Solicitation No.
N40192-16-R-2800

SMALL BUSINESS DESIGN-BUILD MULTIPLE AWARD CONSTRUCTION CONTRACT (SB DBMACC)

VARIOUS LOCATIONS, GUAM

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Solicitation No.
N40192-16-R-2800

SMALL BUSINESS DESIGN-BUILD MULTIPLE AWARD CONSTRUCTION CONTRACT (SB DBMACC)

VARIOUS LOCATIONS, GUAM

PART 1
PROPOSAL FORMS AND DOCUMENTS

SOLICITATION, OFFER, AND AWARD (Construction, Alteration, or Repair)	1. SOLICITATION NO. N40192-16-R-2800	2. TYPE OF SOLICITATION [ ] SEALED BID (IFB) [X] NEGOTIATED (RFP)	3. DATE ISSUED 29-Mar-2016	PAGE OF PAGES 1 OF 64

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO. ACQR4094691	6. PROJECT NO.

7. ISSUED BY CODE N40192	8. ADDRESS OFFER TO (If Other Than Item 7) CODE
COMMANDING OFFICER - NAVFAC MARIANAS IPT MILCON PSC 455, BOX 195 FPO AP 96540-2937 TEL: FAX:	**See Item 7** TEL: FAX:

9. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS)
	TERESA F. AGUON	671-333-3171

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying no., date):*

REQUEST FOR PROPOSAL N40192-16-R-2800 – SMALL BUSINESS (SB) DESIGN BUILD MULTIPLE AWARD CONSTRUCTION CONTRACT (DBMACC), VARIOUS LOCATIONS, GUAM

The work to be acquired under this DBMACC is new construction, renovation/modernization, and routine repair/maintenance, by method of design build, at various federal or military facilities and installations on Guam. The work (tasks) will generally provide all design, labor, transportation, equipment, materials, tools, supplies, engineering, supervision, and administration services needed to complete the scope of work. A list of facility types are identified in the P-72 "Facility Category Codes" publication. The work shall also include sampling, testing, removal, and disposal of lead contaminated paint, asbestos and other hazardous materials. Occasionally work may be required at federal or military facilities and installations in the Northern Mariana Islands and the outlying Pacific islands.

PROPOSAL DOCUMENTS:
- Solicitation, Offer, and Award (SF1442)
- Instructions to Offerors
- Representations and Certifications

CONTRACT DOCUMENTS:
- Solicitation, Offer, and Award (SF1442)
- Contract Clauses
- NAVFAC Specification 41-16-2800

11. The Contractor shall begin performance within _____ calendar days and complete it within _____ calendar days after receiving [X] award, [ ] notice to proceed. This performance period is [ ] mandatory, [ ] negotiable. *(See* Each TaskOrder *.)*

12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? *(If "YES," indicate within how many calendar days after award in Item 12B.)* [X] YES [ ] NO	12B. CALENDAR DAYS 10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 4 copies to perform the work required are due at the place specified in Item 8 by 04:30 PM *(hour)* local time 28 Apr 2016 *(date).* If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee [X] is, [ ] is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 120 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

SOLICITATION, OFFER, AND AWARD (Continued)

(Construction, Alteration, or Repair)

OFFER ***(Must be fully completed by offeror)***

14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*		15. TELEPHONE NO. *(Include area code)*
		16. REMITTANCE ADDRESS *(Include only if different than Item 14)* **See Item 14**
CODE	FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirements stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)*

AMOUNTS	SEE SCHEDULE OF PRICES

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation -- give number and date of each)

AMENDMENT NO.										
DATE										

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*	20B. SIGNATURE	20C. OFFER DATE

AWARD ***(To be completed by Government)***

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)*	**ITEM**	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO ☐ 10 U.S.C. 2304(c) ☐ 41 U.S.C. 253(c)
26. ADMINISTERED BY CODE		27. PAYMENT WILL BE MADE BY: CODE

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT *(Contractor is required to sign this document and return _ _ copies to issuing office.)* Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications or incorporated by reference in or attached to this contract.		☐ 29. AWARD *(Contractor is not required to sign this document.)* Your offer on this solicitation, is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.
30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN *(Type or print)*		31A. NAME OF CONTRACTING OFFICER *(Type or print)* TEL: EMAIL:
30B. SIGNATURE	30C. DATE	31B. UNITED STATES OF AMERICA BY 31C. AWARD DATE

Section 00010 - Solicitation Contract Form

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0001		240,000,000	Each		
	Base Year – Small Business DBMACC FFP This is an Indefinite Delivery/Indefinite Quantity (IDIQ) Design Build Multiple Award Construction Contract (DBMACC), Guam for a period of 12 months. A task order for the minimum guarantee will be issued concurrently with the award of the basic contract. FOB: Destination PURCHASE REQUEST NUMBER: ACQR4094691				

MAX
NET AMT

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0002 OPTION		UNDEFINED	Each		
	First Option Yr - Small Business DBMACC FFP This is an Indefinite Delivery/Indefinite Quantity (IDIQ) Design Build Multiple Award Construction Contract (DBMACC), Guam for a period of 12 months. FOB: Destination PURCHASE REQUEST NUMBER: ACQR4094691				

MAX
NET AMT

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0003		UNDEFINED	Each		
OPTION	Second Option Yr – Small Business DBMACC FFP This is an Indefinite Delivery/Indefinite Quantity (IDIQ) Design Build Multiple Award Construction Contract (DBMACC), Guam for a period of 12 months. FOB: Destination PURCHASE REQUEST NUMBER: ACQR4094691				
				MAX NET AMT	

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0004		UNDEFINED	Each		
OPTION	Third Option Yr – Small Business DBMACC FFP This is an Indefinite Delivery/Indefinite Quantity (IDIQ) Design Build Multiple Award Construction Contract (DBMACC), Guam for a period of 12 months FOB: Destination PURCHASE REQUEST NUMBER: ACQR4094691				
				MAX NET AMT	

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0005 OPTION	Fourth Option Yr – Small Business DBMACC FFP This is an Indefinite Delivery/Indefinite Quantity (IDIQ) Design Build Multiple Award Construction Contract (DBMACC), Guam for a period of 12 months. FOB: Destination PURCHASE REQUEST NUMBER: ACQR4094691	UNDEFINED	Each		

MAX
NET AMT

SF1442 BLOCK 10 CONTINUATION

READ THE FOLLOWING IN CONJUNCTION WITH THE ACQUISITION REQUIREMENTS.

This procurement is restricted to Small Business concerns.
NAICS: 236220 Commercial and Institutional Building Construction Size Standard: $36.5 million

Maximum dollar value, including the base period and all options, for all contracts combined is $240 million.

Task Order Range is $1 million to $20 million.

Minimum guarantee is $25,000.

Inquiries regarding the Request for Proposal (RFP) shall be submitted electronically using the Request for Information (RFI) form provided as Attachment 1 in this solicitation. The Point of Contact (POC) for inquiries is Teresa Aguon at (671) 333-3171, by email at Teresa.Aguon@fe.navy.mil. The Government does not intend to respond to inquiries submitted less than 10 days before the proposal receipt date.

ENFORCEABILITY OF PROPOSAL:

Items offered in the contractor's proposal are binding on the contractor and shall be provided for the duration of the contract. Substitutions will require prior Contracting Officer's approval and shall be equal or better, in the judgment of the Contracting Officer, than the items originally proposed.

PROPOSALS MUST SET FORTH FULL, ACCURATE, AND COMPLETE INFORMATION AS REQUIRED BY THIS REQUEST FOR PROPOSAL (INCLUDING ATTACHMENTS). THE PENALTY FOR MAKING FALSE STATEMENTS IN PROPOSALS IS PRESCRIBED IN 18 U.S.C. 1001.

THE GOVERNMENT INTENDS TO EVALUATE PROPOSALS AND AWARD WITHOUT DISCUSSIONS. HOWEVER, THE GOVERNMENT RESERVES THE RIGHT TO CONDUCT DISCUSSIONS IF IT IS LATER DETERMINED BY THE CONTRACTING OFFICER TO BE NECESSARY. THEREFORE, EACH INITIAL OFFER SHOULD CONTAIN THE BEST TERMS FROM A TECHNICAL AND PRICE STANDPOINT.

Section 00100 - Bidding Schedule/Instructions to Bidders

INSTRUCTIONS TO OFFERORS

1. GENERAL OVERVIEW OF MULTIPLE AWARD CONSTRUCTION CONTRACT (MACC)

A MACC is a contract awarded from a single solicitation, and may result in award to multiple contractors. This procurement consists of one (1) solicitation with the intent to award five (5) Indefinite Delivery Indefinite Quantity (IDIQ) type construction contracts to the Offerors whose proposals, conforming to the RFP, will be most advantageous to the Government resulting in the best value, price and non-price factors considered. Successful Offerors will compete for future work during the term of the contract. In accordance with Federal Acquisition Regulation (FAR) Subpart 36.3, this acquisition is based upon two-phase design-build selection procedures. Phase One will select the most highly qualified Offerors to submit Phase Two proposals. In making the best value award decision after Phase Two, the Government will consider the evaluated ratings for Factors 2 through 6 and price.

2. INQUIRIES

Inquiries regarding the Request for Proposal (RFP) shall be submitted electronically using the Request for Information (RFI) form provided as Attachment (1). The Point of Contact (POC) for inquiries is Teresa Aguon at (671) 333-3171, by email at teresa.aguon@fe.navy.mil. The Government does not intend to respond to inquiries submitted less than 10 days before the proposal receipt date.

3. PROPOSAL SUBMITTAL REQUIREMENTS

3.1 PROPOSAL FORMAT

Phase One proposals submitted in response to this solicitation shall be formatted as follows and furnished in the number of copies stated herein.

Phase One proposals shall be submitted in three ring binders or bound, with tabs or separators. Page limits, where stipulated, must be adhered to (page refers to one printed side of a piece of paper). Proposals shall be submitted on 8.5”x11” paper, using standard margins and no less than 10 pitch font, utilizing both sides of the paper. Proposals may include larger size 11”x17” paper for the organizational chart in Factor 1. The format for the proposal follows in paragraphs 3.2 and 3.3 of this section. A cover letter shall accompany the Phase One proposal.

The cover letter shall include —

a. The solicitation number;
b. The name, address, telephone and facsimile numbers, and e-mail addresses of the Offeror;
c. The **DUNS Number, CAGE Code, and Tax Identification Number (TIN)** of the Offeror;
d. A statement specifying the extent of agreement with all terms, conditions, and provisions included in the solicitation and agreement to furnish any or all items upon which prices are offered at the price set opposite each item;
e. Names, titles, phone and facsimile numbers, and email addresses of persons authorized to negotiate on the Offeror’s behalf with the Government in connection with this solicitation and;
f. Name, title, and signature of person authorized to sign the proposal. Proposals signed by an agent shall be accompanied by evidence of that agent’s authority, unless that evidence has been previously furnished to the issuing office.
    i. Individuals. A contract with an individual shall be signed by that individual. A contract with an individual doing business as a firm shall be signed by that individual, and the signature shall be followed by the individual’s typed, stamped, or printed name and the words “an individual doing business as *[insert name of firm]*.”
    ii. Partnerships. A contract with a partnership shall be signed in the partnership name.

iii. Corporations. A contract with a corporation shall be signed in the corporate name, followed by the word "by" and the signature and title of the person authorized to sign.
iv. Joint Ventures. A contract with a joint venture may involve any combination of individuals, partnerships, or corporations. The contract shall be signed by each participant in the joint venture in the manner prescribed in paragraphs (a) through (c) above for each type of participant.
v. Agents. When an agent is to sign the contract, other than as stated in paragraphs (a) through (d) above, the agent's authorization to bind the principal must be established by evidence satisfactory to the Contracting Officer.

3.2 PROPOSAL PARTS

Phase One proposals submitted in response to this solicitation shall contain the following parts:

COVER LETTER

RFP PART 1 DOCUMENTS

Standard Form SF1442 (Solicitation, Offer, and Award) with Blocks 14 through 20c completed.
Representations and Certifications – Section 00600 of RFP and the Online Representations and Certifications Application (ORCA) via the System for Award Management (SAM) website.

INFORMATION REQUIRED BY EVALUATION FACTORS

Tab 1: Factor 1, Technical Approach (Narrative, Organizational Chart, and Legally Binding Agreements or Letters of Commitment [if applicable])
Tab 2: Factor 2, Experience (Exhibit A)
Tab 3: Factor 3, Past Performance (Exhibit B and/or CPARS Evaluations)
Tab 4: Factor 4, Safety (TRC, DART, and Narrative)

Offerors are asked to submit only the information/exhibits required. Do not submit any additional information such as brochures or other pre-printed materials.

3.3 PROPOSAL SUBMISSION

Phase One proposals in response to this RFP must be submitted in the format and number of copies as follows:

i. One (1) original Phase One Proposal
ii. Four (4) copies of the Phase One Proposal
iii. One (1) electronic copy of the Phase One Proposal in Adobe Acrobat PDF format provided on compact disc (CD)

The Offeror is responsible for ensuring that all original paper and electronic copies are identical. Should there be a discrepancy between the paper and electronic versions, the paper copy shall govern.

Proposals must be received by this office no later than the date and time stated in Block 13 of the SF1442. Offerors should address all evaluation factors and shall submit the Phase One proposal to the following address:

Naval Facilities Engineering Command Marianas
Attention: Teresa F. Aguon
Bldg 4175, 2nd Floor, Room A206
Pedro LG Roberto Drive, Apra Heights,
Santa Rita, Guam 96915

PROPOSALS MUST BE RECEIVED AND DATE/TIME STAMPED BY THE CONTRACTING OFFICER ON OR BEFORE THE DATE AND TIME SPECIFIED IN THE RFP. LATE SUBMITTALS WILL NOT

BE CONSIDERED UNLESS IT MEETS THE REQUIREMENTS IN FAR 52.215-1 INSTRUCTIONS TO OFFERORS – COMPETITIVE ACQUISITION.

Phase One proposal must be clearly marked on the outside of the package with the solicitation number.

4. PRE-PROPOSAL SITE VISIT

a. Offerors selected to submit Phase Two proposals will be invited to a one-time pre-proposal site visit of the seed project location. This site visit is to provide Offerors with an opportunity to familiarize them with the jobsite and conditions to be encountered and is not for the purpose of answering questions.

b. Failure of a prospective Offeror to submit any written questions or to attend the pre-proposal site visit will be construed to mean that the Offeror fully understands all requirements of the solicitation. Prospective Offerors are advised that the pre-proposal site visit will be held solely for the purpose of explaining the concepts involved in the project and the specifications, terms, and conditions of this solicitation.

c. No minutes of this meeting will be issued. All prospective Offerors are advised that this solicitation will remain unchanged unless it is amended in writing. However, if an amendment is issued, normal procedures relating to the acknowledgment and receipt of any such amendment as described in Contract Clause "Amendment to Solicitations" of this section shall be applicable.

5. JOINT VENTURE, LIMITED LIABILITY COMPANIES AND LIMITED PARTNERSHIP

a. Joint Venture Offerors shall provide a copy of the joint venture agreement. The agreement shall include information that identifies the responsibilities for each entity under this contract, demonstrate the relationship between firms, and identify contractual relationships and authorities to bind each entity of the joint venture. The Joint Venture also needs to complete the online representations and certifications for each joint venture member as well as for the joint venture itself.

b. Joint Ventures and Limited Liability Companies and Limited Partnerships shall submit the following additional documentation regarding their business entities:

   i. A copy of the JV, LLC, or LTD agreement.
   ii. A detailed statement outlining the following in terms of percentages where appropriate:

      1. The relationship of the team/partners/parties in terms of business ownership, capital contribution, profit distribution or loss sharing.
      2. The management approach in terms of who will conduct, direct, supervise, and control.
      3. The structure and decision-making responsibilities of the partners/parties in terms of who will control the manner and method of performance of work.
      4. Identify (by name and title) the personnel having the authority to legally bind the partners/parties (including authority to execute the contract documents and bonds).

   iii. A list of partners/parties, to include company name, DUNS and CAGE Numbers, Address, Point of Contact, e-mail address, phone number and facsimile number

6. SYSTEM FOR AWARD MANAGEMENT REGISTRATION

The implementation of the System for Award Management (SAM), among other changes, brings together the capabilities of the former Central Contractor Registration (CCR) and Online Representations and Certifications Application (ORCA).

Firms offering a response to this notice should ensure that they are registered in the System for Award Management (SAM) database (https://www.sam.gov), and complete the provisions associated with the annual

representations and certifications identified in the Federal Acquisition Regulation (FAR) subpart 4.1202 and Defense FAR Supplement (DFARS) subpart 204.1202. Firms shall also ensure to obtain a registered DUNS number prior to award.

NOTE: CONTRACTORS MUST COMPLETE BOTH THE FAR AND DFARS REPRESENTATIONS AND CERTIFICATIONS ON THE SAM WEBSITE. CONTRACTORS ARE PROVIDED ACCESS TO THE DFARS PROVISIONS ONLY WHEN THEY ANSWER AFFIRMATIVELY THAT THEY WOULD LIKE TO DO BUSINESS WITH THE DEPARTMENT OF DEFENSE. Contractors are advised that both FAR and DFARS provisions must be listed on their SAM record in order to participate in this solicitation.

7. FEDERAL CONTRACTOR PROGRAM

In accordance with Federal Acquisition Regulation (FAR) 22.1303, any contractor or subcontractor with a contract of $100,000 or more with the Federal Government must take affirmative action to employ, and advance in employment, qualified special disabled veterans, veterans of the Vietnam era, and other eligible veterans without discrimination based on their disability or veteran's status.

Companies must file an annual VETS-100 report, which shows the number of targeted veterans in their workforce by job category, hiring location, and number of new hires, including targeted veterans hired during the reporting period and the maximum number and minimum number of employees of such contractor during the period covered by the report. Instructions, information and follow-up assistance is provided at the VETS-100 Internet site at http://www.dol.gov/vets/vets-100.html or employers may contact the VETS-100 Processing Center at (866)237-0275 or e-mail at VETS100-customersupport@dol.gov. **A contract cannot be awarded to a contractor that has not submitted a required annual form VETS -100, Federal Contractor Veterans' Employment Report (VETS-100 Report) if subject to the reporting requirements of 38 U.S.C. 4212(d) for that fiscal year**.

8. INCURRED EXPENSES

The Government is not responsible for any costs incurred or associated with preparation and submission of a proposal in response to this solicitation.

9. PRE-AWARD SURVEY/RESPONSIBILITY DETERMINATION

This pre-award survey/responsibility determination is not part of the technical evaluation. FAR subpart 9.104 requires prospective contractors to demonstrate that they have adequate financial resources to perform the contract or the ability to obtain them; capability to comply with the required performance schedule; satisfactory performance record; and be otherwise eligible to receive an award under applicable laws and regulations. This is notice that the Contracting Officer may request Offerors submit the following information for review and determination prior to award:

a. Company financial statements (balance sheets and income statements) for the past three years.
b. Financial resources available to perform the contract. Submit evidence of availability of working/operating capital that will be used for the performance of the contract. If the Offeror plans to rely on financial support from other sources, identify the maximum lines of credit that will be available to include documentation to support the amounts. The maximum lines of credit should be based upon the inclusion of this contract effort. For joint ventures discuss the financial responsibilities among companies and provide the same information for each partner.
c. Newly-formed entities (e.g. limited liability companies (LLC)), limited partnerships (LTD) and newly created corporate subsidiaries) that are the entity liable on the contract ordinarily have no record or an insufficient record of relevant experience, past performance, and financial capability to support a responsibility determination. In such cases, the Offeror may rely on the resources of the LLC member, parent, limited partner, or other entities related to the Offeror for responsibility purposes where the offer submits a guaranty from the entity providing the resources.

d. A list of existing commercial and government business commitments to include contract numbers, names of Contracting Officers, telephone numbers, value of contract, completion date and percent complete. If the list of existing commitments is extensive, provide the required information on at least five projects of similar dollar value and a summary of the existing commitments to include number of contracts, total dollar value of all contracts, and total dollar value of work remaining.

10. TERRITORY OF GUAM NOTICE CONCERNING TAXES, LICENSES, WITHHOLDINGS

(NOTE: The information in this Notice to Bidders is provided by the Government of Guam, Department of Revenue and Taxation. Any questions concerning applicability or interpretation should be directed to that Agency at 1240 Army Drive, Barrigada, Guam 96913. Business registration with the Government of Guam is not considered in determining contractor responsiveness or responsibility. Bidders attention is directed to FAR Clause 52.236-7 in the solicitation entitled "PERMITS AND RESPONSIBILITIES".)

a. All persons engaging in business in Guam must be licensed to do so by the Government of Guam prior to commencement of business in Guam. Engaging in business includes, but is not limited to, services provided by contractors. Applications for business licenses shall be made to the Department of Revenue and Taxation, License and Registration Branch.
b. All corporations, domestic (created under the laws of Guam) or foreign (not created under the laws of Guam) must register with the Department of Revenue and Taxation, License and Registration Branch.
c. Any person engaging in business on Guam must file monthly Business Privilege Tax returns with the Department of Revenue and Taxation.
d. All corporations with the Guam source of funds must file income tax returns to the Department of Revenue and Taxation on the prescribed forms.
e. All employers must deposit wage withholdings from their employees to the Treasurer of Guam. Guam Depository Receipts, as well as Quarterly Withholding Statements are required to be filed with the Department of Revenue and Taxation in the same manner as similar returns and statements required to be filed with the U.S. Internal Revenue Service.
f. Failure to comply with the above may result in criminal or civil penalties as provided by law.

SOLICITATION PROVISIONS

CLAUSES INCORPORATED BY REFERENCE

52.204-7	System for Award Management	JUL 2013
52.204-16	Commercial and Government Entity Code Reporting	JUL 2015
52.216-27	Single or Multiple Awards	OCT 1995
52.217-5	Evaluation Of Options	JUL 1990
52.236-28	Preparation of Proposals--Construction	OCT 1997
252.204-7004 Alt A	System for Award Management Alternate A	FEB 2014

CLAUSES INCORPORATED BY FULL TEXT

52.211-2 AVAILABILITY OF SPECIFICATIONS, STANDARDS, AND DATA ITEM DESCRIPTIONS LISTED IN THE ACQUISITION STREAMLINING AND STANDARDIZATION INFORMATION SYSTEM (ASSIST) (APR 2014)

(a) Most unclassified Defense specifications and standards may be downloaded from the following ASSIST websites:

(1) ASSIST (https://assist.dla.mil/online/start/);

(2) Quick Search (http://quicksearch.dla.mil/);

(3) ASSISTdocs.com (http://assistdocs.com).

(b) Documents not available from ASSIST may be ordered from the Department of Defense Single Stock Point (DoDSSP) by--

(1) Using the ASSIST Shopping Wizard (https://assist.dla.mil/wizard/index.cfm);

(2) Phoning the DoDSSP Customer Service Desk (215) 697-2179, Mon-Fri, 0730 to 1600 EST; or

(3) Ordering from DoDSSP, Building 4, Section D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Telephone (215) 697-2667/2179, Facsimile (215) 697-1462.

(End of provision)

52.211-14 NOTICE OF PRIORITY RATING FOR NATIONAL DEFENSE, EMERGENCY PREPAREDNESS, AND ENERGY PROGRAM USE (APR 2008)

Any contract awarded as a result of this solicitation will be ***** DX rated order; ***** DO rated order certified for national defense, emergency preparedness, and energy program use under the Defense Priorities and Allocations System (DPAS) (15 CFR 700), and the Contractor will be required to follow all of the requirements of this regulation.

DX/DO ratings are defined on a per task order basis.

(End of provision)

52.215-1 INSTRUCTIONS TO OFFERORS--COMPETITIVE ACQUISITION (JAN 2004)

(a) Definitions. As used in this provision--

“Discussions” are negotiations that occur after establishment of the competitive range that may, at the Contracting Officer's discretion, result in the offeror being allowed to revise its proposal.

“In writing or written” means any worded or numbered expression which can be read, reproduced, and later communicated, and includes electronically transmitted and stored information.

“Proposal modification” is a change made to a proposal before the solicitation's closing date and time, or made in response to an amendment, or made to correct a mistake at any time before award.

“Proposal revision” is a change to a proposal made after the solicitation closing date, at the request of or as allowed by a Contracting Officer as the result of negotiations.

“Time”, if stated as a number of days, is calculated using calendar days, unless otherwise specified, and will include Saturdays, Sundays, and legal holidays. However, if the last day falls on a Saturday, Sunday, or legal holiday, then the period shall include the next working day.

(b) Amendments to solicitations. If this solicitation is amended, all terms and conditions that are not amended remain unchanged. Offerors shall acknowledge receipt of any amendment to this solicitation by the date and time specified in the amendment(s).

(c) Submission, modification, revision, and withdrawal of proposals. (1) Unless other methods (e.g., electronic commerce or facsimile) are permitted in the solicitation, proposals and modifications to proposals shall be submitted in paper media in sealed envelopes or packages (i) addressed to the office specified in the solicitation, and (ii) showing the time and date specified for receipt, the solicitation number, and the name and address of the offeror. Offerors using commercial carriers should ensure that the proposal is marked on the outermost wrapper with the information in paragraphs (c)(1)(i) and (c)(1)(ii) of this provision.

(2) The first page of the proposal must show--

(i) The solicitation number;

(ii) The name, address, and telephone and facsimile numbers of the offeror (and electronic address if available);

(iii) A statement specifying the extent of agreement with all terms, conditions, and provisions included in the solicitation and agreement to furnish any or all items upon which prices are offered at the price set opposite each item;

(iv) Names, titles, and telephone and facsimile numbers (and electronic addresses if available) of persons authorized to negotiate on the offeror's behalf with the Government in connection with this solicitation; and

(v) Name, title, and signature of person authorized to sign the proposal. Proposals signed by an agent shall be accompanied by evidence of that agent's authority, unless that evidence has been previously furnished to the issuing office.

(3) Submission, modification, or revision, of proposals.

(i) Offerors are responsible for submitting proposals, and any modifications, or revisions, so as to reach the Government office designated in the solicitation by the time specified in the solicitation. If no time is specified in the solicitation, the time for receipt is 4:30 p.m., local time, for the designated Government office on the date that proposal or revision is due.

(ii)(A) Any proposal, modification, or revision received at the Government office designated in the solicitation after the exact time specified for receipt of offers is “late” and will not be considered unless it is received before award is made, the Contracting Officer determines that accepting the late offer would not unduly delay the acquisition; and--

(1) If it was transmitted through an electronic commerce method authorized by the solicitation, it was received at the initial point of entry to the Government infrastructure not later than 5:00 p.m. one working day prior to the date specified for receipt of proposals; or

(2) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of offers and was under the Government's control prior to the time set for receipt of offers; or

(3) It is the only proposal received.

(B) However, a late modification of an otherwise successful proposal that makes its terms more favorable to the Government, will be considered at any time it is received and may be accepted.

(iii) Acceptable evidence to establish the time of receipt at the Government installation includes the time/date stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

(iv) If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at the office designated for receipt of proposals by the exact time specified in the solicitation, and urgent Government requirements preclude amendment of the solicitation, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume.

(v) Proposals may be withdrawn by written notice received at any time before award. Oral proposals in response to oral solicitations may be withdrawn orally. If the solicitation authorizes facsimile proposals, proposals may be withdrawn via facsimile received at any time before award, subject to the conditions specified in the provision at 52.215-5, Facsimile Proposals. Proposals may be withdrawn in person by an offeror or an authorized representative, if the identity of the person requesting withdrawal is established and the person signs a receipt for the proposal before award.

(4) Unless otherwise specified in the solicitation, the offeror may propose to provide any item or combination of items.

(5) Offerors shall submit proposals in response to this solicitation in English, unless otherwise permitted by the solicitation, and in U.S. dollars, unless the provision at FAR 52.225-17, Evaluation of Foreign Currency Offers, is included in the solicitation.

(6) Offerors may submit modifications to their proposals at any time before the solicitation closing date and time, and may submit modifications in response to an amendment, or to correct a mistake at any time before award.

(7) Offerors may submit revised proposals only if requested or allowed by the Contracting Officer.

(8) Proposals may be withdrawn at any time before award. Withdrawals are effective upon receipt of notice by the Contracting Officer.

(d) Offer expiration date. Proposals in response to this solicitation will be valid for the number of days specified on the solicitation cover sheet (unless a different period is proposed by the offeror).

(e) Restriction on disclosure and use of data. Offerors that include in their proposals data that they do not want disclosed to the public for any purpose, or used by the Government except for evaluation purposes, shall--

(1) Mark the title page with the following legend: This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed--in whole or in part--for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of--or in connection with-- the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets [insert numbers or other identification of sheets]; and

(2) Mark each sheet of data it wishes to restrict with the following legend: Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.

(f) Contract award. (1) The Government intends to award a contract or contracts resulting from this solicitation to the responsible offeror(s) whose proposal(s) represents the best value after evaluation in accordance with the factors and subfactors in the solicitation.

(2) The Government may reject any or all proposals if such action is in the Government's interest.

(3) The Government may waive informalities and minor irregularities in proposals received.

(4) The Government intends to evaluate proposals and award a contract without discussions with offerors (except clarifications as described in FAR 15.306(a)). Therefore, the offeror's initial proposal should contain the offeror's best terms from a cost or price and technical standpoint. The Government reserves the right to conduct discussions if the Contracting Officer later determines them to be necessary. If the Contracting Officer determines that the number of proposals that would otherwise be in the competitive range exceeds the number at which an efficient competition can be conducted, the Contracting Officer may limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals.

(5) The Government reserves the right to make an award on any item for a quantity less than the quantity offered, at the unit cost or prices offered, unless the offeror specifies otherwise in the proposal.

(6) The Government reserves the right to make multiple awards if, after considering the additional administrative costs, it is in the Government's best interest to do so.

(7) Exchanges with offerors after receipt of a proposal do not constitute a rejection or counteroffer by the Government.

(8) The Government may determine that a proposal is unacceptable if the prices proposed are materially unbalanced between line items or subline items. Unbalanced pricing exists when, despite an acceptable total evaluated price, the price of one or more contract line items is significantly overstated or understated as indicated by the application of cost or price analysis techniques. A proposal may be rejected if the Contracting Officer determines that the lack of balance poses an unacceptable risk to the Government.

(9) If a cost realism analysis is performed, cost realism may be considered by the source selection authority in evaluating performance or schedule risk.

(10) A written award or acceptance of proposal mailed or otherwise furnished to the successful offeror within the

time specified in the proposal shall result in a binding contract without further action by either party.

(11) If a post-award debriefing is given to requesting offerors, the Government shall disclose the following information, if applicable:

(i) The agency's evaluation of the significant weak or deficient factors in the debriefed offeror's offer.

(ii) The overall evaluated cost or price and technical rating of the successful and the debriefed offeror and past performance information on the debriefed offeror.

(iii) The overall ranking of all offerors, when any ranking was developed by the agency during source selection.

(iv) A summary of the rationale for award.

(v) For acquisitions of commercial items, the make and model of the item to be delivered by the successful offeror.

(vi) Reasonable responses to relevant questions posed by the debriefed offeror as to whether source-selection procedures set forth in the solicitation, applicable regulations, and other applicable authorities were followed by the agency.

(End of provision)

52.216-1 TYPE OF CONTRACT (APR 1984)

The Government contemplates award of a **Indefinite Delivery Indefinite Quantity** contract resulting from this solicitation.

(End of provision)

52.222-23 NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY FOR CONSTRUCTION (FEB 1999)

(a) The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade
	6.9%

These goals are applicable to all the Contractor's construction work performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, the Contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

(c) The Contractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction," and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

(d) The Contractor shall provide written notification to the Deputy Assistant Secretary for Federal Contract Compliance, U.S. Department of Labor, within 10 working days following award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the --

(1) Name, address, and telephone number of the subcontractor;

(2) Employer's identification number of the subcontractor;

(3) Estimated dollar amount of the subcontract;

(4) Estimated starting and completion dates of the subcontract; and

(5) Geographical area in which the subcontract is to be performed.

(e) As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is **Guam**.

(End of provision)

52.225-12 NOTICE OF BUY AMERICAN REQUIREMENT-- CONSTRUCTION MATERIALS UNDER TRADE AGREEMENTS (MAY 2014)

(a) Definitions. “Commercially available off-the-shelf (COTS) item,” “construction material,” “designated country construction material,” “domestic construction material,” and “foreign construction material,” as used in this provision, are defined in the clause of this solicitation entitled “Buy American -- Construction Materials Under Trade Agreements” (Federal Acquisition Regulation (FAR) clause 52.225-11).

(b) Requests for determination of inapplicability. An offeror requesting a determination regarding the inapplicability of the Buy American statute should submit the request to the Contracting Officer in time to allow a determination before submission of offers. The offeror shall include the information and applicable supporting data required by paragraphs (c) and (d) of FAR clause 52.225-11 in the request. If an offeror has not requested a determination regarding the inapplicability of the Buy American statute before submitting its offer, or has not received a response to a previous request, the offeror shall include the information and supporting data in the offer.

(c) Evaluation of offers. (1) The Government will evaluate an offer requesting exception to the requirements of the Buy American statute, based on claimed unreasonable cost of domestic construction materials, by adding to the offered price the appropriate percentage of the cost of such foreign construction material, as specified in paragraph (b)(4)(i) of FAR clause 52.225-11.

(2) If evaluation results in a tie between an offeror that requested the substitution of foreign construction material based on unreasonable cost and an offeror that did not request an exception, the Contracting Officer will award to the offeror that did not request an exception based on unreasonable cost.

(d) Alternate offers. (1) When an offer includes foreign construction material, other than designated country construction material, that is not listed by the Government in this solicitation in paragraph (b)(3) of FAR clause 52.225-11, the offeror also may submit an alternate offer based on use of equivalent domestic or designated country construction material.

(2) If an alternate offer is submitted, the offeror shall submit a separate Standard Form 1442 for the alternate offer, and a separate price comparison table prepared in accordance with paragraphs (c) and (d) of FAR clause 52.225-11 for the offer that is based on the use of any foreign construction material for which the Government has not yet determined an exception applies.

(3) If the Government determines that a particular exception requested in accordance with paragraph (c) of FAR clause 52.225-11 does not apply, the Government will evaluate only those offers based on use of the equivalent domestic or designated country construction material, and the offeror shall be required to furnish such domestic or designated country construction material. An offer based on use of the foreign construction material for which an exception was requested-- (i) Will be rejected as nonresponsive if this acquisition is conducted by sealed bidding; or

(ii) May be accepted if revised during negotiations.

(End of provision)

52.228-1 BID GUARANTEE (SEP 1996)

(a) Failure to furnish a bid guarantee in the proper form and amount, by the time set for opening of bids, may be cause for rejection of the bid.

(b) The bidder shall furnish a bid guarantee in the form of a firm commitment, e.g., bid bond supported by good and sufficient surety or sureties acceptable to the Government, postal money order, certified check, cashier's check, irrevocable letter of credit, or, under Treasury Department regulations, certain bonds or notes of the United States. The Contracting Officer will return bid guarantees, other than bid bonds, (1) to unsuccessful bidders as soon as practicable after the opening of bids, and (2) to the successful bidder upon execution of contractual documents and bonds (including any necessary coinsurance or reinsurance agreements), as required by the bid as accepted.-

(c) The amount of the bid guarantee shall be **20 percent of the total proposed price for the seed project**.

(d) If the successful bidder, upon acceptance of its bid by the Government within the period specified for acceptance, fails to execute all contractual documents or furnish executed bond(s) within 10 days after receipt of the forms by the bidder, the Contracting Officer may terminate the contract for default.-

(e) In the event the contract is terminated for default, the bidder is liable for any cost of acquiring the work that exceeds the amount of its bid, and the bid guarantee is available to offset the difference.

(End of provision)

52.233-2 SERVICE OF PROTEST (SEP 2006)

(a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the Government Accountability Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from **NAVFAC Marianas PSC 455, Box 195 FPO AP 96540-2937**.

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

(End of provision)

52.236-27 SITE VISIT (CONSTRUCTION) (FEB 1995) – ALTERNATE I (FEB 1995)

(a) The clauses at 52.236-2, Differing Site Conditions, and 52.236-3, Site Investigations and Conditions Affecting the Work, will be included in any contract awarded as a result of this solicitation. Accordingly, offerors or quoters are urged and expected to inspect the site where the work will be performed.

(b) An organized site visit **will be** scheduled for **Offerors selected to submit Phase Two proposals at a date and time to be determined**.

(c) Participants will meet at **the seed project location to be determined**.

(End of provision)

52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

Federal Acquisition Regulation (FAR):
http://www.acquisition.gov/far/
http://farsite.hill.af.mil/

Defense Acquisition Regulation Supplement (DFARS):
http://www.acq.osd.mil/dpap/dars/dfarspgi/current/index.html
http://farsite.hill.af.mil/vfdfara.htm

(End of provision)

5252.228-9300 INDIVIDUAL SURETY/SURETIES (JUN 1994)

As prescribed in FAR 28.203(a), individual sureties will be permitted. In order for the Contracting Officer to make a determination as to the acceptability of individuals proposed as sureties, as prescribed in FAR 28-203(b), all proposers who submit bonds which are executed by individual sureties are requested to furnish additional information in support of SF-28, Affidavit of Individual Surety, with the bonds. Pursuant to Instruction 3(b) of Standard Form 24, the Bond, Standard Form 25, the Performance Bond, and the Standard Form 25A, the Payment Bond, the Contracting Officer requests the following information:

(a) Equity Securities (Stock):

(1) State the place(s) of incorporation and address of the principal place of business for each issuing corporation listed.

(2) State whether the security issued was issued by public or private offering and give the place of registration of the security.

(3) State whether the security is presently, actively traded.

(b) Debt Securities (Bonds) and Certificates of Deposit:

(1) List the type of bonds held and their maturity dates.

(2) State the name, address, and telephone number of the issuing agency, firm or individual.

(3) State the complete address(es) where the bonds are held.

(4) State whether the bonds have been pledged as security or have otherwise been encumbered.

(c) Real Property Interests:

(1) Provide complete recording data for the conveyance of each parcel or interest listed to the individual proposed as surety.

(2) State whether the values listed are based upon personal evaluation or evaluation of an experienced real estate appraiser. If available, provide copies of written appraisals.

(3) State the method(s) of valuation upon which appraisal is based.

(4) Provide the assessed value of each property interest listed utilized by the appropriate tax assessor for purposes of property taxation.

(5) Provide the telephone number, including area code, for the tax assessor who performed the most recent tax assessment.

(6) State whether each real property interest listed is currently under lien or in any way encumbered and the dollar amount of each such lien or encumbrance.

(d) Persons Proposed as Individual Sureties:

(1) A current list of all other bonds (bid, performance, and payment) on which the individual is a surety and bonds for which the individual is requesting to be a surety.

(2) A statement as to the percent of completion of projects for which the individual is bound on a performance bond.

This information is necessary to enable the Contracting Officer to evaluate the sufficiency of the surety's net worth in a timely manner.

(End of provision)

5252.228-9302 BID GUARANTEE (ALTERNATE I) (JAN 1996)

To assure the execution of the contract and the performance and payment bonds, each bidder/offeror shall submit with its bid/offer a guarantee bond (Standard Form 24) executed by a surety company holding a certificate of authority from the Secretary of the Treasury as an acceptable surety, or other security as provided in FAR Clause 52.228-1, "Bid Guarantee". Security shall be in a penal sum equal to at least 20 percent of the price payable for the contract guaranteed minimum, but in no case to exceed $3,000,000. The bid guarantee bond shall be accompanied by a copy of the agent's authority to sign bonds for the surety company.

(End of provision)

SECTION 00210

EVALUATION FACTORS FOR AWARD

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PART I GENERAL

1.1 SOLICITATION REQUIREMENTS

In accordance with Federal Acquisition Regulation (FAR) Subpart 36.3, this acquisition is based upon the two-phase design-build selection procedures. Phase One will select the most highly qualified Offerors to submit Phase Two proposals. In making the best value award decision after Phase Two, the Government will consider the evaluated ratings for Factors 2 through 6 and price.

1.2 SOURCE SELECTION

This competitive Small Business set-aside procurement uses source selection procedures to select the responsible Offerors whose proposals conform to the requirements of the solicitation and are determined to provide the best value to the Government, price and non-price factors considered. The Government reserves the right to eliminate from consideration for award any or all offers at any time prior to award of the contract; to negotiate with Offerors in the competitive range; and to award the contracts to the Offerors submitting the proposals determined to represent the best value. Negotiation permits proposals to be evaluated based on price competition, technical merit and other factors; permits impartial and comprehensive evaluation of Offerors' proposals; permits discussions if necessary; and the use of a tradeoff process when it may be in the Government's best interest to consider selection to other than the lowest priced Offeror or to other than the highest technically rated Offeror.

1.3 INTENT TO SELECT/AWARD WITHOUT DISCUSSIONS

In Phase One, the Government intends to select the most highly qualified Offerors to submit proposals for Phase Two without conducting discussions with any Offeror (except clarifications as described in FAR 15.306(a)). Therefore, the initial Phase One proposal shall conform to the solicitation requirements and shall contain the Offeror's best offer.

The Government intends to evaluate Phase Two proposals received and to award the contracts without conducting discussions. Therefore, the initial Phase Two proposal shall conform to the solicitation requirements and shall contain the Offeror's best offer from a non-price and price standpoint.

The Government reserves the right to conduct discussions to maximize the Government's opportunity to obtain the best value and reserves the right to further limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals.

1.4 ENFORCEABILITY OF PROPOSAL

The proposal must set forth full, accurate and complete information as required by this solicitation. The Government will rely on such information in the award of the contract. By submission of the offer, the Offeror agrees that all items proposed (e.g., key personnel, subcontractors, materials, etc.) will be utilized for the duration of the contract and any substitutions will require prior Contracting Officer's approval and shall be equal or better, in the judgment of the Contracting Officer, than the items originally proposed.

PART II EVALUATION FACTORS

2.1 BASIS OF AWARD

The contracts resulting from this solicitation will be awarded to the responsible Offerors whose offers, conforming to the solicitation, are determined to be the most advantageous to the Government considering Price and Non-Price evaluation factors. All technical factors when combined are of equal importance to the performance confidence assessment (past performance) rating; and all technical factors and the performance confidence assessment (past performance) rating, when combined, are approximately equal to price. Award may be made to other than the lowest priced Offeror or other than the highest technically rated Offeror. Any proposal found to have a deficiency in meeting the stated solicitation requirements or performance objectives will be considered ineligible for award, unless the deficiency is corrected through discussions.

2.2 EVALUATION CRITERIA

a. "Relevant" means sufficiently similar to the instant acquisition to provide indicators of expected performance. For example, construction similarity and complexity, contract type, dollar value.

b. Past performance information on "relevant projects" meeting the definition in the solicitation will constitute the primary consideration in the Government's evaluation under this factor. The Government may, however, review and consider past performance information on other construction projects as made available to the Government from other sources such as the Contractor Performance Assessment Reports (CPARS) and inquiries with previous clients/owners. The Government will determine the relevance of the past performance information received on other construction projects, as well as consider the source, context and currency of such information in its evaluation.

c. Offerors who submit past performance and experience information of a parent, sister, predecessor or other affiliated company must describe what involvement such company will have on the instant acquisition. The proposal should clearly indicate how the resources of the parent, sister, predecessor or other affiliated company – its workforce, management, facilities, or other resources – will be provided or relied upon for contract performance.

d. The Contracting Officer may discount favorable past performance and experience of a subcontractor unless the prime contractor clearly provides, in its proposal, evidence of a **binding teaming agreement or other contractual agreement** which creates legal responsibility on the part of the subcontractors.

e. The Offeror will not be rated favorably or unfavorably if the Offeror does not have a record of relevant past performance or if a record of past performance is unavailable. However, the Offeror with favorable relevant past performance may be considered more favorably than an Offeror with no past performance information.

f. The Government, in compliance with FAR 15.305(a)(2)(ii), will allow Offerors to provide information on any problems encountered on any identified contracts, and any corrective actions taken by the Offeror.

2.3 PRICE EVALUATION

The price proposal will be evaluated during Phase Two to determine the reasonableness of the Offeror's proposal. Total price to be evaluated will be based on the total proposed price for the seed project in RFP Part 3.

2.4 EVALUATION FACTORS AND PROPOSAL SUBMISSION REQUIREMENTS

a. The Offeror's proposal shall contain a response to each of the evaluation factors and shall be in the form prescribed by this solicitation. Evaluation factors are divided into two categories: Non-Price (Factors 1 through 6) and Price (Factor 7). The evaluation factors for this acquisition are:

PHASE ONE:
FACTOR 1 – Technical Approach
FACTOR 2 – Experience
FACTOR 3 – Past Performance
FACTOR 4 – Safety

PHASE TWO:
FACTOR 5 – Technical Solution
FACTOR 6 – Energy and Sustainable Design
FACTOR 7 – Price

b. For this Two-Phase Design-Build procurement, Factors 1-4 will be evaluated in Phase One, and Factors 5-7 will be evaluated in Phase Two. Factor 1 will only be rated Acceptable or Unacceptable. If an Offeror is rated Unacceptable in Factor 1, then they will not be considered for Phase Two. In making the best value award decision after Phase Two, the Government will consider Factors 2-6 and price. The relative importance of evaluation factors 2-7 is as follows: Technical factors (Factors 2, 4, 5, and 6) are of equal importance to each other, and when combined, are equal in importance to the past performance evaluation/performance confidence assessment factor (Factor 3). When the proposal is evaluated as a whole, the technical factors and past performance/performance confidence assessment factor combined (i.e., the non-price evaluation factors) are approximately equal to price (Factor 7).

c. Definitions:

DEFICIENCY: A material failure of a proposal to meet a Government requirement or a combination of significant weaknesses in a proposal that increases the risk of unsuccessful contract performance to an unacceptable level.

SIGNIFICANT WEAKNESS: A flaw that appreciably increases the risk of unsuccessful contract performance.

WEAKNESS: A flaw in the proposal that increases the risk of unsuccessful contract performance.

STRENGTH: An aspect of an Offeror's proposal that has merit or exceeds specified performance or capability requirements in a way that will be advantageous to the Government during contract performance.

ACCEPTABLE FEATURES: A proposed method or technique in the proposal that addresses solicitation requirements such that no further explanation or documentation is necessary.

PAST PERFORMANCE: Relates to how well an Offeror has performed; e.g., the quality of work accomplished, schedule compliance, client satisfaction.

EXPERIENCE: Pertains to work previously performed by an Offeror, which is the same or similar to the work that may be ordered under this contract.

PROJECT: A single undertaking of construction or design activities or tasks resulting in new construction, renovation, or repair work (or design thereof) with total construction costs of at least $1 million similar in scope to the work described in this solicitation.

DESIGN-BUILD: Refers to combining design and construction in a single contract with one contractor. Design-build projects require design of the project by a licensed professional (i.e. engineer, architect). Projects that only require shop drawing level effort are not design-build projects.

OFFEROR: Refers to the Contractor submitting the proposal as Offeror, including joint ventures, whose name appears in Block 14 of Standard Form 1442 (Solicitation, Offer and Award).

OFFEROR'S TEAM: Applies to the Offeror, the Offeror's outside Lead Design Firm, and/or in-house Lead Designer(s) only; does not include other subcontractors or consultants.

LEAD DESIGN FIRM: Applies to any outside Lead Design Firm and any in-house Lead Designer(s).

FIVE-YEAR PERIOD: Refers to period of time for which projects may be submitted for Experience or Past Performance. The five-year period is calculated by counting back five years from the specific date of issuance of this solicitation.

PAGE: Refers to one printed side of a piece of paper. (For example, 5 pieces of paper printed on both sides would result in 10 pages of narrative.)

d. The following describes each evaluation factor, submittal requirements and basis for assigning ratings:

PHASE ONE

(1) **Factor 1, Technical Approach:**

(a) Proposal Submission Requirements: In Volume I Tab 1 of the proposal, submit a narrative not to exceed two (2) pages describing the composition and management of the firms proposed as the design-build (DB) team for this contract. The Offeror shall submit the following information:

(i) Provide a narrative describing the proposed primary construction firms and primary design firms for this contract and the rationale for proposing this arrangement. Provide the role, responsibilities, and contractual relationships between the various firms (see FAR Subpart 9.6). The narrative shall also include a simple organizational chart that clearly identifies the lines of authority between the entities. If the experience of an entity is being claimed in Factor 2, that entity must be named in the above narrative and organizational chart.

(ii) In addition to the narrative, the Offeror shall submit a fully executed true and authentic copy of the legally binding agreement, such as a joint venture agreement, partnership agreement, teaming agreement, approved mentor protégé agreement (MPA), or letter of commitment for each member of the Offeror's team identified above (e.g., joint venture member, partner, team member, subcontractor, parent company, subsidiary, or other affiliated company, etc.). This information is not included in the page limitation.

(b) Basis of Evaluation:

The assessment of the technical approach for the Offeror's DB team will be used as a means to evaluate the organizational structure and teaming relationships demonstrating meaningful involvement in the performance of the contract by all team members proposed by the Offeror. This factor will be rated on an Acceptable or Unacceptable basis. If an Offeror is rated Unacceptable in Factor 1, then they will not be considered for Phase Two.

(2) **Factor 2, Experience:**

(a) Proposal Submission Requirements: In Volume I Tab 2 of the proposal, submit projects using the format in the Construction & Design Experience Project Data Sheet in Exhibit A describing the following. Projects and pages that exceed the maximum number allowed will be removed prior to evaluation and will not be considered.

(i) Construction Experience:

Submit a minimum of three (3) and a maximum of five (5) relevant construction projects for the Offeror that best demonstrates construction experience on relevant projects that are similar in size, scope, and complexity to the RFP. For purposes of this evaluation, a relevant project is further defined as new construction, renovation, or repair work with total construction costs of at least $1 million. Projects submitted for the Offeror shall be completed within the past 5 years of the date of issuance of this RFP.

(ii) Design Experience:

Submit a minimum of three (3) and a maximum of five (5) relevant design projects for the design team that best demonstrates design experience on relevant projects that are similar in size, scope, and complexity to the RFP. For purposes of this evaluation, a relevant project is further defined as design of new construction, renovation, or repair work with total construction costs of at least $1 million. Projects submitted shall be completed within the past 5 years of the date of issuance of this RFP. For design-build projects, the design portion of the contract shall have been completed within the past 5 years of the date of issuance of this RFP.

(iii) *Notes for Factor 2, Experience.*

(A) A project is defined as a construction project or a complete design effort performed under a single task order or contract. For multiple award and indefinite delivery/indefinite quantity type contracts, the contract as a whole shall not be submitted as a project; rather Offerors shall submit the work performed under a single task order with total construction costs of at least $1 million as a project.

(B) The Construction & Design Experience Project Data Sheet in Exhibit A is MANDATORY and SHALL be used to submit project information. If the same project is being used to demonstrate construction and design experience, submit separate Project Data Sheets for construction and design. Individual blocks on this form may be expanded; however, total length for each project data sheet shall not exceed one (1) double-sided page (or two (2) single-sided pages). The Government will not consider information submitted in addition to this form except as specifically requested.

(C) For all submitted projects, the description of the project shall clearly describe the scope of work performed and the relevancy to the project requirements of this RFP (i.e.: unique features, area, construction methods). In addition, the description should also address any sustainable features for the project, including specific descriptions of those features. Provide applicable documentation on projects that were validated and/or certified through U.S. Green Building Council (USGBC) or the equivalent organization or process.

(D) If the Offeror is a Joint Venture (JV), relevant project experience should be submitted for projects completed by the JV entity. If the JV entity does not have shared experience, project experience shall be submitted for each individual JV member. Offerors who fail to submit experience for all JV members may be rated lower. Offerors are still limited to a total of five (5) projects combined for construction experience and a total of five (5) projects combined for design experience.

(E) All entities demonstrating experience in Factor 2 must be named in the narrative and organizational chart in Factor 1, Technical Approach.

(b) Basis of Evaluation:

The basis of evaluation will include the Offeror's demonstrated experience and depth of experience in performing relevant construction and design projects as defined in the solicitation submittal requirements. The assessment of the Offeror's relevant experience will be used as a means of evaluating the capability of the Offeror to successfully meet the requirements of the RFP.

Relevant projects where the Offeror and the proposed design firm(s) have previously worked together may be considered more favorably than those that have not worked together.

Relevant projects that demonstrate design-build experience may be considered more favorably than those that do not have design-build experience.

Relevant projects that demonstrate experience with sustainable features may be considered more favorably than those that do not demonstrate experience with sustainable features.

(3) **Factor 3, Past Performance.**

(a) Proposal Submission Requirements: In Volume I Tab 3 of the proposal, submit applicable Contractor Performance Assessment Reports (CPARS) evaluations or Past Performance Questionnaires (PPQ), any performance recognition documents, and information on problems encountered on projects submitted under Factor 2, Experience, as follows. Projects that do not correspond to projects submitted under Factor 2 and pages that exceed the maximum number allowed will be removed prior to evaluation and will not be considered.

(i) CPARS Evaluations or Past Performance Questionnaires.

(A) If a completed CPAR or Construction Contractor Appraisal Support System (CCASS) evaluation is available, it shall be submitted with the proposal for each project included in Factor 2 for construction experience. If a completed CPAR or AE Contractor Appraisal Support System (ACASS) evaluation is available, it shall be submitted with the proposal for each project included in Factor 2 for design experience. If there is not a completed CPAR, CCASS, or ACASS evaluation then submit PPQs (Exhibit B) for each project included in Factor 2 for both construction experience and design experience. The Offeror should provide completed PPQ in the proposal. If the Offeror is unable to obtain a completed PPQ from a client for a project(s) before proposal closing date, the Offeror shall complete and submit with the proposal the first page of the PPQ, which will provide contract and client information for the respective project(s). The Government may make reasonable attempts to contact the client noted for that project(s) to obtain the PPQ information. However, Offerors should follow-up with clients/references to help ensure timely submittal of questionnaires. If the client requests, questionnaires may be submitted directly to the Government's point of contact, Teresa F. Aguon, Contract Specialist, via email at teresa.aguon@fe.navy.mil prior to proposal closing date.

(B) Offerors must resubmit and shall not incorporate by reference into their proposal PPQs or CPARS previously submitted for other RFPs. However, this does not preclude the Government from utilizing previously submitted PPQ information in the past performance evaluation.

(ii) Performance Recognition Documents

Include performance recognition documents received for projects submitted under Factor 2, Experience, such as awards, customer letters of commendation, and any other forms of performance recognition.

(iii) Information on Problems Encountered.

(A) Offerors may provide any information on problems encountered and the corrective actions taken on projects submitted under Factor 2, Experience.

(B) Offerors may also address any adverse past performance issues.

(C) Explanations shall not exceed four (4) pages total.

(iv) *Notes for Factor 3, Past Performance.*

(A) The Government reserves the right to contact references for verification or additional information. The Government's inability to contact any of the Offeror's references or the references unwillingness to provide the information requested may affect the Government's evaluation of this factor.

(B) The Government may review any other sources of information for evaluating past performance. Other sources may include, but are not limited to, past performance information retrieved through the Past Performance Information Retrieval System (PPIRS) using all CAGE/DUNS numbers of team members (partnership, joint venture, teaming arrangement, or parent company/subsidiary/affiliate/member) identified in the Offeror's proposal, inquiries of owner representative(s), Federal Awardee Performance and Integrity Information System (FAPIIS), Electronic Subcontract Reporting System (eSRS), and any other known sources not provided by the Offeror.

(C) While the Government may elect to consider data from other sources, the burden of providing detailed, current, accurate and complete past performance information rests with the Offeror

(b) Basis of Evaluation:

(i) This evaluation focuses on how well the Offeror performed on the relevant projects submitted under Factor 2, Experience, and past performance on other projects currently documented in known sources. More emphasis will be placed on more relevant projects.

(ii) The Government will consider the currency and relevancy of the information, the source of the information, context of the data, and general trends in the Contractor's performance. This evaluation is separate and distinct from the Contracting Officer's responsibility determination. The assessment of the Offeror's past performance will be used as a means of evaluating the Offeror's probability to successfully meet the requirements of the RFP.

(iii) Offerors lacking relevant past performance history will not be evaluated favorably or unfavorably in past performance and will receive an Unknown Confidence rating.

(4) **Factor 4, Safety:**

(a) Proposal Submission Requirements: In Volume I Tab 4 of the proposal, submit a narrative not to exceed four (4) pages describing the following:

(i) Safety program performance, including, but not limited to the OSHA Total Recordable Case (TRC) rate and OSHA Days Away, Restricted Duty or Transferred (DART) rates for the most recent five (5) complete calendar years. The narrative shall address any observed trend, serious mishaps, including fatalities, and any mitigating circumstances associated with the TRC and DART rates. If negative trends are noted, the narrative shall address corrective measures taken to

prevent repeat occurrences of similar mishaps. For a partnership or joint venture, TRC and DART rates are required for each contractor who is part of the partnership or joint venture.

(ii) Methodology used in those projects identified in Factor 3, Past Performance, to qualify, evaluate, select, and oversee subcontractors based on their safety performance, such as TRC and DART rates.

(iii) Methodology intended to be used to qualify, evaluate, select, and oversee subcontractors for this contract, highlighting what specific management practices will be in place for providing deliberate safety program management and mishap prevention support to those subcontractors whose TRC rate is greater than 2.75 and whose DART rate is greater than 3.0.

(b) Basis of Evaluation: The Government is seeking to determine that the Offeror has consistently demonstrated a commitment to safety and that the Offeror plans to properly manage and implement safety procedures for its self-performed work and the work of its subcontractors. The Government will evaluate the Offeror's overall safety management system, safety performance record, and the Offeror's methodology of qualifying, evaluating, selecting and overseeing its subcontractors. The Government's sources of information for evaluating safety will include, but are not limited to: OSHA, NAVFAC's Enterprise Safety Applications Management System (ESAMS) database, and other related databases. While the Government may elect to consider data from other sources, the burden of providing detailed, current, accurate and complete safety information regarding these submittal requirements rests with the Offeror.

The Government will evaluate the narrative to determine the degree to which subcontractor safety performance will be considered in the selection of all levels of subcontractors on the upcoming contract and the specific management practices that will be in place for providing deliberate safety program management and mishap prevention support to those subcontractors whose TRC rate is greater than 2.75 and whose DART rate is greater than 3.0. Those Offerors who demonstrate an effective safety management system, as indicated by the required information provided in their safety narrative may be considered more favorably in the evaluation.

PHASE TWO

(This section applies only to Offerors selected to submit Phase Two proposals.)

(5) **Factor 5, Technical Solution:**

(a) Proposal Submission Requirements: In Volume II Tab 5 of the proposal, submit a narrative not to exceed six (6) pages describing the following:

(i) Provide a narrative describing the technical solution to the seed project in RFP Part 3 that meets the requirements of the RFP. Include the following:

i. Building structural system describing how system proposed will provide for minimum structural obstructions within the facility to allow for optimum flexibility in storing various types and sizes of equipment and vehicles and to minimize restriction of maneuvering capabilities of vehicles traversing through the space.
ii. ADA accessibility features to ensure that required access is provided at major equipment storage areas and other ancillary spaces where physically disabled persons may require access.
iii. Exterior façade describing how the proposed construction integrates with the surrounding area and existing base facilities design or architectural theme.
iv. Site layout including a description of the building orientation, roadways, parking (include ingress and egress), emergency vehicle access, maneuvering space/clearances for service

vehicles, and ATFP standoff distances. Also include in the narrative a description of the general concept proposed to meet low impact development (LID).

v. Methodology to be used to comply with the NAVSEA OP5, JRM ESS, and Specification Section 01 57 19.01 20 and how the Offeror plans to integrate explosives safety compliance with construction processes. Narrative shall include at a minimum: coordination of construction and UXO-qualified crews when working either adjacent to each other or in phased sequence, community outreach, and exclusion zone enforcement.

(ii) Up to three (3) conceptual drawings may be provided to supplement the narrative (i.e. floor plan, exterior elevation, and site plan).

(b) Basis of Evaluation:

The Government will evaluate the narrative and conceptual drawings (if included) considering the extent to which the Offeror demonstrates a clear understanding of the architectural and engineering requirements of the seed project. The Government will evaluate the Offeror's technical solution to determine adherence to the technical requirements of the RFP. Offerors who propose an innovative MEC clearance approach that reduces or mitigates impacts to exclusion zones or construction schedule may be rated higher.

(6) **Factor 6, Energy and Sustainable Design:**

(a) Proposal Submission Requirements: In Volume II Tab 6 of the proposal, submit an EPAct 2005 Energy Efficiency Narrative not to exceed four (4) pages describing the following:

(i) Provide the following information, which describes how the seed project will meet or exceed the following sustainable design contract requirements.

i. Using the guidance outlined in Part 3 of this RFP, provide a detailed narrative to describe whether the proposed solution will meet or exceed the goal of a 30% energy reduction using the ASHRAE Std 90.1-2013, Appendix G, Building Performance Rating Method, excluding receptacle and process loads.

ii. Provide the proposed percent energy reduction. Provide the assumptions the Offeror will use to obtain a high-performance building, which will comply with these energy reduction goals.

iii. Describe the Offeror's proposed building with regards to building orientation, shape, fenestration, solar heat gain coefficients (SHGC), wall and roof insulation values (U-values), HVAC systems, water heating systems, lighting systems, and control systems.

iv. Organize/divide the assumptions into four areas: building orientation and configuration, building envelope, mechanical systems, and electrical systems.

(ii) If the Offeror cannot achieve the 30% reduction within the budget identified, the Offeror shall state what percent energy reduction is proposed within their proposal. *Note: Building performance rating and percent energy reduction are calculated in terms of energy rather than energy cost.*

(b) Basis of Evaluation:

The Government will evaluate the Offeror's response to the Energy and Sustainable Design Factor considering the proposed energy savings. The Government will evaluate the Offeror's proposed energy budget reduction relative to EPAct 2005 energy efficiency goals, including evaluation of assumptions.

(7) **Factor 7, Price.**

(a) Proposal Submission Requirements: The Offeror shall submit the following in the order shown below in a sealed envelope.

Envelope is to be clearly marked in the bottom right corner as follows:

Offeror's Name
PRICE PROPOSAL SUBMITTED UNDER RFP N40192-16-R-2800
SMALL BUSINESS (SB) DESIGN BUILD MULTIPLE AWARD CONSTRUCTION CONTRACT (DBMACC), VARIOUS LOCATIONS, GUAM
DO NOT OPEN IN MAILROOM

(i) Seed Project Price – Offeror is to complete the Price Proposal Schedule provided during Phase Two.

(ii) Seed Project Bid Bond – Offeror is to provide a bid bond in the amount of 20% of the proposed price or $3M, whichever is less.

(iii) Bonding Capacity – Offeror is to provide a letter from bonding agent or surety indicating single and aggregate bonding capacity for task order awards under this contract.

(iv) *Notes for Factor 7, Price.*

The seed project in RFP Part 3 was selected from existing requirements to best represent the nature of potential work under this contract. Pricing of the seed project will be used to evaluate the reasonableness of proposed pricing in order to make best value determinations. The best value Offeror will receive award of a task order for the seed project, which will serve as the minimum guarantee for the base period.

(b) Basis of Evaluation: The Government will evaluate price based on the total proposed price for the seed project in RFP Part 3. The price proposals will not be assessed an adjectival rating but will be ranked from lowest to highest. Prices will be evaluated and Offerors will be ranked accordingly. Analysis will be performed by one or more of the following techniques to ensure a fair and reasonable price:

(i) Comparison of proposed prices received in response to the solicitation.

(ii) Comparison of proposed prices with the Independent Government Estimate.

2.5 FINAL SELECTION

Final selection will be made to the responsible Offerors whose offers, conforming to the solicitation, are determined to be the most advantageous to the Government considering price and non-price evaluation factors.

Section 00600 - Representations & Certifications

CLAUSES INCORPORATED BY FULL TEXT

52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (JAN 2016)

(a)(1) The North American Industry Classification System (NAICS) code for this acquisition is **236220, Commercial and Institutional Building Construction**.

(2) The small business size standard is **$36,500,000**.

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b)(1) If the provision at 52.204-7, System for Award Management, is included in this solicitation, paragraph (d) of this provision applies.

(2) If the provision at 52.204-7 is not included in this solicitation, and the offeror is currently registered in System for Award Management (SAM), and has completed the Representations and Certifications section of SAM electronically, the offeror may choose to use paragraph (d) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The offeror shall indicate which option applies by checking one of the following boxes:

( ) Paragraph (d) applies.

( ) Paragraph (d) does not apply and the offeror has completed the individual representations and certifications in the solicitation.

(c) (1) The following representations or certifications in SAM are applicable to this solicitation as indicated:

(i) 52.203-2, Certificate of Independent Price Determination. This provision applies to solicitations when a firm-fixed-price contract or fixed-price contract with economic price adjustment is contemplated, unless—

(A) The acquisition is to be made under the simplified acquisition procedures in Part 13;

(B) The solicitation is a request for technical proposals under two-step sealed bidding procedures; or

(C) The solicitation is for utility services for which rates are set by law or regulation.

(ii) 52.203-11, Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions. This provision applies to solicitations expected to exceed $150,000.

(iii) 52.204-3, Taxpayer Identification. This provision applies to solicitations that do not include the provision at 52.204-7, System for Award Management.

(iv) 52.204-5, Women-Owned Business (Other Than Small Business). This provision applies to solicitations that—

(A) Are not set aside for small business concerns;

(B) Exceed the simplified acquisition threshold; and

(C) Are for contracts that will be performed in the United States or its outlying areas.

(v) 52.209-2; Prohibition on Contracting with Inverted Domestic Corporations--Representation.

(vi) 52.209-5; Certification Regarding Responsibility Matters. This provision applies to solicitations where the contract value is expected to exceed the simplified acquisition threshold.

(vii) 52.214-14, Place of Performance--Sealed Bidding. This provision applies to invitations for bids except those in which the place of performance is specified by the Government.

(viii) 52.215-6, Place of Performance. This provision applies to solicitations unless the place of performance is specified by the Government.

(ix) 52.219-1, Small Business Program Representations (Basic & Alternate I). This provision applies to solicitations when the contract will be performed in the United States or its outlying areas.

(A) The basic provision applies when the solicitations are issued by other than DoD, NASA, and the Coast Guard.

(B) The provision with its Alternate I applies to solicitations issued by DoD, NASA, or the Coast Guard.

(x) 52.219-2, Equal Low Bids. This provision applies to solicitations when contracting by sealed bidding and the contract will be performed in the United States or its outlying areas.

(xi) 52.222-22, Previous Contracts and Compliance Reports. This provision applies to solicitations that include the clause at 52.222-26, Equal Opportunity.

(xii) 52.222-25, Affirmative Action Compliance. This provision applies to solicitations, other than those for construction, when the solicitation includes the clause at 52.222-26, Equal Opportunity.

(xiii) 52.222-38, Compliance with Veterans' Employment Reporting Requirements. This provision applies to solicitations when it is anticipated the contract award will exceed the simplified acquisition threshold and the contract is not for acquisition of commercial items.

(xiv) 52.223-1, Biobased Product Certification. This provision applies to solicitations that require the delivery or specify the use of USDA-designated items; or include the clause at 52.223-2, Affirmative Procurement of Biobased Products Under Service and Construction Contracts.

(xv) 52.223-4, Recovered Material Certification. This provision applies to solicitations that are for, or specify the use of, EPA- designated items.

(xvi) 52.225-2, Buy American Certificate. This provision applies to solicitations containing the clause at 52.225-1.

(xvii) 52.225-4, Buy American--Free Trade Agreements--Israeli Trade Act Certificate. (Basic, Alternates I, II, and III.) This provision applies to solicitations containing the clause at 52.225- 3.

(A) If the acquisition value is less than $25,000, the basic provision applies.

(B) If the acquisition value is $25,000 or more but is less than $50,000, the provision with its Alternate I applies.

(C) If the acquisition value is $50,000 or more but is less than $77,533, the provision with its Alternate II applies.

(D) If the acquisition value is $77,533 or more but is less than $100,000, the provision with its Alternate III applies.

(xviii) 52.225-6, Trade Agreements Certificate. This provision applies to solicitations containing the clause at 52.225-5.

(xix) 52.225-20, Prohibition on Conducting Restricted Business Operations in Sudan--Certification. This provision applies to all solicitations.

(xx) 52.225-25, Prohibition on Contracting with Entities Engaging in Certain Activities or Transactions Relating to Iran—Representation and Certification. This provision applies to all solicitations.

(xxi) 52.226-2, Historically Black College or University and Minority Institution Representation. This provision applies to solicitations for research, studies, supplies, or services of the type normally acquired from higher educational institutions.

(2) The following representations or certifications are applicable as indicated by the Contracting Officer:

[Contracting Officer check as appropriate.]

__X__ (i) 52.204-17, Ownership or Control of Offeror.

(ii) 52.222-18, Certification Regarding Knowledge of Child Labor for Listed End Products.

(iii) 52.222-48, Exemption from Application of the Service Contract Labor Standards to Contracts for Maintenance, Calibration, or Repair of Certain Equipment--Certification.

(iv) 52.222-52 Exemption from Application of the Service Contract Labor Standards to Contracts for Certain Services--Certification.

(v) 52.223-9, with its Alternate I, Estimate of Percentage of Recovered Material Content for EPA-Designated Products (Alternate I only).

(vi) 52.227-6, Royalty Information.

(A) Basic.

(B) Alternate I.

(vii) 52.227-15, Representation of Limited Rights Data and Restricted Computer Software.

(d) The offeror has completed the annual representations and certifications electronically via the SAM website accessed through https://www.acquisition.gov. After reviewing the SAM database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically that apply to this solicitation as indicated in paragraph (c) of this provision have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below [offeror to insert changes, identifying change by clause number, title, date]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause	Title	Date	Change

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on SAM.

(End of provision)

52.209-7 INFORMATION REGARDING RESPONSIBILITY MATTERS (JULY 2013)

(a) Definitions. As used in this provision--

Administrative proceeding means a non-judicial process that is adjudicatory in nature in order to make a determination of fault or liability (e.g., Securities and Exchange Commission Administrative Proceedings, Civilian Board of Contract Appeals Proceedings, and Armed Services Board of Contract Appeals Proceedings). This includes administrative proceedings at the Federal and State level but only in connection with performance of a Federal contract or grant. It does not include agency actions such as contract audits, site visits, corrective plans, or inspection of deliverables.

Federal contracts and grants with total value greater than $10,000,000 means--

(1) The total value of all current, active contracts and grants, including all priced options; and

(2) The total value of all current, active orders including all priced options under indefinite-delivery, indefinite-quantity, 8(a), or requirements contracts (including task and delivery and multiple-award Schedules).

Principal means an officer, director, owner, partner, or a person having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a division or business segment; and similar positions).

(b) The offeror ( ) has ( ) does not have current active Federal contracts and grants with total value greater than $10,000,000.

(c) If the offeror checked “has” in paragraph (b) of this provision, the offeror represents, by submission of this offer, that the information it has entered in the Federal Awardee Performance and Integrity Information System (FAPIIS) is current, accurate, and complete as of the date of submission of this offer with regard to the following information:

(1) Whether the offeror, and/or any of its principals, has or has not, within the last five years, in connection with the award to or performance by the offeror of a Federal contract or grant, been the subject of a proceeding, at the Federal or State level that resulted in any of the following dispositions:

(i) In a criminal proceeding, a conviction.

(ii) In a civil proceeding, a finding of fault and liability that results in the payment of a monetary fine, penalty, reimbursement, restitution, or damages of $5,000 or more.

(iii) In an administrative proceeding, a finding of fault and liability that results in--

(A) The payment of a monetary fine or penalty of $5,000 or more; or

(B) The payment of a reimbursement, restitution, or damages in excess of $100,000.

(iv) In a criminal, civil, or administrative proceeding, a disposition of the matter by consent or compromise with an acknowledgment of fault by the Contractor if the proceeding could have led to any of the outcomes specified in paragraphs (c)(1)(i), (c)(1)(ii), or (c)(1)(iii) of this provision.

(2) If the offeror has been involved in the last five years in any of the occurrences listed in (c)(1) of this provision, whether the offeror has provided the requested information with regard to each occurrence.

(d) The offeror shall post the information in paragraphs (c)(1)(i) through (c)(1)(iv) of this provision in FAPIIS as required through maintaining an active registration in the System for Award Management database via https://www.acquisition.gov (see 52.204-7).

(End of provision)

252.204-7007 ALTERNATE A, ANNUAL REPRESENTATIONS AND CERTIFICATIONS (JAN 2015)

Substitute the following paragraphs (d) and (e) for paragraph (d) of the provision at FAR 52.204-8:

(d)(1) The following representations or certifications in the System for Award Management (SAM) database are applicable to this solicitation as indicated:

(i) 252.209-7003, Reserve Officer Training Corps and Military Recruiting on Campus--Representation. Applies to all solicitations with institutions of higher education.

(ii) 252.216-7008, Economic Price Adjustment--Wage Rates or Material Prices Controlled by a Foreign Government. Applies to solicitations for fixed-price supply and service contracts when the contract is to be performed wholly or in part in a foreign country, and a foreign government controls wage rates or material prices and may during contract performance impose a mandatory change in wages or prices of materials.

(iii) 252.222-7007, Representation Regarding Combating Trafficking in Persons, as prescribed in 222.1771. Applies to solicitations with a value expected to exceed the simplified acquisition threshold.

(iv) 252.225-7042, Authorization to Perform. Applies to all solicitations when performance will be wholly or in part in a foreign country.

(v) 252.225-7049, Prohibition on Acquisition of Commercial Satellite Services from Certain Foreign Entities--Representations. Applies to solicitations for the acquisition of commercial satellite services.

(vi) 252.225-7050, Disclosure of Ownership or Control by the Government of a Country that is a State Sponsor of Terrorism. Applies to all solicitations expected to result in contracts of $150,000 or more.

(vii) 252.229-7012, Tax Exemptions (Italy)--Representation. Applies to solicitations when contract performance will be in Italy.

(viii) 252.229-7013, Tax Exemptions (Spain)--Representation. Applies to solicitations when contract performance will be in Spain.

(ix) 252.247-7022, Representation of Extent of Transportation by Sea. Applies to all solicitations except those for direct purchase of ocean transportation services or those with an anticipated value at or below the simplified acquisition threshold.

(2) The following representations or certifications in SAM are applicable to this solicitation as indicated by the Contracting Officer: [Contracting Officer check as appropriate.]

____ (i) 252.209-7002, Disclosure of Ownership or Control by a Foreign Government.

____ (ii) 252.225-7000, Buy American--Balance of Payments Program Certificate.

____ (iii) 252.225-7020, Trade Agreements Certificate.

____ Use with Alternate I.

_X_ (iv) 252.225-7031, Secondary Arab Boycott of Israel.

____ (v) 252.225-7035, Buy American--Free Trade Agreements--Balance of Payments Program Certificate.

____ Use with Alternate I.

____ Use with Alternate II.

____ Use with Alternate III.

____ Use with Alternate IV.

____ Use with Alternate V.

(e) The offeror has completed the annual representations and certifications electronically via the SAM Web site at https://www.acquisition.gov/. After reviewing the SAM database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically that apply to this solicitation as indicated in FAR 52.204-8(c) and paragraph (d) of this provision have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer, and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below ____ [offeror to insert changes, identifying change by provision number, title, date]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete
as of the date of this offer.

FAR/DFARS Clause #	Title	Date	Change

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications located in the SAM database.

(End of provision)

Section 00700 - Contract Clauses

CLAUSES INCORPORATED BY REFERENCE

52.202-1	Definitions	NOV 2013
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	MAY 2014
52.203-6	Restrictions On Subcontractor Sales To The Government	SEP 2006
52.203-7	Anti-Kickback Procedures	MAY 2014
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	MAY 2014
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	MAY 2014
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	OCT 2010
52.203-13	Contractor Code of Business Ethics and Conduct	OCT 2015
52.203-17	Contractor Employee Whistleblower Rights and Requirement To Inform Employees of Whistleblower Rights	APR 2014
52.204-4	Printed or Copied Double-Sided on Postconsumer Fiber Content Paper	MAY 2011
52.204-9	Personal Identity Verification of Contractor Personnel	JAN 2011
52.204-10	Reporting Executive Compensation and First-Tier Subcontract Awards	OCT 2015
52.204-13	System for Award Management Maintenance	JUL 2013
52.204-15	Service Contract Reporting Requirements for Indefinite-Delivery Contracts	JAN 2014
52.204-18	Commercial and Government Entity Code Maintenance	JUL 2015
52.204-19	Incorporation by Reference of Representations and Certifications.	DEC 2014
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	OCT 2015
52.209-9	Updates of Publicly Available Information Regarding Responsibility Matters	JUL 2013
52.209-10	Prohibition on Contracting With Inverted Domestic Corporations	NOV 2015
52.210-1	Market Research	APR 2011
52.211-13	Time Extensions	SEP 2000
52.211-15	Defense Priority And Allocation Requirements	APR 2008
52.211-18	Variation in Estimated Quantity	APR 1984
52.215-2	Audit and Records--Negotiation	OCT 2010
52.215-10	Price Reduction for Defective Certified Cost or Pricing Data	AUG 2011
52.215-11	Price Reduction for Defective Certified Cost or Pricing Data--Modifications	AUG 2011
52.215-12	Subcontractor Certified Cost or Pricing Data	OCT 2010
52.215-13	Subcontractor Certified Cost or Pricing Data--Modifications	OCT 2010
52.215-17	Waiver of Facilities Capital Cost of Money	OCT 1997
52.219-8	Utilization of Small Business Concerns	OCT 2014
52.219-14	Limitations On Subcontracting	NOV 2011
52.219-28	Post-Award Small Business Program Rerepresentation	JUL 2013
52.222-1	Notice To The Government Of Labor Disputes	FEB 1997
52.222-3	Convict Labor	JUN 2003
52.222-4	Contract Work Hours and Safety Standards- Overtime Compensation	MAY 2014

52.222-10	Compliance with Copeland Act Requirements	FEB 1988
52.222-11	Subcontracts (Labor Standards)	MAY 2014
52.222-12	Contract Termination-Debarment	MAY 2014
52.222-14	Disputes Concerning Labor Standards	FEB 1988
52.222-15	Certification of Eligibility	MAY 2014
52.222-21	Prohibition Of Segregated Facilities	APR 2015
52.222-26	Equal Opportunity	APR 2015
52.222-27	Affirmative Action Compliance Requirements for Construction	APR 2015
52.222-35	Equal Opportunity for Veterans	OCT 2015
52.222-36	Equal Opportunity for Workers with Disabilities	JUL 2014
52.222-37	Employment Reports on Veterans	OCT 2015
52.222-40	Notification of Employee Rights Under the National Labor Relations Act	DEC 2010
52.222-50	Combating Trafficking in Persons	MAR 2015
52.222-54	Employment Eligibility Verification	OCT 2015
52.223-3	Hazardous Material Identification And Material Safety Data	JAN 1997
52.223-5 Alt I	Pollution Prevention and Right-to-Know Information (May 2011) Alternate I	MAY 2011
52.223-6	Drug-Free Workplace	MAY 2001
52.223-12	Refrigeration Equipment and Air Conditioners	MAY 1995
52.223-15	Energy Efficiency in Energy-Consuming Products	DEC 2007
52.223-18	Encouraging Contractor Policies To Ban Text Messaging While Driving	AUG 2011
52.223-19	Compliance with Environmental Management Systems	MAY 2011
52.225-13	Restrictions on Certain Foreign Purchases	JUN 2008
52.227-1	Authorization and Consent	DEC 2007
52.227-2	Notice And Assistance Regarding Patent And Copyright Infringement	DEC 2007
52.227-4	Patent Indemnity-Construction Contracts	DEC 2007
52.228-2	Additional Bond Security	OCT 1997
52.228-5	Insurance - Work On A Government Installation	JAN 1997
52.228-11	Pledges Of Assets	JAN 2012
52.228-12	Prospective Subcontractor Requests for Bonds	MAY 2014
52.228-14	Irrevocable Letter of Credit	NOV 2014
52.228-15	Performance and Payment Bonds--Construction	OCT 2010
52.229-3	Federal, State And Local Taxes	FEB 2013
52.232-5	Payments under Fixed-Price Construction Contracts	MAY 2014
52.232-17	Interest	MAY 2014
52.232-23 Alt I	Assignment of Claims (May 2014) - Alternate I	APR 1984
52.232-27	Prompt Payment for Construction Contracts	MAY 2014
52.232-33	Payment by Electronic Funds Transfer--System for Award Management	JUL 2013
52.232-39	Unenforceability of Unauthorized Obligations	JUN 2013
52.232-40	Providing Accelerated Payments to Small Business Subcontractors	DEC 2013
52.233-1 Alt I	Disputes (May 2014) - Alternate I	DEC 1991
52.233-3	Protest After Award	AUG 1996
52.233-4	Applicable Law for Breach of Contract Claim	OCT 2004
52.236-2	Differing Site Conditions	APR 1984
52.236-3	Site Investigation and Conditions Affecting the Work	APR 1984
52.236-4	Physical Data	APR 1984
52.236-5	Material and Workmanship	APR 1984
52.236-6	Superintendence by the Contractor	APR 1984

52.236-7	Permits and Responsibilities	NOV 1991
52.236-8	Other Contracts	APR 1984
52.236-9	Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements	APR 1984
52.236-10	Operations and Storage Areas	APR 1984
52.236-11	Use and Possession Prior to Completion	APR 1984
52.236-12	Cleaning Up	APR 1984
52.236-13 Alt I	Accident Prevention (Nov 1991) - Alternate I	NOV 1991
52.236-15	Schedules for Construction Contracts	APR 1984
52.236-17	Layout of Work	APR 1984
52.236-21 Alt I	Specifications and Drawings for Construction (Feb 1997) - Alternate I	APR 1984
52.236-26	Preconstruction Conference	FEB 1995
52.242-13	Bankruptcy	JUL 1995
52.242-14	Suspension of Work	APR 1984
52.243-4	Changes	JUN 2007
52.243-7	Notification Of Changes	APR 1984
52.244-6	Subcontracts for Commercial Items	DEC 2015
52.246-12	Inspection of Construction	AUG 1996
52.246-21	Warranty of Construction	MAR 1994
52.247-64 Alt I	Preference for Privately Owned U.S.-Flag Commercial Vessels (Feb 2006) - Alternate I	APR 2003
52.248-3	Value Engineering-Construction	OCT 2015
52.249-2 Alt I	Termination for Convenience of the Government (Fixed-Price) (Apr 2012) - Alternate I	SEP 1996
52.249-10	Default (Fixed-Price Construction)	APR 1984
52.251-1	Government Supply Sources	APR 2012
52.253-1	Computer Generated Forms	JAN 1991
252.201-7000	Contracting Officer's Representative	DEC 1991
252.203-7000	Requirements Relating to Compensation of Former DoD Officials	SEP 2011
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	DEC 2008
252.203-7002	Requirement to Inform Employees of Whistleblower Rights	SEP 2013
252.203-7003	Agency Office of the Inspector General	DEC 2012
252.203-7004	Display of Fraud Hotline Poster(s)	OCT 2015
252.204-7000	Disclosure Of Information	AUG 2013
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.204-7006	Billing Instructions	OCT 2005
252.204-7012	Safeguarding Covered Defense Information and Cyber Incident Reporting.	DEC 2015
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Country that is a State Sponsor of Terrorism	OCT 2015
252.215-7000	Pricing Adjustments	DEC 2012
252.222-7006	Restrictions on the Use of Mandatory Arbitration Agreements	DEC 2010
252.223-7001	Hazard Warning Labels	DEC 1991
252.223-7002	Safety Precautions For Ammunition And Explosives	MAY 1994
252.223-7003	Changes In Place Of Performance--Ammunition And Explosives	DEC 1991
252.223-7006	Prohibition On Storage, Treatment, and Disposal of Toxic or Hazardous Materials	SEP 2014
252.225-7012	Preference For Certain Domestic Commodities	FEB 2013
252.225-7016	Restriction On Acquisition Of Ball and Roller Bearings	JUN 2011

252.225-7030	Restriction On Acquisition Of Carbon, Alloy, And Armor Steel Plate	DEC 2006
252.225-7048	Export-Controlled Items	JUN 2013
252.227-7022	Government Rights (Unlimited)	MAR 1979
252.227-7023	Drawings and Other Data to become Property of Government	MAR 1979
252.227-7033	Rights in Shop Drawings	APR 1966
252.231-7000	Supplemental Cost Principles	DEC 1991
252.232-7003	Electronic Submission of Payment Requests and Receiving Reports	JUN 2012
252.232-7010	Levies on Contract Payments	DEC 2006
252.236-7000	Modification Proposals-Price Breakdown	DEC 1991
252.236-7001	Contract Drawings, and Specifications	AUG 2000
252.236-7002	Obstruction of Navigable Waterways	DEC 1991
252.236-7005	Airfield Safety Precautions	DEC 1991
252.243-7001	Pricing Of Contract Modifications	DEC 1991
252.243-7002	Requests for Equitable Adjustment	DEC 2012
252.244-7000	Subcontracts for Commercial Items	JUN 2013
252.246-7004	Safety of Facilities, Infrastructure, and Equipment for Military Operations	OCT 2010
252.247-7023	Transportation of Supplies by Sea	APR 2014
252.251-7000	Ordering From Government Supply Sources	AUG 2012

CLAUSES INCORPORATED BY FULL TEXT

52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)

The Contractor shall be required to (a) commence work under this contract within **15** calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than **specified on each task order**.***** The time stated for completion shall include final cleanup of the premises.

****Performance periods are defined on a task order basis.***

(End of clause)

52.211-12 LIQUIDATED DAMAGES--CONSTRUCTION (SEP 2000)

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of **specified on each task order** for each calendar day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

(End of clause)

52.216-19 ORDER LIMITATIONS (OCT 1995)

(a) Minimum order. When the Government requires supplies or services covered by this contract in an amount of less than **$1,000,000*** dollar figure or quantity), the Government is not obligated to purchase, nor is the Contractor obligated to furnish, those supplies or services under the contract.
***Except the minimum order shall be $25,000 to the extend required to expend the minimum guarantee.**

(b) Maximum order. The Contractor is not obligated to honor:

(1) Any order for a single item in excess of **$20,000,000**;

(2) Any order for a combination of items in excess of **$35,000,000**; or

(3) A series of orders from the same ordering office within **three (3)** days that together call for quantities exceeding the limitation in subparagraph (1) or (2) above.

(c) If this is a requirements contract (i.e., includes the Requirements clause at subsection 52.216-21 of the Federal Acquisition Regulation (FAR)), the Government is not required to order a part of any one requirement from the Contractor if that requirement exceeds the maximum-order limitations in paragraph (b) above.

(d) Notwithstanding paragraphs (b) and (c) above, the Contractor shall honor any order exceeding the maximum order limitations in paragraph (b), unless that order (or orders) is returned to the ordering office within **two (2)** days after issuance, with written notice stating the Contractor's intent not to ship the item (or items) called for and the reasons. Upon receiving this notice, the Government may acquire the supplies or services from another source.

(End of clause)

52.216-22 INDEFINITE QUANTITY (OCT 1995)

(a) This is an indefinite-quantity contract for the supplies or services specified, and effective for the period stated, in the Schedule. The quantities of supplies and services specified in the Schedule are estimates only and are not purchased by this contract.

(b) Delivery or performance shall be made only as authorized by orders issued in accordance with the Ordering clause. The Contractor shall furnish to the Government, when and if ordered, the supplies or services specified in the Schedule up to and including the quantity designated in the Schedule as the “maximum”. The Government shall order at least the quantity of supplies or services designated in the Schedule as the “minimum”.

(c) Except for any limitations on quantities in the Order Limitations clause or in the Schedule, there is no limit on the number of orders that may be issued. The Government may issue orders requiring delivery to multiple destinations or performance at multiple locations.

(d) Any order issued during the effective period of this contract and not completed within that period shall be completed by the Contractor within the time specified in the order. The contract shall govern the Contractor's and Government's rights and obligations with respect to that order to the same extent as if the order were completed during the contract's effective period; provided, that the Contractor shall not be required to make any deliveries under this contract after **the contract completion date**.

(End of clause)

52.217-9 OPTION TO EXTEND THE TERM OF THE CONTRACT (MAR 2000)

(a) The Government may extend the term of this contract by written notice to the Contractor within **30 days**; provided that the Government gives the Contractor a preliminary written notice of its intent to extend at least **30 days** before the contract expires. The preliminary notice does not commit the Government to an extension.

(b) If the Government exercises this option, the extended contract shall be considered to include this option clause.

(c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed **60 months**.

(End of clause)

52.219-6 NOTICE OF TOTAL SMALL BUSINESS SET-ASIDE (NOV 2011)

(a) Definition.

"Small business concern," as used in this clause, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the size standards in this solicitation.

(b) Applicability. This clause applies only to--

(1) Contracts that have been totally set aside or reserved for small business concerns; and

(2) Orders set aside for small business concerns under multiple-award contracts as described in 8.405-5 and 16.505(b)(2)(i)(F).

(c) General. (1) Offers are solicited only from small business concerns. Offers received from concerns that are not small business concerns shall be considered nonresponsive and will be rejected.

(2) Any award resulting from this solicitation will be made to a small business concern.

(d) Agreement. A small business concern submitting an offer in its own name shall furnish, in performing the contract, only end items manufactured or produced by small business concerns in the United States or its outlying areas. If this procurement is processed under simplified **acquisition** procedures and the total amount of this contract does not exceed $25,000, a small business concern may furnish the product of any domestic firm. This paragraph does not apply to construction or service contracts.

(End of clause)

52.225-11 BUY AMERICAN--CONSTRUCTION MATERIALS UNDER TRADE AGREEMENTS (MAY 2014)

(a) Definitions. As used in this clause--

Caribbean Basin country construction material means a construction material that--

(1) Is wholly the growth, product, or manufacture of a Caribbean Basin country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a Caribbean Basin country into a new and different construction material distinct from the materials from which it was transformed.

Commercially available off-the-shelf (COTS) item—

(1) Means any item of supply (including construction material) that is--

(i) A commercial item (as defined in paragraph (1) of the definition at FAR 2.101);

(ii) Sold in substantial quantities in the commercial marketplace; and

(iii) Offered to the Government, under a contract or subcontract at any tier, without modification, in the same form in which it is sold in the commercial marketplace; and

(2) Does not include bulk cargo, as defined in 46 U.S.C. 40102(4)such as agricultural products and petroleum products.

Component means an article, material, or supply incorporated directly into a construction material.

Construction material means an article, material, or supply brought to the construction site by the Contractor or subcontractor for incorporation into the building or work. The term also includes an item brought to the site preassembled from articles, materials, or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm, and audio evacuation systems, that are discrete systems incorporated into a public building or work and that are produced as complete systems, are evaluated as a single and distinct construction material regardless of when or how the individual parts or components of those systems are delivered to the construction site. Materials purchased directly by the Government are supplies, not construction material.

Cost of components means--

(1) For components purchased by the Contractor, the acquisition cost, including transportation costs to the place of incorporation into the construction material (whether or not such costs are paid to a domestic firm), and any applicable duty (whether or not a duty-free entry certificate is issued); or

(2) For components manufactured by the Contractor, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (1) of this definition, plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the manufacture of the construction material.

Designated country means any of the following countries:

(1) A World Trade Organization Government Procurement Agreement country (Armenia, Aruba, Austria, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea (Republic of), Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan or United Kingdom);

(2) A Free Trade Agreement country (Australia, Bahrain, Canada, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Korea (Republic of), Mexico, Morocco, Nicaragua, Oman, Panama, Peru, or Singapore);

(3) A least developed country (Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Laos, Lesotho, Liberia, Madagascar, Malawi,

Mali, Mauritania, Mozambique, Nepal, Niger, Rwanda, Samoa, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, South Sudan, Tanzania, Timor-Leste, Togo, Tuvalu, Uganda, Vanuatu, Yemen, or Zambia); or

(4) A Caribbean Basin country (Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bonaire, British Virgin Islands, Curacao, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saba, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Sint Eustatius, Sint Maarten, or Trinidad and Tobago).

Designated country construction material means a construction material that is a WTO GPA country construction material, an FTA country construction material, a least developed country construction material, or a Caribbean Basin country construction material.

Domestic construction material means--

(1) An unmanufactured construction material mined or produced in the United States;

(2) A construction material manufactured in the United States, if--

(i) The cost of its components mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. Components of foreign origin of the same class or kind for which nonavailability determinations have been made are treated as domestic; or

(ii) The construction material is a COTS item.

Foreign construction material means a construction material other than a domestic construction material.

Least developed country construction material means a construction material that--

(1) Is wholly the growth, product, or manufacture of a least developed country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a least developed country into a new and different construction material distinct from the materials from which it was transformed.

“Free Trade Agreement country construction material” means a construction material that—

(1) Is wholly the growth, product, or manufacture of a Free Trade Agreement (FTA) country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a FTA country into a new and different construction material distinct from the materials from which it was transformed.

“Least developed country construction material” means a construction material that—

(1) Is wholly the growth, product, or manufacture of a least developed country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a least developed country into a new and different construction material distinct from the materials from which it was transformed.

United States means the 50 States, the District of Columbia, and outlying areas.

WTO GPA country construction material means a construction material that--

(1) Is wholly the growth, product, or manufacture of a WTO GPA country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a WTO GPA country into a new and different construction material distinct from the materials from which it was transformed.

(b) Construction materials.

(1) This clause implements 41 U.S.C. chapter 83, Buy American, by providing a preference for domestic construction material. In accordance with 41 U.S.C. 1907, the component test of the Buy American statute is waived for construction material that is a COTS item. (See FAR 12.505(a)(2)). In addition, the Contracting Officer has determined that the WTO GPA and Free Trade Agreements (FTAs) apply to this acquisition. Therefore, the Buy American restrictions are waived for designated country construction materials.

(2) The Contractor shall use only domestic or designated country construction material in performing this contract, except as provided in paragraphs (b)(3) and (b)(4) of this clause.

(3) The requirement in paragraph (b)(2) of this clause does not apply to information technology that is a commercial item or to the construction materials or components listed by the Government as follows: **None**

(4) The Contracting Officer may add other foreign construction material to the list in paragraph (b)(3) of this clause if the Government determines that--

(i) The cost of domestic construction material would be unreasonable. The cost of a particular domestic construction material subject to the restrictions of the Buy American statute is unreasonable when the cost of such material exceeds the cost of foreign material by more than 6 percent;

(ii) The application of the restriction of the Buy American statute to a particular construction material would be impracticable or inconsistent with the public interest; or

(iii) The construction material is not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality.

(c) Request for determination of inapplicability of the Buy American statute.

(1)(i) Any Contractor request to use foreign construction material in accordance with paragraph (b)(4) of this clause shall include adequate information for Government evaluation of the request, including--

(A) A description of the foreign and domestic construction materials;

(B) Unit of measure;

(C) Quantity;

(D) Price;

(E) Time of delivery or availability;

(F) Location of the construction project;

(G) Name and address of the proposed supplier; and

(H) A detailed justification of the reason for use of foreign construction materials cited in accordance with paragraph (b)(3) of this clause.

(ii) A request based on unreasonable cost shall include a reasonable survey of the market and a completed price comparison table in the format in paragraph (d) of this clause.

(iii) The price of construction material shall include all delivery costs to the construction site and any applicable duty (whether or not a duty-free certificate may be issued).

(iv) Any Contractor request for a determination submitted after contract award shall explain why the Contractor could not reasonably foresee the need for such determination and could not have requested the determination before contract award. If the Contractor does not submit a satisfactory explanation, the Contracting Officer need not make a determination.

(2) If the Government determines after contract award that an exception to the Buy American statute applies and the Contracting Officer and the Contractor negotiate adequate consideration, the Contracting Officer will modify the contract to allow use of the foreign construction material. However, when the basis for the exception is the unreasonable price of a domestic construction material, adequate consideration is not less than the differential established in paragraph (b)(4)(i) of this clause.

(3) Unless the Government determines that an exception to the Buy American statute applies, use of foreign construction material is noncompliant with the Buy American statute.

(d) Data. To permit evaluation of requests under paragraph (c) of this clause based on unreasonable cost, the Contractor shall include the following information and any applicable supporting data based on the survey of suppliers:

Foreign and Domestic Construction Materials Price Comparison

Construction material description	Unit of measure	Quantity	Price (dollars) \1\
Item 1:			
Foreign construction material....	.....	.....	.....
Domestic construction material...	.....	.....	.....
Item 2:			
Foreign construction material....	.....	.....	.....
Domestic construction material...	.....	.....	.....

\1\ Include all delivery costs to the construction site and any applicable duty (whether or not a duty-free entry certificate is issued).

List name, address, telephone number, and contact for suppliers surveyed. Attach copy of response; if oral, attach summary.

Include other applicable supporting information.

(End of clause)

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

Federal Acquisition Regulation (FAR):
http://www.acquisition.gov/far/

http://farsite.hill.af.mil/

Defense Acquisition Regulation Supplement (DFARS):
http://www.acq.osd.mil/dpap/dars/dfarspgi/current/index.html
http://farsite.hill.af.mil/vfdfara.htm

(End of clause)

252.216-7006 ORDERING (MAY 2011)

(a) Any supplies and services to be furnished under this contract shall be ordered by issuance of delivery orders or task orders by the individuals or activities designated in the contract schedule. Such orders may be issued from **award date** through **effective term of the contract**.

(b) All delivery orders or task orders are subject to the terms and conditions of this contract. In the event of conflict between a delivery order or task order and this contract, the contract shall control.

(c)(1) If issued electronically, the order is considered "issued" when a copy has been posted to the Electronic Document Access system, and notice has been sent to the Contractor.

(2) If mailed or transmitted by facsimile, a delivery order or task order is considered "issued" when the Government deposits the order in the mail or transmits by facsimile. Mailing includes transmittal by U.S. mail or private delivery services.

(3) Orders may be issued orally only if authorized in the schedule.

(End of Clause)

252.222-7000 RESTRICTIONS ON EMPLOYMENT OF PERSONNEL (MAR 2000)

(a) The Contractor shall employ, for the purpose of performing that portion of the contract work in **Guam**, individuals who are residents thereof and who, in the case of any craft or trade, possess or would be able to acquire promptly the necessary skills to perform the contract.

(b) The Contractor shall insert the substance of this clause, including this paragraph (b), in each subcontract awarded under this contract.

(End of clause)

252.232-7006 WIDE AREA WORKFLOW PAYMENT INSTRUCTIONS (MAY 2013)

(a) Definitions. As used in this clause--

Department of Defense Activity Address Code (DoDAAC) is a six position code that uniquely identifies a unit, activity, or organization.

Document type means the type of payment request or receiving report available for creation in Wide Area WorkFlow (WAWF).

Local processing office (LPO) is the office responsible for payment certification when payment certification is done external to the entitlement system.

(b) Electronic invoicing. The WAWF system is the method to electronically process vendor payment requests and receiving reports, as authorized by DFARS 252.232-7003, Electronic Submission of Payment Requests and Receiving Reports.

(c) WAWF access. To access WAWF, the Contractor shall--

(1) Have a designated electronic business point of contact in the System for Award Management at https://www.acquisition.gov; and

(2) Be registered to use WAWF at https://wawf.eb.mil/ following the step-by-step procedures for self-registration available at this Web site.

(d) WAWF training. The Contractor should follow the training instructions of the WAWF Web-Based Training Course and use the Practice Training Site before submitting payment requests through WAWF. Both can be accessed by selecting the “Web Based Training” link on the WAWF home page at https://wawf.eb.mil/.

(e) WAWF methods of document submission. Document submissions may be via Web entry, Electronic Data Interchange, or File Transfer Protocol.

(f) WAWF payment instructions. The Contractor must use the following information when submitting payment requests and receiving reports in WAWF for this contract/order:

(1) Document type. The Contractor shall use the following document type(s).

Navy Construction/Facilities Management Invoice

(2) Inspection/acceptance location. The Contractor shall select the following inspection/acceptance location(s) in WAWF, as specified by the contracting officer.

Specified on task order

(3) Document routing. The Contractor shall use the information in the Routing Data Table below only to fill in applicable fields in WAWF when creating payment requests and receiving reports in the system.

Routing Data Table*

Field Name in WAWF	Data to be entered in WAWF
Pay Official DoDAAC	**Specified on task order**
Issue By DoDAAC	**Specified on task order**
Admin DoDAAC	**Specified on task order**
Inspect By DoDAAC	**Specified on task order**
Ship To Code	**Specified on task order**
Ship From Code	____
Mark For Code	____
Service Approver (DoDAAC)	____
Service Acceptor (DoDAAC)	____
Accept at Other DoDAAC	**Specified on task order**

LPO DoDAAC	**Specified on task order**
DCAA Auditor DoDAAC	____
Other DoDAAC(s)	____

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(4) Payment request and supporting documentation. The Contractor shall ensure a payment request includes appropriate contract line item and subline item descriptions of the work performed or supplies delivered, unit price/cost per unit, fee (if applicable), and all relevant back-up documentation, as defined in DFARS Appendix F, (e.g. timesheets) in support of each payment request.

(5) WAWF email notifications. The Contractor shall enter the email address identified below in the “Send Additional Email Notifications” field of WAWF once a document is submitted in the system.

Specified on task order

(g) WAWF point of contact. (1) The Contractor may obtain clarification regarding invoicing in WAWF from the following contracting activity's WAWF point of contact.

Specified on task order

(2) For technical WAWF help, contact the WAWF helpdesk at 866-618-5988.

(End of clause)

5252.201-9300 CONTRACTING OFFICER AUTHORITY (JUN 1994)

In no event shall any understanding or agreement between the Contractor and any Government employee other than the Contracting Officer on any contract, modification, change order, letter or verbal direction to the Contractor be effective or binding upon the Government. All such actions must be formalized by a proper contractual document executed by an appointed Contracting Officer. The Contractor is hereby put on notice that in the event a Government employee other than the Contracting Officer directs a change in the work to be performed or increases the scope of the work to be performed, it is the Contractor's responsibility to make inquiry of the Contracting Officer before making the deviation. Payments will not be made without being authorized by an appointed Contracting Officer with the legal authority to bind the Government.

(End of clause)

5252.209-9300 Organizational Conflicts of Interest (Jun 1994) ALTERNATE I (JUN 1994)

(a) The restrictions described herein shall apply to the Contractor and its affiliates, consultants and subcontracts under this contract. If the Contractor under this contract prepares or assists in preparing a statement of work, specifications and plans, the Contractor and its affiliates shall be ineligible to bid or participate, in any capacity, in any contractual effort which is based on such statement of work or specifications and plans as a prime contractor, subcontractor, consultant or in any similar capacity. The Contractor shall not incorporate its products or services in such statement of work or specification unless so directed in writing by the Contracting Officer, in which case the restriction shall not apply. This contract shall include this clause in its subcontractor's or consultants' agreements concerning the performance of this contract.

(b) Some remedial action may be performed by the architect-engineer firm in order to prevent continued contamination that immediately endangers population or property.

(c) The Contractor shall provide a statement with his bid or proposal which concisely describes all relevant facts concerning any past, present, or currently planned interest (financial, contractual, organizational, or otherwise) relating to the work to be performed hereunder. The Contractor warrants that, to the best of the Contractor's knowledge and belief, there are no relevant facts or circumstances which could give rise to an organizational conflict of interest, as defined in FAR Subpart 9.5, or that the Contractor has disclosed all such relevant information prior to award. If a potential conflict is discovered after award, the Contractor shall make a full disclosure in writing to the Contracting Officer. The disclosure shall include a description of action which the Contractor proposes to take, after consultation with the Contracting Officer, to avoid, mitigate, or neutralize the conflict of interest.

(d) In addition, the Contractor shall notify the Contracting Officer, in writing, of its intention to compete for, or accept the award of any contract for similar or related work for any Department of Defense, other Agency of the federal government, or state regulatory agency which may involve Navy sites. Such notification shall be made before the Contractor either competes for or accepts any such contract.

(e) Remedies: The Government may terminate this contract for convenience, in whole or in part, if it deems such termination necessary to avoid an organizational conflict of interest. If the Contractor was aware of a potential organization conflict of interest prior to award or discovered an actual or potential conflict after award and did not disclose or misrepresented relevant information to the Contracting Officer, the Government may terminate the contract for default, or debar the Contractor from Government contracting, or pursue such other remedies as may be permitted by law or this contract.

(f) The Contractor further agrees to insert in any subcontract or consultant agreement hereunder, provisions which shall conform substantially to the language of this clause, including this paragraph (f).

(End of clause)

5252.216-9300 APPOINTMENT OF ORDERING OFFICER(S) (OCT 1996)

Ordering Officers under this contract are authorized by the Contracting Officer to execute delivery/task orders provided the total price for the delivery/task order does not exceed the individual Contracting Officer(s) warrant limitations. The ordering officers and their specific authority shall be stated in this contract or in an appointment letter.

(End of clause)

5252.216-9302 INDEFINITE QUANTITY (JUN 1994)

This is an indefinite-quantity contract for the services specified, and effective for the period stated previously.

Delivery or performance shall be made only as authorized by orders issued in accordance with the Ordering clause. The Contractor shall furnish to the Government, when and if ordered, the services specified in the Schedule up to an including the "maximum" fee total designated previously.

There is no limit on the number of orders that may be issued subject only to the maximum annual value of the contract.

Any order issued during the effective period of this contract and not completed within that period shall be completed by the Contractor within the time specified in the order. The contract shall govern the Contractor's and

Government's rights and obligations with respect to that order to the same extent as if the order were completed during the contract's effective period.

(End of clause)

5252.216-9306 PROCEDURES FOR ISSUING ORDERS (MAR 2002)

(a) Services to be furnished under this contract shall be furnished at such times as ordered by the issuance of task orders on DD Form 1155 by the Ordering Officer designated by the Contracting Officer. All orders issued hereunder are subject to the terms and conditions of this contract. This contract shall control in the event of conflict with any orderA task order will be considered "issued" for the purpose of this contract at the time the Government deposits the order in the mail or, if transmitted by other means, when physically delivered to the Contractor.

(b) Except in emergency situations, only a Contracting Officer may modify task/delivery orders.. An Ordering Officer, when authorized by the designation official (Contracting Officer), may issue modifications to task/delivery orders only during an emergency. Modifications to task/delivery orders will be issued on a Standard Form (SF 30).

Task orders may be modified orally by the Ordering Officer in emergency circumstances. Oral modifications will be confirmed in writing by issuance of a SF 30 within two (2) working days from the time the oral direction is issued.

(End of clause)

5252.236-9301 SPECIAL WORKING CONDITIONS AND ENTRY TO WORK AREA (OCT 2004)

The Government under certain circumstances may require denial of entry to the work areas under this contract where the Contractor's work or presence would constitute a safety or security hazard to ordnance storage or handling operations. Restrictions covering entry to and availability of the work areas are as follows:

(a) Entry. Entry to work areas located within the special Security Limited areas, defined as those work areas located within the existing security fence, can be granted subject to special personnel requirements as specified herein and to other normal security and safety requirements. Complete denial of entry to the Limited Area may be required during brief periods of one to two hours (normally) and on rare occasions of two to four hours. For bidding purposes, the Contractor shall assume denial of entry to the work areas in the Limited Area of six 2 hour denials and one 4 hour denial per month.

(b) Vehicle Delay. The Contractor shall also assume for bidding purposes that, in addition to site denial, each vehicle and/or unit of construction equipment will be delayed during each movement through the security gate, both entering and leaving the limited area. Delays will average **10 minutes**.

(c) Operational Considerations. To reduce delay time while preserving required security, the following points should be considered in operational planning:

(1) Vehicle Search. Security regulations required that all vehicles, when authorized to enter the Limited Area be thoroughly searched by guard force personnel. Such a search will be required for all vehicle/ construction equipment. Accordingly, once a vehicle or unit of construction equipment has been cleared, it may be left in the Limited Area after initial entry has been made. For the period of time authorized the vehicle/equipment left in the Limited Area will be assigned parking areas by the Contracting Officer. The vehicle/equipment must be

secured as specified in paragraph entitled "SECURITY REQUIREMENTS." The intent is to reduce the Contractor loss of time at the security gate. No private vehicles will be allowed to enter the Limited Area.

(2) Delivery Vehicles. Guard force personnel will inspect vehicles delivering construction materials while the driver is being processed for entry into the Limited Area. A Security Escort will then escort the driver and vehicle in the Limited Area. To provide this service, delivery schedules should be promulgated in advance and vendors made aware that a reasonable delay can be expected if delivery is other than the time specified. Deliveries after 1600 hours will not be allowed entry into the Limited Area without prior approval of the Physical Security Officer.

(End of clause)

5252.236-9303 ACCIDENT PREVENTION (NOV 1998)

(a) The Contractor will maintain an accurate record of, and will report to the Contracting Officer in the manner and on the forms prescribed by the Contracting Officer, all accidents resulting in death, traumatic injury, occupational disease, and damage to property, materials, supplies and equipment incident to work performed under this contract.

(b) Compliance with the provisions of this article by subcontractors will be the responsibility of the Contractor.

(c) Prior to commencement of the work, the Contractor may be required to:

(1) submit in writing his proposals for effectuating provision for accident prevention;

(2) meet in conference with representatives of the Contracting Officer to discuss and develop mutual understandings relative to administration of the overall safety program.

(End of clause)

5252.236-9304 UTILITIES FOR CONSTRUCTION AND TESTING (JUN 1994)

The Contractor shall be responsible for obtaining, either from available Government sources or local utility companies, all utilities required for construction and testing. The Contractor shall provide these utilities at his expense, paid for at the current utility rate delivered to the job site. The Contractor shall provide and maintain all temporary utility connections and distribution lines, and all meters required to measure the amount of each utility used.

(End of clause)

5252.236-9310 RECORD DRAWINGS (OCT 2004) (ALTERNATE II) (OCT 2004)

The Contractor shall maintain at the job site two sets of full size prints of the contract drawings, accurately marked in red with adequate dimensions, to show all variations between the construction actually provided and that indicated or specified in the contract documents, including buried or concealed construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the final government-accepted drawings. Existing utility lines and features revealed during the course of construction, shall also be accurately located and dimensioned. Variations in the interior utility systems shall be clearly defined and dimensioned; and coordinated with exterior utility connections at the building five foot line, where applicable. Existing topographic features which differ from those shown on the contract drawings shall also be accurately located and recorded. Where a choice of materials or methods is permitted herein, or where variations in scope or

character of methods is permitted herein, or where variations in scope or character of work from that of the original contract are authorized, the drawings shall be marked to define the construction actually provided. The representations of such changes shall conform to standard drafting practice and shall include such supplementary notes, legends, and details as necessary to clearly portray the as built construction. These drawings shall be available for review by the Contracting Officer at all times. The Contractor shall deliver the marked up drawings to the Designer of Record who shall incorporate all as-built modifications into the electronic design drawings. Final payment shall not be made until the as-built electronic design drawings are delivered to the Contracting Officer.

(End of clause)

5252.236-9312 DESIGN-BUILD CONTRACT- ORDER OF PRECEDENCE (AUGUST 2006)

(A) In the event of a conflict or inconsistency between any of the below described portions of the conformed contract, precedence shall be given in the following order:

(1) Any portions of the proposal or final design that exceed the requirements of the solicitation.
(a) Any portion of the proposal that exceeds the final design.
(b) Any portion of the final design that exceeds the proposal.
(c) Where portions within either the proposal or the final design conflict, the portion that most exceeds the requirements of the solicitation has precedence.

(2) The requirements of the solicitation, in descending order of precedence:
(a) Standard Form 1442, Price Schedule, and Davis Bacon Wage Rates.
(b) Part 1 - Contract Clauses.
(c) Part 2 - General Requirements.
(d) Part 3 - Project Program Requirements.
(e) Part 6 - Attachments (excluding Concept Drawings).
(f) Part 5 - Prescriptive Specifications exclusive of performance specifications.
(g) Part 4 - Performance Specifications exclusive of prescriptive specifications.
(h) Part 6 - Attachments (Concept Drawings).

(B) Government review or approval of any portion of the proposal or final design shall not relieve the contractor from responsibility for errors or omissions with respect thereto.

(End of clause)

5252.236-9313 DESIGN-BUILD CONTRACT – INCORPORATION OF DESIGNER OF RECORD FINAL DESIGN (JUL 2008)

Upon Government receipt and acceptance of the Designer of Record signed and stamped final design submission for all work, a no-cost unilateral modification shall be issued to incorporate the final design into the contract.

If the Contractor is authorized to proceed with portions of the work prior to the completion of a final design for all work, a no-cost unilateral modification shall be issued for each Government accepted Designer of Record signed and stamped design submission for each portion of the work in order to incorporate that design submittal into the contract.

(End of clause)

5252.242-9300 GOVERNMENT REPRESENTATIVES (OCT 1996)

(a) The contract will be administered by an authorized representative of the Contracting Officer. In no event, however, will any understanding or agreement, modification, change order, or other matter deviating from the terms of the contract between the Contractor and any person other than the Contracting Officer be effective or binding upon the Government, unless formalized by proper contractual documents executed by the Contracting Officer prior to completion of this contract. The authorized representative as indicated hereinafter:

X (1) The Contracting Officer's Representative (COR) will be designated by the Contracting Officer as the authorized representative of the Contracting Officer. The COR is responsible for monitoring performance and the technical management of the effort required hereunder, and should be contacted regarding questions or problems of a technical nature.

X (2) The designated Contract Specialist will be the Administrative Contracting Officer's representative on all other contract administrative matters. The Contract Specialist should be contacted regarding all matters pertaining to the contract or task/delivery orders.

___(3) The designated Property Administrator is the Administrative Contracting Officer's representative on property matters. The Property Administrator should be contacted regarding all matters pertaining to property administration.

(End of clause)

5252.242-9305 PRE-PERFORMANCE CONFERENCE (JUL 1995)

Within **15** days of contract award, prior to commencement of the work, the Contractor will meet in conference with representatives of the Contracting Officer, at a time to be determined by the Contracting Officer, to discuss and develop mutual understanding relative to scheduling and administering work.

(End of clause)

Section 00800 - Special Contract Requirements

LABOR REQUIREMENTS

1. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

With the exception of Defense Policy Review Initiative (DPRI) projects, construction contracts in Guam are subject to the Contract Work Hours and Safety Standards Act but are not subject to Davis-Bacon Act. Therefore, the following FAR clauses shall be modified to reflect this applicability and included in this contract.

a. FAR 52.222-11, Subcontracts (Labor Standards), except that the list of applicable clauses in paragraph b shall be modified to refer only to the clauses: Contract Work Hours and Safety Standards Act-Overtime Compensation, Subcontracts (Labor Standards), and Contract Termination-Debarment, Disputes Concerning Labor Standards.

b. FAR 52.222-12, Contract Termination-Debarment, except that the list of applicable clauses in the first sentence shall be modified to refer only to the Contract Work Hours and Safety Standards Act-Overtime Compensation, and Subcontracts (Labor Standards).

2. NOTICE CONCERNING LABOR RATES

a. Davis-Bacon Act does not apply to this project.

b. Offerors maintain the responsibility to comply with the Government of Guam's Labor Certification process and current prevailing wage rates, as applicable. The notice for prevailing wage rates for construction is attached as Attachment (2) and provided for information only.

c. Inquiries should be directed to the Department of Labor, Government of Guam, Wage and Hour Division, P.O. Box 9970, Tamuning, Guam 96931-9970, telephone 671-475-7050/51/24.

SECTION 00801

CONTRACT TYPE/PERFORMANCE
SPECIAL CONTRACT REQUIREMENTS

1. GENERAL OVERVIEW OF MULTIPLE AWARD CONSTRUCTION CONTRACT (MACC)

A MACC is a contract awarded from a single solicitation, and may result in award to multiple contractors. This procurement consists of one (1) solicitation with the intent to award five (5) Indefinite Delivery Indefinite Quantity (IDIQ) type construction contracts to the Offerors whose proposals, conforming to the RFP, will be most advantageous to the Government resulting in the best value, price and non-price factors considered. Successful Offerors will compete for future work during the term of the contract.

2. CONTRACT TYPE

This is an IDIQ contract with no pre-established fixed contract prices. The actual amount of work to be performed and the time of such performance will be determined by a Contracting Officer, who will issue written task orders to the Contractor. Award of task orders will be on a firm fixed price basis. This is not a requirements contract.

3. SET-ASIDE: This contract is 100% set-aside for Small Business concerns.

4. NAICS CODE: 236220; Size standard of $36,500,000 applies to this general construction contract.

5. DESCRIPTION OF WORK

The work to be acquired under this contract is for new construction and renovation within the NAICS code listed, by method of design build, at various federal or military facilities and installations on Guam. Occasionally work may be required at federal or military facilities and installations in the Northern Mariana Islands and the outlying Pacific islands. The work (tasks) will generally provide all design, labor, transportation, equipment, materials, tools, supplies, engineering, supervision, and administration services needed to complete the scope of work. The scope includes design and construction of new construction, renovation/modernization, and routine repair/maintenance projects on Government shore-based facilities. A list of facility types are identified in the P-72 “Facility Category Codes” publication. The facility types include, but are not limited to: 1) Operations and training facilities, 2) Maintenance and production facilities, 3) Supply facilities, 4) Hospital-medical facilities, 5) Administrative facilities, 6) Housing and community facilities, and 7) Utilities and ground improvement. The work shall also include sampling, testing, removal, and disposal of lead contaminated paint, asbestos and other hazardous materials.

Under a design build contract, the contractor is to develop, determine, and propose the construction solution best suited to serve the Government’s requirements.

6. CONTRACT DURATION, LIMITS, AND AMOUNTS

a. Term of contract: Each of the resulting contracts will have a base period of 12 months.

b. Options: Each contract contains four (4) 12-month options for a total maximum duration of 60 months. The Government has the option to extend the term of the contract in accordance with the contract clause entitled “FAR 52.217-9, Option to Extend the Term of the Contract”. The Government may extend their contract by written notice to the Contractor within thirty (30) days, provided that the Government will give the Contractor a preliminary written notice of its intent to extend within thirty (30) days before the contract expires. The preliminary notice does not commit the Government to an extension.

c. Amounts: The maximum aggregate dollar value, including the base period and all options, for all awarded contracts is $240,000,000.

d. Estimated Amounts: For each period, any remaining unused amounts in the estimated aggregate dollar value may be carried over to the next option period provided the overall maximum aggregate dollar value of $240,000,000 is not exceeded in the contract.

e. Task Order Limitations: Task orders will range between $1,000,000 and $20,000,000. Task orders may fall below or above this limit; however, under the general terms of the contract, contractors are not obligated to accept task orders as follows: Contractors are not obligated to honor (1) any order for a single item in excess of $20,000,000; (2) any order for a combination of items in excess of $35,000,000; or (3) a series of orders from the same ordering office within 3 days that together call for quantities exceeding the limitation in excess of $35,000,000. A task order may be issued in an amount less than the minimum order amount of $1,000,000 when it is determined by the Government as necessary to expend the minimum guarantee.

f. Task Order Exceeding Limitation: Notwithstanding the task order limitations in paragraph 6(e), contractors may voluntarily participate in task orders estimated to exceed the limitations listed. To participate, contractors must provide a letter from their surety or sureties certifying bonding capabilities and endorsing participation in task orders exceeding the limitations outlined in paragraph 6(e). A list of participants will be maintained under the contract; however, contractors remain responsible for providing current, accurate and complete information regarding bonding capabilities.

g. Minimum Guarantee: The Government makes no representation as to the number of task orders or actual amount of work to be ordered. The successful offerors will each receive a minimum guarantee of $25,000. The minimum guarantee applies to the base period only. Contractors are not guaranteed work in excess of the minimum guarantee specified herein.

7. COMMENCEMENT OF WORK

The work shall commence within fifteen (15) days after award of the base period.

8. PLACE OF PERFORMANCE

The place of performance will be designated on each individual task order.

9. PROPOSAL PREPARATION COSTS

The costs for preparation of task order proposals, if required under this contract, shall be the responsibility of the contractor and not directly reimbursable. Each task order awarded will include at a minimum all labor wages, management, supervision, mobilization, material and equipment costs. The contractor shall furnish all project management, planning, estimating, labor, transportation, materials, equipment, tools, supervision, design if applicable, and all other associated costs necessary to fulfill the requirements of the task order.

10. PERFORMANCE AND PAYMENT BONDS

Performance and payment bonds shall be in the form of firm commitment, supported by corporate sureties whose names appear on the list contained in the Treasury Department Circular 570, in the amount of 100% will be required for each task order and shall be submitted for approval to the Contracting Officer within 10 days (unless otherwise stipulated on the individual task order) of award of a task order. Commencement of construction is contingent upon approval of required bonds and issuance of a notice to proceed (NTP).

11. REQUIRED INSURANCE

a. Within fifteen days after award of this contract, the contractor(s) shall furnish the Administrative Contracting Officer a Certificate of Insurance as evidence of the existence of the following insurance coverage amounts not less than the amount specified below in accordance with FAR Clause 52.228-5, Insurance – Work On A Government Installation.

COVERAGE:

Comprehensive General Liability: $500,000 per occurrence

Automobile Liability: $200,000 per person, $500,000 per occurrence for bodily injury; $20,000 per occurrence for property damage Workmen's Compensation: As required by Federal and State Worker's compensation and occupational disease laws.

Employer's Liability Coverage: $l00,000, except in states where worker's compensation may not be written by private carriers

Others as required by state law.

b. The Certificate of Insurance shall provide for thirty (30) days written notice to the Contracting Officer by the insurance company prior to cancellation or material change in policy coverage. Other requirements and information are contained in the aforementioned "Insurance" clause.

12. TASK ORDER PERFORMANCE PERIOD

FAR Clause 52.211-10, Commencement, Prosecution, and Completion of Work will be incorporated into each task order identifying the construction schedule. The Government reserves the right to negotiate a task order's performance period if determined to be in the best interest of the Government.

13. SITE VISIT

Upon receipt of the scope of work, including applicable drawings, and following a brief time period for reviewing the documents, the Contractor shall inspect the job site. Any deficiencies, conflicts, or other areas of concern existing in the scope of work and applicable drawings should be brought to the attention of the Contracting Officer, in writing. The contractor shall also notify the Contracting Officer, in writing, upon observing any features in the design that appear to be ambiguous, confusing, conflicting or erroneous. Ten (10) or more failures to attend site visits may be reason for the Government's determination not to exercise the Contractor's option periods.

14. SUPERVISION

For each task order, the contractor shall provide supervision in accordance with FAR Clause 52.236-6, Superintendence by the Contractor. In addition to the required supervision, the contractor shall provide for a Quality Control (QC) manager for each task order issued under the contract. No construction work or testing may be performed unless the QC manager is on the work site; however, construction work may continue if the QC manager is conducting QC related work for the specific task order on base installations. In situations where more than one project location is designated in the task order, construction work may continue at a worksite if the QC manager is present at another one of the task order's related worksite. Unless otherwise specified in the RFPL, for projects requiring Level 4 competency or higher, the Site Safety and Health Officer (SSHO) shall have no other duties other than safety and occupational health management, inspections, and enforcement on that project. For all other projects, the SSHO may be a collateral duty of either the superintendent, QC manager, or other designated employee. In no case, however, will all three functions (superintendent, QC, and SSHO) be assigned to the same individual.

15. SUBCONTRACTING RESPONSIBILITIES

The contractor shall be responsible for the management and performance of all subcontractors. The contractor shall ensure subcontractors are competent and capable of handling all assigned work. The contractor shall ensure task orders are completed within the stated requirements.

The contractor is responsible for ensuring subcontracting opportunities are made available to all small business, veteran-owned small business, service-disabled veteran-owned small business, HUBZone small business, small disadvantaged small business and women-owned small businesses.

16. NOTICE OF CONSTRUCTIVE CHANGES

No order, statement or direction of the Contracting Officer, an authorized representative of the Contracting Officer whether or not acting within the limits of his authority, or any other representative of the Government, shall constitute a change order under the "Changes" clause of this contract or entitle the contractor(s) to an equitable adjustment of the price or delivery schedule, unless such a change is issued in writing and signed by the Contracting Officer.

17. PAYMENTS

Designated paying office will be determined upon award of individual task orders under this contract. Invoicing procedures will be as stated in Section 01 20 00.05 20 Price and Payment Procedures for Design-Build. Percentage of performance payments will be processed through the designated Administrative Contracting Officer. Invoices shall be submitted to the office identified in block 6 of the DD 1155.

18. PRE-CONSTRUCTION MEETING

Prior to commencing work under a task order, the contractor shall meet with the Contracting Officer and/or designated technical personnel at a mutually agreeable time to discuss and develop mutual understandings concerning schedule and administering work.

19. PARTNERING

Partnering is a structured process, as well as philosophy of doing business with contractors and clients that recognizes common goals through communication and teamwork. It helps create an environment where trust and teamwork prevent disputes, foster good working relationships to everyone's benefit, and facilitate the completion of a successful contract. In support of the command's goals of teamwork and client satisfaction, our policy is to practice the philosophy of Partnering on every contract we administer. The contractor's key personnel may be required to attend formal partnering for the basic contract. In addition, formal partnering may be required prior to and/or during performance of an individual task order, if determined necessary by the Government. Key personnel are defined as the Project Manager, Quality Control (QC) Manager, and Safety Officer. Major subcontractors and specialized supplementary personnel are also encouraged to attend. The contractor shall pay all costs associated with the partnering effort. The participants shall bear their own costs for meals, lodging and transportation associated with partnering.

20. PERFORMANCE EVALUATIONS

The Administrative Contract Office will complete a contractor's performance evaluation for input into the Contractor Performance Assessment Reports (CPARS) database. The evaluation will take into account all aspects of the contractor's performance. Interim performance evaluations may be completed at any time the Contractor's performance is considered less than satisfactory or to provide feedback on the design portion of a design-build task order. Contractors will be provided a copy of the performance evaluation and an opportunity to discuss the evaluation. The negative performance evaluations will have an impact on the award of future task orders.

21. CONSOLIDATED SCHEDULES

In addition to the requirements for a network analysis schedule for each task order, the contractor shall provide a separate, single consolidated schedule for all task orders it is issued under the contract. This consolidated schedule shall be updated and provided to the Contracting Officer on the first day of each month; and shall incorporate significant milestones and related information for each task order. Required information in the consolidated

schedule will be provided as directed by the Contracting Officer and includes, but is not limited to, task order award date and amount, description, estimated completion date, contract completion date, percentage of scheduled completion, percentage of actual completion, pending issues, contract amount including modifications, and DD1354 submission date. This consolidated schedule is a tool to manage the contract and will be used to measure progress and to evaluate potential impact on the performance of future task orders. The Contractor remains responsible for providing detailed, current, accurate and complete information in the consolidated schedules.

22. POTENTIAL TASK ORDERS

The contractor's progress on ongoing task orders will be measured using the consolidated schedule required in paragraph 21. Contractor must prosecute the work or any separable part, with the diligence that will ensure completion within the time specified in the task orders. The Government reserves the right to not award a contractor new task orders if the contractor fails to prosecute the work on any outstanding task orders of any such action.

SECTION 00803

TASK ORDER ISSUANCE PROCEDURES

1. GENERAL

a. When the Government requires work under the contract, a Request for Proposal Letter (RFPL) will be issued as appropriate. RFPLs are usually accompanied by a Statement of Work (SOW) and will normally be issued electronically by email but may be placed via mail, telephone, facsimile or other electronic means.

b. Contractors are responsible for submitting proposals, and any modifications or revisions, so as to reach the Government office designated in the RFPL by the time specified in the RFPL. Any proposal, modification, or revision, received at the Government office after the exact time specified for receipt of proposals will be late and will not be considered.

c. Task orders will be awarded on DD Form 1155, Order for Supplies or Services. Task orders will be placed in a sequential numbering system, which relate back to the basic contract number and the assigned Work Order Number (WON).

d. The Government will not be obligated to reimburse the contractor for work performed, items delivered, or any costs incurred, nor shall the contractor be obligated to perform, deliver, or otherwise incur costs except as authorized by duly executed task orders.

e. Each task order shall include as a minimum:

(1) Date of order
(2) Contract number and order number
(3) Contract item number and description, quantity, and unit price or estimated cost
(4) Delivery or performance schedule
(5) Place of performance
(6) Any packaging, packing, and shipping instructions
(7) Accounting and appropriation data
(8) Method of payment and payment office

f. Modifications to task orders will be issued on Standard Form (SF) 30.

g. Each contractor is required to submit a reasonable number of good faith proposals to RFPLs. If unable to propose on a task order, contractors are required to contact the Contracting Officer within two days of notification if they cannot participate in the site visit or submit an offer. Contractors are required to submit in writing a letter explaining the reasons for not submitting an offer for the RFPL. Failure to provide this notification may impact future consideration for task orders and exercise of an option.

h. In accordance with FAR 16.505(a) (9), no protest under Subpart 33.1 is authorized in connection with the issuance or proposed issuance of an order under a task order contract except for a protest on the grounds that the order increases the scope, period, or maximum value of the contract; or a protest of an order valued in excess of $10 million. Protests of orders in excess of $10 million may only be filed with the Government Accountability Office, in accordance with the procedures at FAR 33.104.

2. COMPETITION

a. Competition for issuance of task orders is limited to those awardees under this contract. All awardees will be given a fair opportunity to be considered for each task order unless the Contracting Officer applies one

of the exceptions noted in paragraph (f) below. Upon determining the need to issue a task order, all awardees will be considered equally against the stated criteria in the RFPL.

b. Task order proposals will be evaluated based on one of the following criteria:

(1) Price Only;
(2) Lowest Price Technically Acceptable (LPTA); or
(3) Price and Non-price Evaluation Factors Combined

c. Each task order will be awarded, as a result of competition to the contractor whose offer is the most advantageous to the Government considering the criteria specified in the RFPL.

d. The Contracting Officer may consider (1) past performance on earlier orders under the contract, including quality, timeliness, and cost control; and (2) potential impact on other task orders placed with the contractor. See paragraphs 21 and 22 of Section 00801. Other factors may be considered as specified in the RFPL.

e. The Contracting Officer need not contact each of the multiple awardees under the contract before selecting a task order awardee if the Contracting Officer has information available to ensure that each awardee is provided a fair opportunity to be considered for each task order. The competition requirements in FAR part 6 and the policies in FAR Subpart 15.3 do not apply to the ordering process.

f. Each task order exceeding the simplified acquisition threshold shall be placed on a competitive basis in accordance with FAR 16.505(b) unless this requirement is waived on the basis of a justification that is prepared and approved and includes a written determination that –

(1) The agency need for the supplies or services is so urgent that providing a fair opportunity would result in unacceptable delays;
(2) Only one awardee is capable of providing the supplies or services required at the level of quality required because the supplies or services ordered are unique or highly specialized;
(3) The order must be issued on a sole-source basis in the interest of economy and efficiency because it is a logical follow-on to an order already issued under the contract, provided that all awardees were given a fair opportunity to be considered for the original order;
(4) It is necessary to place an order to satisfy a minimum guarantee; or
(5) A statute expressly authorizes or requires that the purchase be made from a specified source.

g. For projects estimated at less than the simplified acquisition threshold, the Contracting Officer reserves the right to make award of the task order without competition or justification based upon one of the circumstances described in the preceding paragraph 2.f. The Contracting Officer shall document in the contract file the basis for using an exception to the fair opportunity process.

3. REQUIREMENT FOR PROPOSALS

a. Task orders will be firm fixed price with a specific completion date or performance period and will clearly define the specific services to be performed or the performance desired. When options are included in the Schedule, the task order will specify the number of days after award for exercising the options.

b. Task orders incorporate by reference applicable provisions and clauses in the basic contract. All task orders are subject to the terms and conditions of this contract. In the event of conflict between a task order and this contract, the contract will control, except as otherwise noted in the contract documents. The Government reserves the right to incorporate additional clauses, as appropriate, into individual task orders solicitations and awards.

c. Task orders may be awarded on the basis of price only; lowest price technically acceptable; or price and non-price factors combined. The basis for award will be stated in the RFPL.

d. Task order proposals must be complete and adequately address RFPL requirements to be considered for award. Therefore, proposals must contain the best offer from a technical and price standpoint.

e. Unless otherwise specified in the RFPL, task order proposals must remain valid for 120 calendar days after the last stated date for which proposals may be received.

f. Bid Guarantee: Contractors are advised that construction projects with magnitudes more than $15,000,000 will require submission of bid bonds in the amount of 20% of the proposed price or $3 million, whichever is less, at the time designated for receipt of task order proposals.

g. Task order projects may be non-complex performance oriented tasks requiring minimal design, may be complex construction requiring design development for design-build construction, or a combination thereof. Projects will be varying in size and complexity. In most cases, the SOW is developed entirely by the Government. Occasionally, the task orders may be written based on a Government/Contractor Team cooperative scoping of the work in order to develop a mutually agreed upon SOW. The task order may or may not have traditional plans and specifications.

h. Task order proposals may include but are not limited to:

(1) Sketches, catalog cuts, calculations, and architectural renderings
(2) List of long lead-time materials
(3) Performance time to coincide with the number of days allotted on the RFPL. (Critical Path Project schedule showing start and finish dates of submittals, procurement, delivery, and major task elements may be required)
(4) Detailed breakdown of all costs, including direct costs (labor, materials, and equipment), indirect costs, profit, taxes, overhead, markups, etc.
(5) Management plan of all tasks (current and proposed) with workload scheduling and resource management.
(6) Overview of the proposed construction methodology for each Definable Feature of Work (DFOW)

4. SELECTION CRITERIA

Task order awards may be based on price alone, or may be awarded based on price and, but not limited to, other non-price factor criteria. All awards shall consider price as one of the factors in the selection decision. The task order award criteria will be specified in each RFPL issued or as specified by the Contracting Officer.

5. OMBUDSMAN

The agency’s designated Task Order Ombudsman is the Echelon III/IV Competition Advocate and is responsible for reviewing complaints from contractors and ensuring that all contractors are afforded a fair opportunity to be considered for award of task orders, in accordance with the requirements of the contract.

CONSTRUCTION & EXPERIENCE PROJECT DATA SHEET

Project No. (check one) : ☐ CON #1 ☐ CON #2 ☐ CON #3 ☐ CON #4 ☐ CON #5

☐ DESIGN #1 ☐ DESIGN #2 ☐ DESIGN #3 ☐ DESIGN #4 ☐ DESIGN #5

1. Experience for: ☐ Primary Construction Firm ☐ Primary Design Firm ☐ Other (explain)

Firm Name:
Address:
Phone Number:
DUNS Number:
Point of Contact: Contact Phone Number:

2. Work Performed as: ☐ Prime Contractor ☐ Subcontractor ☐ Other, e.g. Joint-Venture Partner (explain in Block 9)

If subcontractor, who was prime (Name/Phone #):

3. Contract Number: Delivery/Task Order Number:

Title:
Location:

4. Type of work:

☐ New Construction ☐ Renovation ☐ Repair ☐ Alteration ☐ Other (explain):

5. Type of Contract/Task Order:

☐ Firm-Fixed Price ☐ Cost Reimbursement/Time and Material ☐ Other (explain):

6. Construction Project:

Award Date (mm/dd/yy): Completion Date (mm/dd/yy):

Construction Award Amount:
Percent of Project Work Self-Performed:
Value of Work Performed as a Subcontractor (if applicable):
Final Construction Cost (including any modifications):

Type of Construction: ☐ Design-Build ☐ Design-Bid-Build ☐ Other (explain)

If Design-Build, identify the Lead Design Firm:
If Design-Bid-Build, identify the Designer of Record:

7. Design Project:

Award Date (mm/dd/yy): Completion Date (mm/dd/yy):

Completion Date of Design Portion of Design Build (if applicable) (mm/dd/yy):

Design Fee: Total Construction Value:

Type of A/E Service: ☐ Designer of Record/Lead Design Firm ☐ Engineering Services ☐ Other (explain):

8. Provide a detailed description of the project and the relevancy to the project requirements of this RFP (i.e.: unique features, square footage, construction methods), including any sustainable features or USGBC LEED certifications. If design-build, include a description of the design-effort.
9. Provide a detailed description of what work your firm self-performed on this project:
10. Other Information:

END OF PROJECT DATA SHEET

NAVFAC/USACE PAST PERFORMANCE QUESTIONNAIRE (Form PPQ-0)

CONTRACT INFORMATION (Contractor to complete Blocks 1-4)

1. Contractor Information
Firm Name: CAGE Code:
Address: DUNs Number:
Phone Number:
Email Address:
Point of Contact: Contact Phone Number:

2. Work Performed as: ☐ Prime Contractor ☐ Subcontractor ☐ Joint Venture ☐ Other (Explain)
Percent of project work performed:
If subcontractor, who was the prime (Name/Phone #):

3. Contract Information
Contract Number:
Delivery/Task Order Number (if applicable):
Contract Type: ☐ Firm Fixed Price ☐ Cost Reimbursement ☐ Other (Please specify):
Contract Title:
Contract Location:

Award Date (mm/dd/yy):
Contract Completion Date (mm/dd/yy):
Actual Completion Date (mm/dd/yy):
Explain Differences:

Original Contract Price (Award Amount):
Final Contract Price (*to include all modifications, if applicable*):
Explain Differences:

4. Project Description:
Complexity of Work ☐ High ☐ Med ☐ Routine
How is this project relevant to project of submission? (*Please provide details such as similar equipment, requirements, conditions, etc.*)

CLIENT INFORMATION (Client to complete Blocks 5-8)

5. Client Information
Name:
Title:
Phone Number:
Email Address:

6. Describe the client's role in the project:

7. Date Questionnaire was completed (mm/dd/yy)**:**

8. Client's Signature:

NOTE: NAVFAC REQUESTS THAT THE CLIENT COMPLETES THIS QUESTIONNAIRE AND SUBMITS DIRECTLY BACK TO THE OFFEROR. THE OFFEROR WILL SUBMIT THE COMPLETED QUESTIONNAIRE TO NAVFAC WITH THEIR PROPOSAL, AND MAY DUPLICATE THIS QUESTIONNAIRE FOR FUTURE SUBMISSION ON NAVFAC SOLICITATIONS. CLIENTS ARE HIGHLY ENCOURAGED TO SUBMIT QUESTIONNAIRES DIRECTLY TO THE OFFEROR. HOWEVER, QUESTIONNAIRES MAY BE SUBMITTED DIRECTLY TO NAVFAC. PLEASE CONTACT THE OFFEROR FOR NAVFAC POC INFORMATION. THE GOVERNMENT RESERVES THE RIGHT TO VERIFY ANY AND ALL INFORMATION ON THIS FORM.

ADJECTIVE RATINGS AND DEFINITIONS TO BE USED TO BEST REFLECT YOUR EVALUATION OF THE CONTRACTOR'S PERFORMANCE

RATING	DEFINITION	NOTE
(E) Exceptional	Performance meets contractual requirements and exceeds many to the Government/Owner's benefit. The contractual performance of the element or sub-element being assessed was accomplished with few minor problems for which corrective actions taken by the contractor was highly effective.	An Exceptional rating is appropriate when the Contractor successfully performed multiple significant events that were of benefit to the Government/Owner. A singular benefit, however, could be of such magnitude that it alone constitutes an Exceptional rating. Also, there should have been NO significant weaknesses identified.
(VG) Very Good	Performance meets contractual requirements and exceeds some to the Government's/Owner's benefit. The contractual performance of the element or sub-element being assessed was accomplished with some minor problems for which corrective actions taken by the contractor were effective.	A Very Good rating is appropriate when the Contractor successfully performed a significant event that was a benefit to the Government/Owner. There should have been no significant weaknesses identified.
(S) Satisfactory	Performance meets minimum contractual requirements. The contractual performance of the element or sub-element contains some minor problems for which corrective actions taken by the contractor appear or were satisfactory.	A Satisfactory rating is appropriate when there were only minor problems, or major problems that the contractor recovered from without impact to the contract. There should have been NO significant weaknesses identified. Per DOD policy, a fundamental principle of assigning ratings is that contractors will not be assessed a rating lower than Satisfactory solely for not performing beyond the requirements of the contract.
(M) Marginal	Performance does not meet some contractual requirements. The contractual performance of the element or sub-element being assessed reflects a serious problem for which the contractor has not yet identified corrective actions. The contractor's proposed actions appear only marginally effective or were not fully implemented.	A Marginal is appropriate when a significant event occurred that the contractor had trouble overcoming which impacted the Government/Owner.
(U) Unsatisfactory	Performance does not meet most contractual requirements and recovery is not likely in a timely manner. The contractual performance of the element or sub-element contains serious problem(s) for which the contractor's corrective actions appear or were ineffective.	An Unsatisfactory rating is appropriate when multiple significant events occurred that the contractor had trouble overcoming and which impacted the Government/Owner. A singular problem, however, could be of such serious magnitude that it alone constitutes an unsatisfactory rating.
(N) Not Applicable	No information or did not apply to your contract	Rating will be neither positive nor negative.

Contractor Information (Firm Name): _____
Client Information (Name): _____

TO BE COMPLETED BY CLIENT

PLEASE CIRCLE THE ADJECTIVE RATING WHICH BEST REFLECTS YOUR EVALUATION OF THE CONTRACTOR'S PERFORMANCE.

1. QUALITY:						
a) Quality of technical data/report preparation efforts	E	VG	S	M	U	N
b) Ability to meet quality standards specified for technical performance	E	VG	S	M	U	N
c) Timeliness/effectiveness of contract problem resolution without extensive customer guidance	E	VG	S	M	U	N
d) Adequacy/effectiveness of quality control program and adherence to contract quality assurance requirements (without adverse effect on performance)	E	VG	S	M	U	N
2. SCHEDULE/TIMELINESS OF PERFORMANCE:						
a) Compliance with contract delivery/completion schedules including any significant intermediate milestones. *(If liquidated damages were assessed or the schedule was not met, please address below)*	E	VG	S	M	U	N
b) Rate the contractor's use of available resources to accomplish tasks identified in the contract	E	VG	S	M	U	N
3. CUSTOMER SATISFACTION:						
a) To what extent were the end users satisfied with the project?	E	VG	S	M	U	N
b) Contractor was reasonable and cooperative in dealing with your staff (including the ability to successfully resolve disagreements/disputes; responsiveness to administrative reports, businesslike and communication)	E	VG	S	M	U	N
c) To what extent was the contractor cooperative, businesslike, and concerned with the interests of the customer?	E	VG	S	M	U	N
d) Overall customer satisfaction	E	VG	S	M	U	N
4. MANAGEMENT/ PERSONNEL/LABOR						
a) Effectiveness of on-site management, including management of subcontractors, suppliers, materials, and/or labor force?	E	VG	S	M	U	N
b) Ability to hire, apply, and retain a qualified workforce to this effort	E	VG	S	M	U	N
c) Government Property Control	E	VG	S	M	U	N
d) Knowledge/expertise demonstrated by contractor personnel	E	VG	S	M	U	N
e) Utilization of Small Business concerns	E	VG	S	M	U	N
f) Ability to simultaneously manage multiple projects with multiple disciplines	E	VG	S	M	U	N
g) Ability to assimilate and incorporate changes in requirements and/or priority, including planning, execution and response to Government changes	E	VG	S	M	U	N
h) Effectiveness of overall management (including ability to effectively lead, manage and control the program)	E	VG	S	M	U	N
5. COST/FINANCIAL MANAGEMENT						
a) Ability to meet the terms and conditions within the contractually agreed price(s)?	E	VG	S	M	U	N

Contractor Information (Firm Name): _____
Client Information (Name): _____

b) Contractor proposed innovative alternative methods/processes that reduced cost, improved maintainability or other factors that benefited the client	E	VG	S	M	U	N
c) If this is/was a Government cost type contract, please rate the Contractor's timeliness and accuracy in submitting monthly invoices with appropriate back-up documentation, monthly status reports/budget variance reports, compliance with established budgets and avoidance of significant and/or unexplained variances (under runs or overruns)	E	VG	S	M	U	N
d) Is the Contractor's accounting system adequate for management and tracking of costs? *If no, please explain in Remarks section.*		Yes			No	
e) If this is/was a Government contract, has/was this contract been partially or completely terminated for default or convenience or are there any pending terminations? *Indicate if show cause or cure notices were issued, or any default action in comment section below.*		Yes			No	
f) Have there been any indications that the contractor has had any financial problems? *If yes, please explain below.*		Yes			No	
6. SAFETY/SECURITY						
a) To what extent was the contractor able to maintain an environment of safety, adhere to its approved safety plan, and respond to safety issues? (Includes: following the users rules, regulations, and requirements regarding housekeeping, safety, correction of noted deficiencies, etc.)	E	VG	S	M	U	N
b) Contractor complied with all security requirements for the project and personnel security requirements.	E	VG	S	M	U	N
7. GENERAL						
a) Ability to successfully respond to emergency and/or surge situations (including notifying COR, PM or Contracting Officer in a timely manner regarding urgent contractual issues).	E	VG	S	M	U	N
b) Compliance with contractual terms/provisions *(explain if specific issues)*	E	VG	S	M	U	N
c) Would you hire or work with this firm again? *(If no, please explain below)*		Yes			No	
d) In summary, provide an overall rating for the work performed by this contractor.	E	VG	S	M	U	N

Please provide responses to the questions above (*if applicable*) and/or additional remarks. Furthermore, please provide a brief narrative addressing specific strengths, weaknesses, deficiencies, or other comments which may assist our office in evaluating performance risk *(please attach additional pages if necessary)***:**

_____

_____

_____

_____

_____

_____

REQUEST FOR INFORMATION (RFI)

SOLICITATION N40192-16-R-2800

The Government does not intend to respond to inquiries submitted less than 10 days before the proposal receipt date shown in the solicitation. Please submit questions via email to Teresa Aguon at Teresa.Aguon@fe.navy.mil.

FIRM NAME:

POC:

ADDRESS:

TELEPHONE NUMBER:

E-MAIL ADDRESS:

Question is regarding (if known):

Section of the Request for Proposal:

Paragraph:

Page number:

QUESTION:

EDDIE BAZA CALVO
Governor

RAY TENORIO
Lieutenant Governor

Office of the Governor of Guam

COMMON CONSTRUCTION PREVAILING WAGE RATES FOR GUAM

Pursuant to 8 CFR 214.2(h)(6)(v)(F)(2), U.S. Citizenship and Immigration Services (USCIS) must approve specific wage data and prevailing wage rates used for construction occupations on Guam. The following prevailing wage rates apply only to H-2B workers and similarly employed U.,S. workers on Guam. USCIS has reviewed the Government of Guam's proposed rates and has approved the adjusted rates. These rates shall be effective for Temporary Labor Certification applications filed on or after Tuesday February 16, 2016.

OCCUPATION	HOURLY WAGE RATES
CAMP COOK	$10.54
CARPENTER	$14.20
CEMENT MASON	$14.33
ELECTRICIAN	$18.83
HVAC and REFRIGERATION MECHANICS	$16.76
CONSTRUCTION EQUIPMENT MECHANIC	$17.63
HEAVY EQUIPMENT OPERATOR	$15.40
REINFORCING METAL WORKER	$13.62
PAINTER	$14.33
PIPEFITTER	$17.41
PLASTERER	$15.24
PLUMBER	$17.41
SHEET METAL WORKER	$15.92
STRUCTURAL STEEL WORKER	$13.34
WELDER	$17.92

These prevailing wage rates are effective for both new and extension temporary labor certifications. The prevailing wage rate on applications approved prior to the implementation of these new rates shall remain in effect for the duration of the existing labor certifications.

For further information, please contact Maria Connelley, Director of Labor, at (671) 475-7075, or Greg Massey, Administrator for the Alien Labor Processing & Certification Division (ALPCD) at (671) 475-8005.

/s/ **EDDIE BAZA CALVO**
Governor of Guam

FEB 16 2016

Ricardo J. Bordallo Governor's Complex • Adelup, Guam 96910
Tel: (671) 472-8931/6 • Fax: (671) 477-4826 • www.governor.guam.gov

Solicitation No.
N40192-16-R-2800

SMALL BUSINESS DESIGN-BUILD MULTIPLE AWARD CONSTRUCTION CONTRACT (SB DBMACC)

VARIOUS LOCATIONS, GUAM

PART 2
GENERAL REQUIREMENTS

SECTION 01 14 00.05 20

WORK RESTRICTIONS FOR DESIGN-BUILD
09/15

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this section to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. Code (USC)

10 USC 6011	Navy Regulations
8 USC 1101	Definitions

1.2 DEFINITIONS

1.2.1 State

"State" when used in reference to states of the United States also includes the Territory of Guam.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. The following must be submitted in accordance with Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES and Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

List of Contact Personnel; G

Personnel List; G

Vehicle List; G

Statement of Acknowledgement Form SF 1413; G

1.4 SPECIAL SCHEDULING REQUIREMENTS

a. Have materials, equipment, and personnel required to perform the work at the site prior to the commencement of the work.

b. The facility will remain in operation during the entire construction period. The Contractor must conduct operations so as to cause the least possible interference with normal operations of the activity.

c. Permission to interrupt any Activity roads, railroads, and/or utility service must be requested in writing a minimum of 15 calendar days prior to the desired date of interruption.

d. The work under this contract requires special attention to the scheduling and conduct of the work in connection with existing operations. Identify on the construction schedule each factor which constitutes a potential interruption to operations.

e. NMCI and Other Government Contractors Access: The NMCI and Other Government Contractors must be allowed access to the facility prior to the final phases of construction (90% finishes complete, 100% rough-in complete, Inside Plant (ISP)/Outside Plant (OSP) infrastructure in place) in order to provide equipment within telecommunications rooms and make final connections. The contractor must be required to coordinate their efforts with the NMCI or Other Government Contractor to facilitate joint use of building spaces during the final phases of construction and incorporate the coordination efforts into the construction schedule. Requirements for NMCI are specified in part 4, D50 ELECTRICAL and G40 SITE ELECTRICAL UTILITIES.

1.5 CONTRACTOR ACCESS AND USE OF PREMISES

1.5.1 Activity Regulations

Ensure that Contractor personnel employed on the Activity become familiar with and obey Activity regulations including safety, fire, traffic and security regulations. Keep within the limits of the work and avenues of ingress and egress. To minimize traffic congestion, delivery of materials must be outside of peak traffic hours (6:30 to 8:00 a.m. and 3:30 to 5:00 p.m.) unless otherwise approved by the Contracting Officer. Wear hard hats in designated areas. Do not enter any restricted areas unless required to do so and until cleared for such entry. Contractor’s equipment must be conspicuously marked for identification.

Motor Vehicle Operation - Ingress and egress of personnel will be subject to the security regulations of the Station.

(1) All personnel must be made aware of the posted base speed limits.

(2) Parking is in designated areas only, between two white lines. No parking is permitted in fire lanes, on seeded areas, in parking slots reserved for general officers and handicapped personnel.

(3) Traffic accidents should be reported immediately to the Base Security Police by calling 116.

(4) All personnel entering the installation are subject to random vehicle inspections. The purpose of these inspections is to detect the theft of Government and private property, and to detect contraband or illegal drugs.

(5) Required Information on Privately Owned Vehicles - Advise company employees who desire to use their privately owned vehicles to personally bring the vehicle, vehicle registration, copy of vehicle insurance policy, valid state inspection documentation, and driver's license to the JRM Main Gate, Visitor Control Center.

(6) Access to Restricted Areas - Base entry passes allow access to designated areas on the installation only. Entry into off limits areas is prohibited unless the contract requires it.

(7) Current Information - Contractors will be responsible for keeping the vehicle and employee lists current, and for securing and returning identification cards belonging to terminated employees to the Visitor Control Center.

1.5.1.1 Subcontractors and Personnel Contacts

Provide a list of contact personnel of the Contractor and subcontractors including addresses and telephone numbers for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists.

1.5.1.2 Identification Badges and Installation Access

Application for and use of badges will be as directed. Obtain access to the installation by participating in the Navy Commercial Access Control System (NCACS), or by obtaining passes each day from the Visitor Control Center. Costs for obtaining passes through the NCACS are the responsibility of the Contractor. One-day passes, issued through the Visitor Control Center, will be furnished without charge. Furnish a completed EMPLOYMENT ELIGIBILITY VERIFICATION (DHS FORM I-9) form for all personnel requesting badges. This form is available at: http://www.uscis.gov/portal/site/uscis by searching or selecting Employment Verification (Form I-9). Immediately report instances of lost or stolen badges to the Contracting Officer.

a. NCACS Program: NCACS is a voluntary program in which Contractor personnel who enroll, and are approved, are subsequently granted access to the installation for a period up to one year, or the length of the contract, whichever is less, and are not required to obtain a new pass from the Base Pass and Identification Office for each visit. The Government performs background screening and credentialing. Throughout the year the Contractor employee must continue to meet background screening standards. Periodic background screenings are conducted to verify continued NCACS participation and installation access privileges. Under the NCACS program, no commercial vehicle inspection is required, other than for Random Anti-Terrorism Measures (RAM) or in the case of an elevation of Force Protection Conditions (FPCON). Information on costs and requirements to participate and enroll in NCACS is available at http://www.rapidgate.com/vendors/how-to-enroll or by calling 1-877-727-4342. Contractors should be aware that the costs incurred to obtain NCACS credentials, or costs related to any means of access to a Navy Installation, are not reimbursable. Any time invested, or price(s) paid, for obtaining NCACS credentials will not be compensated in any way or approved as a direct cost of any contract with the Department of the Navy.

(1) Delivery companies submitting NCACS applications must only be granted access if the prime Contractor has included the company on a participant's spreadsheet provided in advance to the Contracting Officer. This form must be provided by the Government upon request.

(2) Delivery companies NOT participating in NCACS must have documentation identifying the destination location (building no., street, etc.), Project title, Contract No., Prime Contractor organization, Bill of Lading & Proof of Citizenship. Otherwise, no access will be allowed.

(3) For those companies that do not have a bill of lading or proof of citizenship the prime contractor must fill out the Short Term Visitor Request form and provide to the Contracting Officer no less than 5 workdays prior to the delivery date.

b. One-Day Passes: Participation in the NCACS is not mandatory, and if the Contractor chooses not to participate, the Contractor's personnel will have to obtain daily passes, be subject to daily mandatory vehicle inspection, and will have limited access to the installation. The Government will not be responsible for any cost or lost time associated with obtaining daily passes or added vehicle inspections incurred by non-participants in the NCACS. Contact the appropriate Installation Base Visitor Control Center for more information and latest forms to use.

1.5.1.3 Commander, Joint Region Marianas (JRM) Fuel Division, Safety /Security Policy

Non-CNRM Fuel Division personnel requiring access to the Fuel Farm and other Fuel Division property must check in at Bldg. 1700, Sasa Valley Fuel Farm, at the beginning and end of each work day. Keys to Fuel Facilities will be issued daily between the hours of 7:30 a.m. and 4:00 p.m. Keys must be returned by 7:00 p.m. the same day.

At the end of each workday, update the check-in board in the Fuel Division Operations and provide information as follows for the next workday:

a. Contract name or number

b. Name of person responsible for work crew(s)

c. Emergency phone numbers

d. Number of workers in crew

e. Location of work

f. Type of work to be conducted

g. Fuel Division support required:

1) Draining of pipe

2) Outages

Route hot work permits to the CNRM Fuel Division for approval. Following approval, submit permit to the Federal Fire Department (FFD). After approval by the FFD, submit a copy of the permit and the Marine Chemist Gas Free Certificate to the Fuels Operations Division for record.

1.5.1.4 Naval Computer and Telecommunications Station (NCTS) Safety/Security Policy

Non-NCTS personnel requiring access to the critical facilities of NCTS property must be U.S. Citizens.

1.5.1.5 No Smoking Policy

Smoking is prohibited within and outside of all buildings on installations under the cognizance of JRM (Joint Region Marianas) except in designated smoking areas. This applies to existing buildings, buildings under construction and buildings under renovation. Discarding tobacco materials other than into designated tobacco receptacles is considered littering and is subject to fines. The Contracting Officer will identify designated smoking areas.

1.5.2 Working Hours

Regular working hours must consist of an 8 hour period between 6:00 a.m. and 6:00 p.m., Monday through Friday, excluding Government holidays.

1.5.3 Work Outside Regular Hours

Work outside regular working hours requires Contracting Officer approval. Requests must be submitted a minimum of 3 calendar days prior to such work to allow arrangements to be made by the Government for inspecting the work in progress, giving the specific dates, hours, location, type of work to be performed, contract number and project title. Based on the justification provided, the Contracting Officer may approve work outside regular hours. During periods of darkness, the different parts of the work must be lighted in a manner approved by the Contracting Officer. If utility cutovers/ outages are required, they must be made, to the maximum extent possible, after normal working hours or on Saturdays, Sundays, and Federal Government holidays. Contractors must pay time and one half wages for all work in excess of 40 hours per week. Approval of overtime work does not constitute a change in contract or task order.

1.5.4 Occupied and Existing Buildings

The Contractor must be working in and around existing buildings which are occupied. Do not enter the buildings without prior approval of the Contracting Officer.

The existing buildings and their contents must be kept secure at all times. Provide temporary closures as required to maintain security as directed by the Contracting Officer.

Provide dust covers or protective enclosures to protect existing work that remains and Government material during the construction period.

Relocate movable furniture away from the Contractor's working area as required to perform the work, protect the furniture, and replace the furniture in their original locations upon completion of the work. Leave attached equipment in place, and protect them against damage, or temporarily disconnect, relocate, protect, and reinstall them at the completion of the work.

1.5.5 Utility Cutovers and Interruptions

a. Make utility cutovers and interruptions after normal working hours or on Saturdays, Sundays, and Government holidays. Conform to procedures required in the paragraph "Work Outside Regular Hours."

b. Ensure that new utility lines are complete, except for the connection, before interrupting existing service.

c. Interruption to water, sanitary sewer, storm sewer, telephone service, electric service, air conditioning, heating, fire alarm, compressed air, are considered utility cutovers pursuant to the paragraph entitled "Work Outside Regular Hours." Such interruptions are further limited to the approval of the Contracting Officer. This time limit includes time for deactivation and reactivation.

d. Operation of Station Utilities: The Contractor must not operate nor disturb the setting of control devices in the station utilities system, including water, sewer, electrical, and steam services. The Government will operate the control devices as required for normal conduct of the work. The Contractor must notify the Contracting Officer giving reasonable advance notice when such operation is required.

1.5.5.1 Location of Underground Utilities

Obtain diffing permits prior to start of excavation by contacting the Contracting Officer 15 calendar days in advance. Scan the construction site with electromagnetic or sonic equipment, and mark the surface of the ground or paved surfaces where existing underground utilities or utilities encased obstruction not indicated to be specified or removed but indicated or discovered during scanning in locations to be traversed by piping, ducts, and other work to be conducted or installed.

a. Notification Prior to Excavation: Notify the Contracting officer at least 15 days prior to starting excavation work.

b. Excavation work are subject to ESS/MEC (Explosive Safety Submission/Munitions and Explosives of Concern) requirements.

1.6 SECURITY REQUIREMENTS

Contract Clause "FAR 52.204-2, Security Requirements and Alternate II" and "FAC 5252.236-9301, Special Working Conditions and Entry to Work Area" applies.

1.6.1 Personnel List

Submit for approval, at least 45 days prior to the desired date of entry for all bases, an original alphabetical list of personnel who require entry into Government property to perform work on the project. Furnish for each person:

a. Name

b. Date and place of birth

c. Citizenship

d. Home address

e. Social security number

f. Current pass expiration date

g. Naturalization or Alien Registration number

h. Passport number, place of issue, and expiration date

i. Guam Police clearance report for last six months

j. USAF Contractor/Sub-Contractor Access Affidavit as required by Andersen Air Force Base Guam

The request for personnel passes must be accompanied with the following certification:

"I hereby certify that all personnel on this list are either born U.S. citizens, naturalized U.S. citizens with the naturalization number shown, or legal aliens with the alien registration number indicated."

Signature/Firm Name

1.6.2 Vehicle List

Submit an original list of vehicles to be utilized at the work site with the following information for each vehicle:

a. Make

b. Year

c. Model

d. License number

e. Registered owner

f. Current applicable NAVBASE Joint Region Marianas pass expiration date.

1.6.3 Passes

Submit request for personnel and vehicle passes together. Include the Certificate of Insurance for Contractor and Subcontractor(s) and the Statement of Acknowledgement Form SF 1413 with the submittal. Passes will normally be issued within 45 days for all bases.

1.6.3.1 Control

Maintain strict accountability over passes. Immediately report to the source of issue, passes missing or lost and the circumstances. If the Contractor has another active contract or one commencing immediately,

employees' names may be transferred from one contract to the other. Final payment will not be effected until employees are transferred to another contract or the records are cleared. Furnish a signed letter, countersigned by the source of issue, stating that passes have been turned in.

1.6.4 Photographs

The possession or use of photography equipment is prohibited in and around restricted areas. When photography is required under this contract, the contractor must submit a completed photographer's identification card request to the Contracting Officer at least 14 calendar days in advance. The request must identify the person and equipment involved and the location and purpose of the photographs. All photographs are subject to review by the Government prior to release.

1.7 SPECIAL SCHEDULING REQUIREMENTS FOR FAMILY HOUSING AREA

1.7.1 Minimal Interference

The Contractor must conduct his operations so as to cause the least possible interference with the building/or housing tenants.

1.7.2 Interruption to Operations

The work under this contract requires special attention to the scheduling and conduct of the work in connection with existing operations. Identify on the project schedule each factor, which constitutes a potential interruption to operations. Permission to interrupt any Activity roads, and/or utility service must be requested in writing a minimum of 15 calendar days prior to the desired date of interruption.

1.7.2.1 Notification

Housing residents must be notified of any work in and around Housing Areas before any work is started. Buildings or housing units must remain accessible to tenants. The Contractor must coordinate roof access with the housing tenant(s) or, if the tenant is not home, by taping the notice to the front door of the unit(s), in a conspicuous location. The written notice must be prepared by the Contractor in coordination with the Contracting Officer and must indicate the construction or renovation project area to include, but not limited to the building and/or house number, street name, and the type of work to be accomplished. The start and completion dates must be included on the notice. If it is necessary to shut down or interrupt utility systems, a new notice is required and the times and dates of the outage must be indicated on the notice. Prior to the start of delivery of the first notice, a list of units to be served with the written notice must be submitted to the Contracting Officer and the U.S. Navy Family Housing Department for approval and information. Delivery schedule of written notice to the tenants by the Contractor to be done on three occasions are as follows:

a. **1st**: Fourteen (14) calendar days prior to the impending start of work.

b. **2nd**: Seven (7) calendar days prior to the impending start of work.

c. **3rd**: Twenty four (24) hours prior to the start of work in or around each unit to confirm the intent of the Contractor to start work

in or around each unit the following day. If an outage will affect a whole housing area or a partial area, a notice 24 hours prior to the outage must be placed on each unit affected.

1.7.3 Air Conditioning Warranty Work

For air conditioning work at military housing units, the Contractor must be available to perform warranty work 24-hours a day, 7-days a week, and respond on-site to the housing unit within two (2) hours of receipt of notification. Thereafter, all repair work must be completed within eight (8) hours unless otherwise directed by the Contracting Officer. The Contractor must remedy at the Contractor's expense any failure to conform, or any defect in the air conditioning work. Costs related to this special requirement for 24-hours, 7-days, and 2-hour warranty response must be inclusive in the price for projects with air conditioning work at military HOUSING UNITS.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 20 00.05 20

PRICE AND PAYMENT PROCEDURES FOR DESIGN-BUILD
01/12

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EP-1110-1-8	(2009) Construction Equipment Ownership and Operating Expense Schedule

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance with Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD. Submit the following in accordance with Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES and 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Schedule of Prices or Earned Value Report; G

1.3 SCHEDULE OF PRICES or EARNED VALUE REPORT

1.3.1 Data Required

If the contract requires the use of a cost-loaded Network Analysis Schedule (NAS) or Critical Path Method (CPM), the information required for the Schedule of Prices will be entered as an integral part of the NAS and its Mathematical Analysis. Within 15 calendar days of notice of award, prepare and deliver to the Contracting Officer a Schedule of Prices (construction contract) as directed by the Contracting Officer. Provide a detailed breakdown of the contract price, giving quantities for each of the various kinds of work, unit prices, and extended prices. Costs must be summarized and totals provided for each Construction Category.

1.3.2 Schedule Instructions

Payments will not be made until the Schedule of Prices or Earned Value Report from cost-loaded NAS or CPM has been submitted to and accepted by the Contracting Officer. For design phase progress payment(s), the Schedule of Prices or Earned Value Report from the Cost Loaded CPM must include detailed design activities and general (summarized) approach for the construction phase(s) of the project. The Schedule of Prices or Earned Value Report must be fully developed with detailed construction line items as design

progresses. The complete design and construction Schedule of Prices or Earned Value Report must be submitted and accepted prior to starting construction work.

For Fast-Tracked or Critical Path Submittals of construction projects, the Schedule of Prices or Earned Value Report must include detailed design and construction line items for each fast-tracked/critical path phase(s), submitted to and accepted by the Contracting Officer during the Post Award Kickoff Meetings and confirmed prior to starting construction work in that phase. Additionally, the Schedule of Prices or Earned Value Report must be separated as follows:

a. Primary Facility/s Cost Breakdown: Defined as work on the primary facility/s out to the 1.5 m (5 foot) line. Work out to the 1.5 m (5 foot) line includes construction encompassed within a theoretical line 1.5 m (5 foot) from the face of exterior walls and includes attendant construction, such as pad mounted HVAC equipment, that may extend beyond the 1.5 m (5 foot) line.

   (1) Provide a cost breakout for all Primary Facility features that support Low Impact Development (LID), such as vegetated roof and rainwater harvesting features. The sum of the Primary Facility Cost above - a. and these Primary Facility LID sub-items - (1) must equal the total Primary Facility cost. Provide a subtotal cost of all Primary Facility LID sub-items on the Schedule of Prices or Earned Value Report at design complete and project closeout.

b. Supporting Facilities Cost Breakdown: Defined as site work, including incidental work, outside the 1.5 m (5 foot) line.

   (1) Provide a cost breakout for all Supporting Facilities features that support LID, such as bioswales, permeable paving, infiltration basins, tree box filters, etc. The sum of the Supporting Facilities Cost above - b. and these Supporting Facilities LID sub-items - (1) must equal the total Supporting Facilities cost. Provide a subtotal cost of all Supporting Facilities LID sub-items on the Schedule of Prices or Earned Value Report at design complete and project closeout.

1.3.4 Real Property Assets

Provide the Draft and Interim DD Form 1354, Transfer and Acceptance of Military Real Property filled in with the appropriate Real Property Unique Identifiers (RPUID) and related construction Category Codes. Provide the Draft DD Form 1354 that uses the appropriate division of the RPUIDs/ Category Codes to represent the designed real property assets that apply to this contract and include all associated cost. The Contractor must meet with the Contracting Officer and the Real Property Accounting Officer during the Post Award Kickoff Meeting and the Project Closeout Meetings to modify and include any necessary changes to the DD Form 1354. The Contractor shall provide the Interim DD Form 1354 that uses the appropriate division of the RPUIDs/ Category Codes to represent the final constructed facility and include all associated cost. Coordinate the Contractor's Price and Payment structure with the structure of the RPUIDs / Category Codes.

Divide detailed asset breakdown into the RPUIDs and related construction Category Codes and populate associated costs which represent all aspects of

the work. Where assets diverge into multiple RPUID/ Category Codes, divide the asset and provide the proportion of the assets in each RPUID/ Category Code. Assets and related RPUID/ Category Codes may be modified by the Contracting Officer as necessary during the course of the work. Coordinate identification and proportion of these assets with the Government Real Property Accounting Officer.

Cost data accumulated under this section are required in the preparation of DD Form 1354. Coordinate with Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES in paragraph titled "DD Form 1354".

1.3.5 Schedule Requirements for HVAC TAB

The field work requirements of TAB work required by RFP Part 4 D30, HVAC must be broken down in the Schedule of Prices and in the cost-loaded NAS or CPM by separate line items which reflect measurable deliverables. Specific payment percentages for each line item must be determined on a case by case basis for each contract. The line items must be as follows:

a. Approval of Design Review Report: The TABS Agency is required to conduct a review of the project plans and specifications to identify any feature, or the lack thereof, that would preclude successful testing and balancing of the project HVAC systems. The resulting findings must be submitted to the Government to allow correction of the design. The progress payment must be issued after review and approval of the report.

b. Approval of the pre-field engineering report: The TABS Agency submits a report which outlines the scope of field work. The report must contain details of what systems will be tested, procedures to be used, sample report forms for reporting test results and a quality control checklist of work items that must be completed before TABS field work commences.

c. Season I field work: Incremental payments are issued as the TABS field work progresses. The TABS Agency mobilizes to the project site and executes the field work as outlined in the pre-field engineering report. The HVAC water and air systems are balanced and operational data must be collected for one seasonal condition (either summer or winter depending on project timing).

d. Approval of Season I report: On completion of the Season I field work, the data is compiled into a report and submitted to the Government. The report is reviewed, and approved, after ensuring compliance with the pre-field engineering report scope of work.

e. Completion of Season I field QA check: Contract QC and Government representatives meet the TABS Agency at the jobsite to retest portions of the systems reported in the Season I report. The purpose of these tests are to validate the accuracy and completeness of the previously submitted Season I report.

f. Approval of Season II report: The TABS Agency completes all Season II field work, which is normally comprised mainly of taking heat transfer temperature readings, in the season opposite of that under which Season I performance data was compiled. This data must be compiled into a

report and submitted to the Government. On completion of submittal review to ensure compliance with the pre-field engineering report scope, progress payment is issued. Progress payment is less than that issued for the Season I report since most of the water and air balancing work effort is completed under Season I.

1.3.6 Schedule Requirements for LEED Certification

If LEED certification is required by the contract, submittals to the U.S. Department of Energy's Federal Energy Management Program, *High Performance Federal Buildings Database* and to USGBC for LEED certification as required in 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES must be included as activities in the NAS. A separate line item equal to 0.5% of the contract /task order value and identified as - LEED Certification, must be included in the contractor's Schedule of Prices or Earned Value Report from the cost-loaded NAS or CPM. The unit of measure for this line item must be lump sum without any payment made until the specified level of LEED certification is obtained from USGBC and the Certification documentation is provided to the Contracting Officer in accordance with Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES.

1.4 CONTRACT MODIFICATIONS

In conjunction with the Contract Clause "DFARS 252.236-7000, Modification Proposals-Price Breakdown," and where actual ownership and operating costs of construction equipment cannot be determined from Contractor accounting records, equipment use rates must be based upon the applicable provisions of the EP-1110-1-8.

1.5 CONTRACTOR'S INVOICE AND CONTRACT PERFORMANCE STATEMENT

1.5.1 Content of Invoice

Requests for payment will be processed in accordance with the Contract Clause FAR 52.232-27, Prompt Payment Construction Contracts and FAR 52.232-5, Payments Under Fixed-Price Construction Contracts. The Requests for payment must include the documents listed below:

a. The Contractor's invoice, on NAVFAC Form 7300/30 furnished by the Government, showing in summary form, the basis for arriving at the amount of the invoice. Form 7300/30 must include certification by Quality Control (QC) Manager as required by the contract.

b. The Estimate for Voucher/ Contract Performance Statement on NAVFAC Form 7300/31 furnished by the Government or Earned Value Report from the cost-loaded NAS, showing in detail: the estimated cost, percentage of completion, and value of completed performance for each of the construction categories stated in this contract.

c. Updated Project Schedule and reports required by the contract.

d. Contractor Safety Self Evaluation Checklist (original).

e. Other supporting documents as requested.

f. Updated copy of submittal register.

g. Invoices not completed in accordance with contract requirements will be returned to the Contractor for correction of the deficiencies.

h. Monthly Work-hour Report.

i. Solid Waste Disposal Report.

1.5.2 Submission of Invoices

If NFAS Clause 5252.232-9301 is included in the contract, the documents listed in paragraph CONTENT OF INVOICE above must be provided in their entirety as an attachment in Wide Area Work Flow (WAWF) for each invoice submitted. The maximum size of each WAWF attachment is two megabytes, but there are no limits on the number of attachments. If a document cannot be attached in WAWF due to system or size restriction it must be provided as instructed by the Contracting Officer. All other paper invoices must be forwarded with specific marking on the envelope. This marking must be in the front lower left hand corner, in large letters, "INVOICES - ENCLOSED."

Monthly invoices and supporting forms for work performed through the anniversary award date of the contract must be submitted to the Contracting Officer within 5 calendar days of the date of invoice For example, contract award date is the 7th of the month, the date of each monthly invoice must be the 7th and the invoice must be submitted by the 12th of the month.

1.5.3 Final Invoice

a. A final invoice must be accompanied by the certification required by DFARS 252.247.7023 TRANSPORTATION OF SUPPLIES BY SEA, and the Contractor's Final Release. If the Contractor is incorporated, the Final Release must contain the corporate seal. An officer of the corporation must sign and the corporate secretary must certify the Final Release.

b. For final invoices being submitted via WAWF, the original Contractor's Final Release Form and required certification of Transportation of Supplies by Sea must be provided directly to the respective Contracting Officer prior to submission of the final invoice. Once receipt of the original Final Release Form and required certification of Transportation of Supplies by Sea has been confirmed by the Contracting Officer, the Contractor must then submit final invoice and attach a copy of the Final Release Form and required certification of Transportation of Supplies by Sea in WAWF.

c. Final invoices not accompanied by the Contractor's Final Release and required certification of Transportation of Supplies by Sea will be considered incomplete and will be returned to the Contractor.

1.6 PAYMENTS TO THE CONTRACTOR

Payments will be made on submission of itemized requests by the Contractor which comply with the requirements of this section, and will be subject to reduction for overpayments or increase for underpayments made on previous payments to the Contractor.

1.6.1 Obligation of Government Payments

The obligation of the Government to make payments required under the provisions of this contract will, at the discretion of the Contracting Officer, be subject to reductions and/or suspensions permitted under the FAR and agency regulations including the following in accordance with "FAR 32.503-6:

a. Reasonable deductions due to defects in material or workmanship;

b. Claims which the Government may have against the Contractor under or in connection with this contract;

c. Unless otherwise adjusted, repayment to the Government upon demand for overpayments made to the Contractor; and

d. Failure to provide up to date record drawings not current as stated in Contract Clause "FAC 5252.236-9310, Record Drawings."

1.6.2 Payment for Onsite and Offsite Materials

Progress payments may be made to the contractor for materials delivered on the site or for materials stored off construction sites under the following conditions:

a. FAR 52.232-5(b) Payments Under Fixed Price Construction Contracts.

b. Materials delivered on the site but not installed, including completed preparatory work, and off-site materials to be considered for progress payment must be major high cost, long lead, special order, or specialty items, not susceptible to deterioration or physical damage in storage or in transit to the construction site. Examples of materials acceptable for payment consideration include, but are not limited to, structural steel, non-magnetic steel, non-magnetic aggregate, equipment, machinery, large pipe and fittings, precast/prestressed concrete products, plastic lumber (e.g., fender piles/curbs) and high-voltage electrical cable. Materials not acceptable for payment include consumable materials such as nails, fasteners, conduits, gypsum board, glass, insulation, and wall coverings.

c. Materials to be considered for progress payment prior to installation must be specifically and separately identified in the Contractor's estimates of work submitted for the Contracting Officer's approval in accordance with Schedule of Prices or Earned Value Report requirement of this contract. Requests for progress payment consideration for such items must be supported by documents establishing their value and that the title requirements of the clause at FAR 52.232-5 have been met.

d. Materials are adequately insured and protected from theft and exposure.

e. Provide a written consent from the surety company with each payment request for offsite materials.

f. Materials to be considered for progress payments prior to installation must be stored on the island of Guam. Other locations are subject to written approval by the Contracting Officer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 30 00.05 20

ADMINISTRATIVE REQUIREMENTS FOR DESIGN-BUILD
03/13

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

15 CFR 772	Definition of Terms
15 CFR 773	Special Licensing Procedures

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance with Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD. Submit the following in accordance with Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES and 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Insurance; G

1.3 MINIMUM INSURANCE REQUIREMENTS

Procure and maintain during the entire period of performance under this contract the following minimum insurance coverage:

a. Comprehensive general liability: $500,000 per occurrence

b. Automobile liability: $200,000 per person, $500,000 per occurrence for bodily injury, $20,000 per occurrence for property damage

c. Workmen's compensation as required by Federal and State workers' compensation and occupational disease laws.

d. Employer's liability coverage of $100,000, except in States where workers compensation may not be written by private carriers,

e. Others as required by the State.

Refer to UFGS section 01 33 10.05 20, CONSTRUCTION SUBMITTAL PROCEDURES for typical preconstruction submittals similar to insurance.

1.4 CONTRACTOR PERSONNEL REQUIREMENTS

1.4.1 Subcontractor Special Requirements

1.4.1.1 Asbestos Containing Material

All contract requirements of PART 4, F20 SELECTIVE BUILIDNG DEMOLITION, assigned to the Private Qualified Person (PQP) must be accomplished directly by a first tier subcontractor.

1.4.1.2 HVAC TAB AND COMMISSIONING

All contract requirements of TAB and Commissioning work PART 4 D30 HVAC must be accomplished directly by a first tier subcontractor. No TAB or Commissioning work required by PART 4 D30 HVAC is allowed to be accomplished by a second tier subcontractor.

1.4.1.3 Qualified Testing Organization

All contract requirements of work required to be performed by a Qualified Testing Organization in PART 4, D50 ELECTRICAL and G40 SITE ELECTRICAL UTILITIES must be accomplished directly by a first tier subcontractor. No work to be performed by a Qualified Testing Organization, required by PART 4, D50 and G40 is allowed to be accomplished by a second tier subcontractor.

1.5 SUPERVISION

Have at least one qualified supervisor capable of reading, writing, and conversing fluently in the English language on the job site during working hours. In addition, if a Quality Control (QC) representative is required on the contract, then that individual must also have fluent English communication skills.

1.6 AMERICAN PREFERENCE POLICY

If project is funded under the 1987 Defense Appropriation Act and is estimated to be over $1,000,000. The American Preference policy applies as follows:

> This policy precludes the award of construction contract estimated by the Government to exceed $1,000,000 to a foreign contractor; unless the lowest responsive bid of a U.S. contractor exceeds the lowest responsible and responsive bid of a foreign contractor by greater than 20 percent. To qualify as a U.S. contractor, the firm (or if a joint venture, all members of the joint venture) must be incorporated in the U.S. and comply with the following: (a) the corporate headquarters must be in the U.S,; (b) the firm must have filed corporate franchise and employment tax returns (if required) in the U.S. for a minimum of 2 years, must have filed state and federal income tax returns (if required) for a minimum of 2 corporate years, and paid any taxes determined to be due as a result of such filings; and (c) the firm must employ U.S. citizens in key management positions.

1.7 AVAILABILITY OF CADD DRAWING FILES

After award and upon request, the electronic "Computer-Aided Drafting and Design (CADD)" drawing files will only be made available to the Contractor

for use in preparation of construction drawings and data related to the referenced contract subject to the following terms and conditions.

Data contained on these electronic files must not be used for any purpose other than as a convenience in the preparation of construction drawings and data for the referenced project. Any other use or reuse must be at the sole risk of the Contractor and without liability or legal exposure to the Government. The Contractor must make no claim and waives to the fullest extent permitted by law, any claim or cause of action of any nature against the Government, its agents or sub consultants that may arise out of or in connection with the use of these electronic files. The Contractor must, to the fullest extent permitted by law, indemnify and hold the Government harmless against all damages, liabilities or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.

These electronic CADD drawing files are not construction documents. Differences may exist between the CADD files and the corresponding construction documents. The Government makes no representation regarding the accuracy or completeness of the electronic CADD files, nor does it make representation to the compatibility of these files with the Contractors hardware or software. In the event that a conflict arises between the signed and sealed construction documents prepared by the Government and the furnished CADD files, the signed and sealed construction documents must govern. The Contractor is responsible for determining if any conflict exists. Use of these CADD files does not relieve the Contractor of duty to fully comply with the contract documents, including and without limitation, the need to check, confirm and coordinate the work of all contractors for the project.

If the Contractor uses, duplicates and/or modifies these electronic CADD files for use in producing construction drawings and data related to this contract, all previous indicia of ownership (seals, logos, signatures, initials and dates) must be removed.

1.8 ELECTRONIC MAIL (E-MAIL) ADDRESS

The Contractor must establish and maintain electronic mail (e-mail) capability along with the capability to open various electronic attachments in Microsoft, Adobe Acrobat, and other similar formats. Within 10 days after contract award, the Contractor must provide the Contracting Officer a single (only one) e-mail address for electronic communications from the Contracting Officer related to this contract including, but not limited to contract documents, invoice information, request for proposals, and other correspondence. The Contracting Officer may also use email to notify the Contractor of base access conditions when emergency conditions warrant, such as hurricanes, terrorist threats, etc. Multiple email addresses will not be allowed.

It is the Contractor's responsibility to make timely distribution of all Contracting Officer initiated e-mail with its own organization including field office(s). The Contractor must promptly notify the Contracting Officer, in writing, of any changes to this email address.

1.9 LEVEL I ANTI-TERRORISM TRAINING

Contractor must ensure all employees working under federal contracts receive the Level I Anti-terrorism training. The Contractor must submit a letter certifying all of the employees have received this training, when it was completed and that procedures are in place to ensure any new employees will receive the training within 30 days of being hired. On line Level 1 Antiterrorism training is available at https:/atlevel1.dtic.mil/at/. Contractor must maintain copies of employees' certificates of completion.

1.10 CLEANUP

Leave premises "broom clean." Clean interior and exterior glass surfaces exposed to view; remove temporary labels, stains and foreign substances; polish transparent and glossy surfaces; vacuum carpeted and soft surfaces. Clean equipment and fixtures to a sanitary condition. Clean filters of operating equipment. Clean debris from roofs, gutters, downspouts and drainage systems. Sweep paved areas and rake clean landscaped areas. Remove waste and surplus materials, rubbish and construction facilities from the site.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 31 19.05 20

POST AWARD MEETINGS
09/15

PART 1 GENERAL

1.1 SUMMARY

This document includes post-award requirements for project kickoff and subsequent design and preconstruction meetings.

1.2 SUBMITTALS

The use of a "G" following a submittal indicates that a Government approval action is required. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance with Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD. Submit the following in accordance with Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES and 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Design Submittal Packaging Proposal; G

Project Schedule; G

Performance Assessment Plan (PAP); G

Design Presentation Concept Site and Floor Plans; G

CDW Facilitator Experience Resume; G

CDW Preliminary Concept Design; G

CDW Cost Estimate; G

Concept Design Workshop Report; G

1.3 POST AWARD KICKOFF MEETING

The Post Award Kickoff (PAK) meeting is made up of Contract Administration, Concept Design Presentation/Design Development or Concept Design Workshop (CDW), Partnering, and Scheduling. If mutually beneficial to the Contractor and the Government, these four elements may be addressed in a single multi day meeting but most often multiple scheduled meetings are required. Schedule a separate meeting or a separate day of the multiday PAK, to accomplish the Design Presentation/Design Development Meeting or Concept Design Workshop(CDW).

1.3.1 PAK Meeting Schedule and Location

Within 35 calendar days after contract or task order award or a time period mutually agreed upon by both parties, and prior to commencing work, meet with the Contracting Officer for the PAK meeting(s). The meeting must be

located at a specific time and place to be determined by the Contracting Officer.

1.3.2 PAK Meeting Outcomes

The meeting(s) outcomes are:

a. Integrate the Contractor and all client representatives into the project team.

b. Achieve consensus from the project team on any issues and concerns with the Contractor's technical proposal and the User's functional requirements. Confirm the design is within the project budget.

c. Establish and explain policies and procedures for completion of a successful project.

d. Establish clear lines of communication and points of contact for Government and Contractor team members.

e. Obtain an acceptable conceptual design including floor and site plans, signed by the client, Contractor and other key team members.

f. Establish project design schedule, design submittal packaging, and preliminary construction schedule in accordance with Secton 01 32 17.05 20 COST LOADED NETWORK ANALYSIS SCHEDULE (NAS) FOR DESIGN-BUILD. Discuss design milestones and events that will be included in the Quality Control Communication Plan.

g. Establish clear expectations and schedules for facility turnover, providing DD Form 1354 asset management records, eOMSI submittals, Guiding Principle Validation, Third Party Certification (if applicable), and training of Government maintenance personnel.

h. Establish procedure for design packages reviews, Contractor's resolution to comments, and Government's role in review of packages.

i. Establish clear expectations for the Concept Design Workshop.

j. Establish clear expectations for Design Model presentations for projects implementing Building Information Management/Modeling (BIM).

1.3.3 PAK Meeting Contractor Attendees

The following Contractor key personnel must attend the PAK: Project Manager, Project Scheduler, Lead Designer-of-Record (DOR), Design Staff responsible for each architectural/engineering discipline when facility design is discussed, Superintendent, QC Manager, DQC Manager and when required, the Commissioning Authority (CA). Optional attendees include: Principal, Assistant Project Manager, major subcontractors and specialized supplemental QC personnel.

1.3.4 Contract Administration

Contract administration roles and responsibilities will be addressed.

1.3.5 Design Presentation/Development (DP/D)

The Contractor must lead discussions to develop an understanding of the facility design that the accepted technical proposal represents with the Government users and maintainers of the facility. Develop site plans, floor plans, exterior finish materials, and building elevations to conduct working sessions with the Government meeting attendees. The purpose of the DP/D Meeting is to confirm the appropriateness of the facility design and develop acceptable alternatives if changes are needed. The Contractor must anticipate that Government Facility Users represented at the DP/D Meeting will provide additional functional information. Incorporate functional design changes into the facility design as required to meet the needs of the Users. At the end of the DP/D Meeting the Contractor must provide either assurance that the updated design can be built with-in the budget or identify potential cost modification items and establish a follow-on DP/D Meeting to finalize a design that will include trade-offs to bring the project within the budget.

Demonstrate ability to achieve identified Guiding Principle sustainability goals and also Third Party Certification sustainability goals, if applicable.

1.3.5.1 Design Presentation/Development Contractor Meetings Attendees

The following Contractor key personnel must attend the Design Presentation: Project Manager, Project Scheduler, Cost Estimator, Lead Designer of Record, Design Staff responsible for each architectural/engineering discipline when facility design is discussed, Major Subcontractors, and DQC.

1.3.6 Concept Design Workshop (CDW)

Provide a CONCEPT DESIGN WORKSHOP that meets the following requirements;

1.3.6.1 CDW General Requirements

a. Methodology. A Concept Design Workshop will be conducted per task order requirements. This effort will examine project functions and requirements, quality and life safety costs, analyze alternate design concepts, expose and resolve project issues, and develop the final conceptual design.

b. Facilitator. Provide a Facilitator who is experienced in conducting Concept Design Workshops. Submit a CDW Facilitator Experience Resume to the Contracting Officer describing his experience. He or she will be responsible for leading the team in a timely manner, making sure that issues are pursued and resolved to the maximum extent possible, documenting meetings, organizing the design concept documents for on-site approval, and providing the Concept Design Workshop Report.

c. Contractor's Design Team. The primary functions of the Design Team will be to investigate, develop and present alternate design solutions. The entire Design Team will participate in all phases of the Concept Design Workshop effort and provide assistance to the Facilitator in development of the Concept Design Workshop Report, including most of the required documentation.

d. Concept Design Workshop Report. Produced almost entirely on-site, the

Concept Design Workshop Report will summarize the final conceptual design.

e. Award Amount. At each contract stage, the Contractor must verify that the concept is within the contract award amount.

1.3.6.2 CDW Procedures

a. Preliminary Work. The Contractor's Design Team must complete the following prior to the on-site workshop:

(1) Review the contract documents and references explaining the project scope and history.

(2) At the Post Award Kickoff meeting, the User(s) makes a presentation of their functional requirements.

(3) Prepare and submit, at least 14 days in advance of the CDW, 15 copies of a CDW Preliminary Concept Design (Concept #1), a Basis of Design, and a statement that the concept provided is within the award amount.

(4) Make arrangements for and provide an appropriate conference room convenient to the project site and/or Users for use by the Design Team and government participants during the workshop.

(5) Incorporate government comments in a revised Concept #1 and produce at least 20 copies of the revised Concept #1 documents for distribution at the workshop.

(6) Facilitator conducts meeting with NAVFAC representatives before the CDW to review preparations, relationships, and the status of work to be accomplished.

b. On-Site Workshop. The Design Team must accomplish the following items during the on-site phase of the CDW (Typically conducted in four to six working days, minimizing breaks so as to maintain momentum. The Design Team should expect longer than normal workdays.)

(1) On the first day of the workshop, meet with the using activity, Station and other Government representatives. The Facilitator will describe the CDW process and review the workshop agenda. The user(s) will provide a functional presentation. This is to reiterate to all participants the User(s) needs and desires. The intent is to make the design solution and issue resolution function-oriented.

(2) Present the revised Concept #1 and respond to questions.

(3) Participate in a comment/creative session to generate ideas to improve this project in the areas of function, quality and total life cycle cost, issue resolution and sustainable design within the award amount. It is often helpful to request User comments in writing so they may be considered, responded to, and presented at subsequent presentations.

(4) Create a new concept design. Design concepts must include drawings,

sketches, and other graphics as necessary to fully describe the concept. Prepare at least 20 copies for distribution at all presentations.

(5) Repeat applicable steps as necessary. Usually, three concepts are required. The final concept must be within the contract award amount.

(6) The final concept must include the following:

(a) Site Plan: Show the layout of the proposed facility in relation to major landmarks. Show all buildings, access roads, parking, pedestrian walkways, roads, sidewalks, landscaping, and major utilities. Indicate major dimensions and orientation. Provide a building code analysis, relating the proposed building site, size, and construction type to maximum allowable limits of the International Building Code.

(b) Building Floor Plans: Provide floor plans depicting functional utilization of spaces and furniture and equipment layout. Show room sizes or dimensions. Provide a Life Safety Code analysis with the floor plan to identify required life safety and egress features.

(c) Perspective Sketches: Provide at least one sketch to show a perspective of major buildings. The sketch should not be elaborate but must show the proposed form and massing, colors to be used, and an indication of materials used.

(d) Mechanical Plans: Provide plans as necessary to show the essential work and intent of the design. Suggestions include equipment layouts, zones, etc.

(e) Electrical Plans: Provide plans as necessary to show the essential work and intent of the design. Suggestions include special light fixture types, locations, switching, power outlets and panelboard location. Provide electrical distribution single line diagram.

(f) Cost Estimate: Provide a CDW Cost Estimate and statement that the concept presented can be constructed within the award amount.

(g) Basis of Design: Describe the intent of the design by discipline. Address material quality, energy efficiency and life cycle costs.

(h) Sustainable Design: Demonstrate ability to achieve identified Guiding Principle sustainability goals and also Third Party Certification sustainability goals, if applicable. Provide Preliminary Sustainable Notebook, refer to Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD for requirements.

(i) System Safety Engineering

(7) Prepare 20 copies of the final concept (drawings, basis of design and statement that the concept is within the award amount) for

distribution at the final presentation.

(8) Dependent upon the project, the Concept Design Workshop Report is provided by the Facilitator, includes all items included in the final concept design and the following:

(a) Endorsements: Include a copy of the signature/endorsement sheet.

(b) Comments: Include comments and resolutions concerning the final concept design.

(c) Executive Summary: Summarize the workshop, including how the various concepts differed and were improved during the workshop.

(d) Special Design Features: Identify and describe unique project needs and features, e.g., pile foundations, physical security, intrusion detection systems, access control, construction in humid climates, pollution abatement, tempest, HEMP, etc.

(e) Architectural Compatibility Statement: Identify architectural style, materials, and color scheme; and indicate their compatibility with installation planning and design concepts established in the Base Exterior Architectural Plan.

(f) Environmental Summary: Provide a summary of environmental issues, listing completed actions and items requiring further coordination, waivers or permits.

(g) Supporting Project Documentation: Include data to support the development of the concept design, layout, and special features. Items should include: project scope discussion, minutes of meetings, function analysis work sheets, and economic and technical analyses if alternatives evaluated.

(9) Except for final comments, responses and endorsements, the final report should be completed (electronically) on site, before the final presentation. If requested by the NAVFAC Project Manager, be prepared to present up to 10 hard copies of the report at the conclusion of the workshop.

(10) Conduct a "front-to-back" comprehensive presentation of the final concept. Obtain user signatures on a conceptual design endorsement sheet, signifying approval of the concept design, subject to the final comments and their resolutions agreed to at the final presentation meeting.

1.3.6.3 Concept Design Workshop Report

Within 14 calendar days of completion of the on-site Concept Design Workshop, the Design Team must submit to the NAVFAC Project Manager an electronic copy of the Concept Design Workshop Report as one file in .PDF format.

1.3.6.4 CDW Meeting Attendees

The following Contractor key personnel must attend the CDW: Project Manager, Project Scheduler, Cost Estimator, Lead Designer of Record, Design Staff representing each architectural/engineering discipline and Major Subcontractors when facility design is discussed, Superintendent, QC Manager, and DQC.

1.3.7 Partnering

To most effectively accomplish this contract, the Government requires the formation of a cohesive partnership within the Project Team whose members are from the Government, Contractor and its Subcontractors. Key Personnel from the Supported Command, End User (who will occupy the facility), NAVFAC (Echelon III and/or IV), Navy Region/Installation, Contractor and Subcontractors and the Designer of Record will be invited to participate in the Partnering process. The Partnership will draw on the strength of each organization in an effort to achieve a project without any safety mishaps, conforming to the Contract, within budget and on schedule.

Information on the Partnering Process and a list of Key and Optional personnel who should attend the Partnering meeting are available from the Contracting Officer.

1.3.7.1 Formal Partnering

a. The Contractor must host the Partnering sessions with Key personnel of the Project Team, including Contractor's personnel and Government personnel. The Contractor must pay all costs associated with the Partnering effort including the Facilitator, meeting room and other incidental items.

b. Before a Partnering session, the contractor must coordinate with the Facilitator all requirements for incidental items (audio-visual equipment, easels, flipchart paper, colored markers, note paper, pens/pencils, colored flash cards, etc.) and have these items available at the Partnering session. The contractor will copy documents for distribution to all attendees. The participants must bear their own costs for meals, lodging and transportation associated with Partnering.

c. The Facilitator must be experienced in conducting Partnering Workshops and acceptable to both the Government and Contractor. The Facilitator is responsible for leading the team in a timely manner and making sure that issues are identified and resolved. A list of Partnering Facilitators is available from the Contracting Officer.

d. The Initial Partnering Session must be a duration of one day minimum. It must be located at a place off the construction site as agreed to by the Contracting Officer and the Contractor. It may take place concurrently with the Pre Construction Meeting.

e. The Follow-on Partnering Session(s) generally lasts a half day or less. They will be scheduled at 3 to six month intervals or when needed. Participants are encouraged to utilize electronic means to expedite meetings. Meetings may be held at a location off Base, at the project site, or in a Government Facility on Base. Follow-on meetings may be held concurrently with other scheduled meetings. Attendees need only be those required to resolve current issues. The same Facilitator used in

the Initial Partnering session is recommended to achieve best results and for continuity.

1.3.7.2 Informal Partnering

a. The Contracting Officer must organize the Partnering Sessions with key personnel of the project team, including Contractor's personnel and Government personnel.

b. The Initial Informal Partnering session should be a part of the DB Post Award Kickoff (PAK). Partnering sessions should be held at a location agreed to by the Contracting Officer and the Contractor (typically a conference room provided by the PWD FEAD/ROICC office or the Contractor).

c. The Initial Informal Partnering Session will be conducted and facilitated using electronic media (appropriate media and accompanying forms) provided by Contracting Officer.

d. The Partners will determine the frequency of the follow-on sessions.

1.3.8 Performance Assessment Plan (PAP)

The Performance Assessment Plan (PAP) must be used to document design innovation and budget management, provide performance feedback to the Contractor, and as a basis for interim and final evaluations in the Construction Contractor Appraisal System (CCASS) on-line database.

It is the intent of the Government to establish the PAP based on tangible, measurable indicators of outstanding contractor performance, and on commitments made in the Contractor's proposal. The initial PAP may be found on the NAVFAC Design-Build Request for Proposal Website in RFP PART 6 Attachments. Review and finalize the initial PAP during the Partnering Session. During the initial Partnering Session, the Government, the Contractor, the Designer-of-Record, and the Client will establish the PAP. Following the establishment of the PAP, the Contractor will present it, with his input, for update and discussion at projects meetings which discuss project performance. Submit an updated PAP on a monthly basis with the invoice for that period as a minimum.

1.3.9 Project Schedule

Provide in accordance with Section 01 32 17.05 20 COST LOADED NETWORK ANALYSIS SCHEDULES (NAS) FOR DESIGN-BUILD.

1.4 DESIGN QUALITY ASSURANCE MEETINGS

After Government Quality Assurance (QA) of each Design Submittal has been completed, meet with the Government for a one-day conference to discuss review comments for the specific design submittal.

Provide consolidated copies of all Government comments with annotations of Contractor's action beside them. Notify the Contracting Officer in writing within five (5) days after receipt of Government's comments if the Contractor disagrees with comments technically or interprets comments to exceed the requirements of the contract.

1.4.1 Design QA Meeting Attendees

The following Contractor key personnel must attend the design QA meetings: Project Manager, QC Manager, Commissioning Authority, and Contractor's Design Staff (architect and engineering disciplines related to topics to be discussed).

1.4.2 Design QA Meeting Location

Meetings must be located at the office of the Contracting Officer's QA Team or may be conducted at other locations or by other electronic means if mutually acceptable to all parties.

1.4.3 Minimum Design QA Meeting Agenda

Address all Government comments that are unresolved and present clarification or supporting information requested by the Contracting Officer's QA team during the previous meeting.

1.5 PRECONSTRUCTION MEETING

Meet with the Contracting Officer to discuss construction items of concern to the Government and the Contractor such as outages, storage, trailer location, disposal of construction debris, and safety, at a location to be determined by the Contracting Officer. The Preconstruction meeting may take place with the PAK meeting or at any time prior to mobilization and before any construction work begins.

1.6 RECURRING MEETINGS

1.6.1 Quality Control and Production Meetings

Quality Control and Production Meetings will be in accordance with Section 01 45 00.05 20 DESIGN AND CONSTRUCTION QUALITY CONTROL.

1.6.2 Safety Meetings

Safety Meetings will be in accordance with Section 01 35 26.05 20 GOVERNMENT SAFTETY REQUIREMENTS FOR DESIGN-BUILD.

1.6.3 eOMSI Meetings

Refer to Section 01 78 24.00 20 FACILITY ELECTRONIC OPERATIONS AND MAINTENANCE INFORMATION (eOMSI) for requirements.

1.6.4 Sustainability Documentation Progress Meetings

Most sustainability documentation progress meetings may be combined with other design, construction, and project closeout meetings; however additional meetings are required post-design and post-construction. Refer to Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD for meeting requirements.

1.7 FACILITY TURNOVER PLANNING MEETINGS (NAVFAC RED ZONE - NRZ)

Meet with the Government to identify strategies to ensure the project is carried to expeditious closure and turnover to the Client. Start the

turnover process at the PAK meeting with a discussion of the NAVFAC Red Zone (NRZ) process and convene at regularly scheduled NRZ Meetings. Include the following in the facility Turnover effort:

1.7.1 NRZ Checklist

a. Contracting Officer's Technical Representative (COTR) will provide the Contractor a copy of the NRZ Checklist template prior to 75 percent completion.

b. Prior to 75 percent completion add/delete critical activities to the NRZ Checklist template as necessary to match the project scope, and schedule critical activities and insert planned completion dates in the NRZ checklist for each critical activity. Present the NRZ Checklist to COTR and review during a regularly scheduled QC Meeting.

1.7.2 Meetings

a. Upon Government acceptance of the NRZ Checklist, the Project Superintendent is required to lead regular NRZ Meetings beginning at approximately 75 percent project completion, or three to six months prior to Beneficial Occupancy Date (BOD), whichever comes first.

b. The Contracting Officer will determine the frequency of the meetings, which is expected to increase as the project completion draws nearer.

c. Using the NRZ Checklist as a Plan of Action and Milestones (POAM) and basis for discussion, review upcoming critical activities and strategies to ensure work is completed on time.

d. Coordinate with the COTR any upcoming activities that require Government involvement.

e. Maintain the NRZ Checklist by documenting the actual completion dates as work is completed and update the NRZ Checklist with revised planned completion dates as necessary to match progress. Distribute copies of the current NRZ Checklist to attendees at each NRZ Meeting.

f. Assign responsibility and schedule for the provision of all information necessary to complete the Final eOMSI Data and Documents Submittals for facility turnover.

g. Assign responsibility and schedule for the provision of all documentation necessary to achieve Guiding Principle Validation and also Third Party Certification, if applicable.

h. Schedule and coordinate the facility training of Government maintenance personnel in accordance with 01 78 23 OPERATION AND MAINTENANCE DATA.

1.7.3 Facility Turnover NRZ Meeting Attendees

The following key personnel must attend the Facility Turnover Meetings as needed to accomplish meeting requirements: Contractor QC Manager, Design Quality Control Manager, Superintendent, Major Subcontractors, Designer-of-Record, Contracting Officer's Representative, Project Sponsor, Representative(s) of NAVFAC, the Facility Owner/ Real Property Accounting Officer, Public Works Facility Maintenance Specialist, and the Client.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

-- End of Section --

SECTION 01 32 17.05 20

COST-LOADED NETWORK ANALYSIS SCHEDULES (NAS) FOR DESIGN-BUILD
03/15

PART 1 GENERAL

1.1 DESCRIPTION

The Contractor is responsible for scheduling all design, procurement, Contractor quality control and construction, acceptance testing and training. A single schedule must logically incorporate all design and construction for the entire project. Unless otherwise indicated, the contractor may begin construction when design is signed, stamped and submitted to the Government via the Contractor's quality control organization. If Government approval is required for any portion of a final signed and sealed design package prior to construction, that review time must be included in the schedule. The schedule must also include times for procurement, Contractor quality control and construction, acceptance testing and training. Refer to Specification Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES to determine if any items require Government approval prior to construction. If any are required, include that submittal review time in the schedule.

The schedule is a tool to manage the project, both for Contractor and Government activities. It will also be used to report progress and evaluate time extensions. The Project NAS must be cost-loaded and will provide the basis for progress payments. Use the Critical Path Method (CPM) and the Precedence Diagram Method (PDM) to satisfy time and cost applications. For consistency, when scheduling software terminology is used in this specification, the terms in Primavera's scheduling programs are used.

1.2 SUBMITTALS

The use of a "G" following a submittal indicates that a Government approval action is required. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance with Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD. Submit the following in accordance with Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES and 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Qualifications; G

Design Baseline Network Analysis Schedule (NAS); G

Construction Baseline Network Analysis Schedule (NAS); G

SD-07 Certificates

Monthly Network Analysis Schedule Updates; G

SD-11 Closeout Submittals

As-Built Schedule; G

1.3 SCHEDULE ACCEPTANCE PRIOR TO START OF WORK

The Design Baseline Network Analysis Schedule(NAS) must be submitted and presented to the Government at the PAK Meeting. The acceptance of a Design Baseline NAS is a condition precedent to processing Contractor's pay request(s) for design activities/items of work. The most current updated design schedule must accompany each design submittal.

The Contracting Officer and Contractor must participate in a preliminary meeting(s) to discuss the proposed schedule and requirements of this section prior to the Contractor preparing the Project Baseline Schedule. Government review comments on the Contractor's schedule(s) do not relieve the Contractor from compliance with requirements of the Contract Documents. Only bonds may be paid prior to acceptance of the Baseline Network Analysis Schedule (NAS). The acceptance of a Baseline NAS is a condition precedent to:

a. The Contractor starting work on the demolition or construction stage(s) of the contract.

b. Processing Contractor's invoices(s) for construction activities/items of work.

c. Review of any schedule updates.

Submittal of the Construction Baseline Network Analysis Schedule, and subsequent schedule updates, is understood to be the Contractor's certification that the submitted schedule meets all of the requirements of the Contract Documents, represents the Contractor's plan on how the work must be accomplished, and accurately reflects the work that has been accomplished and how it was sequenced (as-built logic).

1.4 SOFTWARE

Prepare and maintain project schedules using Primavera P6. Importing data into P6 using data conversion techniques or third party software is cause for rejection of the submitted schedule.

A listing of Primavera P6 settings and parameters which must be used in preparing the Schedules are contained later in this specification section. Deviation from these settings and parameters, without prior consent of the Contracting Officer, is cause for rejection of schedule submission.

1.5 QUALIFICATIONS

The designated Scheduler for the project must have prepared and maintained at least 3 previous schedules of similar size and complexity of this contract using Primavera P3, Primavera SureTrak, or Primavera P6. At least one of the three must be in Primavera P6. Submit a resume outlining the qualifications of the Scheduler. Payment will not be processed until an acceptable Scheduler is provided.

1.6 NETWORK SYSTEM FORMAT

The system must include time scaled logic diagrams and specified reports.

1.6.1 Diagrams

Provide Time-scaled Logic Diagram printed in color on ANSI D sheets. The diagram must clearly show activities on the critical path. Include the following information for each activity:

a. Activity ID

b. Activity Description

c. Original Duration in Work Days

d. Remaining duration

e. Percent Complete

f. Early Start Date

g. Early Finish Date

h. Total Float

1.6.2 Schedule Activity Properties and Level of Detail

The NAS must identify all Design, Government, Construction Quality Management (CQM), Construction activities planned for the project and all other activities that could impact project completion if delayed. Separate activities must be created for each Phase, Area, Floor Level and Location the activity is occurring. Activity categories included in the schedule are specified below.

With the exception of the Contract Award and Contract Completion Date (CCD) milestone activities, no activity is allowed to be open-ended; each activity must have predecessor and successor ties. No activity shall have open start or open finish (dangling) logic. Minimize redundant logic ties. Once an activity exists on the schedule it must not be deleted or renamed to change the scope of the activity and must not be removed from the schedule logic without approval from the Contracting Officer. While an activity cannot be deleted, where said activity is no longer applicable to the schedule but must remain within the logic stream for historical record, it can be changed to a milestone. Document any such change in the milestone's "Notebook", including a date and explanation for the change. The ID number for a deleted activity must not be re-used for another activity. Within the Baseline Schedule no more than 20 percent of the activities may be critical or near critical. Critical is defined as having zero days of Total Float. "Near Critical" is defined as having Total Float of 1 to 14 days. Contractor activities must be driven by calendars that reflect Saturdays, Sundays and all Federal Holidays as non-work days.

1.6.2.1 Activity Categories

a. Design Activities: Design activities must include design decision points, design submittal packages, including any critical path submittals for Fast Tracked Phases. Review times for design development

packages must be included in the schedule. Refer to Specification Section 01 33 10.05 20 Design Submittal Procedures, for specific requirements.

b. Procurement Activities: Examples of procurement activities include, but are not limited to; Material/equipment submittal preparation, submittal and approval of material/equipment; material/equipment fabrication and delivery, and material/equipment on-site. As a minimum, separate procurement activities will be provided for critical items, long lead items, items requiring government approval and material/equipment procurement for which payment will be requested in advance of installation. The Contractor must show each delivery with relationship tie to the Construction Activity specifically for the delivery.

c. Government Activities: Government and other agency activities that could impact progress must be clearly identified. Government activities include, but are not limited to; Government approved submittal reviews, Government conducted inspections/tests, environmental permit approvals by State regulators, utility outages, Design Start, Construction Start, (including Design/Construction Start for each Fast-Track Phase, and delivery of Government Furnished Material/Equipment.

d. Quality Management (QM) Activities: CQM Activities must identify the Preparatory Phase and Initial Phase for each Definable Feature of Work identified in the Contractor's Quality Control Plan. These activities must be added to each Three-Week Look Ahead Schedule referenced in the paragraph entitled "THREE-WEEK LOOK AHEAD SCHEDULE" and will also be included in each monthly update. The Follow-up Phase will be represented by the Construction Activities in the Baseline Schedule and in the schedule updates.

e. Construction Activities: No on-site construction activity must have a duration in excess of 20 working days. Separate construction activities must be created for each Phase, Area, Floor Level and Location the activity is occurring. Contractor activities must be driven by calendars that reflect Saturdays, Sundays and all Federal Holidays as non-work days, unless otherwise defined in this contract. Government availability for construction review, meeting attendance, performance verification testing, acceptance inspections, and project close-out, will be extremely difficult to achieve between Christmas and New Years Days

f. Turnover and Closeout Activities: Include a separate section with all items on the Navfac Red Zone Checklist/POAM that are applicable to this project. The checklist will be provided at the PAK meeting. As a minimum, this will include all testing, specialized inspection activities, Pre-Final inspection, Punch List Completion, Final Inspection and Acceptance. Add a milestone for the Facility Turnover Planning Meeting at approximately 75% construction contract completion or three to six months prior to BOD, whichever is sooner.

1.6.2.2 Contract Milestones and Constraints

1.6.2.2.1 Project Start Date Milestones

Include as the first activity on the schedule a start milestone titled

"Contract Award", which must have a Mandatory Start constraint equal to the Contract Award Date.

1.6.2.2.2 Facility Turnover Planning Meeting Milestones

See paragraph ACTIVITY CATEGORIES above.

1.6.2.2.3 Substantial Completion Milestone

Include an unconstrained finish milestone on the schedule titled "Substantial Completion". Substantial Completion is defined as the point in time the Government would consider the project ready for beneficial occupancy wherein by mutual agreement of the Government and Contractor, Government use of the facility is allowed while construction access continues in order to complete remaining items (e.g. punch list and other close out submittals).

1.6.2.2.4 Projected Completion Milestone

Include an unconstrained finish milestone on the schedule titled "Projected Completion". Projected Completion is defined as the point in time the Government would consider the project complete. This milestone must have the Contract Completion (CCD) milestone as its only successor.

1.6.2.2.5 Contract Completion Date (CCD) Milestone

Include as the last activity on the schedule a finish milestone titled "Contract Completion (CCD)". Calculation of schedule updates must be such that if the finish of the "Projected Completion" milestone falls after the contract completion date, then negative float will be calculated on the longest path and if the finish of the "Projected Completion" milestone falls before the contract completion date, the float calculation must reflect positive float on the longest path.

1.6.2.3 Work Breakdown Structure & Activity Code

At a minimum, the Contractor must establish a Work Breakdown Structure (WBS) and provide activity codes identified as follows:.

1.6.2.3.1 Work Breakdown Structure (WBS)

Group all activities and milestones within appropriate WBS categories including, at a minimum, the following:

a. Project Milestones:

(1) Management Milestones

(2) Project Administrative Meetings

b. Pre-Construction Phase:

(1) Submittals and Reviews

(2) Procurement

c. Construction Phase; Create multiple sub-sections in accordance with project specific categories of work including in WBS descending order as follows:

(1) General Area

(a) Type of Work Item

1. Location

d. Commissioning & Testing:

(1) Specific area/locations of commissioning

(2) Final Testing

(3) Training

e. Project Closeout: Include activity items such as Punchlist, Demobilization, O&M, As-built Drawings, and As-built NAS.

f. Modifications: Create multiple sub-sections as the project progresses identified by modifications issued.

1.6.2.3.2 Responsibility Code

All activities in the project schedule must be identified with the party responsible for completing the task. Activities must not belong to more than one responsible party.

1.6.2.4 Anticipated Weather Delays

Use the National Oceanic and Atmospheric Administration's (NOAA) historical monthly averages for days with precipitation, using a nominal 30-year, greater than 2.5 mm (0.10 inch) amount parameter, as indicated on the Station Report for the NOAA location closest to the project site as the basis for establishing a "Weather Calendar" showing the number of anticipated non-workdays for each month due to adverse weather, in addition to Saturdays, Sundays and all Federal Holidays as non-work days.

Assign the Weather Calendar to any activity that could be impacted by adverse weather. The Contracting Officer will issue a modification in accordance with the contract clauses, giving the Contractor a time extension for the difference of days between the anticipated and actual adverse weather delay if the number of actual adverse weather delay days exceeds the number of days anticipated for the month in which the delay occurs and the adverse weather delayed activities are critical to contract completion. A lost workday due to weather conditions is defined as a day in which the Contractor cannot work at least 50 percent of the day on the impacted activity.

1.6.2.5 Anticipated Restricted Delays

Unless otherwise noted or defined in Section 01 14 00.05 20 WORK RESTRICTIONS FOR DESIGN-BUILD, allow in the schedule a total of 5 lost workdays per calendar year for instances where base access is not permitted

due to a restriction or closure which causes a delay in the work. A lost workday is defined as a day which the Contractor cannot work at least 50 percent of the day on the closed installation. If the installation is closed for a period longer than 5 lost workdays per calendar year, the Contracting Officer will issue a no cost contract modification as applicable in accordance with the contract clauses extending the contract completion date where the critical path has been impacted.

1.6.2.6 Cost Loading

1.6.2.6.1 Cost Loading Activities

Assign Material and Equipment Costs, for which payment will be requested in advance of installation, to their respective procurement activity (i.e., the material/equipment on-site activity). Assign cost for material/equipment, paid for after installation; labor; and construction equipment to their respective Construction Activities. The value of commissioning, testing and closeout WBS section must not be less than 10 percent of the total costs for Procurement and Construction Activities. Evenly disperse overhead and profit to each activity over the duration of the project.

1.6.2.6.2 Quantities and Units of Measure

Each cost loaded activity must have a detailed quantity breakdown and unit of measure. Lump sum costing is not acceptable.

1.6.3 Schedule Software Settings and Restrictions

a. Activity Constraints: Date/time constraint(s), other than those required by the contract, will not be allowed unless accepted by the Contracting Officer. Identify any constraints proposed and provide an explanation for the purpose of the constraint in the Narrative Report.

b. Default Progress Data Disallowed: Actual Start and Actual Finish dates on the CPM schedule must match the dates on the Contractor Quality Control and Production Reports.

c. Software Settings: Schedule calculations and Out-of-Sequence progress (if applicable) must be handled through Retained Logic, not Progress Override. All activity durations and float values will be shown in days. Activity progress will be shown using Remaining Duration. Default activity type will be set to "Task". The project "Must Finish By" date must be left blank.

d. At a minimum, include the following settings and parameters in Baseline Schedule preparation:

(1) General: Define or establish Calendars and Activity Codes at the "Project" level, not the "Global" level.

(2) Admin Drop-Down Menu, Admin Preferences, Time Periods Tab:

(a) Set time periods for P6 to 8.0 Hours/Day, 40.0 Hours/Week, 172.0 Hours/Month and 2000.0 Hours/Year.

(b) Use assigned calendar to specify the number of work hours for each time period: must be checked.

(3) Admin Drop-Down Menu, Admin Preferences, Earned Value Tab:

(a) Earned Value Calculation: Use "Budgeted values with current dates".

(4) Project Level, Dates Tab:

(a) Set "Must Finish By" date to "Contract Completion Date".

(5) Project Level, Defaults Tab:

(a) Duration Type: Set to "Fixed Duration & Units".

(b) Percent Complete Type: Set to "Physical".

(c) Activity Type: Set to "Task Dependent".

(d) Calendar: Set to "Standard 5 Day Workweek". Calendar must reflect Saturday, Sunday and all Federal holidays as non-work days. Alternative calendars may be used with Contracting Officer approval.

(6) Project Level, Calculations Tab:

(a) Activity percent complete based on activity steps: Must be Checked.

(b) Reset Remaining Duration and Units to Original: Must be Checked.

(c) Subtract Actual from At Completion: Must be Checked.

(d) Recalculate Actual units and Cost when duration percent complete changes: Must be Checked.

(e) Link Actual to Date and Actual This Period Units and Cost: Must be Checked.

(f) Price/Unit: Set to "$1/h".

(g) Update units when costs change on resource assignments: Must be Unchecked.

(7) Project Level, Settings Tab:

(a) Define Critical Activities: Check "Total Float is less than or equal to" and add "0d".

(8) Work Breakdown Structure Level, Earned Value Tab:

(a) Technique for Computing Performance Percent Complete: "Activity percent complete" is selected.

(b) Technique for Computing Estimate to Complete (ETC): "PF = 1" is selected.

1.6.4 Required Tabular Reports

Include the following reports with the Baseline, Monthly Update and any other required schedule submittals:

a. Log Report: Listing of all changes made between the previous schedule and current updated schedule.

b. Narrative Report: Identify and justify:

(1) Progress made in each area of the project;

(2) Critical Path;

(3) Date/time constraint(s), other than those required by the contract

(4) Changes in the following; added or deleted activities, original and remaining durations for activities that have not started, logic, milestones, planned sequence of operations, critical path, and cost loading;

(5) Any decrease in previously reported activity Earned Amount;

(6) Pending items and status thereof, including permits, changes orders, and time extensions;

(7) Status of Contract Completion Date and interim milestones;

(8) Current and anticipated delays (describe cause of delay and corrective actions(s) and mitigation measures to minimize);

(9) Description of current and future schedule problem areas.

Each entry in the narrative report must cite the respective Activity ID and Activity Description, the date and reason for the change, and description of the change.

c. Earned Value Report: List all activities having a budget amount cost loaded. Compile total earnings on the project from notice to proceed to current progress payment request. Show current budget, previous physical percent complete, to-date physical percent complete, previous earned value, to-date earned value and cost to complete on the report for each activity.

d. Schedule Variance Control (SVC) Diagram: With each schedule submission, provide a SVC diagram showing 1) Cash Flow S-Curves indicating planned project cost based on projected early and late activity finish dates and 2) Earned Value to-date. Revise Cash Flow S-Curves when the contract is modified, or as directed by the Contracting Officer.

1.7 SUBMISSION AND ACCEPTANCE

The Design Baseline NAS must include detailed design activities, general (summarized) approach for the construction phase(s) of the project and required milestone activities. If the project is being Fast-Tracked or allows Early Start of construction, the Design Baseline Project Schedule must include all fast-tracked design construction phases, etc., including the required or proposed critical path design submittals within each phase that must occur during the duration of the project.

The Contractor must develop the Construction Baseline Schedule as design progresses, with detailed construction activities. If design must be completed and accepted prior to construction, submit the complete design and construction network analysis schedule and obtain acceptance prior to starting construction work. If the project will be Fast-Tracked, each construction stage must be detailed and built upon the previous Fast-Tracked Baseline Schedule (including any interim updates) and accepted prior to starting that stage of the construction work. Payment for completed work is dependent on an accepted, detailed schedule for that portion of work.

1.7.1 Monthly Network Analysis Updates

Contractor and Government representatives must meet at monthly intervals to review and agree on the information presented in the updated project schedule. The submission of an acceptable, updated schedule to the Government is a condition precedent to the processing of the Contractor's pay request. If a Schedule of Prices is the basis for progress payments, it must be consistent with the logic and activity breakdowns on the progress schedule. If progress payments are based on a cost-loaded schedule, the Contractor and Government must agree on percentage of payment for each activity progressed during the update period.

Provide the following with each Schedule submittal:

a. Time Scaled Logic Diagram.

b. Reports listed in paragraph entitled "Required Tabular Reports."

c. Data disks containing the project schedule. Include the back-up native .prx/current mandated schedule program files.

1.7.2 As-Built Schedule

As a condition precedent to the release of retention and making final payment, submit an "As-Built Schedule," as the last schedule update showing all activities at 100 percent completion. This schedule must reflect the exact manner in which the project was actually constructed.

1.8 CONTRACT MODIFICATION

Submit a Time Impact Analysis (TIA) with each cost and time proposal for a proposed change. TIA must illustrate the influence of each change or delay on the Contract Completion Date or milestones. No time extensions will be granted nor delay damages paid unless a delay occurs which consumes all available Project Float, and extends the Projected Finish beyond the Contract Completion Date.

a. Each TIA must be in both narrative and schedule form. The narrative must define the scope and conditions of the change; provide start and finish dates of impact, successor and predecessor activity to impact period, responsible party; describe how it originated, and how it impacts the schedule. The schedule submission must consist of three native files:

(1) Fragnet used to define the scope of the changed condition

(2) Most recent accepted schedule update as of the time of the proposal or claim submission that has been updated to show all activity progress as of the time of the impact start date.

(3) The impacted schedule that has the fragnet inserted in the updated schedule and the schedule “run” so that the new completion date is determined.

b. If the impact has not occurred within 30 calendar days, TIA procedure must be reduced to the most basic level possible to still reflect a reasonable assessment of the result of a delay, representing actual conditions as they occurred.

c. All TIAs must include any mitigation, and must determine the apportionment of the overall delay assignable to each individual delay. The associated narrative must clearly describe the findings in a chronological listing beginning with the earliest delay event.

(1) Identify types of delays as follows:

(a) Excusable Delay: Force-Majeure (e.g. weather) - Contractor may receive time extension, but time will not be compensable.

(b) Inexcusable Delay: Contractor Responsibility – Contractor must not receive time extension.

(c) Compensable Delay: Government Responsibility – Contractor may receive compensable time extension.

(2) If a combination of delay types occurs, it is considered Concurrent Delay, which is defined in the following combinations:

(a) Excusable Delay and Compensable Delay results in Excusable Delay

(b) Excusable Delay and Inexcusable Delay results in Inexcusable Delay

(c) Compensable Delay and Inexcusable Delay results in Excusable Delay

d. Submit Data disks containing the narrative and native schedule files.

e. Unless the Contracting Officer requests otherwise, only add conformed contract modifications into the Project NAS.

1.8.1 No Reservation of Rights

All direct costs, indirect cost, and time extensions must be negotiated and made full, equitable and final at the time of modification issuance.

1.9 FLOAT

Project Float is the length of time between the Contractor's Projected Finish Milestone and the Contract Completion Date Milestone. Project Float available in the schedule, at any time must not be for the exclusive use of either the Government or the Contractor.

The use of Resource Leveling or other techniques used for the purpose of artificially adjusting activity durations to consume float and influence critical path is prohibited.

1.10 THREE-WEEK LOOK AHEAD SCHEDULE

The Contractor must prepare and issue a 3-Week Look Ahead schedule to provide a more detailed day-to-day plan of upcoming work identified on the Project Network Analysis Schedule. The work plans must be keyed to NAS activity numbers and updated each week to show the planned work for the current and following two-week period. Additionally, include upcoming outages, closures, preparatory meetings, and initial meetings. Identify critical path activities on the Three-Week Look Ahead Schedule. The detail work plans are to be bar chart type schedules, maintained separately from the Project NAS on an electronic spreadsheet program and printed on 8-1/2 by 11 sheets as directed by the Contracting Officer. Activities must not exceed 5 working days in duration and have sufficient level of detail to assign crews, tools and equipment required to complete the work. Three hard copies and one electronic file of the 3-Week Look Ahead Schedule must be delivered to the Contracting Officer no later than 8 a.m. each Monday and reviewed during the weekly CQC Coordination and/or Production Meeting.

1.11 CORRESPONDENCE AND TEST REPORTS

All correspondence (e.g., letters, Requests for Information (RFIs), e-mails, meeting minute items, Production and QC Daily Reports, material delivery tickets, photographs) must reference Schedule activity IDs that are being addressed. All test reports (e.g., concrete, soil compaction, weld, pressure) must reference schedule activity IDs that are being addressed.

1.12 ADDITIONAL SCHEDULING REQUIREMENTS

Any references to additional scheduling requirements, including systems to be inspected, tested and commissioned, that are located throughout the remainder of the Contract Documents, are subject to all requirement of this section.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 33 00.05 20

CONSTRUCTION SUBMITTAL PROCEDURES
05/14

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

This section covers construction submittals that are not included in the design submittals. Submit design submittals in accordance with 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES. When using Unified Facility Guide Specifications (UFGS) sections that reference Section 01 33 00 SUBMITTAL PROCEDURES, change reference to this section, Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES.

1.2 SUBMITTAL DESCRIPTIONS (SD)

Submittal requirements are specified in UFGS in Part 2, GENERAL REQUIREMENTS; in references in Part 4 PERFORMANCE TECHNICAL SPECIFICATIONS; and in UFGSs in Part 5, PRESCRIPTIVE SPECIFICATIONS. Submittals that are identified by SD numbers use descriptions of items included in submittal packages and titles as follow:

SD-01 Preconstruction Submittals

Certificates of insurance.
Surety bonds.
List of proposed subcontractors.
List of proposed products.
Construction Progress Schedule.
Network Analysis Schedule (NAS)
Submittal register.
Schedule of prices or earned value report.
Health and safety plan.
Work plan.
Quality control and Commissioning plans.
Environmental protection plan.

SD-02 Shop Drawings

Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.

Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and

other characteristics of materials or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

Manufacturer's data certifying and demonstrating that specific product, process, and/or conditions complies with applicable Guiding Principle GP) or Third Party Certification (TPC) criteria.

SD-04 Samples

Physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged.

Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.

Field samples and mock-ups constructed on the project site establish standards by which the ensuing work can be judged. Includes assemblies or portions of assemblies which are to be incorporated into the project and those which will be removed at conclusion of the work.

SD-05 Design Data

Calculations, mix designs, analyses or other data pertaining to a part of work.

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)

Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports.

Daily checklists.

Final acceptance test and operational test procedure.

SD-07 Certificates

Statements signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets

specification requirements. Must be dated after award of project contract and clearly name the project.

Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.

Confined space entry permits.

Text of posted operating instructions.

SD-08 Manufacturer's Instructions

Preprinted material describing installation of a product, system or material, including special notices and Material Safety Data sheets concerning impedances, hazards and safety precautions.

SD-09 Manufacturer's Field Reports

Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

Factory test reports.

SD-10 Operation and Maintenance Data

Data that is furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel. This data is needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

Special requirements necessary to properly close out a construction contract. For example, Record Drawings, As-built drawings, DD Form 1354, Guiding Principles Validation or Sustainability Third Party Certification (TPC), Sustainability Notebook (including all of components) and eOMSI submittals. Also, submittal requirements necessary to properly close out a major phase of construction on a multi-phase contract.

1.3 SUBMITTALS

The use of a "G" following a submittal indicates that an approval action is required, either by the Government or by the Contractor's Designer of Record (DOR) or QC Specialist.

The use of an "S" following a submittal indicates separate but simultaneous submittal is required as part of federally mandated sustainability requirements. Refer to Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD for "S" submittal requirements.

Submit the following in accordance with the requirements of this section.

SD-01 Preconstruction Submittals

Submittal Register Format; G

1.3.1 Submittal Register

The submittal register must be prepared during the initial design stages of the project and indicate each design and construction submittal. Maintain an electronic version of the submittal register as work progresses. The DOR must assist the DQC in preparing the submittal register by determining all project submittals that require DOR approval. The Contractor proposed submittal register format must include all types of information pertinent to the submittal process and be approved by the Contracting Officer prior to the first submission.

1.4 CONSTRUCTION QUALITY CONTROL

1.4.1 Contractor Reviewing, Certifying, Approving Authority

The QC organization is responsible for reviewing and certifying that submittals are in compliance with the contract requirements.

In RFP PART 4 PERFORMANCE TECHNICAL SPECIFICATIONS (PTS), there are UFGS specification sections required to be submitted as part of the design submittal. Unless specified otherwise in this section, the Contractor's DOR is the approving authority for submittals listed in these specifications with a "G" designation, unless the DOR delegates to Contractor Quality Control approval. RFP Part 4 PTS sections also include submittals identified for DOR approval that are not denoted with a "G" designation, these submittals cannot be delegated for Contractor Quality Control approval.

If RFP PART 5 PRESCRIPTIVE SPECIFICATIONS are utilized in this RFP, the Contractor's DOR is the approving authority for submittals listed with a "G" designation, unless the DOR delegates to Contractor Quality Control approval.

DOR must approve construction submittals that are incorporated in the design submittal prior to being submitted to the Government for design submittal approval. Indicate approval of these construction submittals on the accompanying submittal transmittal forms and the submittal register for each design submittal package. In addition, the DOR professional stamp on the final design submittal indicates approval of construction submittals combined with the design submittal.

Submittal items identified in RFP PARTS 2, 4, and 5 that are not identified with a "G" designation or not designated for DOR approval (in RFP Part 4) are for Contractor Quality Control approval.

Construction submittals that are approved by the DOR or certified by the QC are not required to be submitted to the Government for surveillance, except when the RFP requires the design and construction submittals to be combined in UFGS section 01 33 10.05 20, DESIGN SUBMITTAL PROCEDURES or where specified in paragraph SUBMITTALS RESERVED FOR GOVERNMENT SURVEILLANCE of

this section.

In addition to other approvals that may be required, provide review and approval of Guiding Principles Validation and TPC Submittals by Design-Build team's Sustainability or TPC Professional. Provide this approval prior to including in any Government-reviewed submittal.

1.4.2 Submittals Reserved for Government Surveillance

Surveillance submittals are approved by the Contractor in accordance with paragraph CONTRACTOR REVIEWING, CERTIFYING, AND APPROVING AUTHORITY, but provide the Government the opportunity to oversee critical project issues.

If during the Government surveillance of construction submittals, items are brought to the Contractor's attention as non-compliant, the Contractor must correct the submittal and construction to comply with the requirements of the RFP. Stamp surveillance submittals "APPROVED" by the DOR or QC Specialist and "FOR SURVEILLANCE ONLY." Submit the following Government surveillance submittals, prior to starting work for construction submittal items, and after the completion of the work for reports submittals items.

a. Submit fire protection related submittals pertaining to spray-applied fire proofing and fire stopping, exterior fire alarm reporting systems, interior fire alarm & detection systems, and fire suppression systems including fire pumps and standpipe systems.

b. Submit geotechnical related submittals pertaining to the soils investigations (reports and soils analysis), foundations (shallow and deep), pavements structure design, test pile and production pile testing and installation.

c. Submit conveying related submittals pertaining to elevators, escalators, weight handling equipment, lifts, and conveyors.

d. Submit roofing submittals pertaining to materials and systems used to make up the roof system.

e. Submit HVAC Testing, Adjusting, and Balancing required submittals.

f. Submit telecommunications shop drawings, as described in Part 4, D50 ELECTRICAL, for coordination with the NMCI Contractor.

g. Submit Performance Verification and Acceptance Testing submittals listed in the PTS and referenced UFGS.

h. Submit all Interim Special Inspection Reports on a bi-weekly basis until work requiring special inspections is complete.

i. Submit all Structural Observation Reports and the Final Report of Special Inspections.

j. Submit Final Guiding Principle Validation and TPC sustainability documentation.

k. Submit the exterior enclosure barrier drawings.

l. Submit building enclosure testing results for air tightness and the infrared thermography results if air barrier deficiencies are identified. Describe actions taken to correct building enclosure deficiencies at each location.

1.4.3 Submittals Reserved for Government Approval

The Government is the approving authority for submittals with a "G" designation in RFP Part 2 GENERAL REQUIREMENTS specification sections. Comply with additional Government approval requirements for Environmental submittals, as specified in RFP Part 2, Section 01 57 19.00 20 TEMPORARY ENVIRONMENTAL CONTROLS FOR DESIGN-BUILD and 01 57 19.01 20, SUPPLEMENTAL TEMPORARY ENVIRONMENTAL CONTROLS.

In addition to the Government approvals required by RFP Part 2, GENERAL REQUIREMENTS, the following submittals must be certified by the QC Manager and the DOR, and approved by the Contracting Officer.

a. Transformers
b. Medium Voltage Switchgear
c. Medium Voltage Cable
d. Automatic Transfer Switches
e. Fire Protection
f. HVAC
g. Architectural Finishes (Colors, Floor Tiles, Roof Tiles, Doors, Windows, and etc.)

1.4.3.1 Scheduling for Government Approved Submittals

Except as specified otherwise, allow review period, beginning when Government receives submittal from the QC organization, of 20 working days for return of submittal to the Contractor. Period of review for submittals with Contracting Officer approval begins when Government receives submittal from QC organization. Period of review for each resubmittal is the same as for initial submittal.

1.4.4 Constraints

a. Submittals must be complete for each definable feature of work; submit components of definable feature interrelated as a system at the same time.

b. Approval of a separate material, product, or component does not imply approval of assembly in which item functions.

1.4.5 Design Change and Variation

The Contractor must limit change and variation to items that will be advantageous to the Government. Submit proof that the change or variation is needed and provide the same or better level of quality as the design that the Government originally reviewed or approved. Design change is considered prior to Government approval of the final design and variation is considered after Government approval of final design.

1.4.5.1 Design Changes

Design changes must meet the minimum requirements of the solicitation and the accepted proposal. Any changes to the design from what was previously reviewed by the Government during any phase of the design process prior to Government approval of the Final Design must be approved by the DOR and Government before the design change may be incorporated into the design documents. Design changes must be requested in accordance with Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES.

1.4.5.2 Variations

Variations from contract requirements including the solicitation, the accepted proposal, and the final design, require Government approval. Variations must be approved by the DOR prior to submitting written request to the Government for approval.

a. Considering Variations

Discuss the proposed variation with the Contracting Officer after consulting with the DOR prior to submission to help ensure functional and quality requirements are met and minimize potential rejections and re-submittals. When contemplating a variation which results in lower cost, consider submitting the variation as a Value Engineering Change Proposal (VECP) in accordance with FAR 52.248-3. Specifically point out variations from contract requirements in transmittal letters as applicable. Failure to receive prior Government approval for deviations may result in the Government requiring rejection and removal of such work at no additional cost to the Government.

b. Submitting Variations

When submitting a variation, deliver the written request to the Contracting Officer in the form of a Request for Information (RFI) to include documentation illustrating the nature and features of the variation including any necessary technical submittals and why the variation is desirable and beneficial to Government. Request must also include any savings to the government and documented approval from the DOR.

The Contracting Officer will indicate an approval or disapproval of the variation request; and if not approved as submitted, must indicate the Government's reasons therefor. Any work done before such approval is received is performed at the Contractor's risk.

c. Warranting Variations Are Compatible

When proposing a variation for approval, the Contractor, including its Designer(s) of Record, warrants that the contract documents have been reviewed to establish that the variation, if incorporated, will be compatible with the design intent and operational requirements.

1.4.6 Contractor's Responsibilities

Ensure no work has begun until submittals for that work have been "approved" or "approved as noted."

1.4.7 QC Organization Responsibilities

Stamp each sheet of each submittal with QC certifying statement or approving statement, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.

a. When approving authority is Contracting Officer, QC organization will certify submittals, assure proper signatures, and forward to Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with contract Number (insert contract number here), is in compliance with the contract documents, can be installed in the allocated spaces, and is submitted for Government approval.

RFP Part Two Submittals:

Certified by QC Manager _____, Date _____
(QC Manager)

RFP Part Four and Part Five Submittals:

Certified by DOR _____, Date _____

Certified by QC Manager _____, Date _____"

(1) Sign certifying statement or approval statement. The person signing certifying statements must be QC organization member designated in the approved QC plan. The signatures must be in original ink. Stamped signatures are not acceptable.

(2) Update submittal register database as submittal actions occur and maintain the submittal register at project site until final acceptance of all work by Contracting Officer.

(3) Retain a copy of approved submittals at project site, including Contractor's copy of approved samples.

b. When the Approving Authority is the Designer of Record, the DOR must approve, professionally stamp, sign, and date submittals. DOR stamp on construction submittals or submission of design documents that include construction submittals indicates DOR approval for construction. QC organization will certify submittals, assure proper signatures, and forward to Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with contract Number (N40192-15-------), is in compliance with the contract requirements, can be installed in the allocated spaces, and is submitted for DOR approval.

RFP Part Four and Part Five Submittals:

Approved by DOR _____, Date _____

Certified by QC Manager _____, Date _____"

(1) Sign certifying statement or approval statement. The person signing

certifying statements must be QC organization member designated in the approved QC plan. The signatures must be in original ink. Stamped signatures are not acceptable.

(2) Update submittal register database as submittal actions occur and maintain the submittal register at project site until final acceptance of all work by Contracting Officer.

(3) Send copies of final DOR or QC Specialist approved and signed submittals that are identified in this section for Government surveillance to the Contracting Officer. Stamp copies "For Surveillance Only."

1.4.8 Government's Responsibilities

When approving authority is the Contracting Officer, the Government will:

a. Note date on which submittal was received from QC Manager, on each submittal.

b. Review submittals for compliance with contract documents.

1.4.8.1 Government Actions

Submittals will be returned with one of the following notations:

a. Submittals marked "approved" or "approved as submitted" authorize Contractor to proceed with work covered.

b. A submittal marked "not reviewed" will be returned with an explanation of the reason it was not reviewed.

c. Submittals marked "approved as noted" or "approval except as noted; resubmission not required" authorize Contractor to proceed with work as noted provided Contractor takes no exception to the notations.

d. Submittals marked "revise and resubmit" or "disapproved" indicate submittal is incomplete or does not comply with design concept or requirements of the contract documents and must be resubmitted with appropriate changes. No work is allowed to proceed for this item until resubmittal is approved.

e. Submittals required for surveillance will be returned only if corrective actions are required.

1.5 FORMAT OF SUBMITTALS

1.5.1 Transmittal Form

Transmit submittals with transmittal form prescribed by Contracting Officer and standard for the project.

1.5.1.1 Combined Design and Construction Submittal Notification

Indicate on the design submissions transmittal form, which construction submittals have been combined with the design documents. Coordinate

transmittal form list of combined design and construction submittals with submittal register to indicate DOR approval of all combined submittals.

1.5.1.2 Sustainable Design and Construction Submittals

On all projects, provide sustainability submittals in accordance with requirements of this document, specification Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD and FC 1-300-09N, "Navy and Marine Corps Design Procedures". Specific submittal requirements are also identified in technical sections of the specifications. Separate out data demonstrating compliance with construction sustainability requirements and submit separately but concurrently.

1.5.2 Identifying Submittals

When submittals are provided by a Subcontractor, the Prime Contractor is to prepare, review and stamp with Contractor's approval all specified submittals prior to submitting for Government approval.

Identify submittals, except sample installations and sample panels, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

a. Project title and location.

b. Construction contract number.

c. Date of the drawings and revisions.

d. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other subcontractor associated with the submittal.

e. Section number of the specification section by which submittal is required.

f. Submittal description (SD) number of each component of submittal.

g. When a resubmission, add alphabetic suffix on submittal description, for example, submittal 18 would become 18A, to indicate resubmission.

h. Product identification and location in project.

1.5.3 Format for SD- 02 Shop Drawings

Shop drawings are not to be less than 8 1/2 by 11 inches or more than 30 by 42 inches, except for full size patterns or templates. Prepare drawings to accurate size, with scale indicated, unless other form is required. Drawings are to be suitable for reproduction and be of a quality to produce clear, distinct lines and letters with dark lines on a white background.

Present 8 1/2 by 11 inches sized shop drawings as part of the bound volume for submittals required by section. Present larger drawings in sets.

Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph IDENTIFYING SUBMITTALS of this section.

Number drawings in a logical sequence. Each drawing is to bear the number of the submittal in a uniform location adjacent to the title block. Place the Government contract number in the margin, immediately below the title block, for each drawing.

Reserve a blank space on the right hand side of each sheet for the Government disposition stamp.

Dimension drawings, except diagrams and schematic drawings; prepare drawings demonstrating interface with other trades to scale. Use the same unit of measure for shop drawings as indicated on the contract drawings. Identify materials and products for work shown.

Include the nameplate data, size and capacity on drawings. Also include applicable federal, military, industry and technical society publication references.

1.5.4 Format of SD - 03 Product Data and SD - 08 Manufacturer's Instructions

Present product data submittals for each section as a complete bound volume. Include table of contents, listing page and catalog item numbers for product data.

Indicate, by prominent notation, each product which is being submitted; indicate specification section number and paragraph number to which it pertains.

Supplement product data with material prepared for project to satisfy submittal requirements for which product data does not exist. Identify this material as developed specifically for project, with information and format as required for submission of SD-07 Certificates.

Provide product data in metric dimensions. Where product data are included in preprinted catalogs with English units only, submit metric dimensions on separate sheet.

Include the manufacturer's name, trade name, place of manufacture, and catalog model or number on product data. Also include applicable federal, military, industry and technical society publication references. Should manufacturer's data require supplemental information for clarification, submit as specified for SD-07 Certificates.

Where equipment or materials are specified to conform to industry and technical society reference standards of the organizations such as American National Standards Institute (ANSI), ASTM International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), and Association of Edison Illuminating Companies (AEIC) submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Contracting Officer. State on the

certificate that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

Collect required data submittals for each specific material, product, unit of work, or system into a single submittal and marked for choices, options, and portions applicable to the submittal. Mark each copy of the product data identically. Partial submittals will [not] be accepted for expedition of construction effort.

Submit manufacturer's instructions prior to installation.

1.5.5 Format of SD - 04 Samples

Furnish samples in sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately same size as specified:

a. Sample of Equipment or Device: Full size.

b. Sample of Materials Less than 50 by 75 mm (2 by 3 inches): Built up to 210 by 297 mm (8 1/2 by 11 inches).

c. Sample of Materials Exceeding 210 by 297 mm (8 1/2 by 11 inches): Cut down to 210 by 297 mm (8 1/2 by 11 inches) and adequate to indicate color, texture, and material variations.

d. Sample of Linear Devices or Materials: 250 mm (10 inch) length or length to be supplied, if less than 250 mm (10 inches). Examples of linear devices or materials are conduit and handrails.

e. Sample of Non-Solid Materials: 750 ml (1.6 pints). Examples of non-solid materials are sand and paint.

f. Color Selection Samples: 50 by 100 mm (2 by 4 inches). Where samples are specified for selection of color, finish, pattern, or texture, submit the full set of available choices for the material or product specified. Sizes and quantities of samples are to represent their respective standard unit.

g. Sample Panel: 1200 by 1200 mm (4 by 4 feet).

h. Sample Installation: 10 square meters (100 square feet).

Samples Showing Range of Variation: Where variations in color, finish, pattern, or texture are unavoidable due to nature of the materials, submit sets of samples of not less than three units showing extremes and middle of range. Mark each unit to describe its relation to the range of the variation.

Reusable Samples: Incorporate returned samples into work only if so specified or indicated. Incorporated samples are to be in undamaged condition at time of use. Recording of Sample Installation: Note and preserve the notation of area constituting sample installation but remove notation at final clean-up of project.

When color, texture or pattern is specified by naming a particular manufacturer and style, include one sample of that manufacturer and style, for comparison.

1.5.6 Format of SD - 05 Design Data and SD - 07 Certificates

Provide design data and certificates on 210 by 297 mm (8 1/2 by 11 inches) paper. Provide a bound volume for submittals containing numerous pages.

1.5.7 Format of SD-06 Test Reports and SD - 09 Manufacturer's Field Reports

Provide reports on 210 by 297 mm (8 1/2 by 11 inches) paper in a complete bound volume. Indicate by prominent notation, each report in the submittal. Indicate specification number and paragraph number to which it pertains.

1.5.8 Format of SD - 10 Operation and Maintenance Data (O&M)

Comply with the requirements specified in Section 01 78 23 OPERATION AND MAINTENANCE DATA for O&M Data format.

1.5.9 Format of SD - 01 Preconstruction Submittals and SD - 11 Closeout Submittals

When submittal includes a document which is to be used in project or become part of project record, other than as a submittal, do not apply Contractor's approval stamp to document, but to a separate sheet accompanying document.

Provide all dimensions in administrative submittals in English and Metric. Where data are included in preprinted material with English units only, submit metric dimensions on separate sheet.

1.6 QUANTITY OF SUBMITTALS

1.6.1 Quantity of Submittals Reserved for Government Approval

Submit four paper copies and one electronic copy of submittals of shop drawings requiring review and approval by Contracting Officer.

1.6.2 Quantity of Submittals Reserved for Government Surveillance

Submit three copies of submittals specified for surveillance to the Contracting Officer. Submit two additional copies of elevator submittals directly to the NAVFAC Elevator Specialist responsible for the NAVFAC elevator certification of the project.

1.6.3 Electronic Submittals

Where practicable, in lieu of hard copy copies, construction submittals may be transmitted electronically with approval from the Contracting Officer.

1.7 FORWARDING SUBMITTALS

1.7.1 Overseas Shop Drawing Submittals

All submittals must be sent via overnight express mail service. All costs

associated with the overnight express mail service must be borne by the Contractor. Costs associated with the overnight express mail of submittals related to proposed submittal variances of resubmittals necessary as a result of noncompliant or incomplete contractor submittals must be the responsibility of the Contractor.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 33 10.05 20

DESIGN SUBMITTAL PROCEDURES
09/15

PART 1 GENERAL

1.1 SUMMARY

This section includes requirements for Contractor-originated design documents and design submittals.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. The latest version of the publication at time of award must be used.

U.S. DEPARTMENT OF DEFENSE (DOD)

UFC 1-200-01	(2013) General Building Requirements
UFC 1-300-08	(2009, with Change 2) Criteria for Transfer and Acceptance of DoD Real Property
FC 1-300-09N	(2014) Navy and Marine Corps Design Procedures

1.3 UFC 1-200-02

UFC 1-200-01 requires compliance with UFC 1-200-02, "High Performance and Sustainable Building Requirements". UFC 1-200-02 replaces and cancels UFC 4-030-01, Sustainable Development and UFC 3-400-01, Energy Conservation.

1.4 UFC 3-600-10N and UFC 3-800-10N

UFC 3-600-10N and UFC 3-800-10N are only available on the NAVFAC Design-Build Website under the Design Guidance link: http://www.wbdg.org/ndbm/design_guidance.php. These Draft UFCs are applicable as final documents for Navy projects.

1.5 GENERAL DESIGN REQUIREMENTS

Contractor-originated design documents must provide a project design that complies with the Request For Proposal (RFP), FC 1-300-09N, UFC 1-200-01, the Core UFCs, and other UFC's listed above.

1.6 SUBMITTALS

Submit design submittals, including shop drawings used as design drawings, to the Government for approval. The use of a "G" following a submittal

indicates that a Government approval action is required. Submit the following in accordance with this section and Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES.

Submittals with an "S" are for inclusion in the Sustainability Notebook in conformance to Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD for "S" submittal requirements. Submit the following in accordance with this section and Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES.

SD-01 Preconstruction Submittals

Consolidated RFP Documents; G

Submittal Register; G

SD-04 Samples

Final framed rendering and copies; G

SD-05 Design Data

Design Drawings; G

Specifications; G

Basis of Design; G

Design Submittals; G

Sustainability Notebook; G

Project Rendering; G

BIM Project Execution Plan (PxP); G

Design Model; G

Visual Review Report; G

Clash Detection Report; G

Facility Recognition Plaque; G

Historic Preservation and Planning Commission Submission; G

SD-11 Closeout Submittals

Record Documents; G

Final Sustainability Notebook; G

Final Record Model; G

DD Form 1354; G

1.7 DESIGN QUALITY CONTROL

1.7.1 Contractor Reviewing and Certifying Authority

The QC organization is responsible for reviewing and certifying that design submittals are in compliance with the contract requirements.

1.7.2 Government Approving Authority

The Contracting Officer is the approving authority for design submittals.

1.7.3 Designer of Record Certifying Authority

The Designer of Record (DOR), as registered and defined in FC 1-300-09N, is the design certifying authority. The DOR accepts responsibility for design of work in each respective design discipline, by stamping and approving final construction drawings submitted to the Government approval authority.

1.7.4 Contractor Construction Actions

Upon submission of sealed and signed design documents certified by the DOR, Design Quality Control (DQC) Manager and the Quality Control (QC) Managers, the Contractor may proceed with material and equipment purchases, fabrication and construction of any elements covered by that submittal, except as specified in the following paragraph.

1.7.4.1 Exception to Contractor Construction Actions

The Government will approve the following final submittals before the Contractor is allowed to proceed with construction:

a. Any design submittal (Final Design Drawings, Basis of Design and etc.) that includes or will not be impacted by a design change to the contract. Final Government approval of the design change is required before construction can begin on the work included in that design submittal.

b. Final Specifications.

1.7.5 Contractor's Responsibilities

a. Designate a lead licensed architect or engineer to be in responsible charge to coordinate the design effort of the entire project. This lead architect or engineer must coordinate all design segments of the project to assure consistency of design between design disciplines.

b. With the Designer of Record, verify site information provided in the RFP. In addition, provide additional field investigations and verification of existing site conditions as may be required to support the development of design and construction of the project.

c. Indicate on the transmittal form accompanying submittal which design submittals are being submitted as shop drawings.

d. Advise Contracting Officer of variations, as required by paragraph VARIATIONS.

e. Provide an updated, cumulative SUBMITTAL REGISTER with each design package that identifies the design and construction submittals required by that design package and previous submittals. The DOR must assist in developing the submittal register by determining which submittal items are required to be approved by the DOR. To obtain Government approval of the final design package, complete all fields in the submittal register.

f. Refer to Section 01 33 29.05 20, SUSTAINABILITY REPORTING FOR DESIGN-BUILD for Contractor's responsibilities for Guiding Principle Validation and Third Party Certification.

g. Refer to Section 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI) for Contractor's eOMSI responsibilities.

1.7.6 QC Organization Responsibilities

a. Both the CA and the QC Manager must certify design submittals for compliance with the contract documents. The DOR stamp on drawings indicates approval from the DOR.

b. QC organization must certify submittals forwarded by the Designer of Record (DOR) to the Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with Contract Number (insert contract number here), is in compliance with the contract documents, and is submitted for Government approval.

Certified by Design Quality Control (DQC) Manager
_____,
Date _____

Certified by QC Manager_____,
Date _____"

c. Sign certifying statement. The persons signing certifying statements must be the QC organization members designated in the approved QC plan. The signatures must be in original ink. Stamped signatures are not acceptable.

d. Update submittal register as submittal actions occur and maintain the submittal register at project site until final approval of all work by Contracting Officer.

e. Retain a copy of approved submittals at project site.

1.7.7 Government Responsibilities

The Government will:

a. Note date on which submittal was received from QC manager, on each submittal.

b. Perform a quality assurance (QA) review of submittals. Government will notify Contractor when comments for that design package are posted and ready for Contractor evaluation and resolution.

c. Upon submittal of final design package and resolution of comments by the Contractor, the Government will sign final design package, when approved, and return electronic copy of signed design documents to the Contractor.

1.7.7.1 Actions Possible

Submittals will be returned with one of the following notations:

a. Submittals may be marked "approved."

b. Submittals marked "not reviewed" indicate submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and certified by Contractor, or is not complete. Submittal will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by Contractor or for being incomplete, with appropriate action, coordination, or change.

c. Submittals marked "revise and resubmit" or "disapproved" indicate submittal is incomplete or does not comply with design concept or requirements of the contract documents and must be resubmitted with appropriate changes. If work has been started on the unacceptable portion of the design submittal, the Contractor must propose corrective action. No further work is allowed to proceed until the issue is resolved in a manner satisfactory to the Government.

1.8 DESIGN DOCUMENTS

Provide design documents that include basis of design, design drawings, and design specifications, reports, and submittal register in accordance with FC 1-300-09N, navy and Marine Corps Design Procedures.

The Contractor is encouraged to make product, material, and system selections during the project design and indicate these choices on the design documents. Accomplish this by submitting design drawings and specifications that include proprietary submittal information such as manufacturers name, product names, model numbers, product data, manufactures information, provided optional features, appropriate connections, fabrication, layout, and product specific drawings. Adherence to RFP submittal requirements and provision of DOR approved construction submittal information on the design submittals - eliminates the need for follow-on traditional construction submittals after the final design is approved.

Refer to 01 33 00.05 20, CONSTRUCTION SUBMITTAL PROCEDURES for requirements pertaining to Contractor proposed design changes or variations.

1.9 DESIGN DRAWINGS

Prepare, organize, and present design drawings in accordance with the

requirements of FC 1-300-09N, Navy and Marine Corps Design Procedures. Submit all CADD files for the final drawings on CD-ROM disks in AutoCAD 2010 format. Drawing files must be full files, editable, uncompressed and unzipped.

1.9.1 Design Drawings Used as Shop Drawings

Design drawings may be prepared more like shop drawings to minimize construction submittals after final design is approved. If the Contractor chooses or is required to include the construction submittal information on the design documents, indicate proprietary information on the design drawings as necessary to describe the products, materials, or systems that are to be used on the project. Construction submittal information included directly in the design drawings must be approved by the DOR. All design documents must be professionally signed in accordance with FC 1-300-09N, Navy and Marine Corps Design Procedures.

1.9.2 Drawing Format For Design Drawings Used as Shop Drawings

The Contractor-originated drawings will be used as the basis for the record drawings. Shop drawings included as design documents must comply with the same drawing requirements such as drawing form, sheet size, layering, lettering, and title block used in design drawings.

1.9.3 Identification of Design Drawings Used as Shop Drawings

The Contractor's transmittal letter and submittal register must indicate which design drawings are being submitted as shop drawings.

1.9.4 Naval Facilities (NAVFAC) Engineering Command Drawing Numbers

Number the final Contractor-originated design drawings consecutively with NAVFAC drawing numbers. Determine the total number of sheets required for the complete set of drawings before requesting the NAVFAC drawing numbers from the Contracting Officer.

1.9.5 Seals and Signatures on Documents

All final Contractor-originated design drawings must be signed, dated, and bear the seal of the registered architect or the registered engineer of the respective discipline in accordance with FC 1-300-09N. This seal must be the seal of the Designer of Record for that drawing, and who is professionally registered for work in that discipline. A principal or authorized licensed or certified employee must electronically sign and date final drawings and cover sheet, in accordance with FC 1-300-09N. The design drawing coversheets must be sealed and signed by the lead licensed architect or engineer of the project design team. Indicate the Contractor's company name and address on the drawing coversheets of each design submittal. Application of the electronic seal and signature accepts responsibility for the work shown thereon.

1.9.6 Units of Measure

Utilize metric units of measure on the design documents unless otherwise directed and authorized by the Government with proper documentation and justification the use of English Inch Pound units of measure.

1.10 BUILDING INFORMATION MANAGEMENT/MODELING (BIM)

Include BIM submittals as required by and complying with FC 1-300-09N:

a. BIM Project Execution Plan (PxP)

b. Design Model

c. Visual Review Report

d. Clash Detection Report

e. Record Model (With Record Documents)

1.11 SPECIFICATIONS

Provide a Contractor-originated design specification that in conjunction with the drawings, demonstrates compliance with requirements of the RFP. The specified products, materials, systems, and equipment that are approved by the DOR; submitted to the Government by the Contractor; and reviewed by the Contracting Officer must be used to construct the project. UFGS sections contained in RFP Part 2 become a part of the Contractor-originated Division 01 specification without modification. Specification Sections contained in RFP Part 5 become a part of the Contractor-originated specification without modification.

1.11.1 Specifications Components and Format

The Contractor must prepare design specifications that include a UFGS specification for each product, material, or system on the project. If the Contractor chooses or is required above to combine design and construction submittal information on the design documents, provide a UFGS specification and also proprietary information such as catalog cuts and manufacturers data that demonstrates compliance with the RFP. Organize the specifications using Construction Specification Institute (CSI) Masterformat™ unless the Contracting Officer requires a Uniformat organization. Navy's use of system specifications takes precedence over CSI Masterformat component breakdown and related component specifications. Provide project specifications to include the following:

a. Provide the specification cover sheet with the professional seal and signature of the lead licensed architect or engineer of the project design team. Indicate the Contractor's company name and address on the specification coversheet.

b. Table of contents for entire specification.

c. Individual UFGS specification sections for each product, material, and system required by the RFP. Edit UFGS sections in accordance with RFP Part 4, PTS Section Z-10, Design Submittals.

d. If proprietary information is provided or required, include a coversheets for the product, material, or system information that is being proprietarily specified. This information is to follow the

related UFGS specification.

e. If proprietary information is provided or required, include highlighted and annotated Catalog Cuts, Manufacturer's Product Data, Tests, Certificates, Manufactures information and letters for each product, material, or system that is being proprietary specified.

f. Coordinated submittal register for all products, materials and systems with each design submittal. Provide a cumulative register that identifies the design and construction submittals required by each design package along with previous design submittals. The DOR must assist in developing the submittal register by determining which submittal items are required to be approved by the DOR. Complete all fields in the final submittal register in order to obtain Government approval of the final design. Submittal register to include separate but simultaneous delivery and approval of design or data required to fulfill sustainability requirements by Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD.

1.11.2 Specifications Section Source Priority

Choose UFGS sections that describe the products, materials, and systems that are used on the project. Use current UFGS sections that are available on the Whole Building Design Guide website and give priority to the Unified Tri-Service UFGS sections (no spec number suffix) and UFGS that are prepared by NAVFAC (.00 20 suffix). Only use a UFGS section prepared by another DoD Component (.00 10, and .00 30 suffix), if an applicable NAVFAC prepared specification section does not exist. Do not use Army (.00 10 suffix) and NASA (.00 40 suffix) electrical and mechanical specifications. If no applicable UFGS technical specification exists to meet your project requirements, consult with the NAVFAC Component for guidance and create a new UFGS specification in accordance with UFC 1-300-02, Unified Facilities Guide Specifications (UFGS) Format Standard.

1.11.3 Fire Protection Specifications

Specifications pertaining to spray-applied fire proofing and fire stopping, exterior fire alarm reporting systems, interior fire alarm and detection systems, and fire suppression systems, including fire pumps and standpipe systems must be either prepared by, or reviewed and approved by the Fire Protection DOR.

1.11.4 Identification of Manufacturer's Product Data Used with Specifications.

Provide complete and legible catalog cut sheets, product data, installation instructions, operation and maintenance instructions, warranty, and certifications for products and equipment for which final material and equipment choices have been made. Indicate, by prominent notation, each product that is being submitted including optional manufacturer's features, and indicate where the product data shows compliance with the RFP.

Coordinate with Section 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI) for Contractor's eOMSI responsibilities.

1.11.5 Specification Software

Submit the final specification source files in either MS Word or SpecsIntact.

1.12 DESIGN ANALYSIS

Prepare, organize, and present design analysis in accordance with the requirements of FC 1-300-09N. The design analysis must be a presentation of facts at the Concept Design Workshop to demonstrate the concept of the project is fully understood and the design is based on sound engineering principles. Provide design analyses for each discipline and include the following:

a. Basis of design that includes:

(1) An introductory description of the project concepts that addresses the salient points of the design;

(2) An orderly and comprehensive documentation of criteria and rationale for system selection; and

(3) The identification of any necessary licenses and permits that are anticipated to be required as a part of the design and/or construction process.

b. Code and criteria search must identify all applicable codes and criteria and highlight specific requirements within these codes and criteria for critical issues in the facility design.

c. Calculations as specified and as needed to support this design.

d. Sustainability Notebook: Analysis and calculations relative to sustainable design requirements. Refer to Section 01 33 29.05 20, SUSTAINABILITY REQUIREMENTS FOR DESIGN-BUILD and FC 1-300-09N for requirements.

e. Draft and Final NAVFAC Sustainable and Energy Data Record Card (NSEDRC) that documents the energy usage and sustainable features of the building. Refer to RECORD DOCUMENTS paragraphs in this section for requirements.

f. Provide an exterior enclosure vapor pressure analysis, hygrothermal analysis, and written/graphic descriptions for each unique wall and roof assembly used as part of exterior enclosure barriers.

g. Section titled "Antiterrorism" that documents the antiterrorism features.

h. Fall Protection Analysis

i. Draft and Interim DD Form 1354 that document the real property assets of the project. Refer to Record Documents paragraphs in this section for requirements.

j. eOMSI Facility Data Workbook (FDW)

k. BIM PxP

1.12.1 Basis of Design Format

The basis of design for each design discipline must include a cover page indicating the project title and locations, contract number, table of contents, tabbed separations for quick reference, and bound in separate volumes for each design discipline.

1.12.2 Design Calculations

Place the signature and seal of the designer responsible for the work on the cover page of the calculations for the respective design discipline.

1.12.4 Historic Preservation and Planning Commission Submission

Prepare the presentation materials required to obtain approval from the Historic Preservation and Planning Commissions having jurisdiction over the site location. The submission of the materials to the agencies will be accomplished by the Government. Consult with the NAVFAC Region Historic Preservation Officer and prepare a submittal in accordance with the 36 CFR 800.11, DOCUMENT STANDARDS. The Contractor is responsible for preparing the submittal package, presenting the project in public meeting, if called upon by the Government; and to modify the submittal and contract documents to incorporate the comments of the agencies having jurisdiction to obtain project approval.

1.12.5 Fall Protection Analysis

Eliminate fall hazards in the facility or if not feasible provide control measures to protect personnel conducting maintenance work after completion of the project. Identify fall hazards in the Basis of Design with the Design Development and Pre-final submittals. The analysis must describe how fall hazards are considered, eliminated, prevented or controlled to prevent maintenance personnel from exposure to fall hazards while performing work at heights. Refer to RFP Part 2, UFGS Section 01 35 26.05 20, *GOVERNMENT SAFETY REQUIREMENTS FOR DESIGN-BUILD* for fall hazard protection requirements.

1.13 PROJECT RENDERING

When required in the task order, provide a full color photo-realistic architectural rendering of the primary façade or facades of the facility. Depict the final, approved facility design and accurately illustrate the proposed final constructed facility including but not limited to, massing, fenestration pattern, material selections, colors, textures, landscaping, paving, and to the extent directed - the surrounding context.

Renderings created using traditional casein painted techniques or computer generated renderings are acceptable. Develop computer generated renderings using a current rendering engine suitable to produce photo-realistic images. Renderings created solely in BIM or CADD authoring software are not acceptable.

Renderings must include realistic advanced lighting characteristics (natural and/or synthetic) and true ambient lighting and shading characteristics. Provide images that are sharp in detail and resolution through proper anti-aliasing techniques. Material maps must be comprised of advanced techniques and practices to ensure materials are an exact representation of the facility product/finish selections.

1.13.1 Preliminary Rendering Planning

Provide planning PDF drawings of the facility to exhibit the proposed rendering appearance. Submit not less than 3 alternative views for review and approval to determine the most advantageous view. The Preliminary rendering submittal must display the following characteristics of the final rendering;

- Selection of primary façade(s)
- Point of view (aerial, eye-level, elevated, etc.)
- Close-up or wide angle
- Extent of surrounding context

Adjust view and resubmit if an alternative to the submitted views is required for the rendering planning approval. Submit rendering planning submittal during the Preliminary Design Submittal.

1.13.2 Pre-final Rendering

Submit two (2) hard copies of the pre-final rendering to indicate compliance with planning decisions, establish level of detail and rendering elements to be employed such as people, cars, and vegetation/trees. Indicate proposed colors, textures, foreground and background. Use processes and printing equipment that will be used on the final rendering. Submit Pre-final rendering submittal for approval with the Pre-final Design Submittal.

1.13.3 Final Rendering

Provide the final rendering submission that complies with the following requirements;

a. The rendering must be a full vignette and fully developed. Approximate finished size must be a minimum of 24 by 30 inches (610 by 760mm) with a 16 by 20 inches (406 by 508mm) minimum inside mat dimension. Provide reduced size rendering(s) with a minimum finished size of 10 by 12 inches (254 by 304mm) and a minimum 8 by 10 inches (203 by 254mm) inside mat dimension.

b. Provide final original color rendering, two (2) full size , and two (2) reduced size high resolution reproductions of the original rendering, and two (2) sets of the digital master images on DVD media. Original and reproductions must be mounted on acid free heavy illustration board and double-matted with complimentary colored, acid free mat boards. Frame rendering(s) with contemporary polished metal frames and single strength, non-glare glass. Print the Project name, location, Architect/Engineer firm's name on the matting. On the back of the

renderings and reproductions, indicated the project name, the location, the contract number, and the date of reproduction.

c. Match the exterior color scheme approved for the facility.

d. Provide photo-realistic quality rendering elements such as people, cars, vegetation/trees, etc.

e. Provide digitally reproductions of the rendering using a minimum 600 dpi resolution for print reproduction on 24 by 36 inch (609 by 914mm) stock with no loss of fidelity, quality or detail from the master image.

f. Provide each set of digital master images in both TIF and JPEG formats. Save JPEG images using the highest quality setting (minimum compression). Provide the following as a minimum;

   (1) One set including the unit insignia(s) for the tenant activity, the service insignia (Navy, Marine Corps, Army, or Air Force), the name of the facility, name of installation, and the names of the contractor and design professional.

   (2) One set including the image only, without any identifying information other than that which may be depicted as a part of the building signage within the rendering.

g. Submit the final rendering for approval 30 days after the Final Design Submittal approval. Ship the rendering, the digital copies and the digital files in resilient packaging to ensure damage free delivery. Deliver to;
Address provided by Contracting Officer.

1.14 Facility Recognition Plaque

When required in the task order, provide a facility recognition plaque for this facility in accordance with FC 1-300-09N, *Design Procedures*.

1.15 RECORD DOCUMENTS

1.15.1 Record Drawings

The as-built modifications must be accomplished by electronic drafting methods on the Contractor-originated .DWG design drawings to create a complete set of record drawings. In addition to the requirements of FAC 5252.236-9310, RECORD DRAWINGS, survey the horizontal and vertical location of all provided underground utilities to within 30 mm (0.1 feet) relative to the station datum. All pipe utilities must be surveyed at each fitting and every 30.5 m (100 LF) of run length. Electrical and communication ductbank, direct buried conduit, and direct buried conductor must be surveyed every 30.5 m (100 LF) and at each change of direction. Record locations and elevations on the Record Drawings.

a. For each record drawing, provide CADD drawing identical to signed Contractor-originated .PDF drawings that incorporate modifications to the as-built conditions. In addition, copy initials and dates from the Contracting Officer approved .PDF documents to the title block of the record CADD.DWG drawings. The RFP reference or definitive drawings are

not required for inclusion in the record set of drawings.

b. After all as-built conditions are recorded on the CADD.DWG files, produce a PDF and .TIF file of each individual record drawing in conformance with UFC 1-300-09N. Electronic signatures are not required on record drawings.

c. Provide a searchable electronic copy of the photo documentation if photos are used in the QC Daily Reports. Refer to UFGS 01 45 00.05 20, DESIGN AND CONSTRUCTION QUALITY CONTROL.

1.15.2 Source Documents

Provide the specifications, design analysis, reports, surveys, calculations, and any other contracted documents on the CD-ROM disk with the record drawings.

1.15.3 DD Form 1354

Prepare a Draft and Interim DD Form 1354, TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY, in accordance with UFC 1-300-08, available at http://www.wbdg.org/ccb/DOD/UFC/ufc_1_300_08.pdf . All assets must be broken out by construction categories that are found in the DD Form 1391 and the "Category Codes for Military Real Property" from NAVFAC P-72. Use Navy specific Facility Category Codes from the NAVFAC P-72, which are available from the Contracting Officer. Coordinate the identification of appropriate asset construction categories with the Contracting Officer and the Real Property Accounting Officer.

a. Draft DD Form 1354. DOR must determine applicable real property assets broken out by construction categories and submit a "Draft DD Form 1354" for Government approval as a part of the Design Analysis included with the Pre-final Design submittal. "Draft DD Form 1354" must include all quantities and units of measure, but does not require cost breakdown. Download the current blank editable DD Form 1354 in ADOBE (PDF) from the following web site: http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd1354.pdf

b. Interim DD Form 1354. Contractor must coordinate with the DOR and update the Draft DD Form 1354 submission to include any additional assets, improvements, or alterations that occurred during construction. Use the Draft DD Form 1354 and the UFGS Section 01 20 00.05 20, PRICE AND PAYMENT PROCEDURES to identify costs. Submit Interim DD Form 1354 to the Government for approval a minimum of 30 days prior to the Beneficial Occupancy Date (BOD). If modifications to the Interim DD Form 1354 are required by the Government, the corrected version must be submitted prior to the BOD.

Coordinate with Section 01 20 00.05 20, PRICE AND PAYMENT PROCEDURES for construction categories and associated category codes. The Contractor's Schedule of Prices must allocate the total cost of construction to the appropriate category codes.

When documenting demolition work, the DD Form 1354 must list the quantitative data associated with this work as a negative value to show the cost should be deleted from the Navy asset data store. Coordinate with the

Installation Real Property POC to assist in determining the negative value for demolition work.

PART 2 PRODUCTS

2.1 CONSOLIDATED RFP DOCUMENTS

Within four weeks after contract award, provide three electronic and hard copies of consolidated RFP documents incorporating the Contractor's Proposal and all RFP amendments and revisions that are contained in the contract award. Identify the changes to the RFP with the "Red-lining" or "Track Changes" feature of SpecsIntact or MS Word to highlight the pre-award modifications to the contract. Identify the amendment source at each addition and deletion by annotation, such as footnote or reference in parenthesis.

2.2 DESIGN SUBMITTALS

Complete the Contractor-originated design submittals as defined by this contract, and coordinate with the approved design network analysis schedule.

Refer to Section 01 33 29.05 20, SUSTAINABILITY REPORTING FOR DESIGN-BUILD for sustainable design submittals.

2.2.1 Design Submittal Packages

The Government prefers to review for Quality Assurance (QA) as few submittal packages as possible. Site and Building Design Submittal Packages are required, however Critical Path Design Submittals are acceptable if they are substantiated as having an impact to the critical path in the Government approved Network Analysis Schedule. A Critical Path submittal must include all design analyses, drawings, specifications and product data required to fully describe the project element for Government review.

Examples of project elements that may be submitted as Critical Path Design Submittal Packages are: Master Plan Design, Demolition Design, Foundation Design, Structural Design, Building Enclosure Design, Remaining Work Design, Furniture/Equipment Design, long lead items, or any other construction activity or project element that can be organized into a submittal package that can be reviewed and approved by the Government without being contingent upon subsequent design submittals.

2.2.1.1 Site Design

The Site Design typically includes the following components:

a. Master Site Plan

b. Demolition

c. Site work including Environmental

d. Geotechnical

2.2.1.2 Building Design

The Building Design typically includes the following components:

a. Foundation

b. Structural

c. Building Enclosures

d. Remaining Work

e. Furniture/Equipment

2.2.2 Required Design Submittals

Provide the following Design Submittal packages. Provide comprehensive, multi-discipline design packages that include design documentation for project elements, fully developed to the design stage indicated, and in accordance with UFC 1-300-09N, except where specified otherwise.

a. Concept Design presented at Concept Design Workshop

b. Design Development in-progress, over the shoulder review, - Government Progress QA. 21 calendar day Government review time.

c. Pre-final (100%) Design - Government Progress QA. 21 calendar day Government review time.

d. Final Design - Government QA. 7 calendar day Government review time for submittals requiring Government approval prior to construction.

2.2.3 Critical Path Design Submittals

Provide Critical Path Design Submittals that include design documents for the project elements involved. Include and provide full documentation that would normally have been provided in earlier submittal stages, such as Design Development Phase.

a. 100 percent (Pre-final) Design - Government Progress QA. 21 calendar day Government review time.

b. Final Design - Government QA. 7 calendar day Government review time for submittals requiring Government approval prior to construction.

2.2.4 Review Copies of Design Submittal Packages

a. Provide bound copies of each design submittal package for review to the following reviewers. Addresses for mailing will be furnished at the PAK meeting.

(1) 4 paper copies to the NAVFAC component and 2 electronic copies of the Final submittals.

(2) 2 paper copies to the Activity claimant.

(3) 1 paper copy to the Activity Public Works Officer (PWO) and 1 electronic copies of the Final submittals.

b. Provide the same quantities of copies for resubmittals, as required for each design submittal.

2.2.5 Design Submittal Review Schedule

Use the time frames for Government submittal review identified in the RFP. For construction scheduling purposes add additional time to the identified minimum review time periods to allow for the following scheduling conditions;

1. Submittals received after noon will be logged in on the following business day.

2. Federal holidays, including the period between Christmas and New Years Day, will be considered non-working days for Government personnel in reviewing design submittals and attending design related meetings.

3. Postpone delivery if Government personnel to receive the submittal are unavailable. Assure in advance of the submittal delivery it can be received.

4. Postpone delivery when heightened security restricts access to the Base. Coordinate heightened security requirements in advance with the CM.

5. Period of review for a resubmittal is the same as the initial submittal. Review time for resubmittals caused by non-conformance, do not result in a change in contract duration or cost.

2.2.6 Distribution of Approved Final Design Drawings and Specification to Government Representatives

Submit within 14 calendar days of receiving the Government Approved Final Design Documents, which includes any Critical Path Final Design Document Packages, electronic and hardcopy(s) of these final documents to Government representatives for use during the construction of the project. If Critical Path Submittal Packages are used, provide coversheets and index to identify each sheet and how this Critical Path Submittal Package fits into the overall project. Provide the number and type of copies of the final design documents to the following Government representative:

a. Two electronic and two hard copy(s) to the Project Manager (name, address, and phone number)

b. Two electronic and two hard copy(s) to the Design Manager

c. One electronic and one hard copy(s) to the Construction Manager

d. One electronic and one hard copy(s) to the Contracting Officer

e. One electronic and one hard copy(s) to the Public Works Officer

2.3 IDENTIFICATION OF DESIGN SUBMITTALS

Provide a title sheet to clearly identify each submittal, the completion status, and the date. The title sheet must use the standard format indicated in the UFC 1-300-09N for title sheets. The title sheet must be unique to a particular design submittal. Submit the project title sheet with design status and date for the design submittals.

2.3.1 Critical Path Submittal Title Sheet

Identify Critical Path submittals as such, and include a title sheet indicating the type of critical path submittal, the status, and the date.

2.3.2 Construction Document Validation

All CAD design documents used to construct the facility must bear a visible and legible AutoCAD generated plotstamp in the lower right hand margin of each drawing. The plotstamp information on the jobsite construction documents must match the plotstamp information contained on the following development stages of the design documents:

a. The Final Critical Path Submittal or the Final Design Submittal professionally signed by the DOR and submitted for Government approval.

b. The Final Critical Path Submittal or the Final Design Submittal drawings that have approved by the Government. This development stage may be combined with "c." below, if issued at the same time.

c. The Final Critical Path or Final Design drawings that have been included in the contract by modification.

d. The Final Critical Path or Final Design drawings which include subsequent revisions to the design documents that have been included in the contract by modifications.

Issue new drawings for construction which bear the current plotstamp once a new development stage of the design documents has been accomplished. Design documents which do not bear a plotstamp that matches the corresponding plotstamp exhibited on the design documents described above, are not allowed to be used for the construction of the project. The plotstamp must bear the date and time of the plot, at a minimum. Maintain a plotstamp record at the jobsite that lists the applicable plotstamp information for each drawing through each stage of development described above.

PART 3 EXECUTION

3.1 CONTRACTOR'S RESOLUTION OF COMMENTS

Provide written responses to all written comments by the Government. Resubmittal of an unacceptable design submittal must be a complete package that includes all the required, specified components of that design submittal. When required by the Government, Contractor resubmittal of design package, due to nonconformance to the contract, is not a delay in the contract.

3.2 DESIGN CHANGE AND VARIATIONS

A design change is when the design is revised from what was reviewed by the

Government during any phase of the design process prior to Government approval of the Final Design. A variation is any portion of the design that differs from the requirements of the solicitation, accepted proposal, or final design after Government approval of the Final Design. Design changes and variations require Government approval and only variations that are advantageous to the Government will be considered. Refer to UFGS 01 33 00.05 20, CONSTRUCTION SUBMITTAL PROCEDURES for further explanation and requirements of design change and variation.

The Contractor must immediately notify the Government of all potential design changes and variations via a Request for Information (RFI) to the Contracting Officer. Design changes or variations that the Contractor asserts will require a contract modification to adjust the cost/price or schedule are not allowed to be incorporated in the design during any phase of the design process without prior documented approval from the Contracting Officer. Contractors will not receive compensation for any unauthorized design changes or variations which have been included in the Government approved Final Design. Include the following information in the design change and variation RFIs:

a. Indicate the RFP Parts, sections, and paragraphs affected by this design change or variation,

b. The scope of work of the design change or variation,

c. The reason for the proposed change,

d. Explanations of how the variation is advantageous to the Government.

d. Indicate which upcoming design submittal will be affected by the subject design change,

e. Explanation of contract cost/price and schedule impacts or provide an affirmative statement indicating that the design change or variation will not have an impact on the contract cost/price or schedule.

f. Coordination measures proposed to incorporate the design change or variation into the construction.

g. Upon request by the Contracting Officer, submit a cost proposal prepared using the Uniformat Work Breakdown Structure for all design changes and variations that have cost or schedule impacts. Submit a proposal that provides cost breakdown of each Uniformat system or subsystem that is applicable to the design change or variation. Utilize the units of measure indicated in the Uniformat Structure at the NAVFAC DB RFP webpage, http://www.wbdg.org/ndbm/uniformat.php.

3.3 THE CONTRACT AND ORDER OF PRECEDENCE

3.3.1 Contract Components

The contract consists of the solicitation, the approved proposal, and the final design.

3.3.2 Order of Precedence

NFAS Clause 5252.236-9312. In the event of conflict or inconsistency between any of the below described portions of the conformed contract, precedence must be given in the following order:

a. Any portions of the proposal or final design that exceed the requirements of the solicitation.

(1) Any portion of the proposal that exceeds the final design.

(2) Any portion of the final design that exceeds the proposal.

(3) Where portions within either the proposal or the final design conflict, the portion that most exceeds the requirements of the solicitation has precedence.

b. The requirements of the solicitation, in descending order of precedence:

(1) Standard Form 1442, Price Schedule, and Davis Bacon Wage Rates.

(2) Part 1 - Contract Clauses.

(3) Part 2 - General Requirements.

(4) Part 3 - Project Program Requirements.

(5) Part 6 - Attachments (excluding Concept Drawings).

(6) Part 5 - Prescriptive Specifications exclusive of performance specifications.

(7) Part 4 - Performance Specifications exclusive of prescriptive specifications.

(8) Part 6 - Attachments (Concept Drawings).

3.3.2.1 Government Review or Approval

Government review or approval of any portion of the proposal or final design must not relieve the Contractor from responsibility for errors or omissions with respect thereto.

-- End of Section --

SECTION 01 33 29.05 20

SUSTAINABILITY REPORTING FOR DESIGN-BUILD
09/15

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ASHRAE 55	(2010; Errata) Thermal Environmental Conditions for Human Occupancy
ASHRAE 62.1	(2010; Errata 2011; INT 3 2012; INT 4 2012; INT 5 2013) Ventilation for Acceptable Indoor Air Quality
ASHRAE 90.1 - IP	(2010; ERTA 2011-2014; Thru INT 24 2015) Energy Standard for Buildings Except Low-Rise Residential Buildings
ASHRAE 90.1 - SI	(2010; Errata 2012-2014; Thru INT 22) Energy Standard for Buildings Except Low-Rise Residential Buildings
ASHRAE 189.1	(2014; Errata 1-2 2015;) Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

GREEN BUILDING INITIATIVE (GBI)

GBI Green Globes for NC	(2013) Green Globes(tm) for New Construction Technical Reference Manual
GBI GP Compliance	GBI Guiding Principles Compliance Program for New Construction

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

ANSI/SMACNA 008	(2007) IAQ Guidelines for Occupied Buildings Under Construction, 2nd Edition

U.S. DEPARTMENT OF DEFENSE (DOD)

FC 1-300-09N	(2014) Navy and Marine Corps Design Procedures

UFC 1-200-02	(2013) High Performance and Sustainable Building Requirements

U.S. DEPARTMENT OF ENERGY (DOE)

ISWG Guiding Principles	(2008) High Performance and Sustainable Buildings Guidance

U.S. GREEN BUILDING COUNCIL (USGBC)

LEED GBDC Ref Guide	(2009; R 2010) LEED Reference Guide for Green Building Design, Construction and Major Renovations of Commercial and Institutional Buildings including Core & Shell and K-12 Projects

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 247	Comprehensive Procurement Guideline for Products Containing Recovered Materials

U.S. DEPARTMENT OF AGRICULTURE (USDA)

USDA Biopreferred Program	United States Department of Agriculture's Biopreferred Program

1.2 SUMMARY

This specification includes general requirements and procedures for projects to be designed, constructed, and documented per the federally mandated "Guiding Principles" (GP), Third Party Certification (TPC) requirements (if applicable), UFC 1-200-02 High Performance and Sustainable Building Requirements, and other requirements identified in this specification.

1.3 SUBMITTALS

Submittals requirements are specified in the technical sections using Submittal Description (SD) numbers and titles. Submittals requiring Government approval use a "G" or submittal designator in the UFGS sections. In addition, submit the GPV and TPC-required sustainability documentation in this specification as "S" submittals. Submittals not having a "G" designation are for Contractor Quality Control approval.

Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance with the requirements of this Section.

Government approval is required for submittals in RFP Part 2 with a "G" designation Additional construction submittals reserved for Government approval are listed in the Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES. Submittals with a "G" designation found in the sections used by the Contractor to create construction specification, require DOR approval. DOR approved submittals are also listed in the "Construction Submittals" paragraph in each RFP PART 4, Performance Technical Specifications. Provide required certification or validation submittals in accordance with Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES, Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES, FC 1-300-09N, Navy and Marine Corps Design Procedures, and as identified below.

SD-01 Preconstruction Submittals

Preliminary Sustainability Notebook; G

Preliminary High Performance and Sustainable Building Checklist; G

SD-05 Design Data

Final Design Sustainability Notebook; G

Final Design High Performance and Sustainable Building Checklist; G

SD-11 Closeout Submittals

Final Sustainability Notebook; G

Final High Performance and Sustainable Building Checklist; G

Amended Final Sustainability Notebook Submittal; G

Third Party Certification Plaque and Certificates; G

1.4 GUIDING PRINCIPLES VALIDATION

Provide sustainability documentation to verify achievement of ISWG Guiding Principles Validation (GPV).

Provide the following for GPV:

a. Refer to Attachment 1, HPSB Checklist at the end of this specification section.

b. Obtain approval of the HPSB Checklist from the Contracting Officer at the Post Award Kick-Off Meetings. Contracting Officer's approval establishes identified ISWG Guiding Principles Requirements as the project's sustainability goals.

   No variations or substitutions to the HPSB Checklist are allowed without written consent from the Contracting Officer. Immediately bring to the attention of the Contracting Officer any project changes that impact meeting the approved ISWG Guiding Principles Requirements for this project and Contractor must demonstrate that change will not incur additional construction cost or increase the life cycle cost.

c. Include all work required to incorporate the applicable ISWG Guiding Principles Requirements indicated on the HPSB Checklist and in this contract.

d. Include design and construction related documentation to maintain an up-to-date Sustainability Notebook. Supplement design and construction related documentation containing the following components;

   (1) HPSB Checklist

   (2) Sustainability Action Plan

(3) Documentation illustrating Guiding Principle Requirements compliance

(4) Commissioning Plan and Reports

1.4.1 SUSTAINABILITY ACTION PLAN

Include the following information in the Sustainability Action Plan;

a. Contractor's planned method to achieve each GP requirement.

b. For each designated Federal Guiding Principles Requirement that is not attempted or achieved, provide narrative explaining how mission or activity precludes achieving specific sustainability requirement or goal. Provide analysis of particular requirement and level to which project is able to comply.

c. Name and contact information for: Contractor's Sustainability POC and other sustainability professional on the Contractor's Staff responsible for ensuring sustainability goals are accomplished and documentation is assembled.

1.4.2 COSTS

Contractor is responsible for all costs associated with designing, constructing and demonstrating that project complies with approved ISWG Guiding Principles Requirements.

1.4.3 CALCULATIONS

Provide all design data, calculations, product data, and certifications required in this specification to demonstrate compliance with the ISWG Guiding Principles Requirements.

1.4.4 THIRD PARTY CERTIFICATION (TPC) Documentation

Register and meet all requirements, and certify to achieve Third Party Certification (TPC) level of LEED GBDC Ref Guide Silver or GBI Green Globes for NC 2 Globes. Third Party Certification is met when Government receives TPC organization certificate and plaque.

Third Party Certification requirements are in addition to all requirements under header above GUIDING PRINCIPLES VALIDATION (GPV).

Register project with TPC organization using the following format and content:

a. Project Title First Line: US Army, US Air Force, US Navy or US Marine Corps, Building Name (if known)

b. Project Title Second Line: MILCON P#, DD1391 Project Name

c. Project Address: UIC (Installation code), Category code, RPUID (Real Property Unique Identifier) Number

d. Project Owner Organization: US Army, US Air Force, US Navy or US Marine Corps

e. Primary Contact, Owner: Agency Project Manager

f. Additional Contact, Building Owner: Public Works Officer or Designee

The TPC Certification requires the following:

a. Refer to Attachment 2, TPC Checklist at the end of this specification section.

b. Obtain approval of the TPC Checklist from the Contracting Officer at the Post Award Kick-Off Meetings. Contracting Officer's approval establishes identified TPC Requirements as the project's sustainability goals.

No variations or substitutions to the TPC Checklist are allowed without written consent from the Contracting Officer. Immediately bring to the attention of the Contracting Officer any project changes that impact meeting the approved TPC Requirements for this project. Demonstrate that change will not: incur additional construction cost; increase the life cycle cost; or impact achieving required TPC certification level.

c. Complete all design and construction work to incorporate the applicable TPC Requirements.

d. Maintain the design and construction related information, and provide replacement pages, in the Sustainability Notebook pertaining to additions and changes to the approved sustainability requirements. The Sustainability Notebook is in electronic format and is explained in the paragraph SUSTAINABILITY NOTEBOOK. The Sustainability Notebook contains the following components in addition to the GPV requirements under header above GUIDING PRINCIPLES VALIDATION (GPV):

(1) TPC Checklist

(2) Completed TPC Online forms for each identified prerequisite and credit. Upload onto the TPC Online documentation website.

(3) Copy of all correspondence with the TPC organization. Provide proof of TPC registration.

(4) Documentation illustrating compliance with TPC requirements

(5) TPC Award Certificate

e. Include the following information in the Sustainability Action Plan. Provide this TPC information in addition to the GPV Action Plan items above:

(1) Contractor's planned method to achieve each TPC requirement.

(2) For each of the TPC credit that is attempted but not achieved, provide narrative explaining how mission or activity precludes achieving specific sustainability requirement or goal. Provide

analysis of particular requirement and level to which project is able to comply.

(3) Names and contact information for: Contractor sustainability POC and other names of sustainability professionals on the Contractor's Staff responsible for ensuring TPC sustainability goals are accomplished and documentation is assembled.

(4) Provide the plan and schedule for performance testing, data collection, and commissioning.

f. Contractor is responsible for all costs associated with designing, constructing, and demonstrating that project complies with approved TPC requirements, including but not limited to:

(1) Registration, review, certification and plaque fees.

(2) Online (or offline with secure facilities) TPC management and documentation.

(3) Obtaining TPC certification based on Government-approved sustainability goals.

(4) Design and construction work required to incorporate TPC prerequisites and credits.

(5) Submittals required to demonstrate compliance with Government approved TPC checklists.

g. Provide all design data, calculations, product data, and certifications required in this specification to demonstrate compliance with the TPC Requirements.

h. Provide all online (or offline, with secure facilities) TPC management and documentation.

i. Provide all required responses to TPC.

j. Provide TPC Plaque and Certificates. Use the following format to create the Plaque, Certificate, and Letter of Congratulations. Forward to parties designated by Contracting Officer:

(1) Plaque

Name: Final Building Name. If unknown, use the Form DD1391 Project Name.

(2) Certificate

Project title, first line: P-(X); (1391 Project Name). Project title, second line: UIC (installation code)

(3) Letter of Congratulation

Address letter to the Facility's Installation Commander Name. Address the letter to an individual person.

1.5 SUSTAINABILITY SUBMITTALS

Provide documentation in the Sustainability Notebook and the HPSB Checklist to indicate compliance with the sustainability requirements of the project.

1.5.1 High Performance Sustainable Building (HPSB) Checklist

Provide documentation that provides proof of and supports compliance with the completed HBSP Checklist. Prepopulated HPSB checklist may be obtained from the Government Project Manager.

1.5.1.1 HPSB Checklist Submittals

Submit updated HPSB Checklist with each Sustainability Notebook submittal. Attach final HPSB Checklist to DD1354 Real Property Record Submittal.

1.5.1.2 HPSB Checklist Public Access

The Checklist form is found at the following link; http://www.wbdg.org/pdfs/navfac_sustainable_energy_data_record_card.pdf . Use the bookmarked New Construction & Major Renovation form for new construction and major renovation, and use the Minor Construction form for minor construction under $2.5M.

1.5.2 "S" Submittals for Sustainability Documentation

Submit the GPV and TPC sustainability documentation required in this specification as "S" submittals. Highlight GPV[and TPC] compliance data in "S" submittal.

1.5.3 Sustainability Notebook

Prepare and maintain a comprehensive Sustainability Notebook to document compliance with the sustainability requirements identified in the approved HPSB and TPC Checklists. Sustainability Notebook must contain all required data to support full compliance with the Federal Guiding Principles Requirements and TPC requirements. Sustainability Notebook is in the form of an Adobe PDF file; bookmarked at each Federal Guiding Principles Requirement, TPC requirement, and sub-bookmarked at each document. Match format to Federal Guiding Principles numbering system indicated herein. Maintain up to date information, spreadsheets, templates, etc. with each current submittals. For TPC projects, provide a second Table of contents using TPC numbering system. Locate documentation unique to TPC here. Where TPC documentation would repeat GP documentation, insert note referring reviewer to GP documentation.

Contracting Officer may deduct from the monthly progress payment accordingly if Sustainability Notebook information is not current, until information is updated and on track per project goals.

1.5.3.1 Sustainability Notebook Submittal Schedule

Provide Sustainability Notebook Submittals at the following milestones of the project:

a. Preliminary Sustainability Notebook

Submit preliminary Sustainability Notebook for approval at the Post Award Kick-Off Meetings. Include Preliminary High Performance and Sustainable Building Checklist.

b. Final Design Sustainability Notebook Submittal

Submit updated Sustainability Notebook no later than 60 days after final design complete submission. Review Sustainability Notebook and TPC Online submission for completeness of design requirements, prerequisites, and credits documentation and appropriate progress toward construction requirements, prerequisites, and credits documentation. Identify any outstanding issues relating to achieving the sustainability goals of the project and incomplete documentation requirements. Obtain DOR approval and submit three (3) electronic copies of the Final Design Sustainability Notebook on DVDs to the Government. Include Final Design High Performance and Sustainable Building Checklist.

c. Construction Progress Meetings.

Update GP and TPC documentation in the Sustainability Notebook and TPC Online tool for each meeting.

d. Final Sustainability Notebook

Submit updated Sustainability Notebook within 60 days after the Beneficial Occupancy Date (BOD). Final progress payment retainage may be held by Contracting Officer until Final Sustainability construction phase documentation is complete. Obtain DOR approval and submit three (3) electronic copies of the Final Sustainability Notebook on DVDs to the Government. Include Final High Performance and Sustainable Building Checklist.

e. Amended Final Sustainability Notebook Submittal

Amend and resubmit the Final Sustainability Notebook to include commissioning, testing and balancing, and collection of performance requirements. Obtain prior DOR approval and submit three (3) final electronic copies of the Amended Final Sustainability Notebook Submittal on DVDs to the Government no longer than 30 days after the GP, TPC, and Cx designated data collection period.

1.6 DOCUMENTATION REQUIREMENTS

Third Party Certification requirements or credits are mandatory when they have requirements that match a Guiding Principle Requirement. Documentation used to demonstrate TPC compliance may be used to demonstrate GP compliance.

Incorporate each of the following ISWG Guiding Principles Requirements into project and provide documentation that proves compliance with each listed requirement. Items below are organized according to the ISWG Guiding Principles.

For projects that require TPC, refer to Third Party Certifier's reference manuals for TPC requirements.

A life cycle cost analysis is required for all energy and water-related Guiding Principles, and others as required below. One document with all assessments is acceptable with Contracting Officer approval.

1.6.1 Integrated Design Process

Use a collaborative, integrated planning and design process. For the submittal documentation below, use the Integrated Building Design process as described in ASHRAE Handbook - HVAC Applications, Chapter 58 (Integrated Building Design) to the maximum extent practical. This reference is applicable to all disciplines and provides a roadmap to guide design teams through the Integrated Design process. (The use of Building Information Modeling, as described in the section Tools is encouraged but not required.)

a. Design submittal documentation required;

(1) Maintain an up-to-date list of the sustainability integrated design team and their roles in all stages of a project's planning and delivery:

(a) Contractors Sustainability Coordinators; Architecture and engineering disciplines involved on the project and the DOR in charge of the overall project and each discipline; Construction Subcontractors and the company representatives that align with each architectural and engineering discipline, Planning, Public Works, Environmental Specialist and other appropriate installation personnel.

(b) Describe their roles and responsibilities and plan-of-action for how each team member will be involved to achieve the project sustainability requirements, and how the Contractor will coordinate with Government personnel.

(2) Provide narratives and reports;

(a) Performance goals for siting, energy, water, materials, and indoor environmental quality along with other comprehensive design goals and ensures incorporation of these goals throughout the design and lifecycle of the building.

(b) Integration of the goals into design and construction.

(c) Collaboration with other providers, such as Commissioning Authority and Third Party Certification.

1.6.2 COMMISSIONING (Cx)

GP Denotation - I.2; LEED EAp1 and EAc3

Using a qualified Commissioning Authority (CxA), develop and incorporate Commissioning requirements into the construction documents. Develop and implement a Commissioning plan. Verify the installation and performance of the systems to be commissioned, including no less than: HVAC&R systems and associated controls, lighting and daylighting controls, domestic hot water systems, renewable and non-renewable energy systems. Complete a summary Commissioning report. Work with the Commissioning Authority (CxA) to achieve

requirements of the Commissioning plan and other document requirements at each stage of Commissioning. Maintain up-to-date records of Commissioning activities in Sustainability Notebook, to include commissioning plan and Summary of Work.

a. Provide construction submittal documentation required below. Coordinate with Section 01 45 00.05 20, DESIGN AND CONSTRUCTION QUALITY CONTROL.

(1) Commissioning Authority certifications.

(2) Commissioning Authority qualifications.

(3) Commissioning meeting minutes during construction.

(4) Commissioning Plan, updated at each project stage.

(5) For each commissioned system, completed pre-startup checklist, completed functional verification checklist and performance verification test report.

(6) Final Commissioning report and narrative demonstrating project's Commissioning requirements have been successfully executed.

1.6.3 Optimize Energy Performance

GP Denotation - II.1; LEED Eap2, EAc1

Meet the requirements of ASHRAE 90.1 - SI (ASHRAE 90.1 - IP), and achieve at least 30 percent energy efficiency below baseline, when life cycle cost effective.

Reduce measured building energy use by at least 20 percent compared to Building energy use in 2003 or a year thereafter with metered energy use data.

]a. Design submittal documentation required;

(1) Provide documentation showing total percentage of proposed building energy performance improvement over cited standards baseline.

(a) Submit calculations demonstrating project meets the energy consumption reduction (including process and receptacle loads) required.

(2) Provide life cycle cost analysis (LCCA)

b. Construction submittal documentation required;

(1) Provide revised energy modeling for actual system constructed.

1.6.4 Energy Efficient Equipment

GP Denotation - II.3

Provide only energy-using equipment that is Energy Star or has Federal Energy Management Program (FEMP) recommended efficiency. Where Energy Star

or FEMP recommendations have not been established, provide equipment with efficiency in the top 25 percent for the type of equipment procured. Provide only energy using equipment that meet FEMP requirements for low standby power consumption. Energy efficient equipment can be found at: http://www1.eere.energy.gov/femp/ and http://www.energystar.gov/

a. Construction submittal documentation required;

(1) Provide proof that equipment is energy efficient and complies with the cited requirements.

1.6.5 Solar Thermal Water Heating

GP Denotation - II.4.

Provide 30 percent or more of domestic hot water needs through solar thermal water heating.

a. Design submittal documentation required;

(1) Provide documentation showing total on-site renewable energy to be installed as a percentage of proposed building energy consumption.

(2) Provide life cycle cost analysis (LCCA)

1.6.6 On-site Renewable Energy Generation

GP Denotation - II.5.

Provide project energy needs thru on-site renewable energy generation.

a. Design submittal documentation required;

(1) Provide documentation showing total on-site renewable energy to be installed as a percentage of proposed building energy consumption.

(2) Provide life cycle cost analysis (LCCA)

1.6.7 Building-level Power Metering

GP Denotation - II.6

Provide building-level meters of electricity, natural gas (and steam where applicable) use.

a. Design submittal documentation required;

(1) Provide design drawings that highlight meter locations on the site.

1.6.8 Benchmarking

GP Denotation - II.7.

Provide report of initial actual energy performance with the energy design targets.

a. Construction submittal documentation required;

(1) Provide a Prefinal Performance Report with data collected from the first 60 days of operation of the facility after Beneficial Occupancy Date (BOD). Submit this information with the Final Sustainability Documentation Submittal.

1.6.9 Water Consumption

GP Denotation - III.1; LEED WEp1

Reduce water consumption with the use of fixtures and equipment efficiencies required by ASHRAE 189.1, Sections 6.3.2.1 and 6.3.2.2.

a. Design submittal documentation required

(1) Provide documentation showing potable water consumption is reduced by cited standard.

1.6.10 Building-level Water Metering

GP Denotation - III.2.

Provide building-level meters for water use.

a. Design submittal documentation required;

(1) Provide design drawings that highlight meter locations on the site.

1.6.11 Landscape Irrigation

GP Denotation - III.4; LEED WEc1

Reduce potable water landscape irrigation by 50 percent or more.

a. Design submittal documentation required

(1) Provide documentation showing potable water consumption used for landscape irrigation is reduced by 50 percent compared to baseline case, or provide statement that no potable water is used for landscape irrigation.

(2) Provide life cycle cost analysis (LCCA)

1.6.12 Stormwater Management

GP Denotation - III.6 and 7

Meet the requirements of UFC 3-210-10.

a. Design submittal documentation required

(1) Provide documentation showing storm water is managed on site per cited criteria.

1.6.13 Water Use for Heating and Cooling

GP Denotation - III.8.

Reduce Process Water consumption.

a. Design submittal documentation required

(1) Provide required documentation showing compliance with EPAct 2005, Section 109 where life cycle cost effective.

1.6.14 Water Conserving Fixtures

GP Denotation - III.9.

Use water-consuming products that meet or exceed EPA's WaterSense criteria.

a. Design submittal documentation required;

(1) Provide design drawings that highlight the requirement for EPA Watersense products

(2) Provide documentation that indicates the most efficient water fixtures available, when EPA Watersense product categories are not available.

1.6.15 Ventilation and Thermal Comfort

GP Denotation - IV.1, IV.2; LEED IEQp1, IEQc7.1

Design to meet ASHRAE 189.1, Section 8.3.1 "Indoor Air Quality" 62.1 and Section 6.3.2 "Thermal Environmental Conditions for Human Occupancy".

a. Design submittal documentation required

(1) Provide documentation showing project HVAC system meets minimum requirements of Sections 4 through 7 of ASHRAE 62.1. (Documentation as described in Section 6.2 is not required), and other provisions of ASHRAE 189.1.

(2) Provide documentation showing entry mat systems and finish requirements.

(3) Provide documentation showing that HVAC systems and the building envelope have been designed to meet the requirements of ASHRAE 55 (Documentation as described in Section 6.2 is not required).

1.6.16 Moisture Control

GP Denotation IV.3; LEED IEQc10

Follow the requirements of UFC 3-101-01 "Architecture", Chapter 3 "Building Envelope."

a. Design submittal documentation required

(1) Provide design details for envelope and HVAC humidity controls.

(2) Provide plan for construction material storage and protection, humidity controls during construction, and operation and maintenance plan for ongoing building moisture control.

1.6.17 Daylighting

GP Denotation IV.4; LEED IEQc8.1 and IEQc6.1

Achieve the minimum daylighting requirements of ASHRAE 189.1, Section 8.4.1 "Daylighting by Sidelighting" or Section 8.5.1 "Daylighting Simulation". Provide automated lighting controls.

a. Design submittal documentation required

(1) Floor plans, elevations, and calculations delineating requirements, to include compliant reflective surface locations and shading devices (where applicable).

1.6.18 Reduce Volatile Organic Compounds (VOC)

GP Denotation - IV.6; LEED IEQc4.1, 4.2, 4.3, 4.4, 4.5,4.6

Provide materials and products with low pollutant emissions, including composite wood products, adhesives, sealants, interior paints and finishes, carpet systems, and furnishings. Meeting the requirements of ASHRAE 189.1 Sections 8.4.2 (Prescriptive Option: Materials) or Section 8.5.2 (Performance Option: Materials) demonstrates compliance. Insulation products must meet the requirements of Section 8.5.2 (Performance Option: Materials). Provide the following documentation:

a. Construction submittal documentation required

(1) Demonstrate that materials do not exceed maximum VOC emissions of cited standards. VOC averaging is allowed where coatings are subject to human contact or harsh environmental conditions.

(2) Demonstrate that flooring materials comply with VOC emissions of cited standards.

(3) Demonstrate that composite wood and agrifiber products and associated laminating adhesives contain no added urea-formaldehyde.

(4) Demonstrate that furniture and seating complies with low emissions requirements.

(5) Create and maintain a list of above listed products used on the project within the building vapor barrier. Demonstrate how product meets cited standards.

1.6.19 Indoor Air Quality During and After Construction

GP Denotation - IV.7 and 8; LEED IEQc3.1 and 3.2

Prior to construction, create indoor air quality plan. Implement IAQ plan during construction & flush building air before occupancy.

a. Construction submittal documentation required

(1) For new construction and for renovation of unoccupied existing buildings, comply with ASHRAE 189.1 Section 10.3.1.4 (Indoor Air Quality (IAQ) Construction Management), with maximum outdoor air consistent with achieving relative humidity no greater than 60 percent. For renovation of occupied existing buildings, comply with ANSI/SMACNA 008 IAQ Guidelines for Occupied Buildings Under Construction.

(2) Provide required documentation showing that after construction ends and prior to occupancy, HVAC filters were replaced and building air was flushed out in accordance with ASHRAE 189.1 Section 10.4.1.4 for new construction and unoccupied buildings or ANSI/SMACNA 008 for occupied buildings.

1.6.20 Environmentally Preferred Products

Use products designated for Federal procurement to meet environmentally preferred requirements.

a. Construction submittal documentation required

(1) Provide list of environmentally preferable products used on this project that meet the requirements of UFC 1-200-02.

1.6.21 Recycled Content

Provide materials on this project with aggregated total recycled content equal to or greater than 10 percent. In addition comply with 40 CFR 247. Refer to for assistance identifying products cited in 40 CFR 247.

a. Construction submittal documentation required

(1) Total amount of recycled content contained in building materials as a percentage of total cost of all building materials on the project (mechanical, electrical and plumbing components, and specialty items such as elevators excluded).

(2) Manufacturers documents stating the recycled content by material, or written justification for claiming one of the exceptions allowed under RCRA 6002.

(3) Contractor may submit for Government approval proposed alternative products or systems that provide equivalent performance and appearance and have greater contribution to project recycled content requirements. For all such proposed substitutions, submit with the Sustainability Action Plan accompanied by product data demonstrating equivalence.

1.6.22 Bio-Based Products

Utilize products and materials made from bio-based materials to the maximum extent possible without jeopardizing the intended end use or detracting from the overall quality delivered to the end user. Use only supplies and materials of a type and quality that conform to applicable specifications and standards.

Bio-based products that are designated for preferred procurement under USDA Biopreferred Program must meet the required minimum bio-based content. Refer to www.biopreferred.gov.for the product categories and BioPreferred Catalog.

a. Construction submittal documentation required

(1) For biobased products used on this project, provide biobased product content percentage and biobased source of material. Indicate name of the manufacturer, cost of each product and the use of each product on this project.

(2) For products that meet USDA Biopreferred Program, provide documentation of USDA Biopreferred label.

1.6.23 Waste Material Management (Recycling – Design)

Provide a dedicated, easily-accessible area or areas for the collection and storage of materials for recycling for the entire building, where markets or on-site recycling exists. Collection must include, at a minimum: paper, corrugated cardboard, glass, plastics and metals.

a. Design submittal documentation required

(1) Provide documentation showing an appropriately sized and placed storage room has been dedicated for recyclables.

1.6.24 Waste Material Management (Recycling – Construction)

Divert construction debris from landfill disposal where markets or on-site recycling exists, in accordance with Section 01 74 19.05 20 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT FOR DESIGN-BUILD.

a. Construction submittal documentation

(1) Documentation showing total amount of construction debris diverted from landfill as a percentage of all construction debris on the project.

(a) Include project's Construction Waste Management Plan and all dumpster haul tickets.

1.6.25 Ozone Depleting Substances

The use of CFC-based refrigerants in HVAC&R systems is prohibited. Eliminate the use of all ozone depleting substances (CFC's, HCFCs, or Halons) during construction and in building design where alternative environmentally preferable products are available taking into account lifecycle impacts. Meet the requirements of ASHRAE 189.1 Section 9.3.3 Refrigerants for no CFC-based refrigerants in heating ventilation, air conditioning and refrigeration systems (except for fire suppression system requirements, covered elsewhere in this specification).

a. Construction submittal documentation required

(1) MSDS sheets for all refrigerants provided

(2) Use substances that meet the criteria of U.S. EPA Significant New Alternatives Policy (http://www.epa.gov/ozone/snap/index.html)

1.6.26 Validation and Certification Restrictions

The purchase of renewable energy credits (RECs) specifically to meet project sustainability goals is prohibited.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 SUSTAINABILITY COORDINATION

3.1.1 Coordinating Sustainability Documentation Progress

Provide sustainability focus and coordination at the following meetings to achieve sustainability goals. In addition to requirement below, the following meetings requirements are further described in other parts of the RFP documents. Contractor's designated TPC accredited sustainability professional responsible for GP and TPC documentation must participate in the following meetings to coordinate documentation completion:

a. Design Review Meetings: Review progress towards meeting Sustainability Action Plan, and completeness of Sustainability Notebook, and TPC Online submission at the following;

(1) Post Award Kick-Off Meeting: Refer to Section 01 31 19.05 20 POST AWARD MEETINGS. Discuss the following: TPC and HPSB Checklists, Sustainability Action Plan, Design submittal and Construction submittal requirements and schedule, individuals responsible for achieving each Guiding Principle Requirement and TPC prerequisite and credit.

(2) Design Quality Assurance Meetings: Refer to Section 01 31 19.05 20POST AWARD MEETINGS for requirements. Discuss progress toward accomplishing Sustainability goals and obtaining sustainability documentation at each design submittal review. Refer to RFP Part 2 Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES for designated design submittals.

(3) Design Complete Review Meetings (No later than 60 days after final design complete submission): Review Sustainability Notebook, and TPC Online submission for completeness and identify any outstanding issues relating to final score and documentation requirements.

b. Construction Progress Meetings: Review GP and TPC sustainability requirements with project team including contractor and sub-contractor representatives. Demonstrate GP and TPC documentation is being collected and updated to the Sustainability Notebook and TPC Online tool.

(1) Project Closeout Meetings: Refer to Section 01 31 19.05 20 POST AWARD MEETINGS for further requirements. Review Sustainability Notebook, and TPC Online submission for completeness and identify

any outstanding issues relating to final documentation requirements.

(2) Final Sustainability Notebook Review

3.2 SUSTAINABILITY AWARD

Finalize the sustainability certification process and obtain the TPC Certification Plaque/Certificates, indicating completion of the projects sustainability goals.

3.2.1 Third Party Certification Plaque and Certificates

Obtain and install plaque and provide one original framed copy of the certificate. Mount certificates in 25 mm (1 inch) deep metal frames, with double matt, and wire hangers. Obtain three additional certificates, and deliver to Contractor Officer, unless otherwise instructed. Hang the Plaque in a prominent interior location approved by the Contracting Officer.

-- End of Section --

SECTION 01 35 13.05 20

SPECIAL PROJECT PROCEDURES FOR DESIGN-BUILD
11/07

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance with Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD. Submit the following in accordance with Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES and 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Watercraft list; G

SD-04 Samples

Model Unit; G

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 HAZARDS TO AIRFIELD, HELIPORT OPERATION

In addition to "DFARS 252.236-7005, Airfield Safety Precautions," the following paragraphs apply.

3.1.1 Work in Proximity to Runways and Landing Strips

Accomplish all construction work on the runways, taxiways, and parking aprons and in the end zones of the runways and 23 m(75 feet) to each side of the runways and taxiways, the landing strip, 23 m(75 feet) to each side thereof, and on the taxiways and parking aprons with extreme care regarding the operation of aircraft. Cooperate closely, and coordinate with the Operations Officer and the Contracting Officer. Park equipment in an area designated by the Contracting Officer. Under no circumstances shall equipment be parked overnight or for any extended period of time in the proximity of the runways or taxiways and landing strip. Leave no material in areas where extreme care is to be taken regarding the operation of aircraft.

3.1.2 Schedule of Work/Aircraft Operating Schedules

Schedule work to conform to aircraft operating schedules. The Government will exert every effort to schedule aircraft operations so as to permit the

maximum amount of time for the Contractor's activities; however, in the event of emergency, intense operational demands, adverse wind conditions, and other such unforeseen difficulties, the Contractor shall discontinue operations at the specified locations in the aircraft operational area for the safety of the Contractor and military personnel and Government property. Submit a schedule of the work to the Contracting Officer describing the work to be accomplished; the location of the work, noting distances from the ends of runways, taxiways and landing strips and buildings and other structures as necessary; and dates and hours during which the work is to be accomplished. Keep the approved schedule of work current, and notify the Contracting Officer of any changes prior to beginning each day's work.

3.1.3 Daytime Markings

During daylight, mark stationary and mobile equipment with international orange and white checkered flags, mark the material, and work with yellow flags.

3.1.4 Nighttime Markings

During nighttime, which begins 2 hours before sundown and ends 2 hours after sunrise, mark stationary and mobile equipment and material, and work with red lanterns. Where the Operations Officer and Contracting Officer determines that the red lanterns may confuse pilots approaching for landings, the Operations Officer and Contracting Officer may direct that the red lanterns be left off or that the color of the globes be changed.

3.1.5 Excavation

Open only those trenches for which material is on hand and ready for placing therein. As soon as possible after the material has been placed and work approved, backfill and compact the trenches as specified. Any form of ground/earth penetration is subject to ESS/MEC (Explosive Safety Submission / Munitions and Explosives of Concern) requirements.

3.1.6 Contractor Safety Precautions

The contractor is advised that aircraft operations will produce extremely high noise levels and will induce vibrations in pavements, structures, and equipment in the vicinity, and may result in high velocity flying debris in the area. The contractor shall be responsible for providing all necessary ear protective and other safety devices for his personnel, for insuring protection of his equipment, and for scheduling the work to eliminate hazards to his personnel and equipment and to prevent damage to work performed by him.

3.1.7 Radio Contact

Provide necessary battery powered portable radios, including one radio for the tower. During work within the landing area, have an operator (who speaks fluent English) available for radio contact with the tower at all times. Radio frequency shall be approved by the tower.

3.2 HARBOR WATERWAYS

In addition to "DFARS 252.236-7002, Obstruction of Navigable Waterways,"

obtain from the Operations Officer at the Naval Base, Guam via the Contracting Officer, permission to use Inner Apra Harbor waterways and the regulations and directives governing such usage. Submit a watercraft list with a description of crafts, including sizes, types, numbers and boat crew for approval.

3.2.1 Hazards to Navigation

Maintain complete control of the movement of floating equipment and material. Loose floating equipment and material are not permitted. Keep in readiness at all times a powered craft capable of moving, securing and disposing of floating equipment which may get loose and become a hazard to navigation.

3.2.2 Submarine Cables or Underwater Utilities

Physically locate submarine cables or underwater utilities as indicated prior to performance of work.

3.2.3 Naval Base Guam Ammunition Wharf (Kilo) Operation Safety and Security

The Contractor shall anticipate delays and disruption in construction activities for a period of 14 consecutive calendar days during the loading and unloading of ammunition at the ammunition wharf. Disruption may range from complete shutdown of construction activity for a prolonged period of time or periodic short term shutdown of less than a full day, but in no event will all such shutdowns in the aggregate exceed 30 calendar days per calendar year. Bidders shall take into consideration such delays when preparing their bids.

3.3 MODEL UNIT

Prior to placement of material orders for components of the BEQ living suites, BOQ living suites and family housing units and the installation of those components throughout the project, the Contractor shall complete the construction of the components of the model unit, and gain the approval of the Contracting Officer for the materials and workmanship therein.

3.3.1 Model Unit Description

The model unit shall be made up of enough living suites consisting of two bedrooms and an interconnecting bathroom, single family housing units to show all of the different levels of completion required below. The model unit shall have enough suites, housing units to show all level of completion simultaneously, except for foundation and floor slab levels which are approved by the Contracting Officer and covered by following levels. The model unit shall be living suites and family housing units constructed at the location agreed upon with the Contracting Officer and a part of the permanent structure as indicated.

3.3.2 Model Unit Requirements

The construction of the model unit shall adhere to the following requirements:

a. Materials provided in model unit shall be those actually approved in

submittals. The QC Manager and Organization must be in place to approve and process submittals in accordance with Sections 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES and 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES.

b. The Contractor shall provide all temporary utilities and climate control necessary to construct, inspect, approve, and maintain the model unit.

c. Prior to completion and approval of the model unit, and with written permission to start from the Contracting Officer, the Contractor may perform general sitework and run major utility lines for the rest of the project.

d. As each model unit's level of completion is approved by the Contracting Officer, construction of that level's components throughout the remainder of the project may proceed.

3.3.3 Model Unit Levels of Completion

The completed model unit shall be exhibited for approval. Upon completion, the model unit shall be available to the Government for a period of fifteen (15) working days for inspection after notification is received by Contracting Officer.

Model unit shall be exhibited and approved at the following levels of completion:

a. Level 1 (Pre-Finished Level) - Model unit construction within a completed building exterior shall exhibit plumbing, ductwork, electrical locations, exposed framing, and windows. Walls and floors shall be unfinished but ready for application of final finish. Upon completion of this milestone, model unit shall be available to the Government for a period of five (5) working days for inspection.

b. Level 2 (Finished Level) - Model unit construction shall exhibit all materials, completely finished as specified, including fixtures, wall and floor finishes, cabinets, and shelving. Upon completion of this milestone, the model unit shall be available to the government for a period of fifteen (15) working days for inspection.

Model unit shall be exhibited and approved at the following 7 levels of completion. For inspections of model unit, level 1 shall each be available to the government for a period of twenty-eight (28) calendar days, and level 2 through 7 shall each be available to the government for a period of ten (10) calendar days.

a. Level 1 (Foundation & Floor Slab Level) - Model unit construction shall exhibit treatment of earth excavation, testing of underslab mechanical piping, earth compaction, assembly and support of concrete reinforcing, technique of concrete movement and placement, framing of foundation steps, placement of insulation, final exposed concrete finished surface treatment, location outlines of all walls, all slab penetrations, and structural support points.

b. Level 2 (Framing Level) - Model unit construction shall exhibit all

load bearing and non-load bearing framing, sheathing, anchorage for exterior shell materials, and shall be framed out ready for trim.

c. Level 3 (Exterior Shell Level) - Model unit exterior construction shall exhibit all exterior finishes, windows and doors with temporary hardware, caulking, sealant, sheathing paper, wall ties, locations of mechanical equipment, roofing, louvers, vents and trim.

d. Level 4 (Plumbing, Mechanical and Electrical rough-in Level) - Model unit construction shall exhibit electrical conduit and box location for switches, outlets fixtures, cable and data collection. This level's model unit construction shall also exhibit ductwork, built-in plumbing fixtures, plumbing piping, and water pressure test of all plumbing pipe.

e. Level 5 (Interior Finishes-rough Level) - Model unit construction shall exhibit non-veneer plaster, unspackled and uncaulked wall and ceiling finishes, insulation, interior doors, final locations of all outlets and fixtures.

f. Level 6 (Interior Finishes & Fixtures-final Level) - Model unit construction shall exhibit final interior finishes, veneer plaster, painting, caulking, built-in shelving, cabinetwork, cabinet supported sinks, final door hardware, mechanical louvers, final electrical equipment connections, electrical fixtures, freestanding bathroom fixtures, properly functioning appliances, and operation of mechanical and electrical systems.

g. Level 7 (Site Finishes Level) - Model unit construction shall exhibit final driveway, walks, exterior stairs, final concrete and asphalt finished surface treatment, topsoil quality and application, sodding/seeding of lawn, tree and shrub planting, landscaping beds, playground fall areas and playground equipment. Contracting Officer shall be notified and retain the right to inspect all preparation and installation of pavings.

-- End of Section --

SECTION 01 35 26.05 20

GOVERNMENT SAFETY REQUIREMENTS FOR DESIGN-BUILD
12/15

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN SOCIETY OF SAFETY ENGINEERS (ASSE/SAFE)

ASSE/SAFE A10.34	(2001; R 2012) Protection of the Public on or Adjacent to Construction Sites
ASSE/SAFE A10.44	(2014) Control of Energy Sources (Lockout/Tagout) for Construction and Demolition Operations
ASSE/SAFE A1264.1	(2007) Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Roof Openings; Stairs and Guardrails Systems
ASSE/SAFE Z244.1	(2003; R 2014) Control of Hazardous Energy Lockout/Tagout and Alternative Methods
ASSE/SAFE Z359.0	(2012) Definitions and Nomenclature Used for Fall Protection and Fall Arrest
ASSE/SAFE Z359.1	(2007) Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
ASSE/SAFE Z359.11	(2014) Safety Requirements for Full Body Harnesses
ASSE/SAFE Z359.12	(2009) Connecting Components for Personal Fall Arrest Systems
ASSE/SAFE Z359.13	(2013) Personal Energy Absorbers and Energy Absorbing Lanyards
ASSE/SAFE Z359.14	(2014) Safety Requirements for Self-Retracting Devices for Personal Fall Arrest and Rescue Systems
ASSE/SAFE Z359.15	(2014) Safety Requirements for Single Anchor Lifelines and Fall Arresters for Personal Fall Arrest Systems
ASSE/SAFE Z359.2	(2007) Minimum Requirements for a Comprehensive Managed Fall Protection Program

ASSE/SAFE Z359.3	(2007) Safety Requirements for Positioning and Travel Restraint Systems
ASSE/SAFE Z359.4	(2013) Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components
ASSE/SAFE Z359.6	(2009) Specifications and Design Requirements for Active Fall Protection Systems
ASSE/SAFE Z359.7	(2011) Qualification and Verification Testing of Fall Protection Products
ASSE/SAFE Z490.1	(2009) Criteria for Accepted Practices in Safety, Health, and Environmental Training

ASME INTERNATIONAL (ASME)

ASME B30.20	(2013; INT Oct 2010 - May 2012) Below-the-Hook Lifting Devices
ASME B30.22	(2010) Articulating Boom Cranes
ASME B30.26	(2015; INT Jun 2010 - Jun 2014) Rigging Hardware
ASME B30.3	(2012) Tower Cranes
ASME B30.5	(2014) Mobile and Locomotive Cranes
ASME B30.8	(2010) Floating Cranes and Floating Derricks
ASME B30.9	(2014; INT Feb 2011 - Nov 2013) Slings

ASTM INTERNATIONAL (ASTM)

ASTM F855	(2015) Standard Specifications for Temporary Protective Grounds to Be Used on De-energized Electric Power Lines and Equipment

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 1048	(2003) Guide for Protective Grounding of Power Lines
IEEE C2	(2012; Errata 2012; INT 1-4 2012; INT 5-7 2013; INT 8-10 2014; INT 11 2015) National Electrical Safety Code

HUMAN FACTORS AND ERGONOMICS SOCIETY

HFES 100	(2007) Human Factors Engineering of Computer Workstations

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA Z535.2	(2011) Environmental and Facility Safety Signs

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 1	(2015; ERTA 2015) Fire Code
NFPA 10	(2013) Standard for Portable Fire Extinguishers
NFPA 241	(2013; Errata 2015) Standard for Safeguarding Construction,Alteration, and Demolition Operations
NFPA 306	(2014) Standard for Control of Gas Hazards on Vessels
NFPA 51B	(2014) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70	(2014; AMD 1 2013; Errata 1 2013; AMD 2 2013; Errata 2 2013; AMD 3 2014; Errata 3-4 2014; AMD 4-6 2014) National Electrical Code
NFPA 70E	(2015; ERTA 1 2015) Standard for Electrical Safety in the Workplace

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety and Health Requirements Manual

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

10 CFR 20	Standards for Protection Against Radiation
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1910.147	Control of Hazardous Energy (Lock Out/Tag Out)
29 CFR 1910.333	Selection and Use of Work Practices
29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment
29 CFR 1915.89	Control of Hazardous Energy (Lockout/Tags-Plus)
29 CFR 1919	Gear Certification
29 CFR 1926	Safety and Health Regulations for Construction

29 CFR 1926.1400	Cranes and Derricks in Construction
29 CFR 1926.16	Rules of Construction
29 CFR 1926.450	Scaffolds
29 CFR 1926.500	Fall Protection
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
CPL 2.100	(1995) Application of the Permit-Required Confined Spaces (PRCS) Standards, 29 CFR 1910.146

1.2 DEFINITIONS

1.2.1 Competent Person (CP)

The CP is a person designated in writing, who, through training, knowledge and experience, is capable of identifying, evaluating, and addressing existing and predictable hazards in the working environment or working conditions that are dangerous to personnel, and who has authorization to take prompt corrective measures with regards to such hazards.

1.2.2 Competent Person, Confined Space

The CP, Confined Space, is a person meeting the competent person requirements as defined EM 385-1-1 Appendix Q, with thorough knowledge of OSHA’s Confined Space Standard, 29 CFR 1910.146, and designated in writing to be responsible for the immediate supervision, implementation and monitoring of the confined space program, who through training, knowledge and experience in confined space entry is capable of identifying, evaluating and addressing existing and potential confined space hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.3 Competent Person, Cranes and Rigging

The CP, Cranes and Rigging, as defined in EM 385-1-1 Appendix Q, is a person meeting the competent person, who has been designated in writing to be responsible for the immediate supervision, implementation and monitoring of the Crane and Rigging Program, who through training, knowledge and experience in crane and rigging is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.4 Competent Person, Excavation/Trenching

A CP, Excavation/Trenching, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and 29 CFR 1926, who has been designated in writing to be responsible for the immediate supervision, implementation and monitoring of the excavation/trenching program, who through training, knowledge and experience in excavation/trenching is capable of identifying, evaluating and addressing existing and potential

hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.5 Competent Person, Fall Protection

The CP, Fall Protection, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and in accordance with ASSE/SAFE Z359.0, who has been designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the fall protection program, who through training, knowledge and experience in fall protection and rescue systems and equipment, is capable of identifying, evaluating and addressing existing and potential fall hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.6 Competent Person, Scaffolding

The CP, Scaffolding is a person meeting the competent person requirements in EM 385-1-1 Appendix Q, and designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the scaffolding program. The CP for Scaffolding has enough training, knowledge and experience in scaffolding to correctly identify, evaluate and address existing and potential hazards and also has the authority to take prompt corrective measures with regard to these hazards. CP qualifications must be documented and include experience on the specific scaffolding systems/types being used, assessment of the base material that the scaffold will be erected upon, load calculations for materials and personnel, and erection and dismantling. The CP for scaffolding must have a documented, minimum of 8-hours of scaffold training to include training on the specific type of scaffold being used (e.g. mast-climbing, adjustable, tubular frame), in accordance with EM 385-1-1 Section 22.B.02.

1.2.7 Competent Person (CP) Trainer

A competent person trainer as defined in EM 385-1-1 Appendix Q, who is qualified in the material presented, and who possesses a working knowledge of applicable technical regulations, standards, equipment and systems related to the subject matter on which they are training Competent Persons. A competent person trainer must be familiar with the typical hazards and the equipment used in the industry they are instructing. The training provided by the competent person trainer must be appropriate to that specific industry. The competent person trainer must evaluate the knowledge and skills of the competent persons as part of the training process.

1.2.8 High Risk Activities

High Risk Activities are activities that involve work at heights, crane and rigging, excavations and trenching, scaffolding, electrical work, and confined space entry.

1.2.9 High Visibility Accident

A High Visibility Accident is any mishap which may generate publicity or high visibility.

1.2.10 Load Handling Equipment (LHE)

LHE is a term used to describe cranes, hoists and all other hoisting equipment (hoisting equipment means equipment, including crane, derricks, hoists and power operated equipment used with rigging to raise, lower or horizontally move a load).

1.2.11 Medical Treatment

Medical Treatment is treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.

1.2.12 Near Miss

A Near Miss is a mishap resulting in no personal injury and zero property damage, but given a shift in time or position, damage or injury may have occurred (e.g., a worker falls off a scaffold and is not injured; a crane swings around to move the load and narrowly misses a parked vehicle).

1.2.13 Operating Envelope

The Operating Envelope is the area surrounding any crane or load handling equipment. Inside this "envelope" is the crane, the operator, riggers and crane walkers, other personnel involved in the operation, rigging gear between the hook, the load, the crane's supporting structure (i.e. ground or rail), the load's rigging path, the lift and rigging procedure.

1.2.14 Qualified Person (QP)

The QP is a person designated in writing, who, by possession of a recognized degree, certificate, or professional standing, or extensive knowledge, training, and experience, has successfully demonstrated their ability to solve or resolve problems related to the subject matter, the work, or the project.

1.2.15 Qualified Person, Fall Protection (QP for FP)

A QP for FP is a person meeting the requirements of EM 385-1-1 Appendix Q, and ASSE/SAFE Z359.0, with a recognized degree or professional certificate and with extensive knowledge, training and experience in the fall protection and rescue field who is capable of designing, analyzing, and evaluating and specifying fall protection and rescue systems.

1.2.16 Recordable Injuries or Illnesses

Recordable Injuries or Illnesses are any work-related injury or illness that results in:

a. Death, regardless of the time between the injury and death, or the length of the illness;

b. Days away from work (any time lost after day of injury/illness onset);

c. Restricted work;

d. Transfer to another job;

e. Medical treatment beyond first aid;

f. Loss of consciousness; or

g. A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (a) through (f) above.

1.2.17 USACE Property and Equipment

Interpret "USACE" property and equipment specified in USACE EM 385-1-1 as Government property and equipment.

1.2.18 Load Handling Equipment (LHE) Accident or Load Handling Equipment Mishap

A LHE accident occurs when any one or more of the eight elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; or collision, including unplanned contact between the load, crane, or other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents, even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, or roll over). Document any mishap that meets the criteria described in the Contractor Significant Incident Report (CSIR) using the NAVFAC prescribed Navy Crane Center (NCC) form.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance with Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD. Submit the following in accordance with Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES and 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

APP - Pre-Design Submittal; G

APP - Pre-Construction Submittal; G

SD-06 Test Reports

Monthly Exposure Reports

Notifications and Reports

Accident Reports; G

LHE Inspection Reports

SD-07 Certificates

Contractor Safety Self-Evaluation Checklist

Crane Operators/Riggers

Standard Lift Plan; G

Critical Lift Plan ; G

Naval Architecture Analysis; G

Activity Hazard Analysis (AHA)

Confined Space Entry Permit

Hot Work Permit

Certificate of Compliance

Third Party Certification of Barge-Mounted Mobile Cranes

License Certificates

Radiography Operation Planning Work Sheet; G

Machinery & Mechanized Equipment Certification Form

1.4 MONTHLY EXPOSURE REPORTS

Provide a Monthly Exposure Report and attach to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both Prime and subcontractor. Failure to submit the report may result in retention of up to 10 percent of the voucher.

1.5 CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST

Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor at the pre-construction conference. Complete the checklist monthly and submit with each request for payment voucher. An acceptable score of 90 or greater is required. Failure to submit the completed safety self-evaluation checklist or achieve a score of at least 90 may result in retention of up to 10 percent of the voucher.

1.6 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this contract, work performed shall comply with USACE EM 385-1-1, and the following federal, state and local laws, ordinances, criteria, rules and regulations. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria,

ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.6.1 Subcontractor Safety Requirements

For this contract, neither Contractor nor any subcontractor may enter into contract with any subcontractor that fails to meet the following requirements. The term subcontractor in this and the following paragraphs means any entity holding a contract with the Contractor or with a subcontractor at any tier.

1.6.1.1 Experience Modification Rate (EMR)

Subcontractors on this contract must have an effective EMR less than or equal to 1.10, as computed by the National Council on Compensation Insurance (NCCI) or if not available, as computed by the state agency's rating bureau in the state where the subcontractor is registered, when entering into a subcontract agreement with the Prime Contractor or a subcontractor at any tier. The Prime Contractor may submit a written request for additional consideration to the Contracting Officer where the specified acceptable EMR range cannot be achieved. Relaxation of the EMR range will only be considered for approval on a case-by-case basis for special conditions and must not be anticipated as tacit approval. Contractor's Site Safety and Health Officer (SSHO) must collect and maintain the certified EMR ratings for all subcontractors on the project and make them available to the Government at the Government's request.

1.6.1.2 OSHA Days Away from Work, Restricted Duty, or Job Transfer (DART) Rate

Subcontractors on this contract must have a DART rate, calculated from the most recent, complete calendar year, less than or equal to 3.4 when entering into a subcontract agreement with the Prime Contractor or a subcontractor at any tier. The OSHA Dart Rate is calculated using the following formula:

(N/EH) x 200,000

where:

N = number of injuries and illnesses with days away, restricted work, or job transfer

EH = total hours worked by all employees during most recent, complete calendar year

200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year)

The Prime Contractor may submit a written request for additional consideration to the Contracting Officer where the specified acceptable OSHA Dart rate range cannot be achieved for a particular subcontractor. Relaxation of the OSHA DART rate range will only be considered for approval on a case-by-case basis for special conditions and must not be anticipated as tacit approval. Contractor's Site Safety and Health Officer (SSHO) must collect and maintain self-certified OSHA DART rates for all subcontractors on the project and make them available to the Government at the Government's request.

1.7 SITE QUALIFICATIONS, DUTIES, PLAN, AND MEETINGS

1.7.1 Personnel Qualifications

1.7.1.1 Site Safety and Health Officer (SSHO)

Provide an SSHO that meets the requirements of EM 385-1-1 Section 1. The SSHO must ensure that the requirements of 29 CFR 1926.16 are met for the project. Provide a Safety oversight team that includes a minimum of one (1) person at each project site to function as the Site Safety and Health Officer (SSHO). The SSHO or an equally-qualified Alternate SSHO must be at the work site at all times to implement and administer the Contractor's safety program and government-accepted Accident Prevention Plan. The SSHO and Alternate SSHO must have the required training, experience, and qualifications in accordance with EM 385-1-1 Section 01.A.17, and all associated sub-paragraphs.

If the SSHO is off-site for a period longer than 24 hours, an equally-qualified alternate SSHO must be provided and must fulfill the same roles and responsibilities as the primary SSHO. When the SSHO is temporarily (up to 24 hours) off-site, a Designated Representative (DR), as identified in the AHA may be used in lieu of an Alternate SSHO, and must be on the project site at all times when work is being performed. Note that the DR is a collateral duty safety position, with safety duties in addition to their full time occupation.

1.7.1.1.1 Additional Site Safety and Health Officer (SSHO) Requirements and Duties

The SSHO must have completed a 40 hour contract safety awareness course based on the content and principles of EM 385-1-1, and instructed in accordance with the guidelines of ASSE/SAFE Z490.1, by a trainer meeting the qualifications of paragraph QUALIFIED TRAINER REQUIREMENTS. If the SSHO does not have a current certification, certification must be obtained within 60 days, maximum, of contract award.

Comply with the additional QC and Contractor Jobsite Personnel requirements for NAVFC Marianas projects.

The Contractor Quality Control Manager can be the SSHO on this project, but at no time shall all three functions (QC, Superintendent and SSHO) be assigned to the same individual. The individual is required to meet the same competency level of the SSHOs, demonstrates the proficiency required, and is approved by the Contracting Officer in consultation with the NAVFAC MARIANAS Site Safety and Health Manager.

1.7.1.3 Competent Person Qualifications

Provide Competent Persons in accordance with EM 385-1-1, Appendix Q and herein. Competent Persons for high risk activities include confined space, cranes and rigging, excavation/trenching, fall protection, and electrical work. The CP for these activities must be designated in writing, and meet the requirements for the specific activity (i.e. competent person, fall protection).

The Competent Person identified in the Contractor's Safety and Health Program and accepted Accident Prevention Plan, must be on-site at all times

when the work that presents the hazards associated with their professional expertise is being performed. Provide the credentials of the Competent Persons(s) to the Contracting Officer for information in consultation with the Safety Office.

1.7.1.3.1 Competent Person for Confined Space Entry

Provide a Confined Space (CP) Competent Person who meets the requirements of EM 385-1-1, Appendix Q, and herein. The CP for Confined Space Entry must supervise the entry into each confined space.

Since this work involves marine operations that handle combustible or hazardous materials, this person must have the ability to understand and follow through on the air sampling, Personal Protective Equipment (PPE), and instructions of a Marine Chemist, Coast Guard authorized persons, or Certified Industrial Hygienist. Confined space and enclosed space work must comply with NFPA 306, OSHA 29 CFR 1915, Subpart B, "Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment," or as applicable, 29 CFR 1910.147 for general industry.

1.7.1.3.2 Competent Person for Scaffolding

Provide a Competent Person for Scaffolding who meets the requirements of EM 385-1-1, Section 22.B.02 and herein.

1.7.1.3.3 Competent Person for Fall Protection

Provide a Competent Person for Fall Protection who meets the requirements of EM 385-1-1, Section 21.C.04 and herein.

1.7.1.4 Qualified Trainer Requirements

Individuals qualified to instruct the 40 hour contract safety awareness course, or portions thereof, must meet the definition of a Competent Person Trainer, and, at a minimum, possess a working knowledge of the following subject areas: EM 385-1-1, Electrical Standards,Lockout/Tagout, Fall Protection, Confined Space Entry for Construction; Excavation, Trenching and Soil Mechanics, and Scaffolds in accordance with 29 CFR 1926.450, Subpart L.

Instructors are required to:

a. Prepare class presentations that cover construction-related safety requirements and includes topics covered in the NAVFAC Construction Safety Hazard Awareness Course for Contractors.

b. Ensure that all attendees attend all sessions by using a class roster signed daily by each attendee. Maintain copies of the roster for at least five (5) years. This is a certification class and must be attended 100 percent. In cases of emergency where an attendee cannot make it to a session, the attendee can make it up in another class session for the same subject.

c. Update training course materials whenever an update of the EM 385-1-1 becomes available.

d. Provide a written exam of at least 50 questions. Students are required to answer 80 percent correctly to pass.

e. Request, review and incorporate student feedback into a continuous course improvement program.

1.7.1.5 Requirements for all Contractor Jobsite Personnel Holding H-1B or H-2B Visas:

All Contractor jobsite workers holding an H-1B or H-2B visa must complete a minimum 16 hours of classroom training on the requirements of the latest version of EM 385-1-1 prior to their first day on the jobsite to include but not limited to the following topics: Sanitation; Medical and First Aid Requirements; Temporary Facilities; Personal Protective Equipment; Electrical; Hand and Power Tools; Material Handling and Storage; Motor Vehicles; Fall Protection; Work Platforms and Scaffoldings; Demolition; Safe Access, Ladders, Floor & Wall Openings, Stairs and Railing Systems; Excavations and Trenching; and Confined Spaces, prior to reporting to the jobsite.

Submit a list of workers who have completed the training to the Contracting Officer prior to them reporting to the jobsite. Update the list as additional workers are added. Maintain the updated list at the jobsite for review by the government's designated authority. Include the qualifications of qualified trainer(s) that provided the training. Personnel who have taken the 40 Hour Construction Safety Hazard Awareness Training Course for Contractors or similar course that includes emphasis on EM 385-1-1 compliance, are not required to take the 16 hours of classroom training on the requirements of the latest version of the EM 385-1-1. The 16 hours classroom training may be provided by the Guam Contractors Association Trades Academy (GCA Trades Academy) or other qualified trainers as outlined in paragraph QUALIFIED TRAINER REQUIREMENTS.

1.7.1.6 Crane Operators/Riggers

Provide Operators meeting the requirements in EM 385-1-1, Section 15.B for Riggers and Section 16.B for Crane Operators. In addition, for mobile cranes with Original Equipment Manufacturer (OEM) rated capacities of 50,000 pounds or greater, designate crane operators qualified by a source that qualifies crane operators (i.e., union, a government agency, or an organization that tests and qualifies crane operators). Provide proof of current qualification.

1.7.2 Personnel Duties

1.7.2.1 Duties of the Site Safety and Health Officer (SSHO)

The SSHO must:

a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Attach safety inspection logs to the Contractors' daily production report.

b. Conduct mishap investigations and complete required accident reports. Report mishaps and near misses.

c. Use OSHA's Form 300 to log work-related injuries and illnesses occurring on the project site for Prime Contractors and subcontractors. Post and maintain the Form 300 on the site Safety Bulletin Board.

d. Maintain applicable safety reference material on the job site.

e. Attend the pre-construction conference, pre-work meetings including preparatory meetings, and periodic in-progress meetings.

f. Review the APP and AHAs for compliance with EM 385-1-1, and approve, sign, implement and enforce them.

g. Establish a Safety and Occupational Health (SOH) Deficiency Tracking System that lists and monitors outstanding deficiencies until resolution.

h. Ensure subcontractor compliance with safety and health requirements.

i. Maintain a list of hazardous chemicals on site and their material Safety Data Sheets (SDS).

j. Maintain a weekly list of high hazard activities involving energy, equipment, excavation, entry into confined space, and elevation, and be prepared to discuss details during QC Meetings.

k. Provide and keep a record of site safety orientation and indoctrination for Contractor employees, subcontractor employees, and site visitors.

Superintendent, QC Manager, and SSHO are subject to dismissal if the above duties are not being effectively carried out. If Superintendent, QC Manager, or SSHO are dismissed, project work will be stopped and will not be allowed to resume until a suitable replacement is approved and the above duties are again being effectively carried out.

1.7.3 Meetings

1.7.3.1 Prework Conference

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project must attend the Prework Conference. This includes the project superintendent, Site Safety and Occupational Health officer, quality control manager, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

b. Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, and Government review of AHAs to preclude project delays.

c. Deficiencies in the submitted APP, identified during the Contracting Officer's review, must be corrected, and the APP re-submitted for review prior to the scheduling the Prework Conference. Work is not permitted to begin until an APP is established that is acceptable to the Contracting Officer.

1.7.3.2 Safety Meetings

Conduct safety meetings to review past activities, plan for new or changed operations, review pertinent aspects of appropriate AHA (by trade), establish safe working procedures for anticipated hazards, and provide pertinent Safety and Occupational Health (SOH) training and motivation. Conduct meetings at least once a month for all supervisors on the project location. The SSHO, supervisors, foremen, or CDSOs must conduct meetings at least once a week for the trade workers. Document meeting minutes to include the date, persons in attendance, subjects discussed, and names of individual(s) who conducted the meeting. Maintain documentation on-site and furnish copies to the Contracting Officer on request. Notify the Contracting Officer of all scheduled meetings 7 calendar days in advance.

1.8 ACCIDENT PREVENTION PLAN (APP)

1.8.1 Plans and Submissions

1.8.1.1 APP - Pre-Design Submittal

Provide a site-specific Accident Prevention Plan (APP), including Activity Hazard Analyses (AHA), in accordance with the US Army Corps of Engineers Safety and Health Manual EM 385-1-1 Appendix A, paragraph 3.k for the design team to follow during site visits and investigations. For subsequent visits, update the form if there are changes in the personnel who will be attending, or the tasks to be performed. Submit the APP for review and acceptance by the Government at least 15 calendar days prior to the start of the design field work. Field work may not begin until the pre-design APP is accepted by the Contracting Officer.

If the design scope includes borings or other subsurface investigations, as part of the APP identify the type of field investigation and verification techniques, such as visual, local utility locating service scanning and third party/subcontractor scanning, potholing, or hand digging within two feet of a known utility. Mark underground utilities before starting any ground-disturbing actions. Notify the Contracting Officer 15 days prior to the start of soil borings or sub-surface investigations.

Prior to the start of construction incorporate the Pre-Design APP into the Pre-Construction APP so that one site specific APP exists for the project and submit to the Contracting Officer for acceptance

1.8.1.2 Accident Prevention Plan - Pre-Construction Submittal

A qualified person must prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of EM 385-1-1, Appendix A, and as supplemented herein. Cover all paragraph and subparagraph elements in EM 385-1-1, Appendix A. The APP must be job-specific and address any unusual or unique aspects of the project or activity for which

it is written. The APP must interface with the Contractor's overall safety and health program referenced in the APP in the applicable APP element, and made site-specific. Describe the methods to evaluate past safety performance of potential subcontractors in the selection process. Also, describe innovative methods used to ensure and monitor safe work practices of subcontractors. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP must be signed by an officer of the firm (Prime Contractor senior person), the individual preparing the APP, the on-site superintendent, the designated SSHO, the Contractor Quality Control Manager, and any designated Certified Safety Professional (CSP) or Certified Health Physicist (CIH). The SSHO must provide and maintain the APP and a log of signatures by each subcontractor foreman, attesting that they have read and understand the APP, and make the APP and log available on-site to the Contracting Officer. If English is not the foreman's primary language, the Prime Contractor must provide an interpreter.

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP. Once reviewed and accepted by the Contracting Officer, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP is cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified. Continuously review and amend the APP, as necessary, throughout the life of the contract. Changes to the accepted APP must be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and Quality Control Manager. Incorporate unusual or high-hazard activities not identified in the original APP as they are discovered. Should any severe hazard exposure (i.e. imminent danger) become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate and remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ASSE/SAFE A10.34), and the environment.

1.8.2 Names and Qualifications

Provide plans in accordance with the requirements outlined in Appendix A of EM 385-1-1, including the following:

a. Names and qualifications (resumes including education, training, experience and certifications) of site safety and health personnel designated to perform work on this project to include the designated Site Safety and Health Officer and other competent and qualified personnel to be used. Specify the duties of each position.

b. Qualifications of competent and of qualified persons. As a minimum, designate and submit qualifications of competent persons for each of the following major areas: excavation; scaffolding; fall protection;

hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; and personal protective equipment and clothing to include selection, use and maintenance.

1.8.3 Plans

Provide plans in the APP in accordance with the requirements outlined in Appendix A of EM 385-1-1, including the following:

1.8.3.1 Confined Space Entry Plan

Develop a confined or enclosed space entry plan in accordance with EM 385-1-1, applicable OSHA standards 29 CFR 1910, 29 CFR 1915, and 29 CFR 1926, OSHA Directive CPL 2.100, and any other federal, state and local regulatory requirements identified in this contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

1.8.3.2 Standard Lift Plan (SLP)

Plan lifts to avoid situations where the operator cannot maintain safe control of the lift. Prepare a written SLP in accordance with EM 385-1-1, Section 16.A.03, using Form 16-2 for every lift or series of lifts (if duty cycle or routine lifts are being performed). The SLP must be developed, reviewed and accepted by all personnel involved in the lift in conjunction with the associated AHA. Signature on the AHA constitutes acceptance of the plan. Maintain the SLP on the LHE for the current lift(s) being made. Maintain historical SLPs for a minimum of 3 months.

1.8.3.3 Critical Lift Plan - Crane or Load Handling Equipment

Provide a Critical Lift Plan as required by EM 385-1-1, Section 16.H.01, using Form 16-3. Critical lifts require detailed planning and additional or unusual safety precautions. Develop and submit a critical lift plan to the Contracting Officer 30 calendar days prior to critical lift. Comply with load testing requirements in accordance with EM 385-1-1, Section 16.F.03.

In addition to the requirements of EM 385-1-1, Section 16.H.02, the critical lift plan must include the following:

a. For lifts of personnel, demonstrate compliance with the requirements of 29 CFR 1926.1400 and EM 385-1-1, Section 16.T.

b. For barge mounted mobile cranes, provide a Naval Architecture Analysis and include an LHE Manufacturer's Floating Service Load Chart in accordance with the criteria from the selected standard in EM 385-1-1, Section 16.L.02. The Floating Service Load Chart must provide a table of rated load versus boom angle and radius. The Floating Service Load Chart must also provide the maximum allowable machine list and trim associated with the tabular loads and radii provided. If the Manufacturer's Floating Service Load Chart is not available, a floating service load chart may be developed and provided by a qualified

Registered Professional Engineer (RPE), competent in the field of floating cranes. The Load Chart must be in accordance with the criteria from the selected standard in EM 385-1-1, Section 16.L; provide a table of rated load versus boom angle and radius; provide the maximum allowable machine list and machine trim associated with the tabular loads and radii provided; and be stamped by a RPE qualified and competent in the field of floating cranes. The RPE, competent in the field of floating cranes must stamp and certify (sign) that the Naval Architectural Analysis (NAA) meets the requirements of EM 385-1-1, Section 16.L.03.

c. Multi-purpose machines, material handling equipment, and construction equipment used to lift loads that are suspended by rigging gear, require proof of authorization from the machine OEM that the machine is capable of making lifts of loads suspended by rigging equipment. Demonstrate that the operator is properly trained and that the equipment is properly configured to make such lifts and is equipped with a load chart.

1.8.3.4 Fall Protection and Prevention (FP&P) Plan

The plan must comply with the requirements of EM 385-1-1, Section 21.D and ASSE/SAFE Z359.2, be site specific, and address all fall hazards in the work place and during different phases of construction. Address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 1.8 m (6 feet). A competent person or qualified person for fall protection must prepare and sign the plan documentation. Include fall protection and prevention systems, equipment and methods employed for every phase of work, roles and responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Review and revise, as necessary, the Fall Protection and Prevention Plan documentation as conditions change, but at a minimum every six months, for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. Keep and maintain the accepted Fall Protection and Prevention Plan documentation at the job site for the duration of the project. Include the Fall Protection and Prevention Plan documentation in the Accident Prevention Plan (APP).

1.8.3.5 Rescue and Evacuation Plan

Provide a Rescue and Evacuation Plan in accordance with EM 385-1-1 Section 21.N and ASSE/SAFE Z359.2, and include in the FP&P Plan and as part of the APP. Include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility.

1.8.3.6 Hazardous Energy Control Program (HECP)

Develop a HECP in accordance with EM 385-1-1 Section 12, 29 CFR 1910.147, 29 CFR 1910.333, 29 CFR 1915.89, ASSE/SAFE Z244.1, and ASSE/SAFE A10.44. Submit this HECP as part of the Accident Prevention Plan (APP). Conduct a preparatory meeting and inspection with all effected personnel to coordinate all HECP activities. Document this meeting and inspection in accordance

with EM 385-1-1, Section 12.A.02. Ensure that each employee is familiar with and complies with these procedures.

1.8.3.7 Excavation Plan

Identify the safety and health aspects of excavation, and provide and prepare the plan in accordance with EM 385-1-1, Section 25.A and Section 31 00 00 EARTHWORK.

1.8.3.8 Occupant Protection Plan

When applicable, identify the safety and health aspects of lead-based paint removal, prepared in accordance with Section 02 82 33.13 20 REMOVAL/CONTROL AND DISPOSAL OF PAINT WITH LEAD.

1.8.3.9 Lead Compliance Plan

When applicable, identify the safety and health aspects of lead work, and prepare in accordance with Section 02 83 13.00 20 LEAD IN CONSTRUCTION.

1.8.3.10 Asbestos Hazard Abatement Plan

When applicable, identify the safety and health aspects of asbestos work, and prepare in accordance with Section 02 82 16.00 20 ENGINEERING CONTROL OF ASBESTOS CONTAINING MATERIALS.

1.8.3.11 Site Safety and Health Plan

When applicable, identify the safety and health aspects, and prepare in accordance with Section 01 35 29.13 HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES FOR CONTAMINATED SITES.

1.8.3.12 PCB Plan

When applicable, identify the safety and health aspects of Polychlorinated Biphenyls work, and prepare in accordance with Sections 02 84 33 REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCBs) and 02 61 23 REMOVAL AND DISPOSAL OF PCB CONTAMINATED SOILS.

1.8.3.13 Site Demolition Plan

When applicable, identify the safety and health aspects, and prepare in accordance with Section 02 41 00 DEMOLITION and referenced sources. Include engineering survey as applicable.

1.9 ACTIVITY HAZARD ANALYSIS (AHA)

Before beginning each activity, task or Definable Feature of Work (DFOW) involving a type of work presenting hazards not experienced in previous project operations, or where a new work crew or subcontractor is to perform the work, the Contractor(s) performing that work activity must prepare an AHA. AHAs must be developed by the Prime Contractor, subcontractor, or supplier performing the work, and provided for Prime Contractor review and approval before submitting to the Contracting Officer. AHAs must be signed by the SSHO, Superintendent, QC Manager and the subcontractor Foreman performing the work. Format the AHA in accordance with EM 385-1-1, Section 1 or as directed by the Contracting Officer. Submit the AHA for review at least 15 working days prior to the start of each activity task, or DFOW. The Government reserves the right to require the Contractor to revise and resubmit the AHA if it fails to effectively identify the work sequences,

specific anticipated hazards, site conditions, equipment, materials, personnel and the control measures to be implemented.

AHAs must identify competent persons required for phases involving high risk activities, including confined entry, crane and rigging, excavations, trenching, electrical work, fall protection, and scaffolding.

1.9.1 AHA Management

Review the AHA list periodically (at least monthly) at the Contractor supervisory safety meeting, and update as necessary when procedures, scheduling, or hazards change. Use the AHA during daily inspections by the SSHO to ensure the implementation and effectiveness of the required safety and health controls for that work activity.

1.9.2 AHA Signature Log

Each employee performing work as part of an activity, task or DFOW must review the AHA for that work and sign a signature log specifically maintained for that AHA prior to starting work on that activity. The SSHO must maintain a signature log on site for every AHA. Provide employees whose primary language is other than English, with an interpreter to ensure a clear understanding of the AHA and its contents.

1.6.4 Meetings

1.6.4.1 Pre-construction Conference

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the Prework conference. This includes the project superintendent, site safety and health officer (SSHO), quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, programs, and procedures associated with it).

b. Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. At a minimum all definable features of work are to have an AHA developed. In addition, establish a schedule for the preparation, submittal, review, and acceptance of AHAs to preclude project delays.

c. Deficiencies in the submitted APP will be brought to the attention of the Contractor and the Contractor shall revise the plan to correct deficiencies and re-submit for acceptance. Do not begin work until there is an accepted APP. A returned APP should be corrected prior to scheduling the Pre-construction meeting.

d. The functions of a Preconstruction conference may take place at the Post-Award Kickoff meeting for Design Build Contracts.

1.6.4.2 Safety Meetings for Employees

Conduct and document meetings as required by EM 385-1-1. Attach minutes showing contract title, signatures of attendees and a list of topics discussed to the Contractors' daily production report.

1.6.5 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.7 NOTIFICATIONS and REPORTS

1.7.1 Accident Notifications

a. Notify the Contracting Officer as soon as practical, but no more than four hours after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than $2,000, or any weight handling equipment accident. Within notification include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

1.7.2 Accident Reports

a. Conduct an accident investigation for recordable injuries and illnesses, as defined in "Article - Definitions" property damage accidents resulting in at least $20,000 in damages, and near misses as defined in "Article - Definitions" to establish the root cause(s) of the accident, complete the applicable NAVFAC Contractor Incident Reporting System (CIRS) and electronically submit via the NAVFAC Enterprise Safety Applications Management System (ESAMS) The Contracting Officer will provide copies of any required or special forms.

b. Near Misses: Require the completion of the applicable NAVFAC Contractor Incident Reporting System (CIRS) and electronically submit via the NAVFAC Enterprise Safety Applications Management System (ESAMS).

c. Conduct an accident investigation for any weight handling equipment accident (including rigging gear accidents) to establish the root cause(s) of the accident, complete the WHE Accident Report (Crane and Rigging Gear) form and provide the report to the Contracting Officer within 30 calendar days of the accident. Do not proceed with crane operations until cause is determined and corrective actions have been implemented to the satisfaction of the contracting officer. The Contracting Officer will provide a blank copy of the accident report form.

1.7.3 Crane Reports

Submit crane inspection reports required in accordance with USACE EM385-1-1, Appendix I and as specified herein with Daily Reports of Inspections.

1.8 HOT WORK

Prior to performing "Hot Work" (welding, cutting, etc.) or operating other flame-producing/spark producing devices, a written permit shall be requested from the Fire Division. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. It is mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in accordance with NFPA 51B and remain on-site for a minimum of 30 minutes after completion of the task or as specified on the hot work permit.

When starting work in the facility, require personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency Fire Division phone number. ANY FIRE, NO MATTER HOW SMALL, SHAL BE REPORTED TO THE RESPONSIBLE FIRE DIVISION IMMEDIATELY.

Obtain services from a NFPA Certified Marine Chemist for "HOT WORK" within or around flammable materials (such as fuel systems, welding/cutting on fuel pipes) or confined spaces (such as sewer wet wells, manholes, vaults, etc.) that have the potential for flammable or explosive atmospheres.

1.9 RADIATION SAFETY REQUIREMENTS

License Certificates for radiation materials and equipment shall be submitted to the Contracting Officer and Radiation Safety Office (RSO), and Contracting Oversight Technician (COT) for all specialized and licensed material and equipment that could cause fatal harm to construction personnel or to the construction project.

Workers shall be protected from radiation exposure in accordance with 10 CFR 20. Standards for Protection Against Radiation.

License Certificates, employee training records, and Leak Test Reports for radiation materials and equipment shall be submitted to the Contracting Officer and Navy Radiation Safety Office (RSO), and Contracting Oversight Technician (COT) for all specialized and licensed material and equipment proposed for use on the construction project. Maintain on-site records whenever licensed radiological materials or ionizing equipment are on government property.

Protect workers from radiation exposure in accordance with 10 CFR 20. Standards for Protection against radiation, ensuring any personnel exposures are maintained As Low As Reasonably Achievable.

Submit a Radiography Operation Planning Work Sheet to Contracting Officer 14 days prior to commencement of operations involving radioactive materials or radiation generating devices. The Contracting Officer and COT will review this worksheet and submit questions and comments.

Contractors must use primary dosimeters process by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory.

Coordinate site access and security requirements with the Contracting Officer and COT for all radiological materials and equipment containing

ionizing radiation that are proposed for use on a government facility. The Navy COT or authorized representative will meet the contractor at a designated location, ensure safety of the materials being transported, and will escort the contractor to the job site and return upon completion of the work.

Loss or release of radioactive materials, and unplanned personnel exposures must be reported immediately to the Contracting Officer, RSO, and Base Security Department Emergency Number.

Actual exposure of the radiographic film or unshielding the source must not be initiated until after 5 p.m. on weekdays.

Provide a copy of all calibration records, and utilization records to the COT for radiological operations performed on the site.

Properly demark and barricade an area surrounding radiological operations to preclude personnel entrance, as per Navy Instruction, EM-385-1-1, Nuclear Regulatory Commission and Applicable State regulations and license requirements, and as per requirements established in the accepted Radiography Operation Planning Work Sheet.

Properly secure the radiological material and ionizing radiation equipment at all times, including keeping the devices in a properly marked and locked container, and secondarily locking the container to a secure point in the Contractor’s vehicle or other approved storage location during transportation and while not in use. While in use, maintain a continuous visual observation on the radiological material and ionizing radiation equipment. In instances where radiography is scheduled near or adjacent to buildings or areas having limited access or one-way doors, no assumptions shall be made as to building occupancy. Where necessary, the Contracting Officer will direct the Contractor to conduct an actual building entry, search, and alert. Where removal of personnel from such a building cannot be accomplished and it is otherwise safe to proceed with the radiography, a fully instructed employee shall be positioned inside such building or area to prevent exiting while external radiographic operations are in process.

Transportation of Regulated Amounts of Radioactive Material will comply with 49 CFR, Subchapter C, Hazardous Material Regulations. Notify Local Fire authorities and the site Radiation Safety officer (RSO) of any Radioactive Material use.

Transmitter Requirements: The base policy concerning the use of transmitters such as radios, cell phones, etc., must be adhered to by all Contractor personnel. They must also obey Emissions control (EMCON) restrictions.

1.10 FACILITY OCCUPANCY CLOSURE

Streets, walks, and other facilities occupied and used by the Government shall not be closed or obstructed without written permission from the Contracting Officer.

1.11 CONFINED SPACE ENTRY REQUIREMENTS

Contractors entering and working in confined spaces performing shipyard industry work are required to follow the requirements of OSHA 29 CFR 1915.

Contractors entering and working in confined spaces performing general industry work are required to follow the requirements of OSHA 29 CFR Part 1926 and comply with the requirements in Section 34 of USACE EM 385-1-1, OSHA 29 CFR 1910, and OSHA 29 CFR 1910.146.

1.12 GAS PROTECTION

Contractor shall have one or more employees properly trained in operation of gas testing equipment and formally qualified as gas inspectors who shall be on duty during times workmen are in confined spaces. Their primary functions shall be to test for gas and operate testing equipment. Unless equipment of constant supervisory type with automatic alarm is employed, gas tests shall be made at least every 2 hours or more often when character of ground or experience indicates gas may be encountered. A gas test shall be made before workmen are permitted to enter the excavation after an idle period exceeding one-half hour.

Readings shall be permanently recorded daily, indicating the concentration of gas, point of test, and time of test. Submit copies of the gas test readings to the Contracting Officer at the end of each work day. Special requirements, coordination, and precautions will apply to areas that contain a hazardous atmosphere or, by virtue of their use or physical character may be oxygen deficient. A check by Government is required prior to entering confined space. Surveillance and monitoring shall be required in these types of work spaces by both Contractor and Government personnel.

1.13 HIGH NOISE LEVEL PROTECTION

Operations performed by the Contractor that involve the use of equipment with output of high noise levels (jackhammers, air compressors, and explosive device activated tools) shall be scheduled for. Use of any such equipment shall be approved in writing by the Contracting Officer prior to commencement of work.

PART 2 PRODUCTS

2.1 CONFINED SPACE SIGNAGE

The Contractor shall provide permanent signs integral to or securely attached to access covers for permit-required confined spaces provided by this contract. Signs wording: "DANGER--PERMIT-REQUIRED CONFINED SPACE - DO NOT ENTER -" in bold letters a minimum of 25 mm (one inch) in height and constructed to be clearly legible with all paint removed. The signal word "DANGER" shall be red and readable from 1.52 m (5 feet).

2.2 FALL PROTECTION ANCHORAGE

Leave in place fall protection anchorage, conforming to ASSE/SAFE Z359.1, installed under the supervision of a qualified person in fall protection, for continued customer use and so identified by signage stating the capacity of the anchorage (strength and number of persons who may be tied-off to it at any one time).

2.2.1 Existing Anchorage

Certified (or re-certified) by a qualified person for fall protection existing anchorages, to be used for attachment of personal fall arrest equipment in accordance with ASSE/SAFE Z359.1. Exiting horizontal lifeline anchorages must be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

PART 3 EXECUTION

3.1 CONSTRUCTION, DESIGN, and OTHER WORK

Comply with USACE EM 385-1-1, NFPA 1, NFPA 70, NFPA 70E, NFPA 241, the APP, the AHA, Federal and/or State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard prevails. PPE is governed in all areas by the nature of the work the employee is performing. Use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks. Safety glasses must be carried/available on each person.

Mandatory as a minimum, all personnel including visitors shall wear ANSI/ISEA 107-2004 Class I compliant apparel. When risk level exceeds those of Class I, the proper Class II or Class III safety apparel shall be worn. PPE includes:

a. Hard Hat

b. Appropriate Safety Shoes

c. Reflective Vests or Harness with reflective and fluorescent material

d. Eye Protection or Safety Glasses

3.1.1 Hazardous Material Use

Each hazardous material must receive approval prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material.

3.1.2 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocynates, lead-based paint are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials. The Radiation Safety Officer (RSO) must be notified prior to excepted items of radioactive material and devices being brought on base.

3.1.3 Unforeseen Hazardous Material

The design should have identified materials such as PCB, lead paint, and friable and non-friable asbestos. If [additional] material, not indicated,

that may be hazardous to human health upon disturbance during operations is encountered, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will validate if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

3.2 PRE-OUTAGE COORDINATION MEETING

Contractors are required to apply for utility outages at least 15 days in advance. As a minimum, the request should include the location of the outage, utilities being affected, duration of outage, and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring shut down, the Contractor shall attend a pre-outage coordination meeting with the Contracting Officer and the Base Operations Support Contractor to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist. For electrical work positive cable/circuit identification must be made prior to submitting any outage request. Arrangements are to be coordinated with the Contracting Officer and Station Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Following the application of lockout/tag out devices to all hazardous energy sources, applicable AHA should outline equipment restart methods to ensure "zero energy" state has been accomplished.

3.3 CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

Contractor shall ensure that each employee is familiar with and complies with these procedures and USACE EM 385-1-1, Section 12, Control of Hazardous Energy.

3.4 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

Establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. Within the program include company policy, identify responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures.

3.4.1 Training

Institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, provide training for each employee who might be exposed to fall hazards. Provide training by a competent person for fall protection in accordance with USACE EM 385-1-1, Section 21.B.

3.4.2 Fall Protection Equipment and Systems

Enforce use of the fall protection equipment and systems designated for each

specific work activity in the Fall Protection and Prevention Plan and/or AHA at all times when an employee is exposed to a fall hazard. Protect employees from fall hazards as specified in EM 385-1-1, Section 21. In addition to the required fall protection systems, safety skiff, personal floatation devices, life rings etc., are required when working above or next to water in accordance with USACE EM 385-1-1, Paragraphs 21.N through 21.N.04. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall arrest systems are required when operating other equipment such as scissor lifts if the work platform is capable of being positioned outside the wheelbase. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, or travel. Fall protection must comply with 29 CFR 1926.500, Subpart M, USACE EM 385-1-1 and ASSE/SAFE A10.32.

3.4.3 Personal Fall Arrest Equipment

Personal fall arrest equipment, systems, subsystems, and components shall meet ASSE/SAFE Z359.1. Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. Body belts may only be used as a positioning device system (for uses such as steel reinforcing assembly and in addition to an approved fall arrest system). Harnesses shall have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Only locking snap hooks and carabiners shall be used. Webbing, straps, and ropes shall be made of synthetic fiber. The maximum free fall distance when using fall arrest equipment shall not exceed 1.8 m 6 feet. The total fall distance and any swinging of the worker (pendulum-like motion) that can occur during a fall shall always be taken into consideration when attaching a person to a fall arrest system.

3.4.4 Fall Protection for Roofing Work

Implement fall protection controls based on the type of roof being constructed and work being performed. Evaluate the roof area to be accessed for its structural integrity including weight-bearing capabilities for the projected loading.

a. Low Sloped Roofs:

(1) For work within 1.8 m 6 feet of an edge, on low-slope roofs, Protect personnel from falling by use of personal fall arrest systems, guardrails, or safety nets. A safety monitoring system used by itself as the only form of fall protection system is not adequate fall protection and is not authorized.

(2) For work greater than 1.8 m 6 feet from an edge, erect and install warning lines in accordance with 29 CFR 1926.500 and USACE EM 385-1-1.

b. Steep-Sloped Roofs: Work on steep-sloped roofs requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also includes residential or housing type construction, repair, or maintenance.

3.4.5 Horizontal Lifelines

Design, install, certify and use under the supervision of a qualified person horizontal lifelines for fall protection as part of a complete fall arrest system which maintains a safety factor of 2 (29 CFR 1926.500).

3.4.6 Guardrails and Safety Nets

Design, install and use guardrails and safety nets in accordance with EM 385-1-1 and 29 CFR 1926 Subpart M.

3.4.7 Rescue and Evacuation Procedures

When personal fall arrest systems are used, the Contractor must ensure the mishap victim can self-rescue or can be rescued promptly should a fall occur. Prepare a Rescue and Evacuation Plan and include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. Include the Rescue and Evacuation Plan within the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP).

3.4.8 Scaffold

Provide employees with a safe means of access to scaffold platforms. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Access scaffold platforms greater than 6 m 20 feet maximum in height by use of a scaffold stair system. Do not use vertical ladders commonly provided by scaffold system manufacturers for accessing scaffold platforms greater than 6 m (20 feet) maximum in height. The use of an adequate gate is required. Ensure that employees are qualified to perform scaffold erection and dismantling. Do not use scaffold without the capability of supporting at least four times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection and prevention plan. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward. Give special care to ensure scaffold systems are not overloaded. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material are prohibited. The first tie-in shall be at a minimum at the height equal to 4 times the width of the smallest dimension of the scaffold base. Place work platforms on mud sills. Scaffold or work platform erectors shall have fall protection during the erection and dismantling of scaffolding or work platforms that are more than six feet. Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection Program and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

3.4.9 Stilts

The use of stilts for gaining additional height in construction, renovation, repair or maintenance work is prohibited.

3.4.10 Fall Prevention during Design Phase

During design phase the Contractor shall consider and eliminate fall hazards encountered during the operation and maintenance evolutions of the facility. If it is not feasible to eliminate or prevent the need to work at heights with its subsequent exposure to fall hazards, control measures should be included in the design to protect personnel conducting maintenance work after completion of the project. In addition to the detailed requirements included in the provisions of this contract, the design work shall incorporate the requirements of 29 CFR 1910 Standards and ASSE/SAFE Z359.0, ASSE/SAFE Z359.1, ASSE/SAFE Z359.2, ASSE/SAFE Z359.3, ASSE/SAFE Z359.4 and ASSE/SAFE A1264.1, NFPA 1.

3.5 EQUIPMENT

3.5.1 Material Handling and Applicable Mechanized Equipment

a. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions. Additionally, when material handling equipment is used as a crane it must meet NAVFAC P-307 requirements in Sections 1.7.2, "Contractor Operated Cranes," and 12, "Investigation and Reporting of Crane and Rigging Gear Accidents."

c. Operators of forklifts or power industrial trucks shall be licensed in accordance with OSHA. Proof of qualifications for operator shall be kept on the project site and addressed as part of the AHA.

d. Manufacture specifications or owner’s manual for the equipment shall be on-site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA or USACE EM 385-1-1. Incorporate such additional safety precautions or requirements into the AHAs.

e. Machinery & Mechanized Equipment are subject to additional Navy proof of certification. A certification form for acceptance by the Contracting Officer prior to being placed into use may be required.

f. Submit a Machinery & Mechanized Equipment Certification Form for acceptance by the Contracting Officer prior to being placed into use. A copy of the certification form will be provided during the Pre-construction Conference.

3.5.2 Weight Handling Equipment

a. Equip cranes and derricks as specified in EM 385-1-1, section 16.

b. Notify the Contracting Officer 15 days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Prior to cranes entering federal activities, a Crane Access Permit must be obtained from the Contracting Officer. A copy of the permitting process will be provided at the Preconstruction Conference. Contractor's operator shall remain with the crane during the spot check.

c. Comply with the crane manufacturer's specifications and limitations for erection, operation of cranes and hoists used and the Crane Critical Lift Plan in support of the work. Perform erection under the supervision of a designated person (as defined in ASME B30.5). Perform all testing in accordance with the manufacturer's recommended procedures.

d. Comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for construction tower cranes, and ASME B30.8 for floating cranes and floating derricks.

e. Under no circumstance shall a Contractor make a lift at or above 90 percent of the cranes rated capacity in any configuration.

f. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and follow the requirements of USACE EM 385-1-1 Section 11, NAVFAC P-307 Figure 10-3 and ASME B30.5 or ASME B30.22 as applicable.

g. Do not crane suspended personnel work platforms (baskets) unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Do not lift personnel with a line hoist or friction crane.

h. Inspect, maintain, and recharge portable fire extinguishers as specified in NFPA 10, Standard for Portable Fire Extinguishers.

i. All employees must keep clear of loads about to be lifted and of suspended loads.

j. Use cribbing when performing lifts on outriggers.

k. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.

l. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.

m. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by Contracting Officer personnel.

n. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by Contracting Officer personnel.

o. Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

p. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. Prior to conducting lifting operations set a maximum wind speed at which a crane can be safely operated based on the equipment being used, the load being lifted, experience of operators and riggers, and hazards on the work

site. This maximum wind speed determination shall be included as part of the activity hazard analysis plan for that operation.

3.6 EXCAVATIONS

Soil classification must be performed by a competent person in accordance with 29 CFR 1926 and EM 385-1-1.

All excavation work is subject to ESS/MEC (Explosives Safety Submission/ Munitions and Explosives of Concern) requirements.

3.6.1 Utility Locations

All underground utilities in the work area must be positively identified by a third party, independent, private utility locating company in addition to any station locating service and coordinated with the station utility department. Any markings made during the utility investigation must be maintained throughout the contract. Locate utilities in accordance with Section 01 14 00.05 20 WORK RESTRICTIONS FOR DESIGN-BUILD.

3.6.2 Utility Location Verification

The Contractor must physically verify underground utility locations, including utility depth, by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system. Digging within 610 mm (2 feet) of a known utility must not be performed by means of mechanical equipment; hand digging shall be used. If construction is parallel to an existing utility expose the utility by hand digging every 30.5 m (100 feet) if parallel within 1.5 m (5 feet) of the excavation.

3.6.3 Utilities Within and Under Concrete, Bituminous Asphalt, and Other Impervious Surfaces

Utilities located within and under concrete slabs or pier structures, bridges, parking areas, and the like, are extremely difficult to identify. Whenever contract work involves chipping, saw cutting, or core drilling through concrete, bituminous asphalt or other impervious surfaces, the existing utility location must be coordinated with station utility departments in addition to location and depth verification by a third party, independent, private locating company. The third party, independent, private locating company shall locate utility depth by use of Ground Penetrating Radar (GPR), X-ray, bore scope, or ultrasound prior to the start of demolition and construction. Outages to isolate utility systems must be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the Contractor from meeting this requirement.

3.6.4 Shoring Systems

Trench and shoring systems must be identified in the accepted safety plan and AHA. Manufacture tabulated data and specifications or registered engineer tabulated data for shoring or benching systems shall be readily available on-site for review. Job-made shoring or shielding must have the registered professional engineer stamp, specifications, and tabulated data.

Extreme care must be used when excavating near direct burial electric underground cables.

3.6.5 Trenching Machinery

Operate trenching machines with digging chain drives only when the spotters/laborers are in plain view of the operator. Provide operator and spotters/laborers training on the hazards of the digging chain drives with emphasis on the distance that needs to be maintained when the digging chain is operating. Keep documentation of the training on file at the project site.

3.7 ELECTRICAL

3.7.1 Conduct of Electrical Work

As delineated in USACE EM 385-1-1 electrical work is to be conducted in a de-energized state unless there is no alternative method for accomplishing the work. In those cases an energized work permit shall be obtained from the contracting officer. The energized work permit application shall be accompanied by the AHA and a summary of why the equipment/circuit needs to be worked energized. Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Attachment of temporary grounds shall be in accordance with ASTM F855 and IEEE 1048. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves and electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA. Contractor shall ensure that each employee is familiar with and complies with these procedures and 29 CFR 1910.147.

3.7.2 Portable Extension Cords

Size portable extension cords in accordance with manufacturer ratings for the tool to be powered and protected from damage. Immediately removed from service all damaged extension cords. Portable extension cords shall meet the requirements of NFPA 70E and OSHA electrical standards.

3.8 WORK IN CONFINED SPACES

In addition to applicable sections of USACE EM 385-1-1, OSHA 29 CFR 1910.146, Directive CPL 2.100 and OSHA 29 CFR 1926.21 the Contractor shall comply with the following. Any potential for a hazard in the confined space requires a permit system to be used.

a. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 06.I.06 of USACE EM 385-1-1 for entry procedures.) All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.

b. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level regardless of classification.

c. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection in addition to continuous forced air ventilation regardless of space classification.

3.9 USE OF EXPLOSIVES

Explosives shall not be used or brought to the project site without prior written approval from the Contracting Officer. Such approval shall not relieve the Contractor of responsibility for injury to persons or for damage to property due to blasting operations. Storage of explosives, when permitted on Government property, shall be only where directed and in approved storage facilities. These facilities shall be kept locked at all times except for inspection, delivery, and withdrawal of explosives.

Explosive work shall be performed in accordance with NASA NSS 1740.12 which is available at: http://www.hq.nasa.gov/office/codeq/doctree/871912.htm

3.10 ERGONOMICS CONSIDERATIONS DURING DESIGN PHASE

Facilities, processes, job tasks, tools and materials shall be designed to reduce or eliminate work-related musculoskeletal (WMSD) injuries and risk factors in the workplace. Designs shall ensure facility maintenance access is designed to reduce WMSD risk factors to the lowest level possible. In addition to the detailed requirements included in the provisions of this contract, the design work shall incorporate the requirements of MIL-STD-1472F, DoD-HDBK 743A and ANSI/HFES 100.

-- End of Section --

SECTION 01 45 00.05 20

DESIGN AND CONSTRUCTION QUALITY CONTROL
06/15

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2014) Safety and Health Requirements Manual

U.S. GREEN BUILDING COUNCIL (USGBC)

LEED NC (2009) Leadership in Energy and Environmental Design(tm) New Construction Rating System

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance with Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD. Submit the following in accordance with Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES and 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Design Quality Control (DQC) Plan; G

Submit a DQC Plan prior to the Post Award Kickoff Meeting.

Construction Quality Control (CQC) Plan; G

Submit a Construction QC Plan prior to start of construction.

Commissioning Plan; G

Submit a Commissioning Plan within 60 days of approval of Cx Authority.

SD-05 Design Data

Design Quality Control Documentation; G

SD-07 Certificates

Preliminary Inspections and Final Acceptance Testing; G

Final Life Safety/Fire Protection Certification; G

IBC Special Inspections Certification; G

SD-11 Closeout Submittals

Summary Commissioning Report; G

Training Course Outline; G

Training Video Recording; G

1.3 QC PROGRAM REQUIREMENTS

Establish and maintain a QC program that is administered by a Design and Construction Quality Control organization, using Quality Control (Design and Construction) Plans, Commissioning Plans and Reports, meetings, a Coordination and Mutual Understanding Meeting, three phases of control, submittal review and approval, testing, completion inspections, and QC certifications and documentation necessary to provide design, materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this Contract. The QC program must cover on-site and off-site work. No construction work or testing may be performed unless the QC Manager is on the work site.

1.3.1 QC Plan Meeting

Prior to submission of the QC Plan, the QC Manager may request a meeting with the Contracting Officer to discuss the QC Plan requirements of this Contrac.t

The purpose of this meeting is to develop a mutual understanding of the QC Plan requirements prior to plan development and submission and to agree on the Contractor's list of Definable Features of Work (DFOWs).

1.3.2 Mutual Understanding Meeting

The purpose of this meeting is to develop a mutual understanding of the QC Plans, including documentation, administration, requirements & procedures, coordination of activities to be performed, and the coordination of the contractor's management, production and QC personnel. At the meeting, the contractor will explain in detail how the three phases of quality control will be implemented for each DFOW.

1.3.3 Design and Construction Quality Control Plans

The Contractor must provide a project specific Design Quality Control (DQC) Plan and Construction Quality Control (CQC) Plan, for review and approval by the Contracting Officer. The Contractor must perform no design until the DQC Plan is approved and no construction until the CQC Plan is approved. The Contractor's plans must include the following:

a. The QC organization for this contract, including member resumes.

b. A letter from an officer of the company designating the QC Manager, Alternate QC Manager, DQC Manager, Commissioning Authority, and their

authority.

c. QC Manager qualifications.

d. DQC Manager qualifications (If required in the Task Order).

e. List of DFOW including list of design submittal packaging. DFOW is a task that is separate and distinct from other tasks and has control requirements and work crews unique to the task.

f. For the CQC Plan, a plan to implement the "Three Phases of Control" for each DFOW.

g. For the CQC Plan, a testing Plan, log and list of personnel and accredited laboratories that will perform tests. Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation with the testing plan. For projects with commissioning requirements, coordinate this testing Plan with the Commissioning Plan verification testing requirements to avoid duplication of effort.

h. Submittal Register including design submittals, listing personnel who will review submittals and noting submittals for Contracting Officer review.

i. Procedures for submitting and reviewing design changes/ variations prior to submission to the Contracting Officer.

j. As part of the Contractor's DQC plan, a statement of Life Safety and Fire Protection Features Inspections and Testing must be prepared by the Fire Protection Designer of Record. Examples of life safety and fire protection features include, but are not limited to, water distribution systems including fire pumps and fire hydrants, fire resistive assemblies such as fire rated walls/partitions, through - penetration firestop systems, spray-applied fire proofing of structural components, fire alarm and detection systems, fire suppression and standpipe systems, means of egress components, emergency and exit lighting fixtures. The plan will include a listing of the individuals, approved agencies or firms that will be retained for conducting the required inspections and tests accompanied by a description of individual inspector's experience and a copy of all required certifications. Additional copies of this plan must be submitted to the NAVFAC Fire Protection Engineer and the Installation Fire Chief. This plan must include the following:

(1) Comprehensive list of systems, components or features to be inspected and tested.

(2) Description of performance verification testing activities for each system or component.

(3) Procedures and schedules for functional performance tests of all systems requiring functional testing.

k. For the DQC plan, submit a formal Communication Plan that indicates the

frequency of design meetings and what information is covered in those meetings, key design decision points tied to the Network Analysis Schedule and how the DOR plans to include the Government in those decisions, peer review procedures, interdisciplinary coordination, design review procedures, comment resolution, etc.

The Communication Plan will emphasize key decisions and possible problems the Contractor and Government may encounter during the design phase of the project. Provide a plan to discuss design alternatives and design coordination with the stakeholders at the key decision points as they arise on the project. Identify individual stakeholders and suggested communication methods that will be employed to expedite and facilitate each anticipated critical decision. Communication methods may include: Concept Design Workshop, over-the-shoulder review meetings, presentation at client's office, lifecycle cost analysis presentation, technical phone conversation, and formal review meeting. The design portion of the Communication Plan must be written by the DQC Manager and confirmed during the Post Award Kick off Partnering. Update the Communication Plan at every Partnering meeting.

l. For the DQC Plan, procedures for insuring the design documents are submitted in accordance with FC 1-300-09N, *Design Procedures* and other procedures to ensure disciplines have been properly coordinated to eliminate conflicts.

m. For the DQC Plan, provide Quality Control Documentation procedures such as QC review sets and QC comments to demonstrate that cross checking of all engineering disciple's design drawings and specifications has taken place. The QC review documentation must exhibit a checking process of the design documents for completeness, accuracy, and constructability.

n. For the DQC Plan, a list of design subcontractors and the scope of the work which each firm will accomplish.

1.3.4 Commissioning Plan

The Contractor must provide a project specific Commissioning Plan for review and acceptance by the Contracting Officer. The intent of the commissioning plan is to expose all critical issues and resolve them with input from the construction team at early stages of planning. Develop and submit the Commissioning Plan to define the on-site activities and roles and responsibilities for commissioning all building systems required by the Project Program paragraph entitled, Building Commissioning. The Commissioning Plan must be updated as information changes during the project. The Plan must include all items required by the LEED NC 2009 and must include the following:

a. Commissioning Authority qualifications and experience.

b. A description of the Commissioning Team’s roles and responsibilities as well as organizational relationships with the Contractor's QC Manager, DQC Manager, and verification and testing personnel.

c. A listing of all systems required to be commissioned, include a list of required instruments and components for measurements, verifications, and full commissioning of mechanical systems.

d. A description of the testing and acceptance method used for each system. Describe all commissioning process activities. Include the sequence and schedule for starting and balancing air distribution systems to ensure construction materials, such as architectural finishes, are installed under the appropriate environmental conditions. Also address the procedure that will be used to "dry out" the structure.

e. A procedures and schedule for functional performance tests of all systems to be commissioned. The Commissioning Authority must be present for all functional performance tests. Coordinate this schedule with the QC Plan testing requirements to avoid duplication of effort.

f. Coordinate with OMSI/eOMSI Preparer to approve the training plan, content of the facility maintenance and operational training, and training schedule for Government personnel. Provide training sessions on performance of the systems that were commissioned.

1.3.5 Summary Commissioning Report

The Commissioning Authority must provide a Summary Commissioning Report upon completion of the performance verification items. The Summary Commissioning Report must include all items required by LEED NC 2009 and must include the following:

a. Executive Summary of the commissioning process including results and observations of the commissioning program.

b. A history of deficiencies identified and their resolution. Indicate outstanding issues to be resolved.

c. Commissioned systems performance test results and evaluations. Provide a 72 hour data trend utilizing the building automation system. Verify that the trend data reflects proper operation of the system.

1.3.6 Special Inspections

Perform all required Special Inspections and structural observations per Section 01 45 35.05 20 SPECIAL INSPECTIONS, the Statement of Special Inspections and the Schedule of Special Inspections.

1.4 QC ORGANIZATION

The QC Manager must manage the QC organization and must report to an officer of the firm and not be subordinate to the Project Superintendent or Project Manager.

The QC Manager, Project Superintendent and Project Manager must work together effectively. Although the QC Manager is the primary individual responsible for quality control, all individuals will be held responsible for the quality of work on the job.

1.4.1 QC and Alternate QC Manager

QC and Alternate QC Manager qualifications:

a. Complete the course entitled "Construction Quality Management (CQM) for Contractors" and maintain a current certificate. The QC Manager that does not have a current certification must obtain the CQM for Contractors course certification within 90 days of award. This course is periodically offered by the Naval Facilities Engineering Command and the Army Corps of Engineers. Contact the Contracting Officer for class schedule information.

b. Familiar with requirements of USACE EM 385-1-1, and experience in the areas of hazard identification and safety compliance.

c. Five years of combined experience as a Superintendent, QC Manager, Project Manager, or Project Engineer on similar size and type construction contracts, and at least two years of experience as a QC Manager.

QC and Alternate QC Manager responsibilities:

a. Participate in the Post Award Kick-off, Partnering, Preconstruction, Design Development, and Coordination and Mutual Understanding Meetings.

b. Implement the "Three Phase of Control" plan for each DFOW and notify the Contracting Officer at least 3 business days in advance of each Preparatory and Initial Phase meeting. Submit respective checklists to the Contracting Officer the next business day.

c. Ensure that no construction begins before the DOR has finalized the design for that segment of work, and construction submittals are approved as required.

d. Inspect all work and rework, using International Conference of Building Officials certified QC specialists as applicable, to ensure its compliance with contract requirements. Maintain a rework log.

e. Immediately stop any segment of work, which does not comply with the contract requirements and direct the removal and replacement of any defective work.

f. Remove any individual from the site who fails to perform their work in a skillful, safe and workmanlike manner or whose work does not comply with the contract plans and specifications.

g. Prepare daily QC Reports.

h. Provide daily photographic documentation to support the work reported in the Daily Reports. Maintain a file of CD/ DVD disks at the job site that assemble the photographs supporting the daily reports. Organize the supporting photographs into searchable files organized by date and under each date organize the photographs in folders for each definable features of work. Indicate on the disk label and disk holder the date range of pictures contained on each disk. Provide a date stamp on each picture and title each picture with a description of location and viewed components. Provide .jpeg color photograph files that are 300 DPI - printable at 20 cm by 25 cm (8 inch by 10 inch) size.

Photograph construction related to existing work to be covered by contract modifications and required rework as follows;

(1) View of as-is conditions prior to modification / rework.

(2) View of as-is conditions with existing exterior enclosure and interior finishes removed before modification / new work begins.

(3) View of new / modified construction prior to being covered by exterior enclosure and interior finishes.

(4) View of completed new / modified construction.

i. Ensure that Contractor Production Reports are prepared daily.

j. Hold weekly QC meetings with the DQC Manager, Commissioning Authority, DOR (or representative), Superintendent and the Contracting Officer; participation must be suitable for the phase of work. Distribute minutes of these meetings.

k. Ensure that design and construction submittals are reviewed and approved, as required by the contract, prior to allowing material on site and work to proceed with these items. Maintain a submittal register.

l. Update As-built drawings daily, maintaining up-to-date set on site.

m. Maintain a testing plan and log. Ensure that all testing is performed in accordance with the contract. Review all test reports and notify the Contracting Officer of all deficiencies, along with a proposal for corrective action.

n. Maintain rework log on site, noting dates deficiency identified, and date corrected.

o. Certify and sign statement on each invoice that all work to be paid under the invoice has been completed in accordance with contract requirements.

p. Perform Punch-out and participate in Pre-final and Final acceptance Inspections. Submit list of deficiencies to the Contracting Officer for each inspection. Correct all deficiencies prior to the Final inspection. Notify Contracting Officer prior to final inspection to establish a schedule date acceptable by the Contracting Officer.

q. Ensure that all required keys, operation and maintenance manuals, warranty certificates, and the As-built drawings are correct and complete, in accordance with the contract, and submitted to the Contracting Officer.

r. Assure that all applicable tests, special inspections, and observations required by the contract are performed.

s. Coordinate all factory and on-site testing, Testing Laboratory personnel, QC Specialists, and any other inspection and testing personnel required by this Contract.

t. Notify the Contracting Officer of any proposed changes to the QC plan.

u. Retain a copy of approved submittals at project site, including Contractor's copy of approved samples.

v. Update the Performance Assessment Plan as described in the UFGS section 01 31 19.05 20, Post Award Meetings and discuss monthly at a QC meeting.

w. Coordinate training of Government maintenance personnel with the eOMSI Preparer to assure training materials and training classes are accurate and provide instruction and documentation on critical elements of the products, materials, and systems in the constructed facility. Verify that the Government's operating personnel were trained.

x. Coordinate scheduled work with Special Inspections required by Section 01 45 35.05 20 SPECIAL INSPECTIONS, the Statement of Special Inspections and the Schedule of Special Inspections.

y. Supervise all Special Inspectors required by the contract documents and the IBC.

z. Verify the qualifications of all of the Special Inspectors.

aa. Verify the qualifications of fabricators.

bb. Maintain a 3- ring binder for the Special Inspector's daily and biweekly reports. This file must be located in a conspicuous place in the project trailer/office to allow review by the Contracting Officer and the DOR.

1.4.2 DQC Manager

Provide DQC Manager that is a member of the QC organization, that coordinates actions with the QC Manager, and that is not subordinate to the Project Superintendent or the Project Manager. The DQC Manager may also act as the CxA if all CxA qualifications are met.

DQC Manager Qualifications: (If required in the Task Order)

a. A minimum of 5 years of experience as a design Architect or Engineer on similar size and type designs /or design-build contracts. Provide education, experience, and management capabilities on similar size and type contracts.

b. Be a registered professional engineer or architect with an active registration in the US or its Territories. Provide proof of registration as part of the resume submittal package.

c. Complete the course entitled "Construction Quality Management (CQM) for Contractors".

DQC Manager Responsibilities:

a. Be responsible for the design integrity, professional design standards, and all design services required.

b. Be a member of the Designer of Record's (DOR) firm.

c. Be responsible for development of the design portion of the QC Plan, incorporation and maintenance of the approved Design Schedule, and the preparation of DQC Reports and minutes of all design meetings.

d. Participate in the Post Award Kick-Off, all design planning meetings, design presentations, partnering, and QC meetings.

e. Implement the DQC plan and must remain on staff involved with the project until completion of the project.

f. Be cognizant of and assure that all design documents on the project have been developed in accordance with the Contract.

g. Provide Design Quality Control Documentation (DQCD) which indicates design coordination of the engineering disciplines. Submit DQCD with the pre-final and final design submittals as required in Section 01 33 10.05 20, DESIGN SUBMITTAL PROCEDURES.

h. Develop the submittal register. Coordinate with each DOR to determine what items need to be submitted, and who needs to approve.

i. Provide QC certification for design compliance.

j. Certify and sign statement on each invoice that all work to be paid to the DOR under the invoice has been completed in accordance with the contract requirements.

k. Prepare weekly DQC Reports that documents the work the design team accomplished that week.

l. Coordinate all training requirements with the QC and the eOMSI Preparer.

m. Coordinate all training issues and validate that the testing and training requirements of this contract are accomplished.

1.4.3 Commissioning Authority (CxA)

Commissioning Authority qualifications:

The Commissioning Authority must be a member of the QC organization, must coordinate actions with the QC Manager, must not be subordinate to the Project Superintendent or the Project Manager, and must report findings directly to the Contracting Officer. The Commissioning Authority may also act as the DQC Manager if all DQC Manager qualifications are met. The Commissioning Authority selected must meet the requirements of LEED NC with the following additional qualifications:

a. Be certified Building System Commissioning (Cx) Contractor recognized by a Building Commissioning Organization. Acceptable minimum certifications are "Certified Cx Agent" from the Associated Air Balance

Council (AABC); "NEBB Building Systems Cx Certified Professional" from National Environmental Balancing Bureau (NEBB); "Certified Building Cx Professional" from the Association of Energy Engineers (AEE); "Certified Cx Professional (CxP)" from the Building Commissioning Association (BCA); or "Commissioning Process Authority Professional" or "Commissioning Process Manager" from the University of Wisconsin College of Engineering.

b. Have documented Commissioning Authority experience in at least two building projects. Provide proof of commissioning experience as part of the Commissioning Plan.

Commissioning Authority responsibilities:

a. Be responsible for development of the Commissioning Plan, the Summary Commissioning Report, and minutes of all commissioning meetings.

b. Participate in the Post Award Kick-Off, all design planning meetings, design presentations, partnering, and QC meetings.

c. Review the Request for Proposal (RFP) for energy and sustainability goals, system expectations, O&M requirements, training expectations, and construction quality expectations.

d. Review the Basis of Design and ensure the RFP requirements are met.

e. Ensure commissioning requirements are incorporated into the construction documents.

f. Assure the electrical requirements of the actual equipment supplied by the mechanical contractor are verified, reviewed and coordinated with the electrical and other trades.

g. Be responsible for implementation and updating of the Commissioning Plan.

h. Be responsible for development of systems functional testing procedures.

i. Ensure pre-functional installation inspections are performed on all systems indicated to be commissioned in accordance with the Commissioning Plan and Contract documents.

j. Verify systems performance of all systems indicated to be commissioned in accordance with the Commissioning Plan and Contract documents.

k. Report any deficiencies in installation, general performance, operation, and functional performance of all systems indicated to be commissioned.

l. Participate in the eOMSI Field Validation to assure the accuracy of the eOMSI Data and eOMSI Document information prior to the submission of the Final eOMSI submittal.

m. Coordinate training of Government maintenance personnel with the eOMSI Preparer to assure training materials and training classes are accurate and provide instruction and documentation on critical elements of the products, materials, and systems in the constructed facility. Verify that the Government's operating personnel were trained on the information necessary to operate the facility.

1.4.4 QC Specialists

QC Specialists must assist and report to the QC Manager and may perform production related duties but must be allowed sufficient time to perform their assigned quality control duties. QC Specialists are required to attend the Coordination and Mutual Understanding Meeting, QC meetings and be physically present at the construction site to perform the three phases of control and prepare documentation for each definable feature of work in their area of responsibility at the frequency specified below.

1.4.4.1 Fire Protection QC Specialist

The Fire Protection QC Specialist (FPQC) must be a U.S. registered Professional Engineer and must be an integral part of the Prime Contractor's Quality Control Organization. This FPQC must have no business relationships (owner, partner, operating officer, distributor, salesman, or technical representative) with any fire protection equipment device manufacturers, suppliers or installers for any such equipment provided as part of this project. The Fire Protection Designer of Record may serve as the lead Fire Protection QC Specialist, provided the following qualifications are met.

a. Qualifications/Experience: The FPQC must have obtained their professional registration by successfully completing the Fire Protection Engineering discipline examination. This FPQC must have a minimum of 5 years full time and exclusive experience in every aspect of facility design and construction as it relates to fire protection, which includes, but is not limited to, building code analysis, life safety code analysis, design of automatic detection and suppression systems, passive fire protection design, water supply analysis, and a multi-discipline coordination reviews, and construction surveillance.

b. Area of Responsibility: The FPQC is responsible for assuring the proper construction and installation of life safety and fire protection features across all disciplines and trades. The FPQC must be responsible for assuring that life safety and fire protection features are provided in accordance with the design documents, approved construction submittals, and manufacturer's requirements. Examples include, but are not limited to, water distribution systems including fire pumps and fire hydrants, fire resistive assemblies such as spray-applied fire proofing of structural components and fire rated walls/partitions, fire alarm and detection systems, fire suppression and standpipe systems, emergency and exit lighting fixtures, etc.

c. Construction Surveillance: The FPQC is responsible for reviewing and implementing the QC Plan developed by the Fire Protection DOR. The FPQC must visit the construction site as necessary to ensure life safety and fire protection systems are being constructed, applied, and installed in accordance with the approved design documents, approved construction submittals, and manufacturer's requirements. Frequency

and duration of the field visits are dependent upon particular system components, system complexity, and phase of construction. At a minimum, field visits must occur just prior to installation of suspended ceiling systems to inspect the integrity of passive fire protection features and fire suppression system piping, and required performance verification testing of all life safety and fire protection systems identified below and in Part 4.

(1) Preliminary Inspections and Final Acceptance Testing: FPQC must personally witness all preliminary inspections of fire alarm/detection and suppression systems. Once preliminary inspections have been successfully completed, the FPQC must submit a signed certificate to the QC Manager that systems are ready for final inspection and testing. The Naval Facilities Engineering Command Fire Protection Engineer will witness formal tests and approve all systems before they are accepted. The QC Manager must submit the request for formal inspection at least [15][_____] days prior to the date the inspection is to take place. The QC Manager must provide 10 days advance notice to the Contracting Officer and the activity Fire Inspection Office of scheduled final inspections.

d. QC Documentation and Certifications: The following documentation and certification must be prepared by the FPQC. Additional copies must be submitted to the NAVFAC Fire Protection Engineer and the Installation Fire Chief.

(1) Field visit reports. Submit reports documenting all field visits and summarizing all findings.

(2) Inspection and Test reports and certificates. Submit in accordance with the applicable codes, standards, and this RFP.

(3) Final Life Safety/Fire Protection Certification. Provide FPQC certification that all life safety and fire protection systems have been inspected and in the FPQC's professional judgment, have been installed in accordance with the contract documents, approved submittals, and manufacturer's requirements. This certification must summarize all life safety and fire protection features, and must bear the professional seal of the fire protection engineer.

1.4.4.2 Mechanical QC Specialist

Provide IBC Special Inspections Certification from the following specialist(s):

Qualification/Experience in Area of Responsibility	Area of Responsibility	Frequency
Mechanical Inspector, International Conference of Building Officials (ICBO) Certified / 5 years minimum	Installation and Testing of Boilers	Minimum 3 times a week during installation and full-time during testing

Qualification/Experience in Area of Responsibility	Area of Responsibility	Frequency
Certified Elevator Inspector, certified by an organization accredited by ASME / 5 years minimum	Pretesting to ensure safety code, specification, and building code compliance; provide testing verification report prior to beginning final acceptance test	Once every two weeks during installation, full time during Pretesting
Registered Mechanical Engineer (PE)/ QC Specialist	Testing of Installed mechanical systems	Full time during testing

1.4.4.3 Building Envelope QC Specialist

Provide IBC Special Inspections Certification from the following specialist(s):

Qualification / Experience in Area of Responsibility	Area of Responsibility	Frequency
Roofing Manufacturer's Technical Representative / 5 years minimum with roofing system used	Installation and testing of roofing	Once a week during installation, two times a week during flashing installation and full time during roof testing

1.4.4.4 Special Inspector

The Special Inspector (SI) must be an independent third party hired directly by the Prime Contractor. The SI must have not be a company employee of the Contractor or any Sub-Contractor performing the work to be inspected. The qualifications of the SI are defined in Section 01 45 35.05 20 SPECIAL INSPECTION.

1.4.4.6 Underwater QC Team

Provide Underwater QC (UWQC) Team at the work site to perform underwater surveillance and inspection for the Contractor. The UWQC Team divers must have current Commercial Diver's License, with a minimum of five (5) years of experience with underwater inspection. The personnel make-up of the UWQC team must comply with EM 385-1-1, OSHA and local requirements for Contract diving operations. Comply with all the applicable safety requirements of EM 385-1-1, OSHA and local requirements for Contract diving operations. The UWQC lead diver must be thoroughly familiar with the design plans and specifications to sufficiently understand the engineering aspects of the

underwater construction and to be able to recognize and document potential problem areas such as improperly constructed or defective areas. Provide all necessary equipment to conduct surveillance and inspection services, including diver's equipment, dive boat, communication equipment, and photographic/video equipment. Diver(s) must be equipped to maintain two-way communication with QC personnel during diving operations. Prepare and submit a report including photographs and/or videos with the QC report after each dive. Frequency of underwater surveillance and inspection during installation and including final inspection will be determined during the PAK meeting. The UWQC Team must be an independent third party hired directly by the Prime Contractor, and must have no involvement with the design, preparation of Contract, or installation of work.

1.5 THREE PHASES OF CONTROL

The Three Phases of Control must adequately cover both on-site and off-site work and must include the following for each DFOW.

1.5.1 Preparatory Phase

Notify the Contracting Officer at least two work days in advance of each preparatory phase meeting. The meeting must be conducted by the QC Manager and attended by the Project Superintendent, QC Specialists, and the foreman responsible for the DFOW. The DQC Manager must also attend if required by structural tests and special inspections, as outlined in Chapter 17 of the IBC and the DQC Plan. When the DFOW will be accomplished by a subcontractor, that subcontractor's foreman must attend the preparatory phase meeting. Document the results of the preparatory phase actions in the daily Contractor Quality Control Report and in the Preparatory Phase Checklist. Perform the following prior to beginning work on each DFOW:

a. Review each paragraph of the applicable specification sections;

b. Review the Contract drawings;

c. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required;

d. Review the testing plan and ensure that provisions have been made to provide the required QC testing;

e. Examine the work area to ensure that the required preliminary work has been completed;

f. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data;

g. Discuss the specific controls used in construction methods, construction tolerances, workmanship standards, and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each DFOW; and

h. Review the APP and appropriate Activity Hazard Analysis (AHA) to ensure that applicable safety requirements are met, and that required Material

Safety Data Sheets (MSDS) are submitted.

1.5.2 Initial Phase

Notify the Contracting Officer at least two work days in advance of each initial phase. When construction crews are ready to start work on a DFOW, conduct the initial phase with the Project Superintendent, QC Specialists, and the foreman responsible for that DFOW. The DQC Manager must also attend if required by structural tests and special inspections, as outlined in Chapter 17 of the IBC and the DQC Plan. Observe the initial segment of the DFOW to ensure that the work complies with Contract requirements. Document the results of the initial phase in the daily CQC Report and in Initial Phase Checklist. Repeat the initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met. Perform the following for each DFOW:

a. Establish the quality of workmanship required;

b. Resolve conflicts;

c. Ensure that testing is performed by the approved laboratory, and

d. Check work procedures for compliance with the APP and the appropriate AHA to ensure that applicable safety requirements are met.

e. Ensure manufacturer's representative has performed necessary inspections, if required.

1.5.3 Follow-Up Phase

Perform the following for on-going work daily, or more frequently as necessary, until the completion of each DFOW and document in the daily CQC Report:

a. Ensure the work is in compliance with Contract requirements;

b. Maintain the quality of workmanship required;

c. Ensure that testing is performed by the approved laboratory; and

d. Ensure that rework items are being corrected.

1.5.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases must be conducted on the same DFOW if the quality of on-going work is unacceptable, if there are changes in the applicable QC organization, if there are changes in the on-site production supervision or work crew, if work on a DFOW is resumed after substantial period of inactivity, or if other problems develop.

1.5.5 Notification of Three Phases of Control for Off-Site Work

Notify the Contracting Officer at least two weeks prior to the start of the preparatory and initial phases.

1.6 TESTING

1.6.1 Testing

Except as stated otherwise in the specification sections, perform sampling and testing required under this contract.

1.6.2 Accreditation Requirements

Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation. The laboratory's scope of accreditation must include the appropriate ASTM standards (i.e.; E 329, C 1077, D 3666, D 3740, A 880, E 543) listed in the technical sections of the specifications. Laboratories engaged in Hazardous Materials Testing must meet the requirements of OSHA and EPA. The policy applies to the specific laboratory performing the actual testing, not just the "Corporate Office."

1.6.3 Laboratory Accreditation Authorities

Laboratory Accreditation Authorities include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology at http://ts.nist.gov/ts/htdocs/210/214/214.htm, the American Association of State Highway and Transportation Officials (AASHTO) program at http://www.transportation.org, International Accreditation Services, Inc. (IAS) at http://www.iasonline.org, U. S. Army Corps of Engineers Materials Testing Center (MTC)at http://gsl.erdc.usace.army.mil/SL/MTC/, the American Association for Laboratory Accreditation (A2LA) program at http://www.a2la.org/, the Washington Association of Building Officials (WABO) at http://www.wabo.org/, (approval authority for WABO is limited to projects within Washington State), and the Washington Area Council of Engineering Laboratories (WACEL) at http://wacel.org/fmi/xsl/wacel/index.xsl (Approval authority by WACEL is limited to projects within Facilities Engineering Command (FEC) Washington geographical area).

1.6.4 Capability Check

The Contracting Officer retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this contract.

1.6.5 Test Results

Cite applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If the item fails to conform, notify the Contracting Officer (KO) immediately. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results must be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the signed reports, certifications, and other documentation to the KO via the QC Manager.

1.7 QC CERTIFICATION

1.7.1 Contractor Quality Control Report Certification

Each CQC Report must contain the following statement: "On behalf of the Contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report."

1.7.2 Invoice Certification

Furnish a certificate to the KO with each payment request, signed by the QC Manager, attesting that as-built drawings are current and attesting that the work for which payment is requested, including stored material, is in compliance with contract requirements.

1.7.3 Completion Certification

Upon completion of work under this contract, the QC Manager must furnish a certificate to the KO attesting that "the work has been completed, inspected, tested and is in compliance with the contract."

1.8 COMPLETION INSPECTIONS

The Contractor must perform the necessary punchout, prefinal, and final inspections, compile punchlists, and correct deficiencies.

1.8.1 Punch-Out Inspection

Near the completion of all work or any increment thereof, established by a completion time stated in the Contract Clause entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the QC Manager and the CA must conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings, specifications and Contract. Include in the punch list any remaining items on the "Rework Items List", which were not corrected prior to the Punch-Out Inspection. Include within the punch list the estimated date by which the deficiencies will be corrected. Provide a copy of the punch list to the Contracting Officer. The QC Manager, or staff, must make follow-on inspections to ascertain that all deficiencies have been corrected. Once this is accomplished, notify the Contracting Officer that the facility is ready for the Government "Pre-Final Inspection".

1.8.2 Pre-Final Inspection

The Government and QC Manager will perform this inspection to verify that the facility is complete and ready to be occupied. A Government "Pre-Final Punch List" will be documented by the QC Manager as a result of this inspection. The QC Manager will ensure that all items on this list are corrected prior to notifying the Government that a "Final" inspection with the Client can be scheduled. Any items noted on the "Pre-Final" inspection must be corrected in a timely manner and be accomplished before the contract completion date for the work or any particular increment thereof, if the project is divided into increments by separate completion dates.

1.8.3 Final Acceptance Inspection

Notify the Contracting Officer at least 14 calendar days prior to the date a final acceptance inspection can be held. State within the notice that all items previously identified on the pre-final punch list will be corrected and acceptable, along with any other unfinished Contract work, by the date of the final acceptance inspection. The Contractor must be represented by the QC Manager, the Project Superintendent, the CA, and others deemed necessary. Attendees for the Government will include the Contracting Officer, other FEAD/ROICC personnel, and personnel representing the Client. Failure of the Contractor to have all contract work acceptably complete for this inspection will because for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the Contract Clause entitled "Inspection of Construction."

1.9 TRAINING

The Commissioning Authority must provide a comprehensive project-specific Government personnel training program for the systems of the facility specified in the technical specifications of this Contract. The core of this training will be based on manufacturer's recommendations and the operation and maintenance support information (OMSI/eOMSI) provided as a part of this Contract. Training must include classroom discussion as well as hands on maintenance, replacement of typical components and repair type maintenance training for parts typically replaced or repaired in the field, such as:

1. Domestic water pressure boosting system
2. Plumbing systems, including temperature actuated thermostatic water mixing valve
3. HVAC Systems, including chillers, boilers, heat pumps, air handling equipment, exhaust fans, fan coil units, hot and chilled water pumping system
4. Steam condensate pumps
5. Direct Digital Controls/Space Temperature Controls
6. Electrical systems, including transformers, diesel-electric generator sets, automatic transfer switches, primary switchgear, secondary switchgear, high-voltage switchgear, variable frequency drives, and frequency converters
7. Fire protection systems, including fire alarm systems and detection systems
8. Site mechanical utilities, including cathodic protection
9. Site electrical utilities, including substations, transformers, and pad mounted switchgear
10. Wastewater pump systems

Provide each trainee in the course a written training course outline. Submit outline for approval at least 90 calendar days prior to training session. Provide to the Contracting Officer two copies of the training video recording in the appropriate current format. Confirm media format required with the using activity. The recording must capture, in video and audio, all instructors training presentations including question and answer periods with the trainees.

1.10 DOCUMENTATION

Maintain current and complete records of on-site and off-site QC program operations and activities. The forms identified under the paragraph "INFORMATION FOR THE CONTRACTING OFFICER (KO)" must be used. Reports are required for each day work is performed. Account for each calendar day throughout the life of the contract. Every space on the forms must be filled in. Use N/A if nothing can be reported in one of the spaces. The superintendent and the QC Manager must prepare and sign the Contractor Production and CQC Reports, respectively. The reporting of work must be identified by terminology consistent with the construction schedule. In the "remarks" section in this report which will contain pertinent information including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered and a record of visitors to the work site. For each remark given, identify the Schedule Activity No. that is associated with the remark.

1.10.1 Quality Control Validation

Establish and maintain the following in a series of three ring binders. Binders must be divided and tabbed as shown below. These binders must be readily available to the Government's Quality Assurance Team during all business hours.

a. All completed Preparatory and Initial Phase Checklists, arranged by specification section.

b. All milestone inspections, arranged by Activity/Event Number.

c. A current up-to-date copy of the Testing and Plan Log with supporting field test reports, arranged by specification section.

d. Copies of all contract modifications, arranged in numerical order. Also include documentation that modified work was accomplished.

e. A current up-to-date copy of the Rework Items List.

f. Maintain up-to-date copies of all punch lists issued by the QC Staff on the Contractor and Sub-Contractors and all punch lists issued by the Government.

1.10.2 As-Built Drawings

The QC Manager is required to review the as-built drawings, are kept current on a daily basis and marked to show deviations, which have been made from the Contract drawings. Ensure each deviation has been identified with the appropriate modifying documentation, e.g. PC number, modification number, RFI number, etc. The QC Manager must initial each deviation or revision. Upon completion of work, the QC Manager must submit a certificate attesting to the accuracy of the as-built drawings prior to submission to the KO.

1.11 NOTIFICATION OF NON-COMPLIANCE

The KO will notify the Contractor of any detected non-compliance with the foregoing requirements. The Contractor must take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor

at the work site, must be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the KO may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor must make no part of the time lost due to such stop orders the subject of claim for extension of time, for excess costs, or damages.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 50 00.05 20

TEMPORARY FACILITIES AND CONTROLS FOR DESIGN-BUILD
11/07

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C511	(2007) Standard for Reduced-Pressure Principle Backflow Prevention Assembly

FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH (FCCCHR)

FCCCHR List	(continuously updated) List of Approved Backflow Prevention Assemblies
FCCCHR Manual	(10th Edition) Manual of Cross-Connection Control

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241	(2013; Errata 2015) Standard for Safeguarding Construction,Alteration, and Demolition Operations
NFPA 70	(2014; AMD 1 2013; Errata 1 2013; AMD 2 2013; Errata 2 2013; AMD 3 2014; Errata 3-4 2014; AMD 4-6 2014) National Electrical Code

U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA)

MUTCD	(2009) Manual on Uniform Traffic Control Devices

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 247	Comprehensive Procurement Guideline for Products Containing Recovered Materials

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance with Section 01 33 29.05 20 SUSTAINABILITY

REPORTING FOR DESIGN-BUILD. Submit the following in accordance with Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES and 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Traffic control plan; G

Construction site plan; G

SD-03 Product Data

Backflow preventers

SD-06 Test Reports

Backflow Preventer Tests; G

SD-07 Certificates

Backflow Tester Certification; G

Backflow Preventers Certificate of Full Approval

1.3 EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

There are many products listed in 40 CFR 247 which have been designated or proposed by EPA to include recycled or recovered materials that may be used by the Contractor in performing the work but will not be incorporated into the work. These products include office products, temporary traffic control products, and pallets. These non-construction products contain the highest practicable percentage of recycled or recovered materials and can be recycled when no longer needed.

1.4 CONSTRUCTION SITE PLAN

Prior to the start of work, submit a site plan showing the locations of temporary facilities (including layouts and details, equipment and material storage area (onsite and offsite), and access and haul routes used for this contract. Show locations of safety and construction fences, site trailers, construction entrances, trash dumpsters, temporary sanitary facilities, and worker parking areas.

1.5 BACKFLOW PREVENTERS CERTIFICATE

Certificate of Full Approval from FCCCHR List, University of Southern California, attesting that the design, size and make of each backflow preventer has satisfactorily passed the complete sequence of performance testing and evaluation for the respective level of approval. Certificate of Provisional Approval will not be acceptable.

1.5.1 Backflow Prevention Training Certificate

The Contractor must submit a certificate recognized by the State or local authority that states the Contractor has completed at least 10 hours of training in backflow preventer installations. The certificate must be current.

1.6 TEMPORARY UTILITIES

Reasonable amounts of the following utilities will be made available to the Contractor at the prevailing rates.

1.6.1 Contractor Utilities

The Contractor must provide his own utilities.

For electricity and potable water. The Contractor must be responsible for verifying the prevailing rates and providing for all costs in the bid or offer. The Government retains the right to change these rates as necessary.

1.6.2 Utilities Services

Utility Services will be provided through the Base Operations Support (BOS) Contractor. The Contractor must pay all costs for coordination, interruption and other utility services. Utility interruption includes connecting, converting, and transferring the utilities (power, water, sewer, fire protection, air conditioning and ventilation system, etc.) to the work. Procedure for requesting and paying for utility services will be provided by the Contracting Officer. The Contractor must make connections, including providing backflow-preventing devices to domestic water line and fire sprinkler system; providing meters; and providing transformers; and make disconnections.

1.6.3 Dig Permits and Miscellaneous Services

Dig permits and miscellaneous services will be provided through the Base Operations Support (BOS) Contractor. The Contractor must coordinate with the Government for dig permits and miscellaneous services provided by the BOS Contractor. Location of utilities will be marked by the BOS Contractor once. The construction Contractor must maintain the markings. Procedure for requesting for dig permits and miscellaneous services will be provided by the Contracting Officer.

1.7 BACKFLOW TESTER CERTIFICATION

Prior to testing, submit to the Contracting Officer certification issued by the State or local regulatory agency attesting that the backflow tester has successfully completed a certification course sponsored by the regulatory agency. Tester must not be affiliated with any company participating in any other phase of this Contract.

1.8 WEATHER PROTECTION

Take necessary precautions to ensure that roof openings and other critical openings in the building are monitored carefully. Take immediate actions required to seal off such openings when rain or other detrimental weather is imminent, and at the end of each workday.

1.8.1 Building and Site Storm Protection

When a warning of gale force winds is issued, take precautions to minimize danger to persons, and protect the work and nearby Government property. Precautions must include, but are not limited to, closing openings; removing loose materials, tools and equipment from exposed locations; and removing or securing scaffolding and other temporary work. Close openings in the work when storms of lesser intensity pose a threat to the work or any nearby Government property.

1.8.2 Typhoon Condition of Readiness

Unless directed otherwise, comply with:

1.8.2.1 Responsibility

The Contractor, at no additional cost to the Government must be responsible for the security and safety of the construction work and the site, including the Contractor’s project site, when warnings of winds of gale force are issued. Gale force winds are defined as having a sustained velocity of 34-knots or better and include winds of tropical storm or typhoon intensity. Satisfactory job site clean-up is the initial, basic day-to-day, minimal preparation the Contractor can make for winds of destructive force.

1.8.2.2 Preparation

When warnings of gale force winds are issued, the Contractor must carry out, without delay, all directives concerning desired action to be taken, which may be issued to him by the Contracting Officer or his designated representative. This preparation is in accordance with the contract terms and every practicable precaution will be taken to minimize danger to persons, to prevent damage to work in place, materials, supplies, equipment, adjacent structures, and property of others; and is in public interest.

1.8.2.3 Tropical Cyclone Conditions of Readiness (COR)

CORs are set by Commander, Naval Forces Marianas, when winds of 93 km/hr are expected to occur locally. Sustained winds of 93 km/hr or greater could result from either a tropical storm or a typhoon approaching or forming over Guam.

Unless directed otherwise, comply with:

a. COR FOUR (Sustained winds of 93 km/hr (58 mph) or greater expected within 72 hours): Normal daily jobsite cleanup and good housekeeping practices. Collect and store in piles or containers all scrap lumber, waste material, and rubbish for removal and disposal at the close of each work day. Maintain the construction site including storage areas, free of accumulation of debris. Stack form lumber in neat piles less than one meter (3.3 feet) high. Remove all debris, trash, or objects that could become missile hazards. Review requirements pertaining to "Condition THREE" and continue action as necessary to attain "Condition FOUR" readiness. Contact Contracting Officer for Condition of Readiness (COR) updates and completion of required actions.

b. COR THREE (Sustained winds of 93 km/hr (58 mph) or greater expected within 48 hours): Maintain "Condition FOUR" requirements and commence securing operations necessary for "Condition TWO" readiness. Cease all routine activities which might interfere with securing operations. Commence securing and stow all gear and portable equipment. Make preparations for securing buildings. Reinforce or remove formwork and scaffolding. Secure machinery, tools, equipment, materials, or remove from the jobsite. Expend every effort to clear all missile hazards and loose equipment from general base areas. Contact Contracting Officer for weather and COR updates and completion of required actions.

c. COR TWO (Sustained winds of 93 km/hr (58 mph) or greater expected within 24 hours): Secure the jobsite, and leave Government premises.

d. COR ONE (Sustained winds of 93 km/hr (58 mph) or greater expected within 12 hours): Contractor access to the jobsite and Government premises is prohibited.

1.8.2.3.1 COR Four “All Clear”

When COR Four “All Clear” is set after the passing of the destructive winds, the Contractor must return to the job site to assess damages and immediately restore the job site to the Satisfaction of Officer in Charge or his designated representative. The job site restoration/clean up must be in accordance with the contract terms and every practicable precaution must be taken to minimize danger to people, to prevent damage to work in place, materials, supplies, equipment, adjacent structures, and property of others; and is in public interest. However, before proceeding with restoration/clean up requiring significant time and cost, a clean-up plan must be discussed with and submitted to the Contracting Officer or his designated representative for approval.

1.9 STATION OPERATION AFFECT ON CONTRACTOR OPERATIONS

1.9.1 Restricted Access Areas

The Government will monitor work in areas indicated in the task order. Notify Contracting Officer at least 14 calendar days prior to starting work in these areas.

1.9.2 Special Restrictions Regarding Access of Vehicles and Parking

1.9.2.1 Interruption of Vehicular Traffic

If during the performance of work, it becomes necessary to modify vehicular traffic patterns at any locations, notify the Contracting Officer at least 15 calendar days prior to the proposed modification date, and provide a Traffic Control Plan detailing the proposed controls to traffic movement for approval. The plan must be in accordance with State and local regulations and the MUTCD 2009. Make all notifications and obtain any permits required for modification to traffic movements outside Station's jurisdiction. Provide cones, signs, barricades, lights, or other traffic control devices and personnel required to control traffic. Do not use foil-backed material for temporary pavement marking because of its potential to conduct electricity during accidents involving downed power lines.

1.10 STORAGE AREAS

Contractor must be responsible for security of his property. The Contract Clause entitled "FAR 52.236-10, Operations and Storage Areas" and the following apply:

1.10.1 Storage in Existing Buildings

The Contractor must be working in and around existing buildings; the storage of material will be allowed where indicated. Provide 2.4 m (8 foot) high security fence with a lockable gate around the storage area. Remove at the completion of work.

1.11 TEMPORARY SANITARY FACILITIES

Provide adequate sanitary conveniences of a type approved for the use of persons employed on the work, properly secluded from public observation, and maintained in such a manner as required and approved by the Contracting Officer. Maintain these conveniences at all times without nuisance. Upon completion of the work, remove the conveniences from the premises, leaving the premises clean and free from nuisance. Dispose of sewage through connection to a municipal, district, or station sanitary sewage system. Where such systems are not available, use chemical toilets or comparably effective units, and periodically empty wastes into a municipal, district, or station sanitary sewage system, or remove waste to a commercial facility. Include provisions for pest control and elimination of odors.

1.12 TEMPORARY BUILDINGS

Temporary facilities (including trailers) must be in like new condition and must be maintained throughout the project. Locate these facilities where directed and within the indicated operations area. Failure to maintain storage trailers or buildings to these standards must result in the removal of non-complying units at the Contractor's expense. A sign not smaller than 600 by 600 mm (24 by 24 inches) must be conspicuously placed on the trailer depicting the company name, business phone number, and emergency phone number. Trailers must be anchored to resist high winds and must meet applicable state of local standards for anchoring mobile trailers. Storage of material/debris under such facilities is prohibited. Contractor must be responsible for the security of the stored property.

1.12.1 Maintenance of Temporary Facilities

Paint in accordance with base standards and maintain the temporary facilities. Failure to do so will be sufficient reason to require their removal.

1.12.3 Quality Control Manager Records and Field Office

Provide on the jobsite an office with approximately 18 square meters (200 square feet) of useful floor area for the exclusive use of the QC Manager. Provide a weathertight structure with adequate cooling, toilet facilities, lighting, ventilation, a 1200 by 2400 mm (4 by 8 foot) plan table, a standard size office desk and chair, computer station, and working communications facilities. Provide a door with a cylinder lock and windows with locking hardware. Make utility connections. Locate as directed. File

quality control records in the office and make available at all times to the Government. After completion of the work, remove the entire structure from the site.

PART 2 PRODUCTS

2.1 BACKFLOW PREVENTERS

Reduced pressure principle type conforming to the applicable requirements AWWA C511. Provide backflow preventers complete with 68 kg (150 pound) flanged cast iron, mounted gate valve and strainer, 304 stainless steel or bronze, internal parts. The particular make, model/design, and size of backflow preventers to be installed must be included in the latest edition of the List of Approved Backflow Prevention Assemblies issued by the FCCCHR List and must be accompanied by a Certificate of Full Approval from FCCCHR List.

2.2 PROJECT SIGN

Prior to initiating any work on site, provide one project identification sign at the location coordinated with the Contracting Officer. Construct the sign in accordance with project sign detail attached at the end of this section. Maintain sign throughout the life of the project. Upon completion of the project, remove the sign from the site. Provide color rendering of the project. Reproduce the rendering on the signboard or enclose a copy of the rendering under a water-proof, transparent cover, and caulk for weather protection. Provide rendering in accordance with Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES.

2.2.1 Project Identification Signboard (Navy

A project identification signboard must be provided in accordance with attached Plates 2, 3, 4, and 5. The signboard is to be placed at a conspicuous location on the job site where directed by the Contracting Officer.

a. The field of the sign must consist of a minimum of 4 by 8 foot sheet of exterior plywood.

b. The entire signboard and supports must be painted. The lettering and sign work must be performed by a skilled sign painter using paint known in the trade as bulletin colors. The colors, lettering sizes, and lettering styles must be as indicated.

c. NAVFAC logo must be a sticker/decal with either transparent or white background or paint the logo by stencil onto the sign. The weather resistant sticker/decal film must be rated for a minimum of 2-year exterior vertical exposure. NAVFAC Logo is available at: https://portal.navfac.navy.mil/portal/page?_pageid=181,3465071&_dad=portal&_schema=PORTAL

d. Sign paint colors

(1) Blue = To match dark blue color in the NAVFAC logo.

(2) White = To match Brilliant White color in the NAVFAC logo.

e. Final signboard artwork (rendering) may be either mounted under plexiglas as indicated in attached Plates 2, or at the Contractor's option may be electrostatically printed on self-adhering, weather resistant, glossy vinyl film and mounted to signboard. Provide film that is capable of full color reproduction of the building rendering and is rated for a minimum of 2 years exterior vertical exposure.

PART 3 EXECUTION

3.1 TEMPORARY PHYSICAL CONTROLS

3.1.1 Access Controls

3.1.1.1 Temporary Barricades

Contractor must provide for barricading around all work areas to prevent public access.

3.1.1.2 Fencing

Fencing must be provided along the construction site at all open excavations and tunnels to control access by unauthorized people. Fencing must be installed to be able to restrain a force of at least 114.00 kg (250 pounds) against it.

Enclose the project work are and Contractor lay-down area with a 2400 mm (8 ft) high chain link fence and gates with brown, UV light resistant, plastic fabric mesh netting (similar to tennis court or other screening). Remove the fence upon completion and acceptance of the work. Intent is to block (screen) public view of the construction.

In addition, prior to the start of work, enclose those areas at the construction site which are not within the construction fence with a temporary safety fence, including gates and warning signs, to protect the public from construction activities. The safety fence must match the base standard color (or bright orange where it protects excavated areas), must be made of high density polyethylene grid or approved equal, a minimum of 1100 mm (42 inches) high, supported and tightly secured to steel posts located on minimum 3000 mm (10 foot) centers. Remove the fence from the work site upon completion of the contract.

3.1.1.3 Signs

Place warning signs at the construction area perimeter designating the presence of construction hazards requiring unauthorized persons to keep out. Signs must be placed on all sides of the project, with at least one sign every 90 m (300 feet). All points of entry must have signs designating the construction site as a hard hat area.

3.1.1.4 Traffic Work

All work around/involving roadways, to include roadway excavations and utility crossings, will be conducted in accordance with Manual of Traffic Control Devices. Contractors must provide and ensure appropriate road closure and detour signs are established as necessary for motor traffic

management. All road closures must be coordinated with the Contracting Officer in advance. Self-illuminated (lighted) barricades must be provided during hours of darkness. Brightly-colored (orange) vests are required for all personnel working in roadways. Road closures must require a road closure plan showing the location of signage.

3.2 TEMPORARY WIRING

Provide temporary wiring in accordance with NFPA 241 and NFPA 70, Assured Equipment Grounding Conductor Program. Program must include frequent inspection of all equipment and apparatus.

3.3 REDUCED PRESSURE BACKFLOW PREVENTERS

Provide an approved reduced pressure backflow prevention assembly at each location where the Contractor taps into the Government potable water supply.

A certified tester(s) must perform testing of backflow preventer(s) for proper installation and operation and provide subsequent tagging. Backflow preventer tests must be performed using test equipment, procedures, and certification forms conforming to those outlined in the latest edition of the Manual of Cross-Connection Control published by the FCCCHR Manual. Test and tag each reduced pressure backflow preventer upon initial installation (prior to continued water use) and quarterly thereafter. Tag must contain the following information: make, model, serial number, dates of tests, results, maintenance performed, and signature of tester. Record test results on certification forms conforming to requirements cited earlier in this paragraph.

3.4 GRASS CUTTING

Cut grass (or annual weeds) within the construction and storage sites to a maximum 100 mm (4 inch) height at least once a week during the growing season unless the grass area is not visible to the public. Trim the grass around fences at time of grass cutting. Maintain grass or weeds on stockpiled earth as needed to maintain the site in a neat and orderly appearance.

-- End of Section --

SECTION 01 57 19

TEMPORARY ENVIRONMENTAL CONTROLS
11/15

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA SW-846	(Third Edition; Update IV) Test Methods for Evaluating Solid Waste: Physical/Chemical Methods

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.120	Hazardous Waste Operations and Emergency Response
40 CFR 112	Oil Pollution Prevention
40 CFR 122.26	Storm Water Discharges (Applicable to State NPDES Programs, see section 123.25)
40 CFR 152	Pesticide Registration and Classification Procedures
40 CFR 152 - 186	Pesticide Programs
40 CFR 241	Guidelines for Disposal of Solid Waste
40 CFR 243	Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
40 CFR 258	Subtitle D Landfill Requirements
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 261.7	Residues of Hazardous Waste in Empty Containers
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 262.31	Standards Applicable to Generators of Hazardous Waste-Labeling

40 CFR 262.34	Standards Applicable to Generators of Hazardous Waste-Accumulation Time
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 273	Standards For Universal Waste Management
40 CFR 273.2	Standards for Universal Waste Management - Batteries
40 CFR 273.3	Standards for Universal Waste Management - Pesticides
40 CFR 273.4	Standards for Universal Waste Management - Mercury Containing Equipment
40 CFR 273.5	Standards for Universal Waste Management - Lamps
40 CFR 279	Standards for the Management of Used Oil
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
40 CFR 300.125	National Oil and Hazardous Substances Pollution Contingency Plan - Notification and Communications
40 CFR 355	Emergency Planning and Notification
40 CFR 403	General Pretreatment Regulations for Existing and New Sources of Pollution
40 CFR 50	National Primary and Secondary Ambient Air Quality Standards
40 CFR 60	Standards of Performance for New Stationary Sources
40 CFR 61	National Emission Standards for Hazardous Air Pollutants

40 CFR 63	National Emission Standards for Hazardous Air Pollutants for Source Categories
40 CFR 64	Compliance Assurance Monitoring
40 CFR 745	Lead-Based Paint Poisoning Prevention in Certain Residential Structures
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 172.101	Hazardous Material Regulation-Purpose and Use of Hazardous Material Table
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
49 CFR 178	Specifications for Packagings

1.2 DEFINITIONS

1.2.1 Class I and II Ozone Depleting Substance (ODS)

Class I ODS is defined in Section 602(a) of The Clean Air Act. A list of Class I ODS can be found on the EPA website at the following weblink. http://www.epa.gov/ozone/science/ods/classone.html.

Class II ODS is defined in Section 602(s) of The Clean Air Act. A list of Class II ODS can be found on the EPA website at the following weblink. http://www.epa.gov/ozone/science/ods/classtwo.html.

1.2.2 Contractor Generated Hazardous Waste

Contractor generated hazardous waste is materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene), waste thinners, excess paints, excess solvents, waste solvents, excess pesticides, and contaminated pesticide equipment rinse water.

1.2.3 Electronics Waste

Electronics waste is discarded electronic devices intended for salvage, recycling, or disposal.

1.2.4 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally or historically.

1.2.5 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.6 Hazardous Debris

As defined in paragraph SOLID WASTE, debris that contains listed hazardous waste (either on the debris surface, or in its interstices, such as pore structure) in accordance with 40 CFR 261. Hazardous debris also includes debris that exhibits a characteristic of hazardous waste in accordance with 40 CFR 261.

1.2.7 Hazardous Materials

Hazardous materials as defined in 49 CFR 171 and listed in 49 CFR 172.

Hazardous material is any material that: Is regulated as a hazardous material in accordance with 49 CFR 173; or requires a Safety Data Sheet (SDS) in accordance with 29 CFR 1910.120; or during end use, treatment, handling, packaging, storage, transportation, or disposal meets or has components that meet or have potential to meet the definition of a hazardous waste as defined by 40 CFR 261 Subparts A, B, C, or D. Designation of a material by this definition, when separately regulated or controlled by other sections or directives, does not eliminate the need for adherence to that hazard-specific guidance which takes precedence over this section for "control" purposes. Such material includes ammunition, weapons, explosive actuated devices, propellants, pyrotechnics, chemical and biological warfare materials, medical and pharmaceutical supplies, medical waste and infectious materials, bulk fuels, radioactive materials, and other materials such as asbestos, mercury, and polychlorinated biphenyls (PCBs).

1.2.8 Hazardous Waste

Hazardous Waste is any material that meets the definition of a solid waste and exhibit a hazardous characteristic (ignitability, corrosivity, reactivity, or toxicity) as specified in 40 CFR 261, Subpart C, or contains a listed hazardous waste as identified in 40 CFR 261, Subpart D.

1.2.9 Installation Pest Management Coordinator

Installation Pest Management Coordinator (IPMC) is the individual officially designated by the Installation Commander to oversee the Installation Pest Management Program and the Installation Pest Management Plan.

1.2.10 Land Application

Land Application means spreading or spraying discharge water at a rate that allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" must occur. Comply with federal, state, and local laws and regulations.

1.2.11 Municipal Separate Storm Sewer System (MS4) Permit

MS4 permits are those held by installations to obtain NPDES permit coverage for their stormwater discharges.

1.2.12 National Pollutant Discharge Elimination System (NPDES)

The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

1.2.13 Oily Waste

Oily waste are those materials that are, or were, mixed with Petroleum, Oils, and Lubricants (POLs) and have become separated from that POLs. Oily wastes also means materials, including wastewaters, centrifuge solids, filter residues or sludges, bottom sediments, tank bottoms, and sorbents which have come into contact with and have been contaminated by, POLs and may be appropriately tested and discarded in a manner which is in compliance with other state and local requirements.

This definition includes materials such as oily rags, "kitty litter" sorbent clay and organic sorbent material. These materials may be land filled provided that: It is not prohibited in other state regulations or local ordinances; the amount generated is "de minimus" (a small amount); it is the result of minor leaks or spills resulting from normal process operations; and free-flowing oil has been removed to the practicable extent possible. Large quantities of this material, generated as a result of a major spill or in lieu of proper maintenance of the processing equipment, are a solid waste. As a solid waste, perform a hazardous waste determination prior to disposal. As this can be an expensive process, it is recommended that this type of waste be minimized through good housekeeping practices and employee education.

1.2.14 Pesticide

Pesticide is any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.

1.2.15 Pesticide Treatment Plan

A plan for the prevention, monitoring, and control to eliminate pest infestation.

1.2.16 Pests

Pests are arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds and other organisms (except for human or animal disease-causing organisms) that adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.

1.2.17 Project Pesticide Coordinator

The Project Pesticide Coordinator (PPC) is an individual who resides at a Civil Works Project office and who is responsible overseeing of pesticide application on project grounds.

1.2.18 Regulated Waste

Regulated waste are solid wastes that have specific additional federal, state, or local controls for handling, storage, or disposal.

1.2.19 Sediment

Sediment is soil and other debris that have eroded and have been transported by runoff water or wind.

1.2.20 Solid Waste

Solid waste is a solid, liquid, semi-solid or contained gaseous waste. A solid waste can be a hazardous waste, non-hazardous waste, or non-Resource Conservation and Recovery Act (RCRA) regulated waste. Types of solid waste typically generated at construction sites may include:

1.2.20.1 Debris

Debris is non-hazardous solid material generated during the construction, demolition, or renovation of a structure that exceeds 60 mm (2.5-inch) particle size that is: a manufactured object; plant or animal matter; or natural geologic material (for example, cobbles and boulders), broken or removed concrete, masonry, and rock asphalt paving; ceramics; roofing paper and shingles. Inert materials may be reinforced with or contain ferrous wire, rods, accessories and weldments. A mixture of debris and other material such as soil or sludge is also subject to regulation as debris if the mixture is comprised primarily of debris by volume, based on visual inspection.

1.2.20.2 Green Waste

Green waste is the vegetative matter from landscaping, land clearing and grubbing, including, but not limited to, grass, bushes, scrubs, small trees and saplings, tree stumps and plant roots. Marketable trees, grasses and plants that are indicated to remain, be re-located, or be re-used are not included.

1.2.20.3 Material not regulated as solid waste

Material not regulated as solid waste is nuclear source or byproduct materials regulated under the Federal Atomic Energy Act of 1954 as amended; suspended or dissolved materials in domestic sewage effluent or irrigation return flows, or other regulated point source discharges; regulated air emissions; and fluids or wastes associated with natural gas or crude oil exploration or production.

1.2.20.4 Non-Hazardous Waste

Non-hazardous waste is waste that is excluded from, or does not meet, hazardous waste criteria in accordance with 40 CFR 263.

1.2.20.5 Recyclables

Recyclables are materials, equipment and assemblies such as doors, windows, door and window frames, plumbing fixtures, glazing and mirrors that are recovered and sold as recyclable, wiring, insulated/non-insulated copper wire cable, wire rope, and structural components. It also includes commercial-grade refrigeration equipment with Freon removed, household appliances where the basic material content is metal, clean polyethylene terephthalate bottles, cooking oil, used fuel oil, textiles, high-grade paper products and corrugated cardboard, stackable pallets in good condition, clean crating material, and clean rubber/vehicle tires. Metal meeting the definition of lead contaminated or lead based paint contaminated may not be included as recyclable if sold to a scrap metal company. Paint cans that meet the definition of empty containers in accordance with 40 CFR 261.7 may be included as recyclable if sold to a scrap metal company.

1.2.20.6 Surplus Soil

Surplus soil is existing soil that is in excess of what is required for this work, including aggregates intended, but not used, for on-site mixing of concrete, mortars, and paving. Contaminated soil meeting the definition of hazardous material or hazardous waste is not included and must be managed in accordance with paragraph HAZARDOUS MATERIAL MANAGEMENT.

1.2.20.7 Scrap Metal

This includes scrap and excess ferrous and non-ferrous metals such as reinforcing steel, structural shapes, pipe, and wire that are recovered or collected and disposed of as scrap. Scrap metal meeting the definition of hazardous material or hazardous waste is not included.

1.2.20.8 Wood

Wood is dimension and non-dimension lumber, plywood, chipboard, hardboard. Treated or painted wood that meets the definition of lead contaminated or lead based contaminated paint is not included. Treated wood includes, but is not limited to, lumber, utility poles, crossties, and other wood products with chemical treatment.

1.2.21 Surface Discharge

Surface discharge means discharge of water into drainage ditches, storm sewers, creeks or "waters of the United States". Surface discharges are

discrete, identifiable sources and require a permit from the governing agency. Comply with federal, state, and local laws and regulations.

1.2.22 Wastewater

Wastewater is the used water and solids from a community that flow to a treatment plant.

1.2.22.1 Stormwater

Stormwater is any precipitation in an urban or suburban area that does not evaporate or soak into the ground, but instead collects and flows into storm drains, rivers, and streams.

1.2.23 Waters of the United States

Waters of the United States means Federally jurisdictional waters, including wetlands, that are subject to regulation under Section 404 of the Clean Water Act or navigable waters, as defined under the Rivers and Harbors Act.

1.2.24 Wetlands

Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

1.2.25 Universal Waste

The universal waste regulations streamline collection requirements for certain hazardous wastes in the following categories: batteries, pesticides, mercury-containing equipment (for example, thermostats), and lamps (for example, fluorescent bulbs). The rule is designed to reduce hazardous waste in the municipal solid waste (MSW) stream by making it easier for universal waste handlers to collect these items and send them for recycling or proper disposal. These regulations can be found at 40 CFR 273.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following must be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Preconstruction Survey; G

Solid Waste Management Plan and Permit; G

Regulatory Notifications; G

Environmental Management Plan; G

Storm Water Pollution Prevention Plan; G

Storm Water Notice of Intent (for NPDES coverage under the general permit for construction activities); G

Dirt and Dust Control Plan

Employee Training Records; G

Environmental Manager Qualifications; G

SD-06 Test Reports

Laboratory Analysis

Inspection Reports

Solid Waste Management Report; G

SD-11 Closeout Submittals

Some of the records listed below are also required as part of other submittals. For the "Records" submittal, maintain on-site a separate three-ring Environmental Records binder and submit at the completion of the project. Make separate parts to the binder corresponding to each of the applicable sub items listed below.

Stormwater Pollution Prevention Plan Compliance Notebook; G

Stormwater Notice of Termination (for NPDES coverage under the general permit for construction activities); G

Waste Determination Documentation; G

Disposal Documentation for Hazardous and Regulated Waste; G

Assembled Employee Training Records; G

Solid Waste Management Permit; G

Solid Waste Management Report; G

Contractor Hazardous Material Inventory Log; G

Hazardous Waste/Debris Management; G

Regulatory Notifications; G

Sales Documentation; G

Contractor Certification

As-Built Topographic Survey

1.4 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined. Plan for and provide environmental protective measures to control pollution that develops during construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Protect the environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire duration of this Contract. Comply with federal, state, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances, and noise pollution.

Tests and procedures assessing whether construction operations comply with Applicable Environmental Laws may be required. Analytical work must be performed by qualified laboratories; and where required by law, the laboratories must be certified.

1.4.1 Environmental Compliance Assessment Training and Tracking System (ECATTS)

1.4.1.1 Personnel Requirements

The Environmental Manager is responsible for environmental compliance on projects. The Environmental Manager and other staff, must complete applicable ECATTS training modules (installation specific or general) prior to starting respective portions of on-site work under this Contract. If personnel changes occur for any of these positions after starting work, replacement personnel must complete applicable ECATTS training within 14 days of assignment to the project.

1.4.1.2 Certification

Submit an ECATTS certificate of completion for personnel who have completed the required ECATTS training. This training is web-based and can be accessed from any computer with Internet access using the following instructions.

Register for NAVFAC Environmental Compliance Training and Tracking System, by logging on to https://environmentaltraining.ecatts.com/. Obtain the password for registration from the Contracting Officer.

1.4.1.3 Refresher Training

This training has been structured to allow contractor personnel to receive credit under this contract and to carry forward credit to future contracts. Ensure the Environmental Manager review their training plans for new modules or updated training requirements prior to beginning work. Some training modules are tailored for specific state regulatory requirements; therefore, Contractors working in multiple states will be required to retake modules tailored to the state where the contract work is being performed.

1.4.2 Conformance with the Environmental Management System

Perform work under this contract consistent with the policy and objectives identified in the installation's Environmental Management System (EMS). Perform work in a manner that conforms to objectives and targets of the

environmental programs and operational controls identified by the EMS. Support Government personnel when environmental compliance and EMS audits are conducted by escorting auditors at the Project site, answering questions, and providing proof of records being maintained. Provide monitoring and measurement information as necessary to address environmental performance relative to environmental, energy, and transportation management goals. In the event an EMS nonconformance or environmental noncompliance associated with the contracted services, tasks, or actions occurs, take corrective and preventative actions. In addition, employees must be aware of their roles and responsibilities under the installation EMS and of how these EMS roles and responsibilities affect work performed under the contract.

Coordinate with the installation's EMS coordinator to identify training needs associated with environmental aspects and the EMS, and arrange training or take other action to meet these needs. Provide training documentation to the Contracting Officer. The Installation Environmental Office will retain associated environmental compliance records. Make EMS Awareness training completion certificates available to Government auditors during EMS audits and include the certificates in the Employee Training Records. See paragraph EMPLOYEE TRAINING RECORDS.

1.5 QUALITY ASSURANCE

1.5.1 Preconstruction Survey and Protection of Features

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, perform a Preconstruction Survey of the project site with the Contracting Officer, and take photographs showing existing environmental conditions in and adjacent to the site. Submit a report for the record. Include in the report a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. The Contractor and the Contracting Officer will sign this survey report upon mutual agreement regarding its accuracy and completeness. Protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference that their preservation may cause to the work under the Contract.

1.5.2 Regulatory Notifications

Provide regulatory notification requirements in accordance with federal, state and local regulations. In cases where the Government will also provide public notification (such as stormwater permitting), coordinate with the Contracting Officer. Submit copies of regulatory notifications to the Contracting Officer within 30 days prior to commencement of work activities. Typically, regulatory notifications must be provided for the following (this listing is not all-inclusive): demolition, renovation, NPDES defined site work, construction, removal or use of a permitted air emissions source, and remediation of controlled substances (asbestos, hazardous waste, lead paint).

1.5.3 Environmental Brief

Attend an environmental brief to be included in the preconstruction meeting. Provide the following information: types, quantities, and use of hazardous materials that will be brought onto the installation; and types and quantities of wastes/wastewater that may be generated during the Contract. Discuss the results of the Preconstruction Survey at this time.

Prior to initiating any work on site, meet with the Contracting Officer and installation Environmental Office to discuss the proposed Environmental Protection Plan (EPP). Develop a mutual understanding relative to the details of environmental protection, including measures for protecting natural and cultural resources, required reports, required permits, permit requirements (such as mitigation measures), and other measures to be taken.

1.5.4 Environmental Manager

Appoint in writing an Environmental Manager for the project site. The Environmental Manager is directly responsible for coordinating contractor compliance with federal, state, local, and installation requirements. The Environmental Manager must ensure compliance with Hazardous Waste Program requirements (including hazardous waste handling, storage, manifesting, and disposal); implement the EPP; ensure environmental permits are obtained, maintained, and closed out; ensure compliance with Stormwater Program requirements; ensure compliance with Hazardous Materials (storage, handling, and reporting) requirements; and coordinate any remediation of regulated substances (lead, asbestos, PCB transformers). This can be a collateral position; however, the person in this position must be trained to adequately accomplish the following duties: ensure waste segregation and storage compatibility requirements are met; inspect and manage Satellite Accumulation areas; ensure only authorized personnel add wastes to containers; ensure Contractor personnel are trained in 40 CFR requirements in accordance with their position requirements; coordinate removal of waste containers; and maintain the Environmental Records binder and required documentation, including environmental permits compliance and close-out. Submit Environmental Manager Qualifications to the Contracting Officer.

1.5.5 Employee Training Records

Prepare and maintain Employee Training Records throughout the term of the contract meeting applicable 40 CFR requirements. Provide Employee Training Records in the Environmental Records Binder. Ensure every employee completes a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures compliance with federal, state and local regulatory requirements for RCRA Large Quantity Generator. Provide a Position Description for each employee, by subcontractor, based on the Davis-Bacon Wage Rate designation or other equivalent method, evaluating the employee's association with hazardous and regulated wastes. This Position Description will include training requirements as defined in 40 CFR 265 for a Large Quantity Generator facility. Submit these Assembled Employee Training Records to the Contracting Officer at the conclusion of the project, unless otherwise directed.

Train personnel to meet EPA and state requirements. Conduct environmental protection/pollution control meetings for personnel prior to commencing

construction activities. Contact additional meetings for new personnel and when site conditions change. Include in the training and meeting agenda: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, waters of the United States, and endangered species and their habitat that are known to be in the area. Provide copy of the Erosion and Sediment Control Inspector Qualifications as defined by EPA.

1.5.5.1 Pest Control Training

Trained personnel in pest control. Conduct a pest control meeting for personnel prior to commencing construction activities. Conduct additional meetings for new personnel and when site conditions change. Include in the training and meeting agenda: methods of detecting and pest infestation; familiarization with statutory and contractual pest control standards; installation and care of devices, and instruments, if required, for monitoring purposes to ensure adequate and continuous pest control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of waters of the United States, and endangered species and their habitat that are known to be in the area. Provide a Certificate of Competency for the personnel who will be conducting the pesticide application and management of pest control.

1.5.6 Non-Compliance Notifications

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with federal, state or local environmental laws or regulations, permits, and other elements of the Contractor's EPP. After receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions will be granted or equitable adjustments allowed for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

1.6 ENVIRONMENTAL PROTECTION PLAN

The purpose of the EPP is to present an overview of known or potential environmental issues that must be considered and addressed during construction. Incorporate construction related objectives and targets from the installation's EMS into the EPP. Include in the EPP measures for protecting natural and cultural resources, required reports, and other measures to be taken. Meet with the Contracting Officer or Contracting Officer Representative to discuss the EPP and develop a mutual understanding relative to the details for environmental protection including measures for protecting natural resources, required reports, and other measures to be taken. Submit the EPP within 15 days after Contract award and not less than 10 days before the preconstruction meeting. Revise the EPP throughout the project to include any reporting requirements, changes in site conditions, or contract modifications that change the project scope of work in a way

that could have an environmental impact. No requirement in this section will relieve the Contractor of any applicable federal, state, and local environmental protection laws and regulations. During Construction, identify, implement, and submit for approval any additional requirements to be included in the EPP. Maintain the current version onsite.

The EPP includes, but is not limited to, the following elements:

1.6.1 General Overview and Purpose

1.6.1.1 Descriptions

A brief description of each specific plan required by environmental permit or elsewhere in this Contract such as stormwater pollution prevention plan, spill control plan, solid waste management plan, wastewater management plan, air pollution control plan, contaminant prevention plan, pesticide treatment plan, a historical, archaeological, cultural resources, biological resources and wetlands plan, traffic control plan, Hazardous, Toxic and Radioactive Waste (HTRW) Plan, Non-Hazardous Solid Waste Disposal Plan, borrowing material plan.

1.6.1.2 Duties

The duties and level of authority assigned to the person(s) on the job site who oversee environmental compliance, such as who is responsible for adherence to the EPP, who is responsible for spill cleanup and training personnel on spill response procedures, who is responsible for manifesting hazardous waste to be removed from the site (if applicable), and who is responsible for training the Contractor's environmental protection personnel.

1.6.1.3 Procedures

A copy of any standard or project-specific operating procedures that will be used to effectively manage and protect the environment on the project site.

1.6.1.4 Communications

Communication and training procedures that will be used to convey environmental management requirements to Contractor employees and subcontractors.

1.6.1.5 Contact Information

Emergency contact information contact information (office phone number, cell phone number, and e-mail address).

1.6.2 General Site Information

1.6.2.1 Drawings

Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, jurisdictional wetlands, material storage areas, structures, sanitary facilities, storm drains and conveyances, and stockpiles of excess soil.

1.6.2.2 Work Area

Work area plan showing the proposed activity in each portion of the area and identify the areas of limited use or nonuse. Include measures for marking the limits of use areas, including methods for protection of features to be preserved within authorized work areas and methods to control runoff and to contain materials on site, and a traffic control plan.

1.6.2.3 Documentation

A letter signed by an officer of the firm appointing the Environmental Manager and stating that person is responsible for managing and implementing the Environmental Program as described in this contract. Include in this letter the Environmental Manager's authority to direct the removal and replacement of non-conforming work.

1.6.3 Management of Natural Resources

a. Land resources

b. Tree protection

c. Replacement of damaged landscape features

d. Temporary construction

e. Stream crossings

f. Fish and wildlife resources

g. Wetland areas

1.6.4 Protection of Historical and Archaeological Resources

a. Objectives

b. Methods

1.6.5 Stormwater Management and Control

a. Ground cover

b. Erodible soils

c. Temporary measures

(1) Structural Practices

(2) Temporary and permanent stabilization

d. Effective selection, implementation and maintenance of Best Management Practices (BMPs).

1.6.6 Protection of the Environment from Waste Derived from Contractor Operations

Control and disposal of solid and sanitary waste. Control and disposal of hazardous waste.

This item consist of the management procedures for hazardous waste to be generated. The elements of those procedures will coincide with the Installation Hazardous Waste Management Plan. The Contracting Officer will provide a copy of the Installation Hazardous Waste Management Plan. As a minimum, include the following:

a. List of the types of hazardous wastes expected to be generated

b. Procedures to ensure a written waste determination is made for appropriate wastes that are to be generated

c. Sampling/analysis plan, including laboratory method(s) that will be used for waste determinations and copies of relevant laboratory certifications

d. Methods and proposed locations for hazardous waste accumulation/storage (that is, in tanks or containers)

e. Management procedures for storage, labeling, transportation, and disposal of waste (treatment of waste is not allowed unless specifically noted)

f. Management procedures and regulatory documentation ensuring disposal of hazardous waste complies with Land Disposal Restrictions (40 CFR 268)

g. Management procedures for recyclable hazardous materials such as lead-acid batteries, used oil, and similar

h. Used oil management procedures in accordance with 40 CFR 279; Hazardous waste minimization procedures

i. Plans for the disposal of hazardous waste by permitted facilities; and Procedures to be employed to ensure required employee training records are maintained.

1.6.7 Prevention of Releases to the Environment

Procedures to prevent releases to the environment

Notifications in the event of a release to the environment

1.6.8 Regulatory Notification and Permits

List what notifications and permit applications must be made. Some permits require up to 180 days to obtain. Demonstrate that those permits have been obtained or applied for by including copies of applicable environmental permits. The EPP will not be approved until the permits have been obtained.

1.6.9 Clean Air Act Compliance

1.6.9.1 Haul Route

Submit truck and material haul routes along with a Dirt and Dust Control Plan for controlling dirt, debris, and dust on Installation roadways. As a minimum, identify in the plan the subcontractor and equipment for cleaning along the haul route and measures to reduce dirt, dust, and debris from roadways.

1.6.9.2 Pollution Generating Equipment

Identify air pollution generating equipment or processes that may require federal, state, or local permits under the Clean Air Act. Determine requirements based on any current installation permits and the impacts of the project. Provide a list of all fixed or mobile equipment, machinery or operations that could generate air emissions during the project to the Installation Environmental Office (Air Program Manager).

1.6.9.3 Stationary Internal Combustion Engines

Identify portable and stationary internal combustion engines that will be supplied, used or serviced. Comply with 40 CFR 60 Subpart IIII, 40 CFR 60 Subpart JJJJ, 40 CFR 63 Subpart ZZZZ, and local regulations as applicable. At minimum, include the make, model, serial number, manufacture date, size (engine brake horsepower), and EPA emission certification status of each engine. Maintain applicable records and log hours of operation and fuel use. Logs must include reasons for operation and delineate between emergency and non-emergency operation.

1.6.9.4 Refrigerants

Identify management practices to ensure that heating, ventilation, and air conditioning (HVAC) work involving refrigerants complies with 40 CFR 82 requirements. Technicians must be certified, maintain copies of certification on site, use certified equipment and log work that requires the addition or removal of refrigerant. Any refrigerant reclaimed is the property of the Government, coordinate with the Installation Environmental Office to determine the appropriate turn in location.

1.6.9.5 Air Pollution-engineering Processes

Identify planned air pollution-generating processes and management control measures (including, but not limited to, spray painting, abrasive blasting, demolition, material handling, fugitive dust, and fugitive emissions). Log hours of operations and track quantities of materials used.

1.6.9.7 Compliant Materials

Provide the Government a list of and SDSs for all hazardous materials proposed for use on site. Materials must be compliant with all Clean Air Act regulations for emissions including solvent and volatile organic compound contents, and applicable National Emission Standards for Hazardous Air Pollutants requirements. The Government may alter or limit use of specific materials as needed to meet installation permit requirements for emissions.

1.7 LICENSES AND PERMITS

Obtain licenses and permits pursuant to the "Permits and Responsibilities" FAR Clause 52.236-7.

No permits will be obtained by the Contracting Officer.

Where required by the State regulatory authority, the inspections and certifications will be provided through the services of a Professional Engineer (PE), registered in Guam where the work is being performed. As a part of the quality control plan, which is required to be submitted for approval by the quality control section, provide a sub item containing the name, appropriate professional registration or license number, address, and telephone number of the professionals or other qualified persons who will be performing the inspections and certifications for each permit.

1.8 CONTRACTOR LIABILITIES FOR ENVIRONMENTAL PROTECTION

The Contractor is advised that this project and the station are subject to Federal, Territory, and local regulatory agency inspections to review compliance with environmental laws and regulations. The Contractor will fully cooperate with any representative from any Federal, State or local regulatory agency who may visit the job site and will provide immediate notification to the Contracting Officer, who will accompany them on any subsequent site inspections. The Contractor will complete, maintain, and make available to the Contracting Officer, station, or regulatory agency personnel all documentation relating to environmental compliance under applicable Federal, State and local laws and regulations. The Contractor will immediately notify the Contracting Officer if a Notice of Violation (NOV) is issued to the Contractor.

The Contractor will be responsible for all damages to persons or property resulting from Contractor fault or negligence as well as for the payment of any civil fines or penalties, which may be assessed by any Federal, Territory or local regulatory agency as a result of the Contractor's or any subcontractor's violation of any applicable Federal, Territory or local environmental law or regulation. Should a Notice of Violation (NOV), Notice of Noncompliance (NON), Notice of Deficiency (NOD), or similar regulatory agency notice be issued to the Government as facility owner/operator on account of the actions or inactions of the Contractor or one of its subcontractors in the performance of work under this contract, the Contractor will fully cooperate with the Government in defending against regulatory assessment of any civil fines or penalties arising out of such actions or inactions.

1.9 ENVIRONMENTAL RECORDS BINDER

Maintain on-site a separate three-ring Environmental Records Binder and submit at the completion of the project. Make separate parts within the binder that correspond to each submittal listed under paragraph CLOSEOUT SUBMITTALS in this section.

1.10 PESTICIDE DELIVERY, STORAGE, AND HANDLING

1.10.1 Delivery and Storage

Deliver pesticides to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses. Store pesticides according to manufacturer's instructions and under lock and key when unattended.

1.10.2 Handling Requirements

Formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions and use the clothing and personal protective equipment specified on the labeling for use during each phases of the application. Furnish SDSs for pesticide products.

1.11 SOLID WASTE MANAGEMENT PERMIT

Provide the Contracting Officer with written notification of the quantity of anticipated solid waste or debris that is anticipated or estimated to be generated by construction. Include in the report the locations where various types of waste will be disposed or recycled. Include letters of acceptance from the receiving location or as applicable; submit one copy of the receiving location state and local Solid Waste Management Permit or license showing such agency's approval of the disposal plan before transporting wastes off Government property.

1.11.1 Solid Waste Management Report

Monthly, submit a solid waste disposal report to the Contracting Officer. For each waste, the report will state the classification (using the definitions provided in this section), amount, location, and name of the business receiving the solid waste.

1.12 FACILITY HAZARDOUS WASTE GENERATOR STATUS

Meet the regulatory requirements of a Large Quantity Generator for any work conducted within the boundaries of this Installation. Comply with provisions of federal, state, and local regulatory requirements applicable to this generator status regarding training and storage, handling, and disposal of construction derived wastes.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Minimize interference with, disturbance to, and damage to fish, wildlife, and plants, including their habitats. Prior to the commencement of activities, consult with the Installation Environmental Office, regarding rare species or sensitive habitats that need to be protected. The protection of rare, threatened, and endangered animal and plant species identified, including their habitats, is the Contractor's responsibility

3.1.1 Flow Ways

Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as specified and permitted.

3.1.2 Vegetation

Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without the Contracting Officer's permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages unless authorized by the Contracting Officer. Where such use of attached ropes, cables, or guys is authorized, the Contractor is responsible for any resultant damage.

Protect existing trees that are to remain to ensure they are not injured, bruised, defaced, or otherwise damaged by construction operations. Remove displaced rocks from uncleared areas. Coordinate with the Contracting Officer and Installation Environmental Office to determine appropriate action for trees and other landscape features scarred or damaged by equipment operations.

3.1.3 Streams

Stream crossings must allow movement of materials or equipment without violating water pollution control standards of the federal, state, and local governments. Construction of stream crossing structures must be in compliance with any required permits including, but not limited to, Clean Water Act Section 404, and Section 401 Water Quality.

The Contracting Officer's approval and appropriate permits are required before any equipment will be permitted to ford live streams. In areas where frequent crossings are required, install temporary culverts or bridges. Obtain Contracting Officer's approval prior to installation. Remove temporary culverts or bridges upon completion of work, and repair the area to its original condition unless otherwise required by the Contracting Officer.

3.2 STORMWATER

Do not discharge stormwater from construction sites to the sanitary sewer. If the water is noted or suspected of being contaminated, it may only be released to the storm drain system if the discharge is specifically permitted. Obtain authorization in advance from the Installation Environmental Office for any release of contaminated water.

3.2.1 Construction General Permit

Provide a Construction General Permit as required by 40 CFR 122.26 or EPA General Permit. Under the terms and conditions of the permit, install, inspect, maintain BMPs, prepare stormwater erosion and sediment control inspection reports, and submit SWPPP inspection reports. Maintain construction operations and management in compliance with the terms and conditions of the general permit for stormwater discharges from construction activities.

3.2.1.1 Stormwater Pollution Prevention Plan

Submit a project-specific Stormwater Pollution Prevention Plan (SWPPP) to the Contracting Officer for approval, prior to the commencement of work. The SWPPP must meet the requirements of 40 CFR 122.26 and the EPA General Permit for stormwater discharges from construction sites.

Include the following:

a. Comply with terms of the EPA general permit for stormwater discharges from construction activities. Prepare SWPPP in accordance with EPA requirements. Use EPA guide Developing your Stormwater Pollution Prevention Plan located at http://water.epa.gov/polwaste/npdes/stormwater/Stormwater-Pollution-Prevention-Plans-for-Construction-Activities.cfm to prepare the SWPPP.

b. Select applicable BMPs from EPA Fact Sheets located at http://water.epa.gov/polwaste/npdes/swbmp/Construction-Site-StormWater-Run-Off-Control.cfm or in accordance with applicable state or local requirements.

c. Include a completed copy of the Notice of Intent, BMP Inspection Report Template, and Stormwater Notice of Termination, except for the effective date.

d. Comply with additional requirements provided in Section 01 57 19.01 20 SUPPLEMENTAL TEMPORARY ENVIRONMENTAL CONTROLS

3.2.1.2 Stormwater Notice of Intent for Construction Activities

Prepare and submit the Notice of Intent for NPDES coverage under the general permit for construction activities to the Contracting Officer for review and approval.

Submit the approved NOI and appropriate permit fees onto the appropriate federal or state agency for approval. No land disturbing activities may commence without permit coverage. Maintain an approved copy of the SWPPP at the onsite construction office, and continually update as regulations require, reflecting current site conditions.

Comply with the additional requirements in Section 01 57 19.01 20 SUPPLEMENTAL TEMPORARY ENVIRONMENTAL CONTROLS.

3.2.1.3 Inspection Reports

Submit "Inspection Reports" to the Contracting Officer in accordance with EPA Construction General Permit. Provide Inspection Reports in accordance with 01 57 19.01 20 SUPPLEMENTAL TEMPORARY ENVIRONMENTAL CONTROLS.

3.2.1.4 Stormwater Pollution Prevention Plan Compliance Notebook

Create and maintain a three ring binder of documents that demonstrate compliance with the Construction General Permit. Include a copy of the permit Notice of Intent, proof of permit fee payment, SWPPP and SWPPP update amendments, inspection reports and related corrective action records, copies of correspondence with the EPA, and a copy of the permit Notice of Termination in the binder. At project completion, the notebook becomes

property of the Government. Provide the compliance notebook to the Contracting Officer.

3.2.1.5 Stormwater Notice of Termination for Construction Activities

Submit a Notice of Termination to the Contracting Officer for approval once construction is complete and final stabilization has been achieved on all portions of the site for which the permittee is responsible. Once approved, submit the Notice of Termination to the appropriate state or federal agency. Prepare as-built topographic survey information required by the permitting agency for certification of the stormwater management system, and provide to the Contracting Officer.

3.2.2 Erosion and Sediment Control Measures

Provide erosion and sediment control measures in accordance with state and local laws and regulations. Preserve vegetation to the maximum extent practicable.

Erosion control inspection reports may be compiled as part of a stormwater pollution prevention plan inspection reports.

3.2.2.2 Sediment Control Practices

Implement sediment control practices to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Implement sediment control practices prior to soil disturbance and prior to creating areas with concentrated flow, during the construction process to minimize erosion and sediment laden runoff.

3.2.3 Work Area Limits

Mark the areas that need not be disturbed under this Contract prior to commencing construction activities. Mark or fence isolated areas within the general work area that are not to be disturbed. Protect monuments and markers before construction operations commence. Where construction operations are to be conducted during darkness, any markers must be visible in the dark. Personnel must be knowledgeable of the purpose for marking and protecting particular objects.

3.2.4 Contractor Facilities and Work Areas

Place field offices, staging areas, stockpile storage, and temporary buildings in areas designated on the drawings or as directed by the Contracting Officer. Move or relocate the Contractor facilities only when approved by the Government. Provide erosion and sediment controls for onsite borrow and spoil areas to prevent sediment from entering nearby waters. Control temporary excavation and embankments for plant or work areas to protect adjacent areas.

3.2.5 Municipal Separate Storm Sewer System (MS4) Management

Comply with the Installation's MS4 permit requirements. Comply with requirements of Section 01 57 19.01 20 SUPPLEMENTAL TEMPORARY ENVIRONMENTAL CONTROLS.

3.3 SURFACE AND GROUNDWATER

3.3.1 Cofferdams, Diversions, and Dewatering

Construction operations for dewatering, removal of cofferdams, tailrace excavation, and tunnel closure must be constantly controlled to maintain compliance with existing state water quality standards and designated uses of the surface water body. Comply with the State water quality standards and anti-degradation provisions and the Clean Water Act. Do not discharge excavation ground water to the sanitary sewer, storm drains, or to surface waters without prior specific authorization in writing from the Installation Environmental Office. Discharge of hazardous substances will not be permitted under any circumstances. Use sediment control BMPs to prevent construction site runoff from directly entering any storm drain or surface waters.

If the construction dewatering is noted or suspected of being contaminated, it may only be released to the storm drain system if the discharge is specifically permitted. Obtain authorization for any contaminated groundwater release in advance from the Installation Environmental Officer and the federal or state authority, as applicable. Discharge of hazardous substances will not be permitted under any circumstances.

3.3.2 Waters of the United States

Do not enter, disturb, destroy, or allow discharge of contaminants into waters of the United States.

3.4 PROTECTION OF CULTURAL RESOURCES

3.4.1 Archaeological Resources

If, during excavation or other construction activities, any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, activities that may damage or alter such resources will be suspended. Resources covered by this paragraph include, but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. Cease all activities that may result in impact to or the destruction of these resources. Secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources. The Government retains ownership and control over archaeological resources.

3.5 AIR RESOURCES

Equipment operation, activities, or processes will be in accordance with 40 CFR 64 and state air emission and performance laws and standards.

3.5.1 Preconstruction Air Permits

Notify the Air Program Manager, through the Contracting Officer, at least 6 months prior to bringing equipment, assembled or unassembled, onto the Installation, so that air permits can be secured. Necessary permitting time must be considered in regard to construction activities. Clean Air Act (CAA) permits must be obtained prior to bringing equipment, assembled or unassembled, onto the Installation.

3.5.2 Oil or Dual-fuel Boilers and Furnaces

Provide product data and details for new, replacement, or relocated fuel fired boilers, heaters, or furnaces to the Installation Environmental Office (Air Program Manager) through the Contracting Officer. Data to be reported include: equipment purpose (water heater, building heat, process), manufacturer, model number, serial number, fuel type (oil type, gas type) size (MMBTU heat input). Provide in accordance with paragraph PRECONSTRUCTION AIR PERMITS.

3.5.3 Burning

Burning is prohibited on the Government premises.

3.5.4 Class I and II ODS Prohibition

Class I and II ODS are Government property and must be returned to the Government for appropriate management. Coordinate with the Installation Environmental Office to determine the appropriate location for turn in of all reclaimed refrigerant.

3.5.5 Accidental Venting of Refrigerant

Accidental venting of a refrigerant is a release and must be reported immediately to the Contracting Officer.

3.5.6 EPA Certification Requirements

Heating and air conditioning technicians must be certified through an EPA-approved program. Maintain copies of certifications at the employees' places of business; technicians must carry certification wallet cards, as provided by environmental law.

3.5.7 Dust Control

Keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing will be permitted only for cleaning nonparticulate debris such as steel reinforcing bars. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not unnecessarily shake bags of cement, concrete mortar, or plaster.

3.5.7.1 Particulates

Dust particles, aerosols and gaseous by-products from construction activities, and processing and preparation of materials (such as from asphaltic batch plants) must be controlled at all times, including weekends,

holidays, and hours when work is not in progress. Maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates that would exceed 40 CFR 50, state, and local air pollution standards or that would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators, or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp. Provide sufficient, competent equipment available to accomplish these tasks. Perform particulate control as the work proceeds and whenever a particulate nuisance or hazard occurs. Comply with state and local visibility regulations.

3.5.7.2 Abrasive Blasting

Blasting operations cannot be performed without prior approval of the Installation Air Program Manager. The use of silica sand is prohibited in sandblasting.

Provide tarpaulin drop cloths and windscreens to enclose abrasive blasting operations to confine and collect dust, abrasive agent, paint chips, and other debris. Perform work involving removal of hazardous material in accordance with 29 CFR 1910.

3.5.8 Odors

Control odors from construction activities. The odors must be in compliance with state regulations and local ordinances and may not constitute a health hazard.

3.6 WASTE MINIMIZATION

Minimize the use of hazardous materials and the generation of waste. Include procedures for pollution prevention/ hazardous waste minimization in the Hazardous Waste Management Section of the EPP. Obtain a copy of the installation's Pollution Prevention/Hazardous Waste Minimization Plan for reference material when preparing this part of the EPP. If no written plan exists, obtain information by contacting the Contracting Officer. Describe the anticipated types of the hazardous materials to be used in the construction when requesting information.

3.6.1 Salvage, Reuse and Recycle

Identify anticipated materials and waste for salvage, reuse, and recycling. Describe actions to promote material reuse, resale or recycling. To the extent practicable, all scrap metal must be sent for reuse or recycling and will not be disposed of in a landfill.

Include the name, physical address, and telephone number of the hauler, if transported by a franchised solid waste hauler. Include the destination and, unless exempted, provide a copy of the state or local permit (cover) or license for recycling.

3.6.2 Nonhazardous Solid Waste Diversion Report

Maintain an inventory of nonhazardous solid waste diversion and disposal of construction and demolition debris. Submit a report to the Contracting Officer on the first working day after each fiscal year quarter, starting the first quarter that nonhazardous solid waste has been generated. Include the following in the report:

Construction and Demolition (C&D) Debris Disposed	_____ cubic yards, tons as appropriate
C&D Debris Recycled	_____ cubic yards, tons as appropriate
Total C&D Debris Generated	_____ cubic yards, tons as appropriate

3.7 WASTE MANAGEMENT AND DISPOSAL

3.7.1 Waste Determination Documentation

Complete a Waste Determination form (provided at the pre-construction conference) for Contractor-derived wastes to be generated. All potentially hazardous solid waste streams that are not subject to a specific exclusion or exemption from the hazardous waste regulations (e.g. scrap metal, domestic sewage) or subject to special rules, (lead-acid batteries and precious metals) must be characterized in accordance with the requirements of 40 CFR 261 or corresponding applicable state or local regulations. Base waste determination on user knowledge of the processes and materials used, and analytical data when necessary. Consult with the Installation environmental staff for guidance on specific requirements. Attach support documentation to the Waste Determination form. As a minimum, provide a Waste Determination form for the following waste (this listing is not inclusive): oil- and latex -based painting and caulking products, solvents, adhesives, aerosols, petroleum products, and containers of the original materials.

3.7.2 Solid Waste Management

3.7.2.1 Solid Waste Management Report

Provide copies of the waste handling facilities' weight tickets, receipts, bills of sale, and other sales documentation. In lieu of sales documentation, a statement indicating the disposal location for the solid waste that is signed by an employee authorized to legally obligate or bind the firm may be submitted. The sales documentation must include the receiver's tax identification number and business, EPA or state registration number, along with the receiver's delivery and business addresses and telephone numbers. For each solid waste retained for the Contractor's own use, submit the information previously described in this paragraph on the solid waste disposal report. Prices paid or received do not have to be reported to the Contracting Officer unless required by other provisions or specifications of this Contract or public law.

3.7.2.2 Control and Management of Solid Wastes

Pick up solid wastes, and place in covered containers that are regularly emptied. Do not prepare or cook food on the project site. Prevent

contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with non-hazardous solid waste.

Manage hazardous material used in construction, including but not limited to, aerosol cans, waste paint, cleaning solvents, contaminated brushes, and used rags, in accordance with 49 CFR 173.

Disposal of rubbish, debris, chemical waste, and metals at the Ordot landfill is prohibited. All rubbish, debris, chemical waste, and asbestos, including any material excavated that could be considered fill material, must be disposed of at Government Facilities. Dispose of rubbish, debris, chemical waste, and asbestos in accordance with the requirements specified herein.

Government dumps within the station and NAVFACMAR Landfill is available for disposal of rubbish, debris, and asbestos materials, except for metals, rubber products, chemicals, and hazardous waste. For dumping rubbish and debris into prepared hole, Contractor will be charged the current rate of $2.10 per cubic yard. This rate is subject to change and is provided for informational purposes. Aside from the dumping charges mentioned, the Contractor will be charged for excavation and backfilling of holes to be performed by Government personnel.

Metal products will not be accepted at the NAVFACMAR landfill. Contractor must remove metals from the construction waste and dispose of the metals by recycling through DRMO, local scrap dealer, or disposal off-island. The Contractor must identify the selected method and site of metal waste disposal in the Environmental Protection Plan.

3.7.2.2.1 NAVFACMAR Landfill

Hours of operation are Monday through Friday, 7:30 a.m. to 4:30 p.m. Coordinate with the Contracting Officer and Landfill Supervisor (671-333-6189) or Operation Division Director (671-333-2936) 24 hours prior to delivery of the first load. Additional loads thereafter do not require advance notification, except for the Contracting Officer’s approval prior to first delivery. Loads will be inspected at the landfill gate, and if approved, the Landfill Supervisor will direct the Contractor’s truck to the disposal site.

3.7.3 Control and Management of Hazardous Waste

Do not dispose of hazardous waste on Government property except as noted. Do not discharge any waste to a sanitary sewer, storm drain, or to surface waters or conduct waste treatment or disposal on Government property without written approval of the Contracting Officer.

3.7.3.1 Hazardous Waste/Debris Management

Identify construction activities that will generate hazardous waste or debris. Provide a documented waste determination for resultant waste streams. Identify, label, handle, store, and dispose of hazardous waste or debris in accordance with federal, state, and local regulations, including

40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, and 40 CFR 268.

Manage hazardous waste in accordance with the approved Hazardous Waste Management Section of the EPP. Store hazardous wastes in approved containers in accordance with 49 CFR 173 and 49 CFR 178. Hazardous waste generated within the confines of Government facilities is identified as being generated by the Government. Prior to removal of any hazardous waste from Government property, hazardous waste manifests must be signed by personnel from the Installation Environmental Office. Do not bring hazardous waste onto Government property. Provide the Contracting Officer with a copy of waste determination documentation for any solid waste streams that have any potential to be hazardous waste or contain any chemical constituents listed in 40 CFR 372-SUBPART D.

3.7.3.2 Asbestos Containing Materials

Environmental Service Department (671-339-3711) approval is required. The Contractor will be charged the current flat rate of $153.00 per cubic yard. This rate includes all work associated with landfill excavation, dumping, backfilling, and disposal fees. The rate is subject to change and is provided for informational purposes. Prior to dumping of waste, Contractor must establish a funding account with NAVFACMAR Comptroller (671-333-8299).

3.7.3.3 Universal Waste Management

Manage the following categories of universal waste in accordance with federal, state, and local requirements and installation instructions:

a. Batteries as described in 40 CFR 273.2

b. Lamps as described in 40 CFR 273.5

c. Mercury-containing equipment as described in 40 CFR 273.4

d. Pesticides as described in 40 CFR 273.3

e. Section 01 57 19.01 20 SUPPLEMENTAL TEMPORARY ENVIRONMENTAL CONTROLS

Mercury is prohibited in the construction of this facility, unless specified otherwise, and with the exception of mercury vapor lamps and fluorescent lamps. Dumping of mercury-containing materials and devices such as mercury vapor lamps, fluorescent lamps, and mercury switches, in rubbish containers is prohibited. Remove without breaking, pack to prevent breakage, and transport out of the activity in an unbroken condition for disposal as directed.

Dispose of chemical waste in accordance with local and federal regulations.

3.7.3.4 Electronics End-of-Life Management

Recycle or dispose of electronics waste, including, but not limited to, used electronic devices such computers, monitors, hard-copy devices, televisions, mobile devices, in accordance with 40 CFR 260-262, state, and local requirements, and installation instructions.

3.7.3.5 Disposal Documentation for Hazardous and Regulated Waste

Contact the Contracting Officer for the facility RCRA identification number that is to be used on each manifest.

Submit a copy of the applicable EPA and or state permit(s), manifest(s), or license(s) for transportation, treatment, storage, and disposal of hazardous and regulated waste by permitted facilities. Hazardous or toxic waste manifests must be reviewed, signed, and approved by the Contracting Officer before the Contractor may ship waste. To obtain specific disposal instructions, coordinate with the Installation Environmental Office. Refer to Section 01 57 19.01 20 SUPPLEMENTAL TEMPORARY ENVIRONMENTAL CONTROLS for the Installation Point of Contact information.

3.7.4 Releases/Spills of Oil and Hazardous Substances

3.7.4.1 Response and Notifications

Exercise due diligence to prevent, contain, and respond to spills of hazardous material, hazardous substances, hazardous waste, sewage, regulated gas, petroleum, lubrication oil, and other substances regulated in accordance with 40 CFR 300. Maintain spill cleanup equipment and materials at the work site. In the event of a spill, take prompt, effective action to stop, contain, curtail, or otherwise limit the amount, duration, and severity of the spill/release. In the event of any releases of oil and hazardous substances, chemicals, or gases; immediately (within 15 minutes) notify the Installation Fire Department, the Installation Command Duty Officer, the Installation Environmental Office, the Contracting Officer and the state or local authority.

Submit verbal and written notifications as required by the federal (40 CFR 300.125 and 40 CFR 355), state, local regulations and instructions. Provide copies of the written notification and documentation that a verbal notification was made within 20 days. Spill response must be in accordance with 40 CFR 300 and applicable state and local regulations. Contain and clean up these spills without cost to the Government.

3.7.4.2 Clean Up

Clean up hazardous and non-hazardous waste spills. Reimburse the Government for costs incurred including sample analysis materials, clothing, equipment, and labor if the Government will initiate its own spill cleanup procedures, for Contractor- responsible spills, when: Spill cleanup procedures have not begun within one hour of spill discovery/occurrence; or, in the Government's judgment, spill cleanup is inadequate and the spill remains a threat to human health or the environment.

3.7.5 Mercury Materials

Immediately report to the Environmental Office and the Contracting Officer instances of breakage or mercury spillage. Clean mercury spill area to the satisfaction of the Contracting Officer.

Do not recycle a mercury spill cleanup; manage it as a hazardous waste for disposal.

3.7.6 Wastewater

3.7.6.1 Disposal of wastewater must be as specified below.

3.7.6.1.1 Treatment

Do not allow wastewater from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, and forms to enter water ways or to be discharged prior to being treated to remove pollutants. Dispose of the construction- related waste water off-Government property in accordance with 40 CFR 403, state, regional, and local laws and regulations.

3.7.6.1.2 Surface Discharge

For discharge of ground water Surface discharge in accordance with federal, state, and local laws and regulations. Surface discharge in accordance with the requirements of the NPDES or state STORMWATER DISCHARGES FROM CONSTRUCTION SITES permit.

3.7.6.1.3 Land Application

Water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing discharged into the sanitary sewer with prior approval and notification to the Wastewater Treatment Plant's Operator.

3.8 HAZARDOUS MATERIAL MANAGEMENT

Include hazardous material control procedures in the Safety Plan, in accordance with Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS. Address procedures and proper handling of hazardous materials, including the appropriate transportation requirements. Do not bring hazardous material onto Government property that does not directly relate to requirements for the performance of this contract. Submit an SDS and estimated quantities to be used for each hazardous material to the Contracting Officer prior to bringing the material on the installation. Typical materials requiring SDS and quantity reporting include, but are not limited to, oil and latex based painting and caulking products, solvents, adhesives, aerosol, and petroleum products. Use hazardous materials in a manner that minimizes the amount of hazardous waste generated. Containers of hazardous materials must have National Fire Protection Association labels or their equivalent. Certify that hazardous materials removed from the site are hazardous materials and do not meet the definition of hazardous waste, in accordance with 40 CFR 261.

3.8.1 Contractor Hazardous Material Inventory Log

Submit the "Contractor Hazardous Material Inventory Log"(found at: http://www.wbdg.org/ccb/NAVGRAPH/graphtoc.pdf), which provides information required by (EPCRA Sections 312 and 313) along with corresponding SDS, to the Contracting Officer at the start and at the end of construction (30 days from final acceptance), and update no later than January 31 of each calendar year during the life of the contract. Keep copies of the SDSs for hazardous materials onsite. At the end of the project, provide the Contracting Officer

with copies of the SDSs, and the maximum quantity of each material that was present at the site at any one time, the dates the material was present, the amount of each material that was used during the project, and how the material was used.

The Contracting Officer may request documentation for any spills or releases, environmental reports, or off-site transfers.

3.9 PREVIOUSLY USED EQUIPMENT

Clean previously used construction equipment prior to bringing it onto the project site. Equipment must be free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. Consult with the U.S. Department of Agriculture jurisdictional office for additional cleaning requirements.

3.10 CONTROL AND MANAGEMENT OF ASBESTOS-CONTAINING MATERIAL (ACM)

Manage and dispose of asbestos- containing waste in accordance with 40 CFR 61. Manifest asbestos-containing waste and provide the manifest to the Contracting Officer. Notifications to the state and Installation Air Program Manager are required before starting any asbestos work.

3.11 CONTROL AND MANAGEMENT OF LEAD-BASED PAINT (LBP)

Manage and dispose of lead-contaminated waste in accordance with 40 CFR 745. Manifest any lead-contaminated waste and provide the manifest to the Contracting Officer.

3.12 CONTROL AND MANAGEMENT OF POLYCHLORINATED BIPHENYLS (PCBS)

Manage and dispose of PCB-contaminated waste in accordance with 40 CFR 761.

3.13 CONTROL AND MANAGEMENT OF LIGHTING BALLAST AND LAMPS CONTAINING PCBS

Manage and dispose of contaminated waste in accordance with 40 CFR 761.

3.14 MILITARY MUNITIONS

In the event military munitions, as defined in 40 CFR 260, are discovered or uncovered, immediately stop work in that area and immediately inform the Contracting Officer.

3.15 PETROLEUM, OIL, LUBRICANT (POL) STORAGE AND FUELING

POL products include flammable or combustible liquids, such as gasoline, diesel, lubricating oil, used engine oil, hydraulic oil, mineral oil, and cooking oil. Store POL products and fuel equipment and motor vehicles in a manner that affords the maximum protection against spills into the environment. Manage and store POL products in accordance with EPA 40 CFR 112, and other federal, state, regional, and local laws and regulations. Use secondary containments, dikes, curbs, and other barriers, to prevent POL products from spilling and entering the ground, storm or sewer drains, stormwater ditches or canals, or navigable waters of the United States. Describe in the EPP (see paragraph ENVIRONMENTAL PROTECTION PLAN) how POL tanks and containers must be stored, managed, and inspected and what

protections must be provided. Storage of fuel on the project site must be in accordance with EPA, state, and local laws and regulations and paragraph OIL STORAGE INCLUDING FUEL TANKS.

3.15.1 Used Oil Management

Manage used oil generated on site in accordance with 40 CFR 279. Determine if any used oil generated while onsite exhibits a characteristic of hazardous waste. Used oil containing 1,000 parts per million of solvents is considered a hazardous waste and disposed of at the Contractor's expense. Used oil mixed with a hazardous waste is also considered a hazardous waste. Dispose in accordance with paragraph HAZARDOUS WASTE DISPOSAL.

3.15.2 Oil Storage Including Fuel Tanks

Provide secondary containment and overfill protection for oil storage tanks. A berm used to provide secondary containment must be of sufficient size and strength to contain the contents of the tanks plus 12 centimeters (5 inches) freeboard for precipitation. Construct the berm to be impervious to oil for 72 hours that no discharge will permeate, drain, infiltrate, or otherwise escape before cleanup occurs. Use drip pans during oil transfer operations; adequate absorbent material must be onsite to clean up any spills and prevent releases to the environment. Cover tanks and drip pans during inclement weather. Provide procedures and equipment to prevent overfilling of tanks. If tanks and containers with an aggregate aboveground capacity greater than 5000 liter (1320 gallons) will be used onsite (only containers with a capacity of 208 liter (55 gallons) or greater are counted), provide and implement a SPCC plan meeting the requirements of 40 CFR 112. Do not bring underground storage tanks to the installation for Contractor use during a project. Submit the SPCC plan to the Contracting Officer for approval.

Monitor and remove any rainwater that accumulates in open containment dikes or berms. Inspect the accumulated rainwater prior to draining from a containment dike to the environment, to determine there is no oil sheen present.

3.16 INADVERTENT DISCOVERY OF PETROLEUM-CONTAMINATED SOIL OR HAZARDOUS WASTES

If petroleum-contaminated soil, or suspected hazardous waste is found during construction that was not identified in the Contract documents, immediately notify the Contracting Officer. Do not disturb this material until authorized by the Contracting Officer.

3.17 PEST MANAGEMENT

In order to minimize impacts to existing fauna and flora, coordinate with the Installation Pest Management Coordinator (IPMC) or Project Pesticide Coordinator (PPC), through the Contracting Officer, at the earliest possible time prior to pesticide application. Discuss integrated pest management strategies with the IPMC and receive concurrence from the PPC through the Contracting Officer prior to the application of any pesticide associated with these specifications. Provide Installation Project Office Pest Management personnel the opportunity to be present at meetings concerning treatment measures for pest or disease control and during application of the

pesticide. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.17.1 Application

Apply pesticides using a state-certified pesticide applicator in accordance with EPA label restrictions and recommendation. The certified applicator must wear clothing and personal protective equipment as specified on the pesticide label. The Contracting Officer will designate locations for water used in formulating. Do not allow the equipment to overflow. Inspect equipment for leaks, clogging, wear, or damage and repair prior to application of pesticide.

3.17.2 Pesticide Treatment Plan

Include and update a pesticide treatment plan, as information becomes available. Include in the plan the sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (that is, pounds of active ingredient applied), equipment used for application and calibration of equipment. Comply with 40 CFR 152-189, state, regional, and local pest management record-keeping and reporting requirements as well as any additional Installation Project Office specific requirements in conformance with DA AR 200-1 Chapter 5, Pest Management, Section 5-4 "Program requirements" for data required to be reported to the Installation.

3.18 CHLORDANE

Evaluate excess soils and concrete foundation debris generated during the demolition of housing units or other wooden structures for the presence of chlordane or other pesticides prior to reuse or final disposal.

3.19 SOUND INTRUSION

Make the maximum use of low-noise emission products, as certified by the EPA. Blasting or use of explosives are not permitted without written permission from the Contracting Officer, and then only during the designated times. Confine pile-driving operations to times as authorized by the Contracting Officer.

Keep construction activities under surveillance and control to minimize environment damage by noise. Comply with the provisions of the State rules.

3.20 POST CONSTRUCTION CLEANUP

Clean up areas used for construction in accordance with Contract Clause: "Cleaning Up". Unless otherwise instructed in writing by the Contracting Officer, remove traces of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. Grade parking area and similar temporarily used areas to conform with surrounding contours.

-- End of Section --

SECTION 01 57 19.01 20

SUPPLEMENTAL TEMPORARY ENVIRONMENTAL CONTROLS
Joint Region Marianas Explosives Safety Submission (JRM ESS)
01/16

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. If state or local references are not provided here, refer to Section 01 57 19.00 20 TEMPORARY ENVIRONMENTAL CONTROLS for appropriate references.

JOINT REGION MARIANAS (JRM)

JRM ESS (Amendment Series)	Explosives Safety Submission, Munitions Response Sites, GUAM CONSTRUCTION SUPPORT

DEPARTMENT OF DEFENSE (DOD)

EM-385-1-1	Safety and Health Requirements Manual, US Army Corp of Engineers (USACE)
NOSSAINST 8020.15D	Naval Ordinance Safety and Security Activity, Explosives Safety Review, Oversight, and Verification of Munitions Responses (U)
NAVSEA OP 5 (Volume 1)	Naval Sea Systems Command, Ammunition and Explosives Safety Ashore
DDESB TP-18	Department of Defense Explosive Safety Board, Technical Paper 18, Qualifications for UXO Technicians
NOSSAINST 8023.11B	Standard Operating Procedures, Development, Implementation, and Maintenance for Ammunition and Explosives

- For all above references, the most current version shall apply.

1.2 SUBMITTALS

Government acceptance is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

ESS Work Plans (Anomaly Avoidance, Anomaly Investigation, Digital Geophysical Mapping (DGM), DGM followed by Anomaly Investigation, DGM followed by Advanced Technology /

Munitions Classifier followed by Anomaly Investigation); G
Installation Commanding Officer (ICO) Notification; G

SD-11 Field Reports, After Action Report, and Closeout

QC/QA Report; G

MEC/MPPEH Spot Report; G

Weekly Situational/Status Report (SITREP); G

After Action Report (AAR) (Anomaly Avoidance, Anomaly Investigation, DGM, Advanced Technology / Munitions Classifier); G

1.2.1 Submittal Schedule

Submittal schedule requirements for various ESS Deliverables are detailed below. The period of review for each resubmittal is the same as for initial submittal.

SCENARIO 1: ANOMALY AVOIDANCE

SUBMITTALS REQUIRED PRIOR TO ANOMALY AVOIDANCE		
Submittal	**Copies**	**Timeframe**
Anomaly Avoidance Work Plan	Electronic, 6 hard copies, each with CD, bookmarked .pdf and .doc (or .xls) file	14 calendar days after award
Government Review/Accept Anomaly Avoidance Work Plan	Electronic, .pdf and .doc (or .xls) file	14 calendar days

*Avoidance field work may commence after Government acceptance of the Anomaly Avoidance Work Plan.

SUBMITTALS REQUIRED DURING ANOMALY AVOIDANCE		
Submittal	**Copies**	**Timeframe**
Weekly SITREP	Electronic	Weekly
MEC/MPPEH Spot Report	Electronic	As required, within 1 business day of confirming identification of MEC/MPPEH
QC/QA Report	Electronic	As required; government review and acceptance 14 calendar days

***MEC = Munitions and Explosives of Concern**
***MPPEH = Material Potentially Presenting an Explosive Hazard**

SUBMITTALS REQUIRED POST-ANOMALY AVOIDANCE		
Submittal	**Copies**	**Timeframe**
Anomaly Avoidance After Action Report	Electronic, 6 hard copies, each with CD, bookmarked .pdf and .doc (or .xls) file	7 calendar days after completion of all Anomaly Avoidance work
Government Review/Accept Anomaly Avoidance AAR	Electronic, .pdf and .doc (or .xls) file	14 calendar days

SCENARIO 2: ANOMALY INVESTIGATION

SUBMITTALS REQUIRED PRIOR TO ANOMALY INVESTIGATION		
Submittal	**Copies**	**Timeframe**
Anomaly Investigation Work Plan	Electronic, 6 hard copies, each with CD, bookmarked .pdf and .doc (or .xls) file	14 calendar days after award
Government Review/ Accept Anomaly Investigation Work Plan	Electronic, CD with .pdf and .doc (or .xls) file	14 calendar days
Installation Commanding Officer (ICO) Notification	Electronic, slide presentation	45 calendar days prior to anomaly investigation

*Anomaly Investigation field work may commence after Government acceptance of Anomaly Investigation Work Plan.

SUBMITTALS REQUIRED DURING ANOMALY INVESTIGATION		
Submittal	**Copies**	**Timeframe**
Weekly SITREP	Electronic	Weekly
MEC/MPPEH Spot Report	Electronic	As required, within 1 business day of confirming identification of MEC/MPPEH
QC/QA Report	Electronic	As required; government review and acceptance 14 calendar days

SUBMITTALS REQUIRED POST-ANOMALY INVESTIGATION		
Submittal	**Copies**	**Timeframe**
Anomaly Investigation After Action Report	Electronic, 6 hard copies, each with CD, bookmarked .pdf and .doc	7 calendar days after completion of all Anomaly Investigation work
Government Review/Accept Anomaly Investigation AAR	Electronic, .pdf and .doc (or .xls) file	14 calendar days

SCENARIO 3: DGM FOLLOWED BY ANOMALY INVESTIGATION

SUBMITTALS REQUIRED PRIOR TO DGM		
Submittal	**Copies**	**Timeframe**
DGM Work Plan	Electronic, 6 hard copies, each with CD, bookmarked .pdf and .doc (or .xls) file	14 calendar days after award
Government Review/Accept DGM Work Plan	Electronic, .pdf and .doc (or .xls) file	14 calendar days

*DGM field work may commence after Gov’t acceptance of DGM Work Plan.

SUBMITTALS REQUIRED DURING DGM		
Submittal	**Copies**	**Timeframe**
DGM QC/QA Report	Electronic	As required, government review and acceptance 7 calendar days

SUBMITTALS REQUIRED POST-DGM		
Submittal	**Copies**	**Timeframe**
DGM After Action Report	Electronic, 6 hard copies, each with CD, bookmarked .pdf and .doc (or .xls) file	30 calendar days after completion of all DGM field work
Government Review/Accept DGM AAR	Electronic, .pdf and .doc (or .xls) file	14 calendar days

*Anomaly Investigation Work Plan shall not be submitted until DGM AAR is accepted by the Government.

SUBMITTALS REQUIRED PRIOR TO ANOMALY INVESTIGATION		
Submittal	**Copies**	**Timeframe**
Anomaly Investigation Work Plan	Electronic, 6 hard copies, each with CD, bookmarked .pdf and .doc	14 calendar days after award
Government Review/ Accept Anomaly Investigation Work Plan	Electronic, DC with .pdf and .doc (or .xls) file	14 calendar days
Installation Commanding Officer (ICO) Notification	Electronic, slide presentation	45 calendar days prior to anomaly investigation

*Anomaly Investigation field work may commence after Gov't acceptance of Anomaly Investigation Work Plan.

SUBMITTALS REQUIRED DURING ANOMALY INVESTIGATION		
Submittal	**Copies**	**Timeframe**
Weekly SITREP	Electronic	Weekly
MEC/MPPEH Spot Report	Electronic	As required, within 1 business day of confirming identification of MEC/MPPEH
QC/QA Report	Electronic	As required; government review and acceptance 14 calendar days

SUBMITTALS REQUIRED POST-ANOMALY INVESTIGATION		
Submittal	**Copies**	**Timeframe**
Anomaly Investigation After Action Report	Electronic, 6 hard copies, each with CD, bookmarked .pdf and .doc	7 calendar days after completion of all Anomaly Investigation work
Government Review/Accept Anomaly Investigation AAR	Electronic, .pdf and .doc (or .xls) file	14 calendar days

The following requirements apply to the CD ROM.

1. Native file formats shall be provided for all documents in reports.
2. A .pdf file(s) of the final documents shall also be provided in the following formats: The entire document shall be provided as one pdf file. The pdf file shall have bookmarks for each item identified in the document's table of contents, including tables, figures, captioned photos, and appendices. The bookmark shall use the same description as provided in the table of contents. If the bookmark is lengthy, abbreviate as needed. Bookmark to the second level (i.e. 1.1, 1.2, 1.3, etc.). Do not bookmark signature page of the list of acronyms. Each appendix, regardless of size, shall be provided as an individual pdf

file. All maps, figures, and pictures shall be provided at a useable resolution. All color maps, figures, and pictures shall be provided in color.

1.3 Personnel Qualifications and Duties

Personnel shall meet the minimum qualification standards set forth in DDESB TP 18 and the JRM ESS, including training and experience requirements. Duties are defined in DDESB TP 18 and the JRM ESS.

For projects requiring on site construction support, a Unexploded Ordnance (UXO) Technician II or above shall be present on site.

For projects requiring munitions response (i.e. anomaly avoidance or anomaly investigation), the contractor shall provide the following personnel:

1.3.1 Unexploded Ordnance Safety Officer (UXOSO)

The UXOSO shall be responsible for implementing the Site Health and Safety Plan (SHSP) and the Accident Prevention Plan (APP). UXOSO must be on site during anomaly investigation. UXOSO may also perform duties of the UXOQCS.

1.3.2 UXO Quality Control Specialist (UXOQCS)

The UXOQCS shall be responsible for implementing the Quality Control Plan. The UXOQCS may also perform duties of the UXOSO. During DGM, either the UXOQCS or Geophysicist must be on site. The UXOQCS shall not report to the SUXOS. The UXOQCS is responsible to ensure that the three phases of quality control (preparatory, initial, and follow-up) are properly implemented and shall inspect each definable feature of work by phase. If anomaly investigation is included, the UXOQCS is responsible for insuring proper implementation of the Geophysical System Verification process, installing an Instrument Verification Strip, and emplacing blind seeds.

1.3.3 The UXO Quality Assurance Manager (UXOQAM)

A qualified government representative shall be assigned to perform the duties of UXOQAM.

1.3.4 Senior UXO Supervisor (SUXOS)

The SUXOS is responsible to oversee all munitions response work. The SUXOS shall be on site at all times during anomaly investigation. SUXOS shall not perform the role of UXOSO or UXOQCS.

1.3.5 Geophysicist

A geophysicist shall be required for DGM only. The Geophysicist shall have a degree in geophysics, geology, geological engineering, or other closely-related field. The geophysicist shall have a minimum of five years of experience directly related to the geophysical mapping, detection, and classification of buried military munitions. This individual is the project geophysicist-of-record and has overall responsibility for design, implementation, and management of geophysical investigations required for the work effort related to military munitions. The geophysicist is not required to be on-site full time; however during DGM, either the UXOQCS or geophysicist must be on site.

1.3.6 UXO Technicians

UXO Technicians shall be provided by the contractor as needed based on site and project conditions. Training and experience shall be in accordance with DDESB TP 18 and JRM ESS and be commensurate with their assigned duties.

1.4 General Requirements for all Work Plans (WP)

Specific requirements for WP elements are described below. The WP shall be written, job-specific, and address any unusual or unique aspects of the project or activity for which it is written. The WP shall interface with the Contractor's overall safety, health, and quality control programs. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety, healthy, and quality control implementation of the subcontractors. Contractors are responsible for informing their subcontractors of the safety and quality provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention and quality control responsibilities are being carried out. The contractor shall implement the three phases of quality control. The WP shall be signed by the project superintendent, the project QC Manager, the project SSHO, the UXOSO, UXOQCS, SUXOS, and geophysicist (DGM WP only).

Once accepted by the Contracting Officer, the WP and attachments will be enforced as part of the contract. Only when the WP is accepted shall the contractor be permitted to begin intrusive activity. Disregarding the provisions of this contract or the accepted WP will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

Once work begins, changes to the accepted WP shall be made with the knowledge and concurrence of the Contracting Officer, project superintendent, QC Manager, SSHO, UXOSO, UXOQCS, SUXOS, and geophysicist (DGM WP only). Should any severe hazard exposure, i.e. imminent danger, become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate/remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment.

Copies of the accepted WP will be maintained at the Contracting Officer's office and at the job site.

1.4.1 Anomaly Avoidance Work Plan (WP)

The Anomaly Avoidance WP shall include, but not be limited to the following:

1. Project Plan. Describe the overall approach to manage and execute anomaly avoidance for surface and subsurface clearance. Identify the objectives and provide details on the equipment, methods, and standard operating procedures to be used. Identify procedures to be followed in the event that actual or suspected MEC/MPPEH is discovered. The WP shall comply with NAVSEA OP5 Section 14-10.3.1.5 that requires soil to be removed in

layers when the depth of intrusive activities exceeds the detection limits of the geophysical instruments used.

2. Organization and Qualifications. Identify the MEC personnel organization, including organizational chart and the names and qualifications of MEC personnel in resume' format. Include copies of all certifications and qualifications per DDESB TP 18 and the JRM ESS.

3. Traffic Control. Detail traffic control and mitigation measures to be employed during anomaly avoidance. Consideration shall be given to temporary road closures, alternate work schedules, and other methods to minimize impact to vehicular and pedestrian traffic. The Contractor shall be responsible for signage, devices, flag men, and any other control measures required to safely employ traffic control. The Traffic Control Plan shall be separate from the Traffic Control Plan required by Section 01 50 00 TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS.

4. Communications Plan. Identify points of contact within the Prime Contractor and appropriate subcontractor organizations related to MEC/UXO clearance and other on-site activities. The list shall include but may not be limited to appropriate government personnel such as the Construction Management Engineer, EOD representative, and appropriate first responders. All contractor and government points of contact shall have names, titles, and primary and secondary phone numbers listed as appropriate. Include direction on who will be called for what specific reasons and the priority in which they will be contacted.

5. Schedule. Include specific line items for development, review, and acceptance for all submissions. It is the responsibility of the Prime Contractor to present an overall construction schedule that includes anomaly avoidance operations within the overall construction time line.

6. Accident Prevention Plan (APP) / Site Health and Safety Plan (SHSP). Describe site-specific hazards and the procedures to protect the health and safety of workers and the public during MEC activities. Include worker protective clothing and equipment, staging areas, and other requirements as appropriate. The MEC APP shall be a separate submittal from the Construction Accident Prevention Plan required by Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS.

7. Quality Control Plan (QCP). Describe the project-specific quality control and procedures that will be implemented. The three phases of control shall be used. The QCP shall be a separate submittal from the Construction Quality Control Plan required by Section 01 45 00.00 20 QUALITY CONTROL.

1.4.2 Digital Geophysical Mapping (DGM) Work Plan (WP)

The DGM WP shall include but not be limited to the following:

1. Project Plan. Describe the overall approach to manage and execute DGM. Identify the objectives and provide details on the equipment, methods, and standard operating procedures to be used. Detail the munitions history of the site to include previous munitions surveys and responses. Detail the technical approach used to execute DGM operations and the procedures required to prepare the site for DGM. Detail surface clearance procedures. Detail DGM processes and procedures to include the geophysical system verification (GSV) process, data collection, and data processing. Include

site maps that identify acreage, HFD, and positional data. The WP shall comply with NAVSEA OP5 Section 14-10.3.1.5 that requires soil to be removed in layers when the depth of intrusive activities exceeds the detection limits of the geophysical instruments used.

2. Organization and Qualifications. Identify the MEC personnel organization, including organizational chart and the names and qualifications of MEC personnel in resume' format. Include copies of all certifications and qualifications per DDESB TP 18 and the JRM ESS.

3. Traffic Control. Detail traffic control and mitigation measures to be employed during DGM. Consideration shall be given to temporary road closures, alternate work schedules, and other methods to minimize impact to vehicular and pedestrian traffic. The Contractor shall be responsible for signage, devices, flag men, and any other control measures required to safely employ traffic control. The Traffic Control Plan shall be included in the Traffic Control Plan required by Section 01 50 00 TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS.

4. Communications Plan. Identify points of contact within the Prime Contractor and appropriate subcontractor organizations related to MEC/UXO clearance and other on-site activities. The list shall include but may not be limited to appropriate government personnel such as the Construction Management Engineer, Public Affairs Officer, EOD representative, and appropriate first responders. All contractor and government points of contact shall have names, titles, and primary and secondary phone numbers listed as appropriate. Include direction on who will be called for what specific reasons and the priority in which they will be contacted.

5. Schedule. Include specific line items for development, review, and acceptance for all submissions. It is the responsibility of the Prime Contractor to present an overall construction schedule that includes the appropriate JRM ESS clearance operations within the overall construction time line.

6. Accident Prevention Plan (APP) / Site Health and Safety Plan (SHSP). Describe site-specific hazards and the procedures to protect the health and safety of workers and the public during DGM activities. Include worker protective clothing and equipment, staging areas, and waste disposal requirements. The DGM APP shall be a separate submittal from the Construction Accident Prevention Plan required by Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS.

7. Quality Control Plan (QCP). Describe the project-specific quality control and procedures that will be implemented during all aspects of the DGM process. The three phases of control shall be used. Include specific details on the instrument validation strip (IVS) and blind seeding procedures. The QCP shall be a separate submittal from the Construction Quality Control Plan required by Section 01 45 00.00 20 QUALITY CONTROL.

1.4.3 Anomaly Investigation Work Plan (WP)

For projects that include DGM, the Anomaly Investigation WP shall be submitted after the acceptance of the DGM After Action Report (AAR). For projects that include extensive footprint or will be executed in zones/phases that result in multiple DGM AARs, a single Anomaly

Investigation WP may be submitted and may be supplemented as additional zone DGM AARs are completed and accepted based on the phased schedule.

Only when the Anomaly Investigation WP is accepted by the Government can ground disturbing work begin. Should the accepted Anomaly Investigation WP only include particular zones due to a phased schedule, ground disturbing work may being only in those zones within the accepted Anomaly Investigation WP.

The Anomaly Investigation WP shall include, but not be limited to the following:

1. Project Plan. Describe the overall approach to manage and execute anomaly investigation for surface and subsurface clearance. Identify the objectives and provide details on the equipment, methods, and standard operating procedures to be used. Detail the primary and contingency munitions with the greatest fragmentation distances (MGFD) and the EZs that apply. Detail any reductions in EZs realized through armoring and engineering controls. Address site specific logistical requirements such as water / electrical / other utilities and demolition requirements, site restoration work, etc. Address on-going activities adjacent to the project site that may be impacted by the EZ (e.g. traffic along adjacent roads, housing, offices, etc.). Provide figures that identify exclusion zones for MGFDs and impacted property owners within the EZ. The WP shall comply with NAVSEA OP5 Section 14-10.3.1.5 that requires soil to be removed in layers when the depth of intrusive activities exceeds the detection limits of the geophysical instruments used.

2. Organization and Qualifications. Identify the MEC personnel organization, including organizational chart and the names and qualifications of MEC personnel in resume’ format. Include copies of all certifications and qualifications per DDESB TP 18 and the JRM ESS.

3. Site Specific Logistical Requirements. Identify staging and storage areas, lay down areas, designated soil storage and sifting operations, management and disposal of waste generated from field operations, and coordination with ongoing construction activities.

4. Traffic Control. Detail traffic control and mitigation measures to be employed during anomaly investigation. Consideration shall be given to temporary road closures, alternate work schedules, and other methods to minimize impact to vehicular and pedestrian traffic. The Contractor shall be responsible for signage, devices, flag men, and any other control measures required to safely employ traffic control. The Traffic Control Plan shall be included in the Traffic Control Plan required by Section 01 50 00 TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS.

5. Community Outreach. Describe the communications measures the Contractor will employ to notify the local community of ESS-related work and its anticipated impact. The contractor shall consider the use of DDESB-approved engineered barricades or bunker in place, alternate work schedules (nights or weekends), base activities and school hours (holidays, summer vacation, etc.), reduced work hours, school bus schedules, rush hour traffic, and other items in order to mitigate impact to the local community. Further requirements for Community Outreach are detailed in Section 3.4.

6. Exclusion Zones. Identify the boundary of the EZ for each separate work period. Work periods may vary depending upon site-specific conditions (DGM AAR results, community impacts, etc.). Indicate all points of vehicle access along the EZ perimeter. Contractor shall be responsible to provide reasonable efforts to clear the EZ daily, prior to the start of anomaly investigation.

7. Communications Plan. Identify points of contact within the Prime Contractor and appropriate subcontractor organizations related to MEC/UXO clearance and other on-site activities. The list shall include but may not be limited to appropriate government personnel such as the Construction Management Engineer, Public Affairs Officer, EOD representative, and appropriate first responders. All contractor and government points of contact shall have names, titles, and primary and secondary phone numbers listed as appropriate. Include direction on who will be called for what specific reasons and the priority in which they will be contacted.

8. Schedule. Include specific line items for development, review, and acceptance for all submissions. It is the responsibility of the Prime Contractor to present an overall construction schedule that includes the appropriate JRM ESS clearance operations within the overall construction time line.

9. Accident Prevention Plan (APP) / Site Health and Safety Plan (SHSP). Describe site-specific hazards and the procedures to protect the health and safety of workers and the public during MEC activities. Include worker protective clothing and equipment, staging areas, and waste disposal requirements. The MEC APP shall be a separate submittal from the Construction Accident Prevention Plan required by Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS.

10. Quality Control Plan (QCP). Describe the project-specific quality control and procedures that will be implemented during all aspects of the field work including, but not limited to Data Interpretation, Target Acquisition, Intrusive Operations, Soil Excavation, Anomaly Avoidance, Soil Sifting and Screening, and MEC Identification / Storage / Transportation / Disposal. Include specific details on the instrument validation strip (IVS) and blind seeding procedures. The three phases of control shall be used. The QCP shall be a separate submittal from the Construction Quality Control Plan required by Section 01 45 00.00 20 QUALITY CONTROL.

1.5 Installation Commanding Officer (ICO) Notification

Intent of this submission is for the ICO to get a quick visual understanding of the anomaly investigation impact and use the submission to advertise the format the EZ, Traffic Control Plan, and impacted buildings. Include an aerial picture. Identify the dates, times, and duration of anomaly investigation. Identify the lead government and contractor point of contact for the on-site work. Submission will likely be 1 to 4 slides for each work period depending on the complexity and size of scope.

1.6 QC/QA Report

1.6.1 Anomaly Avoidance QC/QA Report and Anomaly Investigation QC/QA Report

The Anomaly Avoidance QC/QA Report and the Anomaly Investigation QC/QA Report shall include the coordinate system used, description of grids / area

included in the report, depth of clearance, number of anomalies investigated, lbs of debris recovered, number of MEC found, number of MPPEH found, number of blind seeds placed, and number of blind seeds recovered. The report must indicate if the QC inspection passed/failed, and must be signed by the UXOQCS, the Prime Contractor QC Officer (if different), and UXOQAM. In map format, identify the area included in the QC/QA Report Report relative to the entire project footprint, grids, anomalies Left in Place, MEC/MPPEH, and blind seeds. If MEC/MPPEH are found, include a tabular list of the grid, quantity, depth below surface, weight, type (MEC/MPPEH), disposition, mark/model, northing and easting, and any other applicable information. For blind seeds recovered, include a tabular list of the grid, northing and easting, quantity, depth, weight, description, and any other relevant information. For items Left in Place, include a tabular list of the grid, northing and easting, and description. Each complete QC/QA Report shall be submitted to the Government for review and acceptance.

Upon government acceptance of the QC/QA Report, the footprint included within that QC/QA Report may be managed as low likelihood per NAVSEA OP5 and the JRM ESS and construction may proceed in that area. It is anticipated that multiple QC/QA Reports will be required and the number will vary based on project and site conditions. The contractor is responsible for maintaining oversight of intrusive activities to ensure that construction activities that disturb the earth stay within designated areas of low likelihood. Should MEC/MPPEH be uncovered in a site that is managed as low likelihood, the contractor shall immediately stop work and contact the government Construction Management Engineer.

1.6.2 DGM QC/QA Report

Periodic reports documenting Quality Control and Quality Assurance shall be submitted to the Government. The DGM QC/QA Report shall include operational checks of instruments and equipment, compliance with the accepted DGM WP, identify any non-compliant work and resulting re-work, and document the three phases of control.

The report must indicate if the QC inspection passed/failed, and must be signed by the UXOQCS and the Prime Contractor QC Officer (if different).

1.7 MEC/MPPEH Spot Report

Spot report shall include a brief description of positively identified MEC/MPPEH and its disposition.

1.8 Weekly Situational/Status Report (SITREP)

Indicate percentage of anomaly investigation, area, and depth complete to date and any notable MEC-related issues from the previous week. Report shall also include a list of anomalies and MEC/MPPEH found to date. The site area cleared (area and depth) as well as any MEC/MPPEH found shall also be identified (and updated weekly for submittal) in a Geographic Information System (GIS) 3 Dimensional shape file that shall be compatible for insertion directly into the Government GIS system. The Contractor shall coordinate the software version, type, and coordination system with the Government to ensure compatibility with the Government System.

1.9 General Requirements for all After Action Reports (AAR)

The After Action Reports shall be signed by the project superintendent, the project QC Manager, the project SSHO, the UXOSO, UXOQCS, SUXOS, and geophysicist (DGM AAR only).

1.9.1 Anomaly Avoidance After Action Report (AAR)

The Anomaly Avoidance AAR shall include, but not be limited to the following:

1. Brief description of the site.

2. Summary of MEC and/or MPPEH found, removed, and left in place.

3. Summary of areas (horizontal and vertical dimensions)cleared/converted to low probability (“made green”) within the project site.

4. Description of the relative effectiveness and any limitations of the technologies used and the effects on residual risk relative to that originally projected.

5. A summary of the QC/QA Reports.

6. Maps showing:

   a. Areas from which MEC and/or MPPEH were left in place.
   b. Areas from which MEC and/or MPPEH were removed.
   c. Areas within the site where response actions were not performed and the rationale for not addressing those areas.
   d. The known or reasonably anticipated end use of each area.

7. A summary of the land use controls that were implemented, if any, and the areas to which they apply.

8. A summary of provisions for long-term management.

9. Additional supporting documents as appropriate to include but not limited to field logs, weekly SITREPs, GIS Files, MEC/MPPEH Spot Reports, daily activity reports, QC/QA Reports, NOSSA audits, photographs, QA documentation, Work Plans, etc.

1.9.2 Digital Geophysical Mapping (DGM) After Action Report (AAR)

The Anomaly Avoidance AAR shall include, but not be limited to the following:

1. Brief description of the DGM operations.

2. Summary of control points and GSV.

3. Detailed description of the GSV placement, survey, and results.

4. Dig list summary, basis for selecting anomalies, resulting polygons, and blinds seed results.

5. Describe data mapping and anomaly selection, and include anomaly maps and dig lists as they relate to established grids. Describe areas not mapped.

6. Maps showing:

a. DGM survey as it relates to the established grids and project site.
b. Detailed grid maps as they relate to the dig list.

7. Additional supporting documents as appropriate to include but not limited to field logs, QC/QA Reports, QC data, raw data, etc.

1.9.3 Anomaly Investigation After Action Report (AAR)

The Anomaly Investigation AAR shall include all items identified in Section 1.9.1 Anomaly Avoidance AAR. Additional requirements include maps and summary data of any DGM efforts, maps and summary data of Geophysical System Verification to include Instrument Verification Strip and blind seed data, and a summary of digital data information. Additional supporting documents shall be included as appropriate for the project.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 Notice to Proceed (NTP) Criteria

Submittals shall not cause delay, limit, or halt the start or any portion of progression of the design work and shall be developed in parallel to the design work. The contractor also shall not use the basis of plans or reports that have not commenced development or uncompleted work to cause delay, limit or halt the start of the design work.

The issuance of each Notice to Proceed shall be authorized only by the Contracting Officer. Each Notice to Proceed shall indicate contractor name/s, start dates, location, and specific work tasks.

3.2. Work Schedule for Subsurface Clearance Activities

The contractor shall schedule work appropriately to mitigate, to the greatest extent practicable, the impacts to base operations and the general public both on and off base. Scheduling shall include phasing as well as night and weekend work as necessary.

3.3 Engineered Barriers / Bunker-in-Place

The contractor shall consider use of approved engineered barriers or other approved techniques to mitigate the impact of exclusion zones on quality of life, base operations, and non-DoD property.

3.4 Community Outreach

Projects requiring community outreach should be noted as such in the project statement of work. For any project where the EZs appear to impact public (off-base or on-base) areas and facilities but where community outreach is not indicated in project requirements, request guidance from the Contracting Officer.

The contractor shall develop a thorough strategy for community outreach and engagement to ensure all entities impacted by EZs are effectively identified, notified, and informed of anticipated ESS activities and their impacts in a timely manner. Upon Government approval of the Contractor's Comprehensive Community Relations Plan, the contractor shall coordinate regularly with the designated Government Project Team and Public Affairs Officer (PAO) regarding the project-specific community engagement, outreach and public relations efforts.

The overall project community outreach and engagement strategy will be managed by the government. The contractor shall be responsible for development and submission of ICO notifications, written notices to property owners and businesses within EZs, design and implementation of traffic control, flyers, brochures, scripts that may be used for stakeholder briefs, draft public service announcements, draft media releases, coordination with on base activities and local government, oral and written communication including face-to-face meetings, on-site notices as well as certified mail, and public service announcements using local media outlets, and development and maintenance of a project website.

Should any community outreach and engagement efforts require coordination with on base activities and local governments, coordination shall be via the NAVFAC Marianas Public Affairs Officer and the project construction team.

The Contractor shall maintain the website with maps and schedules of areas impacted by MEC clearance and exclusion zones. The website shall be current, accurate, and provide at least two weeks of planned anomaly investigation work. It shall include maps and supporting information so that the local community can clearly identify the dates and times for each exclusion zone, business and residential addresses and street names within the exclusion zone, and the Government contact number for those requiring additional information.

Written notice to property owners and businesses within the exclusion zone shall be produced and mailed by the contractor in advance of anomaly investigation that impacts those particular properties. Written notice shall provide the name of the project and the contractor, give a general statement of work and explosives safety concern, shall include the contractor's website and the government contact number, and shall be approved by the government prior to issuance. The list of property owners will be provided to the contractor by the government. The contractor shall keep a complete list of the notices sent, detailing name and address of property, date of EZ impact, and date mailed. Should the contractor's

schedule of execution require that particular properties be impacted by EZ's at separate times (i.e. in October and again in December), written notice shall be provided by the contractor for each occasion. Notice should also indicate the property owner's responsibility to inform tenants, residents and/or employees as applicable.

The Contractor shall provide traffic control in the form of notification signs/boards that shall be posted 7 days prior to anomaly investigations to notify drivers of MEC investigative activities.

All proposed Contractor written and oral communications must be approved by a designated Government representative prior to any and all communications with members of the public, stakeholders, etc.

COMMUNITY OUTREACH		
ICO Briefs	Provide 3-5 slides that include schedule and areas impacted.	45 days prior to intrusive investigations, updated every 30 days for duration of intrusive investigations.
Traffic Control	Provide notification signs/boards to notify drivers of upcoming work.	7 days prior to start of anomaly investigations and remain in place until investigation is complete
Advance door to door notices [1]	Door to door notifications and all business and property occupants in effected EZ. Print and post/handout flyers. Complete notification check log.[4]	60 calendar days prior to start of anomaly investigations that impact those particular properties. Template must be approved by the government.
Written notice to property owners and businesses [2]	Print & mail letters to business and property owners and occupants in effected EZ. Complete notification check log.[4]	14 calendar days prior to start of anomaly investigations that impact those particular properties. Template must be approved by the government.
Door to door notices of imminent evacuation [3]	Contractor shall hand-deliver notice to each business and residence and post on door/mailbox/other appropriate location if no one is available. Notice identifies the start of anomaly investigation and traffic control points. Complete notification check log.[4]	24 hours prior to start of anomaly investigations that impacts those particular properties. Template must be approved by the government.

Web Site	Update and maintain web site with schedule and maps for areas impacted by MEC clearance.	Update weekly for duration of intrusive investigations.
Establish the EZ	At posted time for start of intrusive digging, contractor shall perform visual survey of EZ to ensure the EZ is clear.	Daily, at the start of anomaly investigations

NOTES:

1. The contractor (PR representatives) shall provide Government-approved initial notifications by walking door-to-door to meet with property occupant to explain the upcoming activities and their requested cooperation (i.e. evacuation, expected duration of displacement), prior to commencing intrusive investigations. Consideration of people's schedules is necessary and notifications may occur outside of normal business hours and on weekends. If the property owner / tenant is not available (i.e. no one answers the door or a minor answers the door), the contractor shall leave a flyer in a visible location.
2. Contractor shall have a certified/registered mailing to landowners and tenants prior to intrusive investigations. The template for this mailing shall contain all pertinent information regarding the MEC schedule and impact and shall be approved by the government.
3. Contractor shall provide notice of imminent evacuation to all property owners / tenants prior to establishment of the EZ. The notice shall be in flyer format, approved by the government, and hand delivered to each property. Should the property owner / tenant not be available, the contractor shall leave the flyer in a visible location.
4. Contractor shall keep a detailed log of all notifications and responses. The contractor shall make full contact with all properties and tenants as detailed in this section. Should corrections (additions or subtractions) to the property list be required, the contractor shall keep a detailed record of those changes. At a minimum the notification log should include the following data:
   a. Name (property owner or tenant if name is available)
   b. Time and date of each notification
   c. Address
   d. Telephone number (optional)
   e. Response of intent (e.g. concurred to evacuate, refused to evacuate, or no response)

3.5 Enforcement of Exclusion Zones

The contractor shall be responsible for providing reasonable levels of verification and enforcement of identified exclusion zones during ESS activities.

Reasonable verification is defined as observations of exclusion zone no more than 6 hours prior to commencing intrusive investigations; should personnel be observed in the exclusion zone, the contractor shall verbally inform them of the scheduled work and request that they leave the EZ. Verbal contact is intended to remind the impacted residents and businesses of the evacuation requirements and the time and duration when intrusive activities will commence.

Reasonable enforcement is defined as verbal notification and request to evacuate to any individual observed inside the EZ limits during anomaly investigation. The contractor is required to stop anomaly investigation while unauthorized personnel are within the EZ. Should unauthorized personnel remain within the EZ after they have been verbally informed of the scheduled work and request to vacate, the contractor shall immediately notify the government point of contact in order of Engineering Technician, Construction Management Engineer, Supervisory Engineering Technician, Contract Specialist, Contracting Officer, Supervisory General Engineer, and FEAD/ROICC until positive contact is made. The contractor has no authority to detain or escort people out of the EZ.

Upon completion of the anomaly investigation activities in the established EZ the contractor shall notify the evacuees as soon as possible that they may return. Notification may be made by phone, text, social media, or other appropriate notification.

3.6 Public Evacuation Process

Projects requiring community outreach and public evacuations should be noted as such in the project statement of work. For any project where the EZs appear to impact public (off-base) areas and facilities but where community outreach is not indicated in project requirements, request guidance from the Contracting Officer.

The contractor shall be responsible for coordinating and issuing the notices of evacuation consistent with Section 3.4.

The Contractor shall provide a space suitable to accommodate no less than 25% of the people to be evacuated from the EZ for that day, such as a community center. The space shall be located in close proximity to the impacted properties and shall include, at a minimum, the following: seating, air conditioning or suitable ventilation if air conditioning is unavailable, vending machines, drinking water and restroom facilities. Spaces to be provided shall be approved by the Government.

The contractor shall provide transportation from a centralized location in the EZ to the alternate accommodations (i.e. community center) prior to anomaly investigation and back to the EZ once anomaly investigation is complete. Consideration shall be made to medical, health, and disability concerns (i.e. wheelchairs, bedridden individuals on gurneys, etc.).

3.7 Soil Excavation and Removal

Shall be in accordance with JRM ESS and NAVSEA OP 5 (Volume 1). When the depth of intrusive activities exceeds the detection limits of the geophysical instruments used, soil will be removed in layers to allow the detection and removal of MEC and/or MPPEH in the construction footprint.

Anomalies shall be investigated to the depth of construction or when bedrock is reached. Bedrock shall be defined by a licensed professional engineer, geologist or geophysicist. Should the licensed professional engineer, geologist, or geophysicist determine either through site investigation or through the course of anomaly investigation or excavation that the area of excavation is native/virgin soil AND the depth of construction / bedrock is greater than the maximum penetration depth of the munition with the greatest fragmentation distance (MGFD) as described in the JRM ESS, anomalies shall be investigated to the maximum penetration depth of the MGFD only. Should the licensed professional engineer, geologist, or geophysicist determine that anomaly investigation is appropriate to maximum MGFD penetration depth

vice depth of construction or bedrock, the contractor shall submit an RFI to the government to accept the reduced scope.

Upon completion and acceptance by the Government of anomaly investigation, earthwork and other ground disturbance activities may commence.

3.8 Imported Soils

The Contractor shall ensure that all imported soils are free of MEC/UXO/MPPEH item or materials. All imported soils shall be obtained from Government approved borrow pits or must be screened using a 0.75″ screen prior to entering the project site or Government property.

3.9 Requirements When MEC/MPPEH is Encountered

Stop all work immediately if any material or object believed to be MEC/MPPEH is encountered and execute first response protocols immediately. Notify the UXO Technician III, UXOSO or SUXOS. Notify the CME as soon as possible. Follow procedures of the Work Plan.

MEC and MPPEH storage, transportation, and disposal will be accomplished by military EOD IAW JRM ESS.

The Contractor shall not blow-in-place or counter-charge any MEC/MPPEH encountered.

If MEC/MPPEH encountered is determined by the SUXOS to be unsafe to move, poses a threat to human health and the environment or represents an imminent and substantial endangerment to human health and the environment, execute first response protocols immediately. The Contractor shall also coordinate as soon as possible with Explosive Ordnance Disposal Mobile Unit Five (EODMU-5) or the appropriate EOD response team for further disposition.

If MEC/MPPEH encountered is determined by the SUXOS to be safe to move and does not pose a threat to human health or the environment, it may be moved and stored for the appropriate EOD response team for further disposition.

-- End of Section --

SECTION 01 74 19.05 20

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT FOR DESIGN-BUILD
03/15

PART 1 GENERAL

1.1 GOVERNMENT POLICY

Military installations are required to direct at least 60 percent of their non-hazardous solid wastes (including waste from construction and demolition operations) from the waste stream. This guide specification requires the reduction of the amount of construction and demolition waste requiring landfill disposal or incineration, and to promote more efficient use of construction materials during construction.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance with Section 01 33 29.05 20 SUSTAINABILITY REPORTING FOR DESIGN-BUILD. Submit the following in accordance with Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES and 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Waste Management Plan; G

SD-11 Closeout Submittals

Recycling and Disposal Records; S

Waste Management Plan; S

1.3 DISPOSAL

Except as otherwise specified in other sections of the specifications, dispose in accordance with the following:

1.3.1 Reuse

Give first consideration to salvage for reuse since little or no re-processing is necessary for this method, and less pollution is created when items are reused in their original form. Consider sale or donation of waste suitable for reuse. Do not use salvaged materials, other than those specified in other sections to be salvaged and reinstalled, in this project.

1.3.2 Recycle

Make waste materials not suitable for reuse, but having value as being recyclable, available for recycling whenever economically feasible.

1.3.3 Waste

Dispose materials with no practical use or economic benefit at a landfill or incinerator.

2 PART 2 PRODUCTS

Not used.

3 PART 3 EXECUTION

3.1 WASTE MANAGEMENT PLAN

Submit waste management plan within 15 days after contract award and prior to initiating any site preparation work. The plan must demonstrate how the project waste diversion goal is met and plan must include the following:

a. Name of individuals on the Contractor's staff responsible for waste prevention and management.

b. Actions that will be taken to reduce solid waste generation, including coordination with subcontractors to ensure awareness and participation.

c. Description of the regular meetings to be help to address waste management.

d. Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas on site and equipment to be used for processing, sorting, and temporary storage of wastes.

e. Characterization, including estimate types and quantities, of the waste to be generated.

f. Name of landfill and/or incinerator to be used and the estimated costs for use, assuming that there would be no salvage or recycling on the project.

g. Identification of local and regional reuse programs, including non-profit organizations such as schools, local housing agencies, and organizations that accept used materials such as materials exchange networks and Habitat for Humanity. Include the name, location, and phone number for each reuse facility to be used, and provide a copy of the permit or license for each facility.

h. List of specific waste materials that will be salvaged for resale, salvaged and reused, or recycled. Identify recycling facilities that will be used. Provide percentage of non-hazardous construction and demolition waste materials that have been diverted from the waste stream.

i. Identification of materials that cannot be recycled/reused with an explanation or justification.

j. Description of the means by which any waste materials identified in item (h) above will be protected from contamination.

k. Description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site).

l. Anticipated net cost savings determined by subtracting Contractor program management costs and the cost of disposal from the revenue generated by sale of the materials and the incinerationor landfill cost avoidance.

m. Actions that will be taken to divert at least the required amount of non-hazardous solid wastes (including waste from construction and demolition operations) from the waste stream. Report actual diversion rates during construction and demolition.

n. Identification of base, local and regional reuse programs, including non-profit organizations such as schools, local housing agencies, and organizations that accept used materials such as materials exchange networks and Habitat for Humanity.

3.2 RECYCLING AND DISPOSAL RECORDS

Maintained records to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. Report with monthly invoicing the tons diverted, the tons sent to the landfill, cost for each, and the monthly diversion rate. Make the records available to the Contracting Officer during construction, and deliver a copy of the records to the Contracting Officer upon completion of the construction.

-- End of section --

SECTION 01 78 24.00 20

FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI)
02/15

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. DEPARTMENT OF DEFENSE (DOD)

FC 1-300-09N	(2014) Navy and Marine Corps Design Procedures

1.2 DEFINITIONS AND ABBREVIATIONS

1.2.1 eOMSI Manual

Manual (PDF file) provided by the Contractor that includes, but is not limited to, product information, a facility description with photos, and a list of primary facility systems.

1.2.2 eOMSI Facility Data Workbook (FDW)

A Microsoft Excel Spreadsheet containing a maximum of up to 18 facility asset fields to be populated with the required information by the Contractor.

1.2.3 Systems

The words "system", "systems", and "equipment", when used in this document refer to as-built systems and equipment.

1.2.4 Computer Assisted Design and Drafting (CADD)

Electronic Computer Assisted Design and Drafting graphic software program that is used to create facility design contract documents and Record Drawings.

1.2.5 KTR

An abbreviation for "Contractor."

1.3 EOMSI MEETINGS

1.3.1 Pre-Construction Meeting and Post-Award Kickoff Meeting

Be prepared to discuss the following during this meeting:

a. eOMSI Manual and eOMSI Facility Data Workbook Development Meetings

b. Processes and methods of gathering eOMSI Manual and eOMSI Facility Data Workbook information during construction.

c. The eOMSI Submittals schedule. Include the eOMSI submittal schedule on the Baseline Cconstruction Schedule.

d. Electronic eOMSI Facility Data Workbook file for Contractor's use and completion.

1.3.2 eOMSI Manual and Facility Data Workbook Coordination and Mutual Understanding Meeting

Facilitate a meeting after the Pre-Construction Meeting and Post-Award Kickoff Meeting prior to the submission of the eOMSI Progress Submittal. Meeting attendance must include the Contractor's eOMSI Manual and Facility Data Workbook Preparer, Designer of Record (DOR), and Quality Control Manager, the Commissioning Authority (CA), and the Government's Design Manager (DM), Contracting Officer's Representative, and NAVFAC Public Works (PW) Facilities Management Specialist (FMS). Include any Mechanical, Electrical, and Fire Protection Sub-Contractors as required.

The purpose of this meeting is to reach a mutual understanding of the scope of work concerning the contract requirements for eOMSI and coordinate the efforts necessary by both the Government and Contractor to ensure an accurate collection, preparation and timely Government review of eOMSI.

1.3.3 Facility Turnover Meeting

Include eOMSI in Red Zone (NRZ) facility turnover meetings as specified in Section 01 30 00, ADMINISTRATIVE REQUIREMENTS. Section 01 31 19.05 20, POST AWARD MEETINGS.

1.4 SUBMITTAL SCHEDULING

1.4.1 eOMSI, Progress Submittal

Submit the Progress submittal when construction is approximately 50 percent complete, to the Contracting Officer for approval. Provide eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel). Include all elements and portions of system construction completed up to this point.

The purpose of this submittal is to verify progress is in accordance with contract requirements as discussed during the eOMSI Coordination and Mutual Understanding Meeting. Field verify a portion of the eOMSI information.

1.4.2 eOMSI, Prefinal Submittal

Submit the 100 percent submittal of the eOMSI Prefinal Submittal to the Contracting Officer for approval within 60 calendar days of the Beneficial Occupancy Date (BOD). This submittal must provide a complete, working document that can be used to operate and maintain the facility. Any portion of the submittal that is incomplete or inaccurate requires the entire submittal to be returned for correction. Any discrepancies discovered during the Government's review of eOMSI Progress submittal must be corrected prior to the Prefinal submission.

The eOMSI Prefinal Submittal must include eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel).

1.4.3 eOMSI, Final Submittal

Submit completed eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel). The Final submittal is due at BOD. Any discrepancies discovered during the Government's review of the Prefinal eOMSI submittal, including the Field Verification, must be corrected prior the Final eOMSI submission.

1.5 UNITS OF MEASURE

Provide eOMSI utilizing the units of measure required by the RFP for the facility. Refer to Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES.

1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-10 Operation and Maintenance Data

Training Plan; G

Training Outline; G

Training Content; G

SD-11 Closeout Submittals

eOMSI, Progress Submittal; G

eOMSI, Prefinal Submittal; G

eOMSI, Final Submittal; G

Training Video Recording; G

Validation of Training Completion; G

2 PART 2 PRODUCTS

2.1 EOMSI FILES FORMAT

Format eOMSI manuals and files in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA. Include a complete electronically linked operation and maintenance directory. Provide four electronic copies of the eOMSI Manuals to the Contracting Officer for approval.

Provide eOMSI Facility Data Workbook on compact disks (CD) or data digital versatile disk (DVD) disks in (EXCEL) format. Scan eOMSI Manual Files and eOMSI Facility Data Workbook for viruses, malware, and spyware using a commercially available scanning program that is routinely updated to identify and remove current virus threats.

2.1.1 eOMSI Manual Organization

Organize the eOMSI Manuals into three parts: 1) Product and Drawing Information, 2) Facility Information, and 3) Primary Systems. Bookmark the PDF files for easy access to the information.

a. Bookmark Facility Information and Primary Systems to at least one level lower than the major system.

b. Bookmark Product and Drawing Information documents using the current version of CSI Masterformat numbering system, and arrange submittals using the specification sections as a structure. Use CSI Masterformat and UFGS numbers along with descriptive bookmarked titles that explain the content of the information that is being bookmarked.

2.1.2 eOMSI Manual Compact Disk Label and Disk Holder or Case

Provide the following information on the compact disk label and disk holder or case:

a. Building Number

b. Project Title

c. Activity and Location

d. Construction Contract Number

e. Prepared For: (Contracting Agency)

f. Prepared By: (Name, title, phone number and email address)

g. Include the compact disk content on the disk label

h. Date

i. Virus scanning program used

2.2 EOMSI MANUAL

2.2.1 Product and Drawing Information

Provide an organized record of the facility products, materials, equipment, and minimum information necessary to operate the facility. Provide Product and Drawing Information for all systems in the final constructed facility, including the anticipated critical systems identified in this specification section. Organize and bookmark the information for easy access and quick retrieval.

2.2.1.1 O&M Data

As a minimum, include the O&M Data, submitted in the technical specification sections, and in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA. Provide the following for each product, material, and system on the project:

a. Materials

b. Equipment

c. Data Sheets

d. Test Reports

e. Warranties

f. Certificates

g. Shop Drawings

2.2.1.2 Utility Record Drawings

Using Record Source Drawings, show and document details of the actual installation of the utility systems; annotate and highlight the eOMSI information. Provide Utility Record Drawings in PDF format. Provide the following drawings at a large enough scale to differentiate designated isolation units from surrounding valves and switches.

a. Utility Schematic Diagrams - Provide a one line schematic diagram for each utility system such as power, water, wastewater, and gas/fuel. Schematic diagram must show from the point where the utility line is connected to the mainline up to the 1.5-meter (five-foot) connection point to the facility. Indicate location or area designation for route of transmission or distribution lines; locations of duct banks, manholes/ handholes or poles; isolation units such as valves and switches; and utility facilities such as pump stations, lift stations, and substations.

b. Enlarged Connection and Cutoff Plans - Provide enlarged floor plans that provide information between the 1.5 meter (five foot) utility connection point and where utilities connect to facility distribution. Enlarge floor plans/ elevations of the rooms where the utility enters the building and indicate on these plans locations of the main interior and exterior connection and cutoff points for all utilities. Also enlarge floor plans / elevations of the rooms where equipment is located. Include enough information to enable someone unfamiliar with the facility to locate the connection and cutoff points. Indicate designations such as room number, panel number, circuit breaker, or valve number, of each utility and equipment connection and cutoff point, and what that connection and cutoff point controls.

2.2.1.3 Record Drawings

Provide an electronic, PDF copy of the Record Drawings, prepared in accordance with FC 1-300-09N and 01 78 00 CLOSEOUT SUBMITTALS. Bookmark drawings using the sheet title and sheet number.

Include Record Drawings as part of the Red-Zone specified in Section 01 30 00 ADMINISTRATIVE REQUIREMENTS.

2.2.2 Facility Information

Provide the following in Facility Information:

2.2.2.1 General Facility and System Description

Describe the function of the facility. Detail the overall dimensions of the facility, number of floors, foundation type, expected number of occupants, and facility Category Code. List and generally describe all the facility systems listed in the Primary Systems Information and any special building features (for example, HVAC Controls, Sprinkler Systems, Cranes, Elevators, and Generators). Include photographs marked up and labeled to show key operating components and the overall facility appearance.

2.2.2.2 Basis of Design

Include the Basis of Design that shows the basic design scope of work, assumptions and the original intentions of the Designer of Record (DOR). Identify the site utility design goals, objectives, design load limits, assumptions, and system features that are critical to the operation and maintenance of the systems.

2.2.2.3 Safety Hazards

List all residual hazards identified in the Activity Hazard Analysis as prepared by the DOR. Provide recommended safeguards for each identified hazard.

2.2.2.4 Floor Plans

Provide uncluttered, legible 29.9 by 43.2 cm (11 by 17 inches) floor plans. Include room numbers, type or function of spaces, and overall facility dimensions on the floor plans. Do not include items such as construction instructions, references, or frame numbers.

2.2.2.5 Floor Coverings, Wall Surfaces, and Ceiling Surfaces

Provide a table that lists by room number (including hallways and common spaces), the type, and area of finish, manufacturer's product name, identifying number, and color. Include a facility summary of the total area for each type of space and floor, wall, or ceiling finish in the table.

2.2.2.6 Windows

Provide a table that lists by room number (including hallways and common spaces), the type of window, window size, number of each size and type, special features, manufacturer's product name, identifying number, and color. The table must include a facility summary of the total number for each type and size of window.

2.2.2.7 Roofing

Provide the total area of each type of roof surface and system. Provide the name of the roofing product and system; manufacturer's, supplier's, and installer's names, addresses, and phone numbers; manufacturer's product name, identifying number, and color. For each type of roof, provide a recommended inspection, maintenance and repair schedule that details checkpoints, frequencies, and prohibited practices. List roof structural load limits.

2.2.2.8 HVAC Filters

Provide a table that lists the quantity, type, size, and location of each HVAC filter, manufacturer's product name, and identifying number.

2.2.2.9 Plumbing Fixtures

Provide a table that lists by room number, the number and type of plumbing and bathroom plumbing fixtures (for example, sinks, water closets, urinals, showers and drinking fountains).

2.2.2.10 Lighting Fixtures

Provide a table that lists by room number (including hallways and common spaces), the type of lighting fixture, ballast, number of lighting fixtures, type of lamps and number of lamps, and the manufacturer's product name and the identifying number. The table must include a facility summary of the total number of fixtures of each type and number of lamps of each type.

2.2.2.11 Equipment Listing

Provide a table that lists the major equipment shown on the design equipment schedules. Show the item descriptions, locations, model numbers; and the names, addresses, and telephone numbers of the manufacturers, suppliers, contractors, and subcontractors.

2.2.2.12 Supply Inventory Requirements

Provide a list of maintenance and repair supplies (e.g., spare parts, fuels and lubricants) required to ensure continued operation without unreasonable delays. Identify and list parts and supplies that have long purchase lead times. Give special consideration to facilities at remote locations.

2.2.2.13 Extended Warranty Information

List all warranties for products, equipment, components, and sub-components whose duration exceeds one year. Cross reference the list to the warranty copies provided in paragraph FACILITY INFORMATION or in the paragraph PRIMARY SYSTEMS. For each warranty listed, indicate the applicable specification section, duration, start date, end date, and the point of contact for warranty fulfillment. Also, list or reference all specific operation and maintenance procedures that must be performed to keep the warranty valid.

2.2.3 Primary Systems

The project is anticipated to include, but is not limited to, the following primary systems. Provide training and Operation and Maintenance data for all products, materials, and equipment that make up these systems in the final constructed facility.

a. HVAC facility systems (including chillers, boilers, heat pumps, air handling equipment, exhaust fans, fan coil units, VAV boxes, heat recovery wheels, hot and chilled water hydronic systems, control valves, and backflow preventers).

b. Direct Digital Controls/Space Temperature Controls.

c. Steam condensate pumps, Steam pressure relief valves.

d. Electrical systems (including transformers, diesel electric generator sets, automatic transfer switches, primary switchgear, secondary switchgear, high voltage switches, variable frequency drives, and frequency converters).

e. Fire protection systems and fire alarm detection systems.

f. Cathodic protection.

g. Site civil water utilities (including water, storm water collection, and treatment systems).

h. Site civil wastewater utilities (including pumping station, tanks, treatment and filters).

i. Potable water systems (including wells, tanks, pumps, back-flow preventers, filters, disinfection, and controllers).

j. Site electrical utilities (including substations, transformers, and pad-mounted switchgear).

2.2.3.1 Primary Systems Information

Primary Systems Information requires using a systems approach. This approach requires that consideration be given to the entire system (that is, the interfaces of equipment, connections and material flow within the system). Use Notes, Cautions and Warnings throughout the Primary Systems Information to emphasize important and critical instructions and procedures. Provide the following information for each system:

Operation:

(1) System Description - Provide a detailed discussion of the system composition and operation. Include technical details that are essential for an understanding of the system.

(2) Start-Up and Shutdown Procedures - Provide step by step instructions to bring systems from static to operational configurations and from operating to shutdown status.

(3) Normal and Emergency Operating Instructions - Provide a discussion of the normal and emergency operation and control of the system. Address operating norms (for example, temperatures, pressures, and flow rates) expected at each zone or phase of the system. Supplement the discussion with control and wiring diagrams and data. Include shutdown instruction for fires, explosions, spill, or other contingencies.

(4) System Flow Diagrams - Provide a flow diagram indicating system liquid, air or gas flow during normal operations. Integrate all system components into the diagram. A compilation of non-integrated, flow diagrams for the individual system components are not acceptable.

(5) Field Test Reports - Provide Field Test Reports (SD-06) that apply to equipment associated with the system. The eOMSI Manual Submittal does not require the second season HVAC testing.

(6) Operator Servicing Requirements - Provide instructions for services to be performed by the operator such as lubrication, adjustments, and inspection.

(7) Valve List - Provide a list of all valves associated with the system. Show valve type, identification number, function, location and normal operating position.

(8) Operating Log - Provide forms, samples, and instructions for keeping necessary operating records.

(9) Riser Diagrams - Provide riser diagrams and settings of equipment.

2.2.3.2 Preventive Maintenance

Provide information in accordance with paragraph PREVENTIVE MAINTENANCE in Section 01 78 23, OPERATION AND MAINTENANCE DATA.

2.2.3.3 Troubleshooting Guides and Diagnostic Techniques

Provide step-by-step procedures for isolating the cause of system malfunctions. Clearly state indications or symptoms of trouble; the sequential instructions, including checks and tests to be performed and conditions to be sought, to determine the cause; and remedial measures to bring the equipment and system to operating condition. Identify special test equipment required to perform the procedures. Start the troubleshooting guide at the system level and proceed to a level where detailed manufacturer's troubleshooting procedures for equipment and components can be referenced. Provide clear references to repair procedures included in the manufacturer's Product Data.

2.2.3.4 Repair

Provide in accordance with paragraph CORRECTIVE MAINTENANCE (REPAIR) and its subparagraphs in Section 01 78 23 OPERATION AND MAINTENANCE DATA. Provide repair procedures and instructions required for restoring equipment to proper operating condition and standards. References must be specific as to location within the eOMSI Manual.

2.3 EOMSI FACILITY DATA WORKBOOK

Download the eOMSI Facility Data Workbook at the following location: http://www.wbdg.org/ccb/NAVGRAPH/graphtoc.pdf. Complete the KTR Facility Data File tab based on the selection of master systems, systems, and subsystems installed. The following tabs are included in the eOMSI Facility Data File Workbook and serve the purpose stated:

a. Instructions Tab: Instructions for completing Model & Facility Data Matrix Tab and KTR Facility Data File. If a discrepancy exists between what is required in this section and the Workbook, the instructions within the workbook take precedence.

b. Model & Facility Data Matrix Tab: - The Matrix lists Required Asset Fields for each SYSTEM and SUBSYSTEM defined within the project scope of work. In column "In Scope," choose "Yes" or "No" to define SYSTEMS and SUBSYSTEMS that are within the project scope, and that Contractor needs to include and populate in KTR Facility Data File tab. Check Box on if BIM is required for the project. For BIM projects, Columns for "DISCIPLINE," LOD," "DESIGN MODEL GRADE," and "RECORD MODEL GRADE," are pre-populated and indicate the level of detail required in the design model. These columns disappear for projects that are not BIM. The "Required Facility Asset Field Position Numbers," one through eighteen, are pre-populated, and are not editable.

c. Required Asset Fields Tab: Defines the 18 Required Facility Asset Field Position Numbers used in Model and Facility Data Matrix and KTR Facility Data File tabs.

d. KTR Sample Facility Data File Tab: Sample KTR eOMSI facility data file. This spreadsheet shows an example of the mandatory fields of all equipment to be included in the KTR eOMSI Facility Data File, along with their descriptions.

e. KTR Facility Data File Tab: Required eOMSI facility data file deliverable provided to the Government. Provide a separated and unique new row for each facility component or piece of equipment installed.

3 PART 3 EXECUTION

3.1 FIELD VERIFICATION

Field verify eOMSI Facility Data Workbook information with Contractor and Government personnel. Include the following personnel in this meeting: Contractor's eOMSI Manual and Facility Data Workbook Preparer and Quality Control Manager, Commissioning Authority, and the Government's Contracting Officer's Representative and NAVFAC PW FMS. Request, and provide, an eOMSI Field Verification Meeting no sooner than 14 calendar days after submission of the Progress eOMSI submittal, and another, no sooner than 14 calendar days after submission of the Prefinal eOMSI submittal. During this meeting, the Government and Contractor will verify that the eOMSI Facility Data Workbook is complete and accurate.

Field verify that at least 5 Subsystems under each of the Mastersystems are accurate, for a total of 25 Subsystems. For each of these items, verify

that the required facility asset field, as defined in the "Model & Facility Data Matrix" tab, contains the specified data and it is accurate (i.e. item description, manufacturer, model no., serial no.). 100 percent accuracy of eOMSI information is required for successful field verification. If data discrepancies are discovered amongst the 25 Subsystems verified, resubmit an updated eOMSI FDW, and request a make-up field verification meeting. At the make-up field verification meeting 25 new Subsystems and their associated required facility asset fields will be field verified; the 25 new Subsystems must be 100% accurate. Any discrepancies discovered must be corrected prior to next eOMSI Facility Data Workbook Submittal.

(1) D10 - CONVEYING
(2) D20 - PLUMBING
(3) D30 - HVAC
(4) D40 - FIRE PROTECTION
(5) D50 - ELECTRICAL

3.2 EOMSI TRAINING

Prior to acceptance of the facility by the Contracting Officer for Beneficial Occupancy, provide comprehensive training for the systems and equipment specified in the technical specifications. The trainees must include the Facilities Management Specialist, building maintenance personnel, and applicable building occupants. Instructors must be well-versed in the particular systems that they are presenting. Address all aspects of the eOMSI Manual and Facility Data Workbook submittal. Training must include classroom and field lectures as applicable. The location of classroom training requires approval by the Contracting Officer.

3.2.1 Training Plan

Submit a written training plan to the Contracting Officer for approval at least 60 calendar days prior to the scheduled training. Indicate prior approval of the training plan by the Quality Control Manager (QC) and Commissioning Authority (CA) on the submittal forwarded to the Contracting Officer. Also, coordinate the training schedule with the Contracting Officer and QC and CA. Include within the plan the following elements:

a. Equipment included in training

b. Intended audience

c. Location of training

d. Dates of training

e. Objectives

f. Outline of the information to be presented and subjects covered including description

g. Start and finish times and duration of training on each subject

h. Methods (e.g. classroom lecture, video, site walk-through, actual operational demonstrations, written handouts)

i. Instructor names and instructor qualifications for each subject

j. List of texts and other materials required to support training

3.2.2 Training Content

The core of this training must be based on manufacturer's recommendations and the operation and maintenance information defined in Section 01 78 23 OPERATIONS AND MAINTENANCE DATA. The QC and CA are responsible for overseeing and approving the content and adequacy of the training. Provide a brief summary of "Facility Information" and a more detailed presentation of, "Primary Systems Information". Spend 95 percent of the instruction time during the presentation on the "Primary Systems Information". Include the following for each Primary system training presentation:

a. Start-up, normal operation, shutdown, unoccupied operation, seasonal changeover, manual operation, controls set-up and programming, troubleshooting, and alarms.

b. Relevant health and safety issues.

c. Discussion of how the feature or system is environmentally responsive. Advise adjustments and optimizing methods for energy conservation.

d. Design intent.

e. Use of O&M Manual Files.

f. Review of control drawings and schematics.

g. Interactions with other systems.

h. Special maintenance and replacement sources.

i. Tenant interaction issues.

3.2.3 Training Outline

Provide the eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook and a written course outline listing the major and minor topics to be discussed by the instructor on each day of the course to each trainee in the course. Provide the course outline 14 calendar days prior to the training.

3.2.4 Training Video Recording

Provide to the Contracting Officer two copies of the training course in DVD video recording format. Capture within the recording, in video and audio, all instructors' training presentations including question and answer periods with the trainees. Confirm proposed software used to create the training is compatible with the using activity resources to play the training materials. The recording camera(s) must be attended by a person during the recording sessions to assure proper size of exhibits and projections during the recording are visible and readable when viewed as training.

3.2.5 Unresolved Questions from Trainees

If, at the end of the training course, there are questions from trainees that remain unresolved, the instructor must send the answers, in writing, to the Contracting Officer for transmittal to the trainees, and the training video must be modified to include the appropriate clarifications.

3.2.6 Validation of Training Completion

Ensure that each attendee at each training session signs a class roster daily to confirm Government participation in the training. At the completion of all training, submit a signed validation letter that includes a sample record of training for reporting what systems were included in the training, who provided the training, when and where the training was performed, and copies of the signed class rosters. Provide two copies of the validation to the Contracting Officer, and one copy to the eOMSI Preparer for inclusion into the eOMSI documentation.

3.2.7 Quality Control Coordination

Coordinate the eOMSI training with the QC and CA in Section 01 45 00.05 20 DESIGN AND CONSTRUCTION QUALITY CONTROL FOR DESIGN-BUILD.

-- End of Section --

Solicitation No.
N40192-16-R-2800

SMALL BUSINESS DESIGN-BUILD MULTIPLE AWARD CONSTRUCTION CONTRACT (SB DBMACC)

VARIOUS LOCATIONS, GUAM

PART 3
PROJECT PROGRAM

(To be provided during Phase Two)

Solicitation No.
N40192-16-R-2800

SMALL BUSINESS DESIGN-BUILD MULTIPLE AWARD CONSTRUCTION CONTRACT (SB DBMACC)

VARIOUS LOCATIONS, GUAM

PART 4
PERFORMANCE TECHNICAL SPECIFICATIONS

SECTION A10

FOUNDATIONS
09/15

A10 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

A10 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

A10 1.1.1 Government Standards

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFC 1-200-01	*General Building Requirements,* A reference in this PTS Section that requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s):
UFC 3-101-01	*Architecture*
UFC 3-220-01N	*Geotechnical Engineering Procedures for Foundation Design of Buildings and Structures*
UFC 3-301-01	*Structural Engineering*

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS Section 31 23 00.00 20	Excavation and Fill

A10 1.2 GENERAL REQUIREMENTS

A10 1.2.1 Earthwork

The Designer of Record shall prepare the following UFGS Specifications as part of the project specification and shall include the prepared specification section in the design submittal for the project:

Section 31 23 00.00 20 *Excavation and Fill*

Any excavation or ground penetration work must comply with the Munitions and Explosives of Concern (MEC) and Joint Region Marianas Explosives

Safety Submission (JRM ESS) requirements as described in UFGS 01 57 19.01 20, *Supplementary Temporary Environmental Controls*.

A10 1.2.2 Geotechnical Report

A10 1.2.2.1 Subsurface Soils Information

Any provided subsurface soil information is included for the contractor's information only, and is not guaranteed to fully represent all subsurface conditions. The data included in this RFP is to assist in proposal preparation. Contractor shall perform, at his expense, such subsurface exploration, investigation, testing, and analysis as his Designer of Record deems necessary for the design and construction of the foundation system.

A10 1.2.2.2 Contractor-provided Geotechnical Engineer

The Contractor is required to retain a Geotechnical Engineer experienced and licensed in the geographic region of the project to interpret any provided data as related to his design concept and develop requirements for bidding. Requirements stated in Parts 3 and 4 of the RFP take precedence over any content of any included geotechnical report. Additional requirements for the geotechnical design of this project are provided elsewhere in this RFP.

All work by the Contractor-provided Geotechnical Engineer at the project location shall be coordinated with the Contracting Officer and shall not interfere with normal base operations. When providing the Foundation Work Design submittal, provide the Contractor's Geotechnical Report (an Adobe Acrobat PDF version on CD and two printed copies) for review and record keeping purposes. The report shall become the property of the Government. Provide the Geotechnical reports generated during construction, such as pile load tests or PDA results, pile driving results and analysis, to the Contracting Officer (an Adobe Acrobat PDF version and two printed copies) for record keeping purposes.

A10 1.2.2.3 Contractor-Provided Geotechnical Report

Submit a written Geotechnical report based upon Government-provided subsurface investigation data and all additional field and laboratory testing accomplished at the discretion of the Contractor's Geotechnical Engineer. The Geotechnical Report must include all requirements listed in UFC 3-220-01, Geotechnical Engineering, paragraph entitled "Section 1803 "Geotechnical Investigations"; in addition, include the following:

a. The project site description, vicinity map and site map indicating the location of borings and any other sampling locations. Provide 24 hour groundwater observations for at least 20% of the borings, minimum one boring. Provide notes explaining any abbreviations or symbols used and describing any special site preparation requirements.

b. Results of all applicable field and laboratory testing, whether Government or Contractor-provided. Address existing subsurface conditions, selection and his design of the foundation and floor slab, all underground construction including utility installation and all other site-specific requirements (such as soil stabilization and slope stability).

c. Engineering analysis, discussion and recommendations addressing:

1) Settlement analysis. Settlement shall be limited as required in EM 1110-1-1904, *Settlement Analysis*

2) Bearing Capacity Analysis.

3) Foundation selection and construction considerations (shallow, deep, special); dimensions, and installation procedures.

4) Site preparation (earthwork procedures and equipment), compaction requirements, building slab preparation (as applicable), soil sensitivity to weather and equipment, groundwater influence on construction, mitigation of expansive soils or liquefaction potential, dewatering requirements, and other necessary instructions.

5) Sheeting and shoring considerations, as applicable

6) Pavement design calculations with parameters defined, actual or assumed, and recommended thicknesses and materials, whether for design or for proposed modifications to the RFP provided pavement design

7) Haul routes and stockpile locations for earthwork, as applicable.

8) Calculations to support conclusions and recommendations.

9) Recommendations shall be presented on a structure-by-structure Basis.

The Geotechnical Report must be signed by the Contractor-provided Geotechnical Engineer.

The submitted report must be accompanied by a cover letter identifying any report recommendations of the report proposed to be adopted into the design which are interpreted by the Contractor as a change condition to the Geotechnical or Pavement related requirements of the RFP.

A10 1.2.2.4 Geotechnical Site Data required in Design Drawings

The Contractor’s final design drawings shall include the Government-provided subsurface data presented in the RFP as noted below, as well as all additional borings and laboratory test data results performed by the Contractor. The data provided shall include:

a. Logs of Borings and related summary of laboratory test results and groundwater observations. Provide 24-hour groundwater observations for at least 20% of the borings, minimum one boring. Provide notes explaining any abbreviations or symbols used and describing any special site preparation requirements.

b. The locations of all borings shall be indicated on the drawings. The applicable design drawings shall be revised to reference the Contractor’s Geotechnical Report as being a basis for design.

A10 1.2.3 Pile Driver Analyzer (PDA)

If deemed necessary by the Designer-of-Record’s geotechnical engineer, the dynamic wave equation method of analysis, pile driver analyzer, shall be used to validate pile and pile hammer compatibility, establish pile driving criteria, establish terminal penetration resistance, or

verify as-driven capacity of the pile. The PDA or static load test(s) shall be required for piles with required allowable design capacity equal to or greater than 40 tons.

A10 1.3 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

Verification of satisfactory construction and system performance of the foundations shall be via Performance Verification Testing, and by field inspection, as detailed in this section of the RFP and in UFGS Section 01 45 00.05 20. Provide special tests and special inspections in accordance with UFGS Section 01 45 00.05 20, *Design and Construction Quality Control.*

A10 1.3.1 Earthwork

Perform quality assurance for earthwork in accordance with IBC Chapter 17 and UFGS Section 31 23 00.00 20. A competent person, as defined by COE EM 385-1-1, under supervision of a registered Professional Engineer is required to provide inspection of excavations and soil/groundwater conditions throughout construction. The Engineer shall be responsible for performing periodic site visits throughout construction to assess site conditions. The Engineer, with the concurrence of the contractor and the Contracting Officer, shall update the excavation, sheeting, shoring, and dewatering plans as construction progresses to reflect actual site conditions and shall submit the updated plan and a written report (with professional stamp) at least monthly informing the Contractor and the Contracting Officer of the status of the plan and an accounting of Contractor adherence to the plan; specifically addressing any present or potential problems. The Engineer shall be available to meet with the Contracting Officer at any time throughout the contract duration.

A10 1.3.2 Piles

If piles are required, perform quality assurance for pile construction in accordance with UFC 1-200-01, *General Building Requirements*. Pile installation procedures and installed piles shall be inspected and found to be in compliance with these specifications prior to acceptance of the work.

Install test piles as directed by the Contractor’s Geotechnical Engineer. Pile load tests, if required, shall be performed in accordance with UFC 1-200-01. Test pile installation procedures shall be as directed by the Contractor’s Geotechnical Engineer. Results of the pile test program and final pile installation criteria shall be submitted to the Contracting Officer prior to installation of the production piles. If deemed necessary by the Designer-of-Record’s Geotechnical Engineer, the dynamic wave equation method of analysis, pile driver analyzer, shall be used to validate pile and pile hammer compatibility, establish pile driving criteria, establish terminal penetration resistance, or verify as-driven capacity of the pile. The PDA or static pile load test (ASTM D 1143) shall be required for piles with an allowable design capacity equal to or greater than 40 tons. When required, perform PDA on all indicator or test piles. Perform CAPWAP analysis on at least one test (indicator) pile to determine capacity with a minimum three day set-up and develop pile installation criteria.

A10 1.4 DESIGN SUBMITTALS

Design submittals shall be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures,* FC 1-300-09N, *Navy and Marine Corps Design Procedures* UFC 3-

220-01, *Geotechnical Engineering,* and UFC 1-200-01, *General Building Requirements.*

UFGS sections listed below or in the body of the PTS text are to be used by the Designer of Record (DOR) as a part of the design submittal. The DOR shall edit these referenced UFGS sections and submit them as a part of the design submittal specification. Edit the specification sections in accordance with the limitations stated in PTS section Z10, *General Performance Technical Specifications*.

UFGS Section 31 23 00.00 20 *Excavation and Fill*

A10 1.5 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications.* In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following submittals as a minimum:

All structural elements necessary for construction

Contractor-provided geotechnical report

Controlled fill or backfill material tests

Test pile and production pile installation records

Pile load testing reports

As-Built drawings - Include a statement on the drawings indicating the method used to verify the allowable design capacity of the piles (load tests or PDA).

A1010 STANDARD FOUNDATIONS

A1010 1.1 SHEETING AND SHORING

Provide sheeting and shoring as required. Sheeting and shoring plans shall be signed by the Contractor’s Geotechnical Engineer.

A1010 1.2 TERMITE CONTROL

A1010 1.2.1 Termite Control Barrier System

Formulate and apply termiticide in accordance with the manufacturer's label directions. The termiticide label shall bear evidence of registration by the U.S. Environmental Protection Agency or appropriate requirements of the host country.

Apply termiticide to the soil that will be covered by or lie immediately adjacent to the building(s) and structure(s), providing a protective barrier against subterranean termites.

Maintain the Pest Management Maintenance Record, DD Form 1532-1 and submit the Pest Management Report, DD Form 1532 as required.

Applicator(s) shall be licensed or certified by the Federal government or the state or the host country, as applicable.

A1010 1.2.2 Warranty

Furnish a 3 year written warranty against infestations or reinfestation by subterranean termites of the buildings or building additions constructed under this contract. Perform annual inspections of the building(s) or building addition(s). If live subterranean termite infestation or subterranean termite damage is discovered during the warranty period, and building conditions have not been altered in the interim, the Contractor shall:

a. Perform treatment as necessary for elimination of subterranean termite infestation;

b. Repair damage caused by termite infestation;

c. Reinspect the building approximately 180 calendar days after the repair.

A1010 1.2.3 Visual Inspection Guide

To maintain resistance to termites, complete the system and do not disturb, penetrate or damage during the remaining contract time period. Provide Manufacturer’s Guidance for performing a visual assessment of the installed system to ensure the system provides the designed termite physical barrier.

A101001 WALL FOUNDATIONS

Provide foundation walls as required in accordance with the requirements of this section and other portions of this RFP.

A101002 COLUMN FOUNDATIONS AND PILE CAPS

Provide column foundations or pile caps and grade beams as required in accordance with the requirements of this section and other portions of this RFP.

A1020 SPECIAL FOUNDATIONS

A102001 PILE FOUNDATIONS

Where piles are required, design, install, and test piles (including sheet piles, as applicable) in accordance with UFC 1-200-01, except as noted otherwise. Provide piles in accordance with the requirements of the Contractor’s Geotechnical Engineer, and the following paragraphs.

A102001 1.1 DRIVING EQUIPMENT

Install piles (including sheet piles, as applicable) to the required tip elevation and capacity with the appropriate equipment as recommended by the Contractor’s Geotechnical Engineer. Pile hammer shall be of sufficient weight and energy to suitably install piles without damage.

Drive production piles with the same hammer, cap block, and cushion materials, and using the same operating conditions as test piles, including pre-augering and spudding.

Pile driving equipment shall match the equipment assumptions on which the pile driving formulae used to determine blow counts are based.

A102001 1.2 INSTALLATION TOLERANCES

Locate the center of pile butts not more than four horizontal inches from the location indicated at cutoff elevation. Manipulation of the piles is not permitted. In addition to the stated tolerances, the clear distance between the heads of piles and the edges of pile caps shall be a minimum of five inches.

Locate top of sheet piles at cutoff elevation within ½ inch horizontally and 2 inches vertical of the location indicated. Manipulation of the piles is not permitted.

A variation of not more than 2 percent from the vertical for plumb piles, or not more than 4 percent from the required angle for batter piles will be permitted.

A102001 1.3 MISLOCATED AND DAMAGED PILES

Remove and replace with new piles those piles that are damaged, mislocated, or installed out of alignment tolerance or provide additional piles, installed as directed by the Contractor’s Geotechnical Engineer and approved by the Contracting Officer, at no additional cost to the Government.

A102001 1.4 PILE SPACING

For cast-in-place concrete or augercast piles, provide adequate distance, as determined by the Contractor’s Geotechnical/Structural Engineer, between freshly placed concrete and other pile installation operations to avoid damage to concrete.

A102001 1.5 COATED PILES

Handle treated or coated piles so as to protect the treatment or the coating. Repair damage or defects to treatment or coating.

A102002 CAISSONS

If required, provide caissons as required in accordance with the requirements of this section and other portions of this RFP.

A102003 UNDERPINNING

If required, underpin existing construction as required in accordance with the requirements of this section and other portions of this RFP.

A102004 DEWATERING

Dewater site for foundation construction as required by soil conditions and local subsurface and surface water, including rainfall, and considering any potential adverse impact on adjacent facilities, including settlement. Dewatering requirements and methods shall be established by the Contractor’s Geotechnical Engineer, based on his subsurface exploration and investigation.

A102005 RAFT FOUNDATIONS

If required, provide a raft foundation as required to achieve the requirements of this section and other portions of this RFP and as required by the Contractor’s Geotechnical Engineer.

A102006 PRESSURE INJECTED GROUTING

If required, pressure inject grout as required in accordance with the requirements of this section and other portions of this RFP.

A1030 SLAB ON GRADE

A103001 STANDARD SLAB ON GRADE

If allowed by site conditions and recommended by the Contractor-provided Geotechnical Engineer, provide standard concrete slab on grade to meet the required loading requirement in accordance with the requirements of this section and other portions of this RFP.

Floor slab on grade shall be designed and constructed in accordance with EM 1110-1-1904, *Settlement Analysis* and so that any settlement of the floor slab shall not result in harmful distortion of the floor, nor vertical misalignment of the floor with other building components (such as doorways and trenches), building utilities or with pile-supported building elements. If these above conditions cannot be met, provide a pile supported slab.

A103003 TRENCHES

Trenches shall be constructed of reinforced concrete with water proof joints and seals to prevent ground water infiltration.

A103004 PITS AND BASES

Pits and bases shall be constructed of reinforced concrete with water proof joints and seals to prevent ground water infiltration.

A103005 FOUNDATION DRAINAGE

A103005 1.1 PERIMETER FOUNDATION DRAINAGE

Perimeter drainage system shall be provided to remove water away from the foundation of the facility and to be deposited in the storm sewerage system of the site. Pipe for the foundation drainage system shall be of the type specified, shall be perforated, and shall be of a size sufficient to remove water from the foundation successfully. Provide one, or a combination of more than one, of the following types of pipe:

a. Corrugated Polyethelene (PE) Drainage Pipe: ASTM F 405, heavy duty, for pipe 3 to 6 inches in diameter inclusive; ASTM F 667 for pipe 8 to 24 inches in diameter. Fittings shall be manufacturer’s standard type and shall conform to the indicated specification.

b. Acrylonitrile-Butadiene-Styrene (ABS) Pipe: ASTM D 2751, with a maximum SDR of 35.

c. Polyvinyl Chloride (PVC) Pipe: ASTM F 758, Type PS 46, ASTM D 3034, or ASTM F 949 with a minimum pipe stiffness of 46 psi.

Installation shall include wrapping the pipe with filter fabric sock and careful bedding of the pipe with appropriate fill material to ensure that the pipe does not become filled with the bedding material.

A103090 OTHER SLAB ON GRADE

A103090 1.1 BLOCK OR BOARD PERIMETER INSULATION

Provide only thermal insulating materials recommended by manufacturer for perimeter insulation. Provide one of the board or block thermal insulations listed below conforming to the following standards:

a. Cellular Glass: ASTM C 552

b. Extruded Preformed Cellular Polystyrene: ASTM C 578

The thickness of insulation and thermal resistance value shall be sufficient to meet the applicable building code and energy budget for the facility.

-- End of Section --

SECTION A20

BASEMENT CONSTRUCTION
09/15

A20 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

A20 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

A20 1.1.1 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s):
UFC 3-101-01	Architecture
UFC 3-220-01N	Geotechnical Engineering Procedures for Foundation Design of Buildings Structures
UFC 3-301-01,	Structural Engineering)

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS Section 31 23 00.00 20	Excavation and Fill

A20 1.2 GENERAL REQUIREMENTS

A20 1.2.1 Required Specifications

The Designer of Record shall utilize the following UFGS Specifications for the project specification.

Section 31 23 00.00 20, *Excavation and Fill*

A20 1.2.2 Geotechnical Report

A20 1.2.2.1 Contractor-provided Geotechnical Engineer

If a Contractor-provided geotechnical engineer is required, he shall be experienced with soil conditions in the region where the project site is located. The geotechnical engineer shall evaluate the RFP data, obtain and evaluate all additional data as required to support the design and construction, and prepare a Geotechnical Report.

A20 1.2.2.2 Subsurface Soils Information

Subsurface soil information, if provided, is included for the contractor’s information only, and is not guaranteed to fully represent all subsurface conditions. The data included in this RFP are intended for proposal preparation and preliminary design only. Contractor shall perform, at his expense, such subsurface exploration, investigation, testing, and analysis as his Designer of Record deems necessary for the design and construction of the foundation system.

All work by the Contractor-provided Geotechnical Engineer at the project location, if required, shall be coordinated with the Contracting Officer and shall not interfere with normal base operations. Prior to the Foundation Work Design submittal include a Contractor Geotechnical Report (an Adobe Acrobat PDF version on CD and two printed copies) for review and record keeping purposes. The report shall become the property of the Government. Geotechnical reports generated during construction, such as pile driving results and analysis, shall be provided to the Contracting Officer (an Adobe Acrobat PDF version and two printed copies) for record keeping purposes.

A20 1.2.2.3 Contractor-Provided Geotechnical Report

If required, submit a written Geotechnical report based upon Government-provided subsurface investigation data and all additional field and laboratory testing accomplished at the discretion of the Contractor's Geotechnical Engineer. The Geotechnical Report must include all requirements listed in UFC 3-220-01, *Geotechnical Engineering*, paragraph entitled "Section 1803 Geotechnical Investigations"; in addition include the following:

a. The project site description, vicinity map and site map.

b. Results of all the field and laboratory testing, whether Government or Contractor-provided.

c. Engineering analysis, discussion and recommendations addressing:

d. Settlement

e. Bearing Capacity

f. Foundation selection and construction considerations (shallow, deep, special); dimensions, and installation procedures.

g. Site preparation (earthwork procedures and equipment), compaction requirements, building slab preparation (as applicable), soil sensitivity to weather and equipment, and groundwater influence on construction

h. Sheeting and shoring considerations, as applicable

i. Pavement design parameters, actual or assumed, including recommended thicknesses and materials, be for design or for proposed modifications to the RFP provided pavement design only

j. Haul routes and stockpile locations for earthwork, as applicable

k. Calculations to support conclusions and recommendations

l. Recommendations shall be presented on a structure-by-structure basis

The Geotechnical Report shall be signed by a registered Geotechnical Engineer.

The submitted report shall be accomplished by a cover letter identifying any recommendations of the report proposed to be adopted into the design which are interpreted by the Contractor as either conflicting with or being modifications to the Geotechnical or Pavement related requirements of the RFP.

A20 1.2.2.4 Geotechnical Site Data required in Design Drawings

The Contractor's final design drawings shall include the Government-provided subsurface data presented in the RFP as noted below, as well as any additional borings and laboratory test result data performed by the Contractor.

a. Logs of Borings and related summary of laboratory test results and groundwater observations.

b. The locations of all borings shall be indicated on the drawings. The applicable design drawings shall be revised to reference the Contractor's Geotechnical Report as being a basis for design.

A20 1.3 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

Verification of satisfactory construction and system performance of the basement shall be via Performance Verification Testing, and by field inspection, as detailed in this section of the RFP. Provide special tests and special inspections in accordance with UFGS Section 01 45 00.05 20, *Design and Construction Quality Control*.

A20 1.3.1 Earthwork

Perform quality assurance for earthwork in accordance with IBC Chapter 17 and UFGS Section 31 23 00.00 20. If a registered Professional Engineer is required to provide inspection of excavations and soil/groundwater conditions throughout construction, the Engineer shall be responsible for performing pre-construction and periodic site visits throughout construction to assess site conditions. The Engineer, with the concurrence of the contractor and the Contracting Officer, shall update the excavation, sheeting, shoring, and dewatering plans as construction progresses to reflect actual site conditions and shall submit the updated plan and a written report (with professional stamp) at least monthly informing the Contractor and the Contracting Officer of the status of the plan and an accounting of Contractor adherence to the plan; specifically addressing any present or potential problems. The Engineer shall be available to meet with the Contracting Officer at any time throughout the contract duration. The contractor shall bear all costs of the Engineer.

A20 1.4 DESIGN SUBMITTALS

Design Submittals shall be in accordance with Z10, General Performance Technical Specifications, UFGSS section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures*, UFC 3-301-01, *Structural Engineering*, and UFC 3-220-01, *Geotechnical Engineering*.

In addition, UFGS sections listed below or in the body of the PTS text are to be used by the Designer of Record (DOR) as a part of the design submittal. If the UFGS products or systems are applicable to the project, the DOR shall edit these referenced UFGS sections and submit them as a part of the design submittal specification. Edit the specification sections in accordance with the limitations stated in PTS section Z10, *General Performance Technical Specifications*.

UFGS 31 23 00.00 20 (02315N), *Excavation and Fill*

A20 1.5 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications.* In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following submittals as a minimum:

Contractor-provided geotechnical report

Controlled fill or backfill material tests

All structural elements necessary for construction

A2010 BASEMENT EXCAVATION

A201001 EXCAVATION FOR BASEMENTS

Excavate for the basement as required in accordance with the requirements of this section and other portions of this RFP.

A201002 STRUCTURE BACKFILL AND COMPACTION

Provide backfill and soil compaction as required in accordance with the requirements of this section and other portions of this RFP.

A201003 SHORING

Provide shoring and sheeting as required in accordance with the requirements of this section and other portions of this RFP. Shoring and sheeting plans shall be signed by the Contractor’s Geotechnical/Structural Engineer.

A2020 BASEMENT WALLS

A202001 BASEMENT WALL CONSTRUCTION

Provide basement walls as required in accordance with the requirements of this section and other portions of this RFP.

A202002 MOISTURE PROTECTION

A202002 1.1 BUILT-UP BITUMINOUS WATERPROOFING

A202002 1.1.1 Environmental Conditions

Apply the primers and waterproofing specified herein when the ambient temperature is above 40 degrees F.

A202002 1.1.2 Liquid Asphalt

Deliver bulk liquid asphalt in fully insulated, heated transport tanker vehicles with circulating pump devices. Maintain the temperature of the liquid asphalt between 400 and 450 degrees F during storage, provided the transport and storage time does not exceed 12 hours. If the transport and storage time exceeds 12 hours, lower the temperature to between 300 and 325 degrees F at the time the 12 hours are exceeded. Liquid asphalt shall be used within 36 hours after loading in the transport tanker.

A202002 1.1.3 Materials

a. Bitumen - Asphalt; ASTM D 449, Type I.

b. Bituminous Plastic Cement - ASTM D 4586, Type I for asphalt.

c. Membrane Fabric

The following requirements shall apply:

Felt or Fabric Material	Saturant or Impregnant	Specification
Glass (felt) mat	Asphalt	ASTM D 2178, Type III
Reinforcing glass fabric	Asphalt	ASTM D 1668, Type I

d. Nails - Galvanized roofing nails.

e. Primer - ASTM D 41 for asphalt.

f. Protection Board -

ASTM D 517, plain, asphalt plank; ASTM C 208, construction grade building board, 1/2 inch thick, asphalt saturated or coated; ASTM C 726, 7/16 inch thick, covered on one side with waterproof paper or asphalt-saturated felt.

A202002 1.2 ELASTOMERIC SHEET WATERPROOFING

A202002 1.2.1 Environmental Conditions

Do not apply waterproofing during inclement weather or when there is ice, frost, surface moisture, or visible dampness on the surface to receive waterproofing and when ambient and surface temperatures are 40 degrees F or below. The restriction on the application of waterproofing materials when ambient and surface temperatures are below 40 degrees F will be waived if the Contractor devises a means, approved by the Contracting Officer, of maintaining the surface and ambient temperatures above 40 degrees F.

A202002 1.2.2 Butyl Rubber Sheeting

Not less than 60 mils minimum thickness.

A202002 1.2.2.1 Butyl Rubber Sheeting Performance Requirements

a. Thickness Tolerance, ASTM D 412: Plus or minus 10 percent;

b. Specific Gravity, ASTM D 297: 1.20, plus or minus 0.05;

c. Tensile Strength, ASTM D 412: 1200 psi minimum;

d. Tensile Stress at 300 percent elongation, ASTM D 412: 600 psi minimum;

e. Elongation, ASTM D 412: 300 percent minimum;

f. Tear Resistance, Die C, ASTM D 624: 125 pound force per inch (lbf/inch) minimum;

g. Shore A Hardness, ASTM D 2240: Five-second interval before reading; 60 plus or minus 10;

h. Ozone Resistance, ASTM D 1149: No cracks, 7 days - 50 pphm - 100 degrees F, 20 percent elongation;

i. Heating Aging-Accelerated, ASTM D 573: Tensile retention, 60 percent of minimum original elongation retention; 60 percent of minimum original requirement; 7 days, 240 degrees F.

j. Butyl Identification, ASTM D 471, Tricresyl Phosphate Immersion: Maximum volume swell 10 percent, 70 hrs, 212 degrees F;

k. Low Temperature Flexibility, ASTM D 746: No failure at -40 degrees F;

l. Water Absorption, ASTM D 471: +1 percent maximum. 7 days, 158 degrees F;

m. Exposure to Fungi and Bacteria in Soil, Minimum 16 Weeks: Unaffected; and

n. Water Vapor Transmission, 80 Degrees F Permeance, ASTM E 96, Procedure B or BW: 0.15 perms maximum.

A202002 1.2.2.2 Adhesive, Cement, and Tape for Use with Butyl Rubber

Provide as recommended by the butyl rubber waterproofing membrane manufacturer.

A202002 1.2.3 Composite, Self-Adhering Membrane Sheeting

Cold applied composite sheet consisting of rubberized asphalt and cross laminated, high-density polyethylene film. Not less than 60 mils minimum thickness is required.

A202002 1.2.3.1 Composite, Self-Adhering Sheeting Performance Requirements

a. Tensile Strength, ASTM D 412, Die C: 250 psi minimum;

b. Ultimate Elongation, ASTM D 412, Die C: 200 percent minimum;

c. Water Vapor Transmission, ASTM E 96 80 Degrees F Permeance, Procedure B: 0.1 perm maximum;

d. Pliability Degrees F, ASTM D 146: (180 Degrees Bend Over One Inch Mandrel): No cracks at minus -25 degrees F;

e. Cycling Over Crack at Minus 15 Degrees F: Membrane is applied and rolled across two primed concrete blocks with no separation between blocks. Crack opened and closed from zero to 1/4 inch. No effect at 100 cycles;

f. Puncture Resistance, ASTM E 154: 40 lb. minimum;

g. Lap Adhesion at Minimum Application Temperature, ASTM D1876 Modified, 5 lbs/in.(880 N/m);

h. Peel Strength, ASTM D 903: Modified, 9 lbs/in;

i. Resistance to Hydrostatic Head, ASTM D 5385: 231 ft of water

j. Water Absorption, ASTM D 570; 0.1% maximum.

A202002 1.2.3.2 Primer

Asphalt composition, ASTM D 41, or synthetic polymer in solvent as recommended by the membrane manufacturer.

A202002 1.2.3.3 Mastic

Polymer modified asphalt in suitable solvent of trowel-grade consistency and as recommended by the membrane manufacturer.

A202002 1.2.4 Protection Board

Three-dimensional, high impact resistant polymeric grid with woven monofilament drainage fabric bonded to the grid.

A202003 BASEMENT WALL INSULATION

A202003 1.1 BLOCK OR BOARD INSULATION

Provide only thermal insulating materials recommended by manufacturer for the indicated application. Provide one of the board or block thermal insulations listed below conforming to the following standards:

a. Cellular Glass: ASTM C 552

b. Extruded Preformed Cellular Polystyrene: ASTM C 578

c. Unfaced Preformed Rigid Polyurethane and Polyisocyanurate Board: ASTM C 591

d. Faced Rigid Cellular Polyisocyanurate and Polyurethane Insulation: ASTM C 1289

e. Type I Aluminum Foil on both major surfaces. Class 1 - Non-reinforced core foam.

A202003 1.2 BLANKET INSULATION

ASTM C 665, Type I, blankets without membrane coverings; with a thermal resistance value, which will be sufficient to meet the applicable building code and energy budget for the facility. The insulation material shall not contain asbestos materials.

A202003 1.2.1 Recycled Materials

Provide Thermal Insulation containing recycled materials to the extent practicable, provided the material meets all other requirements of this section. The minimum required recycled materials content by weight are:

Rock Wool: 75 percent slag

Fiberglass: 20 to 25 percent glass cullet

A202004 INTERIOR SKIN

Comply with Section C30, *Interior Finishes*.

-- End of Section --

SECTION B10

SUPERSTRUCTURE
09/15

B10 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

B10 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

B10 1.1.1 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-101-01, Architecture UFC 3-301-01, Structural Engineering)
UFC 4-023-03	Design of Buildings to Resist Progressive Collapse

B10 1.2 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

Verification of satisfactory construction and system performance shall be via Performance Verification Testing, as detailed in this section of the RFP. Provide special tests and special inspections in accordance with UFGS Section 01 45 00.05 20, *Design and Construction Quality Control.*

B10 1.3 DESIGN SUBMITTALS

Design submittals shall be in accordance with Z10, *General Performance Technical Specifications,* UFGS section 01 33 10.05 20, *Design Submittal Procedures,* FC 1-300-09N, *Navy and Marine Corps Design Procedures,* UFC 3-101-01, *Architecture,* and UFC 3-301-01, *Structural Engineering.*

B10 1.4 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications.* In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following submittals as a minimum:

All structural elements necessary for construction of the superstructure.

B1010 FLOOR CONSTRUCTION

B101001 STRUCTURAL FRAME

Structural frame elements may include columns, girders, beams, trusses, joists, moment frames, shear walls, and bracing. See Section B20, *Exterior Enclosure*, for additional requirements for exterior walls used as load-bearing walls or shear walls.

B101002 STRUCTURAL INTERIOR WALLS

Provide structural interior walls as required in accordance with the requirements of this section and other portions of this RFP. See Section C10, *Interior Construction*, for additional requirements.

B101003 FLOOR DECKS AND SLABS

If required, provide floor decks as required in accordance with the requirements of this section and other portions of this RFP.

B101005 BALCONY CONSTRUCTION

Design and construct exterior balconies to drain and with the top of the balcony high-point below the interior floor elevation as required for flashing.

B101006 RAMPS

Provide ramps as required in accordance with the requirements of this section and other portions of this RFP.

B101007 FLOOR RACEWAY SYSTEMS

See Section D50, *Electrical*, for floor raceway systems.

B1020 ROOF CONSTRUCTION

B102001 STRUCTURAL FRAME

Structural frame elements may include columns, girders, beams, trusses, joists, moment frames, shear walls, and bracing. See Section B20, *Exterior Enclosure*, for additional requirements for exterior walls used as load-bearing walls or shear walls.

B102002 STRUCTURAL INTERIOR WALLS

Provide structural interior walls as required in accordance with the requirements of this section and other portions of this RFP. See Section C10, *Interior Construction*, for additional requirements.

B102003 ROOF DECKS AND SLABS

Provide roof deck as required in accordance with the requirements of this section and other portions of this RFP.

B102004 CANOPIES

Provide canopies as required in accordance with the requirements of this section and other portions of this RFP.

-- End of Section --

SECTION B20

EXTERIOR ENCLOSURE
09/15

B20 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

B20 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and Government standards referenced in the section text that are **not** found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website, are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the referenced standard at the time of contract award.

B20 1.1.1 Industry Standards and Codes

NATIONAL LUMBER GRADES AUTHORITY (NLGA)

B20 1.1.2 Government Standards

Military Handbook 1013/1A, *Design Guidance for Physical Security of Facilities*

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-101-01, Architecture)

UFC 1-200-02 High Performance and Sustainable Buildings

B20 1.2 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

Verification of satisfactory exterior enclosure system performance must be via Performance Verification Testing, and by field inspection as detailed in this section of the RFP. Provide special tests and special inspections in accordance with UFGS Section 01 45 00.05 20, *Design and Construction Quality Control.* The Contractor must pay the cost of all testing.

B20 1.2.1 Required Brick Masonry Testing and Field Samples

a. Where field testing is required, masonry strength must be determined in accordance with ACI 530.1.

b. Field Samples: Masonry Panel Requirements - At the job site submit for approval by the Designer of Record, a sample masonry panel minimum 8 feet (2.4 meters) long by a minimum of 4 feet (1.2 meters) high. Actual Sample size will be determined by number of components in the sample wall but provide a span of at least 4 feet (1.2 meters) of uninterrupted brickwork and 2 feet (.6 meters) above wall openings. The approved sample must exhibit the standard for workmanship and materials for the project. The sample panel must include brick coursing, bond, weep holes, flashing, thickness, anchors, joint reinforcing, wall ties, rigid-board insulation, intersection of walls, bond beams, expansion and control joints, and tooling of joints, range of color, texture of masonry, and mortar color; or cold-formed steel framing, insulation, fiberglass-faced gypsum sheathing, air barrier, moisture barrier/vapor retarders, exterior enclosure barrier connections to adjoining construction, sealing of exterior enclosure barrier penetrations, sealant, masonry ties and anchors, and tooling of joints, the range of color and texture of brick veneer, and the color of mortar. The sample panel must be protected from damage and must remain at the site until masonry work is complete and approved, at which time the panel must be removed from the site. If there are windows or curtain walls in the project which interface with the masonry, a cut-away sample window or curtain wall mock-up must be installed in the masonry field panel, with all accessories, finishes, and trim (see B20 1.2.4 and 1.2.5). Masonry work must match the approved sample.

B20 1.2.2 Air Barrier Field Sample

Designate a portion of the project that reveals the various edge, seam, transition, and penetration conditions that the air barrier is exposed to. Determine this location with the Contracting Officer and obtain approval of the sealing methods employed on the project from the air barrier Manufacturer. Leave sample area exposed to view as long as practical to serve as a construction standard and comparison of future air barrier construction on the project. Before construction covers the sample area, provide detailed photographs of the air barrier details for future reference.

B20 1.2.3 Air Barrier Performance

Provide air barrier inspection on all projects and air barrier performance testing when required in RFP Part 3, section B20.

B20 1.2.3.1 Air Barrier Inspection

Coordinate all subcontractors that provide part of the air barrier construction to provide an air tight barrier. Review the air barrier prior to being covered by subsequent construction to confirm that the air barrier complies with the following requirements;

a. Prior to applying an air barrier, confirm that the substrate complies with conditions required by the applied air barrier material manufacturer.
b. Air barrier must create a continuous barrier, without gaps, "fish mouths", holes, unsealed seams, or unsealed penetrations.
c. Air barrier components are compatible and capable of being permanently connected to form an air tight barrier.
d. Construction of the air barrier complies with air barrier design as indicated in the Basis of Design and exterior enclosure barrier drawings.
e. Air barrier is installed in accordance with manufacturer's standard details available on the Air Barrier Association of America (ABAA) website named "Air Barrier Materials, Components, Assemblies & Systems" and found at the following web link; http://www.airbarrier.org/materials/assemblies_e.php

B20 1.2.3.2 Air Barrier Performance Testing

Provide air barrier testing and repair as follows (coordinate with infrared thermal testing):

a. Provide a testing plan as a part of the Commissioning Plan and notify the Contracting Officer 7 working days before the testing will take place. Do not test the building until verifying that the continuous air barrier is in place and installed without failures in accordance with installation instructions so that repairs to the continuous air barrier, if needed to comply with the required air leakage rate, can be done in a timely manner.

   Also coordinate building access during the test with the Contracting Officer. Perform pretest inspection with all parties involved in the test and possible repairs of the building enclosure. Record pretest conditions and utilize pictures to assist in the documentation.
b. DOR must utilize UFGS 07 05 23, "Pressure Testing an Air Barrier System for Air Tightness" and Contractor must perform testing as described in that specification. Where conflicts exist between the UFGS 07 05 23 and this performance specification, UFGS 07 05 23 shall govern. The air leak flow rate must not exceed 0.25 CFM at 75 Pa per square foot (0.076 cmm 75 Pa per square meter) of building enclosure area including roof or ceiling, walls and floor as provided by the DOR.

   Method 1: This test consists of measuring the flow rates required to establish 12 positive and 12 negative building pressures from at least 25 Pa to at least 50 Pa. At least 12 bias pressure readings must

be taken across the building enclosure and averaged over 5 seconds each before and after the test. None of these readings must exceed 30% of the minimum test pressure.

Method 2: this test consists of measuring the flow rates required to establish 12 positive building pressures from at least 50 Pa to at least 75 Pa. At least 12 bias pressure readings must be taken across the building enclosure and averaged over 5 seconds each before and after the test. None of these readings must exceed 20% of the minimum test pressure.

The test results must be either pass or fail. Provide the theoretical size of the opening that leaks the same amount as the building enclosure at 75 Pa, to facilitate the search for leaks and repair of the exterior enclosure.

c. Provide infrared thermography to determine air leakage paths if facility fails to retain the required air pressure in the test above. Utilize infrared cameras with a resolution of 0.1 degree C or better.

Prerform infrared thermography in accordance with ISO 6781:1983 and ASTM C1060-90(1997). Determine air leakage pathways in accordance with ASTM E1186-03 *Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems*, and perform corrective work as necessary to achieve the whole building air leakage rate specified.

Modify construction to stop identified air leakage until target 0.25 cfm/ft2 is reached. Correct air path leaks at the source of the leak, do not use sealant to close air leakage paths that are required to be opened for maintenance of the facility such as fixtures, switches covers, receptacle covers, access doors,...etc.

d. Air leaks must be sealed in the following order of priority:1. Top of the building. These include attics, roof/wall intersections, penthouse doors and walls, HVAC equipment.
2. Bottom of the building. These include ground floor access doors and inspection hatches, exhaust and air intake vents, service penetrations of enclosure, crawl spaces.
3. Vertical shafts. These include gasket stairwell fire doors, fire hose cabinets and recessed toilet accessories connected to vertical shaft, vertical and horizontal utility penetrations in service rooms, elevator rooms and shafts.
4. Exterior walls. These include weather strip doors and windows, exhaust fans and ducts, service penetrations, electrical receptacles, wall base.

B20 1.2.4 Thermal Envelope Performance Testing (Infrared Thermography)

Where required in RFP Part 3, provide infrared thermal testing and repair as follows (coordinate with air barrier testing):

a. Test the building envelope using Infrared Thermography technology. The thermography testing must be completed in accordance with the requirements of ASTM C1060 and ISO 6781. The Contracting Officer will witness the testing. Testing must occur just before the building air tightness test. Testing must also occur during the air tightness test so that areas of building air leaks are detected. If the building air tightness test is failed, thermographic testing must be repeated just before and during subsequent air tightness tests until the air tightness test is successful.
b. Thermography Test Procedures: Submit detailed test procedures indicating the test apparatus, the test methods and procedures, and the analysis methods to be employed not later than 60 days after Notice to Proceed.
c. Thermography Test Report: Provide a report. The report must include thermographs in color and a color temperature scale to define the temperature indicated by the various colors. The report must identify the high temperature reading, the outdoor air temperature, the building indoor air temperature, and the wind speed and direction. The report must note any areas of compromise in the building envelope, and must note all actions required and taken to correct those areas.
d. Final Test: Final thermography test report must demonstrate the problem areas have been corrected. Submit the complete test and analysis for review and approval.

B20 1.2.5 Required Records for Concrete Wall Panels

a. Cast-in-place - Submit to DOR mandatory batch ticket information as ASTM C 94 for each load of ready-mixed concrete.

b. Submit to DOR commercial testing results in accordance with PCI MNL-117 and as required in paragraph entitled "Sampling and Testing for Precast."

B20 1.2.6 Precast Concrete Wall Panel Surface Finish Sample

Submit to DOR a concrete wall panel sample 12 inches (300 mm) by 12 inches (300 mm) by approximately 1 1/2 inches (38 mm) in thickness, to illustrate quality, color, and texture of both exposed-to-view surface finish and finish of panel surfaces that will be concealed by other construction. Obtain initial approval of color and texture from DOR prior to submission of sample panels.

B20 1.2.6.1 Manufacturing Plant Sampling And Testing for Precast

Plant Quality Control - PCI MNL-117 for PCI enrolled plants. Where panels are manufactured by specialists in plants not currently enrolled in the PCI "Quality Control Program," provide a product quality control system in accordance with PCI MNL-117 and perform concrete and aggregate quality control testing using an approved, independent commercial testing laboratory. Submit test results to the Contracting Officer.

a. Aggregate Tests: ASTM C 33. Perform one test for each aggregate size, including determination of the specific gravity.

b. Strength Tests: ASTM C 172. Provide ASTM C 39 and ASTM C 31/C 31M compression tests. Perform ASTM C 143 slump tests. Mold six cylinders each day or for every 20 cubic yards (15 cubic meters) of concrete placed, whichever is greater. Perform strength tests using two cylinders at 7 days and two at 28 days. Cure four cylinders in the same manner as the panels and place at the point where the poorest curing conditions are offered. Moist cure two cylinders and test at 28 days.

c. Changes in Proportions: If, the compressive strength falls below that specified, adjust the mix proportions and water content and make necessary changes in the temperature, moisture, and curing procedures to secure the specified strength. Notify the Contracting Officer of all changes.

d. Strength Test Results: Evaluate compression test results at 28 days in accordance with ACI 214 using a coefficient of variation of 20 percent. Evaluate the strength of concrete by averaging the test results (two specimens) of standard cylinders tested at 28 days. Not more than 20 percent of the individual tests must have an average compressive strength less than the specified ultimate compressive strength.

B20 1.2.6.2 Acceptable Appearance

Refer to *Architectural Precast Concrete* by the Prestressed Concrete Institute, in the “Acceptability of Appearance” paragraph for reasons to reject precast panels. Panels in place may be rejected for any one of the product defects or installation deficiencies remaining after repairs and cleaning have been accomplished. "Visible" means visible to a person with normal eyesight when viewed from a distance of 20 feet (6 meters) in broad daylight.

B20 1.2.7 Window Sample Mock-Up

a. Provide mock up of one (1) typical combination window unit to be used within the project and conduct a field mock-up test in strict compliance with AAMA 502 method A and method B. Each opening will be tested to achieve performance of ASCE 7-02 calculated requirements (PSF or Kg/m2) for water resistance, which must not exceed .667 % of the products capable water based on AAMA 101/I.S. 2. Allowable rates of air leakage for field testing must be 1.5 times applicable AAMA 101/I.S.2 rate for the Product Type and Performance Class.

b. Opening is to be tested under “Quality Control” testing by a designated independent testing agency.

1) Schedule mock up installation sufficiently in advance of need to allow adequate time for cure of sealants, testing and reconstruction, if needed, without delaying the project.

2) Build mock up in building envelope wall in location selected by Owner and Architect.

3) Modify mock up construction and perform additional tests as required to achieve specified minimum acceptable results. If corrections are not adequate, construct new mock up, at written direction of Owner and Architect. Co-ordinate construction of mock up with other involved trades.

4) Approved mock ups may become part of completed Work if undisturbed at time of Substantial Completion.

5) Flood test Mockup window subsill and obtain approval of DOR prior to installing window unit.

B20 1.2.8 Curtain Wall Systems Field Sample and Testing

a. At the job site submit for approval by the Designer of Record, a sample curtain wall installation which may be a cut-away portion of a curtain wall, if appropriate, to show the construction, the workmanship, tie-in to building, infiltration and moisture barriers, wrap, flashing, head, window unit installation where required, sill, lintel if required, interior and exterior trim, anchors and reinforcing, and sealants.

b. Provide mock up of (1) designated Curtain Wall System unit to be used in conducting a field mock-up test in strict compliance with AAMA 503 method A and method B. Each opening will be tested to achieve performance of ASCE 7-05 calculated requirements (PSF or Kg/m2) for water resistance, which must not exceed the derived water expectation of 0 infiltration at the calculated Design Pressure. Allowable rates of air leakage for field testing must be .30 CFM/Ft2 of wall area test specimen. Performance test at 6.24 PSF (30.3 Kg/m2) allows .30 cfm/ft2. Opening is to be tested under “Quality Control” testing by a designated independent testing agency.

1) Schedule mock up installation sufficiently in advance of need to allow adequate time for cure of sealants, testing and reconstruction, if needed, without delaying the project.

2) Build mock up in building envelope wall in location selected by DOR.

3) Modify mock up construction and perform additional tests as required to achieve specified minimum acceptable results. If corrections are not adequate, construct new mock up, at written direction of DOR. Co-ordinate construction of mock up with other involved trades.

4) Approved mock ups may become part of completed Work if undisturbed at time of Substantial Completion.

The sample curtain wall must be protected from damage and must remain at the site until curtain wall construction work is complete and approved, at which time the panel must be removed from the site. On projects where the curtain wall interfaces with masonry walls, a cut-away sample curtain wall must be installed with the masonry sample panel. Curtain wall installations must match the approved sample.

Water Penetration: No water penetration must occur when the wall is tested in accordance with ASTM E 331 at a differential static test

pressure of 20 percent of the inward acting design wind pressure as specified, but not less than 15 psf (80 Kg/m2). Make provision in the wall construction for adequate drainage to the outside of water leakage or condensation that occurs within the outer face of the wall. Leave drainage and weep openings in members and wall open during test.

B20 1.3 DESIGN SUBMITTALS

Design submittals must be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures*, UFC 3-101-01, *Architecture* and UFC 3-301-01, *Structural Engineering*.

In addition, UFGS sections listed below or in the body of the PTS text are to be used by the Designer of Record (DOR) as a part of the design submittal. If the UFGS products or systems are applicable to the project, the DOR must edit these referenced UFGS sections and submit them as a part of the design submittal specification. Edit the specification sections in accordance with the limitations stated in PTS section Z10, *General Performance Technical Specifications*.

UFGS 08 34 16.10, *Steel Sliding Hangar Door*

UFGS 08 34 16.20, *Vertical Lift Fabric Door*

B20 1.4 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, General Performance Technical Specifications. In addition to the Z10 requirements, the Designer of Record (DOR) must approve the following submittals as a minimum;

Shop drawings for reinforcing steel in masonry walls, doors, door hardware, windows, storefront, curtainwall, glazing, paint, exterior enclosure barrier systems, and visible exterior materials.

All structural elements necessary for construction.

B20 1.4.1 Manufacturer’s Verification Inspection Documentation for Galvanized Steel

Manufacturer’s verification inspection documentation must be submitted for all galvanized steel in accordance with ASTM A123, ASTM A 153, and ASTM A 653.

B20 1.4.2 Field Inspection of Field-erected Concrete Panels

a. Perform field inspection of panel welded connections. Furnish the services of AWS-certified welding inspector for erection inspections. Welding inspector must visually inspect all welds and identify all defective welds.

b. The DOR must be notified in writing of defective welds, bolts, nuts and washers within 7 working days of the date of inspection. All

defective connections or welds must be removed and re-welded or repaired as required by the DOR.

B20 1.4.3 Sustainable Construction Submittals

Submit sustainable construction submittals in accordance with UFGS 01 33 29.05 20 *Sustainability Reporting for Design-Build*.

B2010 EXTERIOR WALLS

Provide exterior wall construction that consists of exterior skin system of non-structural outside face elements with rain-screen back-up wall systems that include; flashing (embedded, exposed, and thru-wall), a water resistive barrier, moisture barrier/ vapor retarder (if required), air barrier, and insulation systems with interior skin system materials to provide a protective finish on the inside face of exterior walls. Provide all components necessary to for a shingled water resistive barrier to direct water that would penetrate the wall to be directed to the outside of the wall. Provide exterior enclosure components and barriers in accordance with UFC 3-101-01, *Architecture*.

Design all work to comply with UFC 3-101-01, *Architecture*, and UFC 3-301-01, *Structural Engineering*, and the following requirements:

a. Vapor Pressure and Hygrothermal Analysis - Perform a job specific vapor pressure and hygrothermal analysis in accordance with UFC 3-101-01, Architecture. The conclusion of the analysis must indicate if a moisture barrier/ vapor retarder is required, the appropriate locations of needed moisture barrier/ vapor retarder, and anticipated dew-point locations in the exterior enclosure during different critical times of the year.
b. Wind Loads - Provide wind load calculations for exterior cladding in accordance with UFC 1-200-01 and UFC 3-301-01 with comparative analysis of the cladding system to be provided.
c. Water Penetration - No water penetration must occur at a pressure of 8 psf (39 Kg/m2) of fixed area when tested in accordance with ASTM E 331.
d. Insulating Value – Comply with UFC 3-101-01, Architecture for the ASHRAE requirements defining the minimum insulating value of the complete wall system.

B201001 EXTERIOR CLOSURE

B201001 1.1 MASONRY VENEER EXTERIOR WALL CLOSURE COMPONENTS

B201001 1.1.1 General Requirements

a. Masonry veneer must include load bearing and non-load bearing exterior walls of the structure, and must include colored mortar, special shapes such as sills, headers, trim units and copings of brick masonry, precast concrete, concrete masonry units, or other approved material. The veneer must be tied to the backup wall system with a system that allows the veneer to move independently of the backup wall system, while being structurally supported. The

masonry veneer must allow for expansion and contraction of the veneer without cracking the exterior material.

b. Use running bond, tooled concave joints and full head joint weeps at 24 inches (610 mm) o.k. in the course immediately above the base flashing. Where rowlocks are permitted, slope rowlocks and project not less than 1/2 inch (13 mm) beyond the face of the wall to form a wash and drip. Where required, provide colored mortar conforming to ASTM C270. Provide special shapes where required.

c. Locate expansion/control joints and seal with proper backing material and ASTM C 920 polyurethane sealant, or preformed foam or rubberized expansion joint closure. Conform to UFC 3-100-10N and BIA Technotes 18, 18A. Joint must match color of the brick, unless DOR directs otherwise.

d. Conform to ACI 530.1 for masonry veneer installation, including cold weather construction. Antifreeze admixtures are not to be used.

e. Clean the masonry in accordance with manufacturer's instructions and BIA Technote 20.

f. Utilize BIA Technical Notes to design, detail, and construct brick masonry walls. This PTS section amends the BIA documents and takes precedence over similar BIA requirements. Substitute directive language in the place of BIA suggestive language as required in PTS Section Z10, *General Performance Technical Specifications*. The results of these wording substitutions change this document to required procedures.

B201001 1.1.2 Face Brick

a. Brick Masonry Appearance - Do not change source or supply of materials after brick manufacturing work has started. Blend all brick to produce a uniform appearance when installed. An observable "banding" or "layering" of colors or textures caused by improperly mixed brick is unacceptable.

b. Brick Type – Brick must be ASTM C216, Grade SW, type FBX. ASTM C67 test rating must be "Not effloresced".

B201001 1.1.3 Split Faced or Ground Faced Masonry

ASTM C 90. If required, provide split faced or ground faced units, or split-ribbed units or scored-faced units.

B201001 1.1.4 Cast Stone Trim Units

a. Cast stone must be the product of a manufacturer regularly engaged in the manufacture of architectural cast stone (precast concrete building unit) products. Cast Stone must meet or exceed the requirements of ASTM C 1364.

b. Trim units of cast stone must include sills, fascia, header units, copings and other trim units as required by the approved design

B201001 1.1.5 The Wall Cavity

Comply with UFC 3-101-01 and BIA Technical Notes 21A, 21B, 21C, 28B.

B201001 1.1.6 Through-Wall Flashing Components

Provide through-wall flashing over all openings, spandrels, shelf angles, lintels, and built-in structural steel members. Provide through-wall flashing below all openings, parapets copings, sills, and at the base of the wall. Provide a method of weeping water collected by the through-wall flashing to the outside of the wall.

a. Incorporate weep holes to align with through-wall flashing in cavity wall construction as required by UFC 3-101-01 and BIA Technotes. Install flashing according to BIA Technotes 7, 7A, 7B, 21A, 21B, 21C, 28B, and SMACNA figures 4-1A and 4-1B. Extend metal drip edge flashing beyond the wall plane using a 1/4 inch (6 mm) preformed 45 degree angle turn down.
b. Flashing material must be as required by UFC 3-101-01 and the following: Provide flashing of 7 ounce copper flashing with a 3 ounce bituminous coating on each side or a fiberglass fabric bonded on each side of the copper sheet. Sixteen (16) ounce uncoated copper, 28 gauge Type 302 or 304 stainless steel is also acceptable. 'Flexible membrane flashing, plastic or PVC-based membrane flashing is prohibited. Lap and seal turndown solid metal drip edge flashing to through- wall flashing. Refer to "Flashing" in this section to find requirements for non-through-wall flashing.
c. Incorporate the through-wall flashing in the water resistive barrier and seal joints to flashing to form a shingled effect and direct water to the exterior to the exterior enclosure and away from back-up wall assembly.
d. Where flashing is not continuous, such as at masonry wall opening heads and sills, extend flashing four inches beyond each side of the opening and turn up ends to form a pan and prevent water from reentering the wall cavity.

B201001 1.1.7 Reinforcing in Veneer Layer

Reinforcing in the veneer layer must be galvanized in accordance with ASTM A 123/A123M, ASTM A153/A153M, or ASTM A653/A653M, Z275 (G90) coating, and be of sufficient size to eliminate damage to the veneer layer from wind and other live and dead loads imposed on the veneer layer.

B201001 1.2 METAL WALL PANEL EXTERIOR CLOSURE

B201001 1.2.1 General Wall Panel Requirements

a. Factory Color Finish – Provide panels with a factory applied, baked coating to the exterior and interior of metal wall panels and metal accessories. Exterior finish topcoat must be of 70 percent polyvinylidene fluoride (PVDF) resin with not less than 0.8 mil dry film thickness (DFT). Provide exterior primer that is standard with panel manufacturer but not less than 0.8 mil dry film thickness (DFT). Provide factory applied 70 percent PVDF clear coating of 0.8 mil DFT over the color topcoat and edge coating for projects within 300 feet (91 meters) of a water shoreline or industrial environment. Field apply 70 percent PVDF clear coat to unfinished panel edges or field cut panels. Interior finish exposed to sun or rain must be the same coating and DFT as the exterior coating.

b. Wall system and attachments must resist wind loads as determined by ASCE 7, with a factor of safety appropriate for the material holding the anchor. Maximum deflection due to wind on aluminum wall panels must be 1/60. Limit maximum deflection due to wind on steel wall panels and girts behind aluminum or steel wall panels to 1/120 of their respective spans, except that when interior finishes are used limit the maximum allowable deflection to 1/180 of their respective spans. The structural performance test methods and requirements of the wall system and attachments must be in accordance with ASTM E 1592.

c. Conformations - Non-insulated steel or aluminum wall panels must have configurations for overlapping adjacent sheets or interlocking ribs for securing adjacent sheets and fastened to framework using exposed or concealed fasteners, as specified. Provide sheets of sufficient length to cover the entire height of any unbroken wall surface when the length of run is 30 feet (9 meters) or less. Design wall systems with provisions for expansion and contraction. Where required, provide series 305 stainless steel fasteners factory finished to match panels.

d. Shape - Standard V-beam or boxed beam type having 5 to 8 inch (125 mm to 200 mm) pitch for steel panels or 4 to 8 inch (100 mm to 200 mm) pitch for aluminum panels, and 1.5 inch (38 mm) overall depth, exclusive of coating. Other shapes may be considered if approved by the DOR.

B201001 1.2.2 Steel Wall Panels

a. Material and Coating - Form sheets from steel conforming to ASTM A 653/A 653M, Structural Grade 40, galvanized coating conforming to ASTM A 924/A 924M, Class G-90; aluminum-coated steel conforming to SAE AMS 5036; or steel-coated with aluminum-zinc alloy conforming to ASTM A 792/A 792M, except that coating chemical composition must be approximately 55 percent aluminum, 1.6 percent silicon, and 43.4 percent zinc with minimum coating weight of 0.5 ounce per square foot.

b. Gage - Minimum 22 U.S. Standard Gage for wall panels, but in no case lighter than required to meet maximum deflection requirements specified.

B201001 1.2.3 Aluminum Wall Panels

a. Material and Coating - Form sheets of Alloy 3004 or Alclad 3004 conforming to ASTM B 209 having proper temper to suit respective forming operations.

b. Thickness - Minimum 0.032 inch (0.81 mm) nominal, but in no case thinner than that required to meet maximum deflection requirements specified.

B201001 1.2.4 Insulated Aluminum or Steel Wall Panels

Insulated wall panels must be steel or aluminum factory-fabricated units with insulating core between metal face sheets securely fastened together and uniformly separated with rigid spacers. Panels must have a factory color finish. Insulation must be compatible with adjoining materials and capable of retaining its R-value for the life of the metal facing sheets; and unaffected by extremes of temperature and

humidity. The assembly must have a flame spread rating not higher than 25, and smoke developed rating not higher than 50 when tested in accordance with ASTM E 84. Panels must be not less than 8 inches (200 mm) wide and must be in one piece for unbroken wall heights.

Wall panels must have edge configurations with interlocking ribs for securing adjacent panels. System must utilize factory fabricated corners and trim pieces at intersections with other materials. Wall panels must be fastened to framework using concealed fasteners. Installation must be in accordance with DOR-approved shop drawings and manufacturer’s recommendations.

a. Insulated Steel Panels - Zinc-coated steel conforming to ASTM A 653/A 653M; or Aluminum-zinc alloy coated steel conforming to ASTM A 792/A 792M, AZ 55 coating. Uncoated wall panels must be 0.024 inch (0.61 mm) thick minimum.

b. Insulated Aluminum Panels - Alloy conforming to ASTM B209, temper as required for the forming operation, minimum 0.032 inch (0.81 mm) thick.

B201001 1.3 STUCCO EXTERIOR WALL CLOSURE

B201001 1.3.1 Portland Cement Plaster

ASTM C150, gray Portland cement Type II with 1/2 inch (13 mm) maximum chopped alkali resistant fiberglass strands, minimum 1.5 percent by weight to cement; 1 1/2 pounds (.68 kg) per sack of cement. Lime must conform to ASTM C206, Type S. System must utilize stainless steel or zinc corner beads, J-beads and other accessories.

a. Unless specifically deleted, utilize an acrylic admixture or coating to give additional moisture suppression to control fungus growth for the system.

b. Sand aggregate for job-mixed base coat and job-mixed finish coat stucco must conform to ASTM C897.

c. Sand for Finish Coats: Natural color and graded within the limits shown above for basecoats, except that the sand must pass the No. 8 sieve, and for smooth finish the sand must pass the No. 30 sieve.

d. Mix scratch coat in proportion of one part by volume Portland cement, 3/4 to 1 1/2 parts by volume hydrated lime and 2 1/2 to 4 parts sand (volume of sand per sum of cement and lime). Mix brown coat in proportion of one part by volume Portland cement, 3/4 to 1 1/2 parts by volume hydrated lime and 3 to 5 parts sand (volume of sand per sum of cement and lime). Mix proportions can vary depending on climate and application variations, with the approval of the DOR.

e. Portland Cement Stucco Finish Coat 3 to 5 parts sand (volume of sand per sum of cement and lime).

f. Portland cement plaster application must be in accordance with ASTM C 926. Furring and lath application must be in accordance with ASTM C 1063.

g. Bonding Agents: ASTM C 932. Provide for exterior applications to masonry or concrete substrates.

h. Provide water resistive barrier under stucco in accordance with manufacturer's recommendations and code requirements.

B201001 1.4 CONCRETE EXTERIOR WALL CLOSURE

B201001 1.4.1 Precast Concrete Wall Panels:

ACI 211.1 and ACI 301. PCI MNL-116 or PCI MNL-117. Concrete must have a minimum 28-day compressive strength of 4000 psi (281 Kg/cm2). Air content of plastic concrete must be between 4 and 6 percent air by volume. Provide a dosage of air entraining agent, which will produce 19 plus or minus 3 percent air in a 1 to 4 by weight standard sand mortar in accordance ASTM C 185. Provide aggregate in accordance with ASTM C 33. Seal the panel joints with fully loaded and tooled sealant joints that are properly sized, shaped, and placed against manufacturer approved backing material. Sealant material thickness must not be less than 1/4 inch (6mm).

For rain screen precast panel wall systems with back-up wall construction, provide sealed face joints that allow moisture to be drained from the wall cavity behind the precast panels via weeps. Provide flashing and water/ moisture resistant barriers to direct water from the wall cavity to the outside of the building. Locate weeps where cavity is obstructed such as above through-wall flashing, at head and sill flashing above and below windows, above door flashings, and wall base flashing.

For barrier wall precast panel wall systems without back-up wall construction, provide a two stage drained joint system on all precast panels joints. Design the two staged drained joint system to provide the following;

a. Locate all sealant beads on the exterior side of the backer rod. Align placement of the exterior sealant bead with the exterior surface of the precast panel and space the placement of the interior sealant bead as required below but no less than 3 inches (75 mm) from the face of the panel to the face of the interior tooled sealant bead.
b. Space sealant beads as far apart as possible but provide no less than 1 inch (25mm) clear air space between the exterior seal backer rod and the tooled interior sealant bead.
c. Form minimum of 1/2 inch (12mm) weep holes to facilitate drainage in the vertical sealant joints. Attach a bead of sealant to the interior vertical sealant bead with an outward slope and a drop in height of at least 4 inches (100mm) to form the drainage plane for the weep opening.
d. Locate weeps as necessary to allow complete drainage of water from the two stage air/ vent space. Provide weeps at obstructions in the air/ vent space such as through wall flashing, horizontal panel joints, head and sill flashing above and below windows, above door flashing, and wall base flashing.

Minimize cracking potential of precast concrete elements by implementing expansion and control joints in the precast assembly. Comply with the following;

a. Exposed Aggregates - In addition to the above aggregate, facing mixture aggregate, and aggregate for homogeneous panels with exposed aggregate finish, must be crushed stone.
b. Cement - ASTM C 150.
c. Admixtures - ASTM C 260 for air-entraining admixtures. Other admixtures: ASTM C 494. Certify that admixtures are free of chlorides.
d. Reinforcement - ACI 301.
e. Inserts - ASTM A 47, Grade 32510 or 35018, or may be medium strength cast steel conforming to ASTM A 27/A 27M, Grade U-60-30. Where exposed to moisture, provide inserts hot-dip galvanized after fabrication in accordance with ASTM A 153/A 153M.
f. Embedded Plates - ASTM A 36/A 36.
g. Flashing Reglets - Fabricate of sheet metal, open-type with continuous groove 1-1/8 inches (28 mm) deep minimum by 3/16 inch (5 mm) wide at opening and sloped upward at 45 degrees. Top surface must have toothed lip section to anchor upturned edge of metal snap-lock counter flashing when inserted. Provide stainless steel sheet metal, 0.011 inch (0.28 mm) minimum thickness, ASTM A 167, Type 302 or Type 304, Number 2D finish, soft temper.
h. Clip Angles - ASTM A 36/A 36M steel, galvanized after fabrication in accordance with ASTM A 153/A 153M.
i. Ferrous Casting Clamps - ASTM A 47, Grade 32510 or Grade 35018 malleable iron or cast steel, or ASTM A 27/A 27M, Grade U-60-30, cast steel casting, hot-dip galvanized in accordance with ASTM A 153/A 153M.
j. Threaded Fasteners – Provide galvanized machine bolts, washers and, when required, nuts.

   1) Bolts: ASTM A 449, 3/4 inch (19 mm) diameter machine bolts with hexagon head.

   2) Washers: ANSI B18.21.1, medium or heavy lock-spring washers.

   3) Nuts: ASTM A 563, Grade C, heavy, hexagon-type nuts.

   4) Square Nuts: ASTM A 563, Grade A, plain.

B201001 1.5 CONCRETE WALL PANEL RESTORATION

Materials, physical and chemical properties, and composition of new concrete must match that of existing concrete to be repaired, unless samples and testing determine that existing mixtures and materials are faulty or non-performing.

B201001 1.5.1 Existing Concrete Testing

Representative samples of existing concrete must be taken from areas of the structure to be repaired at indicated locations. The samples must be taken in accordance with ASTM C 42 and ASTM C 823 and tested in accordance with ASTM C 39, ASTM C 42, ASTM C 295, ASTM C 457, ASTM C

856, ASTM C 1218/C 1218M, and ASTM C 642, ASTM C 114, and ASTM C 1084. Aggregates in the existing concrete must be evaluated in accordance with ASTM C 136 and ASTM C 295. The air content of the existing concrete must be determined in accordance with ASTM C 457 and ASTM C 642.

B201001 1.5.2 Admixtures

Air entraining admixtures must conform to ASTM C 260, water-reducing or -retarding admixtures must conform to ASTM C 494, and pigments for integrally colored concrete must conform to ASTM C 979 and ASTM C 1017. Admixtures must not contain added chlorides.

B201001 1.5.3 Aggregates

Aggregates must conform to ASTM C 33.

B201001 1.5.4 Cement

Cement composition must match that of cement used in existing concrete to be repaired as determined by samples and testing and must conform to the basic requirements of ASTM C 150, Type I or II. Cement must have non-shrink (shrinkage compensating) properties and must conform to ASTM C 1107, Class B or C, expansive cement type.

B201001 1.5.5 Pozzolan

Pozzolan must conform to ASTM C 618, Class F, including limit on available alkalis, "Table 2 - Supplementary Optional Chemical Requirements," and uniformity requirements, "Table 4 - Supplementary Optional Physical Requirements."

B201001 1.5.6 Epoxy Anchor Adhesives

An epoxy-resin grout must be used to bond steel anchors to concrete, and must be a 100 percent solids, moisture insensitive, low creep, structural adhesive. The epoxy must conform to ASTM C 881, type IV; grade and class selected to conform to the manufacturer's recommendations for the application. The epoxy adhesive must be conditioned, proportioned, mixed, and applied in accordance with the manufacturer's recommendations, except as otherwise specified herein.

a. Epoxy-resin grout - Must be a two-component material, 100 percent solids by weight, formulated to meet the requirements of ASTM C 881, Type I or II. Type I material must be used when materials or atmospheric temperatures are 70 degrees F (21 degrees C) or above. Type II material must be used when materials or atmospheric temperatures are below 70 degrees F (21 degrees C). Epoxy-resin grout must have the ability to structurally rebond cracks, delaminations, and hollow plane conditions in concrete; must be insensitive to the presence of water; and must have the

capability to penetrate cracks down to 5 mils in width. Materials must have been used in similar conditions for a period of at least five years.

b. Epoxy Injection Ports - Injection ports for epoxy-resin grout must be designed for the intended use as detailed in this section and must be made according to the recommendation of the epoxy manufacturer.

B201001 1.6 OTHER EXTERIOR WALL CLOSURE

B201001 1.6.1 Glass Block

a. Glass block units must be made of clear colorless glass. Units to have polyvinyl butyral edge coating. Units to have 75 percent light transmission allowance. System must utilize ventilators and accessories recommended by glass block manufacturer. Glass block specified is manufactured by Pittsburgh Corning Corporation. The manufacturer's name and catalog identification are provided to describe physical characteristics and functional requirements of the product desired. Other manufacturers' products that are considered to be the functional equivalent will be acceptable.

b. Exterior Glass Block Units must be DECORA, VUE, or ARGUS pattern. Units designated as "reflective glass block" must have a highly reflective oxide surface coating of a gray color.

B201001 1.6.2 Concrete Unit Masonry

Masonry walls must comply with ACI 530.1. Load-bearing units: ASTM C90, Non-load bearing- units: ASTM C129, Type I or II. Provide ground face units, split-faced units, ground-faced units, or split-ribbed units for exposed exterior walls. Provide water repellent admixture to masonry units where the exterior face of the units will not receive a waterproof coating such as paint. Mortar must conform to ASTM C 270, Type S. Test mortar in accordance with ASTM C 780. Provide water repellent admixture and color additive in mortar for masonry walls that will not receive a waterproof coating such as paint. Do not use admixtures containing chlorides. Provide air entrainment, not to exceed 12 percent, in mortar.

a. Adjustable Anchors for Structural Members - Use adjustable anchors to anchor masonry structural steel columns or beams. Weld the fixed portion of the anchors (steel anchor rods) to the structural steel member. Provide adjustable anchors 3/16 inch (5 mm) diameter steel wire, triangular-shaped. Anchors attached to steel must be 5/16 inch (8 mm) diameter steel bars placed to provide 1/16 inch (1.6 mm) play between flexible anchors and structural steel members.

b. Deformed Bars - ASTM A 615/A 615M, ASTM A 616/A 616M, ASTM A 617/A 617M, or ASTM A 706/A 706M.

B201002 EXTERIOR WALL BACKUP CONSTRUCTION

B201002 1.1 CONCRETE UNIT MASONRY

Provide concrete unit masonry as described in **B201001 1.10.2**

Provide water resistive barrier on the cavity-facing wythe of the backup masonry. Coordinate water resistant barrier materials and methods to provide water control and vapor transmission control for the lifetime of the structure. Seal all holes and penetrations in the water resistive barrier and repair any material damaged by other construction operations.

B201002 1.2 LOAD-BEARING METAL FRAMING SYSTEM

Exterior Studs:

Max. Deflection Criteria	Exterior Finish
L/360	Cement Plaster, Wood Veneer, Synthetic Plaster, Metal Panels
L/600	Brick Veneer, Stone Panels

Wall deflections must be computed on the basis that studs withstand all lateral forces independent of any composite action from sheathing materials. Studs abutting windows or louvers must also be designed not to exceed 1/4-inch maximum deflection and as required in UFC 4-010-01.

a. Studs - ASTM A 1003/ASTM A 1003M, Structural Grade 50, Type H minimum; provide Z180 (G60) galvanized coating in accordance with ASTM A 653/ASTM A 653M. Do not expose studs to direct moisture contact. Studs must be stamped with manufacturer's name, initials, or logo, an ICBO number, material thickness and yield strength. Size and gage must be as required to meet the loading requirements specified.

b. Bracing - Provide horizontal bracing in accordance with design calculations and AISI SG-673, consisting of, as a minimum, runner channel cut to fit between and welded to the studs or hot- or cold-rolled steel channels inserted through cutouts in the web of each stud and secured to studs with welded clip angles. Provide bracing, as a minimum, at 5 feet (1.52 meters) o.c. for wind load only, and 3’-4” (1.0 meters) o.c. for axial loads.

c. Sheathing - Provide sheathing to withstand structural loads imposed on the wall structure. Cover sheathing with either a 15 pound asphalt-impregnated building paper, or air barrier as required by the wall moisture analysis. Sheathing must be one of the following:

1) Plywood: C-D Grade, Exposure 1, with an Identification Index of not less than 24/0.

2) Structural-Use and OSB Panels: Sheathing grade with durability equivalent to Exposure 1, Span Rating of 24/0 or greater.

3) Gypsum: ASTM C 79/C 79M and ASTM C 1177/C 1177M, 1/2 inch (13 mm) thick fire retardant (Type X) 5/8 inch (15 mm) thick; 4 feet (1.2 meters) wide with square edge for supports 16 inches (400 mm) o.c. with or without corner bracing of framing.

Gypsum sheathing must be faced with materials capable of resisting six months of weathering exposure without degradation of the covering or the gypsum. Seal all joints as recommended by the manufacturer.

d. Water resistive barrier – Install to protect back-up wall assembly.

B201002 1.3 CAST-IN-PLACE CONCRETE SYSTEM

a. Unless otherwise noted herein, all concrete design and construction must be in accordance with UFC 1-200-01.

b. Concrete construction must be in accordance with ACI 301.

c. Refer to Performance Verification Testing for Cast-in-place field quality control.

d. Concrete construction tolerances must be in accordance with ACI 117.

e. Design for watertight joints, or weeping joints having back-up water penetration protection in precast elements. Cracking potential of precast concrete elements must be minimized by implementing expansion and control joints in the precast assembly.

f. Joints must include properly sized and placed backing material and fully loaded and tooled sealant joint of no less than 1/4 inch sealant material thickness.

g. Provide a water resistive barrier to protect back-up wall assembly.

B201003 INSULATION AND VAPOR RETARDER

Provide insulation, air barriers, water resistive barriers, and moisture barrier/ vapor retarders (if required) in the exterior enclosure to control heat loss/gain, air infiltration/diffusion, moisture infiltration/diffusion, and water infiltration. These barriers can be accomplished by insulation, liquid application, applied sheet materials, or applied membranes.

Provide insulation, air barrier and water resistive barrier on all conditioned facilities and moisture barrier/ vapor retarders when required by the exterior enclosure vapor pressure and hygrothermal analysis. These barrier materials may be installed separately or combined if different air barrier, moisture barrier/ vapor retarder, and water resistive barrier functions can be consolidated in one material.

Provide exterior enclosure barriers that are durable and designed to last the life of the facility. Seal the continuous air and water resistive barrier in a flexible manner to allow for relative movement of adjacent building enclosure components. Support exterior enclosure barriers to withstand maximum positive and negative air pressure to be placed on the building without displacement or damage and transfer the load to the structure. Permanently seal penetrations, joints, holes, and transitions to adjoining construction in air and water resistive barriers as recommended by the material manufacturer. Do not compromise exterior enclosure barrier integrity at electrical boxes, fixture supports, and fasteners with holes through the

exterior enclosure barriers that allow air or water leakage. Do not expose exterior enclosure barriers or retarders to environment conditions longer than is recommended by the manufacturer.

B201003 1.1 INSULATION SYSTEMS

Vertical and horizontal polystyrene insulation conforming to ASTM C578 or rigid polyisocyanurate board wall insulating products conforming to ASTM C591 or mineral-fiber blanket insulation conforming to ASTM C 665 must be provided. Wall insulating product must have a minimum R-value as indicated by applicable ASHRAE 90.1 calculations called for in UFC 1-200-02, High Performance and Sustainable Building Requirements, and meeting minimum building envelope insulation requirements of UFC 3-101-01 Architecture and the energy design of the facility. Seal the joints in rigid insulation within cavity/veneer walls for additional moisture and air infiltration protection.

B201003 1.2 AIR BARRIER

The building air barrier is a combination of various construction materials/ components that form a continuous air barrier seal on all six sides of a building. Materials designated as a part of the air barrier must use methods recommended by the manufacture to seal joints and intersections for air-tightness. Individual materials used in the continuous air barrier must have an air permeance not to exceed 0.004 cfm/ft2 at a pressure differential of 0.3 inches water (1.56lb/ft2), (0.02 L/s. m2 at 75 Pa) when tested in accordance with ASTM E 2178. If the air barrier is to be field tested, refer to the requirements in the paragraph entitled "Air Barrier Performance Testing" of this section for entire building minimum air permeance. Air barrier installation at windows must be in accordance with ASTM E 2112.

B201003 1.2.1 Exterior Enclosure Air Barrier Materials

Refer to Air Barrier Association of America (ABAA) to identify qualified materials with the appropriate performance for the air barrier. Utilize materials from the "ABAA Evaluated Air Barrier Materials" found at the following web link; http://www.airbarrier.org/materials/index_e.php

B201003 1.3 WATER RESISTIVE BARRIER

Provide a water resistant barrier to resist bulk water penetration and wind-driven rain that passes the exterior cladding of the facility. Provide vapor permeable water resistant barrier if the water resistive barrier function is combined with other exterior enclosure barrier functions. Integrate water resistive barriers with wall flashing to form a shingled effect and direct water down the outside surface of the water resistive barrier, away from the back-up wall assembly, and out of the wall. Comply with the requirements of ASTM E2256 for mechanical fastened building wrap materials or ICC-ES Acceptance Criteria AC38 for other materials.

B201003 1.3.1 Exterior Enclosure Water Resistive Barrier Materials

Refer to Air Barrier Association of America (ABAA) to identify

qualified materials with the appropriate performance for the water resistive barrier. Utilize materials from the "ABAA Evaluated Air Barrier Materials" found at the following web link; http://www.airbarrier.org/resistive/index_e.php

B201003 1.4 MOISTURE BARRIER/ VAPOR RETARDER

Provide a moisture barrier/ vapor retarder to slow or reduce the unintended movement of water vapor in and out of conditioned space, if required by exterior enclosure vapor pressure and hygrothermal analysis. Perform the analysis and provide a moisture barrier/ vapor retarders in accordance with UFC 3-101-01, *Architecture*. Choose the moisture barrier/ vapor retarder permeability as a function of climate, the characteristics of the materials that comprise the assembly, and the interior conditions. If required, install moisture barrier/ vapor retarder materials on the warm side of the building assembly insulation (in the predominate season for the facility climate). Select moisture barrier/ vapor retarders in accordance with ASTM C755.

B201004 PARAPETS

Avoid parapets when possible, but when necessary, provide parapets with the same materials as the exterior wall construction, including framing members, anchors, flashings, cants, and accessories. Parapets must be designed to withstand the lateral loads prevailing at the project site and be provided with thruwall flashing below the parapet cap, at structural members, at penetrations, and at the roof level. Provide flashing and scuppers in accordance with SMACNA.

B201005 EXTERIOR LOUVERS & SCREENS

If required, provide louvers, which are not an integral part of the mechanical equipment, exterior closures, grilles and screens, storm shutters, and other materials used for a variety of purposes including screening of equipment or as louvers for exterior doors.

Louvers, screens, grilles in must be selected in a color and design that is compatible with the fabric of the exterior architectural character as described below. For frame construction, install in accordance with ASTM E 2112.

B201005 1.1 WALL LOUVERS

Wall louvers must be drainable blade type louver with blade slopes of 45 degrees minimum, but provide wind driven rain rated louvers for wall louvered rooms without a floor drain within the room. Louvers must be made to withstand a wind load of not less than 30 psf (146 Kg/m^2), .08 inch (2 mm) thick 6063-T5 or T52 extruded aluminum in a factory-finished color in accordance with AAMA 2605 with a minimum coating thickness of 1.2 mil to match the building facade. Wall louvers must bear the AMCA certified ratings program seal for air performance and water penetration in accordance with AMCA 500 , 500L (wind driven rain), and AMCA 511. Provide sill flashing with sloped drain pan at base of louver to collect moisture that migrates down the interior face of the louver. This sill flashing

must drain water to the outside of the building. Louvers must have bird screens.

B201005 1.2 SCREENED EQUIPMENT ENCLOSURE

Design and fabricate support frames to withstand wind loads. Anchor frames securely in place. Provide secondary horizontal steel or aluminum framing for attachment of screen materials. Screen material must be factory finished coating in accordance with AAMA 2605 with a minimum coating thickness of 1.2 mils. Formed metal panels from galvanized steel sheet per ASTM A 653 or aluminum sheet per ASTM B 209.

B201005 1.3 STORM SHUTTERS

B201005 1.3.1 Roll Shutters

Roll shutters must have factory finished 0.050 inch (1.27 mm), 6063-T5/T6 aluminum slats with continuous over-head housing, frame and tracks. Roll shutter must be capable of being locked in a closed position by a non-key device.

B201005 1.3.2 Accordion Shutters

Accordion shutters must have factory-finished aluminum alloy 6063-T5/T6 slats and tracks. Accordion shutter must have stainless steel wheel carriers, nylon wheels and guides with stainless steel fasteners and be capable of being locked in a closed position by a non-key device.

B201005 1.3.3 Hinged Louvered Shutters

Hinged louvered shutters must have factory finished 0.50 inch (13 mm), 6063-T5/T6 aluminum louvered blades and frames with stainless steel hinges, holders, and fasteners. Allow minimum space between horizontal louver blades. Provide storm bar where required due to the lateral loads imposed on the shutter.

B201005 1.3.4 Removable Shutters

Removable shutters must have formed factory finished 0.050 inch (1.27 mm), 3003-H16 aluminum panels and continuous 6063-T5/T6 header and base frame with stainless steel fasteners or spring tempered stainless steel clips.

B201005 1.3.5 Exterior Door Louvers

If allowed by UFC 4-010-01, louvers for exterior doors must be inverted "Y" type with minimum of 30 percent net-free opening. Weld or tenon louver blades to continuous channel frame and weld assembly to door to form watertight assembly. Form louvers of hot-dip galvanized steel of same gage as door facings. Louvers must have steel-framed insect screens secured to room side and readily removable. Louvers must have aluminum wire cloth, 18 by 18 or 18 by 16 inch mesh, for insect screens. Net-free louver area to be before screening.

B201006 BALCONY WALLS & HANDRAILS

B201006 1.1 PRECAST CONCRETE BALCONY WALLS

Precast concrete balcony walls must be in accordance with section B201001 EXTERIOR CLOSURE paragraph titled, “Precast Concrete Wall Panels.”

B201006 1.2 UNIT MASONRY BALCONY WALLS

B201006 1.2.1 Clay Masonry Units

Clay masonry balcony walls must be in accordance with section B201001 EXTERIOR CLOSURE, paragraph titled, “Face Brick.”

B201006 1.2.2 Concrete Masonry Units

Concrete masonry balcony walls must be in accordance with section B201001 EXTERIOR CLOSURE, paragraph titled, “Unit Masonry.”

B201006 1.3 METAL FRAMED ASSEMBLY BALCONY WALLS

Metal framed assembly balcony walls must be in accordance with section B201001 EXTERIOR CLOSURE, paragraph titled, “Load Bearing Metal Framing System.”

B201006 1.4 HANDRAILS

Design handrails and anchorage connections to resist loads in accordance with IBC. Provide materials in accordance with NAAMM PR, with the same size handrail and vertical post. Provide series 300 stainless steel pipe collars. Factory coat all metal railings, except ornamental metals such as brass, bronze, and nickel-silver, with a high performance coating in accordance with AAMA 2605 with a minimum coating thickness of 1.2 mils unless otherwise noted.

B201006 1.4.1 Steel Handrails

Steel handrails, including inserts in concrete, steel pipe conforming to ASTM A 53 or structural tubing conforming to ASTM A 500, Grade A or B of equivalent strength must be provided. Steel railings must be of 1 1/2 inches (38 mm) nominal size. Railings must be hot-dip galvanized, shop primed shop painted for exterior applications.

B201006 1.4.2 Aluminum Handrails

Aluminum railing must be of 1-1/2 inch (38 mm) nominal schedule 40 pipe conforming to ASTM B 429 or 1-3/4 inch (44 mm) square aluminum semi-hollow tube with rounded corners conforming to ASTM B 221. Railings must be coated with a high performance coating or anodized in accordance with AAMA 611, Class I. All fasteners must be Series 300 stainless steel.

B201006 1.4.3 Wood Handrails

Wood handrails must be of pre-finished natural hardwood in oak, walnut, or ash. Wood must be coated with hard acrylic finish to withstand indentations.

B201007 EXTERIOR SOFFITS

Exterior soffit system assemblies must include trim and necessary accessories including high performance coatings, if required. Installation must be crisp, fit and trim with tight joinery to back-up framing. Soffits must be designed to be field assembled by lapping side edges of adjacent panels and mechanically attaching through panels to galvanized, non-load bearing framing conforming to ASTM A 653 (G60) and ASTM C 645, using concealed fasteners. Provide trim accessories of the same material and finish as the soffit material where soffit abuts other materials.

Use adequate backing material to assure snug joints and even face planes. Where soffits ventilate an attic space, or an otherwise unventilated space, provide a soffit/ridge/louver/ventilator ventilation system with air quantities complying to the IBC. For spaces intentionally not vented, provide sealed soffits to maintain the integrity of the air barrier and insulating envelope.

B201007 1.1 METAL SOFFIT PANELS

Metal soffit panels must be factory-formed and factory-finished. Use factory-applied sealant in side laps

B201007 1.2 EXTERIOR FIBER-CEMENT BOARD SYSTEM

Exterior fiber-cement board soffit system must be square edge 7/16 inch (16 mm) thick, 48 inch (1.2 meter) wide exterior fiber-cement board panels conforming to ASTM C 1186 and ASTM E 136, mechanically attached to galvanized non-load bearing framing conforming to ASTM A 653, G60 and ASTM C 754. Calk and finish fiber-cement board joints in accordance with ASTM C840. Soffit design must assure that the soffit material does not have direct water contact.

B201008 WALL FLASHING

Flashing must be aluminum or stainless steel or copper. Aluminum must conform to ASTM B 209/B 209M, 0.040 inches (1.27 mm) thick and must be coated to match the item flashed. Stainless steel must conform to ASTM A 167, type 302 or 304, 2D finish, fully annealed, dead soft temper. Thickness must be a minimum of 0.018 inches (0.4572 mm). Copper must conform to ASTM B 370, cold rolled temper. Thickness of copper must be 20 ounces per square foot (6.125 Kg/m^2). Incorporate the flashing in the water resistive barrier and seal joints to flashing to form a shingled effect and direct liquid water to the exterior of the exterior enclosure and away from back-up wall assembly.

B201009 EXTERIOR PAINTING AND SPECIAL COATINGS

Apply coatings directly to all non-prefinished surfaces of the exterior construction. Comply with Master Painters Institute requirements for surface degradation analysis, surface preparation, paint and coating selection, paint application restrictions for substrate materials, and paint application.

B201009 1.1 GENERAL REQUIREMENTS

Painting practices must comply with applicable federal, state and local laws enacted to insure compliance with Federal Clean Air Standards. Apply coating materials in accordance with SSPC PA 1. SSPC PA 1 methods are applicable to all substrates.

All paint must be in accordance with the Master Painter Institute (MPI) standards for the exterior architectural surface being finished. The current MPI, "Approved Product List" which lists paint by brand, label, product name and product code as of the date of contract award, will be used to determine compliance with the submittal requirements of this specification. The Contractor may choose to use a more current MPI "Approved Product List"; however, only one list may be used for the entire contract. All coats on a particular substrate, or a paint system, must be from a single manufacturer. No variation from the MPI Approved Products List is acceptable.

Select paint systems for the project in accordance with the MPI Architectural Painting Decision Tree available on the Whole Building Design Guide. Use this interactive MPI Decision Tree website to identify applicable paint system(s) for the project. The MPI Decision Tree identifies paint systems for each interior or exterior coated surface in "Normal" or "Aggressive" environmental conditions and generally lists the applicable paint systems in descending order of performance. The paint system at the top of each substrate list generally indicates the highest performing acceptable coating system.

Choose the "Aggressive" environmental conditions in the MPI Decision Tree for exterior systems that are used in moist humid conditions, abrasive conditions, chemical exposure conditions, or within five miles proximity of the ocean or a body of water. Also use "Aggressive " environmental conditions in interior spaces that are exposed to in moist humid conditions, abrasive conditions, chemical exposure conditions, such as bathrooms, shower rooms, kitchens, chemical storage area, swimming pools, laundry, sanitary areas, commercial kitchens, industrial production areas, and hospital operating rooms provide paint systems that comply with the MPI Decision Tree "Aggressive" environmental conditions.

Comply with the following requirements when determining the appropriate paint or coating system from the MPI Decision Tree:

a. Some of these paint systems are identified with a "NAVFAC Anchor". This "NAVFAC Anchor" indicates the minimum performing system that NAVFAC will accept for that substrate and environmental conditions.

b. When multiple "NAVFAC Anchors" are indicated on a certain substrate and environmental condition, provide the "NAVFAC Anchor" paint or coating system that is most appropriate for the facility use.

c. If only one MPI Decision Tree choice is available for a certain substrate and environmental condition with no indicated NAVFAC preference, provide that sole option for NAVFAC projects.

d. If the MPI Decision Tree provides multiple choices and no NAVFAC preference is denoted, refer to the Additional RFP Requirements below to determine level of performance.

e. If the MPI Decision Tree does not identify all paint system applicable

to the facility, utilize the *MPI Architectural Painting, Exterior Systems Manual* to identify other appropriate paint systems for the project. Utilize the "Premium Grade" systems and comply with all limitations stated in the MPI "Approved Product List" for each paint product. Products having an MPI VOC Range E3 must be given preferential consideration over lower VOC Ranges. Use higher performing paint systems unless the lower performing paint system can be justified based on a lifecycle cost to include surface preparation, application, disposal, environmental impact, and required recoating cycles. Only use paint products that have been tested for MPI'S "DETAILED PERFORMANCE" or "EVALUATED PERFORMANCE ". Do not use products that have only been tested for "INTENDED USE".

f. If an "Aggressive" environmental condition option is not available in the MPI Decision Tree for a certain substrate, use the "Normal" environmental condition option.

g. Refer to the Additional Exterior Paint and Coating System Requirements below for further system requirements.

Paints and coatings must comply with Master Painters Institute Green Performance Standard GPS-1-12 which is available at the following website; http://www.specifygreen.com/EvrPerf/EnvironmentalPerformance.html . Choose paints that provide performance, are environmentally friendly, and that conform to EPA or local environmental regulations, whichever requires the lowest VOC content.

B201009 1.1.1 MPI Gloss Levels

Gloss levels must comply with the MPI system of determining gloss as defined in the Evaluation sections of the MPI Manuals. Utilize the performance characteristics of the paint gloss and sheen to categorize paint rather than manufacturers' description of the product. The MPI Gloss Levels are indicated by the notation G1, G2, G3, G4, G5, G6, or G7. Navy only uses MPI Gloss Levels G2, G3, G5, G6.

The MPI Decision Tree indicates a default gloss level for each paint system, however consider the appearance, anticipated conditions, and need for cleaning when establishing the final gloss level for each coated surface of the project. Comply with the following guidance in choosing the appropriate gloss level.

a. Use G2 "Velvet-like" Flat for ceilings, residential walls away from human contact and low traffic areas.

b. Use G3 "Eggshell-like" in high traffic areas for ceilings and walls, when human contact with the wall is limited, and for dark accent colors.

c. Use G5 Semigloss for walls, doors and trim for high durability and clean ability and when a surface is expected to have routine human contact.

d. Use G6 Gloss only in special situations such as for piping identification or special effects.

The MPI gloss and sheen standard values are per ASTM D523, and are as follows:

Gloss Level Number	Gloss@60 Degrees:	Sheen@85 Degrees
Gloss Level 1(G1)–Matte or Flat	Max.5 units:	Max.10 units
Gloss Level 2(G2)–"Velvet-like" Flat	Max. 10 units:	10-35 units
Gloss Level 3(G3)–"Eggshell-like"	Max. 10-25 units:	10-35 units
Gloss Level 4(G4)-"Satin-like	Max. 20-35 units:	Min. 35 units
Gloss Level 5(G5)-Semi-Gloss	35-70 units	
Gloss Level 6(G6)–Gloss	70-85 units	
Gloss Level 7(G7)–High Gloss	More than 85 units	

B201009 1.1.2 MPI System Designations and Table Abbreviations

The MPI coating system number description is found in either the *MPI Architectural Painting Specification Manual* or the *Maintenance Repainting Manual* and defined as an exterior system

a. EXT - MPI short-term designation for an exterior coating system on a new surface.

b. REX - the MPI short term designation for an exterior coating system used in repainting projects or over existing coating systems.

c. DSD - the MPI short-term designation for Degree of Surface **Degradation as defined in the Assessment sections in the *MPI*** *Maintenance Repainting Manual*. Degree of Surface Degradation designates the MPI Standard for description and appearance of existing condition of surfaces to be painted. This DSD classification is used to determine the proper surface preparation necessary for painting.

d. DFT – The short-term designation for dry film thickness. DFT is the minimum acceptable depth or thickness of a coating or system in the dry state. The maximum acceptable DFT is not more than 50% greater than the minimum acceptable DFT (example... DFT = 2 mils, maximum DFT = 3 mils). The DFT indicated in the paint systems below relate to new coatings - MPI INT. MPI RIN will be less than the indicated DFT.

e. Paint Systems Abbreviations: BF – block filler; C – clear coat; SP – spot primer ;P – primer coat; I – intermediate coat; T – topcoat; .

B201009 1.1.3 Surface Preparation

Comply with the "Exterior Surface Preparation" section of the *MPI Architectural Painting Specification Manual*or the Exterior Surface Preparation" section of the *MPI Maintenance Repainting Manual*. All suggestive language such as "may" or "should" are deleted from the

standard and "must" or "must" inserted in its place. Suggestive language such as "recommended" or "advisable" is deleted from the standard and "require" or "required" inserted in its place. The results of these wording substitutions change this document to required procedures. For surface preparation, determine a MPI DSD Assessment of each surface and comply with the MPI Surface Preparation Requirements relating to the assessments. Not withstanding MPI requirements, clean exterior ferrous metal that is exposed to weather conditions (wind, precipitation, solar degradation, and humidity) to a SSPC SP 10 level (near white).

Remove dirt, splinters, loose particles, grease, oil, and other foreign matter and substances deleterious to coating performance as specified for each substrate before application of paint or surface treatments. For existing buildings, use MPI *Maintenance Repainting Manual* to determine the coatings that need to be removed. Remove deteriorated or loose coatings before repainting begins. Oil and grease must be removed prior to mechanical cleaning. Cleaning must be programmed so that dust and other contaminants will not fall on wet, newly painted surfaces. Exposed ferrous metals such as nail heads on or in contact with surfaces to be painted with water-thinned paints, must be spot-primed with a suitable corrosion-inhibitive primer capable of preventing flash rusting and compatible with the coating specified for the adjacent areas.

B201009 1.2 EXTERIOR CONCRETE FINISHES

New and Existing, previously painted concrete, vertical surfaces, undersides of balconies and soffits, but excluding tops of slabs:

a. Latex, System DFT: 3.5 mils

1) MPI EXT 3.1K/ REX 3.1L-G2 (Flat)/; P: MPI 3, I: MPI 10, T: MPI 10

2) MPI EXT 3.1K/ REX 3.1L-G3/G4 (Low sheen); P: MPI 3, I: MPI 15, T: MPI 15

New and Existing, previously painted concrete floors, patios, and walkways with low contact and traffic. Not for high abuse, wheel traffic, or high humid area applications:

a. Latex, System DFT: 3.5 mils

1) MPI EXT/ REX 3.2A-G2/G3 (Low gloss); P: MPI 60, I: MPI 60, T: MPI 60

B201009 1.3 EXTERIOR CONCRETE MASONRY FINISHES

New and Existing, previously painted concrete masonry:

a. Latex, System DFT: 11 mils

1) MPI EXT/REX 4.2A-G2 (Flat); BF:MPI 4, P:MPI 10, I:MPI 10, T: MPI 10

2) MPI EXT 4.2A-G3/G4 (Low sheen) / REX 4.2-G5; BF:MPI 4, P:MPI 15, I: MPI 15, T: MPI 15

B201009 1.4 EXTERIOR METAL FINISHES

B201009 1.4.1 New Steel that has been hand or power tool cleaned to SSPC SP 2 or SP 3:

a. Alkyd, System DFT: 5.25 mils

1) MPI EXT 5.1Q-G5 (Semigloss)/REX 5.1D-G5; P:MPI 23, I:MPI 94, T:MPI 94

B201009 1.4.2 New Steel that has been blast cleaned to SSPC SP 6:

a. Alkyd, System DFT: 5.25 mils

1) MPI EXT/ REX 5.1D-G5 (Semigloss); P:MPI 79, I:MPI 94, T:MPI 94

B201009 1.4.3 New and existing steel that has been blast cleaned to SSPC SP 10:

a. Waterborne Light Industrial, System DFT: 8.5 mils

1) MPI EXT 5.1R-G5 (Semigloss); P:MPI 101, I:MPI 108, T:MPI 163

B201009 1.4.4 New Galvanized surfaces:

a. Epoxy P/Waterborne Light Industrial, System DFT: 4.5 mils

1) MPI EXT 5.3K-G5 (Semigloss); C:MPI 25, P:MPI 101, I:MPI 161, T:MPI 161

B201009 1.4.5 Galvanized surfaces with slight coating deterioration, with little or no rusting:

a. Epoxy P/Waterborne Light Industrial Coating, System DFT: 4.5 mils

1) MPI EXT 5.3K-G5 (Semigloss); C:MPI 25, P:MPI 101, I:N/A, T:MPI 163

B201009 1.4.6 Galvanized surfaces with severely deteriorated coating or rusting:

a. Epoxy P/Waterborne Light Industrial Coating, System DFT: 8.5 mils

1) MPI EXT 5.3K-G5 (Semigloss); C:MPI 25, P:MPI 101, I:MPI 163, T:MPI 163

B201009 1.5 EXTERIOR WOOD FINISHES

B201009 1.5.1 New and existing uncoated, dressed lumber or plywood, including backprime, top, bottom, and edges of doors not specified otherwise:

a. Alkyd, System DFT: 5 mils

1) MPI EXT 6.3B-G5 (Semigloss); P:MPI 7, I:MPI 94, T:MPI 94

b. Latex, System DFT: 5 mils (Not for human or abrasive contact areas)

1) MPI EXT 6.3A-G5 (Semigloss); P:MPI 7, I:MPI 11, T:MPI 11

B201009 1.5.2 Existing dressed lumber or plywood, including top, bottom, and edges of doors previously coated with an alkyd / oil based finish:

a. Alkyd, System DFT: 5 mils

1) MPI REX 6.3B-G5 (Semigloss); P:MPI 5, I:MPI 94, T:MPI 94

b. Latex, System DFT: 5 mils (Not for human or abrasive contact areas)

1) MPI REX 6.3A-G5 (Semigloss); P:MPI 5, I:MPI 11, T:MPI 11

B201009 1.5.3 Existing dressed lumber or plywood, including top, bottom, and edges of doors previously coated with an latex / waterborne finish:

a. Latex, System DFT: 4.5 mils

1) MPI REX 6.3L-G5 (Semigloss); P:MPI 6, I:MPI 11, T:MPI 11

B201009 1.5.4 New and existing dressed lumber or plywood, including stairs and decks:

a. Latex, System DFT: 4.5 mils(not for use in high traffic areas)

1) MPI REX 6.5A-G5/G6 (Low Gloss); P:MPI 5, I:MPI 60, T:MPI 60

B201009 1.6 EXTERIOR STUCCO FINISHES

B201009 1.6.1 New and existing stucco or plaster:

a. Latex, System DFT: 4.5 mils

1) MPI EXT/REX 9.1J-G3/G4 (Low sheen); P:MPI 3, I:MPI 15, T:MPI 15

2) MPI EXT/REX 9.1J-G5 (Semigloss); P:MPI 3, I:MPI 11, T:MPI 11

B201009 1.7 ADDITIONAL EXTERIOR PAINT AND COATING SYSTEM REQUIREMENTS

In addition to the MPI Decision Tree, comply with the following paint system requirements:

B201009 1.7.1 Pavement Coatings

a. EXT 3.2 Concrete Horizontal Surfaces

Normal/ Aggressive Condition; Pigmented;

Provide road and parking lot pavement marking in accordance with UFGS 32 17 23.00 20, *Pavement Markings.*

b. EXT 10.2 Bituminous Coated Surfaces

Normal/ Aggressive Condition; Pigmented;

Provide road and parking lot pavement marking in accordance with UFGS 32 17 23.00 20, *Pavement Markings.*

B201009 1.7.2 Hot Metal Surfaces (including smokestacks),

a. EXT 5.2 Hot Metal, Up to 205 degrees C 400 degrees F

Normal/ Aggressive Condition; Pigmanted

(1) EXT 5.2A - Heat Resistant Enamel

Primer: Intermediate/ Topcoat:

MPI 21 Surface Preparation and numbers of coats per manufacturers' instructions.

b. EXT 5.2 Hot Metal (Ferrous), Up to 400 degree C, 750 degree F

Normal/ Aggressive Condition; Pigmented;

(1) 5.2C - Heat resistant - inorganic zinc coating

Primer: Intermediate/ Topcoat:

MPI 19 Surface Preparation and numbers of coats per manufacturers' instructions.

(2) 5.2B - Heat resistant - aluminum finish enamel

Primer: Intermediate/ Topcoat:

MPI 2 Surface Preparation and numbers of coats per manufacturers' instructions.

c. EXT 5.2 Hot Metal (Non-Ferrous), Up to 593 degree C, 1100 degree F

Normal/ Aggressive Condition; Pigmented

(1) 5.2D - Heat Resistant Coating

New and existing surfaces cleaned bare to SSPC SP 10/NACE No. 2

Primer: Intermediate/ Topcoat:

MPI 22 Surface Preparation and numbers of coats per manufacturers' instructions.

B201010 EXTERIOR JOINT SEALANT

Sealant joint design, priming, tooling, masking, cleaning and application must be in accordance with the general requirements of *Sealants: A Professionals' Guide* from the Sealant, Waterproofing & Restoration Institute (SWRI). All sealant must conform to ASTM C 920.

Joints must include proper backing material for sealant support during application, control of sealant depth, and to act as a bond breaker. Use filler boards, backer rods and bond breaker tapes. Provide priming unless specifically not recommended by the sealant manufacturer. Applied sealant must be tooled. Tooling must not compact sealant too less than the minimum sealant thickness required. Mask adjacent surfaces to control sealant boundaries during sealant application.

B201011 SUN CONTROL DEVICES (EXTERIOR)

Sun control devices must be manufactured devices to provide sun control on exterior windows and storefronts. Sun control devices must be designed and installed to withstand the wind loads prevailing at the project site.

B201011 1.1 EXTERIOR SUN SCREENS

Exterior sun screens must be of aluminum with 6063-T5/T6 aluminum demountable frame attachment. Screen material must be formed factory finished metal from aluminum sheet per ASTM B 209. Screen material must be factory finished coating in accordance with AAMA 2605 with a minimum coating thickness of 1.2 mils. Sunscreen must be awning, fin or other type appropriate to the installation.

B201012 SCREEN WALL

Screen walls include attached or unattached walls adjacent to the main building. Screen walls must conform to the applicable portions of Section B201001 EXTERIOR CLOSURE.

B201090 OTHER EXTERIOR WALLS

B2020 EXTERIOR WINDOWS

Standard windows must be in compliance with ANSI/AAMA/WDMA 101, SWI SWS, UFC 4-010-01, and the design criteria of ASCE 7 for glazed windows to meet the Building Code.

If required, provide windows that meet the requirements of AAMA/WDMA 101/I.S.2. Residential construction must utilize windows that comply with AAMA LC-25 designation unless the wind pressure on the building exceeds 38 psf (185 Kg/m^2). Commercial (non-residential) construction must utilize windows that comply with AAMA designation HC-40 (60 psf - 293 Kg/m^2) for windows that do not have to meet anti-terrorism requirements, and HC-60 (90 psf - 439 Kg/m^2) for commercial windows that are required to meet anti-terrorism requirements, unless the wind pressure or blast pressure on the building exceeds the design pressure for these minimum windows. Determine the wind pressure on the building by converting the ASCE-7 basic wind speed to wind pressure and find the corresponding structural test pressure

in the AAMA specific requirements or optional performance tables. If the residential window wind pressure exceeds of 38 psf (185 Kg/m^2) or the commercial (non-residential) window wind pressure exceeds 60 psf (293 Kg/m^2) or exceeds 90 psf (439 Kg/m^2), utilize a higher AAMA designated window complying with the calculated wind pressure. Anti- Terrorism window systems (including connections) must meet the testing requirements of UFC 4-010-01 when tested in accordance with ASTM F1642.

Comply with ASTM E 2112 and with flashing and weather-resistive barrier manufacturers' recommendations to install windows in framed wall construction. Comply with window flashing details from BIA for masonry back-up and veneer walls. Engineer and install window cleaning access and anchorage to the exterior wall for facilities over three stories tall without interior window cleaning access from pivoting or tilting sash. Provide anchors in accordance with OSHA standard 29 CFR Section 1910.66.

Windows must be provided with sills on the exterior and stools on the interior of the opening. Sills must be special shape or cut unit masonry or precast concrete in masonry exterior construction and extruded aluminum or aluminum-wrapped wood framing or formed metal in other construction. Positively slope sills away from windows. Window stools must be slate or solid polymer for commercial construction and painted wood for residential construction.

B202001 WINDOWS

Exterior windows must consist of fixed and operable sash used singly and in multiples. Provide operable sash in spaces occupied by people as a minimum. Include operating hardware, non-corroding framed metal screens for operable sash, integrated blinds set between glass panels and security grilles. Provide jamb support for larger windows where recommended by manufacturer. Metal windows with insulating glass must have thermally broken frames and sash. Provide thermally broken windows and window assemblies where separating conditioned and unconditioned spaces. Provide windows and window assemblies that bear an NFRC energy performance label and meet or exceed current EnergyStar requirements.

Provide glazing in exterior windows in accordance with section B202004 EXTERIOR GLAZING.

B202001 1.1 STANDARD WINDOW SYSTEMS

B202001 1.1.1 Steel Windows

Conform to SWI SWS. Solid hot-rolled steel shape welded frames and mullions. Provide chemically cleaned and primed galvanized frames with polysteel powder coat finish. Provide glazing beads, steel frame screens with aluminum mesh at operable sashes, hardware and locks, and tinted glazing. Aluminum screens must comply with ANSI/SMA 1004.

B202001 1.1.2 Aluminum Windows

Conform to ANSI/AAMA/WDMA 101. Factory finish aluminum windows and provide with aluminum frame screens with aluminum mesh at operable

sash, hardware and locks, and tinted glazing. Aluminum screens must comply with ANSI/SMA 1004.

Exposed aluminum surfaces must be factory finished with an AA 45 anodic coating or an AAMA organic coating. Provide a minimum of architectural Class II anodized coating or a baked enamel finish conforming to AAMA 2604 for residential construction. Provide a minimum of architectural Class I anodized coating or a high-performance organic coating conforming to AAMA 2605 for non-residential (commercial) construction. AAMA coatings must have a total dry film thickness of 1.2 mils.

B202001 1.1.3 Security Windows

Security windows delay forced entry into the building through the windows. In addition to meeting the requirements of AAMA 101, windows designated “resistance to forced entry” must conform to the requirements of AAMA 1302.

B202002 STOREFRONTS

Provide one-story storefront system fabricated from formed and extruded aluminum and glass components for exterior use.

B202002 1.1 ALUMINUM-FRAMED STOREFRONTS

B202002 1.1.1 Performance Requirements

a. Structural Requirements, as measured in accordance with ANSI/ASTM E330: Wind loads for exterior assemblies must meet or exceed 25 psf (122 Kg/m2) acting inward and 25 psf (122 Kg/m2) acting outward. Design system to withstand this as a minimum and comply with design pressure established within the required ASCE 7-05 Wind Speed Calculations determined by the overall average opening within the project.

b. Deflection: Maximum calculated deflection of any framing member in direction normal to plane of wall when subjected to specified design pressures for spans up to and including 13’-6” must be limited to 1/175 of its clear span and for spans greater than 13’-6” deflection must be limited to 1/240 + 1/4” of its clear span, except that maximum deflection of members supporting plaster surfaces must not exceed 1/360 of its span.

c. Air Infiltration - Air leakage through fixed light areas of storefront must not exceed 0.06 cfm per square foot of surface area when tested in accordance with ASTM E283 at differential static pressure of 6.24 psf (33.84 Kg/m2).

d. Water Penetration - When tested in accordance with ASTM E 331, there must be no water penetration at a pressure of 15 psf (73 Kg/m^2) of fixed area.

e. Water infiltration No uncontrolled leakage when tested in accordance with ASTM E331 at test pressure of 10 psf (48 Kg/m2) for system standard and capable of performing within the Design Pressure requirements derived from the ASCE 7-05 requirements.

f. Provide storefront framing and glazing assembly with an overall thermal transmittance value of not more than 0.40 BTU/hr x ft2 x deg F as determined according to NFRC 100.

B202002 1.1.2 Doors And Frames

Provide doors complete with frames, framing members, subframes, transoms, adjoining sidelights, adjoining window wall, trim, and accessories, as required for a complete installation. Anchors must be stainless steel. Weatherstripping must be Continuous wool pile, silicone treated, or type recommended by door manufacturer. See B203008, EXTERIOR DOOR HARDWARE for hardware requirements.

B202002 1.1.3 Aluminum Alloy for Doors and Frames

ASTM B 221, Alloy 6063-T6 for extrusions. ASTM B 209, alloy and temper best suited for aluminum sheets and strips.

B202002 1.1.4 Fabrication

a. Aluminum Frames: Provide removable glass stops and glazing beads for frames accommodating fixed glass. Use countersunk stainless steel Phillips screws for exposed fastenings, and space not more than 12 inches (300 mm) o.c.. Mill joints in frame members to a hairline fit, reinforce, and secure mechanically.

b. Aluminum Doors: Doors must be medium or wide stile. Doors must be not less than 1-3/4 inches (44 mm) thick. Minimum wall thickness, 0.125 inch (3.175 mm), except beads and trim, 0.050 inch (1.27 mm). Bevel single-acting doors at lock, hinge, and meeting stile edges. Double-acting doors must have rounded edges at hinge stile, lock stile, and meeting stile edges.

c. Finishes: Provide exposed aluminum surfaces with factory finish of anodic coating conforming to AA45, Architectural Class I or an organic coating conforming to AAMA 2605 with a total dry film thickness of not less than 1.2 mils.

B202004 EXTERIOR GLAZING

Provide setting and sealing materials, stops and gaskets as recommended by the glass or acrylic sheet manufacturer.

Provide warranty for insulating glass units for a period of 10 years against development of material obstruction to vision (such as dust or film formation on the inner glass surfaces) caused by failure of the hermetic seal, other than through glass breakage. The Contractor must require the glazing warranty for curtain wall glazing to be written directly to the Government.

Provide warranty for polycarbonate sheet glazing for a period of 5-years against breakage, coating delamination, and yellowing.

Glazing thickness indicated in the following paragraphs is the minimum acceptable thickness. Provide thicker glazing if required by the manufacturer for the given application.

B202004 1.1 GLASS

B202004 1.1.1 Clear Glass

Type I, Class 1 (clear), Quality q4 (A).

B202004 1.1.2 Heat-Absorbing Glass

ASTM 1036, Type I, Class 2 (heat absorbing and light reducing), Quality q3 (select), 1/4 inch (6 mm) thick, with a light transmittance of approximately 45 percent and total solar transmittance of not more than 50 percent for 1/4 inch (6 mm) thickness. Use warm color tint for warm color frames and cool color tints for white and gray frames.

B202004 1.1.3 Wire Glass

Type II, Class 1, Form 1, Quality q8 Mesh m1 or Form 2, Quality q7, Finish f1, Mesh m1, 1/4 inch (6 mm) thick. Conform to NFPA 80. Glass for fire-rated windows must be UL listed and must be rated when tested in accordance with ASTM E 163.

B202004 1.1.4 Laminated Glass

ASTM 1172, fabricated from two pieces of Type I, Class 1, Quality q3 glass laminated together with a clear 0.030 inch (0.75 mm) thick polyvinyl butyral interlayer. The total thickness must be nominally 1/4 inch (6 mm). Laminated glass used for anti-terrorism window assemblies must be a minimum of 1/4 inch (6 mm) thickness.

B202004 1.1.5 Insulating Glass Units

Provide insulated glass using a combination of the interior and exterior glazing materials listed below filled with a thermal resistive gas. The air space must be sized to meet the thermal requirements below but not less than one half inch(12 mm) for non-residential construction and one quarter inch(6 mm) minimum for residential construction.

Provide active solar control glazing by using tinting, maximum thermal resistance, special coatings to meet Energy Star climate zone and window type requirements(including frames), and comply with the performance characteristics below. Provide an active low-emissivity coating on glass surface number 2 (the inside surface of the exterior glass pane).

If the building is located in a heat dominated climate zone, the facility is designed to utilize solar heat gain to augment the HVAC system, and the window overhang design prohibits excessive solar gain; a passive low-emissivity coating may be used to accommodate the design. Occupied spaces adjoining passive low-emissivity coated glass must be designed for comfortable use of the space.

Provide two panes of glass separated by a dehydrated airspace and hermetically sealed. Dimensional tolerances must be as specified in IGMA TR-1200. The units must conform to ASTM E 773 and ASTM E 774, Class A. Provide primary seal, secondary seal, and spacers to eliminate

moisture and hydrocarbon vapor transmission into airspace. Warranty insulating glass units against development of material obstruction to vision (such as dust, fogging, or film formation on the inner glass surfaces) caused by failure of the hermetic seal for a 10-year period following acceptance of the work.

The interior glass pane must be one of the following:

1. Typically ASTM C 1036, Type I, Class 1, Quality q4, minimum 1/4 inch (6 mm) thick;
2. ASTM C 1048, Grade B (fully tempered), Style I (uncoated), Type I, Class 1 (transparent), Quality q4, minimum 1/4 inch (6 mm) thick when required by ANSI Z97.1 or possible human impact is anticipated;
3. ASTM C 1172, laminated glass as specified above, when required by antiterrorism requirements.

The exterior glass pane must be one of the following:

1. Typically ASTM C 1036, Type I, Class 2 (tinted heat absorbing or reflective), Quality q4, minimum 1/4 inch (6 mm) thick;
2. ASTM C 1048, Grade B (fully tempered), Style I (uncoated), Type I, Class 2 (tinted heat absorbing or reflective), Quality q4, minimum 1/4 inch (6 mm) thick when required by ANSI Z97.1 or possible human impact is anticipated.

Insulating glass performance for active solar control using low-emissivity coatings:

1. Visible Light Transmission, 66% or lower

2. Outdoor Light Reflectance, 11% or greater

3. Solar Heat Gain Coefficient, .36 or lower

4. Winter U-Value, .35 Btu/square foot x hr x degree F or lower for residential construction and .29 Btu/square foot x hr x degree F or lower for all other types of construction.

B202004 1.1.6 Tempered Glass

ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated), Type I, Class 1 (transparent) or 2 (tinted heat absorbing, Quality q3, 1/4 inch (6 mm) thick.

B202004 1.1.7 Bullet-Resisting Glass

ASTM 1172 and UL 752, fabricated from Type I, Class 1, Quality q3 glass with polyvinyl butyral plastic interlayers between the layers of glass and listed by UL ABPMED as bullet resisting, with a power rating of Medium--Small Arms, High--Small Arms, Super--Small Arms, High—Rifle, or as required by the building program in accordance with UL 752.

B202004 1.1.8 Patterned Glass

ASTM 1036, Type II, Class 1 (translucent), Form 3 (patterned), Quality q7 (decorative), Finish f1 (patterned one side), Pattern p2 (geometric) 7/32 inch (5.55 mm) thick.

B202004 1.1.9 Spandrel Glass

ASTM C 1048, Kind HS or FT, Condition B (ceramic coated), Type I, Quality q5, 1/4 inch (6 mm) thick.

B202004 1.1.10 Spandrel Glass with Adhered Backing

ASTM C 1048, Kind HS or FT, Condition B (ceramic coated), Type I, Quality q5, 1/4 inch (6 mm) thick and must pass the fallout resistance test specified in ASTM C 1048.

B202004 1.2 PLASTIC GLAZING

All plastic glazing exposed to the interior or exterior environment must have an applied hardcoat.

B202004 1.2.1 Bullet-Resistant Plastic Sheet

Provide cast acrylic sheet or mar-resistant polycarbonate sheet laminated with a special interlayer, and listed in UL 752 as bullet resisting, Class I, II, III, clear, or in color.

B202004 1.2.2 Acrylic Sheet Glazing

ASTM D 4802, Type I, regular, Type II, heat resistant, in various thicknesses, clear or colored.

B202004 1.2.3 Polycarbonate Sheet Glazing

ASTM D 3595, ANSI Z97.1, Mar-resistant, Clear and smooth both sides when used for vision glazing; Translucent, textured both sides when used for obscure glazing, tint to match frame, ultraviolet stabilized, thickness to be specified in mm and inches, and listed in UL ABPMED as burglar resisting. Mar-resistant sheet must have a change in haze of between 5 and 8 percent under silica carbide test, 56.44 ounces (1600 grams), ASTM D 673.

B202004 1.3 FRAGMENT RETENTION FILM FOR GLAZING

Existing windows that will not be replaced in the project must have fragment retention film if they require antiterrorism protection. The film must be polyester, polyethylene terephthalate, or a composite. Fragment retention film must be optically clear and free of waves, distortions, impurities, and adhesive lines. The film may be a single layer or laminated. Lamination of the film must only occur at the factory of the fragment retention film manufacturer. The film must include an abrasion resistant coating on the surface that does not receive the film adhesive. Fragment retention film must be a minimum thickness of 0.004 inch (0.1016 mm), or 0.007 inch (0.1778 mm), or 0.010 inch (0.254 mm). The film must be supplied with an optically clear weatherable pressure sensitive adhesive. The adhesive must contain ultraviolet inhibitors to

protect the film for its required life and must limit ultraviolet transmission to not more than 8 percent of the radiation between 300 and 380 nanometers. The adhesive must not be water activated. A water-soluble detackifier or release liner may be incorporated over the adhesive to facilitate film application. The adhesive must be 90 percent cured within 30 days of installation. Adhesives on film thicknesses of 0.010 inch (0.254 mm) and greater must be a minimum of 0.0008 inch (0.02032 mm) thick.

B202090 OTHER EXTERIOR WINDOWS

B202090 1.1 OPERABLE TRAY PASS WINDOWS

Frames and glass channels must be of heavy type 6063-TS aluminum extrusions with reinforcing as required. Include bullet-resistant glazing and heavy-duty operable pass tray. Unit must have a minimum of architectural Class I anodized coating or a high-performance organic coating conforming to AAMA 2605. AAMA coatings must have a total dry film thickness of 1.2 mils.

B2030 EXTERIOR DOORS

Exterior doors must be heavy duty insulated steel doors and frames for service access. Door frames must be welded. Corner knockdown door frames are not permitted.

Use heavy-duty overhead holder and closer to protect doors from wind damage. Provide kickplates on the inside face of all exterior doors.

Weather-protect all exterior doors and related construction with low infiltration weatherstripping and sealants. Provide threshold with offset to stop water penetration while maintaining accessibility compliance.

Conform to the design criteria of ASCE 7.

See section B203008, EXTERIOR DOOR HARDWARE, for door hardware requirements. For all installations, provide a recessed key box (Knox Box) approximately 7 inches x 7 inches (175 mm x 175 mm) with 4-3/4 inches (120 mm) solid steel door at primary exterior entry for storage of keys and access cards accessible by the fire department.

B203001 SOLID DOORS

B203001 1.1 STEEL DOORS

Hardware preparation must be in accordance with ANSI A250.6. Doors must be hung in accordance with ANSI A115.16.

B203001 1.1.1 Steel Doors

Steel doors must be ANSI A250.8, Level 4, exterior, main entry doors, with a physical performance level of, Model 1 or 2.

Doors may be specified to be insulated. Door selection must be specified in the project program according to the following:

a. Standard Duty Doors - Level 1, physical performance Level C, Model [1] [2]

b. Heavy Duty Doors - physical performance Level B, Model [1] [2]

c. Extra Heavy Duty Doors – ANSI A250.8, Level 3, physical performance Level A, Model [1] [2] [3]

d. Maximum Duty Doors – ANSI A250.8, Level 4, physical performance Level A, Model [1] [2]

B203001 1.1.2 Residential Insulated Steel Entry Door Systems

Insulated steel doors and frames must be provided for residential construction with a core of polyurethane foam and an R factor of 10.0 or more (based on a k value of 0.16). Face sheets, edges, and frames of galvanized steel not lighter than 23 gage thick (0.7 mm) for paneled door faces, or 16 gage thick (1.5 mm) for solid doors, with vinyl door bottom flashing. Frames must be a minimum 16 gage thick (1.5 mm) respectively; with magnetic weatherstripping; nonremovable-pin hinges; thermal-break aluminum threshold. Doors and frames must receive phosphate treatment, rust-inhibitive primer, and baked acrylic enamel finish. Doors must have been tested in accordance with ANSI A250.4 and must have met the requirements for Level C. Prepare doors to receive specified hardware. Doors must be 1-3/4 inch (44.5 mm) thick.

B203001 1.1.3 Insulation Cores

Insulated cores must be of type specified, and provide an apparent U-factor of .48 in accordance with SDI 113 and must conform to:

a) Rigid Polyurethane Foam: ASTM C591, Type 1 or 2, foamed-in-place or in board form, with oxygen index of not less than 22 percent when tested in accordance with ASTM D2863; or

b) Rigid Polystyrene Foam Board: ASTM C578, Type I or II; or

c) Mineral board: ASTM C612, Type I.

B203001 1.1.4 Accessories

a) Louvers must comply with SDI 111-C, must be stationary, sight-proof type. Use lightproof louvers if function of room requires darkness. Louver frames must be 20-gage steel with louver blades minimum 24 gage.

b) Astragals: For pairs of exterior steel doors that will not have aluminum astragals or removable mullions, provide overlapping steel astragals with the doors.

c) Moldings: Provide moldings around glass of exterior doors and louvers. Provide non-removable moldings on outside of exterior doors. Secure inside moldings to stationary moldings, or provide snap-on moldings. Muntins must interlock at intersections and must be fitted and welded to stationary moldings.

B203001 1.1.5 Standard Steel Frames

ANSI A 250.8. Form frames with welded corners for installation in exterior walls. Form stops and beads of 20 gage steel. Frames must be set in accordance with ASTM A250.11.

B203001 1.1.6 Anchors

Anchor all frames with a minimum of three jamb anchors and base steel anchors per frame, zinc-coated or painted with rust-inhibitive paint, not lighter than 18 gage. Mortar infill frames in masonry walls, and infill with gypsum board compound at each jamb anchor in metal frame walls. Only use surface exposed bolted anchors in concrete walls.

B203001 1.1.7 Finishes

a) Exterior Doors, Factory-Primed and Field Painted Finish - Doors and frames must be factory primed with a rust inhibitive coating as specified in ANSI A250.8. Factory prime doors on six sides of the door. Manufacturer’s primer and field painting must be compatible with finish system in the paragraph “EXTERIOR PAINTING AND SPECIAL COATINGS”.

b) Exterior Doors Galvanized Finish -- Must be Commercial Quality, Coating Class A, zinc coating in accordance with ASTM A 591 when facility is located further than 300 feet (91 meters) from the ocean. When facility is located within 300 feet (91 meters) of the ocean, provide G60 galvanized coating in accordance with ASTM A 924/A 924M and ASTM A 653/A 653M.

B203002 GLAZED DOORS

B203002 1.1 ALUMINUM GLAZED DOORS

See B202002 STOREFRONTS, paragraph titled, “Doors and Frames.”

B203004 OVERHEAD ROLL-UP AND OVERHEAD SECTIONAL DOORS

Refer to RFP PART 3, Chapter 6 for project specific exterior overhead sectional and roll-up doors system requirements. Large exterior overhead and roll-up doors system must consist of manual or automatic exterior doors and door assemblies. Do not use roll-up doors on exterior walls of conditioned spaces.

B203004 1.1 OVERHEAD ROLL-UP DOORS

Provide overhead doors in accordance with Door and Access Systems Association International (DASMA) requirements. Overhead roll-up doors must conform to ANSI/ DASMA 207. Provide overhead roll-up doors with minimum 22 gage thermal insulated slats, however use door weight, pressure, and width to determine if a heavier gauge slat is required. Electric operators must have protected 3-button switches conforming to NEMA MG 1, NEMA ICS 1, and NEMA ICS 2, and auxiliary hand chain operation, weather-stripping and wind-locks. Galvanize door and sheet metal components in accordance with ASTM A653. Apply painted coat required in RFP Part 3, Chapter 6, over the galvanizing to all components directly exposed to the weather.

Doors must be capable of withstanding the design wind loading of ASCE 7 and still operate normally. Finish of the door must be hot-dipped galvanized with a painted finish.

B203004 1.2 OVERHEAD SECTIONAL DOORS

Provide overhead doors in accordance with Door and Access Systems Association International (DASMA) requirements. Overhead sectional doors must conform to ANSI/DASMA 102 Completely close the door opening in the closed position and make the full width and height of the door opening available for use in the open position. Provide a 3 inch (75 mm) track when required by manufacturers standards, or design pressure and forces on the door, or if the door is equal to or greater than 16 feet (4877 mm) high or wide. Design door storage to allow full use of the space around the door for the activities required in the space. Provide a minimum of 16 inches (400 mm) of headroom for 2 inch (50 mm) tracks, 21 inches (525 mm) of headroom for 3 inch (75 mm) tracks, or a high lift type or vertical lift type. If motorized, provide limit switches to automatically stop doors at the fully open and closed positions. Provide readily adjustable limit switch positions.

Doors must be capable of withstanding the design wind loading of ASCE 7. Doors must remain operable and undamaged after conclusion of tests conducted in accordance with ASTM E 330 using the design wind load. Form door sections of hot-dipped galvanized steel not lighter than 16 gage with flush surface without ribs or grooves. Sections must be not less than 2 inches (50 mm) in thickness. Insulate door sections with fibrous glass or plastic foam to provide a "U" factor of 0.14 or less when tested in accordance with ASTM C 236. Cover interior of door sections with steel sheets of not lighter than 24 gage to completely enclose the insulating material. Provide galvanized steel tracks not lighter than 14 gage for 2 inch (50 mm) tracks and not lighter than 12 gage for 3 inch (75 mm) track. Provide a positive locking device and cylinder lock with two keys on manually operated doors. Form aluminum door panels of 0.050 inch (1.3 mm) sheet aluminum and styles and rails of 6063-T6 aluminum. Galvanize door and steel sheet metal components in accordance with ASTM A653.

B203004 1.3 OVERHEAD DOOR FINISH

Finish steel door and components with hot dipped galvanized coating and apply a baked-on primer and topcoat painted finish. If powder coat finish is required in RFP Part 3, Chapter 6, painted system must conform to the following requirements;

a. Outgas Forgiving Primer

b. Film Thickness per ISO 2360 - 2.5-3.5 mils (60-80 Î¼m)

c. Mandrel Bending Test per ASTM D522 - 1/8 inches (3mm)

d. Impact Test per ASTM D2794 - Up to 80 in/lb. Cracking at the perimeter of the concave area

but no cracking pick off

e. Pencil Hardness per ASTM D3363 - 2H minimum.

f. Color Change per ASTM D2244 - â‰¤Î”Îµ 5.0 (Hunter)

g. Gloss Retention per ASTM D523 - >80%

h. Salt Spray Test per ASTM B117 - 3000 hours

B203005 HANGAR DOORS

DOR utilize UFGS Specification Section 08 34 16.10, *Steel Sliding Hangar Doors*, or Specification Section 08 34 16.20, *Vertical Lift Fabric Doors,* for the project specification submittal for the project. Refer to the Project Program for which type of hanger door is used on this project.

B203006 EXTERIOR DOOR HARDWARE

Provide the services of an Architectural Hardware Consultant(AHC), Certified Door Consultant(CDC), or an Electrified Hardware Consultant(EHC) to assist the Designer of Record in preparation of the door hardware schedule and product selection. The hardware consultant must sign and seal the door hardware construction submittal. Provide, as far as possible, door hardware of one manufacturer’s make. All hardware must be clearly and permanently marked by the manufacturer where it will be visible after installation.

B203006 1.1 HINGES

BHMA A156.1, size to match door size, but in no case less than 4-1/2 x 4-1/2 inches (114 mm x 114 mm), with non-removable pin and anti-friction bearing hinges. Use two hinges for doors 60 inches (1500 mm) or less in height and one additional hinge for each additional 30 inches (750 mm), or fraction thereof, in door height.

B203006 1.2 PIVOTS

BHMA A156.4.

B203006 1.3 LOCKS AND LATCHES

Commercial (all construction except family housing) buildings locks and latches must be BHMA A 156.13, Series 1000, Operational Grade 1, Security Grade 2 for exterior building entrances and other high-use doors not requiring exit devices. Use BHMA A 156.2, Series 4000, Grade 1 for all Commercial buildings locks and latches not using Series 1000 hardware.

For Residential (family housing) projects, use Series 4000, Grade 2 hardware.

B203006 1.3.1 Combination Locks for Sensitive Areas and Vault Doors

If required for exterior use, see C102007 1.1.6 “Combination Locks” for the specification. This installation may require special weather protection.

B203006 1.3.2 Pushbutton Combination Locks

Where required, provide a heavy-duty, mechanical combination lockset with 5 pushbuttons, standard-sized knob or lever, 3/4 inch (19 mm) deadlocking latch with 2-3/4 inch (70 mm) back-set. Provide deadbolt key override option. Safelock, Simplex, and Venn are acceptable manufacturers. Provide a hardware grade equivalent to Grade 1, series 4000. Include a 5-year parts and labor warranty.

B203006 1.4 CARD KEY SYSTEM

Where required, provide card key type access units. Provide lithium battery powered, magnetic stripe keycard locksets that are ANSI/BHMA A156.13, Series 1000, Grade 1, mortise or ANSI/BHMA A156.2, Series 4000, Grade 1, cylindrical locks, tamper resistant, UL listed with 1 inch (25 mm) throw deadbolt, 3/4-inch (19 mm) throw latch bolt, auxiliary deadlocking latch, and 2-3/4 inch (68.75 mm) backset. The latch bolt and the dead bolt must be operated simultaneously by rotating inside lever. Locks with mechanical override lock cylinders are not acceptable. Locks must be operated only by a correctly encoded keycard. Use of a newly issued keycard automatically re-keys the lock and voids the previous keycard. The lock must re-lock immediately after outside lever is turned and latch retracted. Locks must have memory that is capable of recording up to 140 entries into each room, identification of the keycard used to access the room, the date and time of entry. Entry information of the lock must be retrievable by a data key that can be inserted into the lock and then taken to the front desk printer to display information. Other components that are required for this system at the front desk are a personal or laptop computer, printer and encoder to program each key.

For exit device locks with card key access, provide mortise type, narrow stile exit devices with 24 volt DC, solenoid option for card key exterior access at aluminum storefront doors. Provide mortise type exit devices with 24 volt DC, solenoid option with alarm and remote exterior access for card key access at insulated hollow metal doors. The alarmed exit device must sound when exiting only.

System must be capable of accepting a minimum of 12 keycard access levels, security auditing and computer interfacing with existing installations management system. Provide a single point of contact customer service representative accessible by telephone with a 10-digit telephone number without additional dialing hierarchies except that a maximum 4-digit extension is permissible. On-site service must be provided within 3 hours from request within the first 12 months of occupancy. Provide a 5-year parts and labor warranty.

B203006 1.5 EXIT DEVICES

BHMA A 156.3, Grade 1. Provide on exit doors if it is anticipated that more than 50 people may use a particular door in an emergency exit situation. Touch bars must be provided in lieu of conventional crossbars and arms. Use manufacturer’s integral touch bars in aluminum storefront doors.

B203006 1.6 EXIT LOCKS WITH ALARM

BHMA A 156.5.

B203006 1.7 CYLINDERS AND CORES

If required, provide cylinders and cores for new locks, including locks provided under other sections of this specification. Cylinders and cores must have seven pin tumblers. Cylinders must be products of one manufacturer, and cores must be the products of one manufacturer. Rim cylinders, mortise cylinders, and knobs of bored locksets must have interchangeable cores, which are removable by special control keys. Stamp each interchangeable core with a key control symbol in a concealed place on the core.

B203006 1.8 KEYING SYSTEM

Keying system must be a master key system for the facility, unless more than one tenant/tenant command must reside in a facility, or a grand master keying system, or great, grand master keying system if multiple tenants or buildings are required. The keying system must be an extension of the existing keying system for additions to existing facilities. The keying system must allow for construction interchangeable cores when subcontractors require keys during construction. If required, provide a key cabinet.

The Contractor must coordinate a keying system meeting. The Contractor’s Project Manager, Superintendent, Hardware Subcontractor, Electrical Subcontractor (if keying hardware is electric), Designer of Record, Contracting Officer, Public Works Base Hardware Specialist, and the Using Activity must attend this meeting to establish the keying system for the project. This meeting is intended to identify base limitations, the necessary security, and access control within the facility. The meeting must produce a marked up copy of the floor plan indicating the doors to receive locks and the doors to be keyed together, and any master keying or grand master keying.

B203006 1.9 KEYS

Furnish one file key, one duplicate key and one working key for each key exchange and for each master and grand master keying system.

B203006 1.10 LOCK TRIM

Cast, forged or heavy wrought construction and commercial plain in design.

B203006 1.10.1 Knobs and Roses

Knobs and roses must meet test requirements of BHMA A 156.2 and BHMA A 156.13.

B203006 1.10.2 Lever Handles

Provide lever handles in lieu of knobs as required by UFAS and ADAAG. Lever handles must meet the test requirements of BHMA A 156.13 for mortise locks. All lever handles (mortise or cylinder) must be the freewheeling type.

B203006 1.11 DOOR BOLTS

BHMA A 156.16, Grade 1. Provide two flush bolts for each inactive leaf of a pair of doors.

B203006 1.12 CLOSERS

BHMA A 156.4, Series C02000, Grade 1, with PT 4C, full size case. Provide closers for all exterior doors, fire-rated doors, corridor doors, stairway doors, and secure area doors, for non-residential (commercial) construction, as a minimum.

B203006 1.13 OVERHEAD HOLDERS

BHMA A 156.8, Grade 1. Provide for exterior doors for non-residential (commercial) construction.

B203006 1.14 DOOR PROTECTION PLATES

Kick plates must conform to BHMA A 156.6. Provide kick plates on all doors with closers and all doors leading to corridors or circulation spaces. Provide armor plates on all doors to receive cart traffic. Provide mop plates on all doors in rooms with a mopable floor finish that do not have kick plates.

B203006 1.15 DOOR STOPS AND SILENCERS

BHMA A 156.16. Provide silencers, Type L03011, three per single door and four per double door, for doors in hollow metal frames.

B203006 1.16 THRESHOLDS

BHMA A 156.21. Provide thresholds with offset to stop water infiltration, while maintaining accessibility requirements.

B203006 1.17 WEATHERSTRIPPING

BHMA A 156.22. Air leakage of weatherstripped doors must not exceed 0.5 CFM of air per square foot of door for residential doors, and 1.25 CFM for non-residential doors (unless a more restrictive infiltration level is specified).

B203006 1.18 RAIN DRIPS

For all exterior doors that open to the outside, where the door swing area is not covered by an overhang, provide top and bottom rain drips complying with ANSI R3Y535 as a minimum. Greater weathersealing may be required by the geographic location of the project.

B203006 1.19 FINISHES

One of the following hardware finish systems must be provided, and match the interior door hardware:

a. BHMA A156.18. Hardware must have BHMA 630 finish (satin stainless steel), unless specified otherwise. Provide items not manufactured in stainless steel in BHMA 626 finish (satin chromium plated) over brass or bronze, except surface door closers which must have aluminum paint finish, and except steel hinges which must have BHMA 652 finish (satin chromium plated). Hinges for exterior doors must be stainless steel with BHMA 630 finish or chromium plated brass or bronze with BHMA 626 finish. Exit devices may be provided in BHMA 626 finish in lieu of BHMA 630 finish. Exposed parts of concealed closers must have finish to match lock and door trim. Hardware for aluminum doors must be finished to match the doors.

b. BHMA A156.18. Hardware must have BHMA 612 finish (satin bronze), unless specified otherwise. Surface door closers must have bronze paint finish. Steel hinges must have BHMA 639 finish (satin bronze plated). Exposed parts of concealed closers must have finish to match lock and door trim. Hardware for aluminum doors must be finished to match the doors. Hardware showing on interior of bathrooms, shower rooms, toilet rooms, washrooms, laundry rooms, and kitchens must have BHMA 629 finish (bright stainless steel) or BHMA 625 finish (bright chromium plated).

B203090 OTHER EXTERIOR SPECIALTY DOORS

Where required, provide special function exterior doors and gates and assemblies required for the proper operation and functioning of the facility. Exterior doors system may include factory-finished or painted doors and frames.

B203090 1.1 AUTOMATIC ENTRANCE DOORS

B203090 1.1.1 Automatic Swinging Entrance Door Controller

Automatic swinging entrance doors must be glazed aluminum doors and frames as specified in this section. Controller must be a dual function safety device that utilizes planar K-band microwave motion detectors and active infrared presence sensors at each door to protect individuals in the path of the swinging door. The planar K-band motion detector must be capable of sensing an individual moving as slow as 2.2 inches (55.8 mm) per foot. The infrared sensors must employ both diffused presence sensors that see through the plane of the door, and distance measuring sensors. The infrared sensors must constantly remain in operation. The safety device must call for reactivation or creep closing function, depending on the location of the sensor. If the sensor is located on the swing side, it will call for reactivation; if it is located on the pull side, it will call for creep closing function. Sensing system must be fully adjustable with a universal remote control, and meet or exceed the requirements of ANSI A156.10. System must include aluminum guard rails and signage for additional personnel safety.

B203090 1.1.2 Automatic Sliding Entrance Door Controller

Automatic sliding entrance doors must be glazed aluminum doors and frames as specified in this section. Controller must be a dual

function safety device that utilizes planar K-band microwave motion detectors and focused active infrared presence sensors at each door to protect individuals in the path of the sliding door. The planar K-band motion detector must be capable of sensing an individual moving as slow as 2.2 inches (55.8 mm) per foot. The focused active infrared sensors must overlap their patterns for full coverage of the motion pattern and extend its range all the way to the floor surface. The infrared sensors must constantly remain in operation even when the door is in the closing cycle. Door and frame must have a “break-away’ feature that allows the door to be pushed open in an emergency exit situation.

-- End of Section --

SECTION B30

ROOFING
09/15

B30 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

B30 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and Government standards that are referenced in the section text that are **not** found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the standard at the time of contract award.

B30 1.1.1 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-101-01 ArchitectureUFC 3-110-03 Roofing)
UFC 1-200-02	High Performance and Sustainable Buildings

B30 1.1.2 Design Requirements

Wind Uplift Resistance: Determine the required wind uplift resistance based on ASCE 7 wind loading calculations or applicable building code requirements and UFC 3-301-01 *Architecture* and UFC 3-110-03 *Roofing*. The specified FM rating incorporates a safety factor of 2 over the maximum

calculated uplift pressure. Therefore, a FM rating of 1-90 correlates to a maximum uplift calculation of 2.2 kPa, 45 psf. When a rated system is specified, ensure the specified roof system is capable of meeting the wind uplift resistance specified. Where non-rated systems may be allowed and used, delineate calculated values in the roof specification or drawings. Utilize independently tested and rated roof systems, such as Factory Mutual (FM), Underwriters Laboratory (UL), and Single Ply Roofing Industry (SPRI).

The complete roof system assembly shall be rated and installed to resist wind loads calculated in accordance with ASCE 7 and validated by uplift resistance testing in accordance with Factory Mutual (FM) test procedures. Non-rated systems must not be installed, except as approved by the Contracting Officer. Submit licensed engineer's wind uplift calculations and substantiating data to validate any non-rated roof system.

B30 1.2 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

Verification of satisfactory roofing system performance shall be via Performance Verification Testing, and by field inspection as detailed in this section of the RFP. All performance and acceptance testing including final/warranty inspections shall be witnessed by the Contracting Officer on all significant roof projects.

A significant roof is defined as a single or group of buildings with greater than 15,000 square feet (1,400 m2) of roof area; or a roof with area that is allocated to energy generating equipment such as solar hot water panels or photovoltaic panels; or where building equipment (excluding HVAC), use, or safety causes multiple roof penetrations.

B30 1.2.1 Pre-Roofing Design Conference

If the project roof meets the definition of a significant roof above or required per task order, provide a Pre-Roofing Design Conference. Schedule this conference prior to the roof design and roof layout of the facility. Attendee's shall include the DOR, DQC Manager, Roof Design Assurance Consultant (if applicable or required per task order), Commissioning Authority, and Subcontractors directly responsible for installing the roof and equipment that will be mounted on the roof. Discuss and coordinate the following as a minimum:

a. Sustainable systems to be mounted on the roof and interface with building systems and utilities,

b. Allocation of space on the roof for different functions,

c. Impact of sustainable systems and building orientation to the suns path,

d. Waterproofing, flashing, and future reroofing considerations of the facility resulting from sustainable systems inclusion on the roof,

e. Measures taken to eliminate penetration of the roof membrane. NRCA roof details proposed for each necessary penetration,

f. Structural requirements to support roof mounted equipment,

g. Aesthetic impact of roof mounted equipment on the facility and measures taken to mitigate negative appearances of equipment.

h. Maintenance and Commissioning requirements of the roof and roof mounted equipment to facilitate final testing and provide proper access and roof membrane protection.

B30 1.2.2 Pre-Roofing Conference

Prior to beginning roofing work, the Contractor shall hold a Pre-Roofing Conference with the Contracting Officer. Attendees' shall include personnel directly responsible for the roofing systems design and construction, DQC Manager, Commissioning Authority, as well as the roofing manufacturer's technical representative, and Roof Design Consultant (if applicable). At this time the Contractor will address any conflicts between the proposed roofing system, the design documents, and the scheduling of work / workers (trades) to assure a watertight roofing installation. Resolutions will be obtained and documented in writing prior to the start of roofing work. A quality assurance/quality control plan shall also be established at this time, inclusive of the roofing manufacturer's recommended testing and inspections procedures, and in accordance with industry standard guidelines.

Contractor shall provide the following additional information at the pre-roofing conference: Procedure for the roof manufacturer’s technical representative's onsite inspection and acceptance of the roofing substrate, roof insulation, and installation of the roofing in accordance with the roof system warranty, the name of the manufacturer's technical representatives, the frequency of the onsite visits, copies of the roof status reports from the technical representatives to the roof manufacturer, and pertinent structural details to the roofing system.

B30 1.2.3 Roof Design Assurance

If the project roof meets the definition of a significant roof above, the Contractor must utilize the services of a Registered Roof Consultant (RRC) certified by the Roof Consultant Institute, or a Registered Professional Architect or Engineer who specializes in roofing, to approve the roof design. The roof consultant must derives his or her principal income from roofing design on the quality control staff of the Design or Design-Build team. The roof consultant must verify in writing that the design for the project is in accordance with the current edition of NRCA *Roofing and Waterproofing Manual*, UFC 3-110-03, the RFP, and standard industry practices and building codes.

B30 1.2.3 Low Slope Roof Drain Test

Plug roof drains and fill with water to the edge of the drain sump for 24 hours. Not all drains shall be tested at one time. Measure water at the beginning and end of the 24 hour time period to ensure there is

no leakage. Repeat testing until all leaks have been located, corrected, and no leaks found.

B30 1.2.4 Tests for Surface Dryness

Prior to application of roofing materials, perform surface dryness tests in presence of DOR. Asphalt of 350 to 400 degrees F (177 to 204 degrees C) shall not foam upon contact with substrate. After foaming test is performed, test for strippability (adherence).

B30 1.2.5 Quality Control Program

Contractor shall establish a quality control program to assure adherence to NRCA recommended Quality Control Guidelines for the Application of Roofing Systems and other specified application requirements. Compliance with UFGS Section 01 45 00.05 20, *Design and Construction Quality Control*, is required.

B30 1.3 DESIGN SUBMITTALS

Design submittals shall be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures,* UFC 3-101-01, *Architecture* and UFC 3-110-03, *Roofing*.

B30 1.4 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following submittals as a minimum:

Test reports, color samples, certificates of conformance, warranties, close out documentation, and manufacturer's instructions for application and installation on all products used on the roof. Products used on the roof consist of but are not limited to structural deck, insulation, membrane or panels, Standing Seam Metal Roofing (SSMR), flashing, fasteners, nailers, accessories and equipment support curbs or equipment support stands for solar equipment, equipment roof plan, maintenance access and paths.

B3010 ROOF COVERINGS

Roof coverings shall comply with the requirements of UFC 3-110-03, *Roofing*, and NRCA, *Roofing and Waterproofing Manual* found at http://www.nrca.net/rp/technical/manual/manual.aspx as the primary NAVFAC roofing criteria. Determine wind uplift using wind speed in accordance with ASCE-7.

Submit the INFORMATION CARD (see "Form 1" at the end of this section) Provide a typewritten card, laminated in plastic and framed in a weather-tight frame, or a photoengraved 0.032-inch (0.81 mm) thick aluminum card for the roof. This card shall be a minimum size of 8 1/2 x 11 inch (216 x 280 mm) and contain information listed in the attached Form 1. Install the card where directed. Furnish framed card and a duplicate card to the Designer of Record.

B301001 STEEP SLOPE ROOF SYSTEMS

Slope conversions from low slope to steep slope roofing systems must specifically address temporary waterproofing protection where new framing connections penetrate the existing low slope system.

B301001 1.1 NOT USED.

B301001 1.2 NOT USED.

B301001 1.3 ROOF TILES

B301001 1.3.1 Warranty

The contractor shall warrant for 30 years that the tile roofing system, as installed, is free from defects in workmanship.

B301001 1.3.2 Materials

a. Clay Tile - ASTM C 1167, machine-formed natural clay tiles, kiln-fired to vitrification and free from surface imperfections. Provide specially shaped units as required to provide watertight installation and closure. Form fastening holes prior to firing.

B301001 1.3.5 - Fasteners

a. Materials for Installation of Tile - Nails shall be round-head, sharp point, 11 or 12 gauge, stainless steel ring shank roofing nails. Nail heads shall be low profile, smooth and flat. Shanks may be smooth, barbed or otherwise deformed for added pull out resistance. Nail heads should be of sufficient size to prevent pullover of the tile.

1) Wind Locks shall be of 0.084 inch (2.1 mm) stainless steel formed wire clips.

2) Provide hurricane clips with two nail holes in the horizontal leg for anchorage to deck or substrate.

3) Provide dual means of attachment of tile as follows, or as recommended by the tile manufacturer: Mechanical fastening plus hurricane clips, mechanical fastening plus foam setting, mechanical fastening plus sealant adhesive attachment of tile to tile in headlap areas.

B301001 1.3.8 Bird-stop

Provide 20 oz.(567 g) copper, lead or stainless steel “L” section with 3-inch (75 mm) wide horizontal leg and vertical leg cut to conform to bottom profile of tile, or provide mortar formed bird-stops with weep holes, molded plastic bird-stops, or prefabricated tiles as recommended by roofing tile manufacturer.

B301001 1.3.9 Mortar

ASTM C 270, Type M mortar mix. Mortar set tile shall not be used in high-wind areas.

B301001 1.3.10 Asphaltic Plastic Cement

ASTM D 4586.

B301001 1.3.11 Foam-set Tile

Provide foam plastic adhesive designed to meet the concrete and clay tile roofing industries requirements for adhering roofing tile to specified roof underlayment assemblies. Foam adhesive shall meet ASTM E 84, with a flame spread of less than 75. When tested in accordance with ASTM E 108, the roof covering system shall qualify as a Class ‘A’ roof covering system.

B301001 1.4 METAL ROOF PANELS (ARCHITECTURAL STANDING SEAM METAL ROOFS ON SUPPORTED SUBSTRATE)

B301001 1.4.1 Manufactured Sheet Metal Roofing

Provide galvanized steel or aluminum-zinc coated steel or aluminum panels formed at the manufacturing plant and conditioned for flatness. Panel thickness shall be determined by the requirements of NRCA, *Roofing and Waterproofing Manual*, but not less than 24 gauge for panels less than 16 inches wide (400 mm), and 22 gauge for panels greater than 16 inches (400 mm) wide. All panels greater than 12 inches (300 mm) wide shall have preformed reinforcing ribs or embossed for stiffening. The minimum gauge for aluminum panels shall be 20-gauge, .032 inch thick (.8 mm thick) or greater. Roofing design shall meet deflection and wind load requirements per building code.

The SSMR system covered under this specification shall include the entire roofing system; the standing seam metal roof panels, fasteners, connectors, roof securement components, and assemblies tested and approved in accordance with ASTM E 1592. In addition, the system shall consist of panel finishes, slip sheet, insulation, vapor retarder, all accessories, components, and trim and all connections with roof panels. This includes roof penetration items such as vents, curbs, skylights; interior or exterior gutters and downspouts; eaves, ridge, hip, valley, rake, gable, wall, or other roof system flashings installed and any other components specified within this contract to provide a weathertight roof system.

a. Provide inverted “L” Standing Seam shape roofing panels.

b. Panel Protection - Treat exposed cut edges with compatible coating comparable to the factory applied coating system for corrosion protection.

c. Sealants - Provide non-curing, non-skinning butyl based sealants and tapes for concealed locations such as within laps and under eaves. Provide polyurethane and curing butyl elastomeric sealants for exposed locations such as along top edge of surface mounted counter flashings.

d. Factory Color Finish - Provide factory applied, baked coating to the exterior and interior of metal wall panels and metal accessories. Provide exterior finish top coat of 70 percent polyvinylidene fluoride resin with not less than 0.8 mil dry film thickness. Provide exterior primer standard with panel manufacturer with not less than 0.8 mil dry film thickness. Interior finish shall consist of 0.5 mil dry film thick backer coat if permanently concealed from view by construction or the same coating and dry film thickness as the exterior coating if the panel interior side will be exposed. Provide factory-applied clear 70 percent PVF, 0.8 mil top coat and edge coating on all factory-cut or unfinished panel edges for projects within 300 feet (91 meters) of the ocean or industrial environments.

e. Warranty - Furnish manufacturer's no dollar limit materials and workmanship warranty for the roofing system. The warranty period shall be not less than 20 years from the date of Government acceptance of the work. The warranty shall be issued directly to the Government. The warranty shall provide that if within the warranty period the metal roofing system becomes non-watertight or shows evidence of corrosion, perforation, peeling paint, rupture or excess weathering due to deterioration of the roofing system resulting from defective materials or workmanship the repair or replacement of the defective materials and correction of the defective workmanship shall be the responsibility of the roofing system manufacturer. Repairs that become necessary because of defective materials and workmanship while roofing is under warranty shall be performed within 7 days after notification, unless additional time is approved by the Contracting Officer. Failure to perform repairs within the specified period of time will constitute grounds for having the repairs performed by others and the cost billed to the manufacturer. The Contractor shall also provide a 2 year contractor installation warranty. Coating shall not show a color change greater than 5 NBS color units per ASTM D2244, and not show chalking in excess of 10 per ASTM D4214.

f. Wind Uplift - Metal roofing systems shall be designed and attached to resist wind uplift pressures calculated in accordance with ASCE 7. Uplift resistance shall be validated by applicable Factory Mutual (FM), Underwriters Laboratories (UL), or ASTM uplift resistance test procedures.

B301001 1.4.2 Metal Roof Design Requirements

The design of the SSMR system shall be provided by the Contractor as a complete system. Roof panels, components, transitions, accessories, and assemblies shall be supplied by the same roofing system manufacturer. Provide to the DOR a design analysis signed by a Registered Professional Engineer employed by the SSSMR manufacturer. The design analysis shall include a list of the design loads, and complete calculations for the roofing system and its components; valley designs, gutter/downspout calculations, screw pullout test results, and shall indicate how expected thermal movements are accommodated.

B301001 1.4.3 Accessories

Provide other sheet metal flashings, trim moldings, closure strips, caps and other preformed metal panel accessories, of the same material, thickness and finish as panels, except accessories that are concealed after installation, and are aluminum or zinc-coated steel may be provided unfinished. Provide molded closure strips of closed-cell or solid-cell synthetic rubber, neoprene, or polyvinyl chloride premolded to match configurations of preformed metal panels. All accessories shall be manufactured or approved by the roof panel manufacturer.

B301001 1.4.4 Fasteners

Provide concealed fasteners for attaching panels to structural supports and to adjoining panels as approved and in accordance with printed manufacturer’s recommendations. Fasteners shall be type 304 stainless steel.

B301001 1.4.5 Field Quality Control

Install in accordance with the approved manufacturer's erection instructions, shop drawings, and diagrams. Panels shall be in full and firm contact with attachment clips. Where prefinished panels are cut in the field, or where any of the factory applied coverings or coatings are abraded or damaged in handling or installation, they shall, after necessary repairs have been made with material of the same color as the weather coating, be approved before being installed. Seal openings through panels. Correct defects or errors in the materials. Replace materials which cannot be corrected in an approved manner with nondefective materials. Provide molded closure strips where necessary to provide weathertight construction. Use shims as required to ensure attachment clip line is true. Use a spacing gage at each row of panels to ensure that panel width is not stretched or shortened. Provide 30 pound layer of asphalt-saturated felt placed perpendicular to roof slope, covered by a slip sheet. Overlap side and end laps 75 mm 3 inches, offset seams in building paper with seams in felt.

Apply roofing panels with the standing seams parallel to the slope of the roof. Provide roofing panels in longest practical lengths from ridge to eaves (top to eaves on shed roofs), with no transverse joints except at the junction of ventilators, curbs, and similar openings. Install flashing to assure positive water drainage away from roof penetrations. Locate panel end laps such that fasteners do not engage supports or otherwise restrain the longitudinal thermal movement of panels. Attach panels to the structure with concealed clips incorporated into panel seams. Clip attachment shall allow roof to move independently of the structure, except at fixed points as necessary.

B301001 1.5 STRUCTURAL METAL ROOFING SYSTEM

B301001 1.5.1 Structural Standing Seam Metal Roof (SSSMR) System

The SSSMR system covered under this specification shall include the entire roofing system; the standing seam metal roof panels, fasteners, connectors, roof securement components, and assemblies tested and approved in accordance with ASTM E 1592. In addition, the system shall

consist of panel finishes, slip sheet, insulation, vapor retarder, all accessories, components, and trim and all connections with roof panels. This includes roof penetration items such as vents, curbs, skylights; interior or exterior gutters and downspouts; eaves, ridge, hip, valley, rake, gable, wall, or other roof system flashings installed and any other components specified within this contract to provide a weathertight roof system.

B301001 1.5.2 Design Requirements

The design of the SSSMR system shall be provided by the Contractor as a complete system, in accordance with ASCE 7. Framing members and connections not indicated on the drawings shall be designed by the Contractor. Roof panels, components, transitions, accessories, and assemblies shall be supplied by the same roofing system manufacturer. Provide to the DOR a design analysis signed by a Registered Professional Engineer employed by the SSSMR manufacturer. The design analysis shall include a list of the design loads, and complete calculations for the support system (when provided by the Contractor), roofing system and its components; valley designs, gutter/downspout calculations, screw pullout test results, and shall indicate how expected thermal movements are accommodated.

a. Dead Loads - The dead load shall be the weight of the SSSMR system. Collateral loads such as sprinklers, mechanical and electrical systems, and ceilings shall not be attached to the panels.

b. Concentrated Loads - The panels and anchor clips shall be capable of supporting a 300 pound concentrated load. The concentrated load shall be applied at the panel mid-span and will be resisted by a single standing seam metal roof panel assumed to be acting as a beam. The un-deformed shape of the panel shall be used to determine the section properties.

c. Uniform Loads - The panels and concealed anchor clips shall be capable of supporting the minimum uniform live load specified in

d. Wind Loads - The design wind uplift pressure for the roof system shall be shown on the contract drawings. The design uplift force for each connection assembly shall be that pressure given for the area under consideration, multiplied by the tributary load area of the connection assembly. The safety factor listed below shall be applied to the design force and compared against the ultimate capacity. Prying shall be considered when figuring fastener design loads.

   1) Single fastener in each connection.....3.0

   2) Two or more fasteners in each connection...2.25

e. Framing Members Supporting the SSSMR System - New or revised framing members and their connections shall be designed in accordance with AISC 335, AISI SG-973, or SJI Specs & Tables.

Maximum deflection under applied live load, snow, or wind load shall not exceed 1/180 of the span length.

f. Roof Panels Design – Deflections shall be based on panels being continuous across three or more supports. Deflection shall be calculated and measured along the major ribs of the panels.

1) Steel panels shall be designed in accordance with AISI SG-973.

2) Aluminum panels shall be designed in accordance with AA ADM. The panel deflection from concentrated loads shall not exceed 1/180 of the span length. The panel deflection under applied live load, snow, or wind load shall not exceed 1/180 times the span length.

B301001 1.5.3 Performance Requirements

a. The SSSMR shall be tested for wind uplift resistance in accordance with ASTM E 1592; SSSMR systems previously tested and approved may be acceptable.

b. SSSMRS Warranty Certificate -- At the completion of the project the Contractor shall furnish signed copies of the 5-year Warranty for Structural Standing Seam Metal Roof (SSSMR) System, a sample copy of which is attached to this section, and the 20-year Manufacturer's Material Warranties, and the manufacturer's 20-year system weather-tightness warranty.

1) Contractor's Weather-tightness Warranty

The SSSMR system shall be warranted by the Contractor on a no penal sum basis for a period of five years against material and workmanship deficiencies; system deterioration caused by exposure to the elements or inadequate resistance to specified service design loads, water leaks, and wind uplift damage. The SSSMR system covered under this warranty shall include the entire roofing system including, but not limited to, the standing seam metal roof panels, fasteners, connectors, roof securement components, and assemblies tested and approved in accordance with ASTM E 1592. In addition, the system shall consist of panel finishes, slip sheet, insulation, vapor retarder, all accessories, components, and trim and all connections with roof panels. This includes roof penetration items such as vents, curbs, and skylights; interior or exterior gutters and downspouts; eaves, ridge, hip, valley, rake, gable, wall, or other roof system flashings installed and any other components specified within this contract to provide a weathertight roof system; and items specified in other sections of these specifications that are part of the SSSMR system. All material and workmanship deficiencies, system deterioration caused by exposure to the elements /or inadequate resistance to specified design loads, water leaks and wind uplift damage shall be repaired as approved by the DOR. See the attached Contractor's required warranty for issue resolution of warrantable defects. This warranty shall warrant and cover the entire cost of repair

or replacement, including all material, labor, and related markups. The Contractor shall supplement this warranty with written warranties from the installer and system manufacturer, which shall be submitted along with Contractor's warranty; however, the Contractor shall be ultimately responsible for this warranty

2) Manufacturer's Material Warranties

The Contractor shall furnish, in writing, the following manufacturer's material warranties which cover all SSSMR system components such as roof panels, anchor clips and fasteners, flashing, accessories, and trim, fabricated from coil material:

a) A manufacturer's 20 year material warranty warranting that the aluminum, zinc-coated steel, aluminum-zinc alloy coated steel or aluminum-coated steel as specified herein will not rupture, structurally fail, fracture, deteriorate, or become perforated under normal design atmospheric conditions and service design loads. Liability under this warranty shall be limited exclusively to the cost of either repairing or replacing nonconforming, ruptured, perforated, or structurally failed coil material.

b) A manufacturer's 20 year exterior material finish warranty on the factory colored finish warranting that the finish, under normal atmospheric conditions at the site, will not crack, peel, or delaminate; chalk in excess of a numerical rating of eight, as determined by ASTM D 4214 test procedures; or change color in excess of five CIE or Hunter Lab color difference (delta E) units in accordance with ASTM D 2244. Liability under this warranty is exclusively limited to refinishing with an air-drying version of the specified finish or replacing the defective coated material.

c) A roofing system manufacturer's 20 year, non-prorated, system weathertightness warranty.

B301001 1.5.4 Roof Panels

Panels shall be steel or aluminum and shall have a factory color or mill finish. Length of sheets shall be sufficient to cover the entire length of any unbroken roof slope for slope lengths that do not exceed 30 feet. When length of run exceeds 30 feet and panel laps are provided, each sheet in the run shall extend over three or more supports. Sheets longer than 100 feet may be furnished if approved by the DOR. Width of sheets shall provide not more than 24 inches of coverage in place. SSSMR system with roofing panels greater than 12 inches in width shall have standing seams rolled during installation by an electrically driven seaming machine.

a. Steel panels

1) Steel panels shall be zinc-coated steel conforming to ASTM A 653/A 653M; aluminum-zinc alloy coated steel conforming to ASTM A 792/A 792M, AZ 55 or 50 coating; or aluminum-coated steel conforming to ASTM A 463/A 463M,Type 2, coating designation T2 65. Zinc, zinc-aluminum alloy or aluminum coated panels shall be 0.023 inch (0.584 mm) thick minimum. Panels shall be within 95 percent of reported tested thickness as noted in wind uplift resistance testing required in paragraph “PERFORMANCE REQUIREMENTS”.

2) Prior to shipment, if the panels are not specified with a factory color finish, mill finish panels shall be treated with a passivating chemical to inhibit the formation of oxide corrosion products. Panels that have become wet during shipment and have started to oxidize shall be rejected.

b. Aluminum Panels - Alloy conforming to ASTM B 209, temper as required for the forming operation, minimum 0.032 inch thick.

B301001 1.5.5 Concealed Anchor Clips

Concealed anchor clips shall be the same as the tested roofing system. Anchor clips shall be type 304 stainless steel.

B301001 1.5.6 Accessories

Flashing, trim, metal closure strips, caps and similar metal accessories shall be the manufacturer's standard products. Exposed metal accessories shall be finished to match the panels furnished.

B301001 1.5.7 Fasteners

Fasteners for steel roof panels shall be type 304 stainless steel, type and size specified below or as otherwise approved for the applicable requirements. Fasteners for structural connections shall provide both tensile and shear ultimate strengths of not less than 750 pounds per fastener. Exposed roof fasteners shall be sealed or have sealed washers on the exterior side of the roof to waterproof the fastener penetration. Washer material shall be compatible with the roofing; have a minimum diameter of 3/8 inch for structural connections; and gasketed portion of fasteners or washers shall be neoprene or other equally durable elastomeric material approximately 1/8 inch thick. Exposed fasteners for factory color finished panels shall be factory finished to match the color of the panels.

a. Screws - Screws for attaching anchor devices shall be not less than No. 14

b. Bolts - Bolts shall be not less than 1/4 inch diameter, shouldered or plain shank as required, with locking washers and nuts.

c. Structural Blind Fasteners - Blind screw-type expandable fasteners shall be not less than 1/4 inch diameter. Blind (pop) rivets shall be not less than 9/32 inch minimum diameter.

B301001 1.5.8 Sub-purlins

Cold formed supporting structural members/sub-purlins shall have a minimum thickness of 0.059 inches and a minimum tensile yield strength of 50000 psi. Hot rolled structural members shall have a minimum thickness of 0.25 inches and a minimum tensile yield strength of 36000 psi. Sub-purlins shall be galvanized or shop painted, as required by the project program.

B301001 1.5.9 Factory Color Finish

Panels shall have a factory applied polyvinylidene fluoride finish on the exposed side. The exterior finish shall consist of a baked-on topcoat with an appropriate prime coat. The exterior coating shall be a nominal 2 mil thickness consisting of a topcoat of not less than 0.7 mil dry film thickness and the paint manufacturer's recommended primer of not less than 1.0 mil thickness. The interior color finish shall consist of the same coating and dry film thickness as the exterior. The exterior color finish shall meet the test requirements specified below.

a. Salt Spray test - A sample of the sheets shall withstand a cyclic corrosion test for a minimum of 2016 hours in accordance with ASTM D 5894, including the scribe requirement in the test. Immediately upon removal of the panel from the test, the coating shall receive a rating of not less than 10, no blistering, as determined by ASTM D 714; 10, no rusting, as determined by ASTM D 610; and a rating of 6, over 21/16 to 1/8 inch failure at scribe, as determined by ASTM D 1654.

b. Formability Test - When subjected to testing in accordance with ASTM D 522 Method B, 1/8 inch diameter mandrel, the coating film shall show no evidence of cracking to the naked eye.

c. Humidity Test - When subjected to a humidity cabinet test in accordance with ASTM D 2247 for 1000 hours, a scored panel shall show no signs of blistering, cracking, creepage or corrosion.

d. Impact Resistance - Factory-painted sheet shall withstand direct and reverse impact in accordance with ASTM D 2794 0.500 inch diameter hemispherical head indenter, equal to 1.5 times the metal thickness in mils, expressed in inch-pounds, with no cracking.

e. Abrasion Resistance Test - When subjected to the falling sand test in accordance with ASTM D 968, Method A, the coating system shall withstand a minimum of 2.83 cubic feet (80 liters) of sand before the appearance of the base metal. The term "appearance of base metal" refers to the metallic coating on steel or the aluminum base metal.

f. Specular Gloss – Where considerations for flight line visibility (or other considerations) mandate, finished roof surfaces shall have a specular gloss value of 10 or less at an angle of 85 degrees or 30 plus or minus the value specified in the project program at 60 degrees when measured in accordance with ASTM D 523.

g. Pollution Resistance - Coating shall show no visual effects when covered spot tested in a 10 percent hydrochloric acid solution for 24 hours in accordance with ASTM D 1308.

B301001 1.5.10 Insulation

Thermal resistance of insulation shall be not less than the R-values shown on the contract drawings. R-values shall be determined at a mean temperature of 75 degrees F in accordance with ASTM C 518. Insulation shall be installed on interior side, below roof deck.

a. Blanket Insulation - Blanket insulation shall conform to ASTM C 991.

B301001 1.5.11 Sealant

Sealants shall be elastomeric type containing no oil or asphalt. Exposed sealant shall be colored to match the applicable building color or clear and shall cure to a rubber like consistency. Sealant placed in the roof panel standing seam ribs shall be provided in accordance with the manufacturer's recommendations.

B301001 1.5.12 Vapor Retarder

a. Vapor Retarders as Integral Facing - Alloy conforming to ASTM B 209, temper as required for the forming operation, minimum 0.032 inch thick. Insulation facing shall have a permeability of 0.02 perm or less when tested in accordance with ASTM E 96.

b. Vapor Retarders Separate from Insulation - Vapor retarder material shall be polyethylene sheeting conforming to ASTM D 4397. A single ply of 10 mil polyethylene sheet; or, at the Contractor's option, a double ply of 6 mil polyethylene sheet shall be used. A fully compatible polyethylene tape with equal or better water vapor control characteristics than the vapor retarder material shall be provided. A cloth industrial duct tape in a utility grade shall also be provided to use as needed to protect the vapor retarder from puncturing.

c. Slip Sheet for Use With Vapor Retarder - Slip sheet for use with vapor retarder shall be a 5 lb. per 100 square feet rosin-sized, unsaturated building paper.

B301001 1.5.13 EPDM Rubber Boots

Flashing devices around pipe penetrations shall be flexible, one-piece devices molded from weather-resistant EPDM rubber. Rubber boot material shall be as recommended by the manufacturer. The boots shall have base rings made of aluminum or corrosion resisting steel that conform to the contours of the roof panel to form a weather-tight seal.

B301001 1.5.14 Prefabricated Curbs and Equipment Support

Prefabricated curbs and equipment supports shall be of structural quality, hot-dipped galvanized or galvanized sheet steel, factory primed and prepared for painting with mitered and welded joints.

Integral base plates and water diverter crickets shall be provided. Minimum height of curb shall be 8 inches above finish roof. Curbs shall be constructed to match roof slope and to provide a level top surface for mounting of equipment. Curb flange shall be constructed to match configuration of roof panels. Curb size shall be coordinated, prior to curb fabrication, with the mechanical equipment to be supported. Strength requirements for equipment supports shall be coordinated to include all anticipated loads. Flashings shall not be rigidly attached to underline structure.

B301002 LOW SLOPE ROOF SYSTEMS

B301002 1.1 GENERAL REQUIREMENTS

a. Warranty (Except SSSMRS) - Furnish the roofing system manufacturer’s materials and workmanship warranty for the roofing system. The warranty period shall not be less than 20 years from the date the Government acceptance of the work. The warranty shall be issued directly to the Government and shall not be limited in dollar value. The system warranty shall include roofing membrane, insulation, flashings, accessories and attachments.

b. Wind Uplift - The complete roof covering assembly shall be rated in accordance with FM P7825, capable of withstanding an uplift pressure as determined by ASCE-7, and FM I-49 for perimeter and flashing attachment.

c. Fire Safety - The complete roof covering assembly shall meet ASTM E 108, Class 1A or UL 790, Class A; and be listed as Fire-Classified roof deck construction in the UL RMSD, or Class I roof deck construction in FM P7825. All components of the system shall be UL labeled. Complete roof covering assembly shall:

   1) Be Class A or B rated in accordance with ASTM E 108 , FM 4470, or UL 790; and

   2) Be listed as part of Fire-Classified roof deck construction in UL RMSD, or Class I roof deck construction in FM P7825c.

d. Traffic Pads - Provide on roof system to protect roof from foot traffic. Provide traffic pads from roof access to and around roof mounted mechanical equipment and underneath removable mechanical equipment access panels. Traffic pads shall be of compatible material to roof.

e. Cool Roof - If required in RFP Part 3 comply with UFC 3-110-03, Roofing Chapter 1, Cool Roofs. Cool roof design must follow the requirements in UFC 3-110-03 "Roofing" Chapter 1, Cool Roofs.

B301002 1.2 BUILT-UP ASPHALT ROOFING

This paragraph covers the requirements for aggregate surfaced bituminous built-up roofing made up of glass felt, asphalt bitumen, and aggregate surfaced or modified bitumen cap sheet.

B301002 1.2.1 Materials

a. Asphalt - ASTM D 312, Type II, III or IV

b. Felts - Base Sheet (GB) – ASTM D 4601, Type II without perforations

1) Ply Felt (GA) – ASTM D 2178, Type IV or VI

2) Ventilating Base Sheet VB) – ASTM D 4897

3) Flashing Felt (SBS Modified Base Sheet - MB) per ASTM D 6162 (with combined polyester and glass fiber reinforcing), Type II, Grade G (weighing 4.3(90 lbs./100sf), and a thickness of 130 mils) or Grade S (weighing 58 lbs./100sf and a thickness of 85 mils), ASTM D 6163 (with glass fiber reinforcing), Type II, Grade G (weighing 90 lbs./100sf, and a thickness of 130 mils) or S (weighing 58 lbs./100sf and a thickness of 85 mils), ASTM D 6164 (with polyester reinforcing), Type II, Grade G (weighing 90 lbs./100sf, and a thickness of 130 mils) or S (weighing 70 lbs./100sf and a thickness of 115 mils).

4) SBS Bitumen Cap Sheet (RSS) – ASTM D 6162 (with combined polyester and glass fiber reinforcing), Type II, Grade G (weighing 90 lbs./100sf, and a thickness of 130 mils), ASTM D 6163 (with glass fiber reinforcing), Type II, Grade G (weighing 90 lbs./100sf, and a thickness of 130 mils), ASTM D 6164 (with polyester reinforcing),

c. Primer - ASTM D 41

d. Asphalt Roof Cement - ASTM D 4586, Type II for vertical surfaces and Type I for horizontal surfaces.

e. Aggregate for Surfacing Built-up Roofing - ASTM D 1863

f. Fasteners - Provide metal fasteners of copper, aluminum or stainless steel, compatible with materials to be penetrated. Fasteners shall be of sufficient length to achieve appropriate embedment or penetration into the substrate below.

g. Metal Discs - Flat discs or caps of zinc-coated steel not less than 28 gage and not less than 1-3/8 inches (35 mm) in diameter.

h. Traffic Pads - Preformed reprocessed rubber, compatible with the roof membrane, 1/4-inch (6.35 mm) minimum thickness, weighing not less than 1-1/2 pounds per square foot, to protect roof from foot traffic. Provide traffic pads around roof access and around roof mounted equipment and underneath removable mechanical equipment access panels.

B301002 1.2.2 FIELD QUALITY CONTROL

a. Tests for Surface Dryness - see paragraph B301002 1.2 for Performance Verification and Acceptance Testing requirements.

B301002 1.3 ETHYLENE PROPYLENE DIENE MONOMER (EPDM)

B301002 1.3.1 - Materials

a. EPDM Sheet - ASTM D 4637. Ethylene Propylene Diene Monomer (EPDM), reinforced, 0.06 inch (1.5 mm) thick for fully adhered application. Seams shall be sealed with seam tape versus liquid adhesive, unless previously approved by DOR.

b. Flashing and Flashing Accessories - Flashing, including perimeter flashing, flashing around roof penetrations, and prefabricated pipe seals, shall be 0.06 inch (1.5 mm) minimum thick uncured EPDM sheet or 0.045 inch (1.1 mm) minimum thick cured EPDM.

c. Fasteners - Provide fasteners warranted by the roofing manufacturer for the EPDM sheet installation.

d. Roof Insulation - Provide rigid board insulation beneath the EPDM sheet as part of the warranted roof system, and compatible with the adhesive used in the installation.

B301002 1.4 MODIFIED BITUMINOUS MEMBRANE ROOFING

This paragraph covers the requirements for modified bituminous membrane sheet roofing, SBS modified for hot mopping or cold applied, with a minimum slope of 1/2 inch per foot. Contractor shall provide a complete modified bitumen roofing system, to include insulation, flashings, felts, primers and adhesives as recommended for the installation either on a nailable (plywood or metal deck) or non-nailable (concrete) substrate, from the materials below. All work must follow the NRCA Roof Man guidelines and standards stated within this Section.

B301002 1.4.1 Materials

a. Asphalt - ASTM D 312, Type III or IV.

b. Ply Materials -

1) Ventilating Base Sheet (VB) – ASTM D 4897, Type II

2) Base Sheet (GB) – ASTM D 4601, Type II without perforations

3) SBS Modified Base Sheet (MB) – ASTM D 6162 (with combined polyester and glass fiber reinforcing), Type II, Grade S weighing 58 lbs./100sf and a minimum thickness of 85 mils), ASTM D 6163 with glass fiber reinforcing), Type II, Grade S (weighing 58 lbs./100sf and a minimum thickness of 85 mils), ASTM D 6164 (with polyester reinforcing), Type II, Grade S (weighing 70 lbs./100sf and a minimum thickness of 115 mils).

4) SBS Interply Sheet: ASTM D 6162, ASTM D 6164, ASTM D 6163, Type I or II, Grade S, minimum 80 mils (2.0 mm) thick.

5) SBS Bitumen Cap Sheet (RSS) – ASTM D 6162 (with combined polyester and glass fiber reinforcing), Type II, Grade G (weighing 90 lbs./100sf, and a thickness of 130 mils), ASTM D 6163 (with glass fiber reinforcing), Type II, Grade G (weighing 90 lbs./100sf, and a thickness of 130 mils), ASTM D 6164 (with polyester reinforcing), Type II, Grade G (weighing 90 lbs./100sf,

and a thickness of 130 mils). Provide polyester reinforced cap sheet on roofs expected to experience high levels of traffic, on roofs with congested equipment, where equipment is expected to receive regular service or high maintenance, and where other service conditions warrant.

c. Mineral Roofing Granules - Factory applied, requiring no further coating.

d. Primer - ASTM D 41

e. Asphalt Roof Cement - ASTM D 4586, Type II for vertical surfaces, Type I for horizontal surfaces.

f. Fasteners - Provide type 304 stainless steel fasteners meeting the requirements of FM A/S4470..

g. Asphalt Adhesive - ASTM D 4479, Type III.

h. Reflective Coating - 100% Acrylic Elastomeric with Energy Star Rating exceeding the requirements of ASTM D-6083. Coating shall be intended for use as a roof topcoat.

B301002 1.5 STRUCTURAL STANDING SEAM METAL ROOFING

See B301001 1.5.1 “Structural Standing Seam Metal Roof System” for SSSMR requirements.

B301003 ROOF INSULATION & FILL

The insulation system shall be coordinated with the mechanical design to suit the energy requirements of the facility. Insulation shall be installed on interior side, under the roofing material.

B301003 1.1 MINERAL FIBER BLANKET INSULATION

This paragraph covers the requirements for mineral fiber blanket thermal insulation in attics and above ceilings.

B301003 1.1.1 Products

a. Blanket Insulation - ASTM C 665, Type I, II, or III, as appropriate for the installation, Class A, membrane-faced surface with a flame spread of 25 or less; and a smoke developed rating of 150 or less when tested in accordance with ASTM E 84. Indicate insulation R-values on the design drawings.

b. Blocking – Treated wood, metal, un-faced mineral fiber blankets in accordance with ASTM C665, Type I. Blocking around chimneys and other heat producing devices shall be non-combustible and shall meet the requirements of ASTM E 136.

c. Vapor Retarder - 6 mil (minimum) thick polyethylene sheeting conforming to ASTM D 4397, with a water permeance value of 1 perm or less when tested according with ASTM E 96.

B301003 1.2 ROOF AND DECK INSULATION

This paragraph covers the requirements for insulation materials used below the roofing systems.

B301003 1.2.1 Insulation Types

Roof insulation shall have an R-value determined per ASHRAE Standard 90.1 and per project energy goals and be one or an assembly of a maximum of three of the following materials and compatible with attachment methods for the specified insulation and roof system:

a. Expanded Perlite Board – ASTM C 728, minimum thickness of 3/4" boards, and 4’ by 4’ board size.

b. Polyisocyanurate Board – ASTM C 1289, with a minimum compressive strength of 138 kPa (20 psi), unless overlaid with another board with a comparable or greater compressive strength. Use insulation facer as recommended by the roofing material manufacturer. Board size shall be restricted to 4’ by 4’ when applied in direct contact with concrete deck.

c. Composite Boards – ASTM C 984 (Polyisocyanurate-perlite) or ASTM C 1050 (Polystyrene-wood fiberboard), Type III, Grade 1, Class A, or ASTM C 1289, Type V, oriented strand board or waferboard on one side and fibrous felt or glass fiber mat membrane or aluminum foil on the other.

B301003 1.2.2 Protection Board

Provide for use as a thermal barrier (underlayment) or protection board for hot-mopped applications.

B301003 1.2.3 Glass Mat Gypsum Roof Board

ASTM C 1177, with a 0 Flame Spread and 0 Smoke Developed when tested in accordance with ASTM E 84.

B301003 1.2.4 Bitumens

a. Asphalt Primer - ASTM D 41

b. Asphalt - ASTM D 312, Type III or IV

c. Asphalt Roof Cement - ASTM D 4586, Type I for horizontal surfaces, Type II for vertical and sloped surfaces. Roof cement shall be compatible with membrane materials.

B301003 1.2.5 Underlayment

a. Asphalt-Saturated Felt Base Sheet for Single Layer Application - ASTM D 4869, Type II or ASTM D 226, Type II (30 pounds).

b. Polymer-Modified Self-Adhering Bitumen Sheet, 40 mil (1.1 mm) minimum thickness. Provide at roof perimeter, valley and roof penetration locations as a minimum.

B301003 1.2.6 Seal at Penetrations

Provide pre-manufactured flashing components for use in single-ply roofing applications. Seal laps and penetrations to prevent moisture vapor penetration. Adhesives, sealants, prefabricated components and spray foam products may be required.

B301003 1.2.7 Fasteners

Fasteners shall be flat, round or hexagonal type 304 stainless steel (not less than 1-3/8″ (35 mm) diameter) and 28 gage, or plastic plates (not less than 3 inches (75 mm) in diameter).

Fasteners in lightweight cellular concrete decks shall penetrate at least 1 inch (25 mm) but not more than 1-1/2 inches (32 mm) into the deck. Withdrawal resistance from lightweight cellular concrete deck shall be not less than 40 lbs.(18 kg) each, or 120 lbs. (54 kg) each in metal deck.

Fasteners in steel decks shall be hardened fasteners or screws conforming to FM A/S4470 and listed in FM P7825 for Class I roof deck construction.

Fasteners shall be place to withstand an uplift pressure required by the project program in the field of the roof and FM LPDS 1-49 for perimeter component and flashing attachment.

Roofing Nails - Provide type 304 stainless steel ring shank nails of sufficient length to penetrate a minimum of 1 inch (25 mm) into wood nailers or so as to provide appropriate embedment in substrate below. Fasteners shall conform to FM A/S4470, and be placed to withstand an uplift pressure of 90 psf (4.3 kPa) conforming to FM P7825, and FM 1-49 for perimeter fasteners.

B301004 FLASHINGS & TRIM

B301004 1.1 FLASHING AND SHEET METAL

This paragraph covers the requirements for flashing and sheet metal work including scuppers, splash pans, and sheet metal roofing. Flashing and sheet metal shall be provided in accordance with roof manufacturer’s printed installation instructions and in compliance with NRCA and SMACNA recommendations.

B301004 1.1.1 Materials

Furnish sheet metal items in minimum 8 to 10 foot (2.44 to 3.05 meter) lengths. Sheet metal items include the following: gutters, including hangers; downspouts; counter-flashings; gravel stops and fascias; cap, valley, stepped, base and eave flashings and related accessories.

a. Copper, Sheet and Strip - ASTM B 370, cold-rolled temper.

b. Stainless Steel - ASTM A 167, Type 304, 2D finish, fully annealed, dead-soft temper.

f. Aluminum Alloy Sheet and Plate - ASTM B 209

g. Pre-Finished Aluminum - Provide trim, gravel stops and fascias of Pre-finished aluminum. Finish shall be baked-on factory applied color coating of polyvinylidene fluoride (PVF2) or other equivalent fluorocarbon coating with a minimum thickness of 0.8 to 1.3 mils.

h. Aluminum alloy, Extruded Bars, Rods, Shapes, and Tubes - ASTM B 221

i. Solder - ASTM B 32

j. Polyvinyl Chloride Reglet - ASTM D 1784, Type II

k. Asphalt Primer - ASTM D 41

l. Fasteners - Fasteners shall be of the same or compatible metal with the item being fastened. Stainless steel fasteners shall be used to fasten dissimilar materials.

B301004 1.1.2 Field Quality Control

Fabrication and installation of sheet metal items shall be as follows:

a. Install work with watertight and hairline joints, without waves, warps, buckles, fastening stresses, or distortion, allowing for expansion and contraction.

b. Make surfaces to receive sheet metal plumb and true, clean, even, smooth, dry and free of defects and projections that could affect the application.

c. Provide sheet metal flashing in angles formed where roof decks abut walls, curbs, ventilators, pipes, or other vertical surfaces and wherever indicated and necessary to make the work watertight.

d. Provide prefabricated inside and outside corners at all sheet metal intersection pieces. Minimum leg length shall be 12 inches (300 mm), maximum length shall be 18 inches (450 mm).

e. Sheet metal shall be fabricated to conform to the contours of surfaces to which applied.

f. All sheet metal cap flashings shall have waterproof membrane underlayment installed behind or below the metal components.

g. Provide conforming sheet metal closures at all flashing termination conditions.

h. Provide fastenings and accessories as required to provide a securely attached, watertight construction. Cleats shall be a minimum of one gage heavier than the component to be attached.

i. Where sheet metal components are to be embedded in the roofing system, prime both sides of all metal flanges prior to installation.

B301005 GUTTERS AND DOWNSPOUTS

Provide stainless steel gutters and downspouts. Concealed (interior) gutters and downspouts are prohibited. The primary and secondary drainage systems shall be sized per applicable Plumbing and Building Codes. Finish shall be baked-on factory applied color coating of polyvinylidene fluoride (PVF2) or other equivalent fluorocarbon coating with a minimum thickness of 0.8 to 1.3 mils.

B301006 ROOF OPENINGS AND SUPPORTS

B301006 1.1 GENERAL REQUIREMENTS

Provide flashings for roof openings and supports as recommended by the NRCA and as specified below:

When existing pitch pans cannot be avoided and must be utilized, insure pitch pan is a preformed pan with minimum 4-inch (100 mm) height and 2-inch (50 mm) flange with 2-inch (50 mm) clearance on all sides of the penetration. Fill bottom 1/3 with non-shrink grout. Fill remainder with pourable elastomeric sealer sloped to drain. For round penetrations, provide a metal umbrella cap clamped to the penetration.

Assure all penetration flashings extend minimum 8 inches (200 mm) above the finished roof surface. Use round shapes to construct equipment supports. Equipment supports should be raised on a continuous curb a minimum of 14 inches (350 mm), but not less than as required by the NRCA.

B301006 1.2 ROOF HATCHES

Construct using NRCA approved techniques and details. Provide roof hatch where required by OSHA, or as access to roof when roof mounted equipment is used or other routine roof maintenance is required.

B301006 1.2.1 Construction

Provide insulated roof hatches of 14 gage stainless steel with 22 gage stainless steel liner or 18 gage aluminum liner, and have integral curb, flange and flashings for securing to roof deck. Hinge shall be heavy-duty stainless steel with non-removable pins. Latching mechanism shall be stainless steel slam latch with inside and outside levers. Springs shall be greased compression springs in telescopic tubes. Provide interior locking of roof hatch. Provide a safety rail or ladder extension. Size roof hatch to allow access of routine maintenance equipment, but not less than 2’-6” x 3’-0” (750 mm x 900 mm). Hatch and access ladders shall conform to OSHA and other applicable safety standards.

B301006 1.3 GLAZED ROOF OPENINGS

This paragraph covers the requirements for skylights manufactured from glass-fiber or thermoplastic carbonate.

Skylights and other glazed roof openings shall be used only to supplement interior lighting levels (generally in steep slope or vertical

applications), and otherwise, are discouraged from use. Proper detailing is critical, and shall be scrutinized closely to minimize the likelihood of future leaks at these locations.

B301006 1.3.1 Warranty

The contractor shall furnish to the Government the manufacturer's complete warranty for materials, workmanship and installation. The warranty is for 10 years from the time of project completion. The warranty shall guarantee, but shall not be limited to, the following:

a. Light transmission and color of the panels shall not change after exposure to heat of 300 degrees F (149 degrees C) for 25 minutes.

b. There is no delamination of the panel affecting appearance, performance, weatherability or structural integrity of the panels or the completed system.

c. There is no fiberbloom on the panel face.

d. Change in light transmission of no more than 6% per ASTM D 1003, and in color (yellowing index) no more than 10 points in comparison to the original specified value over a 10 year period.

B301006 1.3.2 Skylight Panels

Skylight panels shall be constructed of glass-fiber reinforced polyester or extruded cellular thermoplastic polycarbonate materials. Glass-fiber reinforced panels shall conform to ASTM D 3841 and to the requirements of AAMA 1600/I.S.7.

a. Non-Combustible Grid Core - The aluminum I-beams shall be 6063-T6 with provisions for mechanical interlocking of muntin-mullion and perimeter to provide full bonding surface to contact the face material. Panels shall withstand 1200 degrees F (650 degrees C) for a minimum of one hour without collapse or exterior flaming.

b. Adhesive - The laminate adhesive shall meet the following requirements:

1) Tensile strength of 750 psi-in. in accordance with ASTM C 297.

2) Shear strength shall meet or exceed the following per ASTM D 1002:

a) 540 psi (3723 kPa) at 50% relative humidity and 73 degrees F (23 degrees C).

b) 800 psi (5516 kPa) under accelerated aging per ASTM D 1037 at room temperature.

c) 250 psi (1724 kPa) under accelerated aging per ASTM D 1037 at 182 degrees F (83 degrees C).

d) 1400 psi (9653 kPa) after 500 hour Oxygen Bomb per ASTM D 572.

e) 100 psi (690 kPa) at 182 degrees F (83 degrees C).

c. Panel Construction - Panels shall consist of fiberglass faces laminated to an aluminum I-beam grid core and shall not deflect more than 1.9 inches (48 mm) at 30 psf (1.44 kPa) in 10 feet (3.048 meters) per ASTM E 72, without a supporting frame.

B301006 1.3.3 Thermoplastic Polycarbonate Panels

The glazing panels shall meet the following requirements:

a. The interior flame spread classification shall be Class I in accordance with ASTM E 84, with a smoke developed rating no greater than 70 in accordance with ASTM D 2843.

b. The exterior and interior faces shall be an approved light transmitting panel with a CC1 fire rating classification in accordance with ASTM D 635.

c. Self-ignition shall be greater than 1058 degrees F (570 degrees C) in accordance with ASTM D 1929.

d. Fire rated roof assembly translucent panels shall be successfully evaluated for fire from exterior exposure per ASTM E 108 to meet Class ‘A’ rating, and be listed by an independent recognized listing laboratory.

B301006 1.4 GUARDS

Provide rails or guards as required by the OSHA, the International Building Code or other applicable safety standards.

B301090 OTHER ROOFING

B301090 1.1 LIGHTNING PROTECTION

Lightning protection component penetrations and attachments shall be sealed and flashed and anchored in a permanent manner and in a manner to avoid the degradation of the watertight integrity of the roof system. Do not cut or otherwise disturb the roof membrane. Mastic seals in the plane of the roof are unacceptable. Anchor plates set in mastic shall be set on roof surface cleaned of aggregate and loose material prior to mastic application.

B301090 1.2 ROOF DRAINS (EXISTING)

Where existing roof drains are to be reused in roof replacement construction, the contractor shall provide new, compatible flashing materials, a new drain clamping ring and new bolts for anchorage. Reuse of existing clamping ring, bolts, fasteners, etc. is unacceptable.

-- End of Section --

FORMS

ROOFING SYSTEM COMPONENTS

1. Contract Number: _____

2. Building Number and Location: _____

3. NAVFAC Specification Number: _____

4. Deck Type: _____

5. Slope of Deck: _____

6. Insulation Type and Thickness:_____

7. Insulation Manufacturer: _____

8. Vapor Retarder (_____) Yes (_____) No

9. Vapor Retarder Type: _____

10. Roofing Description: _____

    Manufacturer (Name, address, and phone no.): _____

    _____

    Type: _____

    Method of attachment: _____

11. Statement of Compliance or Exception: _____

    _____

    _____

12. Date Roof Completed: _____

13. Warranty Period: _____

14. Roofing Contractor (Name and Address):

    _____

    _____

    _____

15. Prime Contractor (Name and Address):

_____

_____

_____

Contractor's Signature _____ Date: _____

Inspector's Signature _____ Date: _____

Form page 1

CONTRACTOR'S FIVE (5) YEAR NO PENAL SUM WARRANTY
FOR
STRUCTURAL STANDING SEAM METAL ROOF (SSSMR) SYSTEM

FACILITY DESCRIPTION_____

BUILDING NUMBER:_____

CONTRACT NUMBER:_____

CONTRACTOR

CONTRACTOR:_____

ADDRESS:_____

POINT OF CONTACT:_____

TELEPHONE NUMBER:_____

OWNER

OWNER:_____

ADDRESS:_____

POINT OF CONTACT:_____

TELEPHONE NUMBER:_____

CONSTRUCTION AGENT

CONSTRUCTION AGENT:_____

ADDRESS:_____

POINT OF CONTACT:_____

TELEPHONE NUMBER:_____

CONTRACTOR'S FIVE (5) YEAR NO PENAL SUM WARRANTY
FOR
STRUCTURAL STANDING SEAM METAL ROOF (SSSMR) SYSTEM
(continued)

THE SSSMR SYSTEM INSTALLED ON THE ABOVE NAMED BUILDING IS WARRANTED BY _____ FOR A PERIOD OF FIVE (5) YEARS AGAINST WORKMANSHIP AND MATERIAL DEFICIENCES, WIND DAMAGE, STRUCTURAL FAILURE, AND LEAKAGE. THE SSSMR SYSTEM COVERED UNDER THIS WARRANTY SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, THE FOLLOWING: THE ENTIRE ROOFING SYSTEM, MANUFACTURER SUPPLIED FRAMING AND STRUCTURAL MEMBERS, METAL ROOF PANELS, FASTENERS, CONNECTORS, ROOF SECUREMENT COMPONENTS, AND ASSEMBLIES TESTED AND APPROVED IN ACCORDANCE WITH ASTM E 1592. IN ADDITION, THE SYSTEM PANEL FINISHES, SLIP SHEET, INSULATION, VAPOR RETARDER, ALL ACCESSORIES, COMPONENTS, AND TRIM AND ALL CONNECTIONS ARE INCLUDED. THIS INCLUDES ROOF PENETRATION ITEMS SUCH AS VENTS, CURBS, SKYLIGHTS; INTERIOR OR EXTERIOR GUTTERS AND DOWNSPOUTS; EAVES, RIDGE, HIP, VALLEY, RAKE, GABLE, WALL, OR OTHER ROOF SYSTEM FLASHINGS INSTALLED AND ANY OTHER COMPONENTS SPECIFIED WITHIN THIS CONTRACT TO PROVIDE A WEATHERTIGHT ROOF SYSTEM; AND ITEMS SPECIFIED IN OTHER SECTIONS OF THE SPECIFICATIONS THAT ARE PART OF THE SSSMR SYSTEM.

ALL MATERIAL DEFICIENCIES, WIND DAMAGE, STRUCTURAL FAILURE, AND LEAKAGE ASSOCIATED WITH THE SSSMR SYSTEM COVERED UNDER THIS WARRANTY SHALL BE REPAIRED AS APPROVED BY THE CONTRACTING OFFICER. THIS WARRANTY SHALL COVER THE ENTIRE COST OF REPAIR OR REPLACEMENT, INCLUDING ALL MATERIAL, LABOR, AND RELATED MARKUPS. THE ABOVE REFERENCED WARRANTY COMMENCED ON THE DATE OF FINAL ACCEPTANCE ON _____ AND WILL REMAIN IN EFFECT FOR STATED DURATION FROM THIS DATE.

SIGNED, DATED, AND NOTARIZED (BY COMPANY PRESIDENT)

_____

(Company President) (Date)

CONTRACTOR'S FIVE (5) YEAR NO PENAL SUM WARRANTY
FOR
STRUCTURAL STANDING SEAM METAL ROOF (SSSMR) SYSTEM
(continued)

THE CONTRACTOR SHALL SUPPLEMENT THIS WARRANTY WITH WRITTEN WARRANTIES FROM THE MANUFACTURER AND INSTALLER OF THE SSSMR SYSTEM, WHICH SHALL BE SUBMITTED ALONG WITH THE CONTRACTOR'S WARRANTY. HOWEVER, THE CONTRACTOR WILL BE ULTIMATELY RESPONSIBLE FOR THIS WARRANTY AS OUTLINED IN THE SPECIFICATIONS AND AS INDICATED IN THIS WARRANTY EXAMPLE.

EXCLUSIONS FROM COVERAGE

1. NATURAL DISASTERS, ACTS OF GOD (LIGHTNING, FIRE, EXPLOSIONS, SUSTAINED WIND FORCES IN EXCESS OF THE DESIGN CRITERIA, EARTHQUAKES, AND HAIL).

2. ACTS OF NEGLIGENCE OR ABUSE OR MISUSE BY GOVERNMENT OR OTHER PERSONNEL, INCLUDING ACCIDENTS, VANDALISM, CIVIL DISOBEDIENCE, WAR, OR DAMAGE CAUSED BY FALLING OBJECTS.

3. DAMAGE BY STRUCTURAL FAILURE, SETTLEMENT, MOVEMENT, DISTORTION, WARPAGE, OR DISPLACEMENT OF THE BUILDING STRUCTURE OR ALTERATIONS MADE TO THE BUILDING.

4. CORROSION CAUSED BY EXPOSURE TO CORROSIVE CHEMICALS, ASH OR FUMES GENERATED OR RELEASED INSIDE OR OUTSIDE THE BUILDING FROM CHEMICAL PLANTS, FOUNDRIES, PLATING WORKS, KILNS, FERTILIZER FACTORIES, PAPER PLANTS, AND THE LIKE.

5. FAILURE OF ANY PART OF THE SSSMR SYSTEM DUE TO ACTIONS BY THE OWNER TO INHIBIT FREE DRAINAGE OF WATER FROM THE ROOF AND GUTTERS AND DOWNSPOUTS OR ALLOW PONDING WATER TO COLLECT ON THE ROOF SURFACE. CONTRACTOR'S DESIGN SHALL INSURE FREE DRAINAGE FROM THE ROOF AND NOT ALLOW PONDING WATER.

6. THIS WARRANTY APPLIES TO THE SSSMR SYSTEM. IT DOES NOT INCLUDE ANY CONSEQUENTIAL DAMAGE TO THE BUILDING INTERIOR OR CONTENTS THAT IS COVERED BY THE WARRANTY OF CONSTRUCTION CLAUSE INCLUDED IN THIS CONTRACT.

7. THIS WARRANTY CANNOT BE TRANSFERRED TO ANOTHER OWNER WITHOUT WRITTEN CONSENT OF THE CONTRACTOR; AND THIS WARRANTY AND THE CONTRACT PROVISIONS WILL TAKE PRECEDENCE OVER ANY CONFLICTS WITH STATE STATUTES.

**

CONTRACTOR'S FIVE (5) YEAR NO PENAL SUM WARRANTY
FOR
STRUCTURAL STANDING SEAM METAL ROOF (SSSMR) SYSTEM
(continued)

**REPORTS OF LEAKS AND SSSMR SYSTEM DEFICIENCIES SHALL BE RESPONDED TO WITHIN 48 HOURS OF RECEIPT OF NOTICE, BY TELEPHONE OR IN WRITING, FROM EITHER THE OWNER OR CONTRACTING OFFICER. EMERGENCY REPAIRS TO PREVENT FURTHER ROOF LEAKS SHALL BE INITIATED IMMEDIATELY; A WRITTEN PLAN SHALL BE SUBMITTED FOR APPROVAL TO REPAIR OR REPLACE THIS SSSMR SYSTEM WITHIN SEVEN (7) CALENDAR DAYS. ACTUAL WORK FOR PERMANENT REPAIRS OR REPLACEMENT SHALL BE STARTED WITHIN 30 DAYS AFTER RECEIPT OF NOTICE, AND COMPLETED WITHIN A REASONABLE TIME FRAME. IF THE CONTRACTOR FAILS TO ADEQUATELY RESPOND TO THE WARRANTY PROVISIONS, AS STATED IN THE CONTRACT AND AS CONTAINED HEREIN, THE CONTRACTING OFFICER MAY HAVE THE SSSMR SYSTEM REPAIRED OR REPLACED BY OTHERS AND CHARGE THE COST TO THE CONTRACTOR.

IN THE EVENT THE CONTRACTOR DISPUTES THE EXISTENCE OF A WARRANTABLE DEFECT, THE CONTRACTOR MAY CHALLENGE THE OWNER'S DEMAND FOR REPAIRS OR REPLACEMENT DIRECTED BY THE OWNER OR CONTRACTING OFFICER EITHER BY REQUESTING A CONTRACTING OFFICER'S DECISION UNDER THE CONTRACT DISPUTES ACT, OR BY REQUESTING THAT AN ARBITRATOR RESOLVE THE ISSUE. THE REQUEST FOR AN ARBITRATOR MUST BE MADE WITHIN 48 HOURS OF BEING NOTIFIED OF THE DISPUTED DEFECTS. UPON BEING INVOKED, THE PARTIES SHALL, WITHIN TEN (10) DAYS, JOINTLY REQUEST A LIST OF FIVE (5) ARBITRATORS FROM THE FEDERAL MEDIATION AND CONCILIATION SERVICE. THE PARTIES SHALL CONFER WITHIN TEN (10) DAYS AFTER RECEIPT OF THE LIST TO SEEK AGREEMENT ON AN ARBITRATOR. IF THE PARTIES CANNOT AGREE ON AN ARBITRATOR, THE CONTRACTING OFFICER AND THE PRESIDENT OF THE CONTRACTOR'S COMPANY WILL STRIKE ONE (1) NAME FROM THE LIST ALTERNATIVELY UNTIL ONE (1) NAME REMAINS. THE REMAINING PERSON SHALL BE THE DULY SELECTED ARBITRATOR. THE COSTS OF THE ARBITRATION, INCLUDING THE ARBITRATOR'S FEE AND EXPENSES, COURT REPORTER, COURTROOM OR SITE SELECTED, ETC., SHALL BE BORNE EQUALLY BETWEEN THE PARTIES. EITHER PARTY DESIRING A COPY OF THE TRANSCRIPT SHALL PAY FOR THE TRANSCRIPT. A HEARING WILL BE HELD AS SOON AS THE PARTIES CAN MUTUALLY AGREE. A WRITTEN ARBITRATOR'S DECISION WILL BE REQUESTED NOT LATER THAN 30 DAYS FOLLOWING THE HEARING. THE DECISION OF THE ARBITRATOR WILL NOT BE BINDING; HOWEVER, IT WILL BE ADMISSIBLE IN ANY SUBSEQUENT APPEAL UNDER THE CONTRACT DISPUTES ACT.

A FRAMED COPY OF THIS WARRANTY SHALL BE POSTED IN THE MECHANICAL ROOM OR OTHER APPROVED LOCATION DURING THE ENTIRE WARRANTY PERIOD.

SECTION C10

INTERIOR CONSTRUCTION
09/15

C10 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

C10 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and Government standards that are referenced in the section text that are not found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website, are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the standard at the time of contract award.

C10 1.1.1 Industry Standards and Codes

Sealant, Waterproofing & Restoration Institute

C10 1.1.2 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-101-01, Architecture UFC 3-120-10, Interior Design)
UFC 1-200-02	High Performance and Sustainable Buildings

C10 1.2 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

Verification of satisfactory interior construction assemblies' performance shall be via Performance Verification Testing, as detailed in this section of the RFP. Provide special tests and special inspections in accordance with UFGS Section 01 45 00.05 20, *Design and Construction Quality Control.* The Contractor shall pay the cost of all testing.

C10 1.2.1 Slump and Compressive Strength Tests for Grout

Slump between 8 and 11 inches (200 and 275 mm). Provide minimum grout strength of 2000 PSI in 28 days, as tested per ASTM C 1019.

C10 1.2.2 Door Closure Field Test for Demountable Partitions, Retractable Partitions, Operable Panels, and Accordion Partitions

Perform a flashlight test of all joints in partitions and partition to wall, floor, and ceiling. No light from a flashlight shall be visible from the opposite side of the partition. Adjust partition at locations where light is visible, and re-test.

C10 1.2.3 Field Test for Sprayed Fire-Resistive Materials

A qualified testing and inspection agency shall be engaged to prepare testing and adhesion reports to test for bond strength. Bond strength shall be tested per ASTM E 736 and be found to meet the requirements in UL's *Fire Resistance Directory* for coating materials.

C10 1.3 DESIGN SUBMITTALS

Design submittals shall be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures*, UFC 3-101-01, *Architecture*, and UFC 3-301-01, *Structural Engineering*.

C10 1.4 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications.* In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following submittals as a minimum:

Doors, door hardware, windows and glazing, cabinets and countertops, casework, and fireproofing/firestopping.

All structural elements necessary for construction.

C10 1.5 SUSTAINABILITY

Provide products and systems in accordance with UFGS 01 33 29.05 20 Sustainability Reporting for Design Build.

C1010 PARTITIONS

For general use, metal studs and standard grade GWB, CMU with prime filler coat, or CMU/cast-in-place concrete with GWB or skim coat plaster are acceptable unless shown otherwise in the Project Program. Reinforce points where doorknobs can strike a wall and anchorage points for wall mounted equipment.

Provide control joints and installation techniques as recommended by the manufacturer. See PTS Section C30, *Interior Finishes*, for additional information.

Provide painted GWB with access panels at surfaces furred for HVAC, plumbing and other utility services and controls behind wall surfaces.

Acceptable systems where “IMPACT RESISTANCE” (areas subject to physical abuse or wear) is designated in the project program requirements for impact resistance systems include:

a. CMU/cast-in-place concrete with or without plaster or furred impact resistant GWB or surface applied impact resistant textured acrylic architectural coating system.

b. GWB/metal stud system reinforced for impact resistance with a double layer of gypsum board using at least one layer of impact resistant gypsum board to resist denting and puncturing on the impact surface. If wall is subjected to impact on both sides, both sides of the stud require a double layer of gypsum board. Structural, mechanical, and acoustical design requirements effect the metal stud/gypsum support configuration.

C101001 FIXED PARTITIONS

Provide fixed partitions, except where demountable or retractable partitions are specifically required by the “Room Requirements”, to include wood or metal studs, GWB, plaster, masonry and cast-in-place concrete walls. Sound-rated partition assemblies shall have a minimum Sound Transmission Coefficient (STC) as required by the project program. Construct sound-rated bulkheads above partition assemblies for continuity to the deck above.

C101001 1.1 CAST-IN-PLACE INTERIOR CONCRETE WALLS

Accomplish work in accordance with UFC 1-200-01, ACI 117 and 301/301M. Concrete Mix Design shall be suitable for the job conditions.

C101001 1.2 MASONRY PARTITIONS

Accomplish work in accordance with ACI 530.1/ASCE 6/TMS 602 and associated ASTM Standards for concrete masonry wall construction.

C101001 1.2.1 Testing

Masonry strength shall be determined in accordance with ACI 530.1. Where fire-rated assemblies are indicated, provide concrete masonry units that have been tested in conformance with ASTM E 119. Provide certificate of compliance to the Designer of Record (DOR) that the

materials and assemblies meet the fire ratings indicated on the drawings.

C101001 1.2.2 Masonry Units Types

C101001 1.2.2.1 Concrete Masonry Units

Units of modular dimensions and air, water or steam cured. Surfaces of units to be plastered or stuccoed shall be sufficiently rough to provide bond and exposed surfaces of units shall be smooth and of uniform texture.

a. Hollow Load-Bearing Units: ASTM C 90, Type I or II, made of lightweight or normal weight aggregate.

b. Hollow Non-Load-Bearing Units: ASTM C 129, Type I or II, made with lightweight or normal weight aggregate.

c. Special Shapes: Provide special shapes as necessary to complete the work.

d. Fire-Rated CMU: Products shall be tested and approved by United Laboratories (UL) according to testing methods described in ASTM E 119, and listed as 2, 3 or 4-hour fire-rated.

C101001 1.2.2.2 Glass Masonry Units

Provide glass block units made of clear colorless glass with polyvinyl butyl edge coating. Provide all aggregates, horizontal and vertical joint reinforcing, panel anchors, and expansion strip as recommended by the glass block manufacturer.

C101001 1.2.3 Masonry Partition Materials

a. Mortar - Provide ASTM C 270, Type N or S for non-shear-wall interior masonry. For Glass Block use Type S, White Portland cement.

b. Portland Cement - ASTM C 150, Type I, II, or III.

c. Masonry Cement - ASTM C 91, Type N, S, or M.

d. Sand - ASTM C144.

e. Grout - ASTM C 476, Fine aggregate for grouting cells / spaces 3″ (75 mm) or less, or coarse aggregate for grouting cells / spaces greater than 3″ (75 mm). Slump between 8 and 11 inches (200 and 275 mm). Provide minimum grout strength of 2000 PSI in 28 days, as tested per ASTM C 1019.

C101001 1.2.4 Masonry Accessories

a. Horizontal Joint Reinforcement – Fabricate from cold drawn steel wire, ASTM A 82. Wire shall be hot-dipped galvanized after fabrication in accordance with ASTM A 153/ A 153M, Class B-2, 1.5 ounces of zinc per square foot (42.52 g / 0.0929 sq. meter).

b. Anchors and Wall Ties – Provide of stainless steel, ASTM A 167, Type 304, or zinc-coated steel.

c. Reinforcing Bars – ASTM A 615 / A 615M.

C101001 1.3 COLD-FORMED METAL FRAMING

Cold-Formed Metal Framing shall be designed and constructed in accordance with the provisions of UFC 1-200-01 and the International Building Code.

Load-Bearing Cold-Formed Metal Framing shall also be designed in accordance with ASTM C 955. Install in accordance with ASTM C 1007.

C101001 1.3.1 Studs

Galvanized steel, ASTM A 653 / A 653M, SS Grade 50, G60

C101001 1.3.2 Framing Accessories

Fabricate steel-framing accessories of the same material and finish used for framing members, with minimum yield strength of 33,000 psi (230 Mpa). Accessories include, but are not limited to, the following: bracing, bridging, blocking, web stiffeners, end and foundation clips, gusset plates, stud kickers, knee braces, girts, joist hangers, reinforcing and backer plates.

Provide permanent metal-to-metal contact separation from stud to electrical conduits, plumbing pipes, and other internal wall system components, such as electrical wires.

C101001 1.4 METAL SUPPORT ASSEMBLIES

Provide steel materials for metal support systems with galvanized coating per ASTM A 653/ A 653M, G60; aluminum coating ASTM A 463/ A 463M, T1-25; or a 55% aluminum-zinc coating ASTM A 792.

C101001 1.4.1 Suspended and Furred Ceiling Systems, and Wall Furring

ASTM C 841(for lath); ASTM C 645 (for GWB).

C101001 1.4.2 Non-load-Bearing Wall Framing / Furring

ML/SFA MLF (for lath); ASTM C 645, but not thinner than 0.0179 inch (0.4547 mm) thickness. Provide 0.0329 inch (0.8357 mm) minimum thickness for supporting wall hung items such as cabinetwork, equipment and fixtures and for GWB.

C101001 1.5 ROUGH CARPENTRY

Unless otherwise noted, all rough carpentry shall be concealed from view. All framing and board lumber shall be graded and marked by a recognized association or independent inspection agency. Certification of grade is acceptable in lieu of grade markings. Framing lumber such as studs, plates, caps, bucks and nailers shall be of the minimum grade for the application in accordance with the grading rules for the local species of framing and board lumber.

C101001 1.5.1 Moisture Content

Air-dry or kiln dry lumber as follows:

a. Framing lumber and boards – 19% maximum

b. Timbers 5″ and thicker – 25% maximum

C101001 1.5.2 Fire-retardant Treatment

Comply with AWPA C20 or AWPA C27.

C101001 1.5.3 Preservative Treated Lumber

Preservative treated lumber shall be in accordance with AWPA Standards.

C101001 1.5.4 Structural Lumber

Provide of species and grade as listed in AF&PA 101 that have the following minimum allowable unit stresses: 1050 Fb, 700 Fc with 1,200,000 E (for engineered uses) but not less than required by structural calculations.

C101001 1.5.5 Plywood, Structural

PS-1, PS-2.

a. Plywood (Concealed) - C-D grade, exposure 1 durability classification, span rating of 24/16 or greater.

b. Plywood Shear Walls - Structural I, C-C or C-D grade, and a minimum thickness of 1/2 inch (12.5 mm), but not less than required by structural calculations.

C101002 DEMOUNTABLE PARTITIONS

This paragraph covers unitized/component based demountable walls/partitions and associated work, including tracks and anchoring systems. Requirements and configurations shall be in accordance with the project requirements. Majority of the components and hardware shall be provided by a single manufacturer and on the manufacturer's current GSA pricelist.

C101002 1.1 PERFORMANCE REQUIREMENTS

C101002 1.1.1 Product Construction

Panels and framework shall be unitized/component based(not stick built), and non-progressive. All panel components including frames, glass frames, door frames, base trim, ceiling trim, and tracks shall be cold-formed steel or extruded aluminum and powder coated. Panels shall be a minimum of 2-1/4" thick, and shall have panels available between 6"-48" with 1/16" minimum with nominal widths and filler panels available. Panels shall have no more than a 1/4″ reveal between adjacent panels or the use of connectors in the same finish of the skin. Panels shall have integrated leveling devices and have a minimum of 1/2″ adjustability at the ceiling and 1" of adjustability at the floor. Walls shall be capable of hanging any manufacturer's systems furniture. Walls must meet seismic requirements when applicable.

C101002 1.1.2 Surface Skin

Wall surfaces to be available including fabric, wood veneer, plastic laminate, painted MDF, glass, plexi-glass, resin, dry erase board, metal, and custom paint, with the option of being be segmented or monolithic. Surfaces all be interchangeable with the ability to apply a new skin/finish.

C101002 1.1.3 Door Assemblies

Doors shall be a minimum of 1-3/4" thick and available as a hinged or pivot door with the option of being a single or double doors, and with or without glass. All hardware to be included. Door and Frame assemblies shall be aligned and fitted, and securely anchored to partitions.

C101002 1.1.4 Glazing

Comply with the Federal Safety Standard for Architectural Glazing Materials and shall be factory installed. Options shall include clear, frosted, patterned, custom etched, back painted, and available for use on panels and doors.

C101002 1.1.5 Burning Characteristics and Fire Endurance

The system shall have a Class ‘A’ (under 25) flame spread rating in conformance with ASTM E 84.

Provide fabric and lining with a flame spread rating of 25 or less, fuel contribution rating of 15 or less, and a smoke generation of 50 or less when tested in accordance with ASTM E 84.

C101002 1.1.6 Acoustical Performance

Sound-rated partition assemblies shall have a minimum Sound Transmission Coefficient (STC) of as required by the RFP Part 3, Project Program. STC ratings must be laboratory test and documentation must be provided. Construct sound-rated bulkheads above partition assemblies for continuity to the deck above.

C101002 1.1.7 Structural Performance

Panel deflection shall not exceed $1/120^{th}$ of the vertical span when tested in accordance with ASTM E 72.

C101002 1.1.8 Electrical Requirements

Modular power options shall be available within solid wall cavities, base areas and frames and shall have open accessibility before, during and after installation. Power shall be accessible to power and data cabling, disconnection, and reconnection to accommodate wall disassembly and relocation. Power Supply to consist of an 8-wire system with 3,3,2 circuits and 2+1 grounding or a 10-wire system with

4-4-2 circuits and 2+2 grounding with isolated grounding available. UL Listed manufactured wiring system rated for 20amp 120V/208V or 120V/240V. The components shall have a permanent label listing manufacturer, catalog number, CSA/UL listing. Component's wiring shall not be "de populated" to impede future configurations. Electrical system must be capable of working with other manufacturer's products. Light switch and outlet devices shall be provided by the mfr and be fully pre-wired and pre-installed at the factory. Cables shall have a J-Box option for hardwiring any manufacturer's furniture power feed cable. Receptacles to indicate which circuit within the modular wiring zone to which they are connected. Receptacles may/may-not be pre-dedicated but must be able to easily be switched to suit the user circuit requirements. Additional power and/or data modules & hardwired outlets (fire, safety, thermostats etc) shall have the option of being installed on any panel.

C101002 1.1.9 Installation

To include all materials, labor, equipment, and additional seismic bracing as necessary, needed for a turn-key installation. Existing Walls, ceilings, ceiling suspension systems, or floors shall not be altered or damaged to accommodate function of partitions. Manufacturer or manufacturer's representative must take field measurements prior to fabrication.

C101002 1.1.10 Field Test

Perform field tests as required in Paragraph C10 1.2 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING.

C101002 1.2 WIRE MESH PARTITIONS

Wire mesh partitions shall be complete with all items necessary for a useable, and rigid installation. Provide pre-manufactured assemblies with pre-bolted connections. Wire mesh partition doors require a means of locking. Key and cylinder locks are required for partition doors used daily.

C101002 1.2.1 Materials

a. Steel shapes, plates and bars – ASTM A 36/ A 36M.

b. Cold-formed steel – AISI SG-673.

c. Wire mesh – Provide carbon steel wire with woven diamond mesh and intermediate crimping. Wire shall be 10 gauge mesh for seasonal storage, 6 gage mesh for protection of equipment and tools.

C101003 RETRACTABLE PARTITIONS

This paragraph covers all retractable partitions and associated work, including tracks and anchoring systems. Wall assemblies above retractable partitions shall provide a sound barrier equal to, or greater than, the sound rating of the partition.

C101003 1.1 PERFORMANCE REQUIREMENTS

The retractable partitions below shall meet the following performance requirements.

C101003 1.1.1 Burning Characteristics

The system shall have a Class 'A' (under 25) flame spread rating in conformance with ASTM E 84.

C101003 1.1.2 Fire Endurance

Provide fabric and lining with a flame spread rating of 25 or less, fuel contribution rating of 15 or less, and a smoke generation of 50 or less when tested in accordance with ASTM E 84.

C101003 1.1.3 Acoustical Performance

Sound-rated partition assemblies shall have a minimum Sound Transmission Coefficient (STC) of as required by the project program. Construct sound-rated bulkheads above partition assemblies for continuity to the deck above.

C101003 1.1.4 Electrical Requirements

Electrically powered partitions shall be controlled by electrical switches located in the room where the partitions are stored. Electrical outlets shall be tied to the building electrical power system through over-head or end-mount base feeds.

C101003 1.1.5 Door Closure Field Test

Perform field tests as required in Paragraph C10 1.2 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING.

C101003 1.2 PARTITION MATERIALS

a. Aluminum Extrusions - ASTM B221, Alloy 3003

b. Steel Sheets - ASTM A 653 / A653M

c. Fabric Coating - CFFA-W-101-B, Type II

C101003 1.2.1 OPERABLE PANEL PARTITIONS

Operable panel partitions shall be factory finished, supported from an overhead track without floor guides, and complete with hardware, track, and accessories necessary for operation.

a. Suspension System - shall consist of steel or heavy duty extruded aluminum track connected to the structural system by threaded rods, and trolleys designed to support the weight of the partition. Provide steel track of 16 gage minimum, phosphate treated and finished, or zinc or cadmium coated, or provide extruded aluminum track with minimum thickness of 1/8 inch (3.2 mm). Tracks shall have an integral ceiling guard. Trolleys shall have at least two

ball bearing nylon or steel tired wheels spaced according to manufacturer's design criteria and four at an end post.

C101003 1.2.2 ACCORDION PARTITIONS

Provide full accordion type partitions, factory finished, supported from overhead track without floor guides, and complete with hardware, track, and accessories necessary for operation.

a. Suspension System – shall consist of steel or aluminum track and trolleys designed to support the weight of the partition. Provide steel track of 16 gage minimum, phosphate treated and finished, or zinc or cadmium coated, or provide extruded aluminum track with minimum thickness of 1/8 inch (3.2 mm). Tracks shall have an integral ceiling guard. Trolleys shall have at least two ball bearing nylon or steel tired wheels spaced according to manufacturer's design criteria and four at an end post.

C101003 1.2.3 CUBICLE TRACK AND HARDWARE

Provide heavy-duty ceiling surface mounted tracks except in ceiling heights over nine feet, hanger mounted tracks may be used, with stainless steel fasteners. Track bends shall be a minimum of 18 inches radius.

C101003 1.2.3.1 Materials

a. Extruded Aluminum Track - ASTM B 221 and ASTM B 456; alloy 6063-TS, channel shape minimum 1-1/4 inch (32 mm) wide by 1-1/8 inch (29 mm) deep, 0.050 inch (1.27 mm) minimum wall thickness.

b. Carrier Unit - Provide silent type with double canted wheel carrier. Wheels shall have nylon on stainless steel hooks with swivel to support curtain. Provide 2.2 carriers for every foot of track length plus one additional carrier.

C101004 INTERIOR GUARDRAILS & SCREENS

This paragraph covers assemblies to include interior guardrails associated with open sides of floors, but not stairs' handrails. Also included are screens and associated work to include tracks and anchoring systems.

C101004 1.1 MATERIALS

a. Structural Carbon Steel - ASTM A 36/ A 36M

b. Structural Tubing - ASTM A 500

c. Steel Pipe - ASTM A 53, Type E or S, Grade B

d. Aluminum Alloy products - Products shall conform to ASTM B 209 for sheet plate, and ASTM B 221 for extrusions, and ASTM B 26/B 26M or ASTM B 108 for castings, as applicable.

C101004 1.2 FABRICATION FINISHES

C101004 1.2.1 Galvanizing

Hot-dip galvanize steel items to be exposed to water contact. Zinc-coat steel in the largest unit possible. Galvanize per ASTM A 123/ A 123M, ASTM A 153/ A 153M or ASTM A 653/ A 653M, G90, as applicable.

C101004 1.2.2 Non-Ferrous Metal Surfaces

Protect by plating, Class I anodic coatings, or 70% polyvinylidene fluoride organic coatings. See Section C30 for additional coatings/finish information.

C101004 1.3 GUARDRAILS

Design guardrails in accordance with the IBC, except delete the handrail design load reduction for code exceptions for residential, prisons, industrial, high hazard, and storage facilities. Provide materials in accordance with NAAMM PR, and provide the same size rail and post. Provide pipe collars of the same material and finish as the handrail and posts.

C101005 INTERIOR WINDOWS

For fixed interior windows, assemblies include frames, glazing, caulking, and other associated work. For other window types, see PTS Section B20, *Exterior Enclosure*. Glazing for windows specified under this section is located in C101007, “Interior Glazing.”

C101005 1.1 ALUMINUM WINDOWS

Each window unit shall be a complete factory assembled unit with or without glass installed. Fabrication of window units shall comply with AAMA 101.

a. Fixed Windows - Type F, LC25 for residential, or HC40 for non-residential (commercial).

b. Sliding Glass Pass Windows - Frames and glass channels shall be of heavy type 6063-TS aluminum extrusions. Provide 1/4-inch (6.35 mm) clear tempered glass.

c. Bullet-Resistant Pass Windows - Conform to UL classification (1 through 8) as required by the installation. Provide fixed, bullet-resistant glazing with pass tray for installations requiring high levels of security.

C101005 1.2 VISION PANELS

a. Hollow Metal Vision Panels – shall meet the requirements of hollow metal frames, paragraph C102001.

C101005 1.3 BULLET RESISTANT WINDOWS

Windows shall meet U.L. Classification, Rating Level 1 through 8, as required for the installation and stated in the project program. Each window shall be a complete factory-assembled unit with glass factory or field installed.

C101005 1.3.1 Glazing

Provide as specified under this section, paragraph entitled “Interior Glazing.”

C101005 1.3.2 Setting Materials

Provide types required for the glazing applicable setting method specified in the *GANA Glazing Manual*. If sealants are employed, use elastomeric sealants, ASTM C 920, Type S or M, Grade NS, Class 12.5, Use NT.

C101005 1.4 FINISHES

Finish exposed aluminum or steel window surfaces as follows:

a. Anodic Coating

Architectural Class I (0.7 mil or thicker), designation AA-M10-C22-A41, clear (natural) or A42, integral color or A44, electrolytically deposited color anodized.

b. Organic Coating

Provide a high-performance coating in accordance with AAMA 2605 with a total dry film thickness not less than 1.2 mils (0.03 mm).

C101006 GLAZED PARTITIONS & STOREFRONTS

This paragraph covers fixed interior glazed partitions, including interior storefronts with doors. Assemblies include frames, glazing, caulking, and other associated work. See Section B20, *Exterior Enclosure*, for aluminum storefront framing components and performance requirements.

C101006 1.1 GLASS

Refer to “Interior Glazing”.

C101006 1.2 SETTING AND SEALING MATERIALS

Provide as specified in the *GANA Glazing Manual*, SIGMA TM-3000 and SIGMA TB-3001, and per manufacturers recommendations.

C101007 INTERIOR GLAZING

ASTM C 1036, unless specified otherwise. Provide patterned glass where required to obscure view into bathrooms and dressing rooms.

Provide setting and sealing materials, stops and gaskets as recommended by the glass or acrylic sheet manufacturer.

Glazing thickness indicated in the following paragraphs is the minimum acceptable thickness. Provide thicker glazing if required by the code or the manufacturer for the given application.

C101007 1.1 GLASS

C101007 1.1.1 Clear Glass

Type I, class I (clear), quality q4 or q5 for patterned glass.

C101007 1.1.2 Wire Glass

Provide glazing of Type II, Class I, Form I, Quality q8 mesh stainless steel, diamond pattern, 1/4 inch (6.35 mm) thick. Glass shall comply with ASTM E 163.

C101007 1.1.3 Patterned Glass

Type II, Class 1 (translucent), Form 3 (patterned), quality q7 (decorative), Finish f2 (patterned two sides), 1/8 inch (3.2 mm).

C101007 1.1.4 Laminated Glass

Fabricate from two pieces of Type I, Class 1, quality q3 glass laminated together with a clear, 0.030 inch (0.75 mm) thick polyvinyl butyral interlayer. Total thickness shall be nominally 1/4 inch (6.35 mm).

C101007 1.1.5 Bullet-Resistant Glass

Provide bullet resistant composite glazing panel listed by UL ABPMED with a power rating corresponding to the installation prescribed, and in accordance with UL 752.

C101007 1.1.6 Tempered Glass

ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated), Type I, Class 1 (clear), quality q3.

C101008 INTERIOR JOINT SEALANT

Sealant joint design and application shall be in accordance with the general requirements of *Sealants: A Professionals' Guide* from the Sealant, Waterproofing & Restoration Institute. Refer to manufacturers' recommendations for chemical resistance.

C101008 1.1 JOINT SEALANT TYPES FOR INTERIOR WORK

Sealants shall be paintable, and shall match the color of adjacent surfaces.

a. Vertical Surfaces - ASTM C 920, Type M, Grade NS, Class 25, Use NT.
b. Horizontal Surfaces - ASTM C 920, ASTM D 1190 for traffic surfaces, Type M, Class 25, Use T.
c. Pools and pool decks – for vertical joints, Gun grade: ASTM C 920, Type M, Grade NS, Class 25, NT; for horizontal deck traffic joints pourable: ASTM C 920, Type M, Grade P, Class 25, T

d. Food Service – Use a Vinyl Acetate Homopolymer, or other low VOC, non-toxic sealant approved for use in food preparation areas.

e. Chemical Resistance - Ensure that all sealants are chemically compatible or resistant to adjacent materials, or materials that may come into contact with the sealants in the course of the building life.

C1020 INTERIOR DOORS

Door hardware shall be as specified in “Interior Door Hardware” in this section.

C102001 STANDARD INTERIOR DOORS

This paragraph covers all standard interior wood or hollow metal doors with frames, hardware, locks, and finish.

C102001 1.1 STEEL DOORS

Hardware preparation shall be in accordance with SDI 17, ANSI/DHI A115 and ANSI/SDI 100. Doors shall be hung in accordance with ANSI/SDI 100.

C102001 1.1.1 Standard Steel Doors

ANSI A 250.8, Level 1, (occasional use, low abuse types such as closet doors without locks); Level 2, (low use, moderate abuse types such as office/storeroom doors); Level 3, (moderate use, high abuse types such as BEQ sleeping room doors); Level 4, (high use, high abuse types such as corridors, stairways, assembly spaces, and main entry doors), with a physical performance level of ‘A’. Maximum door undercut shall not exceed 3/4 inch (19 mm).

C102001 1.1.2 Sound Insulated Doors and Frames

Provide sound insulated door and frame assemblies into rooms requiring wall assemblies to be sound insulated with a Sound Transmission Class (STC) rating as required. The STC rating for the door and frame assembly shall be not less than the wall assembly STC rating.

C102001 1.1.3 Accessories

a. Shelves for Dutch doors shall comply with SDI 111-B, and be of steel not lighter than 16 gage.

b. Louver shall comply with SDI 111-C, shall be stationary, sight-proof type. Use lightproof louvers if function of room requires darkness. Louver frames shall be 20-gage steel with louver blades minimum 24 gage.

C102001 1.2 STANDARD STEEL FRAMES

ANSI A 250.8. Form frames with welded corners for installation in masonry partitions and knock-down field assembled corners for installation in metal stud and GWB partitions. Frames shall be set in accordance with SDI 105. Form stops and beads with 20 gauge steel.

Provide a minimum of three jamb anchors and base steel anchors per frame, zinc-coated or painted with rust-inhibitive paint, not lighter the 18 gauge. Secure frames to previously installed concrete or masonry with expansion bolts in accordance with SDI 11-F. Provide mortar infill of frames in masonry walls, and gypsum board compound infill at each jamb anchor in metal frame walls.

C102001 1.3 FINISHES

a. Factory-Primed Finish. Doors and frames in non-humid, non-corrosive environments shall be factory primed with a rust inhibitive coating as specified in ANSI A 250.8. Factory prime doors on six sides of the door.

b. Zinc-Iron Alloy Coating (Galvanealed) and Factory Primed Finish

c. Fabricate interior doors and frames (for installation in such rooms as kitchens, laboratories, battery charging, utility rooms and humid areas such as shower/drying areas, areas with frequent floor mopping, or corrosive chemical atmospheres) from zinc coated steel, alloyed type, complying with ASTM A 653/ A 653M. Factory prime doors and frames as specified in ANSI A 250.8.

d. Manufacturer’s primer shall be compatible with door finish system in C30, *Interior Coatings*.

C102001 1.4 WOOD DOORS

C102001 1.4.1 Wood Doors and Frames

Install wood doors and frames according to workmanship requirements of the Architectural Woodwork Institute Quality Standard 900-T-4 Custom Grade. Wood door frames may only be used in residential construction.

For non-residential buildings provide extra-heavy doors for stairways, building entrances, corridors, assembly spaces, and other high use interior doors. Provide heavy duty doors for other non-residential locations and for residential buildings.

Wood doors shall be solid wood doors with wood core and solid wood edge bands. Vertical edge bands shall be one piece or laminated two-piece solid lumber to match face veneer species for natural finish wood doors. Reinforce door at all hardware attachments to door with sound grade hardwood. Horizontal edge bands shall be solid wood or structural composite lumber.

a. Stile and Rail Doors Provide premium or select grade Ponderosa pine, Douglas Fir, White Pine, or Yellow Poplar stile and rail doors conforming to WDMA I.S.6A-01. Doors shall be premium grade, heavy duty or as required by the project program.

b. Interior Flush Doors - Flush doors shall conform to WDMA I.S.6A-01. Doors shall be premium grade, heavy duty, or otherwise as required by the project program.

   Provide WDMA I.S. 1A-04 SCLC-5 structural composite lumber core, or staved lumber core, or PC-5 particleboard core construction. Do not use particleboard cores where it is anticipated that hardware may be

screw mounted to the doors. Provide hardwood or softwood veneers cut for the best presentation for natural finishing of doors. Set match veneers of all components of a door opening. Face veneers shall be 1/20” thick before sanding.

c. Closet Doors – Provide flush, paneled, or louvered doors of premium or custom grade, conforming to WDMA I.S.1A-01, premium or custom grade, heavy duty. Doors shall be hinged or sliding.

d. Acoustical Doors and Frames - WDMA I.S 1-A-2004 WDMA I.S.6A-01. Doors shall be premium or custom grade, heavy duty as required by the project program. Provide acoustical doors in solid core, constructed for door, hardware, and frame to provide a Sound Transmission Class (STC) rating of 39 (minimum) when tested in accordance with ASTM E 90.

C102001 1.4.2 Wood Door Accessories

a. Door Louvers - Louver shall comply with SDI 111-C. Louver frames shall be 20-gage steel with louver blades minimum 24 gage.

b. Door Light Openings - Provide glazed openings with the manufacturer’s standard wood moldings. Moldings for doors to receive a natural finish shall be of the same species and color of the face veneer.

C102001 1.4.3 Fabrication

a. Marking - Each door shall bear a stamp, brand or other identifying mark indicating quality and construction of the door.

b. Adhesives and Bonds - WDMA I.S. 1-A. Use Type I (water-proof) adhesive for assembly of interior doors and for the fabrication of stiles, rails, crossbands, and veneers. Adhesive for doors to receive a natural finish shall be non-staining. Type II (water resistant) is allowed for fabrication of core parts.

C102001 1.4.4 Finishes

Unless required otherwise by the project program, typically provide natural finish wood doors. Factory prime and or seal on all six sides of doors.

a. Factory Finish - Provide doors finished at the factory as follows: AWI Quality Standards Section 1500, specification for Conversion varnish, alkyd urea catalyzed polyurethane, or acrylated UV curable epoxy. The coating shall be AWI Quality Standards premium, medium rubbed sheen, with an open or closed grain effect. Poly-wrap prefinished wood doors at factory for shipping.

b. Field Finish - Prepare doors in accordance with WDMA I.S.1-A-2004. Factory prime or seal doors. Manufacturer’s primer or sealer shall be compatible with door finish system in Section C30, *Interior Finishes*.

C102002 GLAZED INTERIOR DOORS

This paragraph covers all glazed interior doors with glass, frames, hardware and locking devices. See paragraph entitled “Interior Glazing” in this section for glazing options.

C102002 1.1 ALUMINUM DOORS, FRAMES AND STOREFRONT

Provide swing-type aluminum doors and frames complete with framing members, transoms, side-lites, and accessories. Fabricate of ASTM B 221, Alloy 6063-TS for extrusions.

C102002 1.2 FABRICATION

C102002 1.2.1 Aluminum Frames

Provide frames with removable glass stops and glazing beads to accommodate fixed glazing. Countersink screws for exposed fastenings. Jointing of framing members shall obtain hairline fit, be reinforced, and mechanically secured.

C102002 1.2.2 Aluminum Doors

Doors shall be not less than 1-3/4 inches (44 mm) thick, with a minimum wall thickness of 0.125 inch (3.2 mm), except beads and trim, 0.050 inch (1.27 mm). Full glazed stile and rail doors shall have medium or wide stiles and rails. Maximum water leakage of the door and frame shall be “no uncontrolled water penetrating systems or appearing on systems’ normally exposed interior surfaces from sources other than condensation.” Water controlled by flashing and gutters that is drained to exterior and cannot damage adjacent materials or finishes is not considered water leakage.

C102002 1.2.3 Welding and Fastening

Locate welds and fasteners on unexposed surfaces, where possible. Exposed welds shall be dressed smoothly. Exposed fasteners shall have counter-sunk heads. Weld concealed reinforcements for hardware in place. Hardware reinforcements shall be of stainless steel or steel with a hot-dipped galvanized finish, and shall be secured with stainless steel screws.

C102002 1.2.4 Finishes

Provide exposed aluminum surfaces with factory finish of anodic or organic coating. Anodic coatings shall conform to AA 45, with an Architectural Class I finish, 0.7 mil or thicker. Organic coatings shall be a baked enamel finish in accordance with AAMA 2605 with a total dry film thickness not less than 1.2 mil. Exposed fasteners to match the door finish.

C102003 FIRE DOORS

This paragraph covers all interior fire doors, including all necessary frames, hardware, closing devices, and alarms associated with the door.

C102003 1.1 FIRE AND SMOKE DOORS AND FRAMES

Provide in conformance with NFPA 80 an NFPA 105. Fire doors and frames shall bear the label of UL, FM or WHI attesting to the rating required. Door and frame assemblies shall be tested for conformance per NFPA 252 or UL 10B (for neutral pressure) or UL 10C (for positive pressure). Wood fire doors shall also comply with ASTM E 152.

Provide stainless steel astragals complying with NFPA 80 for fire-rated assemblies and NFPA 105 for smoke control assemblies.

C102004 SLIDING AND FOLDING DOORS

Provide paneled or louvered closet doors of premium or custom grade, conforming to WDMA I.S.6A-01, heavy duty. Doors shall be sliding or bi-folding, as required by the program.

C102005 INTERIOR OVERHEAD DOORS

See paragraph titled “OVERHEAD AND ROLL-UP DOORS” within PTS Section B20.

C102006 INTERIOR GATES

Any special type gate installed in the interior of a facility, including frames, hardware, hoisting devices, finish, and other associated work.

C102007 INTERIOR DOOR HARDWARE

C102007 1.1 DOOR HARDWARE

Provide the services of an Architectural Hardware Consultant (AHC), Certified Door Consultant (CDC), or an Electrified Hardware Consultant (EHC) to assist the Designer of Record in preparation of the door hardware schedule and product selection. The hardware consultant shall sign and seal the door hardware construction submittal. Provide, as far as feasible, locks, hinges, pivots, and closers from one lock, hinge, pivot, or closer manufacturer's make. All door hardware shall be clearly and permanently marked by the manufacturer, on a location to be visible after installation. Modify hardware as necessary to provide features indicated or specified. For necessary hardware items not indicated in these specification sections, provide ANSI/BHMA grade 1 rated hardware.

C102007 1.1.1 Hardware for Fire Doors

All hardware provided shall meet the requirements of NFPA 80 for Fire Doors and NFPA 101 for exit doors. Hardware shall bear the label of Underwriter’s Laboratories, Inc., and be listed in UL BMD or labeled and listed by another testing laboratory acceptable to the contracting officer. Comply with NFPA 105 for smoke control assemblies.

C102007 1.1.2 Hinges

BHMA A156.1, Grade 1, 4-1/2 x 4-1/2 inches (108 x 108 mm) with non-removable pin or anti-friction bearing hinges.

C102007 1.1.3 Locks and Latches

For non-residential buildings use Series 1000, Operational Grade 1, Security Grade 2 for stairways, building entrances, corridors, assembly spaces, and other high use interior doors. Use Series 4000, Grade 1 for non-residential locations not using Series 1000 hardware. For residential buildings use Series 4000, Grade 2 for interior doors.

a. Mortise Locks and Latches - BHMA A 156.13, Series 1000, Operation Grade 1, Security Grade 2.

b. Bored Locks and Latches - BHMA A 156.2, Series 4000, Grade 1, or Grade 2.

C102007 1.1.4 Combination Locks

BHMA A 156.2. Heavy-duty, mechanical combination lockset with 5 pushbuttons, standard-sized knob or lever, 3/4-inch (19 mm) deadlocking latch, 2-3/4 inch (70 mm) back-set. Provide deadbolt key override option. Safelock, Simplex, and Venn are acceptable manufacturers. Provide a hardware grade equivalent to Grade 1, series 4000. Provide a 5-year parts and labor warranty.

A door into a sensitive area shall be fitted with a FF-L-2740A X-09 Heavy-duty, combination Electromechanical Deadbolt lock for pedestrian doors, with a drill resistant dial ring mounting plate, 2-3/4 inch (70 mm) back-set, with Automatic Lock Reset, High-Security combination scramble, and resistant to all forms of external manipulation and environmental attack. KABA-MAS is the acceptable manufacturer. Three Modes of Operation:

1) The Single Combination Mode allows access by dialing a six-digit combination.

2) The Dual Combination Mode allows access only when two separate codes are entered within 10 seconds of one another.

3) The Supervisory/Subordinate Mode allows access by a subordinate only after a supervisor code has been entered.

Audit Feature: Lock shall have a full compliment of auditing features, including non-resettable openings log, and unsuccessful attempts log (audits after 3 unsuccessful attempts) that resets once the proper access code is entered. Lock shall generate its own electrical energy with each turn of the dial, with no batteries or wires required. Lock shall be designed to fit industry standard door mounting pattern.

C102007 1.1.5 Card Key System

Provide card key type access units for specialized entries as required by the program. Provide lithium battery powered, magnetic stripe keycard locksets that are ANSI/BHMA A156.13, Series 1000, Grade 1, mortise or ANSI/BHMA A156.2, Series 4000, Grade 1, cylindrical locks, tamper resistant, UL listed with 1 inch (25 mm) throw deadbolt, 3/4-inch (19 mm) throw latch bolt, auxiliary dead-locking latch, and 2-3/4 inch (68.75 mm) backset. The latch bolt and the dead bolt shall be operated simultaneously by rotating inside lever. Locks with mechanical override lock cylinders are not acceptable. Locks shall be

operated only by a correctly encoded keycard. Use of a newly issued keycard automatically re-keys the lock and voids the previous keycard. The lock shall re-lock immediately after outside lever is turned and latch retracted. Locks shall have memory that is capable of recording up to 140 entries into each room, identification of the keycard used to access the room, the date and time of entry. Entry information of the lock shall be retrievable by a data key that can be inserted into the lock and then taken to the front desk printer to display information. Other components that are required for this system at the front desk are a personal or laptop computer, printer and encoder to program each key.

For exit device locks with card key access, provide mortise type, narrow stile exit devices with 24 volt DC, solenoid option for card key exterior access at aluminum storefront doors. Provide mortise type exit devices with 24 volt DC, solenoid option with alarm and remote exterior access for card key access at insulated hollow metal doors. The alarmed exit device shall sound when exiting only.

System shall be capable of accepting a minimum of 12 keycard access levels, security auditing and computer interfacing with the existing or new management system. Provide a single point of contact customer service representative accessible by telephone with a 10-digit telephone number without additional dialing hierarchies except that a maximum 4-digit extension is permissible. On-site service shall be provided within 3 hours from request within the first 12 months of occupancy. Provide a 5-year parts and labor warranty.

C102007 1.1.6 Exit Devices

BHMA A 156.3, Grade 1. Touch bars shall be provided in lieu of conventional crossbars and arms. Use manufacturer’s integral touch bars in aluminum storefront doors.

C102007 1.1.7 Cylinders and Cores

Provide cylinders and cores for new locks, including locks provided under other sections of this specification. Cylinders and cores shall have seven pin tumblers. Cylinders shall be products of one manufacturer, and cores shall be the products of one manufacturer. Rim cylinders, mortise cylinders, and knobs of bored locksets shall have interchangeable cores, which are removable by special control keys. Stamp each interchangeable core with a key control symbol in a concealed place on the core.

C102007 1.1.8 Keying System

Provide a master key system for the facility unless more than one tenant/tenant command shall reside in a facility. Provide a grand master keying system, or great, grand master keying system if multiple tenants or multiple buildings are required. Provide an extension of the existing keying system for existing facility additions. Name the manufacturer of the existing locks, and indicate if they have interchangeable cores. Provide construction interchangeable cores when subcontractors require keys during construction.

The Contractor shall coordinate a keying system meeting. The Contractor's Project Manager, Superintendent, Hardware Subcontractor, Electrical Subcontractor (if keying hardware is electric), Designer of Record, Contracting Officer, Public Works Base Hardware Specialist, and the Using Activity shall attend this meeting to establish the keying system for the project. This meeting is intended to identify base limitations, the necessary security, and access control within the facility. The meeting shall produce a marked up copy of the floor plan indicating the doors to receive locks and the doors to be keyed together, and any master keying or grand master keying

C102007 1.1.9 Keys

Furnish one file key, one duplicate key and one working key for each key exchange and for each master and grand master keying system.

C102007 1.1.10 Key Cabinet and Control System

BHMA A 156.5 Provide key cabinet with 25% more key hooks than required for interior and exterior doors.

C102007 1.1.11 Lock Trim

Cast, forged or heavy wrought construction and commercial plain in design.

a. Knobs and Roses - Knobs and roses shall meet test requirements of BHMA A 156.2 and BHMA A 156.13.

b. Lever Handles - Provide lever handles in lieu of knobs, as required by DoD ADAAS. All lever handles shall have the freewheeling feature.

C102007 1.1.12 Door Bolts

BHMA A 156.16. Provide automatic latching flush bolts for double doors with both door leafs active, BHMA A 156.3, Type 25.

C102007 1.1.13 Closers

BHMA A 156.4, Series C02000, Grade 1, with PT 4C, 1-1/2 inch piston, heavy duty forged arm, with full size cover.

C102007 1.1.14 Overhead Holders

BHMA A 156.8, Grade 1.

C102007 1.1.15 Closer Holder-Release Devices

BHMA A 156.15, Grade 1.

C102007 1.1.16 Door Protection Plates

Provide armor, mop, and kick plates conforming to BHMA A 156.6. Provide door kick plates on all doors with closers and doors leading to

corridors or circulation spaces. Provide armor plates on all doors that receive cart traffic. Provide mop plates on all doors in rooms that have a mop-able floor finish.

C102007 1.1.17 Door Stops and Silencers

BHMA A 156.16, Type L03011, three per single door and four per double door.

C102007 1.1.18 Thresholds

BHMA A 156.21.

C102007 1.1.19 Door Gasketing

BHMA A 156.22. Use light-proof gasketing for room functions that require darkness and integral sound-proof gasketing on acoustically rated doors.

C102007 1.1.20 Finishes

Provide one of the following hardware finish systems, matching the exterior hardware finish system.

a. BHMA A156.18. Hardware shall have BHMA 630 finish (satin stainless steel), unless specified otherwise. Provide items not manufactured in stainless steel in BHMA 626 finish (satin chromium plated) over brass or bronze, except surface door closers which shall have aluminum paint finish, and except steel hinges which shall have BHMA 652 finish (satin chromium plated). Hinges for exterior doors shall be stainless steel with BHMA 630 finish or chromium plated brass or bronze with BHMA 626 finish. Exit devices may be provided in BHMA 626 finish in lieu of BHMA 630 finish except where BHMA 630 is specified under paragraph entitled "Hardware Sets". Exposed parts of concealed closers shall have finish to match lock and door trim. Hardware for aluminum doors shall be finished to match the doors.

b. BHMA A156.18. Hardware shall have BHMA 612 finish (satin bronze), unless specified otherwise. Surface door closers shall have bronze paint finish. Steel hinges shall have BHMA 639 finish (satin bronze plated). Exposed parts of concealed closers shall have finish to match lock and door trim. Hardware for aluminum doors shall be finished to match the doors. Hardware showing on interior of bathrooms, shower rooms, toilet rooms, washrooms, laundry rooms, and kitchens shall have BHMA 629 finish (bright stainless steel) or BHMA 625 finish (bright chromium plated).

C102090 OTHER INTERIOR SPECIALTY DOORS

C102090 1.1 ACCESS DOORS

Provide manufactured access doors and frames of 16-gage steel minimum with concealed pivots or a continuous piano hinge and flush stainless steel cam latch. Finish with manufacturer’s standard primer coat finish and paint to

match the wall or ceiling unless a stainless steel finish is required in the Project Program. Provide UL Rated access doors in fire rated assemblies. Access panels located in furred wall spaces shall have an inserted material to match adjacent wall surface. Size access doors large enough to allow convenient hand and tool access and operation of controls and equipment beyond the door. If maintenance of controls or equipment beyond the door requires removal, size access door to allow removal and reinstallation of new equipment through the access door. Provide access panels capable of receiving finish material inserts in visible wall locations of habitable spaces.

C102091 OTHER INTERIOR PERSONNEL DOORS

Interior personnel doors not described by the assembly categories listed above.

C1030 SPECIALTIES

C103001 COMPARTMENTS, CUBICLES AND TOILET PARTITIONS

This paragraph covers assemblies for individual compartments, cubicles, toilet partitions and urinal screens.

C103001 1.1 TOILET PARTITIONS

FS A-A-60003. Provide toilet compartments at multi-fixture toilet rooms of Type I, Style B-Ceiling Hung, C-Overhead Braced, or F-Overhead braced-alcove. Reinforce panels to receive partition-mounted accessories. Steel and Plastic toilet partitions shall have a recovered materials content of 20 to 30 percent.

C103001 1.2 URINAL SCREENS

FS A-A-60003. Type III, Style A, floor supported and wall hung or Style D, wall hung. Wall hung urinal screens shall be secured with continuous flanges to urinal screen and wall.

C103001 1.3 HARDWARE AND FITTINGS

Chrome-plated or stainless steel door latches and coat hooks. Provide one coat hook per compartment door. Latches and hinges for handicapped compartments shall comply with DoD ADAAS.

C103001 1.4 FINISHES

Finishes shall comply with FS A-A-60003. Use only one type of partition per building.

a. Metal toilet partitions and urinal screens shall be made of stainless steel.

b. Solid plastic partitions shall be fabricated of polymer resins (polyethylene) formed under high pressure forming a single component section one inch thick. Color shall extend throughout the panel thickness.

c. Phenolic core panels.

d. Laminated plastic partitions are acceptable in low or limited use applications (one or two toilet stalls per toilet room).

C103002 TOILET AND BATH ACCESSORIES

This paragraph covers toilet and bath accessories including, but not limited to, soap dispensers, paper holders, towel receptacles, grab bars, and bathroom mirrors.

C103002 1.1 TOILET AND BATH ACCESSORIES

C103002 1.1.1 Toilet Tissue Dispensers

Provide surface or recessed mounted dispensers fabricated of stainless steel. Provide one horizontally or vertically mounted double-roll dispenser per toilet compartment, unless otherwise indicated.

C103002 1.1.2 Paper Towel Dispensers

Provide one per pair of sinks in toilet rooms without electric hand dryers, and one per room with electric hand dryers, unless otherwise indicated. Provide surface or recessed mounted towel dispenser constructed of a minimum 0.7mm 0.03 inch Type 304 stainless steel.

C103002 1.1.3 Combination Paper Towel Dispenser / Waste Receptacle

Provide a recessed or semi-recessed type with a capacity of 400 sheets of C-fold, single-fold, or quarter-fold towel and be constructed of 22-gage stainless steel. Provide one per pair of sinks, unless otherwise indicated. Provide the towel compartment door with a tumbler key lock locking mechanism.

C103002 1.1.4 Sanitary Napkin Disposal Units

Units shall be toilet partition or wall mounted of not less than 22 gage stainless steel, with top and bottom hinged access doors. Provide one in each Woman’s toilet stall, unless otherwise indicated. Each unit shall have leak-proof receptacle for disposable liners. Provide fifty disposable liners of the type standard with the manufacturer.

C103002 1.1.5 Medicine Cabinets

Provide units with plate or float glass mirrors on doors. Provide doors and frames of 16-gage steel with a continuous piano hinge and flush magnetic latch.

C103002 1.1.6 Towel Bars

Provide stainless steel towel bars with a minimum thickness of 0.015 inch (0.4 mm).

C103002 1.1.7 Grab Bars

Provide stainless steel grab bars per DoD ABAAS.

C103002 1.1.8 Robe Hooks

Provide stainless steel two-hook shape with integral wall flange, with a projection not less than 1-5/8 inches (41 mm).

C103002 1.1.9 Mirrors

Provide one manufactured framed electro-copper plated mirror per sink, or one full-size mirror for all sinks, unless otherwise indicated.

C103002 1.1.10 Soap Dispensers

Provide one soap dispenser per two sinks, with mechanical action dispensing valve. Do not mount soap dispenser on mirror. Surface mounted liquid type shall consist of a vertical Type 304 stainless steel tank with holding capacity of 1.2L (40 fluid ounces) with a corrosion-resistant all-purpose valve.

C103002 1.1.11 Electric Hand Dryer

Provide wall mount and electric hand dryer designed to operate at 110/125 volts, 60 cycles, single phase alternating current with a heating element core rating of a maximum 2100 watts. Provide dryer housing of single piece construction and of chrome plated steel. Provide one unit per three sinks, unless otherwise indicated.

C103003 MARKER BOARDS AND TACK BOARDS

This paragraph covers all marker boards, tack boards and fastening devices.

C103003 1.1 MATERIALS

a. Porcelain Enamel - Marker board writing surface shall be composed of porcelain enamel fused to a nominal 28 gage thick steel sheet, laminated to a 1/4-inch (6.35 mm) thick core material with a steel or foil backing sheet.

b. Cork shall be a continuous resilient sheet made from soft, clean, granulated cork, relatively free from hardback and dust and bonded with a binder suitable for the intended purpose. The cork sheet shall have a tensile strength of not less than 40 PSI (275.8 kPa) when tested in accordance with ASTM F 152.

c. Tack-board Covers - Provide woven fabric or vinyl wall covering over cork tack surface.

d. Aluminum - Aluminum frame extrusions shall be alloy 6063-T5 or 6063-T6, conform to ASTM B 221, and be a minimum of 0.06 inches (1.5 mm) thick.

e. Hardwood - Exposed hardwood for frames, cabinets and cases shall be oak, walnut or mahogany, with a factory applied stain and lacquer finish.

f. Glass - Provide tempered glass in accordance with ANSI Z97.1 and in conformance with ASTM C 1048.

C103003 1.2 PRESENTATION BOARD

The presentation board shall be a laminate covered wall-hung cabinet with lockable doors. Doors are to be attached to the cabinet with continuous piano hinges, and have a catch or closure to keep doors closed when not in use. The interior of the cabinet shall contain a porcelain enamel marker board writing surface with chalk-tray, a flip chart that can be hung on an interior door panel, and fabric covered tack surface on the interior door panels.

a. Marker Board - Marker board shall be a factory assembled, one-piece unit, and have a 28 gauge nominal steel porcelain enamel writing surface and a chalk-tray with end closure. Frame shall be aluminum, powder-coated steel, oak, walnut or mahogany.

b. Tack Board - Tack boards shall consist of a minimum 1/4-inch (6.35 mm) thick natural cork laminated to a minimum 1/4-inch (6.35 mm) thick hardboard, shall have an oak or aluminum frame, and be vinyl or fabric covered. Covers shall have a Class ‘A’ flame spread rating of 0-50, and a smoke developed rating of 0-450 in accordance with ASTM E 84.

C103004 IDENTIFYING DEVICES

This paragraph covers all signs, plaques, and traffic markers.

C103004 1.1 ASSEMBLIES

The signage system assemblies shall consist of three primary elements; a structural rail (with coordinating rail joiners to increase sign height in the field), removable copy inserts, and interlocking end caps or frame, and trim.

C103004 1.1.1 Inserts

The signage rails shall be designed as to accept ABS plastic signage inserts.

C103004 1.1.1.1 Insert Fabrication

The insert is the signage member to which message signage copy in the form of letters, numbers, and symbols shall be applied, and shall be interchangeable with similar sized rails of any other sign of equal or greater width and height. The ends of the rail and insert assembly shall be enclosed by end caps of prefinished 6064T5 extruded aluminum. Inserts shall be fabricated from 0.090 minimum ultra-violet resistant thickness extruded ABS Acrylic sheet core with 20.003 polycarbonate non-glare clear cap bonded to the core during the extrusion texturing process.

C103004 1.1.2 End Caps

End caps shall be injection-molded ABS plastic with integral color. The end caps shall be interchangeable to either end of each sign type, and any other similar sign of equal height. The end caps shall be interlocking mechanically with the inserts, and rail, requiring no

tools for assembly. End caps shall utilize straight corners (instead of radius corners). Spring clips shall be steel. Plastic spring clips are not acceptable.

C103004 1.1.3 Trim

Optional accessory top and bottom trim frames of prefinished (color as indicated 6063T5 extruded aluminum shall be provided to the signage types indicated.

C103004 1.1.4 Mounting

Mounting of the modular signage system shall include surface mounting with screw-on applications for interior and exterior walls and on selected doors as indicated, at the locations indicated, and other mounting devices as indicated.

C103004 1.1.5 Graphics Application

a. Tactile Letters and Symbols

Chemically weld tactile letters and symbols to front surface of signage inserts where indicated and where required by DoD ABAAS. Tactile letters and symbols shall be sized as indicated.

b. Braille

Grade II Braille. Provide Grad II Braille inlaid strip as indicated to match sign color.

C103004 1.2 ALUMINUM ALLOY PRODUCTS

Provide ASTM B 209 for aluminum sheet or plate, ASTM B 221 for aluminum extrusions and ASTM B 26/B 26M or ASTM B 108 for aluminum castings. Provide aluminum extrusions at least 1/8-inch (3.2 mm) thick and aluminum plate or sheet at least 16 gage thick. Provide aluminum castings of solid aluminum cast certified by AA 46 alloy designation B443.0. Where anodic coatings are specified, alloy shall conform to Aluminum Association’s alloy designation 514.0 or A514.0.

C103004 1.2.1 Aluminum Finishes

Provide exposed aluminum finishes with either mill finish, factory finished with anodic coating or organic coating. Anodized finishes shall conform to AA 45, Architectural Class I or II, with a coating thickness 0.7 mil or thicker. Organic coatings shall be a baked enamel finish with a dry film thickness not less than 1.2 mils, conforming to AAMA 605.2.

C103004 1.3 STEEL PRODUCTS

Provide ASTM A 36/A 36M for structural steel, ASTM A 167 for sheet and plates.

C103004 1.4 CAST METAL

a. Cast Aluminum, ASTM B 108

b. Cast Bronze, ASTM B 62

C103004 1.5 GLASS

ASTM C 1036, Type 1, Class 1, Quality q3

C103004 1.6 FIBER-REINFORCED POLYESTER (FRP)

ASTM D 3841, Type II, Grade 1

C103004 1.7 ACRYLIC SHEET

ASTM D 4802, Type III

C103004 1.8 POLYCARBONATE SHEET

SAE AMS 3611

C103004 1.9 EXTERIOR POST AND PANEL SIGNS

C103004 1.9.1 Posts and Panels

Provide one-piece extruded aluminum posts with not less than 0.125 inch (3.2 mm) wall thickness. Posts shall permit attachment of panel framing system. Provide cap for each post. Panel framing system shall consist of aluminum extrusions and interlocking track components designed to interlock with concealed fasteners. Panels shall be fabricated of rectangular extruded tubular aluminum with a minimum wall thickness of 0.125 inches. Panels shall be removable and interchangeable. Posts shall be embedded in solid concrete foundation.

C103004 1.9.2 Illumination

Provide concealed lighting within panel framing members. Provide T-12 slim-line lamps. Ballast shall be integrally mounted with high power factor and rated for use in up to minus 20 degrees F (minus 29 degrees C) ambient starting temperature.

C103005 LOCKERS

C103005 1.1 STEEL CLOTHING LOCKERS

C103005 1.1.1 FS AA-L-00486 (Rev J), enameled steel.

Provide ventilated, Single Tier Units (unless multi-tier permitted by Project Program), fully framed. Provide galvanized or galvaneal shelves and bottoms for all lockers, and fully galvanized or galvaneal lockers in locker spaces adjoining shower rooms. Provide full height door stiffeners.

C103006 SHELVING

Assemblies include all types of shelving with brackets and all supporting materials and finish, if required.

C103007 FIRE EXTINGUISHER CABINETS

Cabinet shall be constructed of 16 gauge cold-rolled steel door panel / front, and a 22 gauge cold-rolled steel tub. Cabinet shall be semi-recessed in new construction and surface-mounted in new mechanical/electrical spaces and existing wall construction. Cabinet shall be fire-rated if located in a fire rated wall assembly, and have a full-length piano hinge, and baked enamel finish. Provide a stainless steel cabinet door if cabinet is exposed to the environment. Size and locate fire extinguisher cabinets to encase extinguisher as required by NFPA 10 & 101.

C103008 COUNTERS

C103008 1.1 LAMINATE COVERED COUNTER TOPS

Fabricate with lumber and a core of exterior grade plywood (A-C Grade) or particleboard (ANSI A208.1, Grade 1-M-2 or better), glued and screwed to form an integral unit. Bond laminated plastic under pressure to exposed surfaces using manufacturer’s recommended glue.

a. Countertops shall be constructed to meet “Custom” quality grade as defined in AWI Quality Standards.

b. Finish shall meet NEMA LD 3, Grade PF 42 for plastic laminate.

C103008 1.2 ACRYLIC COUNTER TOPS

Provide 100% acrylic counter tops for use in non-residential construction.

Solid surfacing material shall consist of 100% pure acrylic polymer, mineral fillers, and pigments. The material shall be homogenous, not coated or laminated. Superficial damage to a depth of 0.010 inch (.254 mm) shall be repairable by sanding or polishing. Install with factory recommended fasteners/adhesives/sealant. Provide the following performance characteristics:

a. Tensile strength, ASTM D 638: 5800 psi minimum

b. Hardness, ASTM D 2583: Barcol Impressor 55 minimum

c. Flammability, ASTM E 84: Class I/A, flame spread 25 maximum; smoke developed 30 maximum

d. Thermal Expansion, ASTM D 696:.00002 in/in/F maximum

e. Boiling water resistance, NEMA LD 3: No effect

f. High temperature resistance, NEMA LD 3: No effect

g. Liquid absorption, ASTM D 570 (24 hours): 0.10 percent maximum

h. Mold and mildew growth, ASTM G 21: No growth, no effect

i. Bacteria growth, ASTM G 22: No growth, no effect

j. Sanitation, NSF 51: "Food Contact" approval for food area applications

k. Impact resistance, NEMA LD 3 (1/2 lb. ball drop): 1/4 inch material, 36 inch drop, no failure 1/2 inch material, 120 inch drop, no failure

C103009 CABINETS

This paragraph includes casework items that are permanently fixed in-place. Included are all cabinetry and millwork items with their associated accessories and anchoring devices.

C103009 1.1 WALL AND BASE CABINETS

Wall and base cabinets shall be of the same construction and appearance, with solid ends and frame fronts, or with frames all around. Frames shall be not less than 3/4 inch by 1 1/2 inches (19 mm by 38 mm) hardwood. All ends, bottoms, backs, and partitions shall be hardwood plywood. Cabinet doors and drawer fronts shall be a minimum 3/4 inch (19 mm) of either plywood or medium density fiberboard cores with solid edge bands.

C103009 1.1.1 Quality Standards

Wall and base cabinets shall be constructed to meet “Custom” quality grade as defined in AWI Quality Standards, except where this specification exceeds AWI Custom.

C103009 1.1.2 Hardware

Provide cabinet hardware including two self-closing hinges for each door and two side-mounted metal drawer slides for each drawer and pulls for all doors and drawers as follows. All cabinet hardware exposed to view shall be ANSI/BHMA 156.9, Grade 1, and comply with the following requirements:

a. Concealed Euro-Style, back mounted hinges with opening to 165 degrees and a self-closing feature at less than 90 degrees.

b. Drawer slides shall have a static rating capacity of 100 lbs. (444 N).

c. Provide adjustable shelving standards with shelf support hardware for wall cabinets.

d. Provide heavy-duty magnetic latch and door and drawer catch

C103009 1.1.3 Finish

Provide plastic laminate (NEMA LD3) or transparent finish with sealer and varnish as selected by Designer of Record.

C103010 CASEWORK

This paragraph includes all built-in premanufactured metal cabinetry for specialized functions such as labs, libraries, medical and dental

facilities. At a minimum, all casework shall conform to the following chart:

Metals	Thickness and Material
Uprights (all)	
Horizontal foot	4" x 2" tube, 14 ga. (.075") HRPO Steel
Vertical upright	6" x 2" tube, 11 ga. (.118") HRPO Steel
Leveler	Threaded steel with plastic foot and rubber boot
Bridge Channels	
Channel (halves)	14 ga. (.075") CQCR Steel
Utility Rails	
Top and Bottom Channels	18 ga. (.047") CQCR Steel
Covers	18 ga. (.047") CQCR Steel
Dividers	16 ga. (.059") CQCR Steel
End Brackets	22 ga. (.030") CQCR Steel
Top Stretchers	
Channel	14 ga. (.075") CQCR Steel
End Brackets	18 ga. (.047") CQCR Steel
Vertical Utility Chase	
Chase Assembly	
Upper Chase Cover	
Cover	16 ga. (.059") CQCR Steel
Middle Chase Cover	
Cover	16 ga. (.059") CQCR Steel
Lower Chase Cover	
Cover	16 ga. (.059") CQCR Steel
Attachment Bracket	11 ga. (.118") CQCR Steel
Chase Cover	
Panel	18 ga. (.047") CQCR Steel
Bridge Cover Extension	
Panel	18 ga. (.047") CQCR Steel
Chase Cabinet Filler	
Panel	18 ga. (.047") CQCR Steel
Cantilever	
Cantilever	11 ga. (.118") HRPO Steel
End Panel	
Outer Cover	11 ga. (.118") HRPO Steel
Inner Cover	20 ga. (.036") CQCR Steel
Angle Bracket	16 ga. (.059") CQCR Steel
Shelves	
Shelf (all)	16 ga. (.059") CQCR Steel

End Panels (all)	14 ga. (.075") CQCR Steel
Reinforcement Channel (Flat and Seismic Flat Shelves)	16 ga. (.059") CQCR Steel
Seismic Shelf Support Lip	20 ga. (.036") CQCR Steel

Laminate Overhead Storage Cabinets

Hanger bracket	14 ga. (.075") CQCR Steel
Solid door pull	Steel, aluminum or zinc
Glass door pull	Steel
Glass door track	Aluminum
Reinforcing hat channel for shelf	11 ga. (.118") HRPO Steel

Steel Overhead Storage Cabinets

Sides, Back and Door	20 ga. (.036") CQCR Steel
Top, Bottom and Shelf	18 ga. (.047") CQCR Steel
Hanger bracket	14 ga. (.075") CQCR Steel
Solid door pull	Steel, aluminum or zinc
Glass door pull	Steel
Glass door track	Aluminum
Reinforcing hat channel for shelf	11 ga. (.118") HRPO Steel

Laminate Storage and Sink Cabinets

Drawer glides	Steel rails with ball bearings
Door hinges	Steel
Door and Drawer pulls	Steel, aluminum or zinc
Leveler bracket	11 ga. (.118") HRPO Steel
Leveler	Threaded steel with plastic foot and rubber boot
Reinforcing hat channel for shelf	11 ga. (.118") HRPO Steel

Steel Storage and Sink Cabinets

Sides, Back and Top	20 ga. (.036") CQCR Steel
Base, Bottom and Shelf	18 ga. (.047") CQCR Steel
Door (interior and exterior panels)	20 ga. (.036") CQCR Steel
Drawer glides	Steel rails with ball bearings
Door hinges	Steel
Door and Drawer pulls	Steel, aluminum or zinc
Leveler bracket	11 ga. (.118") HRPO Steel
Leveler	Threaded steel with plastic foot and rubber boot
Reinforcing hat channel for shelf	11 ga. (.118") HRPO Steel

Cord Reel

Cord Reel	11 ga. (.118") HRPO Steel

Cable Storage Tray

Tray	24 ga. (.024") CQCR Steel

Phenolic Drying Rack

Mounting brackets, in-line	14 ga. (.075") CQCR Steel
Mounting brackets, end-of-bench	14 ga. (.075") CQCR Steel

Modular Power Block with GFCI Receptacle

Housing and back bracket	16 ga. (.059") CQCR Steel
Modular Connector Faceplates	
Faceplate	16 ga. (.059") CQCR Steel

Non-Metals	Thickness and Material
Laminate Worksurfaces	
Worksurface core	1.12" X 45 lb/cu ft medium density particle board
Top and bottom laminate (standard)	.012" thick laminate
Front edge banding	3mm thick rigid plastic
Side and back edge banding	1mm thick, flat profile rigid plastic
Chemsurf® Chemical-Resistant Laminate Worksurfaces	
Worksurface core	1.12" X 45 lb/cu ft medium density particle board
Chemsurf ® (option)	VGP grade, resin-impregnated kraft paper
Front edge banding	3mm thick rigid plastic
Side and back edge banding	1mm thick, flat profile rigid plastic
Phenolic Resin Worksurfaces	
Worksurface core	.75" thick, phenolic resin-impregnated kraft paper
Phenolic Drying Rack	
Panel	1.00" thick, phenolic resin-impregnated kraft paper
Pegs	.38" dia x 5" long polypropylene pegs
Phenolic Drip Trough	
Trough	1.00" thick, phenolic resin-impregnated kraft paper
Drain tube	.50" OD rigid phenolic tube
Drain flexible tube	.50" OD x 3' long flexible clear PVC tubing
Laminate Overhead Storage Cabinets	
Panel core (Top, Bottom, Ends, Back, Door, Shelf)	.75" X 45 lb/cu ft industrial grade particle board
Laminate	.012" thick laminate
Cabinet edge banding	1mm thick, flat profile rigid plastic
Door edge banding	2mm thick, flat profile rigid plastic
Glass door	.25" thick tempered safety glass
Steel Overhead Storage Cabinets	
Glass door	.25" thick tempered safety glass
Laminate Storage and Sink Cabinets	
Panel core (Top, Bottom, Base, Ends, Back, Door, and Shelf)	.75" X 45 lb/cu ft industrial grade particle board
Laminate	.012" thick laminate
Cabinet edge banding	1mm thick, flat profile rigid plastic
Drawer/Door edge banding	2mm thick, flat profile rigid plastic

Drawer/Door stop	Rubber
Steel Storage and Sink Cabinets	
Drawer/Door stop	Rubber
Power Block	
Housing	Ultramid Nylon
Harness-to-Harness Connector	
Housing	Ultramid Nylon
Duplex Receptacles	
Housing	Ultramid Nylon
Modular Harnesses and Multipurpose Power Infeeds	
Connector housing	Ultramid Nylon
Wire Manager	
Channel	Rigid plastic

C103011 CLOSETS

This paragraph includes all built-in closets with associated work and finishes.

C103012 FIRESTOPPING PENETRATIONS

This paragraph covers fire-stopping assemblies to include sleeves, caulking and flashing. See PTS Section D40, *Fire Protection*, for additional requirements.

C103012 1.1 FIRESTOPPING

Provide firestopping materials, supplied from a single domestic manufacturer, consisting of commercially manufactured, asbestos-free, nontoxic products that are FM Approval Guide approved, or UL listed, for use with applicable construction and penetrating items, complying with the following minimum requirements.

C103012 1.1.1 Fire Hazard Classification

Material shall have a flame spread of 25 or less, and a smaoke developed rating of 50 or less, when tested in accordance with ASTM E84 or UL 723. Material shall be an approved firestopping material as listed in UL Fire Resistance Directory or by a nationally recognized testing laboratory.

C103012 1.1.2 Toxicity

Material shall be nontoxic and carcinogen free to humans at all stages of application or during fire conditions and shall not contain hazardous chemicals or require harmful chemicals to clean material or equipment. Firestop material must be free from Ethylene Glycol, PCB, MEK, or other types of hazardous materials

C103012 1.1.3 Firestopping Rating

Firestopping materials shall be UL FRD listed or FM P7825 approved for “F” and “T” ratings at least equal to the fire-rating of the fire wall in which penetrated openings are to be protected.

C103012 1.1.4 Through-Penetrations

Firestopping materials for through-penetrations shall provide "F", "T", and "L" fire resistance ratings in accordance with ASTM E814 or UL 1479.

C103013 SPRAYED FIRE-RESISTIVE MATERIALS

See PTS Section D40, *Fire Protection*, for additional requirements.

C103013 1.1 SPRAYED FIRE-RESISTIVE MATERIALS

C103013 1.1.1 Quality Assurance

A pre-installation conference shall be held with the manufacturer’s approved installer prior to the application of the sprayed fire-resistive materials. See Paragraph C10 1.2 for field testing requirements for the fire-resistive material. Products provided shall not contain asbestos per 40 CFR 763.

C103013 1.1.2 Warranty

Contractor shall provide manufacturer’s standard materials and workmanship warranty stating that the manufacturer agrees to repair or replace materials that fail within 2 years, or as required by the project program, from date of Substantial Completion.

C103013 1.1.3 Material Composition

Provide sprayed fire-resistive material consisting of factory-mixed, dry formulation of gypsum or Portland cement binders and light-weight mineral or synthetic aggregates mixed with water at the Project site, or provide sprayed-fiber fire-resistive material consisting of factory-mixed, dry formulation of inorganic binders, mineral fibers, fillers, and additives conveyed in a dry state by pneumatic equipment and mixed with water at a spray nozzle to form a damp, as-applied product.

C103013 1.1.4 Physical Properties

a. Dry Density: 15 lb/cubic foot (240 kg/cubic meter) for referenced fire-resistance design to attain the ratings indicated, per ASTM E 605.

b. Thickness: Provide minimum average thickness required for fire-resistance design indicated according to the following criteria, but not less than 0.375 inch (9 mm), per ASTM E 605:

   1) Where the referenced fire-resistance design lists a thickness of 1 inch (25 mm) or greater, the minimum allowable individual

thickness of sprayed fire-restive material is the design thickness minus 0.25 inch (6 mm).

2) Where the referenced fire-resistance design lists a thickness of less than 1 inch (25 mm) but more than 0.375 inch (9 mm), the minimum allowable individual thickness of sprayed fire-resistive material is the greater of 0.375 inch (9 mm) or 75 percent of the design thickness.

3) No reduction in design thickness is permitted for those fire-resistance designs whose fire-resistance ratings were established at densities of less than 15 lb/cubic foot (240 kg/cubic meter).

c. Bond Strength: 150 lb/sq. ft. (7.2 kPa) minimum per ASTM E 736.

d. Compressive Strength: 5.21 lb/sq. in. (35.9 kPa) as determined per ASTM E 761. Minimum thickness of sprayed fire-resistive material tested shall be 0.75 inch (19 mm) and minimum dry density shall be as specified, but not less than 15 lb/cubic foot (240 kg/cubic meter).

e. Corrosion Resistance: No evidence of corrosion per ASTM E 937.

f. Deflection: No cracking, spalling, or delaminating per ASTM E 759.

g. Effect of Impact on Bonding: No cracking, spalling, or delaminating per ASTM E 759.

h. Air Erosion: Maximum weight loss of 0.025 g/sq. foot (0.270 g/sq. meter) in 24 hours per ASTM E 859.

i. Fire-Test-Response Characteristics: Provide sprayed fire-resistive materials with the following surface-burning characteristics per ASTM E 84 by United Laboratories: flame-spread index of 10 or less and a smoke developed index of 0.

j. Fungal Resistance: No observed growth on specimens per ASTM G 21.

C103014 ENTRANCE FLOOR GRILLES AND MATS

Provide entrance mats at all entrances to the facility. Comply with ABA Standards for installed entrance mats and frames. Provide recessed entrance mats at building entrances with enclosed vestibule and or surface applied entranceway mats or entranceway floor tiles at all other entrances. Entranceway mats and entranceway floor tile require the use of a transition edge where he mat adjoins other floor materials. Mat system shall meet ASTM D-2047 coefficient of friction requirements of minimum 0.60 for accessible routes and be structurally capable of withstanding a uniform floor load of 300 lbs/sq. ft. (14 kPa). All portions of mat system shall comply with ASTM E 648, Class I, Critical Radiant Flux, minimum 0.45 watts/m2 for flammability. Fasteners shall be non-corrosive screws and anchors for securing frames together to floors. Provide continuous vinyl bottom cushion to quiet clatter at recessed entrance mat systems. Hinges shall be flexible aluminum or thermoplastic hinge retained in aluminum tread port, and allow debris and moisture to flow through recessed mat. Provide ball and socket hinge for easy roll-up of

recessed mat inserts for cleaning. Recessed entrance mat systems shall use either an aluminum or thermoplastic framework and shall have replaceable wearing surface inserts. Provide inserts as follows:

a. Carpet Inserts - Carpet insert fiber shall be colorfast, solution dyed, anti-static, anti-microbial, and waterproof. Fiber shall be 100% nylon or polypropylene. Each carpet fiber shall be bonded to rigid ply backing to prevent fraying and supplied in continuous splice-free lengths. Carpet shall be minimum of 30-oz./yd^2.

b. Vinyl or Rubber Inserts - Vinyl or rubber inserts shall be removable and be made from recycled materials wherever possible. Inserts shall have serrated edges for scraping purposed or flexible abrasive grit tape, bonded to a rigid vinyl tread insert.

C103014 1.1 RECESSED MAT THERMOPLASTIC FRAME PROPERTIES:

Thermoplastic frame shall be colorfast and UV-resistant. Tensile strength of frame shall comply with ASTM D 638. Tensile impact of frame shall comply with ASTM D 1822. Flexural strength of frame shall comply with ASTM D 790. Shore D hardness of frame shall comply with ASTM D 2240. Rockwell R hardness of frame shall comply with ASTM D 785. Coefficient of thermal expansion of frame shall comply with ASTM D 696.

C103014 1.2 RECESSED MAT ALUMINUM FRAME REQUIREMENTS:

Aluminum frame and rail shall comply with ASTM B 221, alloy 6063-T5. Frame shall have butted corners and be factory coated with zinc chromate or manufacturer's standard protective finish where surfaces are in contact with concrete. Provide standard mill finish, color anodized finish complying with AAMA 606.1, clear anodized finish complying with AAMA 607.1, or bronze complying with ASTM B455, alloy 385.

C103014 1.3 SURFACE MOUNTED/LOOSE-LAY ENTRANCE MATS.

Loose-lay mats shall have beveled vinyl or rubber transition edge and shall have surface of carpet or vinyl/rubber surfaces. Edges shall conform to ADA accessibility guideline 4.5.2, for loose-lay surface applications. Mats shall be easily removed yet remain adhered to floor to prevent mat from moving as pressure from walking is applied. Do not use carpet inserts unless directed otherwise.

C103014 1.4 SURFACE APPLIED ENTRANCEWAY FLOOR TILE

Applied entranceway floor tiles shall be in the form of carpet tiles, carpet tiles with vinyl or rubber scrubbing surfaces, or tiles of thermoplastic scrubbing surfaces only. Tiles shall be installed in areas where permanent mat is required but slab is not recessed to receive permanent recess mat. Tiles shall be securely installed without obvious seams, cleanable, dimensionally stable, and with maximum finished tile thickness of 1/2" above finished floor line. Carpet fibers shall 100% nylon or polypropylene, anti-static, anti-microbial, colorfast, solution dyed, mold and mildew resistant, and waterproof with minimum face weight of 30 oz/yd^2. Thermoplastic only tiles shall be PVC free and UV-resistant.

C103015 ORNAMENTAL METALWORK

Building components made from ornamental metals. Ornamental stair handrails are included in B1010 EXTERIOR STAIRS and PTS C20, *Stairs*.

C103090 OTHER INTERIOR SPECIALTIES

This paragraph covers other interior specialties not described by other assembly categories listed previously.

C103090 1.1 PROJECTION SCREEN

Motorized projection screen shall be wall, ceiling, or above ceiling mounting, and shall have a 120V motor that is lubricated for life, quick reversal type, has overload protector, integral gears, and preset accessible limit switches. Screen shall be flame retardant, mildew resistant and have black masked borders. Controls shall be wall mounted with wiring concealed within the wall construction. Pull-down projection screens shall be provided in lieu of motorized projection screens as approved by the Activity, as specified in the project program.

C103090 1.2 OTHER INTERIOR SPECIALTIES

Also see PTS Sections C20 and C30 for additional interior specialties not specified here.

-- End of Section --

SECTION C20

STAIRS
09/15

C20 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

C20 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and government standards that are referenced in the section text that are **not** found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website, are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the standard at the time of contract award.

C20 1.1.1 Industry Standards and Codes

AISC American Institute of Steel Construction

C20 1.1.2 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-101-01, Architecture)
UFC 1-200-02	High Performance and Sustainable Buildings

C20 1.2 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

Verification of satisfactory stair performance shall be via Performance Verification Testing, as detailed in this section of the RFP.

C20 1.2.1 Field Testing for Concrete

Field Quality Control Test Reports to be submitted to DOR shall comply with ACI 301. If concrete is found to be below the strength required in the tests, Contractor shall remove and replace that concrete and all associated building components at his own expense.

C20 1.3 DESIGN SUBMITTALS

Design Submittals shall be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures* and UFC 3-101-01, *Architecture*.

C20 1.4 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specification.* In addition to the Z10 requirements the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

Stairs, handrails.

C2010 STAIR CONSTRUCTION

C201001 INTERIOR AND EXTERIOR STAIRS

Provide primed and painted steel stairs with concrete filled pans or cast-in-place concrete stairs for industrial and commercial construction. Design load shall not be less than 100 PSF (4.8 kPa) for live load, and 300 pounds (136 kg) for concentrated loads. Required means of egress stairs shall conform to NFPA 101. Provide steel guard and handrails.

C201001 1.1 STEEL STAIRS

Design shall conform to AISC S335 or AISC S342L.

C201001 1.1.1 Materials

a. Structural Carbon Steel - ASTM A 36/A 36M

b. Structural Tubing - ASTM A 500

c. Steel Pipe - ASTM A 47

d. Gratings - Gray cast iron ASTM A 48, Class 40

e. Metal plank grating, non-slip requirement, FS RR-G-1602 aluminum ASTM B 209, 6061-T6; steel ASTM A 653/ A 653M, G90.

f. Floor Plates, Patterned - ASTM A 786/A 786M, 14 gage.

g. Anchor Bolts - ASTM A 307

h. Galvanized Structural Steel - All steel exposed to the environment or direct water contact shall be galvanized in accordance with ASTM A 123 /A123M, ASTM A153/A153M, and ASTM A653/A653M, Z275 (G90) coating. Galvanize all components after fabrication in accordance with ASTM A385. Fabricate all steel components in the largest units practical using bolted connections for field assembly. Repair damage to, or voids in, galvanizing in accordance with ASTM A780, Annex A1 or Annex A3.

C201001 1.2 ALUMINUM ALLOY PRODUCTS

Conform to ASTM B 209 for sheet plate, ASTM B 221 for extrusions and ASTM B 26/B 26M or ASTM B 108 for castings. Aluminum extrusions shall be at least 1/8-inch (3.2 mm) thick and aluminum plate or sheet at least 0.050 inch (1.27 mm) thick.

C201001 1.3 FINISHES

C201001 1.3.1 Galvanizing

Hot-dip galvanizing: ASTM A 123/A123M, ASTM A 153/A 153M or ASTM A 653/A 653M, G90, as applicable.

C201001 1.3.2 Aluminum Finishes

Protect by plating, Class I anodic coatings, or 70% polyvinylidene fluoride organic coatings. See PTS Section C30 for additional coatings/finish information.

C201001 1.3.3 Safety Treads

NAAMM BG steel, Type W (welded).

C201001 1.3.4 Other Coatings

See PTS Section C30, *Interior Finishes*, for painted finishes.

C201001 1.4 CONCRETE STAIRS / STEPS

Provide interior or exterior concrete steps and stair with non-slip finish. For interior stairs, provide rubber or other finish treads. For exterior stairs, provide cast-in-place abrasive nosing. Provide steel guard and handrails as necessary. Fire stairs shall comply to NFPA 101.

C201001 1.4.1 Materials

a. Concrete - ACI 211.1, ACI 301/301M, and ACI 318/318M, with a compressive strength of 3,000 psi (20,680 kPa) or greater. Concrete Mix Design shall be suitable for the job conditions.

b. Reinforcements - Bars, fabrics, connectors, and chairs shall be galvanized.

c. Reinforcing Bars - ACI 301/301M

d. Welded Wire Fabric - ASTM A 185 or ASTM A 497

e. Cast Aluminum Safety Nosings – For exterior concrete stairs, provide safety nosings of cast aluminum with abrasive surfaces or with abrasive inserts.

C201002 FIRE ESCAPE STAIRS

Design fire escapes of the type and arrangement to conform to Fire Escape Stairs, of NFPA 101, *Life Safety Code*. Escape stairs shall be of steel or aluminum, conforming to the requirements of this specification section.

C201090 STAIR HANDRAILS, GUARDRAILS, AND ACCESSORIES

C201090 1.1 HANDRAILS

Design handrails in accordance with the IBC, except delete the handrail design load reduction code exceptions for residential, prisons, industrial,

high hazard, and storage facilities. NAAMM PR, provide the same size rail and post. Provide series 300 stainless steel pipe collars. Factory coat all metal railings (except for ornamental metals such as brass, bronze, stainless steel, and nickel-silver) with a high performance coating in accordance with AAMA 2605, with a minimum coating thickness of 1.2 mils unless otherwise noted.

C201090 1.1.1 Steel Handrails

Provide steel handrails, including inserts in concrete, steel pipe conforming to ASTM A 53 or structural tubing conforming to ASTM A 500, Grade A or B of equivalent strength. Railings shall be hot-dip galvanized and shop painted for exterior applications and primed and shop painted for interior applications. Railing may be unpainted hot-dip galvanized in industrial areas.

C201090 1.1.2 Aluminum Handrails

Provide aluminum pipe railing conforming to ASTM B 429 or square aluminum semi-hollow tube conforming to ASTM B 221. Railings shall be coated with a high performance coating or anodized in accordance with AAMA 611, Class I.

C201090 1.1.3 Ornamental Handrails

Provide ornamental railings. Provide anchorage and fasteners as recommended by the product manufacturer. Railing system shall conform to ASTM E 985, minimum concentrated test load requirement.

C201090 1.1.4 Glass Handrails

Provide glass railings consisting of continuous 1/2-inch (13 mm) beveled tempered glass structural balusters with continuous railing cap and bottom shoe molding. Railing cap and shoe molding shall be 6063-T52 aluminum, type 304 stainless steel, brass, or bronze.

C201090 1.1.5 Wood Handrails

Wood handrails shall only be used for residential construction. Provide wood handrails of pre-finished natural hardwood. Wood shall be coated with hard acrylic finish to withstand indentations.

C201090 1.2 METAL LADDERS

C201090 1.2.1 Metal Ladders

Provide vertical ladders conforming to Section 7 of 29 CFR 1910.27.

C201090 1.2.2 Installation

Offset distance from the rungs to the finished wall surface not less than 7 inches (175 mm). Provide heavy clip angles riveted or bolted to the stringer and drilled for not less than two 1/2-inch (12 mm) diameter expansion bolts as indicated. Provide intermediate clip angles not over 48 inches (1200 mm) on center.

C201090 1.2.3 Ladder Cages

Where the height of the ladder is greater than 20 feet (6000 mm), provide a cage to conform to 29 CFR 1910.27.

a. Cage fabrication – Provide attachments for fastening bands to the side rails of ladders or directly to the structure.

-- End of Section --

SECTION C30

INTERIOR FINISHES
09/15

C30 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

All interior finish products shall be from manufacturers' standard running line offerings. Custom fabrications shall not be allowed unless otherwise noted.

C30 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and Government standards referenced in the section text that are **not** found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website, are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the referenced standard at the time of contract award.

C30 1.1.1 Industry Standards And Codes

FLOOR COVERING INSTALLATION CONTRACTOR'S ASSOCIATION (FCICA)

FLOOR COVERING INSTALLATION BOARD (FCIB)

TILE COUNCIL OF NORTH AMERICA (TCNA)

C30 1.1.2 Government Standards–

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33

	10.05 20, which includes the following significant UFC(s): UFC 3-101-01, Architecture UFC 3-120-10, Interior Design)
UFC 1-200-02	High Performance and Sustainable Buildings

C30 1.2 QUALITY ASSURANCE

C30 1.2.1 Paint Applicator’s Qualifications

C30 1.2.1.1 SSPC QP 1 Certification

For the application of industrial coatings identified in the Project Program, all contractors and subcontractors that perform surface preparation or coating application shall be certified by the Society for Protective Coatings (formerly Steel Structures Painting Council) (SSPC) to the requirements of SSPC QP 1 prior to contract award, and shall remain certified while accomplishing any surface preparation or coating application. The painting contractors and painting subcontractors must remain so certified for the duration of the project. If a contractor's or subcontractor's certification expires, the firm will not be allowed to perform any work until the certification is reissued. Requests for extension of time for any delay to the completion of the project due to an inactive certification will not be considered and liquidated damages will apply. Notify the Contracting Officer of any change in contractor certification status.

C30 1.2.2 Aircraft Maintenance Hangar and Vehicle Maintenance Flooring Installer Qualifications

The Designer of Record shall utilize UFGS Specification Section 09 67 23.15, *Fuel Resistive Resinous Flooring, 3-Coat System* to provide the required installer qualifications for the floor coating system.

C30 1.3 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

Verification of satisfactory interior finish assemblies’ performance shall be via Performance Verification Testing, as detailed in this section of the RFP.

C30 1.3.1

Provide sample of textured ceiling application for DOR approval before resuming work. Sample shall be used as a reference for remaining application.

C30 1.3.2

Provide sample of multicolor paint application for DOR approval before resuming work. Sample shall be used as a reference for remaining application.

C30 1.3.3

Provide sample of terrazzo and/ or architectural cast-in-place concrete floor application for DOR approval before resuming work. Sample shall be used as a reference for remaining application.

C30 1.4 DESIGN SUBMITTALS

Design Submittals shall be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures,* UFC 1-300-09N, *Navy and Marine Corps Design Procedures* and UFC 3-101-01, *Architecture*.

In addition, UFGS sections listed below or in the body of the PTS text are to be used by the Designer of Record (DOR) as a part of the design submittal. If the UFGS products or systems are applicable to the project, the DOR shall edit these referenced UFGS sections and submit them as a part of the design submittal specification. Edit the specification sections in accordance with the limitations stated in PTS section Z10, *General Performance Technical Specifications*.

Changes shall not be made to the finishes that are submitted in the plans, specifications, and Structural Interior Design submittals and approved by the Government during the design phase unless changes are requested by the Government. In the event that revisions may be required because of unforeseen conditions such as discontinued product, the revisions must be approved by the DOR and then submitted to the Government Interior Designer for approval before substitutions can be made.

C30 1.5 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS section Z10, *General Performance technical Specifications.* In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

Paint, Finish materials, Finish colors

Installation drawings for floors with carpet, tile, stone, architectural cast-in-place concrete or terrazzo to include locations and details of seams, color and material transitions, details of divider strips, control joints, and crack control solutions.

Changes shall not be made to the finishes that are submitted and approved by the Government during the design phase. In the event that revisions may be required because of unforeseen conditions such as discontinued product, the revisions must be approved by the DOR and then submitted to the Government Interior Designer for approval before substitutions can be made.

C3010 WALL FINISHES

Interior wall finishes shall be moisture and mildew resistant, easily maintained, and suitable in accordance with industry standards for the architectural surface being finished. For painted wall finishes, refer to C3040 “INTERIOR PAINTING AND SPECIAL COATINGS”.

C301001 CONCRETE WALL FINISHES

C301001 1.1 SPECIAL OR ARCHITECTURAL FINISHES ON INTERIOR CONCRETE WALLS

Cast-in-place or pre-cast concrete wall finishes shall include, but are not limited to, abrasive blasted surfaces, colored surfaces, exposed aggregate, grooved surfaces, or tooled surfaces.

C301002 PLASTER WALL FINISHES

Veneer plaster shall be gypsum plaster veneer finish on gypsum base finishes, or cement plaster veneer finish on concrete or masonry. Refer to Section C3040 for paint system and gloss level.

C301002 1.1 CEMENT PLASTER

C301002 1.1.1

Portland cement plaster base coat in accordance with ASTM C150, gray portland cement. Use Type I when no special characteristics are required, Type II when plaster and stucco will be exposed to moderate sulfate (alkali) action, Type III when early strength is needed as in cold weather, and Type V when high resistance to sulfate is required.

C301002 1.1.2

Portland cement plaster finish coat in accordance with ASTM C150, gray portland cement Type I when no special characteristics are required, Type II when plaster and stucco will be exposed to moderate sulfate (alkali) action, Type III when early strength is needed as in cold weather.

C301002 1.1.3

Factory-mixed finish coat according to the manufacturer’s instructions.

C301003 GYPSUM WALLBOARD FINISHES

Conform to specifications, standards and requirements in accordance with Gypsum Association GA 214, GA 216 and GA 224. Provide asbestos free materials only. Provide Type X gypsum board in fire rated assemblies. Provide a foil back gypsum board when a vapor retarder is required.

C301003 1.1 REGULAR GYPSUM BOARD

ASTM C36/C36M and ASTM C1396/C1396M 1/2 or 5/8 inch (12.7 mm or 15.9 mm) thick in residential construction, and 5/8 inch (15.9 mm) thick in non-residential construction, tapered edges for exposed layers, square edges for concealed backer layers.

C301003 1.2 MOISTURE RESISTANT GYPSUM BOARD

ASTM C630/C630M, 1/2 or 5/8 inch (12.7 mm or 15.9 mm) thick in residential construction, and 5/8 inch (15.9 mm) thick in non-residential construction. Use in humid areas or spaces but not as a substrate in tiled areas where wall tile is exposed to direct moisture contact or condensation accumulation.

C301003 1.3 FOIL BACKED GYPSUM BOARD

ASTM C1396/C1396M 1/2 or 5/8 inch (12.7 mm or 15.9 mm) thick in residential construction, and 5/8 inch (15.9 mm) thick in non-residential construction, tapered edges for layers exposed to view, square edges for concealed layers. Seal joints in foil backing to other panels and adjoining materials as recommended by the panel manufacturer.

Alternative to foil backed gypsum board in Secured Areas: Field applied foil faced barrier material is an acceptable alternative for pre manufactured foil backed gypsum board. Provide a continuous composite multilayer barrier with a woven polyethylene sheet sandwiched between two sheets of solid reflective aluminum surfaces. Shielding effectiveness tested in accordance with IEEE 229/ ASTM D4935. Install barrier in accordance with manufactures instructions.

C301003 1.4 CEMENTITIOUS BACKING UNITS

Provide cementitious backer units, 1/2 inch (12 mm) thick, in accordance with Tile Council of North America Handbook; use as a substrate for ceramic tile in wet areas that are exposed to direct moisture contact or condensation accumulation for areas including, but not limited to, tubs, shower enclosures, saunas, steam rooms, gang shower rooms, and shower drying rooms. Provide screws specifically designed for use with cement panels.

C301003 1.5 IMPACT RESISTANT GYPSUM BOARD

Reinforced gypsum panel with imbedded fiber mesh or polycarbonate resin thermoplastic backing, 5/8 inch (15.9 mm) thick, tapered edges, in accordance with Structural Failure Test; ASTM E695 or ASTM D2394 and Indentation Test; ASTM D5420 or ASTM D1037. Provide metal framing of 20-gauge minimum. Provide fasteners that meet manufacturer requirements and specifications. Impact resistant gypsum board shall have a flame spread rating of 25 or less and a smoke developed rating of 50 or less, ASTM E84. Finish with a high strength plaster veneer. Refer to PTS C10 for further requirements on impact resistant wall construction.

C301003 1.6 JOINT TREATMENT

ASTM C475, Joint compound shall be specifically formulated and manufactured for use with and compatible with tape, substrate and fasteners as recommended by the manufacturer. Tape and finish gypsum board in accordance with ASTM C840, GA 214 and GA 216. Provide premanufactured joints at all structural expansion joints, crack control joints, and change of materials as recommended by the manufacturer and in accordance with GA 216.

C301003 1.7 FASTENERS

ASTM C514. Fasteners shall be compatible with each type of gypsum board material as recommended by the gypsum board manufacturer and in accordance with GA 216 and GA 224.

C301003 1.8 ACCESSORIES

ASTM C1047. Fabricate from corrosion protected steel or plastic designed for intended use. Accessories manufactured with paper flanges are not acceptable. Flanges shall be free of dirt, grease, and other materials that may adversely affect bond of joint treatment. Provide prefinished or job decorated materials. For predecorated gypsum board provide prefinished metal or plastic trim to match predecorated gypsum board. Install as recommended by GA 214, GA 216 and GA 224.

C301003 1.9 LEVEL OF FINISH

C301003 1.9.1

Tape and finish gypsum board in accordance with ASTM C840, GA 214 and GA 216. Plenum areas above ceilings shall be finished to GA 214, Level 1. Water resistant gypsum backing board, ASTM C630/C630M, to receive ceramic tile shall be finished to GA 214, Level 2. Walls to receive a heavy-grade wall covering or have textured finish before painting shall be finished to GA 214 Level 3. Walls without wall wash lighting to receive paint (MPI Gloss Level 2), light textures, or wall coverings shall be finished to GA 214 Level 4. Unless otherwise specified, all gypsum board walls, partitions shall be finished to GA 214 Level 5. Provide joint, fastener depression, and corner treatment. Do not use fiberglass mesh tape with conventional drying type joint compounds; use setting or hardening type compounds only. Provide treatment for water-resistant gypsum board as recommended by the gypsum board manufacturer.

C301003 1.9.2

Wherever gypsum board is to receive eggshell (MPI Gloss Level 3), semigloss (MPI Gloss Level 5), or gloss (MPI Gloss Level 6) paint finish, finish gypsum wall surface to GA 214 Level 5.

C301003 1.9.3

Where wall wash lighting will accent the flatness of the wall and surface irregularities in gypsum board joints, provide feature edge gypsum board and two coat joint compound fillers. Provide this special joint treatment at up lighting, down lighting and horizontal lighting at the end of a passageway wall.

C301004 TILE AND TERRAZZO WALL FINISHES

C301004 1.1 CERAMIC TILE WALL SYSTEM FINISHES

Provide ceramic tile wall systems as defined in the Tile Council of America (TCA) handbook for ceramic tile installations suitable for the service requirements listed. Install systems in accordance with ANSI

A108/A118 series standards. Colored epoxy grout with sealer shall be provided. Coordinate with ceramic bath accessories for modularity. Include all trim pieces, caps, stops, and returns to complete installation.

C301004 1.1.1

Ceramic Mosaic Wall Tile shall be a minimum of 1/4 inch (6 mm) thick and installed from floor to ceiling, unless otherwise noted.

C301004 1.1.2

Wall tile shall be glazed, matte glazed or unglazed finish. Refer to project program for tile type, pattern, and surface texture.

C301004 1.1.3

Porcelain wall tile shall be through color, polished or unpolished. Refer to project program for tile type, pattern, and surface texture.

C301004 1.1.4

Provide wall tile color and style selections a minimum of one grade above base grade.

C301004 1.1.5

Provide Designer accent tile, accent strips and accessory ceramic tile shapes as an integral part of the ceramic wall tile system.

C301005 WALL COVERINGS

Wall coverings shall be material designed specifically for the specified use. The wallcovering shall contain a non-mercury based anti-microbial. The wallcovering shall be the type made without the use of cadmium-based stabilizers. Wallcovering shall have a Class A flame spread rating of 0-25 and smoke development rating of 0-50 when tested in accordance with ASTM E84. The wall preparation, trimming, adhesive and application shall be according to the manufacturer’s printed directions. The manufacturer shall approve the installers in writing. The material must be easily cleaned by traditional methods such as washing, wiping, or vacuuming. Primer and adhesive shall be of a type recommended by the wallcovering manufacturer and shall contain a non-mercury based anti-microbial. Adhesive shall be strippable type. Do not apply wall coverings to the interior surface of exterior walls.

C301005 1.1 FABRIC WALL COVERING

C301005 1.1.1

Fabric wallcovering shall be woven material of Polyester or Polyolefin, or a combination of the two fibers with an acrylic backing. The face shall be treated with a soil repellent finish. The material must be a minimum of 48 inches (1219 mm) wide. ”Tackable” wall covering shall be “self-healing” from tack penetration through the covering into the substrate. The material must be a minimum of 12 ounces (340 g) per

square yard exclusive of backing. A tackable wall covering will not be required for smoother, less textured surface appearance.

C301005 1.1.2

Acoustical wallcovering shall be textured, woven or non-woven material of polyester or polyolefin, or a combination of the two fibers with an acrylic backing. The material must be a minimum of 48 inches (1219 mm) wide and a minimum of 16 ounces (454 g) per square yard. The material shall have an NRC rating of .15 on gypsum board in accordance with ASTM C423.

C301005 1.4 SURFACE PREPARATION FOR UNEVEN WALLS

C301005 1.4.1

For masonry or rough textured walls, use a veneer plaster finish to smooth the walls prior to wallcovering installation.

C301005 1.5 CORNER GUARDS

C301005 1.5.1

Corner guards shall be 3/32 inch (2.4 mm) thick and shall cover 1 inch (25 mm) each side of corner at right angles. Corner guards shall be clear polycarbonate. Use in executive areas, office areas, and wall-covered areas subject to cart traffic as a minimum.

C301005 1.5.2

Corner guards shall be 3/32 inch thick and shall cover 2-1/2 inches (64 mm) each side of corner at right angles. Corner guards shall be through color polycarbonate or rubber. Use in corridors or other high traffic areas.

If protective wall components from paragraphs C301090 – 1.5 and 1.6 are provided, corner guards shall be from the same lot and color as protective wall components.

C301005 1.6 WAINSCOT CAP

C301005 1.6.1

Wainscot cap shall be satin-finished extruded aluminum approximately 3/4 inch (19 mm) high, feathered at bottom edge, with an approximate 3/16 inch (5 mm) exposed face on top edge, and grooved to receive the covering. Adhesive to install wainscot cap shall be of a type recommended by the manufacturer of the cap.

C301005 1.6.2

Wood wainscot cap shall be 3-1/2 by 3/4 inch (89 mm by 19 mm) solid hardwood, AWI Custom grade, with painted or stained finish. Profile shall be a molded shape.

C301006 ACOUSTICAL PANELS ADHERED TO WALLS

Acoustical wall treatment shall be acoustical panels, sound absorbing wall units, or acoustical wall systems. Acoustical panel system shall include manufacturer's standard concealed fasteners, splines, tracks, and other components necessary to complete the installation. Fire rating for the complete composite system shall be Class A, 200 or less smoke density and flame spread less than 25, when tested in accordance with ASTM E84.

C301006 1.1 ACOUSTICAL FABRIC COVERED WALL PANELS

C301006 1.1.1

Prefinished factory assembled wall panels shall consist of, seamless fabric covered fiberglass or mineral fiber core system. Perimeter edges shall be reinforced by an aluminum frame or a formulated resin edge hardener. Fabric covering shall be stretched free of wrinkles and then bonded to the edges and back or bonded directly to the panel face, edges, and back of panel a minimum distance standard with the manufacturer. Mounting shall be by manufacturer's standard concealed spline, mechanical fasteners, magnetic fasteners, hook and loop or adhesive mounting.

C301006 1.1.2

Stretched fabric wall panel system shall consist of continuous perimeter and butt seam mounting extrusions, site-fabricated and applied directly to the substrate. Facing fabric shall be stretched over core materials and attached without adhesives, nails, tacks, screws or tapes so that fabric may be removed and replaced with framework in place.

C301006 1.1.3

Fabric shall be seamless, 100% polyester or olefin or a blend of the two. Light fastness (fadeometer) shall be approximately 40 hours in accordance with AATCC 16.

C301006 1.1.3.1

Non-woven, embossed texture, or needle punched 100 percent polyester, minimum 12 ounces (340 g) per linear yard. Tear strength shall be minimum 25 pounds (11.25 kg) machine direction and minimum 40 pounds (18 kg) cross-machine direction in accordance with ASTM D1117. Tensile strength shall be minimum 50 pounds (22.5 kg) machine direction and minimum 75 pounds (34 kg) cross-machine direction in accordance with ASTM D5034.

C301006 1.1.3.2

Woven, minimum 2-ply 100 percent polyester or olefin, minimum 12 ounces (340 g) per linear yard. Tear strength shall be minimum 29 pounds (13 kg). Tensile strength shall be 150 pounds (68 kg) minimum in accordance with ASTM D5034.

C301006 1.1.3.3

Perforated vinyl covering with fabric backing, minimum 20 ounces (567 g) per linear yard total weight.

C301006 1.2 ACOUSTICAL WALL PANELS

Aspen wood fibers bonded together with an inorganic hydraulic cement binder, formed in a continuous process under heat and pressure. Nominal overall panel thickness shall be 1 inch (25 mm). Noise Reduction Coefficient shall be not less than NRC 0.85 for Type C-40 and C-80 mounting.

C301090 OTHER WALL FINISHES

C301090 1.1 SOLID SURFACING WALL FINISHES

Solid surfacing material shall consist of 100% pure acrylic polymer, mineral fillers, and pigments. The material shall be homogenous, not coated or laminated, meeting ANSI Z124.3 and ANSI Z124.6 requirements. Superficial damage to a depth of 0.010 inch (.254 mm) shall be repairable by sanding or polishing. Provide manufacturer’s full range of colors and patterns. Flammability, ASTM E84: Class I/A, flame spread 25 maximum; smoke developed 30 maximum.

C301090 1.1.1

If used in a shower, solid surfacing wall finishes shall extend from top of shower pan to a minimum of 84 inches (2130 mm) or to underside of ceiling and shall surround the shower enclosure. Wall finish shall extend from top of tub to 84 inches (2130 mm) and shall surround tub shower. If used in a kitchen, solid surfacing wall finish shall extend from top of kitchen countertop to underside of wall cabinet.

C301090 1.1.2

Provide solid surfacing with factory recommended fasteners/adhesives/caulk to complete the installation.

C301090 1.2 DECORATIVE PANELING SYSTEM

Architectural paneling system applied to interior walls shall include associated furring, fastening, and trim to complete the installation. Wood paneling system finish shall be factory or field applied.

C301090 1.3 WOOD TRIM AND DETAILING FINISHES

Decorative panels, chair rail, standing and running trim, shall be of AWI custom grade hardwood with a painted or stained finish. Refer to C3040 ”INTERIOR PAINTING AND SPECIAL FINISHES” for finish system. Chair rail shall be a minimum of 3-1/2 inches (89 mm) high. Profile of chair rail shall be a molded shape. Wood trim shall include associated furring, fastening, adhesives and trim to complete the installation.

C301090 1.4 IMPACT RESISTANT PANEL OR WAINSCOT WALL FINISHES

The wall covering panel system, or wainscot, shall be an impact-resistant acrylic PVC sheet of a minimum 0.060 inch (1.5 mm) thickness in 4 foot by 8 foot (1219 mm by 2438 mm) sheets. The system shall be Class A (ASTM E84), UL listed, and chemical and stain resistant. It shall include all accessories, such as top caps, joint covers, and inside and outside corners, necessary for a complete installation. A full range of colors and textures shall be included. The wall panel system shall have coordinating color and pattern options for all components within the system. The wall panel system shall offer a 21 ounce (595 g) fabric backed vinyl wallcovering laminated to a 0.020 inch (.51 mm) rigid acrylic/PVC backing capped with 1 mil of protective film.

C301090 1.4.1

Impact Resistant Trim Finishes - Impact resistant chair or handrail system shall be a formed rigid PVC product. Chair or handrail shall be a minimum of 3 inches (76 mm) high and be mounted with concealed hardware. Chair or handrail system shall be chemical, stain, and bacteria resistant. Chair rail shall be UL classified, conforming to NFPA Class A fire rating and ASTM D256-90b for impact strength of 30.2 ft-lbs/inch thick.

C301090 1.5 CORNER AND WALL GUARDS

Corner and wall guards shall be high-impact formed polyvinyl chloride a minimum of 0.078 inch (2 mm) with concealed mounting hardware and end closure. If used with an impact resistant panels system, the guards shall be from the same manufacturer as the impact resistant wall panel system, chair or hand rail system and shall include all accessories necessary for a complete installation. A full range of styles, colors and textures shall be included.

C3020 FLOOR FINISHES

Refer to C3040 “INTERIOR PAINTING AND SPECIAL FINISHES” for painted floor coatings.

C3020 1.1 RESILIENT SUBFLOOR PREPARATION

Have third party independent concrete slab testing agent verify that concrete slabs comply with ASTM F710. Minimum values shall not be below the following: Concrete floor flatness shall meet minimum flatness of FF 60 when tested in accordance to ASTM E1155 - 96(2008). Concrete levelness on slab on grade shall meet minimum levelness of FL 45 when tested in accordance with ASTM E1155 - 96(2008). This requirement does not apply to elevated concrete slabs.

C3020 1.1.1 Floor Preparation

Prior to installation of flooring materials the concrete sub-floors are to be dry, free of curing compounds, sweeping compounds, sealers, hardeners, and other materials which could interfere with bonding of adhesive. If curing compounds, sweeping compounds, bond breakers or sealers exist, they shall be completely removed by mechanical means and methods, specifically grinding and shot blasting of concrete surface as necessary. Determine adhesion and dryness characteristics by performing bond and moisture tests. Prior to building being conditioned, perform a

preliminary moisture test using in situ probe relative humidity testing as specified per ASTM F 2170.

C3020 1.1.2 Testing

All pre-installation moisture testing is to be performed by a qualified independent testing agency. Perform the following test as soon as building is enclosed, watertight, and conditioned, and a minimum of two months prior to floor covering installation.

a. Moisture Testing: Perform moisture and pH tests as recommended by the flooring and adhesive manufacturers. Perform test starting on the deepest part of the concrete structure. Proceed with installation only after concrete substrates meet or exceed floor covering manufacturer's requirements. In the absence of specific guidance from the flooring manufacturer the following shall be the required minimum:

b. Perform concrete internal relative humidity testing using in situ probes in accordance with ASTM F 2170. Proceed with installation only after concrete reaches maximum 75 percent relative humidity level measurement.

C3020 1.1.3 Additional Preparation

If tested moisture levels exceed the allowable limits, shot blast the concrete subfloors to including grinding of areas not accessible to shot blasting equipment and install a 100% solids VOC free epoxy moisture and pH control system as recommended by the third party testing agent.

a. Install cement based self-leveling underlayment over epoxy moisture and pH control system to create a smooth substrate suitable for floor covering and approved by floor covering manufacturer for use with their products.

b. Correct conditions that will impair proper installation.

c. Fill cracks, joints and other irregularities in concrete with leveling compound.

d. Do not use adhesive for filling or leveling purposes.

C3020 1.1.4 Final Cleaning Prior to Flooring Finish Installation

Clean floor of oil, paint, dust, and deleterious substances. Leave floor dry and cured free of residue from existing curing or cleaning agents.

C302001 TILE FLOOR FINISHES

Provide ceramic tile floor systems as defined in the Tile Council of North America (TCNA) handbook for ceramic tile installation and materials for the service requirements listed. Provide installation and materials in accordance with ANSI A108/A118 series standards, except do not use organic adhesives. Provide manufacturer’s full range of colors and styles. Tile shall be a minimum of two grades above base grade.

Mortar shall be Portland cement, ANSI A108.1A/1B/1C/ A118.1, Latex-Portland cement, ANSI A108.5/A118.4 or Epoxy ANSI A108.6/A118.3.

Grout shall be factory sanded Portland cement, ANSI A108.10/A118.6, Latex-Portland cement, ANSI A108.10/A118.7 or Epoxy ANSI A108.6/A118.3. Provide tile joint grout sealer on white, light colored areas that are routinely exposed to water and liquid cleaning materials, entrance areas, and areas that require a high degree of stain resistance, and as required by the manufacturer. Provide chemical resistant epoxy resin for kitchens and other areas where high resistance to staining and absorption are required, ANSI A118.3.

Slip resistant tile shall have a minimum Dynamic Coefficient of Friction (wet and dry) of 0.42, ANSI A137.1-2012. Tile shall have smooth, non-slip or textured surface and a glazed or unglazed finish. Non-slip or textured surface required for tile in areas where there is excessive water or grease and oils such as kitchens, dining facilities, shower rooms, toilets, and in industrial and maintenance facilities.

C302001 1.1 CERAMIC MOSAIC UNGLAZED FLOOR TILES

Ceramic Mosaic unglazed floor tiles shall be a minimum of 1/4 inch (6 mm) thick with a maximum of 1/16 inch (1.6 mm) grout width with cushioned edge. Tile shall have less than a 0.5 percent water absorption rate, ASTM C373. Use in toilets, showers and shower drying rooms and locker rooms.

C302001 1.2 PORCELAIN FLOOR TILE

Porcelain floor tiles shall be a minimum of 5/16 inch (8 mm) thick with a maximum of 1/4 inch (6 mm) grout width with cushioned edge. Tile shall have a minimum breaking strength of 300 pounds (202 kg), ASTM C648 and a maximum absorption rate of 0.5%, ASTM C373. Use in lobbies, corridors, toilets, kitchens, dining facilities, and other areas with minimal maintenance requirements, high resistance to staining, absorption and high durability requirements. Tile shall be color through, impervious, unglazed or glazed finish with an unpolished, semi-polished, polished, or textured surface.

C302001 1.3 QUARRY FLOOR TILE

Quarry floor tiles shall be a minimum of 1/2 inch (12.7 mm) thick tiles with a maximum of 1/4 inch (6 mm) grout width. Tile shall have a minimum breaking strength of 350 pounds (158 kg), ASTM C648 and a maximum absorption rate of 3%, ASTM C373. Use in lobbies, corridors, kitchens, dining facilities, and other areas with high durability requirements. Use grout release for darker pigmented grout colors. Tile shall have a maximum of 3.0 percent water absorption rate when tested in accordance with ASTM C373. Non-slip, abrasive grain or textured surface required for tile in areas where there is excessive water or grease and oils. Tile shall consist of semi-vitreous, vitreous or clay material with smooth or textured surface and unglazed finish.

C302002 TERRAZZO FLOOR FINISHES

Refer to Project Program for special design requirements.

C302002 1.1 BONDED TERRAZZO

Provide terrazzo, bonded to concrete, consisting of a terrazzo topping over an underbed. Use in all general areas requiring terrazzo. Where structural movement is anticipated which may injure the terrazzo, use the

sand cushion (floating) method. Provide cementitious terrazzo in accordance with the NTMA bonded terrazzo specification. Patterns to have three (3) colors with (18 guage) minimum zinc "L" divider strips.

Applicator shall be approved by the NTMA and shall have a minimum of 2 years of experience in the application of the materials to be used and shall have a completed 2 successful installations within the past 2 years.

C302002 1.2 RESINOUS TERRAZZO

The resinous terrazzo flooring shall be an epoxy terrazzo. All terrazzo, auxiliary products and materials and application techniques used must be approved by National Terrazzo and Mosaic Association (NTMA) and epoxy terrazzo manufacturer, whichever is more stringent, prior to use. These requirements shall include, but are not limited to the following;

Epoxy Terrazzo Minimum Requirements:

The contractor must be a member of NTMA and shall have a minimum 10 years application experience and have completed a minimum 5 successful installations over the past five years of similar scope, complexity and minimum of 75 percent of the square footage.

No products shall contain VOC's or formaldehydes. Thickness 3/8" cast in place. Hardness: 60-85 per ASTM D-2240. Tensile Strength: 3,000 psi (min) per ASTM D-638. Compressive Strength: 10,000 psi (min) per ASTM D-695. Chemical Resistance: No deleterious effects per ASTM D-1308

Divider strips/control joints in the terrazzo shall be aluminum or brass shall occur directly above control joints in the subfloor and be a minimum 18 gauge "L" shape. A flexible crack suppression membrane (elastomeric) installed over entire floor slab surfaces, including all cracks in the subfloor. Flatness tolerance of the slab must be less than 0.25-in flatness variation over 10ft span. Fill areas with 100% epoxy solids with fine aggregates per manufacturer's recommendations for areas which do not meet the flatness tolerance mentioned above. The concrete surface shall use shot blasting only (no alternate method to be used). The concrete slab is to be tested for moisture transmission using ASTM F2170 Probe Test. Concrete **slabs shall be shot-blasted and cleaned to receive epoxy terrazzo moisture vapor** primer system as specified by manufacturer and NTMA, whichever is more stringent.

Maintain the ambient room and floor temperature at 60Â°F or above for a period extending 72 hours before, during and after floor installation. Concrete to receive epoxy terrazzo shall have cured for at least 28 days and be free of all curing compounds. Test concrete substrate to determine acceptable moisture levels prior to installation. Testing should be conducted according to ASTM F2170, Probe Test (determining relative humidity in concrete slabs using in situ probes). Concrete slabs shall be shot-blasted and cleaned to receive epoxy terrazzo moisture vapor primer system as specified by manufacturer and NTMA, whichever is more stringent. The building shall be enclosed and the HVAC system operational prior to and during each day of installation, the terrazzo contractor shall verify that the dew point is at least 5Â° F (-15Â° C) less than the slab and air temperature.

Physical properties of the moisture migrating primer shall have a maximum of 0.3 perms with 100% RH. Primer shall be a material recommended by the resin manufacturer which will penetrate the pores of the substrate and bond with the topping to form a permanent monolithic bond between the substrate and the topping.

Five colors for various patterns and accents throughout the flooring area Marble chips shall not exceed #1 size. Provide a minimum of three 6"x6" samples for each color and type of terrazzo for review prior to purchase two, 6" lengths of each type and kind of divider strip. Use of post-industrial recycled marble or granite terrazzo chips. When completed the terrazzo shall show a minimum of 70% decorative aggregate chips on the surface.

The finished floor will be rinsed clean, allowed to dry and non-yellowing, slip-resistant & durable water based acrylic sealer. Confirm with user if high polish finish may be used in lieu of sealer. Coordinate with user sheen of polished finish. Use 100% epoxy solids flexible resin, tinted to match adjoining terrazzo matrix per manufacturer's specification.

For concrete slab requirements; See PTS A10-50 Slab on Grade, 1.1.1 Slab on Grade where Resinous Terrazzo Floor Finish is scheduled.

C302003 WOOD FLOORING

C302003 1.1 WOOD FLOORING SYSTEM

Wood strip flooring shall be 3/4 inch (19 mm) thick by 2-1/4 inches (57 mm) face width, kiln dried, continuous tongue and groove and of standard lengths. Beech and birch shall be second grade in accordance with NOFMA Grading Rules. Hard maple shall be second and better in accordance with MFMA-01. Red and white oak shall be select grade in accordance with NOFMA Grading Rules. Strip flooring shall be marked with the trademark of the grading agency. The strip flooring shall be NOFMA certified and installed in accordance with NOFMA publication *Installing Hardwood Flooring*. Nails shall be as recommended by strip flooring manufacturer’s recommendations. Resilient pads shall be pneumatic rubber, PVC, or polyurethane resilient mounts to fit the floor system. Moisture barrier shall be 6 mil minimum thickness polyethylene.

C302003 1.1.1

Rooms where wood flooring is to be installed shall have permanent heating and air conditioning installed and working or adequate arrangements for ventilation and temperature controls starting not less than 3 days prior to beginning the installation of flooring and continuing throughout the remainder of the contract period.

C302003 1.1.2

Concrete slab shall be level, steel troweled to a tolerance of 1/8 inch (3 mm) plus or minus in a 10 foot (3048mm) radius. Slab surface shall be clean, dry, and approved by wood floor manufacturer prior to start of installation.

C302003 1.1.3

Unless otherwise approved, flooring shall be laid parallel to the length of the area to be floored. Strips shall be laid with close joints, snugly driven up but providing for expansion in accordance with humidity conditions expected during the life of the flooring. End joints shall be so alternated that there will be at least two boards between end joints in the same plane and at least 6 inches between end joints in adjacent boards. Space for expansion shall be left along perimeter walls and around fixed projections through the floor surface.

C302003 1.1.4

Flooring shall be sanded to a smooth, even, uniform finish without burns in accordance with the flooring manufacturer’s recommendations. The flooring shall be left clean and ready to receive the finishing materials. Refer to C3040 “INTERIOR PAINTING AND SPECIAL FINISHES” for floor finishes.

C302004 RESILIENT FLOOR FINISHES

All resilient flooring must meet or exceed applicable ABA Accessibility Standards horizontal requirements. Install each type of flooring with recommended adhesive in accordance with the manufacturers' written instructions. Installers must be approved by the manufacturer in writing and must have a minimum of 3 yrs experience for each type of flooring to be installed. Provide and store a minimum of 2% total quantity for each type flooring, color and pattern within each building for future replacement and patching. Provide manufacturers full line of color and pattern selections, including multi-color patterns. Use the resilient floor finishes as identified in the Project Program or as directed below.

C302004 1.1 RESILIENT SHEET FLOORING SYSTEMS

C302004 1.1.1

Resilient linoleum sheet flooring shall be made with natural raw materials including linseed oil, flour, and rosin or resin binders double calendared onto natural jute backing, ASTM F2034, Type I. Pattern and color shall extend throughout thickness of material. Gage shall be 0.10 inch (2.5 mm). Static load limit shall be 250 psi per ASTM F970. Seal linoleum using manufacturer’s recommended sealer for commercial application. The manufacturer's technical representative shall review and approve each typical sample application on-site prior to resuming the installation and shall spot check each 1,196 square yards (1000 square meters) for quality control. Work shall not commence on any portion of work until the manufacturer's technical representative renders approval on site. A manufacturer's five year warranty is required.

C302004 1.1.2

Resilient rubber sheet flooring shall be commercial quality, dimensionally stable, wear resistant, firm and slip resistant with integral color. The rubber sheet flooring shall be a three-layer

construction consisting of a rubber wear layer, a cushioned layer, and a polyester backing. All components of the construction shall be thoroughly vulcanized to prevent delamination. The rubber sheet flooring shall conform to ASTM F1860-98 and require no wax maintenance.

C302004 1.1.3

Resilient homogeneous vinyl sheet flooring shall be commercial quality, 0.080 inch (2.0 mm) overall nominal gauge with a minimum wear layer thickness of 0.066 inch (1.6 mm) and a minimum of 6 feet (1.83 m) wide. It shall be non-layered, non-backed and include a protective urethane finish for ease of maintenance and conform to ASTM F1303, Type II Grade 1 Class A. Seams shall be recess scribed and heat welded with patterned or solid color weld rods depending on the contractor’s design intent to camouflage, blend or accent the seam lines. Resilient homogeneous vinyl sheet flooring shall require no wax maintenance.

C302004 1.1.4

Resilient heterogeneous vinyl sheet flooring shall be commercial quality, 0.080 inch (2.0 mm) overall nominal gauge with a minimum wear layer thickness of 0.066 inch (1.6 mm) and a minimum of 6 feet (1.83 m) or 12 feet (3.6 m) wide. It shall include a protective urethane finish for ease of maintenance and conform to ASTM F1303, Type I Grade 1 Class A. Seams shall be recess scribed and heat welded with patterned or solid color weld rods depending on the contractor’s design intent to camouflage, blend or accent the seam lines. Resilient heterogeneous vinyl sheet flooring shall require no wax maintenance.

C302004 1.2 RESILIENT TILE FLOORING SYSTEM

C302004 1.2.1

Resilient vinyl composition tile (VCT) shall be commercial grade, asbestos free, with a nominal overall gauge of 1/8 inch (3 mm) and a wear layer thickness of 1/8 inch (3 mm) nominal. The tile shall be manufactured in accordance with ASTM F 1066, Type II, Comp. 1, Class 2, through pattern. Tile shall be finished in accordance with manufacturer’s written instructions.

C302004 1.2.2

Resilient static dissipative vinyl composition tile (SDT) shall be of commercial grade, asbestos free, with a nominal overall gauge of 1/8-inch (3 mm) and a wear layer thickness of 1/8-inch (3 mm) nominal; with an antistatic additive. The SDT tile shall conform to ASTM F1066, Class 2 through pattern. The flooring shall be installed with recommended adhesive and accessories; and finished in accordance with the manufacturer’s written instructions. Use SDT floors in computer areas or areas with sensitive electronic where the Project Program requires tile.

C302004 1.2.3

Resilient solid vinyl tile/plank shall be 0.1 inch (2.5 mm) thick, with a vinyl wear layer of 0.040 inches (1.mm) and shall be planks or square

tiles. It shall include a protective urethane finish for ease of maintenance and conform to ASTM E648, Type III, Class 1 and ASTM F1700, Class III. Provide vinyl flooring that is easily cleaned with off-the-shelf products. Surface finishes requiring manufacturer supplied or special order cleaning solutions are not acceptable. Vinyl flooring shall have a marble, granite, stone, terrazzo or wood grain pattern. A manufacturer's 25-year min warranty is required. Products must meet the Buy American Act and be manufactured in ISO 9001 and ISO 14001 compliant factories.

C302004 1.2.4

Resilient rubber tile shall be 100% synthetic rubber with color through, slip resistance formulation, with a minimum base thickness of 0.125 inch (3.2 mm) and a minimum stud height of 0.024 inch (0.6 mm). Rubber tile shall conform to ASTM F1344, Class I and ASTM E648, Class 1. The product shall require no wax maintenance. A manufacturer’s 10-year warranty is required for a raised round or square surface profile. A manufacturer’s 5-year warranty is required for other surface textures with slip resistant formulation.

C302004 1.2.5

Resilient athletic rubber tile shall be 100% synthetic heavy rubber or recycled crumb rubber tile, 3/8 inch (9 mm) thick. Rubber tile shall conform to ASTM F1344 for recycled crumb rubber tile. The product shall require no wax maintenance. A manufacturer’s 2-year warranty is required. Use rubber tile flooring in weight and exercise rooms.

C302004 1.2.6

Resilient linoleum tile shall be made with natural raw materials including linseed oil, flour, and rosin or resin binders double calendared onto synthetic jute backing, ASTM F2034, Type I. Pattern and color shall extend throughout thickness of material. Gage shall be 0.10 inch (2.5 mm). Static load limit shall be 250 psi per ASTM F970. Seal linoleum using manufacturer’s recommended sealer for commercial application. The manufacturer's technical representative shall review and approve each typical sample application on-site prior to resuming the installation and shall spot check each 1,196 square yards (1000 square meters) for quality control. Work shall not commence on any portion of work until the manufacturer's technical representative renders approval on site. A manufacturer's 5-year warranty is required.

C302005 CARPETING

C302005 1.1 GENERAL

Installer(s) shall be approved by the manufacturer in writing. Carpet manufacturer shall be established and in good standing with the industry. A minimum of 5% total quantity for each color and pattern shall be provided and stored within the building for future replacement patching.

C302005 1.2 CARPET PILE FIBER

Provide one of the following:

a. 100% premium branded, yarn-dyed, Type 6.6 continuous hollow filament nylon

b. 100% premium branded, solution-dyed, Type 6 or Type 6.6 continuous hollow filament nylon

c. 100% premium branded, combination yarn dyed and solution-dyed, Type 6 or Type 6.6 continuous hollow filament nylon

C302005 1.3 CARPET BACKING REQUIREMENTS

a. Provide manufacturer’s standard high performance carpet backing.

b. Moisture resistant carpet backing shall pass the 24 hour British Spill Test.

c. Moisture proof carpet backing shall pass the 10,000 Impacts Test.

d. Provide moisture resistant carpet backing with an attached urethane cushion, minimum 18 lb. density.

e. Provide moisture proof carpet backing with integral high density cushion of thermoplastic, urethane, or PVC.

C302005 1.4 CARPET PERFORMANCE CHARACTERISTICS

a. Flammability: Carpet shall meet the Critical Radiant Flux Classification of not less than 0.45 W/sq. cm. when tested in accordance with ASTM E648. Carpet shall generate less than 450 rating when tested in accordance with ASTM E662
b. Static Control: Carpet shall include a permanent static control system to control static build-up to less than 3.0 KV in accordance with AATCC-134.
c. Dimensional Stability: Carpet shall be permanently dimensionally stable with no delamination of components or any edge raveling or zippering. Edge Ravel: Minimum 1 lb. loop pile only - ASTM D-7267; Delamination: Minimum 3.5 lb. per inch of width - ASTM D-3936; Tuft Bind: Minimum 10 lb. average tuft bind for loop pile - ASTM D-1335; Tuft Bind: Minimum 8 lb. average tuft bind for (Modular Tile) loop pile - ASTM D-1335.
d. Colorfastness to Crocking: Not less than 4, wet and dry, per AATCC-165.
e. Colorfastness to Light: Not less than 4 after 40 AFU (AATCC fading units) per AATCC-16.
f. Antimicrobial Activity: Not less than 0.08-inch (2-mm) halo of inhibition for gram-positive bacteria; not less than 0.04-inch (1-mm) halo of inhibition for gram-negative bacteria; no fungal growth, per AATCC-174.
g. Appearance Retention: Provide carpet with a medium scale (>3" repeat) or large scale (>6" repeat), multi-color pattern for excellent appearance retention and soil hiding characteristics. Heathered yarn without a pattern is unacceptable unless approved by the NAVFAC Interior Designer as an accent carpet.
h. Sustainability: Provide carpets with recycled fiber content, and renewable material content in the attached cushion or backing materials certified by an independent testing agency. Recycle Content of the

Total Product Weight: Must be either Pre-consumer or Post-consumer content or a combination of these. Broadloom: minimum of 10%; Modular Tile: minimum of 30%.

i. Product Sustainability Certification: To achieve superior performance in multiple environmental attribute areas, carpet must have third party certification in accordance with NSF/ANSI 140 Sustainable Carpet Assessment Standard at a "Gold" level minimum. Carpet manufacturer must supply certificate as part of the procurement documentation.

j. Indoor Air Quality: Provide carpets that meet the criteria of the CRI "Green Label Plus" Indoor Air Quality Testing Program. Carpet adhesive VOC's shall be less than 50 g/L..

k. Reclamation of existing carpet to be determined with potential vendor. When carpet is replaced, submit certification documentation from the reclamation facility to the Contracting Officer.

l. Written Warranty: Lifetime commercial warranty for texture retention and edge raveling, zippering, de-lamination is required. Seam preparation and adhesives shall be recommended by the carpet manufacturer in accordance with the warranty. Contractor shall submit a copy of the manufacturer's standard warranty to the Contracting Officer within 60 days of BOD. Government shall be a beneficiary of the terms of this warranty.

m. Texture Appearance Retention Rating (TARR): The carpet should be evaluated using ASTM D-5252, Hexapod Drum Test, as the commercial carpet test procedure and TARR classification determined by ASTM D-7330. Carpet must meet TARR ratings specified below:

Space Definition	Traffic Classification	TARR Classification
Private Offices	Moderate	> 3.0 TARR
Training, Conference, etc.	Heavy	> 3.0 TARR
Open Office, Corridors, Lobbies, etc.	Severe	> 3.5 TARR

C302005 1.7 CARPET INSTALLATION

Install carpet by one of the following methods in accordance the manufacturer’s recommendations and in accordance with the Carpet and Rug Institute, CRI-104, *Standard for Installation Specification of Commercial Carpet*, compatible with the construction, backing, and pattern characteristics of each carpet provided.

a. Direct Glue Down Carpet Installation

b. Double Glue Down Carpet and Pad Installation

c. Carpet with Attached-Cushion Installation

d. Pre-applied releasable “dry” adhesive system installation.

e. Stretch-In Carpet Installation with tack strips and pad

C302006 MASONRY AND STONE FLOORING

C302006 1.1 UNIT MASONRY FLOORING SYSTEM

Unit masonry flooring system and coordinating base shall be fired red clay brick, or chemical resistant brick unit masonry flooring. Provide unit masonry flooring systems in accordance with the Brick Industry Association recommendations and the Tile Council of America *Handbook for Ceramic Tile Installation*.

C302006 1.2 STONE FLOOR AND BASE FINISHES

C302006 1.2.1

Natural Stone Flooring and coordinating base shall be of marble, granite, or travertine.

C302006 1.2.2

Aggregate Stone Tile and coordinating base shall be a composite of marble or granite.

C302006 1.2.3

Install stone floor and base in accordance with the recommendations of the Marble Institute of America, the Indiana Limestone Institute of America, Inc. the National Building Granite Quarries Association, Inc. in addition to the Tile Council of America *Handbook for Ceramic Tile Installation* as applicable to the type of stone being installed.

C302007 WALL BASE FINISHES

Provide a wall base for transition between floor and wall finish. If no other type of base is required, provide rubber or vinyl straight base at carpet installations, rubber or vinyl cove base at exposed concrete or resilient tile floors, and a base to match the floor material at hard surface tile floors, or as required in the project program.

C302007 1.1 RESILIENT WALL BASE FINISHES

C302007 1.1.1

All rubber wall base shall be 4 inch (100 mm) high and 1/8 inch (3.2 mm) thick as required unless indicated otherwise. The wall base shall include inside and outside corners and shall conform to ASTM F1861-98, Type TS. Provide wall base in rolls and not 4 foot lengths.

C302007 1.1.2

Flash-coved integral resilient sheet wall bases shall be installed in accordance with the manufacturers’ printed instructions to include a cove stick having a minimum radius of 3/4 inch (19 mm) and finished with an approved cap strip.

C302007 1.2 WOOD BASE FINISHES

Wall base shall be a minimum of 3-1/2 inches (90 mm) high and AWI custom grade hardwood molding with mitered inside and outside corners. Refer to C302008 – 1.1.2 for wood finishes.

C302007 1.3 STONE AND MARBLE BASE FINISHES

Stone and marble wall base shall coordinate with the adjacent flooring and shall be 4 inch (89 mm) and 3/4 inch (19 mm) thick.

C302007 1.4 TILE BASE FINISHES

Coordinate tile base with ceramic wall and floor tile for color, material match and modularity. Include all pre-manufactured trim pieces, special shapes, caps, stops, and returns to provide a complete installation. Provide coordinating wall, base and floor tile for curb construction at showers.

C302008 STAIR FINISHES

C302008 1.1 RESILIENT STAIR TREADS, RISERS AND LANDINGS

Refer to C302004 for resilient landing finishes. Provide rubber risers to match treads or one piece tread/risers. Provide treads with raised patterns and visually impaired nosing inserts as required.

C302008 1.2 PORCELAIN AND STONE STAIR TREADS, RISERS AND LANDINGS

Refer to C302001 and C302006 for porcelain and stone stair finishes. Provide treads with textured surfaces or raised patterns and visually impaired nosing inserts as required.

C302008 1.3 CARPETED STAIR TREADS, RISERS AND LANDINGS

Refer to C302005 for carpeted stair finishes. Provide dense padding on treads and nosings for increased appearance retention and durability.

C302009 FLOOR TOPPINGS AND TRAFFIC MEMBRANES

Assemblies include floor toppings and membrane systems.

C302009 1.1 REFLECTIVE, CHEMICAL AND SLIP RESISTANT FLOOR SYSTEMS

C302009 1.1.1 Thin Film Floor Coating

The Designer of Record shall utilize UFGS Specification Section 09 67 23.15, Fuel Resistive Resinous Flooring, 3-Coat System, for the project specification submittal and for test patch, surface preparation, and installation requirements. Use MPI Product #212 "Thin Film Flooring System for Aircraft Maintenance Facilities" for product specifications.

C302009 1.1.2 Dry Shake Floor Topping

System shall be a nonferrous, non-oxidizing metallic aggregate, dry-shake surface hardener system consisting of specially processed cementitious binder, plasticizer, and water-reducing admixtures,

formulated and processed under the stringent quality control of the manufacturer. “Lumpiplate” as manufactured by ChemRex, a subsidiary of Master Builder Technologies and “Diamond Plate” as manufactured by The Euclid Chemical Company comply with this specification. The hardener shall be proportioned and sealed in standard moisture resistant bags. The manufacturer shall guarantee their aggregate to be free of rust, corrosive materials, oil, petroleum, or other water-base materials when delivered. The manufacturer shall replace any material found to contain any such materials, or any other material, which is deemed unsatisfactory. The manufacturer shall provide a full-time technical representative, qualified in designing and adjusting concrete mixes, to assist in the application of the aggregate surface hardener system. A mono molecular surface evaporation retardant film, as recommended by ACI 305R and ACI 308R, shall be provided for use under drying conditions, due to high concrete or ambient temperatures, low humidity, high winds, and so forth. This includes heated interiors during cold weather, to aid in maintaining concrete moisture during the early placement stages of the plastic concrete. Retarder shall be certified by its manufacturer to be compatible with the surface hardener and shall be used in accordance with the manufacturer’s recommendations. Curing and sealing materials and procedures shall be as recommended by the manufacturer of the aggregate surface hardener system and ASTM C309 or ASTM C1315. All installation shall be in accordance with manufacturer’s instructions. Coordinate the concrete mix design with the dry shake floor topping manufacturer to optimize bond of floor finish to slab. Spread topping mix with a mechanical spreader.

C302010 HARDENERS AND SEALERS

C302010 1.1 HARDENED AND SEALED CURE CONCRETE FLOORS

Harden and seal concrete floors in accordance with the finished floor manufacture requirements. Utilize other methods of concrete curing if the floor finish manufacturer does not recommend a chemical hardener or sealer. Concrete floors that can utilize a hardener-sealer and will be exposed to traffic shall receive a minimum of two coats of hardener-sealer curing agent for dust protection. These hardener-sealer-cured floors shall be finished with a curing agent that shall penetrate the concrete to permanently seal the floor against moisture and the penetration of contaminants. The curing agent shall be non-toxic, non-flammable, and non-combustible and shall be installed in accordance with the manufacturer’s printed instructions. The finished floor shall be dust-free.

C302010 1.2 COLORED CONCRETE FLOORS

Colored concrete floors shall include a colored pigment either applied as a topical dye; or a concrete topping with integral color pigment; or a dry shake pigment application, as required by the project program. Concrete floor shall be trowel applied in a pattern, or shall include grit for slip resistance.

C302011 RAISED ACCESS FLOORING

C302011 1.1 FLOORING SUPPORT SYSTEM

Design support system to allow for 360 degree clearance in laying out cable and cutouts for service to machines and so that panel and stringer together take up maximum of 2 inches (50 mm).

C302011 1.1.1 Pedestals, Shafts, and Caps

Provide pedestals of steel or aluminum, each capable of carrying 4,960 pounds (2250 kg) axial load without permanent deformation. Provide permanent factory applied corrosion resistant finish for pedestals made of ferrous materials. Provide base plate not less than 4 inch by 4 inch by 1/8 inches (100 mm by 100 mm by 3 mm) thick, welded to shaft of pedestal. Approved die-formed bases of equivalent load spreading capacity and bearing area may be provided in lieu of flat base plates. Provide shafts to support design loads. Provide Pedestal Caps designed to fit precisely over pedestal shafts and to interlock with panels and stringers to prevent tilting, rocking, or vibrating of panels when live load is applied. Provide pedestals with adjusting threads or other devices that will permit leveling of floor system with adjustment range of approximately 2 inches (50 mm). Provide lock nuts, set screws, or other locking devices to positively lock final pedestal vertical adjustments in place, independent of floor panels. Do not use self-tapping screws, snap type connections, or spring-action lock-nuts. All adhesives used shall be as recommended by the manufacturer.

C302011 1.1.2 Stringers

Fabricate from rolled or formed galvanized steel conforming to ASTM A591/A592M. Incorporate interlocking pedestal and stringers in pedestal stringer system, providing positive seating of panels to prevent tilting, rocking, or vibrating of panels when live load is applied. Provide stringers that can be added or removed after floor is in place. Fasten end of each stringer and mid-point of each four foot stringer positively to pedestal heads, using manufacturer’s standard screws. Provide screws that are removable from top.

C302011 1.2 FLOOR PANELS

Provide interchangeable 24 inch by 24 inch (610 mm by 610 mm) square module panels capable of supporting design loads. Panels shall be of weight that can readily be removed and handled by one person using lifting tool furnished by access floor manufacturer. Panel finish surface to be Grade HW 120 high pressure plastic laminate conforming to NEMA LD. Use either factory attached carpet tile, factory attached - static dissipative grounded carpet tile or field installed carpet tile with seams overlapping the access floor grid panels or to transition areas where only part of the space is recessed for access floor.

a. Aluminum Panels - ASTM B85, SC84A, die-cast or extruded construction for rooms with MRI equipment.

b. Steel Panels - Die-formed construction. Weld flat steel top sheet to one or more formed steel stiffener sheets. Provide zinc-coating conforming to ASTM A591/A591M, Class C, with manufacturer's standard corrosive resistant electrically conductive epoxy paint finish Wood, plastic and other combustible products are prohibited.

c. Cementitious or Concrete Filled Formed Steel Panels Entirely non-combustible steel shell and cementitious or concrete fill, corrosive

resistant inside and out. Seal cut edges in accordance with manufacturer’s recommendations.

d. All panels to be manufactured in USA and individually labeled "Made in USA" or in accordance with authorized substitution procedures.

C302011 1.2.1 Gravity held factory finished panels with bolted stringer understructure

Fasten end of each stringer and mid-point of each four foot stringer positively to pedestal heads, using manufacturer's standard screws. Provide corner lock system for all general office (bare for carpet tile) applications with screws that are removable from top.

C302011 1.3 GROUNDING

Ground access floor system for safety hazard and static suppression. Connection of access floor support system to building grounding electrodes is specified in another section of this RFP. Provide positive contact between components for safe, continuous electrical grounding of entire floor system. Total system resistance from wearing surface of floor to building grounding electrode shall be within the range of 0.5 megohms to 20,000 megohms for computer rooms, electronics offices, data centers and control rooms, 0.2 megohms to 2.0 megohms for clean rooms and laboratories.

C302011 1.4 THRESHOLD(S)

Provide interior thresholds of nonferrous materials where flooring materials or floor levels change.

C302011 1.5 RAMPS

Provide ramps of required slip resistance and slope conforming to ABA Accessibility Standards

C302011 1.6 INSTALLATION

Install access floor system and accessories under supervision of the access flooring manufacturers authorized representative to insure rigid, firm installation free of vibration, rocking, rattle, squeaks, and other unacceptable performance. Install in accordance with the following;

a. Set pedestal in adhesive as recommended by the access flooring manufacturer to provide full bearing of the pedestal base on the sub floor.

b. Layout floor panel installation to keep the number of cut panels at the floor perimeter at a minimum. Scribe panel assemblies at the perimeter to provide a clase fir with no voids greater than 1/18" where panels abut vertical surfaces. At spaces where access floor connects to the walls provide connection detail that seals the access floor to the wall to reduce air leakage.

c. Secure grid member to pedestal heads in accordance with access floor manufacturer’s instructions.

d. Thoroughly clean up dust, dirt and construction debris caused by

floor installation.

e. Level installed access floor to within 0.060" of true level over the entire area and within 0.10" in any 10" distance.

C3030 CEILING FINISHES

Refer to C3040 “INTERIOR PAINTING AND SPECIAL COATINGS” for painted ceiling finishes.

C303001 ACOUSTICAL CEILING TILES AND PANELS

C303001 1.1 ACOUSTICAL CEILING PANELS

All acoustical ceiling panels shall be 24 inch by 24 inch (610 mm by 610 mm), with a minimum light reflectance of .75 (except as noted), Class A, flame spread 25 or less and smoke development of 50 or less, ASTM E84. All acoustical ceiling panels shall have minimum 60% recycled content except as noted. Acoustical ceiling panels shall conform to ASTM E1264. Provide square edge except as noted.

C303001 1.1.1

For typical open office areas, conference rooms, executive offices, provide non-asbestos mineral composition acoustical ceiling panels of Type III with factory-applied standard washable painted finish or Type IV with factory-applied plastic membrane-faced vinyl, Form: 1, 2, or 3. Provide reveal edge in lobbies, conference rooms and command suites; otherwise, provide square edge in all other locations to receive acoustical panels.

C303001 1.1.2

For typical humid areas such as toilets, kitchens, fitness and locker rooms, provide non-asbestos mineral or glass composition acoustical ceiling panels bonded with ceramic, moisture resistant thermo-setting resin, or other moisture resistant material with factory-applied standard washable painted finish; and recycled content: minimum of 40%.

C303001 1.1.3

For areas with very high humidity, heavy soiling, staining, impact abrasion, or limited security concerns, such as bachelor’s quarters, laundry rooms, or maintenance shops, provide Type V, Steel or Type VII, aluminum faces with white baked on enamel finish, and non-asbestos mineral composition absorbent backing,

C303001 1.1.4

For areas requiring a concealed grid system, provide non-asbestos mineral composition acoustical ceiling panels of Type III with factory-applied standard washable painted finish or Type IV with factory-applied plastic membrane-faced vinyl, Form: 1, 2, or 3; Size: 12 inch by 12 inch by 5/8 inch (305 mm by 305 mm by 19 mm), Edge: for concealed grid installation.

C303001 1.1.5

Provide NRC and CAC ratings as follows:

Type of space	Minimum NRC	Minimum CAC
Open Office Areas	.75	40-44
Conference Rooms, Classrooms	.60	35-39
Activity spaces, Lobbies, Corridors	.60	35-39
Executive offices	.60	35-39
Toilets	.50	35-39
Kitchens	.50	35-39
Fitness/Locker Rms	.50	35-39
All other spaces	.50	35-39

Base the tested NRC value on Mounting Type E-400 of ASTM E795.

C303002 GYPSUM WALLBOARD CEILING FINISHES

Conform to specifications, standards and requirements in accordance with Gypsum Association GA 214, GA 216 and GA 224. Provide asbestos free materials only. Provide featured edge gypsum board on all gypsum surfaces that flatness of joints will be visible, such as uplighted ceilings, window lighted ceilings, and as recommended by the manufacturer. Provide Type X gypsum board in fire rated assemblies.

C303002 1.1 REGULAR GYPSUM BOARD

ASTM C36/C36M and ASTM C1396/C1396M, 1/2 or 5/8 inch (12.7 mm or 15.9 mm) thick, tapered edge. Provide 5/8 inch (15.9 mm) for all projects except for single family residential, which may utilize 1/2 inch (12.7 mm) if other requirements, such as sound control, are met.

C303002 1.2 MOISTURE RESISTANT GYPSUM BOARD

ASTM C630/C630M, 1/2 or 5/8 inch (12.7 mm or 15.9 mm) thick, tapered edges. Use for ceilings in humid areas. Do not use as a substrate in tiled areas where tile will be exposed to direct moisture contact or condensation accumulation. Support moisture resistant gypsum board at 12 inches (305 mm) on center. Provide 1/2 inch (12.7 mm) for single-family residential projects only. Provide 5/8 inch (15.9 mm) for all other projects.

C303002 1.3 FOIL BACKED GYPSUM BOARD

ASTM C1396/C1396M 1/2 or 5/8 inch (12.7 mm or 15.9 mm) thick in residential construction, and 5/8 inch (15.9 mm) thick in non-residential construction, tapered edges for layers exposed to view, square edges for concealed layers. Seal joints in foil backing to other panels and

adjoining materials as recommended by the panel manufacturer.

Alternative to foil backed gypsum board in Secured Areas: Field applied foil faced barrier material is an acceptable alternative for pre manufactured foil backed gypsum board. Provide a continuous composite multilayer barrier with a woven polyethylene sheet sandwiched between two sheets of solid reflective aluminum surfaces. Shielding effectiveness tested in accordance with IEEE 229/ ASTM D4935. Install barrier in accordance with manufactures instructions

C303002 1.4 CEMENTITIOUS BACKING UNITS

ANSI A108.11 and ANSI A118.9, 1/2 or 5/8 inch (12.7 mm or 15.9 mm) thick; use for adhesive applied ceramic tile in wet areas (tubs, shower enclosures, saunas, steam rooms, gang shower rooms, or for shower areas with a veneer plaster finish. Support cementitious backing units at 12 inches (305 mm) on center. Provide screws specifically designed for use with cement panels.

C303002 1.5 IMPACT RESISTANT GYPSUM BOARD

Reinforced gypsum panel with imbedded fiber mesh or polycarbonate resin thermoplastic backing, 5/8 inch (15.9mm) thick, tapered edges, in accordance with Structural Failure Test; ASTM E695 or ASTM D2394 and Indentation Test; ASTM D5420 or ASTM D1037. For use whenever gypsum board partitions are allowed for barracks, training facilities, and industrial facilities. Provide metal framing of 20-gauge minimum. Provide fasteners that meet manufacturer requirements and specifications. Impact resistant gypsum board shall have a flame spread rating of 25 or less and a smoke developed rating of 50 or less, ASTM E84. Finish with a high strength veneer plaster.

C303002 1.6 TEXTURED CEILING FINISH SYSTEM

Applied textured ceiling finish shall be plaster based. Refer to paragraph “C301002 – 1.1 GYPSUM PLASTER” for finish requirements.

C303002 1.7 JOINT TREATMENT

ASTM C475, Joint compound shall be specifically formulated and manufactured for use with and compatible with tape, substrate and fasteners as recommended by the manufacturer. Tape and finish gypsum board in accordance with ASTM C840, GA 214 and GA 216. Provide premanufactured joints at all structural expansion joints, crack control joints, and change of materials as recommended by the manufacturer and in accordance with GA 216.

C303002 1.8 FASTENERS

ASTM C514, Fasteners shall be compatible with each type of gypsum board material as recommended by the gypsum board manufacturer and in accordance with GA 216 and GA 224.

C303002 1.9 ACCESSORIES

ASTM C1047, Fabricate from corrosion protected steel or plastic designed for intended use. Accessories manufactured with paper flanges are not acceptable. Flanges shall be free of dirt, grease, and other materials that may adversely affect bond of joint treatment. Provide prefinished or job decorated materials. Install as recommended by GA 214, GA 216 and GA 224.

C303002 1.10 LEVEL OF FINISH

C303002 1.10.1

Tape and finish gypsum board in accordance with ASTM C840, GA 214 and GA 216. Ceilings to receive a heavy-grade wall covering or heavy textured finish before painting shall be finished to GA 214, Level 3. Ceilings without critical lighting to receive flat paints, light textures, or wall coverings shall be finished to GA 214, Level 4. Unless otherwise specified, all gypsum board walls, partitions and ceilings shall be finished to GA 214, Level 5. Provide joint, fastener depression, and corner treatment. Do not use fiberglass mesh tape with conventional drying type joint compounds; use setting or hardening type compounds only. Provide treatment for water-resistant gypsum board as recommended by the gypsum board manufacturer.

C303002 1.10.2

Wherever gypsum board is to receive eggshell, semigloss or gloss paint finish, or where severe, up or down lighting conditions occur, finish gypsum wall surface to GA 214 Level 5. In accordance with GA 214 Level 5, apply a thin skim coat of joint compound to the entire gypsum board surface, after the two-coat joint and fastener treatment is complete and dry.

C303003 PLASTER CEILING FINISHES

C303003 1.1 VENEER PLASTER CEILING FINISHES SYSTEM

Veneer plaster ceilings shall be gypsum plaster veneer finish to gypsum base finishes. Refer to Section C3040 for paint system and gloss level. Provide gypsum neat plaster, gypsum ready-mixed plaster, or high strength gypsum plaster base coat conforming to ASTM C28. High strength gypsum plaster shall have a compressive strength of not less than 2,500 psi, when tested dry in accordance with ASTM C472.

C303004 WOOD CEILINGS

Not Used.

C303005 SUSPENSION SYSTEMS

C303005 1.1 EXPOSED SUSPENDED ACOUSTICAL CEILING GRID

Provide 24 inch by 24 inch (610 mm by 610 mm) aluminum or steel non-corroding intermediate-duty standard grid system for lay-in acoustical panels (ASTM C635). Finish shall be factory applied white baked enamel. Provide manufacturer’s hold down clips for fire rated assemblies and wall

or edge molding. Hang grid system as recommended by manufacturer but with no less than 0.106 inch (2.7 mm) diameter wires (ASTM A641A, A641M, Class 1), or with one by 3/16 inch (4.76 mm) galvanized steel straps conforming to ASTM A653A, A653M (for light commercial zinc coating) or ASTM A366A, A366M (with an electrodeposited zinc coating, Type RS). Use ASTM A580/A580M, composition 302 or 304, condition annealed stainless steel, 0.106 inches (2.7 mm) in diameter over high humidity areas such as commercial kitchens and pools. Install suspended grid system with acoustical sealant (ASTM C843, nonstaining and ASTM C636). Recycled content shall be a minimum of 25%.

C303005 1.2 CONCEALED SUSPENDED ACOUSTICAL CEILING GRID

Provide 12 inch by 12 inch (305 mm by 305 mm) aluminum or steel non-corroding intermediate-duty concealed grid system for lay-in acoustical panels (ASTM C635). Finish shall be factory applied white baked enamel. Provide manufacturer’s wall or edge molding. Hang grid system as recommended by manufacturer but no less than with 0.106 inch (2.7 mm) diameter wires (ASTM A641A, A641M, Class 1), or with one by 3/16 inch (4.76mm) galvanized steel straps conforming to ASTM A653A, A653M (for light commercial zinc coating) or ASTM A366A, A366M (with an electrodeposited zinc coating, Type RS). Install suspended grid system with acoustical sealant (ASTM C843, nonstaining) and in accordance with ASTM C636. Recycled content shall be a minimum of 25%.

C303005 1.3 SUSPENDED AND FURRED CEILING SYSTEMS

ASTM C841 (for lath); ASTM C645 (for GWB).

Provide steel materials for metal support systems with galvanized coating per ASTM A653/A653M, G60; aluminum coating ASTM A463/A463M, T1-25; or a 55% aluminum-zinc coating. Provide suspended ceiling framing in accordance with ASTM C754, except framing members shall be 16 inches (400mm) unless otherwise noted.

C303006 METAL STRIP CEILINGS

Not used.

C303090 OTHER CEILING AND CEILING FINISHES

C3040 INTERIOR COATINGS AND SPECIAL FINISHES

Apply coatings directly to all non-prefinished surfaces of the interior construction. Comply with Master Painters Institute requirements for surface degradation analysis, surface preparation, paint and coating selection, paint application restrictions for substrate materials, and paint application.

C304001 GENERAL REQUIREMENTS

All paint shall be suitable in accordance with the Master Painter Institute (MPI) standards for the interior architectural surface being finished. The current MPI, "Approved Product List" as of the date of contract award, will be used to determine compliance with the submittal

requirements of this specification. The Contractor may choose to use a more current MPI "Approved Product List"; however, only one list may be used for the entire contract. All coats on a particular substrate, or a paint system, must be from a single manufacturer. No variation from the MPI Approved Products List is acceptable.

Select paint systems for the project in accordance with the MPI Architectural Painting Decision Tree available on the Whole Building Design Guide. Use this interactive MPI Decision Tree website to identify applicable paint system(s) for the project. The MPI Decision Tree identifies paint systems for each interior or exterior coated surface in "Normal" or "Aggressive" environmental conditions and generally lists the applicable paint systems in descending order of performance. The paint system at the top of each substrate list generally indicates the highest performing acceptable coating system.

Choose the "Aggressive" environmental conditions in the MPI Decision Tree for exterior systems that are used in moist humid conditions, abrasive conditions, chemical exposure conditions, or within five miles proximity of the ocean or a body of water. Also use "Aggressive " environmental conditions in interior spaces that are exposed to in moist humid conditions, abrasive conditions, chemical exposure conditions, such as bathrooms, shower rooms, kitchens, chemical storage area, swimming pools, laundry, sanitary areas, commercial kitchens, industrial production areas, and hospital operating rooms provide paint systems that comply with the MPI Decision Tree "Aggressive" environmental conditions.

Comply with the following rules when determining the appropriate paint or coating system from the MPI Decision Tree:

a. Some of these paint systems are identified with a "NAVFAC Anchor". This "NAVFAC Anchor" indicates the minimum performing system that NAVFAC will accept for that substrate and environmental conditions.

b. When multiple "NAVFAC Anchors" are indicated on a certain substrate and environmental condition, provide the "NAVFAC Anchor" paint or coating system that is most appropriate for the facility use.

c. If only one MPI Decision Tree choice is available for a certain substrate and environmental condition with no indicated NAVFAC preference, provide that sole option for NAVFAC projects.

d. If the MPI Decision Tree provides multiple choices and no NAVFAC preference is denoted, refer to the Additional RFP Requirements below to determine level of performance.

e. If the MPI Decision Tree does not identify all paint system applicable to the facility, utilize the *MPI Architectural Painting, Exterior Systems Manual* to identify other appropriate paint systems for the project. Utilize the "Premium Grade" systems and comply with all limitations stated in the MPI "Approved Product List" for each paint product. Products having an MPI VOC Range E3 shall be given preferential consideration over lower VOC Ranges. Use higher performing paint systems unless the lower performing paint system can be justified based on a lifecycle cost to include surface preparation, application, disposal, environmental impact, and required recoating cycles. Only use paint products that have been tested for MPI'S "DETAILED PERFORMANCE" or "EVALUATED PERFORMANCE ". Do not use

products that have only been tested for "INTENDED USE".

f. If an "Aggressive" environmental condition option is not available in the MPI Decision Tree for a certain substrate, use the "Normal" environmental condition option.

g. Refer to the Additional Exterior Paint and Coating System Requirements below for further system requirements.

Paints and coatings shall comply with Master Painters Institute Green Performance Standard GPS-1-12 which is available at the following website; http://www.specifygreen.com/EvrPerf/EnvironmentalPerformance.html . Provide Interior flat intermediate and topcoats of a maximum of 50 g/L VOC and interior non-flat intermediate and topcoats of a maximum 150 g/L VOC. Choose paints that provide performance and are environmentally friendly by using LEED VOC Budgeting to analyze the total impact of all flat, non-flat and special purpose coatings on the project.

C304001 1.1 MPI GLOSS LEVELS

Gloss levels shall comply with the MPI system of determining gloss as defined in the Evaluation sections of the MPI Manuals. Utilize the performance characteristics of the paint gloss and sheen to categorize paint rather than manufactures' description of his product. The MPI Gloss Levels are indicated by the notation G1, G2, G3, G4, G5, G6, or G7. G1 is not used by Navy.

The MPI Decision Tree indicates a default gloss level for each paint system, however consider the appearance, anticipated conditions, and need for cleaning when choosing the correct gloss level for each coated surface of the project. Comply with the following guidance in choosing the appropriate gloss level.

a. Use G2 "Velvet-like" Flat for ceilings, residential walls away from human contact and low traffic areas.

b. Use G3 "Eggshell-like" in high traffic areas for ceilings and walls, when human contact with the wall is expected but limited, and for dark accent colors.

c. Use G5 Semigloss for walls, doors and trim for high durability and clean ability and when a surface is expected to have routine human contact.

d. Use G6 Gloss only in special situations such as piping identification or special effects.

The MPI Gloss and Sheen Standard values are measured per ASTM D523, and are as follows:

Gloss Level Number	**Gloss@ 60 Degrees**	**Sheen@85 Degrees**
Gloss Level 1**(G1)**: Matte or Flat	Max.5 units	Max.10 units
Gloss Level 2**(G2)**: “Velvet-like” Flat	Max. 10 units	10-35 units
Gloss Level 3**(G3)**: “Eggshell-like”	Max. 10-25 units	10-35 units

Gloss Level 4**(G4)**:	“Satin-like”	Max. 20-35 units	Min. 35 units
Gloss Level 5**(G5)**:	Semi-Gloss	35-70 units	
Gloss Level 6**(G6)**:	Gloss	70-85 units	
Gloss Level 7**(G7)**:	High Gloss	More than 85 units	

C304001 1.2 MPI SYSTEM DESIGNATIONS AND ABBREVIATIONS

The MPI coating system number in each Division is found in either the *MPI Architectural Painting Specification Manual* or the *Maintenance Repainting Manual* and defined as an interior system (INT/RIN).

a. INT designates an interior coating system for new surfaces.

b. RIN designates an interior coating system used in repainting projects or over existing coating systems.

c. DSD – the MPI short-term designation for Degree of Surface Degradation as defined in the Assessment sections in the *MPI Maintenance Repainting Manual.* Degree of Surface Degradation designates the MPI Standard for description and appearance of existing condition of surfaces to be painted. This DSD classification is used to determine the proper surface preparation necessary for painting.

d. DFT – The short-term designation for dry film thickness. DFT is the minimum acceptable depth or thickness of a coating or system in the dry state. The maximum acceptable DFT is not more than 50% greater than the minimum acceptable DFT (example... DFT = 2 mils, maximum DFT = 3 mils). The DFT indicated in the paint systems below relate to new coatings - MPI INT. MPI RIN will be less than the indicated DFT.

e. Paint System Abbreviations: BF - Block Filler; C – Clear coat; P – Primer coat; I – Intermediate coat; T – Topcoat.

C304001 1.3 SURFACE PREPARATION

Comply with the "Interior Surface Preparation" section of the *MPI Architectural Painting Specification Manual*or the "Interior Surface Preparation” section of the *MPI Maintenance Repainting Manual*. All suggestive language such as "may" or "should" are deleted from the standard and "must" or "shall" inserted in its place. Suggestive language such as "recommended" or "advisable" is deleted from the standard and "require" or 'required" inserted in its place. The results of these wording substitutions change this document to required procedures. For surface preparation, determine a MPI DSD Assessment of each surface and comply with the MPI Surface Preparation Requirements relating to the assessments. Notwithstanding MPI requirements, clean interior ferrous metal to a SSPC SP 10 level (near white) that have aggressive chemical environments (SSPC Zones 3A, 3B, 3C, 3D, and 3E) or waterfront exposure to open structures (SSPC Zones 2A or 2B). Examples of these types of facilities are indoor water training facilities, indoor swimming pools, and open or mostly open waterfront maintenance buildings/ waterfront warehouses/ canopies.

Remove dirt, splinters, loose particles, grease, oil, and other foreign matter and substances deleterious to coating performance as specified for

each substrate before application of paint or surface treatments. For existing buildings, use MPI *Maintenance Repainting Manual* to determine the coatings that need to be removed. Remove deteriorated or loose coatings before repainting begins. Oil and grease shall be removed prior to mechanical cleaning. Cleaning shall be programmed so that dust and other contaminants will not fall on wet, newly painted surfaces. Exposed ferrous metals such as nail heads on or in contact with surfaces to be painted with water-thinned paints, shall be spot-primed with a suitable corrosion-inhibitive primer capable of preventing flash rusting and compatible with the coating specified for the adjacent areas.

C304001 1.4 ADDITIONAL INTERIOR PAINT AND COATING SYSTEMS

In addition to the MPI Decision Tree, comply with the following paint system requirements:

C304001 1.4.1 PAVEMENT COATINGS

(1) INT 3.2 Concrete Horizontal Surfaces

Normal Environmental Conditions; Pigmented

Provide road and parking lot pavement marking in accordance with UFGS 32 17 23.00 20, *Pavement Markings.*

C304001 1.4.2 DRESSED LUMBER

Provide Pigmented systems for Composite Wood Doors (Fiberboard) and trim. Do not use Normal/ Aggressive; Clear and Normal/ Aggressive Stain finishes.

C304002 CONCRETE FINISHES

C304002 1.1 New and uncoated existing, and Existing, previously painted, Concrete surfaces:

a. High Performance Architectural Latex, System DFT: 4 mils

1) MPI INT 3.1C-G2/RIN 3.1J-G2 (Flat); P: MPI 3, I: MPI 138, T: MPI 138

2) MPI INT 3.1C-G3/RIN 3.1J-G3 (Eggshell-like); P: MPI 3, I: MPI 139, T: MPI 139

3) MPI INT 3.1C-G5/RIN 3.1J-G5 (Semigloss); P: MPI 3, I: MPI 141, T: MPI 141

b. Institutional Low Odor / Low VOC Latex, System DFT: 4 mils

1) MPI INT 3.1M-G3/RIN 3.1L-G3 (Eggshell-like); P: MPI 3, I: MPI 145, T: MPI 145

2) MPI INT 3.1M-G5/RIN 3.1L-G5 (Semigloss); P: MPI 3, I: MPI 147, T: MPI 147

C304002 1.2

New and uncoated existing and Existing, previously painted Concrete surfaces in toilets, food-preparation, food-serving, restrooms, laundry areas, shower areas, areas requiring a high degree of sanitation, and other high humidity areas unless otherwise specified, (Fill all holes in masonry surface):

a. Waterborne Light Industrial Coating, Not for human or abrasive contact areas, System DFT: 4.8 mils

1) MPI INT 3.1L-G5/RIN 3.1C-G5 (Semigloss); P: MPI 153, I: MPI 153, T: MPI 153

b. Alkyd, System DFT: 4.5 mils

1) MPI INT/RIN 3.1D-G5 (Semigloss); P: MPI 3, I: MPI 47, T: MPI 47

c. Epoxy, System DFT: 4 mils

1) MPI INT 3.1F-G6/RIN 3.1E-G6 (Gloss); P: MPI 77, I: MPI 77, T: MPI 77

C304002 1.3

New and uncoated existing and Existing, previously painted concrete floors:

a. Latex Floor Paint, MPI INT/RIN 3.2A-G2 (Flat); System DFT: 5 mils, P: MPI 60, I: MPI 60, T: MPI 60

b. Epoxy, MPI INT/RIN 3.2M-G6 (Gloss), System DFT: 5 mils, P: MPI 77, I: MPI 77, T: MPI 77

C304003 CONCRETE MASONRY FINISHES

C304003 1.1

New and uncoated Existing Concrete masonry:

a. High Performance Architectural Latex, System DFT: 11 mils

1) MPI INT 4.2D-G2 (Flat); BF: MPI 4, P: N/A, I: MPI 138, T: MPI 138

2) MPI INT 4.2D-G3 (Eggshell-like); BF: MPI 4, P: N/A, I: MPI 139, T: MPI 139

3) MPI INT 4.2D-G5 (Semigloss); BF: MPI 4, P: N/A, I: MPI 141, T: MPI 141

b. Institutional Low Odor / Low VOC Latex, System DFT: 4 mils

1) MPI INT 4.2E-G3 (Eggshell-like); BF: MPI 4, P: N/A, I: MPI 145, T: MPI 145

2) MPI INT 4.2E-G5 (Semigloss); BF: MPI 4, P: N/A, I: MPI 147, T: MPI 147

c. Multi-color, MPI INT 4.2H, BF: MPI 4, P: MPI 125, I: MPI 112, T: MPI 112, C: MPI 121

C304003 1.2

Existing, previously painted Concrete masonry:

a. High Performance Architectural Latex, System DFT: 4.5 mils

1) MPI RIN 4.2K-G2 (Flat); P: MPI 50, I: MPI 138, T: MPI 138

2) MPI RIN 4.2K-G3 (Eggshell-like); P: MPI 50, I: MPI 139, T: MPI 139

3) MPI RIN 4.2K-G5 (Semigloss); P: MPI 50, I: MPI 141, T: MPI 141

b. Institutional Low Odor / Low VOC Latex, System DFT: 4 mils

1) MPI RIN 4.2L-G3 (Eggshell-like); P: MPI 50, I: MPI 145, T: MPI 145

2) MPI RIN 4.2L-G5 (Semigloss); P: MPI 50, I: MPI 147, T: MPI 147

c. Multi-color, MPI INT 4.2E; BF: MPI 4, P: MPI 125, I: MPI 112, T: MPI 112, C: MPI 121

C304003 1.3

New and uncoated Existing Concrete masonry units in toilets, food-preparation, food-serving, restrooms, laundry areas, shower areas, areas requiring a high degree of sanitation, and other high humidity areas unless otherwise specified, (Patch imperfections and fill all masonry surface voids with block filler):

a. Waterborne Light Industrial Coating, Not human or abrasive contact areas, System DFT: 11 mils

1) MPI INT 4.2K-G5 (Semigloss); BF: MPI 4, P: N/A, I: MPI 153, T: MPI 153

b. Alkyd, System DFT: 12 mils

1) MPI INT 4.2N-G5 (Semigloss); BF: MPI 4, P: MPI 50, I: MPI 47, T: MPI 47

c. Epoxy, System DFT: 10 mils

1) MPI INT 4.2G-G6 (Gloss); BF: MPI 116, P: N/A, I: MPI 77, T: MPI 77

C304003 1.4

Existing, previously painted, concrete masonry units in toilets, food-preparation, food-serving, restrooms, laundry areas, shower areas, areas requiring a high degree of sanitation, and other high humidity areas unless otherwise specified (Patch imperfections and fill all masonry surface voids with block filler):

a. Waterborne Light Industrial Coating, Not for human or abrasive contact areas, System DFT: 4.5 mils

1) MPI RIN 4.2G-G5 (Semigloss); P: MPI 50, I: MPI 153, T: MPI 153

b. Alkyd, System DFT: 4.5 mils

1) MPI RIN 4.2C-G5 (Semigloss); P: MPI 50, I: MPI 47, T: MPI 47

c. Epoxy, System DFT: 5 mils;

1) MPI RIN 4.2D-G6 (Gloss); P: MPI 77, I: MPI 77, T: MPI 77

C304004 METAL FINISHES

C304004 1.1

New and Existing, previously painted steel/ferrous surfaces not otherwise specified:

a. High Performance Architectural Latex, System DFT: 5 mils

1) MPI INT 5.1R-G3 (Eggshell-like); P: MPI 79, I: MPI 139, T: MPI 139

2) MPI INT5.1R-G5 (Semigloss); P: MPI 79, I: MPI 141, T: MPI 141

b. Alkyd, System DFT: 5.25 mils

1) MPI INT 5.1E-G3 (Eggshell-like); P: MPI 79, I: MPI 51, T: MPI 51

2) MPI INT 5.1E-G5 (Semigloss); P: MPI 79, I: MPI 47, T: MPI 47

C304004 1.2

New and Existing, previously painted steel/ferrous surfaces in toilet, food preparation, food serving, restrooms, shower areas and areas requiring a high degree of sanitation and other high humidity areas not otherwise specified except floors, hot metal surfaces, and new prefinished equipment:

a. Alkyd, System DFT: 5.25 mils

1) MPI INT 5.1E-G5 (Semigloss); P: MPI 79, I: MPI 47, T: MPI 47

C304004 1.3

New and Existing, previously painted miscellaneous non-ferrous surfaces not otherwise specified:

a. High Performance Architectural Latex, System DFT: 5 mils. MPI INT 5.4F-G5 (Semigloss); P: MPI 95, I: MPI 141, T: MPI 141

b. Alkyd, System DFT: 5 mils. MPI INT 5.4J-G5 (Semigloss); P: MPI 95, I: MPI 47, T: MPI 47

C304004 1.4

New and Existing, previously painted miscellaneous galvanized doors not otherwise specified:

a. Epoxy, System, MPI INT 5.3D-G6 (Gloss); P: MPI 101, I: MPI 77, T: MPI 77

b. Alkyd, System DFT: 5 mils. MPI INT 5.3C-G5 (Semigloss); P: MPI 26, I: MPI 47, T: MPI 47

C304005 INTERIOR WOOD FINISHES

C304005 1.1

New and Existing, uncoated wood and plywood not otherwise specified:

a. High Performance Architectural Latex, System DFT: 4.5 mils

1) MPI INT 6.4S-G4 (Satin-like); P: MPI 39, I: MPI 140, T: MPI 140

2) MPI INT 6.4S-G5 (Semigloss); P: MPI 39, I: MPI 141, T: MPI 141

b. Alkyd, System DFT: 4.5 mils, MPI INT 6.4B-G5 (Semigloss); P: MPI 45, I: MPI 47, T: MPI 47

c. Institutional Low Odor / Low VOC Latex, System DFT: 4 mils

1) MPI INT 6.4T-G4 (Satin-like); P: MPI 39, I: MPI 146, T: MPI 146

2) MPI INT 6.4T-G5 (Semigloss); P: MPI 39, I: MPI 147, T: MPI 147

C304005 1.2

Existing, previously painted wood and plywood not otherwise specified:

a. High Performance Architectural Latex, System DFT: 4.5 mils

1) MPI RIN 6.4B-G4 (Satin-like); P: MPI 46, I: MPI 140, T: MPI 140

2) MPI RIN 6.4B-G5 (Semigloss); P: MPI 46, I: MPI 141, T: MPI 141

b. Alkyd, System DFT: 4.5 mils, MPI RIN 6.4C-G5 (Semigloss); P: MPI 46, I: MPI 47, T: MPI 47

c. Institutional Low Odor / Low VOC Latex, System DFT: 4 mils

1) MPI RIN 6.4D -G4 (Satin-like); P: MPI 39, I: MPI 146, T: MPI 146

2) MPI RIN 6.4D-G5 (Semigloss); P: MPI 39, I: MPI 147, T: MPI 147

C304005 1.3

New and Existing, previously finished or stained wood and plywood, except floors; natural finish or stained:

a. Natural finish, oil-modified urethane, System DFT: 4 mils, MPI INT 6.4J-G4/RIN 6.4L-G4 (Satin-like); P: MPI 57, I: MPI 57, T: MPI 57

b. Stained, oil-modified urethane, System DFT: 4 mils, MPI INT 6.4E-G4/RIN 6.4G-G4 (Satin-like); P: MPI 90, I: MPI 57, T: MPI 57

C304005 1.4

New and Existing, previously finished or stained wood floors; natural finish or stained:

a. Natural finish, oil-modified urethane, System DFT: 4 mils, MPI INT/RIN 6.5C-G6 (Gloss); P: MPI 56, I: MPI 56, T: MPI 56

b. Stained, oil-modified urethane, System DFT: 4 mils, MPI INT/RIN 6.5B-G6 (Gloss); P: MPI 90, I: MPI 56, T: MPI 56

C304005 1.5

New and Existing, uncoated wood surfaces in toilets, food-preparation, food-serving, restrooms, laundry areas, shower areas, areas requiring a high degree of sanitation, and other high humidity areas not otherwise specified:

a. Waterborne Light Industrial Coating, System DFT: 4.5 mils, MPI INT 6.3P-G5 (Semigloss); P: MPI 45, I: MPI 153, T: MPI 153

b. Alkyd, System DFT: 4.5 mils, MPI INT 6.3B-G5 (Semigloss); P: MPI 45, I: MPI 47, T: MPI 47

C304005 1.6

Existing, previously painted wood surfaces in toilets, food-preparation, food-serving, restrooms, laundry areas, shower areas, areas requiring a high degree of sanitation, and other high humidity areas not otherwise specified:

a. Waterborne Light Industrial Coating, (Not for human or abrasive contact areas) System DFT: 4.5 mils, MPI INT 6.3P-G5 (Semigloss); P: MPI 46, I: MPI 153, T: MPI 153

b. Alkyd, System DFT: 4.5 mils, MPI INT 6.3B-G5 (Semigloss); P: MPI 46, I: MPI 47, T: MPI 47

C304005 1.7

New and existing uncoated wood doors:

a. Alkyd, System DFT: 4.5 mils,

1) MPI INT 6.3B-G5 (Semigloss); P: MPI 45, I: MPI 47, T: MPI 47

C304006 GYPSUM WALL BOARD FINISHES

C304006 1.1

New and Existing, previously painted Gypsum Wallboard not otherwise specified (interior gypsum finish of exterior wall):

a. High Performance Architectural Latex, System DFT: 4 mils

1) MPI INT/RIN 9.2B-G2 (Flat); P: MPI 50, I: MPI 138, T: MPI 138

2) MPI INT/RIN 9.2B-G3 (Eggshell-like); P: MPI 50, I: MPI 139, T: MPI 139

3) MPI INT/RIN 9.2B-G5 (Semigloss); P: MPI 50, I: MPI 141, T: MPI 141

b. Institutional Low Odor / Low VOC Latex, System DFT: 4 mils

1) MPI INT/RIN 9.2M-G3 (Eggshell-like); P: MPI 50, I: MPI 145, T: MPI 145

2) MPI INT/RIN 9.2M-G4 (Satin-like); P: MPI 50, I: MPI 146, T: MPI 146

3) MPI INT/RIN 9.2M-G5 (Semigloss); P: MPI 50, I: MPI 147, T: MPI 147

c. Multi-color, MPI INT9.2G; P: MPI 125, I: MPI 112, T: MPI 112, Clear Coat: MPI 121

C304006 1.2

New and Existing, previously painted Gypsum Wallboard in toilets, food-preparation, food-serving, restrooms, laundry areas, shower areas, areas requiring a high degree of sanitation, and other high humidity areas not otherwise specified:

a. Waterborne Light Industrial Coating, (Not for human or abrasive contact areas) System DFT: 4 mils, MPI INT/RIN 9.2L-G5 (Semigloss); P: MPI 50, I: MPI 153, T: MPI 153

b. Alkyd, Use for metal or trim for a durable, hard finish. System DFT: 4 mils, MPI INT/RIN 9.2C-G5 (Semigloss); P: MPI 50, I: MPI 47, T: MPI 47

c. Epoxy, Use for high humidity areas requiring easy to clean enamel finishes. System DFT: 4 mils, MPI INT 9.2E-G6 (Gloss) / MPI RIN 9.2D-G6 (Gloss)P: MPI 50, I: MPI 77, T: MPI 77

C304007 SPECIAL COATINGS TO WALLS

C304007 1.1 HIGH PERFORMANCE ARCHITECTURAL COATING (HIPAC)

HIPAC shall be a durable, organic system applied to a continuous (seamless) high-build film and cure to a hard glaze finish. They shall be resistant to continuous heat and humidity, abrasion, staining, chemicals, and biological growth. Coating shall be installed as a complete system, and as recommended by the manufacturer and have a flame spread index of not more than 25 and a smoke developed index of not more than 50 when tested in accordance with ASTM E84.

C304007 1.1.1

Two-component, epoxy-polyamide shall be chemical and corrosion-resistant, adhesive, alkali-resistant, and water-tolerant for metal, wood, concrete, masonry surfaces, and painted surfaces where high gloss or glaze type finish, extreme workability and resistance to abrasion and stains is required. Minimum dry film thickness is 3 mils for each

of two coats. Furnish Gloss or Semigloss finish. Maximum volatile organic compounds (VOC) shall be 340 grams/liter.

C304007 1.1.2

Single Component, Moisture-Curing Urethane shall be a flexible, abrasion- and impact-resistant, use for floors, walls, machinery, equipment and other surfaces where good abrasion resistance, color retention, gloss retention, graffiti resistance and good resistance to acids, alkalis, solvents, strong cleaners and sanitizers, fuel and chemicals are necessary. Can also be used on concrete floors, brick and masonry surfaces (properly conditioned), metals (properly primed), and wood (properly prepared and sealed.) Minimum dry film thickness is 3 mils for each of 3 coats. Use Type I, Aliphatic, for exterior use except for oily or resinous exterior wood surfaces. Use Type II, Aromatic, for interior use.

C304007 1.2 IMPACT RESISTANT WALL FINISHES

Provide textured acrylic architectural coating system: a seamless textured acrylic water-based coating system, having a thickness of at least 20 mils, on surfaces scheduled to receive it. System shall be composed of pure acrylic polymers, silica dioxide, ethylene dioxide and pigments. System shall have a Barcoll Hardness Index of 35.0 or greater, a flame spread of 8.5 or less as determined by ASTM E84, smoke contribution of 7.0 or less, and have water vapor permeability of 27.5 English Perms or greater when tested in accordance with ASTM E96. (MPI 42) Coating system must have been on the market and successfully used in commercial applications for a minimum of 10 years.

C304007 1.2.1 CMU APPLICATION

High Performance seamless interior acrylic coating system shall be used as an interior wall finish over CMU that has been joint-filled and smoothed with a water resistant manufactured recommended compound. Coating system to be mold and mildew resistant, flame spread 15 or less per ASTM-E84 and have a minimum final film thickness of 7 mils.

C304007 1.2.2 GYPSUM WALLBOARD APPLICATION

High Performance seamless interior acrylic coating system shall be used as an interior wall finish over gypsum wallboard. Do not prime or seal the drywall except as specifically recommended by the texture acrylic coating manufacturer. Coating system to be mold and mildew resistant, flame spread 8.5 or less per ASTM-E84 and have a minimum final film thickness of 20 mils.

C304007 1.2.3 INSTALLATION

Finish may only be installed by factory-qualified applicators in accordance with the manufacturer's printed instructions and recommendations, to fulfill warranty requirements. All coating system components shall be products of the same manufacturer.

A minimum of one sample wall application shall be provided. Edges at door and window frames shall be feathered; hard edges are unacceptable. Upon approval of the sample wall by the project manager, the application shall serve as a standard for the remaining work.

The manufacturer's certified representative shall provide an on-site training demonstration of the application and care of the finish for the end-user's facility manager or other representatives.

-- End of Section --

SECTION D10

CONVEYING
09/15

D10 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

Comply with the requirements of UFC 1-200-01, *General Building Requirements*.

D10 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and Government standards referenced in the section text that are **not** found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website, are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the referenced standard at the time of contract award.

D10 1.1.1 Industry Standards and Codes

Although some the following references are listed in the UMRL, they are repeated here for emphasis.

References publications in this RFP that refer to the "authority having jurisdiction" shall be interpreted to mean the "Contracting Officer."

AMERICAN GEAR MANUFACTURERS' ASSOCIATION (ANSI/AGMA)

ANSI/AGMA 6035	Design, Rating and Application of Industrial Globoidal Wormgearing

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI B4.1	Preferred Limits and Fits for Cylindrical Parts

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7	Minimum Design Load for Buildings and Other Structures

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME A17.1	Safety Code for Elevators and Escalators
ASME A17.2	Guide for Inspection of Elevators, Escalators and Moving Walks
ASME A18.1	Safety Standard for Platform Lifts and Stairway Chairlifts
ASME B20.1,	Safety Standards for Conveyors and Related Equipment
ASME B30.10,	Hooks
ASME B30.2,	Safety Standard for Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A27,	Mild to Medium Strength Carbon Steel Castings for General Application
ASTM A36,	Structural Steel
ASTM A434,	Standard Specification for Steel Bars, Alloy, Hot-Wrought or Cold-finished, Quenched and Tempered
ASTM A521,	Standard Specification for Steel, Closed Impression Die Forgings for General Industrial Use
ASTM A563,	Standard Specification for Carbon and Alloy Steel Nuts (NOT in Spec TEXT)
ASTM A1023/A,	Standard Specification for Stranded Carbon Steel Wire Ropes for General Purposes (NOT in Spec TEXT
ASTM E1417,	Standard Practice for Liquid Penetrant Examination (NOT in Spec TEXT)

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1,	Structural Welding Code Steel (NOT in Spec TEXT)

NATIONAL FIRE PROTECTION ASSOCIATION

NFPA 70,	National Electric Code

RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC)

RSCS	Specification for Structural Joints Using High-Strength Bolts

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE J995,	Mechanical and Material Requirements for Steel Nuts
SAE J123,	Surface Discontinuities on Bolts, Screws, and Studs in Fatigue Applications

D10 1.1.2 Government Standards

NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)

ITG FY13-01	Elevator DesignThis guide can be found at the following web address: http://www.wbdg.org/ccb/browse_cat.php?o=30&c=212
NAVFAC P-307	Management of Weight Handling Equipment

NAVAL SEA SYSTEMS COMMAND (NAVSEA)

T9074-AS-GIB-010/271,	Requirements for Nondestructive Testing Methods.

US NATIONAL ARCHIVES AND RECORDS - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (NARA/ OSHA)

29 CFR, Part 1910.23,	Guarding Floor and Wall Openings and Holes
29 CFR, Part 1910.27,	Fixed Ladders
29 CFR, Part 1910.179,	Overhead and Gantry Cranes
29 CFR, Part 1910.306,	Specific Purpose Equipment and Installations

U.S. DEPARTMENT OF DEFENSE (DOD) UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01,	General Building Requirements(UFC 1-200-01 is a hub document that provides general building requirements and references other critical UFCs. A reference to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs listed in the document.)
UFC 1-200-02	High Performance and Sustainable Buildings

D10 1.2 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

Verification of satisfactory Conveying systems performance shall be via Performance Verification Testing, as detailed in this section of the RFP.

D10 1.2.1 Testing and Inspections for Elevators

a. All testing and inspections shall be conducted in the presence of both the Elevator Specialist and a NAVFAC Certified Elevator Inspector. The Elevator Inspector shall complete, sign and post the results of all tests and inspection results after successful completion of inspection and testing. The Contractor is responsible for all costs involved with reinspection and retesting required to correct discrepancies discovered during testing and the subsequent retesting required, including all costs and expenses incurred by the Government Furnished Inspector.

b. Testing Materials and Instruments

   Provide testing materials and instruments required for final inspection, including a current equipment calibration certification.

c. Field Tests for Elevators

   In addition to the tests required by ASME A17.1 AND ASME A17.2, perform the following:

   1) Endurance Tests - Test each elevator for a period of one hour continuous run, with specified rated load in the car. Restart the one hour test period from beginning, following any shutdown or failure. During the test run, stop car at each floor in both directions of travel for standing period of 10 seconds per floor. The requirements for Rated Speed, Leveling, Temperature Rise, and Motor Amperes testing specified herein shall be met throughout the duration of the Endurance test.

   2) Speed Tests - Determine actual speed of each elevator in both directions of travel with rated load and with no load in elevator car. Minimum acceptable elevator speed is the Rated speed specified. Maximum acceptable elevator speed is 110 percent of Rated speed.

   3) Leveling Tests - Test elevator car leveling devices for landing accuracy of plus or minus 1/4-inch (6 mm) at each floor with no load in car, symmetrical load in car, and with rated load in car in both directions of travel. Car sill must be level with landing sills.

   4) Temperature Rise Tests - Determine temperature rise of elevator hoisting motor, motor-generator, exciter, and booster during full-load test run for one hour minimum. Under these conditions, maximum acceptable temperature rise shall not exceed acceptable temperature rise indicated on manufacturer's data plate. Start test only when equipment is within 9 degrees F (5 degrees C) of ambient temperature.

   5) Motor Ampere Tests - Measure and record motor amperage when motor is running and elevator is lifting at rated load and speed. Measure and record motor amperage at beginning and end of

Endurance test. Test results must not exceed nameplate amperage when motor is running and elevator is lifting at rated load speed.

6) Balance Load for Electric Elevators Tests - Perform electrical and mechanical balance load tests of car and counterweight.

7) Automatic Shutoff Valve Tests - Test the automatic shutoff valve twice. Once at beginning of acceptance test and again at conclusion of one-hour Endurance test to ensure consistent performance of shutoff valve, regardless of temperature of equipment and oil.

8) Perform miscellaneous tests called for in this Section.

D10 1.2.2 Crane System and Monorail with Hoist/Trolley System Installation and Certification

Provide verification of satisfactory conveying systems performance via Inspection and Testing, as detailed in this section of the RFP. Erect and install the crane or monorail system, complete in accordance with the approved submittals and in condition to successfully perform the inspections, operational tests, and acceptance tests listed below. In addition, provide statements and certifications listed below.

a. Certification

The following certifications are required to be submitted and approved prior to acceptance load testing.

(1) Load Chain or Wire Rope - Submit wire rope or chain manufacturer's certification of minimum wire rope or load chain breaking force for each hoist.

(2) Overload Test Certificate - Submit a statement that the crane or monorail system and hoist/trolley can be periodically load tested at up to 131.25 percent of rated load.

(3) Loss of Power Test Certificate - Submit a statement that the crane or monorail system can be subjected to loss of power testing without damage (See paragraph entitled "Load Test").

(4) Hazardous Material Certificate - Submit a statement that the crane or monorail system contains no asbestos, lead paint, polychlorinated biphenyl's (PCB's), elemental mercury and that chromates have been avoided where feasible.

(5) Hook Proof Test - Submit a statement that load and suspension hooks have been proof tested and satisfy the acceptance criteria of ASME B30.10.

(6) Welding Certifications

(a) Submit a statement that all welders, welding operators, weld inspectors and welding procedures meet the requirements of AMERICAN WELDING SOCIETY (AWS) D14.1 for all work performed in manufacturing the cranes.

(b) Submit a statement that all welders, welding operators, weld inspectors, and welding procedures meet the requirements of AWS D1.1 for all field welds.

(7) Design Review by Professional Engineer - Submit a statement that non-commercial component design and any modifications to commercial products have been reviewed by a professional

engineer. Indicate on the certificate, the name, state of licensure and license number of the professional engineer.

(8) Crane Runway Rail - For runway rails provided as part of this contract, submit survey data and a statement that the runway rails are in accordance with the requirements of CRANE MANUFACTURERS' ASSOCIATION OF AMERICA (CMAA) 70, Table 1.4.2-1, or MH 27.1, Figure 1, as applicable.

(9) Frequency Allocation Application - Complete the technical section of the Application for Equipment Frequency Allocation, Form DD 1494, addressing the radio equipment provided, submitted by the manufacturer of the radio control equipment being furnished under this contract.

b. Inspection and Testing

After erection, jointly inspect the crane or monorail system and associated components to determine compliance with specifications and approved submittals with representatives of the Contracting Officer and of the end user's Weight Handling Equipment (WHE) Certifying Official. The WHE certifying official is the designated representative of the supported command empowered to designate lifting and handling equipment acceptable for use. Provide a report of the inspection indicating the crane or monorail system is considered ready for operational tests

(1) Operational Tests - After erection and inspection, test the crane or monorail system and hoist/trolley as specified herein. Test the systems in service to determine that each component operates as specified, is properly installed and adjusted, and is free from defects in material, manufacture, installation, and workmanship. Rectify all deficiencies disclosed by testing and retest the system or component under load to prove the system is operational. Furnish loads for testing, operating personnel, instruments, and all other necessary apparatus.

(2) Test Data - Record test data on appropriate test record forms suitable for retention for the life of the crane or monorail system. Record operating and startup current measurements for electrical equipment (motors) using appropriate instrumentation (i.e., clamp-on ammeters). In addition, note, investigate, and correct high temperatures or abnormal operation of any equipment or machinery. Record function speeds during each test cycle.

(3) Hook Measurement

(a) Measure hook for hook throat spread before and after load test. Establish a throat dimension base measurement by installing two tram points and measuring the distance between these tram points. Record this base dimension. Measure the distance between tram points after load test. Any twist or increase in the throat opening from the base measurement shall be cause for rejection.

(b) Hook Identification - Uniquely identify each hook and nut or eye pin (and swivel eye bar as applicable) with some type of permanent marking in order to provide positive traceability to the non-destructive test report. Mark hooks in low stress areas using low stress marking methods.

(4) Load and Suspension Hook Inspection - Non-Destructive Test (NDT) the entire hook, eye pin (and swivel eye bar as applicable) for defects. No linear indications greater than 1/16 inch(1.6 mm)

is the acceptance criterion. Acceptance criteria for external hook threads may be based on the acceptance criteria in SAE standard J123. Use magnetic particle method in accordance with NAVAL SEA SYSTEMS COMMAND (NAVSEA) Technical Publication T9074-AS-GIB-010/271 for NDT. American Society for Testing and Materials (ASTM) A275 may be used with the following restrictions: DC yokes (including switchable AC/DC yokes used in the DC mode) and permanent magnet yokes shall not be used; automatic powder blowers or any other form of forced air other than from a hand-held bulb shall not be used for the application or removal of dry magnetic particles; arc strikes shall be removed; and equipment ammeters shall have an accuracy of +/- 5 percent of full scale (equipment ammeter accuracy other than that stated is acceptable provided the MT procedure states that a magnetic field indicator is used to establish and verify adequate field strength for all aspects of the inspection). For hooks of non-magnetic material, use liquid penetrant (PT) method in accordance with ASTM E 1417 or T9074-AS-GIB-010/271 for NDT. For PT testing of hooks containing stainless steels, titanium, or nickel-based alloys, total halogens, and sulphur used in the NDT process shall be controlled as specified in T9074-AS-GIB-010/271. If NDT cannot be performed on surfaces inside small holes (e.g. hook/nut captivation roll pin holes), visually inspect those surfaces to the maximum extent practical. Perform NDT prior to load tests.

(5). Non-Destructive Test Quality Assurance Requirements.

(a) The magnetic particle inspection report shall include a letter from the performing vendor certifying that the vendor meets the requirements of ASTM E543. Provide current certification, within one year of the date the NDT was performed.

(b) In addition, include report procedures, for review, including technique sheets specific to the types, shapes, and sizes of the parts being examined (e.g., shank hook, eye hook, duplex hook, eye pin, swivel eye bar). Describe the orientation of the hook or pin to the magnetizing equipment in the procedures.

(c) Indicate review by an independent Level III examiner certified in the applicable NDT method and not an employee of the NDT vendor in the procedures.

(d) In lieu of a., b., and c. above, state in the NDT report that non-destructive testing was performed per Crosby Quality Control Procedure No. 0120, Revision 16, and Technique Sheet No. 319N, Revision 1, or Gunnebo Johnson Quality System Procedure QSP-69, Revision A.

(6) No-Load Test

(a) Hoist: Lower and raise each load hook through the hoist range. Operate at various speeds in both directions. Operate each load hook slowly the full operating lift distance into the hoist primary limit switch or stop and verify satisfactory operation of hoist, upper limit switch or stop, and lower limit switch or stop. Verify that a minimum of two wraps remain on the drum for wire rope hoists and that the load chain is slack on the dead end side for chain hoists when the lower limit switch is engaged. If the hoist is equipped with slow down limits, verify proper operation during the hook travel test. For

electric or air powered hoists with primary and secondary limit switches, bypass the primary upper limit switch and check for proper operation of the backup limit switch. For electric hoists, verify all power to hoist is removed upon actuation of backup limit switch, and the keyswitch reenergizes hoist and allows operation in the down direction only. Operate the hoist at full speed in the up direction until the primary upper limit switch activates. Verify that the hoist stops prior to secondary limit switch operation. Operate the hoist at full speed in the up direction with the primary limit switch bypassed until the secondary upper limit switch is activated. Verify that the hoist stops prior to the load block contacting any portion of the hoist frame. For hoists with two electromechanical brakes, remove power to the crane and observe the proper timing sequence in the application of the primary and secondary brake.

(b) Trolley: Operate the trolley the full length of the monorail or crane bridge rails in both directions. Check the existence of OSHA required 2 inch side and 3 inch overhead clearances during the trolley operation check. Operate at all various speeds in each direction. Verify proper trolley brake operation, if equipped. Slowly contact all trolley stops with the bumpers to verify even bumper contact and that there will be no contact between the crane and any obstruction within the crane envelope with the bumpers fully compressed. Contact the trolley stops with the bumpers at full rated speed, unpowered, and verify structural integrity and that there was no contact between the crane and any obstruction within the crane envelope with the bumpers fully compressed.

(c) Bridge (if equipped): Operate the crane assembly the full length of the crane runway in both directions. Check the existence of OSHA required 2 inch side and 3 inch overhead clearances during the bridge operation check. Operate at all available speeds in each direction. Verify proper bridge brake operation, if equipped. Slowly contact all bridge end stops with crane bumpers to verify even bumper contact and structural integrity and that there will be no contact between the crane and any obstruction within the crane envelope with the bumpers fully compressed. Contact the runway stops with the bumpers at full rated speed, unpowered, and verify structural integrity and that there was no contact between the crane and any obstruction within the crane envelope with the bumpers fully compressed.

(7) Rated Load Speed Test - Test at 100 percent (plus 0 percent minus 5) of rated capacity. If the crane is equipped with multiple trolleys that are used to achieve the rated load of the crane (e.g., two 2,000 pound trolleys which together allow for a 4,000 pound maximum capacity), then perform this bridge rated load speed test with the multiple trolleys loaded simultaneously.

(a) With the hoist loaded to rated capacity, raise and lower the load and record maximum and minimum load speeds in each direction. Also record the voltage and steady state motor amperage draw in both directions at maximum speed. Verify that the hoisting and lowering speeds are provided as specified. Verify slow speed operation (if equipped).

(b) If the capacity overload limit activates during lifting of the rated load (typical of the adjustable type), verify

that the drive stops and the load can only be lowered. Bypass capacity overload device utilizing keyswitch and continue with test.

(c) With the hoist loaded to rated capacity and the load lifted a minimum distance, operate the trolley along the crane bridge, or monorail and record maximum and minimum load speeds in each direction. Also record the steady state motor amperage draw in both directions at maximum speed. Verify that the trolley speeds are provided as specified. Further, verify that the trolley comes to a stop from maximum speed in each direction within a distance (in feet) equal to 10 percent of rated capacity high speed (in feet per minute). Verify slow speed operation (if equipped).

(d) With the hoist loaded to rated capacity and the load lifted a minimum distance, operate crane bridge (if equipped) along the crane runway and record maximum and minimum load speeds in each direction. Also record the steady state motor amperage draw in both directions at maximum speed. Verify that the bridge speeds are provided as specified. Further, verify that the crane bridge comes to a stop from maximum speed in each direction within a distance (in feet) equal to 10 percent of rated capacity high speed (in feet per minute). Verify slow speed operation (if equipped).

(e) With the hoist loaded to rated capacity and the load lifted a minimum distance, operate the swing function (if equipped) at maximum and minimum radius and record maximum and minimum load speeds in each direction. If swing function is powered, record the steady state motor amperage draw in both directions at maximum speed. Verify that the swing speeds are provided as specified. Further, verify that the boom comes to a stop and retains its position. Verify slow speed operation (if equipped).

(8) Rated Load Deflection Test - Test at 100 Percent (plus 0 percent minus 5) of rated capacity.

(a) With the unloaded trolley moved to one end of the bridge or monorail, measure the height of a point near the midpoint of a bridge crane, near the midpoint of the longest unsupported length of a monorail,.

(b) With the hoist loaded to rated capacity, move the trolley to the midpoint of the bridge, midpoint of the longest unsupported length of a monorail. Repeat the measurement taken in step a. Record the difference between the measurements taken in step a. and step b.

(c) Verify that the difference recorded in step b. is less than 1/888 of the span for top running and cambered underrunning girder bridge cranes, 1/600 of the span for uncambered underrunning bridge cranes, 1/450 of the longest unsupported length for monorails. Patented track deflection may not exceed 1.25 inch regardless of span.

(d) For bridge cranes, move the unloaded bridge crane over a runway structural support, move the trolley to the opposite end of the bridge, and measure the height of a point near the midpoint of the longest unsupported length of runway. Hoist a load at rated capacity a minimum distance, move the trolley to the end of the bridge nearest the structural support, and travel the bridge to the midpoint of the longest unsupported length of runway. Repeat the measurement. Record the difference between the

measurements. Verify that the difference is less than 1/450 of the unsupported span length for patented rail and underrunning runways, or 1/600 of the longest unsupported length for top running rolled shape runways. Patented track deflection may not exceed 1.25 inch regardless of span.

(9) Load Test - Test at 125 Percent (plus 5 percent minus 0) of rated capacity. If the crane is equipped with multiple hoists or trolleys that are used to achieve the rated load of the crane (e.g., two 2,000 pound trolleys which together allow for a 4,000 pound maximum capacity), then perform these tests with the multiple hoists or trolleys loaded simultaneously. During load testing, only lift the test load a minimum height as necessary to perform the specified tests.

(a) If the capacity overload limit activates during lifting of the test load (typical of the adjustable type), verify that the drive stops and the load can only be lowered. Bypass capacity overload device utilizing keyswitch and continue with test

(b) Hoist Static Test: Raise test load approximately 12 inches (300 mm) above the floor and hold for 10 minutes. Rotate load and hook 360 degrees clockwise and counter-clockwise to check bearing operation. Observe for load lowering that may occur indicating possible malfunction of hoisting components or brakes. Lower the test load to the floor until the hoist line is slack.

(c) Hoist Dynamic Test: Raise the test load using all available speeds. Lower the load back to the floor using all speeds. Visually observe smooth control and acceleration/deceleration between speeds. Stop the test load at least once while hoisting and once while lowering at highest speed and observe that the brake stops and holds the load. Repeat the above cycle for at least 15 minutes.

(d) Load Brake Test (for powered hoists equipped with mechanical load brake and single holding brake):

1. Raise test load no more than 5 feet (1.5 meters). With the hoist controller in the neutral position, release the holding brake. The load brake must hold the test load.

2. Raise test load the minimum amount to perform the following test. Again, with the holding brake in the released position, start the test load down slowly and return the controller to the neutral position as the test load lowers. The load brake must stop and hold the test load.

3. Document the method used to release the holding brake. Brake release method must be recorded to enable repeating that method during later periodic load testing by the end user. Methods of releasing the holding brake vary from hoist to hoist depending upon the design of the brake and hoist and must be specified by the crane manufacturer prior to testing.

(e) Trolley: With test load hoisted to a minimum height, operate the trolley the full distance of the monorail or crane bridge in both directions using slow speed. Verify

satisfactory operation. Verify proper brake operation, if equipped.

(f) Bridge (if equipped): With test load hoisted to a minimum height and the trolley at one end of the bridge, operate the crane assembly the full length of the crane runway. Move the trolley to the opposite end of the bridge, then operate the crane assembly the full length of the crane runway in the opposite direction. Verify satisfactory operation and that bridge trucks move without binding. Verify proper brake operation, if equipped.

(g) Loss of Power Test: Raise the test load approximately 3 feet (900 mm) and while lowering test load, disconnect main power to hoist and return the hoist controller to neutral. Load must stop. Repeat the test for the trolley, bridge and swing functions, as applicable.

c. Field Test Reports.

(1) Brake Adjustment Records. Provide a brake adjustment record for each brake on the crane or monorail system that contains the adjusted air gap, measured brake lining thickness, measured torque spring length, as well as the manufacturer provided range of acceptable measurement for each. Submit the brake adjustment records on the official form, which can be obtained from the Contracting Officer upon request.

(2) Field Test Record. Upon successful completion of all testing, submit a copy of the completed test record and all test data.

(3) After the crane has passed the acceptance test, complete a control system parameter record for the crane including all control system parameters, and explanation of their functions, and their final settings. Designate each control system parameter as either used or unused.

D10 1.3 DESIGN SUBMITTALS

Provide Design Submittals in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures*, UFC 3-101-01, *Architecture* and UFC 3-301-01, *Structural Engineering*. Provide design submittals that include the following items:

a. Elevators and Weight Handling Equipment (WHE):

(1) Drawings. Show the design of the track beam system, including weight handling equipment curves and switches, principal dimensions, details of structural connections, all component details, and electrical one-line diagrams. Show clearances between elevator and/ or crane structure and building and identify interferences. Provide weight handling equipment wheel load diagrams and hook configuration.

(2) Specification. Provide edited version(s) of the UFGS elevator and weight handling equipment specification(s) that are applicable to this project. Edit this UFGS in accordance with restrictions of RFP Part 4 - PTS Section Z-10 and refer to UFGS 01 33 10.05 20, *Design Submittal Procedures* for format and further specification requirements. Do not add or delete requirements to the UFGS for weight handling equipment unless specifically approved by Navy Crane Center. Edit UFGS for weight handling equipment only to add project specific information such as capacity and hook height. Submit the

applicable UFGS as a part of the Contractor originated design submittal, DO NOT submit RFP Part 4 - D10 as part of the design submittal.

If this RFP includes a type of elevator and weight handling equipment that is not covered in this D10 PTS Section and is specified in a Prescriptive Specification located RFP Part 5, include this Prescriptive Specification in the Contractor's design submittal without modification.

(3) Catalog Cuts. Include catalog cuts in addition to the UFGS sections for all major components. Mark and highlight all catalog cuts to identify all the specific components that are applicable to the project.

D10 1.4 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS section Z10, *General Performance technical Specifications.* In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

a. Construction Submittals for Vertical Transportation Equipment (VTE)

(1) Elevator Construction Submittals:

In addition to the submittal requirements of ASME A17.1, provide the following submittals:

Detail drawings must include dimensioned layouts in plan and elevation showing the arrangement of elevator equipment, accessories, supporting systems, anchorage of equipment and anchorage forces from seismic, gravity, impact, etc. loads, clearances for maintenance and operation; and details on hoistway, doors and frames, operation and signal stations, controllers, motors, guide rails and brackets, and points of interface with normal power, fire alarm system, HVAC or exhaust systems, and interface with emergency power systems. Drawings shall show any revised building electrical system required to make supplied elevator system function as specified. Drawings shall contain complete wiring diagrams showing electrical connections and other details required to demonstrate sequence of operations and functions of system devices. Drawings shall include the appropriate sizing of electrical protective devices, which are frequently different from National Electrical Code standard sizes.

Submit one set of wiring diagrams in plastic or glass cover, framed and mounted in elevator machine room. Deliver other sets to Contracting Officer. Coded diagrams are not acceptable unless adequately identified.

(2) Construction Submittals for Facility Electronic Operation and Maintenance Support Information (eOMSI):

Submit final submittals for eOMSI Submittal. After approval by the DOR and sign-offs by the elevator inspector, assimilate construction submittals into the OMSI manuals required under Section 01 78 24.00 20, *Facility Electronic Operation and Maintenance Support Information*.

b. Construction Submittals for Weight Handling Equipment (WHE):

(1) Drawings. Submit to DOR for approval, the construction submittal

and drawings described below. After DOR approval submit to the Government for approval or surveillance as required in UFGS section 00 33 00.05 20, *Construction Submittal Procedures.* Manufacturer's catalog data will suffice for standard commercial products. Each assembly and subassembly drawing shall include an integral Bill of Materials or shall be followed by a consecutively numbered drawing with the applicable Bill of Materials.

(a) General Arrangement Drawings. Show in plan, elevation and end view the crane or monorail system assembly and each major component, including runways for underrunning cranes to demonstrate proper interface with the facility building. Show all major features including: clearances, lifts, speeds, hook approaches (on all sides), maximum wheel loads (without impact), electrical or pneumatic power supply, and general locations of components such as: hoists, trolleys, brakes, motors, speed reducers, and control panels (including size). Indicate torque value or tightening method (e.g. turn of the nut) for bolts on the drawing. In addition, show estimated weights for major components (girders, trolleys, runway beams, control panels and end trucks) and the completely assembled crane. Provide approximate locations of center of gravity and location of lifting points for completely assembled crane and for each major component with the design drawings.

(b) Structural Drawings. Show fabrication details including all weldments, fastener joints, structural components, and list of materials for fabricated crane girders (including end stops), fabricated trolleys and fabricated end trucks on these drawings. Specify the type of structural bolted connection (i.e. slip critical, snug-tightened, or pretensioned) on the drawing.

(c) Mechanical Drawings. Show the layout of mechanical equipment on cranes and monorail systems on the drawings, in particular drive arrangements (including assembled components). On pneumatically powered cranes, show the layout of pneumatic equipment, including control panel enclosures, motors, brakes, limit switches, piping and valves on the drawings. The drawings must also include:

1. Complete schematic diagram of pneumatic systems with narrative of any special description of operation. All components shown on schematics shall have labels that correspond to the nameplates that will be on the crane. Pipe material and size shall be included.

2. Rating and types of over-pressure protective devices.

3. Complete assembly diagrams including a component material list. Show on the drawings the layout of pneumatic equipment on the crane including: motors, brakes, limit switches, conduits, and piping systems.

(d) Electrical Drawings. Show the layout of electrical equipment on cranes and monorail systems, including control panel enclosures, motors, brakes, limit switches, conduits, disconnects, and conductor systems on the drawings. The drawings must also include:

1. Complete schematic diagram with narrative of any special description of operation. All components shown on schematics must have labels that correspond to the

nameplates that will be on the crane. Wiring type, size, and temperature ratings must be included on schematic diagrams. Remove all optional equipment not included in this project from the schematic diagrams.

2. Motor nameplate data (including all information called for in NATIONAL FIRE PROTECTION ASSOCIATION(NFPA) 70, Section 430.7 (A) items 1 through 7)

3. Rating and types of over-current protective devices.

4. Complete assembly (wiring) diagrams including a component material list. Show on the drawings, the layout of electrical equipment on the crane, including control panel enclosures, motors, brakes, limit switches, conduits, and conductor systems.

5. Layout diagrams showing component placement in control panel enclosures.

(2) Product Data. Provide manufacturer's catalog data for all major components of cranes and monorail systems. Mark-up or supplement the catalog cuts with additional sheets to clearly identify the model or size, selected options, features, and/or modifications to demonstrate compliance with specification requirements. Catalog cuts which show modifications beyond the standard options and all supplemental pages must bear original signatures and dates of the equipment manufacturer's authorized representative. Clearly identify the item on the catalog cuts and each supplemental sheet to which it applies.

(a) Structural Product Data. Submit product data for Bridge End Trucks, Trolley Frame, Patented Track, Runway and Bridge Rails and Support System, and End Stops.

(b) Mechanical Product Data. Submit product data for Speed Reducers, Brakes (including electrical information), Bearings, Couplings, Load Blocks, Hoist/Trolley (if procured as a packaged unit), Hose Reels, Oilers, Pressure Regulators and Bumpers.

(c) Electrical Product Data. Submit product data for Variable Frequency Drives, Motors, Electrical Enclosures, Runway Electrification and Collectors, Limit Switches, Bridge to Trolley Electrification, Pendant or Radio Control Station, Warning and Pilot Devices, Disconnect Switches, and Fuses and Circuit breakers.

(3) Design Data. Provide calculations that demonstrate compliance with all design requirements. Design data will not be approved if their evaluation/review is dependent on data or information not previously approved. List and define all variables at the beginning of each calculation section; variables must be in accordance with required references. Include sufficient information in the design data, so that they may be approved without reference to detail (shop) drawings.

When there is one hoist on one monorail system, the monorail system rated capacity and the hoist rated capacity will be equal. When there is more than one hoist on the monorail system, the rated capacity of the monorail track beam system shall be designed equal to the sum of the two hoists rated capacities. An exception to this is that if the two hoists are separated by positive track beam stops and distance so that the track beam is strength-wise essentially two independent track beam systems.

(a) Structural Calculations. Submit calculations verifying the sizing of any track, track suspension device and additional supports, which are not the runway or monorail system manufacturer's standard cataloged product. Include support reactions and recommended method of connecting/attaching the support. Provide calculations verifying compliance with Section 3 of CMAA No.70 or No. 74 or Section 6 of MH 27.1. In addition to Load Cases 1 and 2 of CMAA No. 70 and 74, the following load combinations are also required in the crane design calculations:

1. CMAA Case 3: Test Loads. The crane will be periodically tested up to 131.25% of rated capacity. Combined stresses for the following load combinations must be calculated to ensure structural adequacy during testing:

   DL (DLFB) + TL (DLFT) + LL (1 + HLF) + IFD + SK

   Test Loads (Stress Level 3). In this calculation use LL = 1.3125 x rated capacity. Do not consider the test and extraordinary loads in the fatigue analysis. Formula abbreviations correspond to principal loads as defined in CMAA #70 and 74, Section 3.3. The subscripts T and B refer to trolley and bridge, respectively.

2. CMAA Case 4: Seismic Load. Provide seismic analysis in accordance with AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) 7-05. Consider loading condition in an event while the crane is operating at rated capacity without lowering or dropping the load.

3. Calculations verifying design of runway and bridge rail stops and bumpers in accordance with the dynamic requirements of Association for Iron and Steel Technology (AIST) TR-06.

4. For cranes that operate outdoor without wind protection, calculations determining the wind speed that will cause the crane travel, trolley, and rotate functions to drive through the brake with the brakes set, and, for rail mounted or wheel mounted cranes, the wind speed that will cause the crane to slide on the rail or runway surface with the brakes set.

(b) Mechanical Calculations. Calculations verifying compliance with Section 4 of CMAA #70, regardless of crane type, for any non-commercial items.

(c) Electrical Calculations

1. Minimum required horsepower for each drive motor - Motor power rating must be based upon the formulae given in CMAA#70 regardless of crane type. For hoist motor sizing calculations, the factor "Kc" shall not be less than 1.0 .For bridge and trolley drive motor sizing calculations, the factor "E" shall be the published gear reducer efficiency ratings. For the bridge drive the minimum acceleration rate must be 4 seconds and 2 seconds for simulated plugging (deceleration). For the trolley drive the minimum acceleration rate must be 3 seconds and 1.5 seconds for simulated plugging. Calculations are not required for packaged hoists, but packaged hoists must still meet acceleration and deceleration requirements.

2. Overcurrent protection.

3. Conductor sizing and Conduit fill calculations (using tables from NFPA 70, Chapter 9 or manufacturer's data sheets).

4. Protective device coordination study showing proper

coordination for any overcurrent devices that have the same rating as another overcurrent device upstream

5. Transformer sizing.

6. Drive controller sizing for hoist motors.

(4) Facility Electronic Operation and Maintenance Data, Documents, and Training Information. Submit the WHE's operation and maintenance data, document, and training information to be incorporated in the UFGS 01 78 24.00 20, *Electronic Facility Operation and Maintenance Support Information*(eOMSI) submittal. Make a copy of the eOMSI submittal available at the acceptance test. Include in the eOMSI submittal a table of contents, operation instructions, preventive maintenance instructions including maintenance, training materials, and programming instructions for the adjustable frequency drives, parts information, a drawing list, design drawings, lubrication drawing supply list, catalog cuts, photographs as needed to explain maintenance or repair procedures, and calculations. Provide maintenance instructions to include recommended maintenance procedures and component manufacturer's installation and maintenance manuals and lubrication instructions. Include detailed crane operating and safety instructions in the operating instructions. Parts information must include information on purchased sub-assemblies and components, including manufacturer's original part number, and detailed drawings of contractor-designed parts. Break-out the parts information into the smallest replacement part.

(5) Provide onsite training for unique critical job skills associated with the crane or attachments

(6) Field Test Reports. Submit a copy of all Field Reports.

D1010 ELEVATORS AND LIFTS

Comply with the *ITG FY 2013 Elevator Design Guide*for the design and construction of elevators.

D1010 1.1 QUALIFICATION OF MANUFACTURER AND INSTALLER

Provide elevator by manufacturer regularly engaged in the manufacture of elevator systems. Manufacturer shall either install elevator system or shall provide letter of endorsement certifying that installer is acceptable to manufacturer. Installer is required to be regularly engaged in installation and maintenance of elevator systems.

D101001 GENERAL CONSTRUCTION ITEMS

Comply with ASME A17.1 AND ASME A17.2 in their entirety, and additional requirements specified herein. Install in accordance with manufacturer's instructions, ASME A17.1, DoD ABA and DEPSECDEF Memorandum (dated October 31, 2011), and NFPA 70. Do not cut or alter Structural Members. Restore damaged or defaced work to original condition. Include recesses, cutouts, slots, holes, patching, grouting, and refinishing to accommodate installation. Use core drilling to drill new holes in concrete ensuring that no existing reinforcing is cut. Finish work to be straight, level, and plumb. During installation, protect machinery and equipment from dirt, water, or mechanical damage. At completion, clean all work, and repair any prefinished items that have been damaged during the performance of the work.

Elevators that are intended to carry personnel other than one (1) operator must be classified as a passenger elevator. Passenger elevators that are intended to carry furniture or equipment, must have an oversized cab. Refer to the Project Program for the type of elevator required.

D101001 1.1 TRAFFIC ANALYSIS

Provide a traffic analysis in accordance with criteria established by a nationally recognized elevator manufacturer’s association and conduct interviews with the U ser to determine the following:

a. Passenger or Freight

b. Rated load

c. Rated speed

d. Travel length

e. Number of stops

f. Number of hoistway openings

g. Car platform, car inside, and hoistway door opening dimensions

h. Hoistway Door Types

i. Car Door type

j. For Freight Elevators, identify Class Loading Type - Class A, B, or C, to handle loads as indicated on the project program.

D101001 1.2 ELEVATOR MACHINE ROOM

Provide a machine room for every elevator. Locate the elevator machine and controller in the Elevator Machine Room.

D101002 PASSENGER ELEVATORS

D101002 1.1 HOISTWAY AND CAR EQUIPMENT

D101002 1.1.1 Car and Counterweight Guide Rails and Fastenings

Paint rail shanks with one coat of black enamel. Only T-section type guide rail is acceptable.

D101002 1.1.2 Pit Channel

Provide pit channel for anchorage of main guide rail brackets and also for anchorage of counterweight guide rail brackets and buffer for electric elevators. Each channel must span distance between guides. Fully grout both pit channels on completion of guide rail and buffer installation.

D101002 1.1.3 Pit "STOP" Switch

Provide push/pull type pit "STOP".

D101002 1.1.4 Wiring and Traveling Cables

Cables shall be suspended by means of self-tightening webbed devices.

D101002 1.2 CAR AND LANDING DOOR EQUIPMENT

D101002 1.2.1 Infrared Curtain Unit

Provide Infrared Curtain Unit (ICU) with multiple infrared beams that protect to the full height of the door opening. Minimum coverage shall extend from 2 inches (50 mm) off the floor to 70 inches (1778 mm) above floor level.

D101002 1.2.2 Hoistway Entrance Frames

Door frame shall be 14 gage (1.8 mm) thick #4 brushed stainless steel unless directed otherwise by Contracting Officer. Solidly grout uprights of entrance ways to height of 5 feet (1500 mm).

D101002 1.2.3 Car and Hoistway Landing Sills

Car and Hoistway Landing Sill - Provide one piece cast solid white bronze or nickel silver entrance sill. Use same material for hoistway and car entrance sills. Solidly grout under full length of sill.

D101002 1.3 IN-CAR AND LANDING FIXTURES

D101002 1.3.1 Car and Hall Buttons

Provide recessed vandal-resistant push buttons of minimum 3/4-inch (19 mm) size satin-finish stainless steel with illuminating jewel center.

D101002 1.3.2 Position and Direction Indicators

Provide position and direction indicators in car and at each landing.

D101002 1.3.3 Direction Audible Signals

Provide audible signals in car and at each landing.

D101002 1.4 CAR AND CAB EQUIPMENT

D101002 1.4.1 Roller Guides

Provide coil-spring loaded roller guide assemblies in adjustable mountings on each side of car and counterweight frames in accurate alignment at top and bottom of frames.

D101002 1.4.2 Certificate Window

Provide 4 inch (100 mm) high by 6 inch (150 mm) wide certificate window in car operating panel for elevator inspection certificate.

D101002 1.4.3 Cab Ventilation

Provide natural and forced ventilation with two-speed fan.

D101002 1.4.4 Protection Pads and Mounting Hooks

Provide stainless-steel hooks and fire retardant protective pads for one elevator in a set.

D101002 1.4.5 Car Enclosure

Car Shell Return Panels, Entrance Columns, Cove Base, and Transom: Provide 14 gage (1.9 mm) minimum non perforated steel. Apply sound-deadening mastic on all exterior components.

Provide finishes for the elevator cab interior that are appropriate for the type of facility. Finishes shall not exceed the flame spread rates mandated by ASME A17.1.

D101002 1.4.6 Car Size

Provide at least one elevator of a size and arrangement to accommodate an ambulance stretcher in the open, horizontal position. The minimum size of the ambulance stretcher used to design the elevator must be 24 inch by 84 inch (609.6 mm by 2133.6 mm) with not less than 5 inch (127 mm) radius corners. Identify all stretcher accessible elevators with the international symbol for emergency medical services (Star of Life).

D101002 1.5 ELEVATOR CONTROLLER

D101002 1.5.1 Non-proprietary Controller

a. On-Board Diagnostic Panel

Provide micro-processor controllers from controller manufacturers who provide generic controllers that are designed to function with all or most manufacturers elevator equipment. The manufacturer of the controller shall engage solely in the manufacture and sale of controllers to the elevator industry and not engage in the elevator installation, service, or maintenance. The follow controller manufactures comply with this requirement:

a. Elevator Controls Corporation, 3525 La Grande Boulevard, Sacramento, CA 95823

b. G.A.L. Manufacturing Corporation, 50 East 153th Street, Bronx, New York 10451

c. Motion Control Engineering, Inc., 11354 Whiterock Road, Rancho Cordova, CA 95742-6522

d. Virginia Controls, Inc., 2513 Mechanicsville Turnpike, Richmond, VA 23223

e. Computerized Elevator Control Corporation (Swift), 24 Empire Blvd., Moonachie, NJ 07074-1303

The following are required features of the generic micro-processor controllers and manufacturers training:

a. On-Board Diagnostic Panel

(1) Provide a non-proprietary micro-processor controller for each individual elevator and group controller. Provide an on-board diagnostic control and LCD display panel that allows unrestricted access to the comprehensive range of adjustable parameters necessary to perform installation, adjusting, service, maintenance, and testing of the elevator.

(2) Provide LCD displays with the capability to display, monitor, and diagnose any and all fault logs, fault history,

trouble calls, and diagnostics. Provide three (3) copies of the complete manufacturer's software program, with complete software documentation, that must enable the same level of unrestricted access to all controllers of the same make and model, regardless of the installation date or location.

b. External Port - For each individual elevator and group controller, provide a USB port or an RS 232 port that allows connection to an on-site portable laptop computer. Provide the same level of unrestricted access as the on-board diagnostic panel.

c. Repair Requirements - For repair of the microprocessor control system(s), provide maintenance tools, supporting computer software, and software documentation required for complete maintenance of elevator system including diagnostics and adjustments. On-board diagnostic panels must not require recharging to maintain their memory or authorization for use. Software must not require periodic reprogramming, or reauthorization. Store programs in non-volatile memory.

d. Training - The elevator controller manufacturer must offer and conduct technical support and factory training that is available to all state licensed elevator service providers qualified to bid on navy elevator maintenance service contracts. Include in the factory training all aspects of the installation, service, and maintenance of the elevator controller.

D101002 1.6 OPERATIONAL CONTROLS

D101002 1.6.1 Independent Service

Provide exposed key-operated switch in car operating panel to enable independent service.

D101002 1.6.2 Hoistway Access Switches

Provide key-operated hoistway access switch to permit limited movement of car at terminal floors for car positioning, operative only when "INSPECTION" switch in car operating panel is in the "INSPECTION" position. Locate switch 6 feet (1800 mm) above floor level, within 12 inches (300 mm) of hoistway entrance frame or with only ferrule exposed when located in entrance frame.

D101002 1.6.3 Emergency Commandeering Service

Provide momentary pressure “ON-OFF” key switch and indicator light at all landings. Provide indicator lights that automatically illuminate during emergency service. Key must be removable only when key is in “OFF” position. Provide in accordance with ASME A17.1.

D101002 1.6.4 Keys for Elevator Key Switches

Provide minimum of twelve keys per unique cylinder used on all key switches for single elevator.

D101002 1.7 MAINTENANCE AND DIAGNOSTIC COMPONENTS

D101002 1.7.1 Maintenance and Diagnostic Tools

Provide all special tools and software necessary to service and maintain each elevator; deliver at time of final acceptance. Provide one of each tool for each elevator machine room.

D101002 1.8 ADDITIONAL REQUIREMENTS FOR HYDRAULIC ELEVATORS

D101002 1.8.1 Hydraulic System

Provide hydraulic system which operates at a maximum working pressure of less than 500 psig.

a. Scavenger Pump Unit - Provide a scavenge oil reservoir, with strainer and transfer pump. Provide a manual-reset pit flood switch to prevent pump operation if pit is flooded. Anchor pump and oil reservoir to the pit floor.

b. Pressure Piping and Accessories - Provide ASTM A 53/A 53M or ASTM A 106/A 106M, Schedule 80, black steel piping with ASME B16.9 or ASME B16.11 fittings for supply piping. Provide welded or threaded forged pipe fittings that are located between the pump control valve body and the cylinder inlet. Extend Schedule 80 piping from the pump control valve body, inside the pump unit, to the hydraulic cylinder in the hoistway. Provide dielectric union at each end of the "pump to cylinder" oil supply line. Provide hangers or supports for all piping.

c. Oil Temperature Device - Provide means to maintain oil temperature between 80 and 120 degrees F (27 and 49 degrees C) regardless of ambient temperature.

D101002 1.8.2 Cylinder-Plunger Unit

Provide a plunger of single-piece seamless steel construction. Provide threaded 1/4-inch (6 mm) bleeder valve at top of cylinder just below packing gland. Telescopic or inverted cylinder-plunger units are not acceptable. Provide cylinder with self-stabilizing mount that will support and hold cylinder plumb without the need for stabilization means at the bottom of the cylinder.

D101002 1.8.3 Automatic Shutoff Valve

Provide automatic shut-off valve in oil supply line as close to cylinder inlet as possible. Provide threaded pipe connections to the valve. Provide manual lowering feature on valve. Provide exposed adjustments of automatic shut-off valve with means of adjustment sealed by certified elevator inspector after being set to correct position and tested.

D101002 1.8.4 Well Casing

Line well with steel casing, minimum 1/4-inch (6 mm) wall with welded 1/2-inch (10 mm) steel bottom, set plumb. Install cylinder well casing plumb using spider bob method.

a. PVC Liner - Provide Schedule 80 PVC pipe liner with bottom cap and couplings; joints sealed watertight using PVC pipe manufacturer's recommended adhesive or heat welding methods. Provide liner inside diameter not less than 3-inch (76 mm) larger than elevator cylinder maximum outside diameter. Set PVC liner into well casing, centered and plumb. PVC liner may be provided as a manufacture’s applied liner or as a separate component.

b. Cylinder Installation - Install Cylinder plumb into PVC.

c. Cylinder Evacuation Tube - Provide a 3/4-inch (19 mm) PVC evacuation tube with strainer located within 6 inch (152 mm) of bottom of liner. Provide top of test tube with removable cap to exclude foreign matter.

d. Pressure Test - Test liner-cylinder assembly as a sealed unit. Provide safety relief valve set to relieve at 10 psig (69 kPag); 4.5 inch (114 mm) diameter dial pressure gage scaled for 0 to 50 psig (0 to 175 kPag) and calibrated to 0.5 percent accuracy; and an air pressure admission throttling and shutoff valve. Perform air pressure test in the presence of the Elevator Inspector. For safety, pressure test shall only be performed when liner and cylinder are fully inserted and assembled in the well casing. Perform the test from remote location outside of the elevator pit.

e. Secure cylinder/PVC liner assembly as recommended by cylinder manufacturer.

f. Seal - Seal gap between steel well casing and PVC liner with foam insert strong enough to retain and support final grouting. Provide 3000 psi (21 MPa) grout to a minimum of 4 inch (102 mm) thickness and level top of final grouting with pit floor.

g. Containment - Protect exposed portions of hydraulic elevator oil supply line that are installed below ground, including portions encapsulated in concrete, or covered by construction, with continuous Schedule 80 PVC containment.

h. Provide layout diagram, foundation support details, and foundation loads.

D101003 FREIGHT ELEVATORS

D101003 1.1 FREIGHT ELEVATOR REQUIRMENTS

Code compliance and all other general compliance items for freight elevators shall be as for passenger elevators, except for such items deleted, altered or added to by the project program.

D101003 1.2 ADDITIONAL REQUIREMENTS FOR FREIGHT ELEVATORS

a. Guides - In addition to ASME A17.1, for freight elevators with greater than 10,000 pound (4545 Kg) capacity, slide guides are permitted in lieu of roller guides.

b. Horizontal Buck Board Wall Protection – Provide 2-1/2 inch (63 mm) thick (minimum) x 12 inch (304 mm) high (minimum) #2 oak protection boards on all side walls of the elevator at a height to prevent damage from fork lift traffic.

D101004 WHEELCHAIR LIFT

Comply with ASME A18.1, *Safety Standard for Platform Lifts and Stairway Chairlifts*.

D101005 DUMBWAITERS

Comply with ASME A17.1, *Code for Elevators and Escalators*.

D1020 WEIGHT HANDLING EQUIPMENT

Cranes and monorail systems must be designed, fabricated, assembled, shop tested, delivered, installed, inspected, field tested, and made ready for use in accordance with these RFP requirements, the applicable UFGS specification,

the reference standards, and building codes. Build the crane or monorail system to the design drawings of a registered professional engineer. This PTS section is designed to provide requirements for all of the most commonly used building cranes types. Equipment provided must meet the paragraphs entitled BASIC REQUIREMENTS FOR CRANES AND MONORAIL WITH HOIST/TROLLEYS below, requirements of paragraphs entitled OVERHEAD CRANES for the crane type provided below, requirements of paragraphs entitled HOISTS for the hoist type provided as stated below, and the applicable UFGS specification section.

D102001 BASIC REQUIREMENTS FOR CRANES OR MONORAILS WITH HOISTS/TROLLEYS

D102001 1.1 SAFETY

Comply with ARCHIVES AND RECORDS (NARA/ OSHA) 29 CFR, Part 1910.179, *Overhead and Gantry Cranes* and the mandatory (shall) and advisory (should) safety requirements of ASME B30.2, B30.11, B30.16 and B30.17, as applicable depending upon crane type.

D102001 1.2 MATERIALS

Provide material free from defects and imperfections that might affect the serviceability and appearance of the finished product. Provide new and unused materials that conform to the following standards.

a. Ductile Materials. All non-redundant components directly supporting the load must be of ductile materials. These components include, but are not limited to all hoist drive gear reducer housings, motor frames and end bells (except for C-face mounted components of packaged hoists), flanged adapters, and brake wheels and discs. For the purposes of this specification ductile is defined as having a minimum elongation of 5% in 2 inches. Furthermore, provide all shafts, keys, gears, torque carrying coupling components, and wire rope drum of steel.

b. Structural Steel conforms to ASTM A36, A572 or A992.

c. Cast Steel conforms to ASTM A27 or ASTM A148.

d. Ductile Cast Iron conforms to ASTM A536.

e. Forged steel conforms to ASTM A668 or ASTM A521, grade as applicable.

f. Steel shafts conform to ASTM A434.

g. Aluminum castings conform to ASTM B26 or ASTM B108.

h. Welding materials for crane fabrication conform to AWS D14.1

i. Welding materials for field welds conform to AWS D1.1.

D102001 1.3 TOLERANCES

Provide tolerances in accordance with the RFP requirements and the standards referenced herein.

D102001 1.4 OPERATING ENVIRONMENT

Provide pendant or radio controlled cranes and monorail systems designed to operate on electric or pneumatic or hand power as indicated in the Project Program. Design indoor equipment for an environment with an ambient temperature range of 40 Â°F to 105 Â°F. Design outdoor equipment for an environment typical of the installation location, including protection against adverse temperature, humidity, ultraviolet radiation, wet weather, salt air, corrosive atmosphere, and include features necessary to prevent in-service or premature age related failure.

D102001 1.5 APPLICABLE DESIGN STANDARD

Design cranes and monorail systems in accordance with CMAA #70, CMAA #74, MH 27.1, 29 CFR 1910.179, 29 CFR 1910.306, paragraph (b), ASME B30.2, ASME B30.11, ASME B30.16, ASME B30.17, ASCE 7-05 and other requirements specified herein. Design packaged hoist in accordance with ASME HST. A packaged hoist is defined as a hoist where the components are mounted via c, d, or p-face flanges as opposed to base mounted. All packaged hoists must be produced by established manufacturers. Furnish and install runway electrification or air distribution system as well as runways for underhung cranes, monorails as part of this specification. Provide the hook work envelope to be the maximum practical consistent with good design.

Choose rated speed of all crane functions from the SLOW or MEDIUM speeds provided in CMAA 70 or CMAA 74 for the crane configuration and rated capacity and to agree with the Project Program stated end User requirements. Provide minimum function speeds to be 1/10 rated speeds.

D102001 1.6 COMPONENTS

A standard commercial product/assembly is defined as an item that is advertised for sale in current commercial literature and is being sold in substantial quantities on the open market in the course of normal business operations. Nominal quantities, as normally associated with models, samples, prototypes, or experimental units are not acceptable under this definition. The contractor may utilize standard commercial products/assemblies in the design of the crane provided such components meet the requirements of this specification. Component selection must be substantiated by means of manufacturer's published ratings, selection method, or pro-rating. All components and assemblies furnished must be new and unused.

D102001 1.7 STRUCTURAL DESIGN

Structural design must conform to AISC Steel Construction Manual, CMAA No. 70, CMAA No. 74 or MH27.1 using ASTM A36, A572, A588 or A992 structural steel, 29 CFR Part 1910.179, ASME B30.2, 29 CRF Part 1910.23 and 1910.27, ASCE 7-05, and other requirements specified herein.

D102001 1.7.1 Space Envelope

Design cranes and monorail systems to operate in the space and match the runway dimensions indicated in building design drawings. Provide the maximum practical hook work envelope to be consistent with good design, but not less than indicated in the Project Program.

D102001 1.7.2 Structural Fasterner Tightening

All bridge girder to end truck connection fasteners and any other fasteners critical to the structural integrity of the cranes must be installed and tightened in accordance with one of the methods in the RCSC Specification for Structural Joints using High Strength Bolts.

D102001 1.7.3 Welding

All welding procedures, nondestructive testing requirements and welder qualifications shall be in accordance with the requirements of AWS D14.1 for crane and monorail system fabrication and D1.1 for building interface welds.

D102001 1.7.4 Wheel Loads

Maximum wheel loads (without impact), as well as column loads and moments due to dead load and the rated capacity live loads, with the trolley in any position, must not cause greater shear or moment in runway girders and/or supporting structures than that produced by the design crane or monorail system load and spacing shown in the facility final design. Building designs/drawings will be provided to the contractor for planning the design, shipping and erection of components.

D102001 1.7.5 Patented Track Monorail, Runway Systems and Bridge Girders

Provide monorails, underrunning runway systems and bridge girders for underrunning hoists with patented steel track, specially designed, fabricated and heat treated in accordance with MH 27.1, minimum Duty Service Classification C.

Utilize the runway or monorail (be supported from) the structural supports indicated on the facility final design. The track system and track suspension are the sole responsibility of the runway track supplier. However, design in accordance with the requirements of this RFP. Design and construct the suspension system to ensure no impairment of the strength of track or the structural support. Locate hanger or suspension at each track splice joint. Provide bracing to hold track sections in rigid alignment at all joints.

a. Sway Bracing - Brace track laterally and longitudinally to prevent damaging sway from loading conditions (dynamic, impact, seismic, etc).

b. Cataloged Products - If possible, provide track manufacturer's standard cataloged devices for connection of the track to the indicated supporting structures. If track manufacturer's cataloged devices are not provided for this suspension system, submit complete shop drawings and calculations for each custom suspension device for review and approval.

c. Suspension of Curves and Switches - Provide steel framing (structural supports), in addition to that indicated, as required by the track curve and switch manufacturer to support curves and switches. The additional steel framing shall be the sole responsibility of the track supplier

D102001 1.7.6 Wind Force Countermeasures For Outdoor Cranes

Provide wind brakes for each function (e.g. travel, trolley, rotate) of outdoor operating cranes where design calculations show that the function brake(s) are not sufficient to prevent inadvertent movement during crane operation in the event of worst case anticipated wind forces. Provide a securing method for each function (e.g. travel, trolley, rotate) of cranes stowed outdoors where design calculations show that the function brake(s) and additional wind brakes are not sufficient to prevent inadvertent movement during stowed condition in the event of worst case anticipated wind forces.

D102001 1.8 MECHANICAL DESIGN

The mechanical design of the cranes must conform to minimum of CMAA 70, Class C, MH 27.1, Duty Service Classification C, ASME B30.2, ASME B30.11, ASME B30.17 and other requirements specified herein. All drives which are not directâ€‘connected with shafts in line must be driven through gears. Do not rely upon retaining rings for axial retention of sheave pins or bearings on pins and axles and they are permitted only on standard commercial assemblies. Do not rely on press fits for transmission of torque, except in travel drives. Cotter pins are permitted only for locking nuts to prevent loosening and for retaining pins in standard

commercial brake assemblies. Conform enclosed gearing to ANSI/ AMERICAN GEAR MANUFACTURERS' ASSOCIATION (AGMA) 6013, 6034, or 6035, as permitted. Design open gearing in accordance with ANSI/AGMA 2001.

D102001 1.8.1 Design Factors

Design cranes and monorails using the following factors:

a. Compute stresses and ratings, except as modified herein, using the locked rotor torque or horsepower of the driving motor.

b. For wire rope drum and related component calculations, the line pull off the drum shall be taken as that necessary to balance rated motor torque.

c. Design the hoist drive, except the wire rope, to withstand the setting of the hoist brake(s) under a full speed lowering condition with either no-load or rated load on the hook whichever load condition represents the worst case scenario.

d. Unless otherwise specified, design or select all mechanical components, including fasteners, to provide design factors of 4.0 and 5.0 based on material yield and ultimate tensile strengths respectively at rated load. Furthermore, except where stated otherwise, those components that are subjected to momentary peak loads (due to starting, braking, or locked rotor torque) must be designed to limit the peak stresses to 0.75 of the material yield strength, except that peak compressive stresses must be limited to 0.90 of the material yield strength.

e. Design the load suspension parts of hand chain operated hoists including load chain so that the static stress calculated for the rated load do not exceed 25% of the minimum ultimate tensile strength.

f. Design shafts and axles subjected to reversing stresses for fatigue loading per CMAA #70, regardless of crane configuration. Do not consider shaft loading resulting from the setting of brakes in the fatigue evaluation.

D102001 1.8.2 Mechanical and Threaded Fasteners and Tightening

All fasteners used in securing mechanical or electrical-mechanical (i.e., brakes) components to their foundations must be tightened to accepted torque values from standard tables based on the lubricant used. The fasteners must be lubricated and not be installed "dry". Where self-locking nuts are used, the prevailing torque of the locking element must be accounted for. Nominally tighten all mechanical fasteners to 70% of the fastener yield strength, except in applications where component manufacturers prescribe specific fastener torque requirements.

Fasten all flange-mounted components and all mechanical connections subjected to calculable loads with SAE J429, Grade 5 or Grade 8 fasteners, ASTM F436 washers, and SAE J995 Grade 5 or Grade 8 nuts. Mounting fasteners from flange-mounted components, including keeper bars, may be installed into tapped holes provided that adequate thread engagement is provided to develop the full tensile strength of the fastener. Provide all nuts with a minimum of one thread pitch of the bolt protruding above the nut top surface. Size fastener connections neglecting any benefit from shear bars or dowel pins.

D102001 1.8.3 Hoist Load Chain or Wire Rope

Provide uncoated load chain. Provide uncoated wire rope that conforms to XIP or XXIP, 6x36, IWRC per ASTM 1023/A. Minimum design factor of 5

to 1 must be provided based on ratio of minimum chain or wire rope breaking force to the calculated load on the chain or wire rope when the hoist is assumed loaded to rated capacity. Certification from hoist manufacturer of provided chain's proof test at 150% of the hoist's rated load divided by the number of chain parts supporting the load for at least 10 minutes without deformation or wire rope's breaking force must be submitted to Contracting Officer and approved prior to final acceptance of hoist. Do not paint, galvanize or coat the load chain or wire rope. Wedge sockets are not permitted as terminal fittings on wire rope. Hoisting rope dead end connections to equalizer bar (if used) or hoist frame must be by means of poured socket connections or swaged fittings installed in a manner that develops the full breaking strength of the hoisting rope. Provide forged steel sockets. Anchor hoisting rope ends on the drum by means of swaged fittings or by clamping. Clamped hoisting rope ends must be neatly and securely seized with wire. Maintain a minimum of two full wraps of rope at the dead end(s) of the drum with the block in its lowest indicated position.

D102001 1.8.4 Load Block And Hook

Construct load blocks of steel. Design the load block to preclude the wire rope from being cut, pinched, crushed, or chafed in case of two-blocking or unloading of the wire rope. Construct load blocks so that hooks and hook nuts can be removed without re-reeving the hoist. Hooks must be able to rotate freely with 131.25% of rated load and employ a thrust bearing rated at no less than 150% of the rated load. Clearly mark hoist capacity in pounds on both sides of the load blocks.

Provide single barb forged carbon steel (conforming to ASTM A668 or ASTM A521 with a material longitudinal elongation of not less than 18% and a safety factor of no less than 5:1), swivel type hook in accordance with ANSI B30.10. Proof test hooks in accordance with ANSI B30.10 for a minimum of 10 minutes without deformation. Secure hook nuts to hooks by a commercial standard removable and reusable means (tack-welding is prohibited). Size hook throat opening for users needs. Provide hook with spring loaded steel safety latch for closing the hook throat opening. Do not paint or coat the hook or hook nut. Permanently mark hook and hook nut with a unique identification number traceable to each other and to the NDT certification. Locate unique hook and nut markings to be visible when the hook and nut are assembled on the hook block. Mark in a low stress area using low stress marking methods.

D102001 1.8.5 Wire Rope Sheaves

Provide forged steel sheaves. The minimum pitch diameters of running and equalizer sheaves must be in accordance with HST-4 for packaged hoist. Do not paint contact surfaces of sheaves. Machine or grind the grooves to contour and rim toughen them to not less than 320 BHN. Sheave groove depth must be not less than 1.15 times the hoisting rope diameter. Mount all rotating sheaves on bearings.

D102001 1.8.6 Wire Rope Drum

The drum must be a one-piece steel weldment; finish-machined after all welding and stress relieving has been completed. Include in the drum integral stub shafts or shaft hubs for through shafts as required. Design the drum such that all hoisting rope is wound in a single layer. Do not mount drums in a 3 bearing configuration. Provide drums that are grooved, with grooves that are helical and machined right and left hand. Minimum drum groove depth must be .375 x rope diameter and drum groove pitch must be 1.14 x rope diameter or rope diameter plus 1/8 inch, whichever is smaller. Provide 18 times wire rope diameter for the minimum pitch diameter of drum.

D102001 1.8.7 Gearing

Provide enclosed (gear reducer) type gearing, except that the final drive may be open gearing. Do not use shafts with three or more bearing supports. Utilize standard commercial products for gear reducers. Provide enclosed reducers with a convenient means of lubricant level indication, oil sampling and draining. Provide base mounted reducers with a ball valve for draining. Hoist gearing shall be spur, helical, or herringbone type only, except for high speed gearing which shall be helical or herringbone. Provide spur gears only on open type drum gear-pinion sets (if applicable). Travel drive gearing may be spur, helical, herringbone or spiral bevel. Shaft mounted gear reducers may be used for travel and trolley drives only. Torque arms shall be other than threaded rod type and shall be designed and installed so that no eccentric loads are imposed on them. Provide enclosed gearing that complies with ANSI/AGMA 6013, 6034, or 6035, as permitted. Design open gearing in accordance with ANSI/AGMA 2001. If the design uses a drum gear, fabricate the gear to be removable from the drum. Provide guards on all gearing not enclosed in gear cases that may constitute a hazard under normal operating conditions, and include guards with provisions for lubrication and inspection.

D102001 1.8.8 Hoist Brakes

See HOISTS, in this section for hoist brake requirements by hoist type.

D102001 1.8.9 Travel Brakes

Provide powered trolley and bridge drives with end mounted electro-mechanical or pneumatic brakes that are spring applied, electrically or air pressure released. Manual and push bridges and trolleys do not require braking. Travel brakes shall have a torque rating of at least 50 percent for indoor cranes and have a torque rating of at least 100 percent for outdoor cranes. The The torque setting must be adjustable Provide brakes capable of stopping within a distance in feet equal to 10% of the rated speed in feet per minute when traveling at rated speed with rated load. Equip brakes with a manual self-return to ON brake release. Provide brake housings with easy access for wear and setting inspection.

D102001 1.8.10 Travel Drives

The bridge and trolley drives must be A-4 type.

D102001 1.8.11 Shafts, Axles, and Pins

All shafts, axles, and pins must be steel. Top running bridge and trolley axles must be of the rotating type.

D102001 1.8.12 Wheels

Underrunning wheels shall be flanged. Provide double flanged for top running bridge and trolley wheels. All wheels shall be straight tread and rolled to shape or roll forged to provide properties in congruence with ASTM A504. Do not make wheels by casting, fabrication from plate steel or hollow stamping. Rim toughen wheels that run on standard runway rails to not less than 320 BHN. Heat treat wheels that run on patented track beam to have minimum tread hardness of 375 BHN. Design bridge and trolley wheels to be compatible with their respective runway's profile. Provide wheel sizing and flange-to-rail head clearances in accordance with MH 27.1 and CMAA recommendations.

Equip bridge and trolley wheels of top running cranes and trolleys with rail sweeps. Provide a means to prevent bridge end truck and trolley from dropping more than one inch in case of wheel or axle failure.

D102001 1.8.13 Bumpers

Provide bumpers of the elastomeric, hydraulic or spring type on trolleys (or ends of bridge girders) and bridge end trucks. Design bumpers to withstand rated load at rated speed IAW AIST TR-6. Fully mate bumpers with the end stops and crane bumpers where applicable. Mount bumpers to provide proper clearance when bumpers are fully compressed. Where practical, mount bumpers to provide for easy removal of the travel wheels. Ensure trolley and bridge end truck frames are designed so that travel wheels do not contact the end stops. Design and install bumpers per the requirements of ASME B30 with a means of retaining the bumper in case of broken or loosened mounting connection(s).

D102001 1.8.14 Keys and Keyseats

Provide parallel type and machined key/keyseat assemblies. Install the key/ keyset assembly in a manner that preclude any possibility of a key shifting out of its intended position.

D102001 1.8.15 Fits

Interference fit all gears, pinions, couplings, brake drums, wire rope drums, wheels, other similar components to their respective shaft or axle. Interference fits must conform to the force fit requirements prescribed in ANSI B4.1 and must be medium drive fits unless length of engagement, material, or loading indicates otherwise. Alternatively, in bridge and trolley drives, keyless hub-to-shaft connections shall be permitted where minimum potential interface fits capable of transmitting maximum torque (not less than 200% rated motor torque) is provided. The individual component manufacturers must endorse these interference fits. Fit bearings, bushings, and seals in accordance with the manufacturer's recommendations. Where multiple interference fitted components are installed on a single shaft from the same end, there must be clearance between each component's bore and the portion of the shaft from the installation end up to its mounting location. Fits of components within standard commercial assemblies, such as gear reducers and electric motors, must comply with the applicable industry standards or with the manufacturer's standard practice if industry standard criteria are not available.

D102001 1.8.16 Bearings

Provide anti-friction type bearings, except those subject to a small rocker motion. Use permanently lubricated sealed bearings wherever practical. Provide an easily accessible means of lubrication for bearings not considered lifetime lubricated by the manufacturer. Supply inner races for all antifriction bearings, except that bearings without inner races are permitted as part of packaged hoist unit. If a pedestal bearing is used to support the drum, the bearing housing must be steel.

D102001 1.8.17 Bushings and Thrust Washers

Fit all connections, including equalizer sheaves or bars, subject only to small rocking motion with bronze bushings and/or thrust washers, as applicable. Groove bushings to distribute lubricant.

D102001 1.8.18 Painting of System

Protect all parts of the cranes against corrosion. Clean, prime, and finish paint all surfaces normally painted at the contractor's plant as specified hereinafter. Do not paint, coat, or galvanize the following surfaces: load chain, hoisting rope, load hook, suspension hook, load hook nut, suspension hook nut, load chain sheave (sprocket), wire rope contact areas of sheaves and drum, trolley and travel wheel treads, gear teeth, load bearing surfaces of travel rails, machined surfaces that are bearing surfaces, lubrication fittings, corrosion resistant steel, bronze, anodized aluminum, name plates, flange mounting faces, other items not normally painted, and wheel tread contact surfaces of runway beams. Provide painting systems and scheme as follows:

a. Paint Systems. Provide primer coat and the finish coat of paint that is smooth, even and free of runs, sags, orange peel, or other defects. Take precautions to avoid painting surfaces specified as non-painted. Any painted over grease fittings must be replaced; they may not be cleaned and reused. Provide a painting system that consists of anti-corrosive primer and topcoat(s) appropriate for the intended environmental conditions. The primer and topcoat(s) must be compatible with each other, the substrate, and be products of the same manufacturer. Apply primer and topcoat(s) in accordance with the manufacturer's recommended process. The use of paint containing lead or mercury is prohibited. Identify the primer and finish coats in the technical manual or drawings.

b. Painting Scheme. The painting scheme is as follows:

(1) Paint crane structural beams, hook block, and end trucks brilliant yellow.

(2) Paint sides of hook blocks to have additional gloss black diagonal safety striping.

(3) Paint faying surfaces of slip-critical structural bolted connections, both interior and exterior, with coatings as specified in RCSC Specification for Structural Joints Using High Strength Bolts".

(4) Clean and repaint any painted surfaces damaged during erection.

(5) Paint other components not specified above. The color and coating may be in accordance with the component manufacturer's standards.

D102001 1.8.19 Identification Plates

Provide two capacity plates with permanent lettering, one for each side of the bridge, monorail. Indicate the rated hoisting capacity of the hook in pound units on the plates and securely attach each plate. Size lettering to be easily read from the floor. Beneath the rated capacity the following information shall be included:

Naval Facilities Engineering Command

Contract Number

Manufacturer's name, address, crane model number and crane serial number

Voltage of AC or DC power supply, and phase and frequency of AC power supply, if applicable.

D102001 1.8.20 Direction Identification

Provide cardinal direction indication letters centered on the bottom of

each trolley where space permits. Denote North, South, East, and West and reflect the travel directions given on the controller. Size lettering to be easily read from the floor.

D102001 1.8.21 Unique Identifier Tag

In accordance with DEFENSE FEDERAL ACQUISITION REGULATIONS (DFAR) 252.211-7003, assign a unique identifier to the crane. Attach the Unique Identification Tag to the outside of the main electrical disconnect panel.

D102001 1.9 ELECTRICAL DESIGN

Electrical design must conform to CMAA #70, CMAA #74, MH 27.1, ASME B30.2, ASME B30.16, as applicable, NFPA 70, NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION (NEMA) ICS 7, NEMA ICS 8, and other requirements specified herein. Each drive mechanism must be provided with a separate and independent drive unit with a circuit breaker branch circuit protection device capable of being locked in the open position. Design the electrical system to allow simultaneous motions of the main hoist and all traversing functions, and ancillary loads. Design the crane to operate on the designated power supply.

Provide disconnecting means for cranes and monorail hoists in accordance with NEC 610.32. Disconnecting means provided for cranes must be a lever arm type switch (rotary type switches are not acceptable) located in a separate enclosure on the crane.. Configure crane disconnects such that when the disconnect is secured, there are no energized conductors in any associated control panels.

Provide a separate runway disconnecting means in accordance with NEC 610.31. Runway disconnect switches for runways or monorails longer than 50 feet must be at the midpoint of the runway as much as possible.

Feed all control circuits from a single phase, air cooled, double-wound transformer. Furnish and install all electric drive equipment on the crane, including motors, brakes, switches, controllers, panels, items associated with the pendant, wiring system, cables, and electrification. All contactors and relays must have appropriate MOVs or R-C surge absorbers installed across the respective device's coil. Do not mix power and control cables in the same conduit in order to prevent interference where feasible.

D102001 1.9.1 Electrical Assembly

Install electrical wiring, conduit, and components in accordance with the requirements of NFPA 70. As a minimum, comply with the following items:

a. Install all electrical connections in accordance with NFPA 70 sections 110.14 or 430.9, as applicable, or as recommended by the device manufacturer.

b. If used, properly size crimped terminal lugs for the wire and install using the device(s) - e.g., crimping tool and indenter - recommended by the terminal lug manufacturer.

c. Identify all spare conductors, and insulate their ends to preclude accidental contact with energized equipment.

d. Adhesive-backed wiring tie wraps and cable-clamping devices can not be used unless they are secured with fasteners, in addition to the adhesive.

e. Bond all panel doors, back sheets, and panel boards with flexible bonding straps.

f. Remove paint from termination points, or install "cut" washers to insure proper grounding of equipment at bonding straps and equipment grounding conductors.

g. Wrap wiring around sharp edges, such as panel doors, to protect sleeves (e.g., "spiral wrap") and prevent wiring insulation damage from chafing, cutting or abrasion.

h. Control panels can not be used as raceways for conductors not terminating within the panel.

i. Use bushings or chafing protection gear on all panel conduit entries.

j. Mount only equipment that needs to be viewed or accessed from the panel door (i.e. dataloggers, key switches, pilot lights, etc.) on the panel door.

k. Tie wraps are prohibited as a permanent mounting means on festoon loops.

l. Flexible metal conduit may be used in lieu of ferrous rigid metal conduit for lengths of three feet or less when flexible connections are needed for motors and lighting.

m. Excluding conduit directly connected to dynamic breaking resistors, raceways shall maintain a 12-inch clearance between the raceway and dynamic braking resistors.

n. Route a separate grounding wire, sized in accordance with Section 250-122 of NFPA 70, with all ungrounded conductors.

o. Number or tag all wiring at all connection points.

p. Label power conductors which are shielded as to the conductor size.

q. Plug all unused conduit openings.

r. Terminate all conductors on terminal blocks; splices are not acceptable, with the following exceptions:

(1) Motor and brake connections may be made using split-bolts or lugged and connected with nuts, bolts, flat washers and lock washers in lieu of installing a terminal block in the motor connection box.

(2) Wire-nuts are not permitted except where making connections for lighting ballasts. Secure wire nut connections such that during operation of the crane they will not loosen.

(3) Provide encoder conductors with a continuous run from the encoder to the drive. Use fiber optic cable if the length of cable required between a drive and its respective encoder is longer than 150 feet.

(4) Wire terminals with more than one wire must be rated by the manufacturer for use with multiple wires.

D102001 1.9.2 Enclosures

Provide enclosures for control panels and auxiliary devices in accordance with UL or CSA listed metallic NEMA type 12 for indoor cranes or NEMA Type 4X stainless steel for all outdoor cranes as defined by NEMA Standards Publication Number 250. Design enclosures with appropriate heating and/or cooling accessories to maintain a climate within the panel that provides an appropriate internal temperature environment for proper operation of the drives. Condensation inside the

control panels is not acceptable. Provide industrial grade electrical components and located so they are easily accessible for inspection and maintenance.

D102001 1.9.3 Wiring System

Unless otherwise specified, provide interconnecting wiring of copper stranded construction complying with Table 310-13 of NFPA 70. Aluminum conductors are prohibited. Aluminum connectors are allowed if they are rated for use with copper conductors (marked AL/CU). All conductors connected to or routed above resistors must have at least 8 inches clearance, with the exception of type SA and FEPB insulation shown in NFPA 70 (National Electric Code (NEC)) Table 610-14(a) for 125Â°C maximum temperature. Size motor branch circuit conductors to have an ampacity not less than 150% of the motor full load current rating and to be no smaller than 12 AWG. Conductors must be selected and de-rated based on maximum ambient temperature. Continuous loads such as utility, heating, lighting, and air conditioning must be multiplied by 2.25 to determine ampacity in order to permit application of NFPA 70 NEC 610-14 (e) for crane supply conductors. Provide raceways of ferrous rigid metal conduit.

D102001 1.9.4 Drive Mechanism Electric Motors

Provide electric drive mechanism motors that conform to NEMA MG 1. Hoist, bridge and trolley drive motors shall be AC inverter duty, totally enclosed non-ventilated (TENV) or totally enclosed fan cooled (TEFC), squirrel cage induction type. All motors must have a 60 minute duty rating minimum. Provide motor insulation of a minimum of Class F, but with a Class B temperature rise. Furnish motors located outdoors with anti-condensation heaters.

Equip motors with thermal trip type over-temperature protection. Provide automatic resetting type temperature sensors installed integral to the motor windings. Activation of any integral motor over-temperature device energizes a red indicating FAULT light mounted on the crane and de-energizes the individual function as follows:

a. Hoists: hoisting direction only

b. Traverse Functions: motion in either direction.

The red indicating fault light remains energized until the over-temperature device resets.

D102001 1.9.5 Hoist, Trolley, Bridge Electric Controls

Comply with the following hoist, trolley and bridge controls requirements:

a. Provide static reversing, adjustable frequency controllers for all functions. Provide all controllers with a keypad or other interface allowing the end user to view/change parameters and view drive faults. Hoist drives are required to be selected such that the continuous rating of the controller is not less than 130% of the calculated motor full load current based on CMAA #70 paragraph 5.2.9.1.1.1, regardless of crane configuration, NFPA 70 NEC Table 430.250, and NEMA ICS7. Equip all hoist drives with a motor overtorque limit to lock out the hoist and prevent gross overload of the associated hoist. Set the overtorque limit such that an overload test can be performed without tripping the overtorque fault. All controllers must be from the same manufacturer. Each electric drive requires dynamic braking. Provide infinitely

variable type speed control for each function. Design controls such that the maximum speed of each function is limited to 25% of rated speed when a slow speed switch is actuated on the operator's controller. Energize a yellow/amber light mounted on the crane while in slow speed mode.

b. Set all function brakes only after the associated controller decelerates the drive motor to a controlled stop. Size all controllers to provide sufficient starting torque to initiate motion of that crane drive mechanism from standstill with 0 to 131.25% of rated load on the hook and not produce any rollback. The hoist controller must enable the drive motor to develop full torque continuously at zero speed. Motors must operate smoothly at all speeds without torque pulsations, and only be energized within the frequency range of 50-60 Hz at rated speed. With respect to AC control wiring, no neutral wire shall pass through the contacts of a control relay or contactor, i.e., a device shall not be shut off or disengaged by breaking the device's neutral conductor.

D102001 1.9.6 Transients and Harmonic Protection

Provide varistors for transient protection internal to the controller. Minimum harmonics protection must consist of a reactor connected in series with each controller's line (input) terminals. Rate all reactors for continuous duty operation based upon motor nameplate amperes and design for 60 HZ operation. For a drive motor branch circuit that exceeds 100 feet in length, connect a reactor in series with the controller load (output) terminals to provide standing wave protection.

D102001 1.9.7 Drive Faults

Energize a red indicating FAULT light visible to the operator for drive faults.

D102001 1.9.8 Brake Controls

Release each drive mechanism's electro-mechanical brake only upon movement of the electric drive's controller from the OFF position and verification of motor torque, and set only after the electric drive's controller is returned to the OFF position and motors have regeneratively slowed to a controlled stop.

D102001 1.9.9 Main Line Contactors

Provide a main line contactor. Control energization of the main line contactor by a POWER-OFF/POWER-ON pushbutton on the control station. Except for the POWER OFF-POWER ON circuit, the control circuit including directional contactors must not be energized without energization of the mainline contactor. Provide black POWER-ON pushbutton and equipped with a guard to prevent accidental actuation. Provide red POWER -OFF mushroom-head pushbutton with no guard for quick and easy access.

D102001 1.9.10 Electrical Overload Protection

Protection must not be less than required by NEMA ICS 8, CMAA #70, MH 27.1, and NFPA 70. Use circuit breakers or fuses for protection. Individually protect motor branch circuits by circuit breakers capable of being locked in the open position to isolate that function without use of a portable lockout device. Calculate the circuit breaker size using the motor full load current from NEC 430, Part XIV (Tables).

D102001 1.9.11 Operator Controls

Comply with the following operator control requirements:

a. Control cranes from a radio control station where permitted, or pendant pushbutton station if radio frequency control is not desired (see project program for control configuration). Legibly mark and arrange operator controllers in accordance with ASME B30 guidance, except label traverse functions of bridge cranes with ordinal directions (NORTH, SOUTH, EAST, WEST) to agree with direction labels on the cranes. Provide all pushbuttons and levers with spring returns to the OFF position upon operator's release. Also provide a maintained two-position selector switch for slow speed selection and an ON/OFF switch for flood lights, if equipped. Equip operator stations to accept keys enabling a user to lock out the station from use.

b. Suspend pendant pushbutton stations by a 1/8 inch minimum stainless steel wire rope strain lead from an independent festoon system. Provide strain relief hardware consisting of a stainless steel wire mesh cable grip. The pendant pushbutton station must be a rubber molded enclosure. Provide pendant cable of type SOO.

c. Include an identical back-up transmitter unit for each radio control system. Provide portable transmitters that weigh not more than eight pounds each (including the batteries and antenna), with an adjustable belt or harness to support it when worn by the operator. Ensure that only one transmitter at a time can control the crane and assure interference from one crane's controller does not affect operation of the other cranes in the building. Each transmitter includes: individual spring return joystick motion control levers for each function; a maintained contact, keyed switch, marked ON-OFF, for portable transmitter unit power; one or more LEDs indicating POWER ON, TRANSMITTING and LOW BATTERY; a red emergency STOP mushroom pushbutton; a 25% speed selector switch; a maintained switch to control the floodlights (if equipped); and a separate auxiliary pushbutton for a crane warning device (horn).

d. Design the remote radio control system to meet the requirements of NEMA ICS 8, Part 9. Each radio remote control lever must be in the OFF position before the associated crane function can begin. Choose the system frequency to be within the unlicensed FCC Part 15 range, unless licensed frequency is required by the end User. Maintain a continuous status signal between each control unit and the associated receiver. Provide a contact monitoring board with each crane radio system receiver.

e. Use rechargeable type batteries in the radio transmitter. Provide a minimum of three sets of batteries(one for each transmitter plus one on recharge). There must be no significant loss in systems efficiency and function at the end of eight hours of continuous battery use. Provide a battery charger.

D102001 1.9.12 Pendant Conductor System

Operate the pendant controller on its own independent festoon system. The festoon cables must consist of flat cables suspended from carriers riding on a rigid I-beam or similar type beam. The pendant controller must be capable of traveling the entire length of the bridge. Festoon loops must not extend below the high hook position. Provide at least 20% of the conductors to be spare at the time of crane acceptance. Pendant festoon systems must move independently of the trolley.

D102001 1.9.13 Indicator Lights and Warning Devices

Comply with indicator lights and warning device requirements as follows:

a. Install indicator lights and beacons with LED type lights sized to be visible from the operator's location. Provide a white light to indicate that power is available on the load side of the crane disconnect, a blue light to indicate that the main line contactor is energized, a yellow/amber slow speed light, and a red fault warning light to indicate a drive fault or motor over-temperature. Design light to use 115 VAC voltage. Provide nameplates with lettering of sufficient size to be easily read from the floor. The nameplates must read in their respective order "POWER AVAILABLE", "POWER ON", "SLOW SPEED", and "FAULT".

b. Install a lamp test pushbutton on the outside of the control panel to allow for simultaneously energizing all lights in this section for testing purposes.

c. Provide a wind indicating device for outdoor cranes. This device must either provide a visible or audible alarm to the crane operator(s) when the wind velocity exceeds a preset limit. Assure that the chosen device does not conflict with any other previously listed indication/warning.

D102001 1.9.14 Overtravel Limit Switches

Comply with the overtravel limit switch requirements as follows:

a. See requirements in paragraph entitled HOIST for numbers and types of overtravel limit switches required by hoist type.

b. Hoist Limit Switch Settings. Set each primary upper limit switch at the maximum practical hook height but not lower than high hook position. Set the secondary upper limit switch not lower than the hook height of the primary upper limit switch setting plus the primary runout distance, but not less than the secondary runout distance below the lowest contact point of the hoist or trolley structure (two-block condition). (The runout distances are defined as the load block maximum drift, after switch activation, in the hoisting direction at rated speed with no load on the hook. Primary and secondary runout distances are associated with the primary and secondary upper limit switches, respectively.)

c. Hoist Slow-Down Limit Switches. Slow down limit switches may be used, set below the primary upper limit switch, to automatically decrease the hoisting speed to a predetermined slow speed before tripping the primary upper limit switch. The runout distances would then be defined as the load block maximum drift, after slow down switch activation, in the hoisting direction at slow speed with no load on the hook.

D102001 1.9.15 Runway Electrification

Comply with the following runway electrification requirements

a. Provide a runway electrification system to power the crane and connect it to the crane runway disconnect. Refer to the facility final design for the length of the system. Runway electrification for crane must be of the flat festooned type or enclosed safety bar type (see project program) with four continuous copper conductors. Ground the crane through the runway electrification system. Provide electrical work in accordance with Section D50, Electrical.

b. Rigid runway electrification systems shall include all necessary hardware to the crane or monorail system from a wall or column mounted disconnect switch. Provide discreet rail type rigid runway electrification systems such that sections can be easily replaced if damaged and have insulating covers. Make outdoor rigid runway

electrification systems with stainless steel or be coated specifically to prevent corrosion and use UV resistant insulating covers. Design rigid runway electrification systems for a dusty environment, consisting of three power conductors and an equipment grounding conductor. Color the ground runway conductor green, if individual conductor bars are used (not a 4-conductor system).

c. For overhead cranes, install a guard if normal crane operations could result in the hook block or wire rope contacting the conductors.

d. Provide heavy duty sliding shoe type design for collectors and specifically design to match conductor contact surface. Collector arms must be insulated, spring loaded and shall permit sufficient lateral and vertical movement to allow for imperfect track and for misalignment relative to the crane. Provide two collector shoes (tandem design) for each conductor; each collector shoe to be rated for its branch circuit current, or higher so as to provide redundancy.

e. Utilize flat cables suspended from carriers riding on an I-beam or C-track for festooned type electrification systems. Select the conductors so as to be of the longest length without splices. Fabricate conductors from copper. Provide a minimum of 20% of the festoon control circuit conductors for each electrification system to be spares at the time of crane acceptance. Festooned cable loops must not extend below the high hook position. Provide UL or CSA listed materials.

f. Size runway conductors for simultaneous motions of the main hoist plus all traverse crane functions plus any ancillary loads. When more than one crane makes use of the same runway electrification, size the system to accommodate simultaneous operations of the main hoist plus all traverse functions of all cranes at once.

D102001 1.9.16 Bridge-to-Trolley Electrification

Utilize flat cables suspended from carriers riding on an I-beam or C-track for festooned type electrification systems from bridge-to-trolley. Select the conductors so as to be of the longest length without splices. Fabricate conductors from copper. Provide a minimum of 20% of the festoon control circuit conductors for each electrification system to be spares at the time of crane acceptance. Electrically powered trolleys are required to be grounded through this conductor system. Festooned cable loops must not extend below the high hook position. Provide UL or CSA listed materials.

D102001 1.9.17 Nameplates

Provide nameplates for all electrical control equipment such as contactors, relays, transformers, etc., and all electrical panels. As a minimum, identify the associated function and system designation on each nameplate. Retain all electrical component nameplates, markings, etc. provided by the original manufacturer.

D102001 1.9.18 Electrical Outlets

For cranes with maintenance walkways, provide a minimum of one 120 VAC duplex outlet on the crane. Mount the outlet on the outside of the control panel(s). Incorporate ground-fault circuit-interrupter protection and a circuit breaker with a minimum rating of 15 amps for protection of circuit supplying receptacles.

D102001 1.9.19 Flood Lights

Provide flood lights where the crane, hoist or trolley cast a shadow on workstations. Select flood lights to match the building lighting color and intensity. Evenly space the light bulbs along the crane to provide a minimum illumination level of 50 foot-candles at three feet above the finished floor. Provide all light fixtures rated for rough service, vibration resistant, and designed to prevent any material from falling from the fixture. Equip the lights with safety cables to prevent the fixtures from falling to the floor if dropped while being serviced. For cranes with maintenance walkways, locate the lights to be serviceable from the walkway(s). Provide a switch on the operator's controller to operate the floodlights.

D102001 1.9.20 Capacity Overload Protection

Provide overload limiting for each hoist motor circuit separate from the hoist drive overtorque limit specified in paragraph above entitled HOIST, TROLLEY, BRIDGE CONTROLS. The device must have a maintained keyed override located on the control panel that can be deactivated during overload testing. When an overload is detected limit the hoist function to the lowering direction only. Resetting of the overload shall only be accomplished by moving the hoist in the down direction or by cycling power. Initially set the overload limit at 100% and ensure that it is adjustable from 80% to 150% of rated capacity.

D102001 1.9.21 Hour Meter

Provide a non-resettable hour meter, connected across the main line contactor, readable from the exterior of the main control panel, to indicate the elapsed number of hours the crane is energized. Additionally provide non-resettable hour meters for each function, readable from the exterior of the main control panel, connected to each function's brake contactors to indicate the running time of each individual function.

D102001 1.10 PNEUMATIC DESIGN

Pneumatic design must conform to CMAA #70, MH 27.1, ASME B30.2, ASME B30.16, ASME HST-5, ASME HST-6 as applicable, and other requirements specified herein. The pneumatic power for the crane must be fed from a junction with a quarter-turn to off valve, accessible to the crane or monorail system operator, capable of being locked in the off position. Disconnect valves for runways or monorails longer than 50 feet must be at the midpoint of the runway as much as possible. The pneumatic supply system must have capacity to allow simultaneous motions of all hoisting and traversing functions. Design the crane to operate on the designated pressure and flow rate. Configure disconnect valves such that when a valve is secured, there are no other sources of air supply to any part of the crane.

D102001 1.10.1 Pneumatic Assembly

Perform Installation of all pneumatic piping and components as stated below:

a. Install all pneumatic piping and connections as recommended by the device manufacturer.

b. Use rigid metal piping of the correct pressure rating for all piping runs. Flexible lines may be used in lieu of rigid metal piping for lengths of three feet or less when flexible connections are needed between components. Flexible lines must be rated for the system pressure.

c. Number or tag piping at all connection points.

d. Pressure test piping runs to ensure that they are free of leaks prior to connection to cranes.

e. Provide system fittings, piping and connectors exposed to the outdoor environment of corrosion resistant material.

D102001 1.10.2 Drive Mechanism Pneumatic Motors

Provide pneumatic drive mechanism motors with adequate power and starting torque and operate without perceptible vibration at any of the hoist loads or speeds within the rated load and speed capacity. The hoist motor may be either axial piston or rotary vane type.

D102001 1.10.3 Overload Protection

Equip the hoist with overload protection to prevent gross overload and any resulting damage to the crane or monorail system. The device must allow load testing at up to 131.25% of rated capacity. If adjustable, initially set the overload limit at 100% of rated capacity. Limit hoist operation to the lowering direction only when an overload occurs.

D102001 1.10.4 Operator Controls

Comply with the following operator control requirements:

a. Provide an operator station suspended from the hoist/trolley unit. Pull cord or rod controls are not desired. Legibly mark and arrange control stations functions in accordance with ASME B30 guidance, except that traverse functions of OETs are labeled with ordinal directions (NORTH, SOUTH, EAST, WEST) to agree with direction labels on the cranes. Spring return all levers to the OFF position upon operator's release.

b. Suspend operator station by a 1/8 inch minimum stainless steel wire rope from the hoist/trolley unit structure.

D102001 1.10.5 Overtravel Limit Switches

Provide a lift limiting device so that the load hook, either loaded or empty, at any operating speed, will not allow the load block to contact the hoist frame. Install a stop or other device to prevent the load hook from being lowered beyond the hoist design limit of travel.

D102001 1.10.6 Runway Air Supply

Comply with the following runway air supply requirements:

a. Provide a runway air supply system, including retractable hose reel, to power the crane and connect it to the crane runway disconnect. Refer to the Project Program for the operating length of the system.

b. Pneumatic supply emergency shut-off devices must be readily accessible from the floor, and located within proximity to the crane runway, monorail track system.

c. Size runway air supply piping for simultaneous motions of all crane functions plus any ancillary loads. When more than one crane makes use of the same runway air supply, size the system to accommodate simultaneous operations of all functions of all cranes at once.

D102001 1.10.7 Nameplates

Provide nameplates for all pneumatic control equipment. As a minimum, identify the associated functions and system designations on each nameplate. Retain all pneumatic component nameplates, markings, etc. provided by the original manufacturer.

D102001 1.10.8 Hour Meter

Provide a non-resettable meter in the air supply calibrated to indicate the elapsed number of hours the crane is operating.

D102001 1.10.9 Pressure and Flow Regulation

Provide a device to limit inlet pressure and air flow in line between the air supply and the crane air inlet, mounted at the level of the hoist. The device(s) must ensure pressure does not exceed the rated pressure at the hoist and that the crane or monorail system functions at the desired speed and capacities. The device must allow sufficient air flow and pressure to operate the brake release mechanism.

D102001 1.10.10 Moisture Separator/ Oiler

Provide a device in the supply line to the crane or monorail to remove moisture and add lubrication to the incoming air supply.

D102002 OVERHEAD CRANES

In accordance with the project program, provide an overhead top running multiple girder bridge cranes, single girder top running bridge crane, single girder underrunning bridge crane, monorail system, or hoist with the required equipment quantity, span, runway length, capacity and hook height needed to fulfill the mission of the end user.

D102002 1.1 TOPRUNNING MULTIPLE GIRDER CRANE

Provide a top running multiple girder crane with hoist and trolley complete, tested and ready for operation. The crane, hoist and trolley must be electrically, pneumatically or manually powered in compliance with the Project Program. Crane, hoist, trolley, equipment, materials, installation, examination, inspection, and workmanship must meet the applicable requirements of ASME B30.2 and CMAA 70, Class C minimum, as modified and supplemented by this specification. Provide the following girder crane components in addition to the general requirements of the paragraphs entitled BASIC REQUIREMENTS FOR CRANES OR MONORAILS WITH HOISTS/TROLLEYS above.

D102002 1.1.1 Bridge Girders

Provide welded box section type bridge girders for spans greater than 40 feet. For spans less than 40 feet, open web girders may be used. Minimize splices in the bridge girder and avoid splices in locations of high stress. Provide full penetration welds at splices. Design bridge girders to be end notched to fit over the end truck.

D102002 1.1.2 Bridge Rails

Select bridge rails from the sizes listed in CMAA #70, Table 4.13.3-4; Do not use solid stock material (square, round or rectangular) for bridge rails. Select the rails so that the allowable wheel loads are not exceeded by the design rated load on the hoist. Attach the rails to the bridge girders with pairs of adjustable rail clips spaced not more than 36 inches apart designed per the wheel loading design. Secure the

rail clips to the top flange of the bridge girder by welding. If rail joints cannot be avoided due to the length of the span, the joints shall be staggered and located directly over girder diaphragms. Provide rail joint gaps less than 1/32 of an inch. Weld creep bars in place at each end of the rail. Locate bridge rails above the shear center of the girder.

D102002 1.1.3 Walkways

Where necessary to access maintainable features, provide full length maintenance walkways on both girders with crossovers at the end trucks to allow movement between girders. At least one walkway shall have a means of boarding the crane and shall match the elevation and position of the access platforms located in the building.

D102002 1.1.4 Hoist and Trolley

Provide electric, air-powered, or manual hoist and trolley in compliance with the general requirements of paragraphs entitled BASIC REQUIREMENTS FOR CRANES OR MONORAILS WITH HOISTS/TROLLEYS above and the specific requirements of HOISTS below.

D102002 1.1.5 Bridge and Trolley End Trucks

Provide end trucks of box section design with wheels centered between the webs. Commercially available end trucks that are not box section may be used for bridge spans less than 40 feet. Equip end trucks for the bridge and trolley with rail sweeps that conform to ASME B30.2 extending below the rail head designed to move an obstruction.

D102002 1.1.6 Drop Lugs

Provide safety lugs or drop lugs to prevent bridge and trolley end trucks from dropping more than one inch or derailing in the event of wheel or axle failure.

D102002 1.1.7 End Stops

Provide end stops on the building runway and bridge girders designed and installed in accordance with AIST TR-13 to resist crane bumper and trolley bumper dynamic forces specified in AIST TR-6. Do not bolt end stops to the bridge rails.

D102002 1.1.8 Major Component Attachments for Lifting and Handling

Design and fabricate major components (e.g. bridge girders, end trucks, and trolleys) with structural or mechanical attachment points (lifting lugs, safety hoist rings, hoist rings or approved equivalent) when they are to be lifted or handled by suspended rigging.

D102002 1.2 TOP RUNNING BRIDGE, UNDERRUNNING HOIST SINGLE GIRDER CRANE

Provide a top running bridge, underrunning hoist/trolley crane with hoist and trolley complete, tested and ready for operation. The crane, hoist and trolley must be electrically, pneumatically or manually powered in compliance with the Project Program. Crane, hoist, trolley, equipment, materials, design, installation, examination, inspection, and workmanship must be in accordance with the applicable requirements, (shall statements) and recommendations (should statements), ASME B30.17, and MH 27.1, Duty Class C, as modified and supplemented by this specification. Provide the following bridge/ girder crane components in addition to the general requirements of the paragraphs entitled BASIC REQUIREMENTS FOR CRANES OR

MONORAILS WITH HOISTS/TROLLEYS above.

D102002 1.2.1 Bridge Girder

Provide bridge girders for single girder cranes not to exceed 50 feet in any single span. Provide a bridge girder of specially designed trackage in accordance with MH 27.1 Duty Class C, e.g., patented track beam constructed from welded steel components. Minimize splices in the bridge girder and avoid splices in locations of high stress. Provide full penetration welds at splices. Design bridge girders to be end notched to fit over the end truck.

D102002 1.2.2 Hoist and Trolley

Provide electric, air-powered, or manual hoist and trolley in compliance with the general requirements of the paragraphs entitled BASIC REQUIREMENTS FOR CRANES OR MONORAILS WITH HOISTS/TROLLEYS above and the specific requirements of HOISTS below.

D102002 1.2.3 Bridge End Trucks

Provide end trucks of box section design with wheels centered between the webs except that commercially available end trucks that are not box section may be used for bridge spans less than 40 feet. Equip end trucks with rail sweeps that conform to ASME B30.17 extending below the rail head designed to move an obstruction.

D102002 1.2.4 Drop Lugs

Provide safety lugs or drop lugs or a functionally equivalent feature on the trolley frame and end truck frames to prevent a drop of more than one inch in the event of wheel or axle failure.

D102002 1.2.5 Trolley Stops

Provide extended wrap-around trolley frame plates or similar to contact the end stops. The trolley wheels shall not contact the end stops.

D102002 1.2.6 End Stops

Provide end stops on the bridge runway designed and installed in accordance with AIST TR-13 to resist crane bumper dynamic forces specified in AIST TR-6. Trolley end stops may be the standard product of the bridge girder manufacturer.

D102002 1.2.7 Major Components Attachments for Lifting and Handling

Design and fabricate major components (e.g. bridge girders, end trucks, and trolleys) with structural or mechanical attachment points (lifting lugs, safety hoist rings, hoist rings or approved equivalent) when they are to be lifted or handled by suspended rigging

D102002 1.3 UNDERRUNNING BRIDGE, UNDERUNNING HOIST, SINGLE GIRDER CRANE

Provide an underrunning single girder bridge crane with underrunning hoist and trolley complete, tested and ready for operation. The crane, hoist and trolley must be electrically, pneumatically or manually powered in compliance with the Project Program. Crane, hoist, trolley (carrier), end trucks, equipment, materials, installation, examination, inspection, and workmanship must be in accordance with the applicable requirements of ASME B30.11, and MH 27.1, Duty Class C, as modified and supplemented by this specification. Crane girder and runway tracks must be patented track.

Provide the following bridge/girder crane components in addition to the general requirements in the paragraphs entitled BASIC REQUIREMENTS FOR CRANES OR MONORAILS WITH HOISTS/TROLLEYS components above.

D102002 1.3.1 Bridge Girder

Provide bridge girders for single girder cranes not exceed 50 feet (except top running multiple girder cranes) in any single span. Provide a bridge girder of specially designed trackage in accordance with MH 27.1 Duty Class C, e.g., patented track beam constructed from welded steel components. Minimize splices in the bridge girder and avoid splices in locations of high stress. Provide full penetration welds at splices.

D102002 1.3.2 Runway Rails

Provide runway rails in accordance with MH 27.1 of length and span to meet the requirements of the facility final design. Attachment to overhead structures or building columns must be as shown in the Project Program without exceeding design loads.

D102002 1.3.3 Hoist and Trolley

Provide electric, air-powered, or manual hoist and trolley in compliance with the general requirements of the paragraphs entitled BASIC REQUIREMENTS FOR CRANES OR MONORAILS WITH HOISTS/TROLLEYS above and the specific requirements **HOISTS** below.

D102002 1.3.4 Drop Lugs

Provide safety lugs or drop lugs or a functionally equivalent feature on the trolley frame and end truck frames to prevent a load drop of more than one inch or derailing in the event of wheel or axle failure.

D102002 1.3.5 Stops

Provide extended wrap-around trolley frame plates or similar to contact the trolley end stops. The trolley wheels shall not contact the end stops. End stops on the bridge and trolley runway may be the standard product of the runway and bridge girder manufacturer.

D102003 MONORAILS

Provide a monorail system with hoist and trolley complete, tested and ready for operation. The hoist and trolley must be electric, pneumatic, manual or push operation as indicated in the Project Program. Crane, hoist, trolley, equipment, materials, installation, examination, inspection, and workmanship must be in accordance with the applicable requirements of ASME B30.11 and MH 27.1, Duty Class C, as modified and supplemented by this RFP. Monorail must be patented track. In addition to the general requirements of the paragraphs entitled BASIC REQUIREMENTS FOR CRANES OR MONORAILS WITH HOISTS/TROLLEYS above, the following design requirements apply:

D102003 1.1 HOIST AND TROLLEY

Provide electric, air-powered, or manual hoist and trolley in compliance with general requirements of the paragraphs entitled BASIC REQUIREMENTS FOR CRANES OR MONORAILS WITH HOISTS/TROLLEYS above and the specific requirements of HOIST below.

D102003 1.2 MONORAIL BEAM

Provide the monorail beam of specially designed trackage in accordance with MH 27.1 Duty Class C, e.g., patented track beam. Provide standard catalog devices for connection of the track to the indicated supporting structures. If track manufacturer's catalog devices are not provided for this suspension system, complete shop drawings and calculations for each custom suspension device must be submitted for review.

D102003 1.3 DROP LUGS

Provide safety lugs (drop stops) or a functionally equivalent feature on the trolley frame to limit trolley drop to 1 inch in the event of wheel or axle failure.

D102003 1.4 TROLLEY STOPS

Provide trolley stops to stop trolley motion at both ends of the monorail. Extended wrap-around trolley frame plates or similar to contact the end stops. The trolley wheels shall not contact the end stops.

D102003 1.5 END STOPS

End stops may be the standard design of the monorail manufacturer.

D102004 HOIST

Comply with the packaged hoist units design requirements of ASME HST-1 (electric chain), HST-2 (hand chain), HST-4 electric wire rope), HST-5 (pneumatic chain) or HST-6 (pneumatic wire rope), with modifications as specified herein. Comply with the safety requirements of ASME B30.16 on all hoists.

D102004 1.1 CAPACITY

Provide the hoist minimum rated load capacity as required by the Project Program. Mark the hoist capacity in pounds on both sides of the hoist or load block. Size of lettering must be easily read from the floor.

D102004 1.2 ELECTRIC POWERED WIRE ROPE HOIST(S)

Provide electric wire rope hoists to comply with "should" and "shall" statements of AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) B30.16 and ASME HST-4, Class H3 or higher, except as modified and supplemented herein. Provide double-reeved wire rope type hoist reeving systems.

D102004 1.2.1 Hoist Brakes

Equip each hoist with one electro-mechanical brake plus a mechanical load brake, each with a minimum torque rating of 131.25% of the rated motor torque. Provide adjustable brake torque settings on the electro-mechanical brakes. The electromechanical brake and mechanical load brake each must be able to independently stop and hold the maximum test load. Electro-mechanical hoist brakes must be provided with a manual, self-return to ON, release mechanism. Maintained OFF, release mechanisms are not permitted. Design all electro-mechanical hoist brakes to permit easy access for inspection and adjustment.

D102004 1.2.2 Hoist Limits

Provide electric powered wire rope hoist(s) limits as follows:

a. Provide two upper limit switches. Provide geared control circuit type primary switches (rope guide actuated limit switches are not

acceptable). When the primary upper limit is reached, the operator must still be able to lower the block out of the upper limit switch. Lowering of the block must automatically reset the primary limit switch. The hoist secondary upper limit switch must be a mechanical block actuated control circuit type limit switch. The block actuated switch must remove all power from the affected hoist drive motor and brake independent of the hoist drive controller, utilizing a hoist line contactor, and set the brake when the secondary upper limit is reached. Provide a spring-returned three position keyed bypass switch on the hoist control panel to bypass the hoist limits. The far right position must allow resetting of the secondary upper limit switch prior to resuming operation. During resetting of the secondary limit, the hoist must operate in the lowering direction only. The far left position must allow bypassing of the primary upper limit switch to allow the secondary limit switch to be tested on a periodic basis. The center position of the bypass switch must be the NORMAL position with neither upper limit being bypassed.

b. Provide a geared control circuit type hoist lower limit switch. When the lower limit is reached, the operator must still be able to raise the block. Automatically reset the limit switch when the block is raised.

D102004 1.3 ELECTRIC POWERED CHAIN HOIST(S)

Provide electric powered chain hoists to comply with "should" and "shall" statements of AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) B30.16 and ASME HST-1, Class H3 or higher, except as modified herein and supplemented herein.

D102004 1.3.1 Hoist Brakes

Equip the hoist with one electro-mechanical brake plus a mechanical load brake, each with a minimum torque rating of 131.25% of the rated motor torque. Provide adjustable brake torque setting on electro-mechanical brakes. The electromechanical brake and mechanical load brake each must be able to independently stop and hold the maximum test load. Provide electro-mechanical hoist brakes with a manual, self-return to ON, release mechanism. Maintained OFF, release mechanisms are not permitted. Design all electro-mechanical hoist brakes to permit easy access for inspection and adjustment.

D102004 1.3.2 Chain Container

Equip chain hoists of 10 foot (3 meters) lift or more with a fabric or corrosion resistant metal load chain container.

D102004 1.3.3 Overtravel Limits

Provide a mechanical block actuated control circuit type upper limit switch or a chain stop with a geared upper limit switch to prevent two blocking of the hoist.

D102004 1.3.3.1 Block Actuated Switch

Provide a block actuated switch that does the following:

a. Remove all power from the affected hoist drive motor and brake independent of the hoist drive controller, utilizing a hoist line contactor, and set the hoist brake.

b. Include a spring-returned reset switch on the operator's

controller to allow resetting the switch to resume hoist operation. When the spring-returned switch is activated but prior to exiting the limit switch, the hoist must operate only in the lowering direction.

D102004 1.3.3.2 Geared Upper Limit Switch

Provide a geared upper limit switch that does the following:

a. Provide a control circuit type and when reached, allow the operator to lower the block out of the limit. Automatically reset the limit switch when the block is lowered.

b. Include a spring-returned keyed bypass switch on the hoist control panel to bypass the limit for functional testing of the chain stop.

D102004 1.3.3.3 Geared Lower Limit Switch

Provide a geared control circuit type hoist lower limit switch or chain stop. When the lower limit is reached, the operator must still be able to raise the block. Automatically reset the limit switch when the block is raised. If a geared lower limit switch is provided, then a chain stop is still required to prevent the load chain from running out of the hoist at its fully extended position.

D102004 1.4 PNEUMATIC POWERED WIRE ROPE HOIST(S)

Provide pneumatic powered wire rope hoists that comply with all "should" and "shall" statements of AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) B30.16 and ASME HST-6 Duty Class A4. Provide double-reeved wire rope hoist type reeving system.

D102004 1.4.1 Hoist Brakes

Equip the hoist with a braking system that can stop and hold 131.25% of the rated hoist capacity. The hoist braking system must be able to prevent uncontrolled lowering of the load in the event of a loss of air supply. Provide hoist brakes with a manual, self-return to ON, release mechanism. Maintained OFF, release mechanisms are not permitted. Design hoist brakes to permit easy access for inspection and adjustment.

D102004 1.5 PNEUMATIC POWERED CHAIN HOIST(S)

Provide hoist or hoist/trolley unit that complies with all "should" and "shall" statements of AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) B30.16 and the American Society of Mechanical Engineers (ASME) HST-5, Duty Cycle A4.

D102004 1.5.1 Hoist Brake

Design the hoist braking system to prevent an uncontrolled lowering of the load in the event of a loss of air supply, and can stop and hold 131.25% of rated capacity. Provide hoist brakes with a manual, self-return to ON, and release mechanism. Maintained OFF, release mechanisms are not permitted. Design hoist brakes to permit easy access for inspection and adjustment.

D102004 1.5.2 Chain Container

Equip chain hoists of 10 foot (3 meters) lift or more with a fabric or corrosion resistant metal load chain container

D102004 1.6 MANUAL HOIST WITH TROLLEY

Provide hoist or hoist/trolley unit that complies with all "should" and "shall" statements of AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) B30.16 and ASME HST-2.

D102004 1.6.1 Hoist Brake

Provide a hoist mechanical load brake that can stop and hold 131.25% of rated capacity.

D102004 1.6.2 Chain Container

Equip chain hoists of 10 foot (3 meters) lift or more with a fabric or corrosion resistant metal load chain container

D102004 1.6.3 Hoist Overload Limiting Device

Equip the hoist with a means to prevent destructive overloads.

D1030 ESCALATORS AND MOVING WALKS

Comply with ASME A17.1 and ASME A17.2.

D103001 ESCALATORS

Comply with ASME A17.1 and ASME A17.2.

D103002 MOVING WALKS

Comply with ASME A17.1 and ASME A17.2.

D109002 CONVEYORS

Comply with ASME B20.1, *Safety Standards for Conveyors and Related Equipment*.

-- End of Section --

SECTION D20

PLUMBING
09/15

D20 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

D20 1.1 NARRATIVE

This section must be used in conjunction with all parts of the Design Build (D/B) Request for Proposal (RFP) to determine the full requirements of this solicitation.

This section includes the construction of interior plumbing systems. This section covers installations inside the facility and out to the five foot line. See Section G30, *Site Mechanical Utilities*, for continuation of systems beyond the five foot line.

D20 1.2 PLUMBING DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

D20 1.2.1 Government Standards

Federal Energy Management Program (FEMP)

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-401-01, Mechanical Engineering UFC 3-420-01, Plumbing Systems)
UFC 1-200-02	High Performance and Sustainable Buildings

D20 1.3 DESIGN SUBMITTALS

Design Submittals shall be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures* and UFC 3-401-01, *Mechanical Engineering*.

D20 1.4 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS section Z10, *General Performance technical Specifications.* In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

Fixtures, equipment, and OMSI information for all equipment and fixtures.

D2010 PLUMBING FIXTURES

Plumbing fixtures shall be provided in accordance with the IBC, IPC, and as specified. Provide EPA's "WaterSense" labeled fixtures.

D201001 WATER CLOSETS

D201001 1.1 FLUSH VALVE WATER CLOSETS

ASME A112.19.2, white vitreous china, siphon jet. Provide ASME A112.19.5 trim. EPA "WaterSense" labeled. Provide self-closing metering type flush valve, unless electronic flush control is specified in the ESR Section D20. Electronic flush control shall conform to UL 1951 and ASSE 1037. Flush valve shall not exceed 1.28 GPF (4.8 LPF). Handicapped fixture mounting height and appurtenances shall be in accordance with ABA Accessibility Standard.

D201001 1.2 DUAL FUNCTION FLUSH VALVE WATER CLOSETS

ASME A112.19.2, white vitreous china, siphon jet. Provide ASME A112.19.5 trim. EPA "WaterSense" labeled. Provide self-closing metering type dual function flush valve, unless electronic flush control is specified in the ESR Section D20. Electronic flush control shall conform to UL 1951 and ASSE 1037. Dual function flush valve shall provide a flush of 0.8 to 1.1 GPF (3.0 to 4.2 LPF) or 1.28 GPF (4.8 LPF). Maximum flush volume shall not exceed 1.28 GPF (4.8 LPF). Handicapped fixture mounting height and appurtenances shall be in accordance with ABA Accessibility Standard.

D201001 1.3 FLUSH TANK WATER CLOSETS

ASME A112.19.2, white vitreous china, siphon jet. Provide ASME A112.19.5 trim. EPA "WaterSense" labeled. Water flushing volume of the water closet shall not exceed 1.28 GPF (4.8 LPF). Handicapped fixture mounting height and appurtenances shall be in accordance with ABA Accessibility Standard.

D201001 1.4 DUAL FUNCTION FLUSH TANK WATER CLOSETS

ASME A112.19.2, white vitereous china, siphon jet. Provide ASME A112.19.5 trim. EPA "WaterSense" labeled. Dual function flush tank water closet shall provide a dual flush that allows a flush of 0.8 to 1.1 GPF (3.0 to 1.6 LPF) or 1.28 GPF (4.8 LPF). Maximum flush tank volume per flush shall

not exceed 1.28 GPF (4.8 LPF). Handicapped fixture mounting height and appurtenances shall be in accordance with ABA Accessibility Standard.

D201002 URINALS

D201002 1.1 FLUSH VALVE TYPE URINALS

ASME A112.19.2, white vitreous china, wall-mounted, wall outlet, siphon jet, integral trap, extended side shields. EPA "WaterSense" labeled. Provide large diaphragm (not less than 2.625 inches (66 mm) upper chamber inside diameter at the point where the diaphragm is sealed between the upper and lower chambers) flush valve of chrome plated cast brass conforming to ASTM B 584, including vacuum breaker and angle (control-stop) valve. Maximum flush valve volume per flush shall not exceed 0.125 gallons per flush (1.9 lpf). Provide ASME A112.19.5 trim and ASME 112.6.1M concealed chair carriers. Provide self-closing metering type flush valve, unless electronic flush control is specified in the ESR Section D20. Electronic flush control shall conform to UL 1951 and ASSE 1037.Handicapped fixture mounting height and appurtenances shall be in accordance with UFAS, ADAAG and ABAAS.

D201002 1.2 NON WATER USE TYPE URINALS

ASME A112.19.2M, white vitreous china, wall-mounted, wall outlet, non-water using, integral drain line connection, with sealed replaceable cartridge or integral liquid seal trap insert. The urinal and trap assembly shall maintain a sufficient barrier of a biodegradable immiscible liquid to provide the trap seal and inhibit the backflow of sewer gases. For urinals that use a replaceable cartridge, provide four additional cartridges for each urinal installed. Provide an additional quart of biodegradable liquid for each urinal installed. Provide ASME A112.6.1M concealed chair carriers. Installation and testing shall be in accordance with the manufacturers’ recommendations. Drain lines that connect to the urinal outlet shall not be made of copper tube or pipe. Urinal design and installation shall be ADA compliant. Slope the sanitary sewer branch line for non-water use urinals a minimum of 1/4-inch per foot. Manufacturer shall provide an operating manual and on-site training for the proper care and maintenance of the urinal.

D201003 LAVATORIES

D201003 1.1 COUNTERTOP LAVATORIES

Unless integral bowl is specified elsewhere, lavatories shall be white, ASME A112.19.2M vitreous china lavatories with minimum dimensions of 20 inches (508 mm) wide x 18 inches (457 mm) front to rear, and self-rimming type. Provide ASME 112.18.1M copper alloy centerset faucets unless self closing metering or electronic control is specified in ESR section D20. Faucets shall be EPA "WaterSense" labeled. Provide with aerator, adjustable P-traps, and perforated grid strainers, unless pop-up drain fittings are specified in ESR section D20.

D201003 1.2 WALL-MOUNTED LAVATORIES

ASME A112.19.1M, white enameled cast-iron or ASME A112.19.2M white vitreous china with ASME A112.6.1M concealed arm carrier support, with minimum dimensions of 20 inches wide by 18 inches (508 mm wide by 457 mm) front to rear. Provide ASME 112.18.1M copper alloy centerset faucets unless self closing metering or electronic control is specified in ESR section D20. Faucets shall be EPA "WaterSense" labeled. Provide with aerator, adjustable P-traps, and perforated grid strainers, unless pop-up drain fittings are specified in ESR section D20.

D201003 1.3 HANDICAPPED LAVATORIES

Same as Paragraphs 1.1 or 1.2, except height and appurtenances shall be in accordance with ABA Accessibility Standard.

D201004 SINKS

D201004 1.1 COUNTERTOP SINKS

ASME/ANSI A112.19.3M sink, 20 gage stainless steel with integral mounting rim, minimum dimensions of 33 inches (840 mm) wide for two compartment or 21 inches (560 mm) wide for one compartment by 21 inches (560 mm) front to rear, with ledge back and undersides coated with sound dampening material. Provide top-mounted ASME A112.18.1M copper alloy faucets, swing spout with aerator, and stainless steel drain outlets with cup strainers. Provide adjustable P-trap with drain piping to vertical vent stack. If specified in ESR section D20, provide UL 430 waste disposer unit in right compartment.

D201004 1.2 SERVICE SINKS

ASME A112.19.1M, white enameled cast-iron or ASME A112.19.2M white vitreous china, wall mounted and floor supported by wall outlet cast-iron P-trap, minimum dimensions of 22 inches (560 mm) wide by 18 inches (457 mm) front to rear with 9 inch (230 mm) splashback, and stainless steel rim guard. Provide ASME A112.18.1M copper alloy back-mounted combination faucets with vacuum breaker and 0.75 inch (20 mm) external hose threads.

D201004 1.3 MOP SINKS

Pre-cast terrazzo floor-mounted mop sink, 36 inches x 36 inches x 12 inches (914 mm x 914 mm x 305 mm) shall be made of marble chips cast in white Portland cement to a compressive strength of not less than 3625 PSI (25 mPa) 7 days after casting. Provide brass body drains with nickel bronze strainers cast integral with terrazzo. Provide stainless steel rim guard for mop sink. Provide chrome-plated exposed hot and cold water faucets ASME A112.18.1 wall-mounted copper alloy faucets swing spout with 3/4 inch (20 mm) hose connection, vacuum breaker, and pail hook. Provide mop hanger on wall above sink suitable for four mops.

D201004 1.4 LAUNDRY SINKS

IAPMO Z124.6, plastic, two compartment, minimum dimensions of 40 inches wide by 21 inches (1016 mm wide by 533 mm) front to rear, with floor-supported steel mounting frame secured to wall. Provide ASME A112.18.1 copper alloy centerset faucets, swing spout with aerator, and stainless

steel drain outlets with cup strainers, and 1.5 inch (40 mm) adjustable P-trap with drain piping to vertical vent stack.

D201005 SHOWERS/TUBS

D201005 1.1 ONE PIECE BATH AND SHOWER MODULES

IAPMO Z124.1.2, made of white fiberglass reinforced plastic (FRP) or acrylic with slip-resistant bathing surfaces, integral grab bar, and three walls integrally molded in one piece. Provide outlet at left or right as necessary to suit module arrangement. Provide pop-up drain fittings and adjustable P-trap. Bathtub and shower supply fittings shall be diverter type with body mounted from behind the wall. Provide tub fill over-rim spout with diverter.

D201005 1.2 SHOWER FLOORS

Precast terrazzo or Acrylic Shower Floors: Terrazzo shall be made of marble chips cast in white Portland cement to produce a compressive strength of not less than 3625 psi (25 MPa) 7 days after casting. Provide brass body drains with nickel bronze strainers cast integral with terrazzo.

D201005 1.3 BATHTUBS

ASME A112.19.1M white enameled cast-iron or porcelain steel bathtubs, recessed type, minimum dimensions of 56 inches (1424 mm) wide by 30 inches (762 mm) front to rear by 16 inches (406 mm) high with drain outlet for above-the-floor drain installation. Bathtub and shower supply fittings shall be diverter type with body mounted from behind the wall. Provide tub over fill rim spout with diverter.

D201005 1.4 SHOWER SUPPLY FITTINGS

ASME A112.18.1M, ball joint, self-cleaning, adjustable spray pattern shower heads, connected to concealed pipe connected to copper alloy pressure balance single control type mixing valves with front access integral screwdriver stops. Showerhead shall be EPA "WaterSense" labeled. Anchor the mixing valves and the pipe to each showerhead in wall to prevent movement.

D201005 1.5 HANDHELD SHOWER HEAD

ASSE 1014, adjustable spray hand-held shower head with swivel fitting, 60 inch (1524 mm) minimum flexible chrome plated copper alloy hose and in-line vacuum breaker. Provide push button flow control if specified in ESR section D20. Showerhead shall be EPA "WaterSense" labeled. Provide 25 inch (635 mm) grab bar with sliding spray holder that locks at any height.

D201006 DRINKING FOUNTAINS AND COOLERS

D201006 1.1 DRINKING FOUNTAINS

Wall mounted drinking fountain shall be constructed of white enameled cast iron with bubbler and push button control. Handicapped fixture mounting

height and appurtenances shall be in accordance with ABA Accessibility Standard.

D201006 1.2 ELECTRIC WATER COOLERS

ARI 1010, wall-mounted, bubbler style, air-cooled condensing unit, 4.0 gph (4.20 mL per second) minimum capacity, stainless steel splash receptor, double wall heat exchanger, and all stainless steel cabinet. Provide ASME A112.6.1M concealed wall hangers with thru-bolts and back plates. Handicapped fixture mounting height and appurtenances shall be in accordance with ABA Accessibility Standard.

D201090 EMERGENCY FIXTURES

Pressure-compensated tempering valve is required for emergency fixtures, with leaving water temperature setpoint adjustable throughout the range 60 to 95 degrees F (15.5 and 35 degrees C) unless cold water supply meets temperature criteria.

Where indicated in ESR section D20, provide packaged, UL listed, alarm system; including an amber strobe lamp, horn with externally adjustable loudness and horn silencing switch, mounting hardware, and waterflow switch, assembled and prewired for waterproof service within NEMA Type 3 or 4 enclosures or for explosion proof service within NEMA Type 7 or 9 enclosures.

D201090 1.1 EMERGENCY SHOWER

ISEA Z358.1, wall-mounted self-cleaning, non-clogging 10 inch (250 mm) diameter stainless steel deluge shower head with elbow, one inch (25 mm) full-flow stay-open ball valve with pull rod and 8 inch (200 mm) diameter ring or triangular handle, one inch (25 mm) interconnecting fittings.

D201090 1.2 EMERGENCY EYE & FACE WASH

ISEA Z358.1, wall-mounted self-cleaning, non-clogging eye and face wash with quick opening, full-flow valves, stainless steel eye and face wash receptor. Provide copper alloy control valves.

D201090 1.3 COMBINATION EMERGENCY SHOWER & EYEWASH

ISEA Z358.1, column mounted on a floor flange. Design combination unit so components can be operated individually from a common fixture supply line. Provide a self-cleaning, non-clogging 10 inch (250 mm) diameter stainless steel deluge shower head with elbow, full flow stay-open ball valve with pull rod and 8 inch (200 mm) diameter ring or triangular handle one inch (25 mm) interconnecting fittings. Provide a self-cleaning, non-clogging eye and face wash with quick opening, full-flow valves, stainless steel eye and face wash receptor. Provide copper alloy control valves.

D2020 DOMESTIC WATER DISTRIBUTION

D202001 PIPES & FITTINGS

D202001 1.1 COPPER

Use copper tubing and fittings for pipe sizes 4 inches (100 mm) or smaller. Use type L tubing above ground with either solder fittings, or press-on copper fittings. For buried piping, use type K tubing with either solder fittings, or press-on copper fittings

D202001 1.2 CHLORINATED POLYVINYL CHLORIDE (CPVC)

When specified in ESR section D20, provide CPVC pipe, fittings, and solvent cement per ASTM D 2846/D 2846M for sizes 4 inches (100 mm) and smaller. Provide transition union connections or threaded gate valve between metallic piping and CPVC piping.

D202002 VALVES & HYDRANTS

D202002 1.1 VALVES

Provide valves at water supplies to fixtures and to provide ease of maintenance as required in the IPC.

D202002 1.2 HOSE BIBBS & HYDRANTS

Use non-freeze wall hydrants where the winter design temperature is at or below freezing. Hose bibbs are acceptable for use elsewhere.

D202002 1.2.1 Hose bibbs

Angle type, copper alloy hose bibbs with vacuum breaker.

D202002 1.2.2 Wall Hydrants

Non-freeze, ASSE 1019, cast bronze, with vacuum breaker, locking shield and tee-handle.

D202003 DOMESTIC WATER EQUIPMENT

D202003 1.1 BACKFLOW PREVENTERS

Furnish proof that each make, model/design, and size of backflow preventer being furnished for the project is approved by and has a current “Certificate of Approval” from the Foundation for Cross-Connection Control and Hydraulic Research (FCCCHR)-USC. Listing of the particular make, model/design, and size in the current FCCCHR-USC will be acceptable as the required proof. Provide freeze protection for aboveground exterior applications in areas where the winter design temperature is at or below freezing.

D202003 1.2 WATER HEATERS

D202003 1.2.1 Electric Water Heaters

Electric water heaters with double heating element per UL 174 for water heaters with less than 120 gallons of storage and 200,000 btuh input. Provide water heater per UL 1453 for commercial water heaters with 120 gallons of storage or more and 200,000 btuh input or more. Water heaters shall be equipped with glass-lined steel tanks, high efficiency

type, insulated with polyurethane foam insulation, replaceable anodes, and adjustable range thermostat to allow hot water settings between 110 and 160 degrees F (43 and 71 degrees C). Water heater warranty shall be a minimum of 5 years.

D202003 1.2.2 Gas-Fired Water Heaters

High efficiency storage type water heaters per ANSI Z21.10.1 for water heaters with less than 120 gallons of storage and 200,000 btuh input. Provide water heater per ANSI Z21.10.3 for commercial water heaters with 120 gallons of storage or more and 200,000 btuh input or more. Water heaters shall meet AGA requirements. Water heaters shall be equipped with glass-lined steel tanks, polyurethane foam insulation, replaceable anodes, and adjustable range thermostat to allow hot water settings between 110 and 160 degrees F (43 and 71 degrees C). Water heater warranty shall be a minimum of 5years. Provide vent in accordance with NFPA 54.

D202003 1.2.3 Oil-Fired Water Heaters

UL 732 oil-fired water heaters with glass-lined steel tanks, high efficiency type, insulated with polyurethane foam insulation, replaceable anodes, with adjustable range thermostat to allow hot water settings between 110 and 160 degrees F (43 and 71 degrees C). Provide vent in accordance with NFPA 58. Oil-fired water heater system design shall be in accordance with NFPA 31.

D202003 1.2.4 Instantaneous Water Heater (Electric)

UL-499, heater(s) shall be of the modulating, under the sink, point-of-use type. Output temperature shall be adjustable from 40 degrees F to 160 degrees F. Heating elements shall be field replaceable. Unit(s) shall have a 10-year warranty.

D202003 1.2.5 Steam Heat Exchangers

Double wall copper tube domestic water heating elements constructed with air gap to atmosphere between the two walls using steam as the heating medium exterior of the heating elements. Provide posted operating instructions for water heaters.

D202003 1.2.6 Storage Tanks

AWWA D100, glass-lined vertical steel tanks, minimum of 125 psig (862 kPa) (gage) working pressure.

D202003 1.3 PUMPS

D202003 1.3.1 Inline Pumps

In-line circulator for service water distribution system. Factory assembled and tested pumps constructed of materials suitable for hot domestic water service.

D202003 1.3.2 Base Mounted Pumps

Potable water service, base mounted, end suction pumps with mechanical seals and drip-proof electric motors.

D202003 1.4 DOMESTIC WATER PRESSURE BOOSTER SYSTEM

Factory assembled, tested, and certified by a single manufacturer who assumes undivided responsibility for the system to include providing start-up services, two days instruction and furnishing related operations and maintenance manuals. Each building shall be provided with its own system. Each system will consist of a minimum of two pumps mounted on a single, welded structural steel base. Provide bladder type low-flow accumulator storage tank, lead-lag pump alternator selector switches and all related controls and alarms required for safe and proper system operation. Provide variable frequency drive pump operation.

D202003 1.5 EXPANSION TANKS

Steel expansion tank with polypropylene or butyl lined diaphragm at water heater.

D202003 1.6 WATER METERS

AWWA C701 turbine type, with register reading in liters and U.S. gallons.

D202004 INSULATION & IDENTIFICATION

D202004 1.1 PIPING INSULATION

Mineral fiber insulation on domestic hot water supply and recirculation piping. Insulate domestic cold water piping with cellular glass insulation (ASTM C 552, Type II, and Type III).

D202004 1.2 PIPING & EQUIPMENT IDENTIFICATION

In addition to the requirements in Section Z10, *General Performance Technical Specification*, provide laminated plastic nameplates for valves. Stop valves in supplies to fixtures will not require nameplates. Identify above ground pipe with the type of service and direction of flow. Letter size, lengths and colors shall be per ANSI A13.1.

D202005 SPECIALTIES

D202005 1.1 WASHING MACHINE CONNECTOR BOX

Recessed wall box fabricated of PVC plastic. Provide bronze dual washing machine valve with single lever shut-off.

D202005 1.2 VALVE BOXES

For each buried valve provide cast-iron, ductile-iron box of a suitable size. Provide cast-iron or ductile-iron cover for the box with the word "WATER" cast on the cover.

D202005 1.3 WATER HAMMER ARRESTORS

PDI WH201, water hammer arrestors in lieu of air chambers.

D202005 1.4 ICEMAKER CONNECTOR BOX

Recessed wall box fabricated of PVC plastic. Provide bronze shut-off valve.

D202090 OTHER DOMESTIC WATER SUPPLY

D202090 1.1 SUPPORTS

Provide piping supports in accordance with the IPC.

D202090 1.2 INSPECTIONS

Prior to initial operation, inspect piping system for compliance with drawings, specifications, and manufacturer's submittals.

D202090 1.3 DISINFECTION

Upon completion of the installation, disinfect all systems per the IPC.

D202090 1.4 PLUMBING SYSTEMS TESTING

Upon completion of the installation test all systems per the IPC.

D2030 SANITARY WASTE

D203001 WASTE PIPE & FITTINGS

D203001 1.1 BELOW-GROUND PIPING

Cast iron hub and spigot pipe and fittings, rubber compression gasket joints. Where approved for use by the local authority and IPC, plastic PVC or ABS piping, fittings, and solvent cement per ASTM D 2665 or ASTM D 2661 may be provided.

D203001 1.2 ABOVE-GROUND PIPING

Cast-iron hubless pipe and fittings, CISPI 301 with CISPI 310 couplings. Where approved for use by the local authority and IPC, plastic PVC or ABS piping, fittings, and solvent cement per ASTM D 2665 or ASTM D 2661 may be provided. Plastic piping shall be equipped with approved firestopping devices as required by code.

D203001 1.3 CLEANOUTS

Provide cleanouts as required by the IPC. Material shall be consistent with the piping system materials.

D203002 VENT PIPE & FITTINGS

Cast-iron hubless pipe and fittings, CISPI 301 with CISPI 310 couplings. Where approved for use by the local authority, IPC and indicated in ESR Section D20, plastic PVC or ABS piping, fittings, and solvent cement per ASTM

D 2665 or ASTM D 2661. PVC piping shall be equipped with approved firestopping devices as required by code. Single drainage/vent stack systems (such as Philadelphia system) and mechanical air admittance valves are not acceptable.

D203003 FLOOR DRAINS

Floor drains shall be flush strainer or extended rim type as required by the IPC. Provide in mechanical rooms, restrooms, fire pump room, laundry room, and plumbing chase areas. Provide floor sinks in kitchens. Provide floor sinks where required for interior air handling unit condensate drains.

D203004 SANITARY & VENT EQUIPMENT

D203004 1.1 PUMPS

203004 1.1.1 Submersible Sump Pumps

Factory assembled and tested submersible type pumps for operation under water.

203004 1.1.2 Sewage Pumps

FS A-A-50555, single or duplex type to meet demand. Duplex types shall be provided with automatic controls to alternate the operation from one pump to the other.

D2040 RAIN WATER DRAINAGE

D204001 PIPE & FITTINGS

D204001 1.1 ABOVE-GROUND PIPING

Cast iron hubless pipe and fittings, CISPI 301 with CISPI 310 couplings. Where approved for use by the local authority, IPC and indicated in ESR Section D20, plastic PVC or ABS piping, fittings, and solvent cement per ASTM D 2665 or ASTM D 2661 may be used. PVC piping shall be equipped with approved firestopping devices as required by code. Size and install piping in accordance with the IPC.

D204001 1.2 BELOW-GROUND PIPING

PVC or ABS pipe to convey the roof drainage from downspouts to a manhole or catch basin in the drainage system. Size and install piping in accordance with the IPC.

D204002 ROOF DRAINS

Roof drains shall conform to ASME A112.6.4, with dome and integral flange, and shall have a device for making a watertight connection between roofing and flashing.

D204003 RAIN WATER DRAINAGE EQUIPMENT

Where required by building design, provide expansion joint(s) of proper size to receive the conductor pipe. The expansion joint shall consist of a heavy cast-iron housing, brass or bronze sleeve.

D204004 INSULATION & IDENTIFICATION

Mineral fiber insulation on all drainage piping that may be subject to condensation. Provide a vapor retarder. Identify aboveground pipe with the type of service and direction of flow. Letter size, lengths and colors shall be per ANSI A13.1.

D2090 OTHER PLUMBING SYSTEMS

D209001 SPECIAL PIPING SYSTEMS

D209001 1.1 NATURAL GAS PIPING

Conform to requirements of the local natural gas utility and ASME B31.8, *Gas transmission and Distribution Piping Systems*, for exterior piping. Conform to requirements of NFPA 54, *National Fuel Gas Code*, for interior gas piping. Provide meter and pressure regulator in accordance with the requirements of the local utility. Provide earthquake valve where required by code.

D209002 ACID WASTE SYSTEMS

Acid-resistant DWV pipe, fittings, and couplings with mechanical, bell and spigot, or fusion type joints. Material for buried piping and aboveground piping shall be silicon-iron composition. Borosilicate glass pipe and fitting may be provided for aboveground piping where acid composition dictates, except vent piping through and above roofs shall be silicon-iron composition. Provide cleanouts and drains as specified for DWV piping, except material shall be silicon-iron composition.

D209003 INTERCEPTORS

D209003 1.1 OIL/WATER SEPARATOR

Oil/water separator, where required, in accordance with the IPC and with a minimum flow capacity to meet system demand.

D209003 1.2 GREASE INTERCEPTORS

Provide in accordance with the IPC and PDI G 101.

D209005 COMPRESSED AIR SYSTEM (NON-BREATHING)

D209005 1.1 AIR COMPRESSOR

Factory packaged electric motor driven, duplex air compressor including manufacturer’s standard air filter, oil filter, and plug drain. Air compressor, aftercooler, and receiver shall be factory packaged as a unit. Receiver tank shall be per ASME PBVC Sec. VIII D1, labeled and rated for 125 PSI (862 kPa) gage, equipped with required valves and trimmings, including gage and automatic drain valve and ASME BPVC

pressure safety relief valve. Air compressor and receiver shall be sized in accordance with the Compressed Air and Gas Institute (CAGI) guidelines. Locate air compressor away from noise sensitive areas.

D209005 1.2 REFRIGERATED AIR DRYER

Low-pressure compressed air dryer of the mechanical refrigeration type, equipped with an automatic temperature shutdown switch to prevent freezing, a regenerative air-to-air exchanger (as standard with the manufacturer), and a main compressed air cooling exchanger. Refrigeration system shall use non-CFC refrigerant and shall cool compressed air to dry the air. Dryer operating pressure shall be not less than 125 PSI (862 kPa) gage. Dryer size shall be based on system pressure, the entire system air flow, and provide air with a dew point 5 degrees F (-15 degrees C) lower than the most stringent equipment or outlet requirement. The pressure drop of the dryer shall not exceed 2 PSI (13.8 kPa) gage.

D209005 1.3 COMPRESSED AIR PIPING SYSTEM

Piping shall conform to the requirements of ASME B31.1 for materials, assembly, and testing. Piping shall be steel, black seamless schedule 40 carbon steel per ASTM A53 with threaded fittings or copper tubing per ATM B 88, Type K or Type L, hard drawn, Class 1, with wrought copper or bronze fittings. Provide compressed air drops in locations to facilitate work required with quick disconnects throughout the work areas to allow connection of such as pneumatic tools and air guns. Each air drop shall be equipped with a filter/moisture separator, pressure gauge, air pressure regulator, and a quick-disconnect.

-- End of Section --

SECTION D30

HVAC
09/15

D30 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

D30 1.1 NARRATIVE

This section includes the construction of interior mechanical systems. This section covers installations inside the facility and out to the five foot line. See Section G30, *Site Civil/Mechanical Utilities*, for continuation of systems beyond the five-foot line.

D30 1.2 MECHANICAL DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

D30 1.2.1 Government Standards

Federal Energy Management Program (FEMP)

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-401-01, Mechanical Engineering UFC 3-420-01, Plumbing Systems)
UFC 1-200-02	High Performance and Sustainable Buildings
UFC 3-440-01	Facility-Scale Renewable Energy Systems

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS 01 78 24.05 20, *Electronic Facility Operation and Maintenance Support Information*

UFGS 23 05 93, *Testing, Adjusting, and Balancing for HVAC*

UFGS 23 09 23.13 20, *BACNET Direct Digital Control Systems for HVAC*

UFGS 23 81 23.00 20, *Computer Room Air Conditioning Units*

D30 1.3 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

a. Verification of satisfactory HVAC system performance shall be via Performance Verification Testing, as detailed in this section.

b. The Government reserves the right to witness all Acceptance Tests and Inspections, review data, and request other such additional inspections and repeat tests as necessary to ensure that the system and provided services conform to the stated requirements.

c. The Qualified Testing Organization shall provide the Acceptance Tests and Inspections test plan and perform the acceptance tests and inspections. Test methods, procedures, and test values shall be performed and evaluated in accordance with appropriate standards, and the manufacturer's recommendations. Equipment shall be placed in service only after completion of required tests and evaluation of the test results have been completed. Contractor shall supply to the testing organization complete sets of shop drawings, settings of adjustable devices, and other information necessary for an accurate test and inspection of the system prior to the performance of any final testing. Perform acceptance tests and inspections on Computer Room Air Conditioning Units, Direct Digital Control System, and HVAC Testing/Adjusting/Balancing.

D30 1.4 HVAC COMMISSIONING

Commission the HVAC systems per the Commissioning Plan as required by UFGS Specification Section 01 45 00.05 20, Design & Construction Quality Control. HVAC system commissioning shall coordinate with and incorporate the testing, reporting, training & O&M documentation requirements of UFGS 23 05 93, Testing, Adjusting, and Balancing for HVACand UFGS 23 09 23.13 20, BACnet Direct Digital Control Systems for HVAC.

D30 1.5 DESIGN SUBMITTALS

Design Submittals shall be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures*, and UFC 3-401-01, *Mechanical Engineering*.

In addition, UFGS sections listed below or in the body of the PTS text are to be used by the Designer of Record (DOR) as a part of the design submittal. If the UFGS products or systems are applicable to the project, the DOR shall edit these referenced UFGS sections and submit them as a part of the design submittal specification. Edit the specification

sections in accordance with the limitations stated in PTS section Z10, *General Performance Technical Specifications*.

UFGS 01 78 24.00 20, *Electronic Facility Operation and Maintenance Support Information*

UFGS 23 09 23.13 20, *BACnet Direct Digital Control Systems for HVAC*

UFGS 23 05 93, *Testing, Adjusting, and Balancing for HVAC*

UFGS 48 14 13.00 20, *Solar Liquid Flat Plate Collectors*

D30 1.6 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS section Z10, *General Performance Technical Specifications*. In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

Solar hot water heating system fixtures and equipment, and OMSI information for all equipment and fixtures.

D30 1.7 MOTORS

Single-phase fractional-horsepower alternating-current motors shall be high efficiency types corresponding to the applications listed in NEMA MG 11. Select polyphase motors based on high efficiency characteristics relative to the applications as listed in NEMA MG 10. Additionally, all polyphase squirrel-cage medium induction motors with continuous ratings shall meet or exceed energy efficient ratings per Table 12-10 of NEMA MG 1. Provide controllers for 3-phase motors rated 1 hp (0.75 kW) and above with phase voltage monitors designed to protect motors from phase loss and over/under-voltage. Provide means to prevent automatic restart by a time adjustable restart relay. For packaged equipment, the manufacturer shall provide controllers including the required monitors and timed restart. Provide reduced voltage starters for all motors 25 hp and larger.

D3010 ENERGY SUPPLY

D301001 1.1 OIL SUPPLY SYSTEM

Conform to requirements of International Mechanical Code for piping. Conform to requirements of NFPA 31 for testing. Contractor is responsible for providing the complete oil supply system to the facility, including any applications and permits.

D301001 1.2 OIL SUPPLY SYSTEM PIPING & EQUIPMENT

ANSI/ASTM A53 or A106 piping with associated ASME fittings or ASTM B88, type L or M copper tubing with ASME B16.26 flared fittings or compression type fittings. Provide welded fittings on piping below grade. Pumps that are not part of the burner assembly shall be positive displacement type. Provide oil filter prior to oil entering appliance or pump. Storage tanks shall meet the requirements of NFPA 31.

D301002 GAS SUPPLY SYSTEM

D301002 1.1 NATURAL GAS PIPING

Conform to requirements of the local natural gas utility and ASME B31.8, *Gas transmission and Distribution Piping Systems*, for exterior piping. Conform to requirements of NFPA 54, *National Fuel Gas Code*, for interior gas piping. Provide meter and pressure regulator in accordance with the requirements of the local utility. Provide earthquake valve where required by code. Contractor is responsible for providing the complete natural gas system to the facility, including any applications and permits.

D301002 1.2 MATERIALS AND EQUIPMENT

D301002 1.2.1 Aboveground Within Buildings

Black steel per ASTM A 53, Schedule 40, and associated ASME fittings threaded ends for sizes 2 inches (50 mm) and smaller; otherwise, plain end beveled for butt welding.

D301002 1.3 PRESSURE TESTS

Pressure test per NFPA 54 at 1.5 times maximum working pressure, but in no case less than 50 PSI (350 kPa).

D301002 1.4 PROPANE PIPING

If required, provide the same as specified for natural gas and comply with NFPA 58.

D301002 1.4.1 Underground

Polyethylene (PE) pipe conforming to ASTM D 2513 for 100 PSI (690 kPa) (gage) working pressure. Standard Dimension Ratio shall be 11.5 maximum. Provide detectable aluminum plastic backed tape or detectable magnetic plastic tape manufactured specifically for warning and identification of direct buried piping. Tape shall be detectable by an electronic detection instrument. Warning tape to be color coded with warning and identification of utility type imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (utility type) LINE BELOW" or similar wording. Color to be yellow for gas lines. Polyethylene Fittings shall be ASTM D 2683 socket fittings or ASTM D 2513 molded butt-fusion fittings.

D301002 1.5 PROPANE TANKS

If not provided by the propane provider, the tank material and installation shall comply with NFPA 58.

D301003 STEAM SUPPLY SYSTEM (FROM CENTRAL PLANT)

Refer to Section G30, *Site Civil/Mechanical Utilities*

D301004 HOT WATER SUPPLY SYSTEM (FROM CENTRAL PLANT)

Refer to Section G30, *Site Civil/Mechanical Utilities*

D301005 SOLAR ENERGY SUPPLY SYSTEM
Design and build each solar domestic hot water heating system meeting the requirements of UFC 3-440-01 *Facility-Scale Renewable Energy Systems*. Each system shall be fully integrated with the building DDC controls system.

Provide complete solar domestic hot water system designed and built by a single contractor who specializes in solar heated water systems. System shall be designed, built, and tested by this contractor who shall be responsible for the provided system to operate as proposed. This design-build contractor must be endorsed in writing, prior to system design, by the manufacturer of the solar plate collectors provided for this solicitation.

The solar domestic hot water system designer shall work with the building designers to optimize the roof area, slope and orientation available for solar domestic hot water. Coordinate with other solar systems utilizing the roof area such as photovoltaic systems.

Provide solar liquid flat plate collector systems to comply with the requirements specified in UFGS Section 48 14 13.00 20, *Solar Liquid Flat Plate Collectors*.

D3020 HEAT GENERATING SYSTEMS

D302001 BOILERS

If required, provide Boiler(s) type for the load capacity of the building as indicated in ESR Section D30.

D302001 1.1 REQUIREMENTS

Boiler shall be designed, tested, and installed per ASME CSD-1 (Controls and Safety Devices) and ASME BPVC (Boiler and Pressure Vessel Code). The boiler shall meet the requirements of the UL 795, ANSI Z83.3, and ASME CSD. Oil-fired boiler system design shall be in accordance with NFPA 31.

D302001 1.2 BOILER BURNER

Burners provided shall be the make, model and type certified and approved by the manufacturer of the boiler being provided. Burner controls and flame safety equipment shall conform to either ASME CSD-1 or NFPA 58 as dictated by the input.

D302001 1.3 BOILER TRIM AND CONTROL EQUIPMENT

D302001 1.3.1 Boiler Controls

Mount controls, including operating switches, indicating lights, gages, alarms, motor starters, fuses, and circuit elements of the control systems, on a single control panel mounted on the burner or separate from the burner. Location of the separate panel shall be at the side of the boiler or in a freestanding control cabinet away from the front of the boiler. When using BACnet communication protocol, use the ASHRAE 135 protocol without gateways to interface with the BACnet Direct Digital

Control System in specification UFGS 23 09 23.13 20.

D302001 1.3.2 Boiler Trim

Comply with ASME BPVC SEC IV, ASME CSD-1, and additional appurtenances as specified herein.

D302001 1.3.3 Pressure Gages

Provide pressure gages with a scale equivalent to 1.5 times the outlet water pressure on supply water piping and return water piping.

D302001 1.3.4 Thermometers

Provide thermometers with a scale equivalent to 1.5 times the outlet water temperature on supply water piping and return water piping.

D302001 1.3.5 Drain Trapping

Provide drain valve and piping to a floor drain.

D302001 1.3.6 Air Vent Valve

Provide with screwed connection, stainless steel disk, and stainless steel seats to vent entrapped air.

D302001 1.4 STEAM BOILERS

Steam boilers shall meet the requirements of hot water boilers, except as follows.

D302001 1.4.1 Pressure Gages

Provide pressure gages with a scale equivalent to 1.5 times the outlet water pressure on boiler feedwater supply piping and condensate return water piping. Provide boiler steam pressure gage with scale equivalent to 1.5 times the boiler rated working pressure.

D302001 1.4.2 Thermometers

Provide thermometers with a scale equivalent to 1.5 times the outlet water temperature on boiler feedwater piping and return water piping.

D302001 1.5 BOILER STACK AND ACCESSORIES

Provide pre-manufactured, multi-wall stacks complying with NFPA 54 or NFPA 58 and UL-listed. Provide flue gas thermometer and mount in flue gas outlet.

D302001 1.6 BOILER STARTUP AND OPERATIONAL TESTS

D302001 1.6.1 Boiler Cleaning

Prior to startup, clean boiler(s) in accordance with ASME *Boiler and Pressure Vessel Code* and manufacturer's recommendations.

D302001 1.6.2 Operational Tests

Furnish the services of an engineer or technician approved by the boiler manufacturer for installation, startup, operational and safety testing. Demonstrate proper operability of combustion control, flame safeguard control, and safety interlocks.

D302002 FUEL-FIRED UNIT HEATERS

D302002 1.1 GAS-FIRED UNIT HEATERS

ANSI Z83.8 and AGA label. Equip each heater with individually adjustable package discharge louver. Provide with thermostat.

D302002 1.2 INFRARED HEATERS

ANSI Z83.8 and AGA label.

D302003 AUXILIARY EQUIPMENT

D302003 1.1 HEAT EXCHANGERS

Steam to hot water converter as required for the application. Provide factory assembled, u-tube units constructed in accordance with ASME BPVC for steam or hot water. Factory assembled, plate type heat exchangers may be provided for hot water.

D302003 1.2 CONDENSATE RETURN UNITS

Floor-mounted receiver and duplex pump unit.

D302004 EQUIPMENT THERMAL INSULATION

Insulate hot water pumps and equipment as suitable for the temperature and service in rigid block, semi-rigid board, or flexible unicellular insulation to fit as closely as possible to equipment.

D3030 COOLING GENERATING SYSTEMS

If coatings are indicated in ESR Section D30, provide with copper tube/copper fin construction or immersion applied, baked phenolic or other approved coating that passes the 3000 hour salt spray resistance test using the ASTM B117-90 procedure. Field applied coatings are not acceptable.

D303001 CHILLED WATER SYSTEMS

D303001 1.1 AIR-COOLED CHILLERS

Air-cooled chillers shall be type indicated in Project Program and meet the requirements of AHRI 550/590. Provide control panel with the manufacturers' standard controls and protection circuits. If DDC system

is required in project, provide a control interface for remote monitoring of the chiller's operating parameters, functions and alarms from the DDC control system central workstation. When using BACnet communication protocol, use the ASHRAE 135 protocol without gateways to interface with the BACnet DDC system in specification UFGS 23 09 13.13 20.

D303001 1.1.1 Stages

Provide continuous variable speed compressor adjustment to match actual load, or minimum of four stages of unloading at 25% per stage minimum for reciprocating, centrifugal, and scroll chillers. Provide reciprocating units with hot gas bypass.

D303001 1.1.2 Pressure Control

Provide head pressure control for cold temperature operation. Provide freeze protection for chiller and piping.

D303001 1.1.3 Coil Construction

Provide copper tube, copper fins with factory applied phenolic or equivalent coating for condenser coils. Provide manufacturer's optional louvered covers or hail guards for condenser coils to provide protection against vandalism, debris, or hail.

D303001 1.2 WATER-COOLED CHILLERS

Self-contained chiller meeting the requirements of AHRI 550/590. Provide control panel with the manufacturers' standard controls and protection circuits. If DDC system is required in project, provide a control interface for remote monitoring of the chiller's operating parameters, functions and alarms from the DDC control system central workstation. Provide automatic capacity-reduction system for stable operation from 100 to 10 percent of full load capacity. When using BACnet protocol, use the ASHRAE 135 protocol without gateways to interface with the BACnet DDC system in specification 23 09 23.13 20

D303001 1.3 COOLING TOWERS

Factory assembled, conforming to NFPA 214. Fire hazard rating for plastic impregnated materials shall not exceed 25. Provide Cooling Technology Institute 201 certification of tower capability and performance. Cooling Tower performance shall meet or exceed that listed in ASHRAE 90.1. Construct as indicated in ESR Section D30 with fill material of PVC formed sheets. Provide stainless steel hardware. Provide vibration cutout switch interlocked with the fan motor. Provide 2-speed or adjustable frequency drive fan motors. Provide work platform(s) at all locations in the tower that require periodic maintenance. For multi-cell installations, provide isolation valves on inlets and outlets of each cell.

D303001 1.4 CLOSED CIRCUIT COOLERS

Factory assembled, conforming to NFPA 214. Fire hazard rating for plastic impregnated materials shall not exceed 25. Provide Cooling Technology

Institute 201 certification of tower capability and performance. Cooler performance shall meet or exceed that listed in ASHRAE 90.1. Provide stainless steel hardware. Provide vibration cutout switch interlocked with the fan motor. Provide 2-speed or adjustable frequency drive fan motors. Meet OSHA safety requirements for stairs and handrails.

D303002 DIRECT EXPANSION SYSTEMS

If coatings are indicated in ESR Section D30, provide with copper tube/copper fin construction or immersion applied, baked phenolic or other approved coating that passes the 3000 hour salt spray resistance test using the ASTM B117-90 procedure. Field applied coatings are not acceptable.

D303002 1.1 HEAT PUMPS

D303002 1.1.1 Air to Air

Air-cooled, split system heat pumps with ducted air distribution. Provide units factory assembled, designed, tested, and rated in accordance with AHRI 210/240 or AHRI 340/360. Provide manufacturer's minimum recommended clearance around condensing units. Refrigerant piping size shall be per the manufacturer's recommendations. Insulate refrigerant piping suction lines and condensate drain.

D303002 1.1.2 Water Source

Factory assembled, designed, tested, and rated in accordance with AHRI/ISO 13256-1 or AHRI/ISO 13256-2. Unit shall be AHRI/ISO 13256-1 or AHRI/ISO 13256-2 certified, or listed in the AHRI/ISO 13256-1 or AHRI/ISO 13256-2 directory.

D303002 1.1.3 Ground-Coupled

Factory assembled, designed, tested, and rated in accordance with AHRI/ISO 13256-1 or AHRI/ISO 13256-2. Unit shall be AHRI/ISO 13256-1 or AHRI/ISO 13256-2 certified, or listed in the AHRI/ISO 13256-1 or AHRI/ISO 13256-2 directory. Ground-coupled heat pumps shall be connected to the heat exchanger by a closed loop ground source vertical well field. Design and installation of each well field shall comply with IGSHPA and ASHRAE Standards.

D303002 1.2 CONDENSING UNITS

Air-cooled, split system air conditioner with ducted air distribution. Provide units factory assembled, designed, tested, and rated in accordance with AHRI 210/240 or AHRI 340/360. Provide manufacturer's minimum recommended clearance around condensing units. Refrigerant piping size shall be per the manufacturer's recommendations. Condenser shall have copper coils with copper fins and with factory applied phenolic or equivalent coating.

D303002 1.3 DX VARIABLE AIR VOLUME (VAV) UNITS

Direct expansion equipment shall be specifically designed and manufactured for VAV applications. The same manufacturer shall provide central air handling units, VAV boxes/zone dampers and zone controls. Airflow through the evaporator coils shall not be modulated. Provide duct mounted zone control damper units with integral control box, designed for use with DX VAV packaged systems. Self-modulating air diffusers will not be allowed.

D303002 1.4 DUCTLESS SPLIT SYSTEM

Air-cooled, ductless split system. Provide units factory assembled, designed, tested, and rated in accordance with ARI 210/240. Provide manufacturer's minimum recommended clearance around heat pump or condensing units. Refrigerant piping size shall be per the manufacturer's recommendations. Insulate refrigerant piping suction lines and condensate drain.

D303002 1.5 VARIABLE REFRIGERANT FLOW SYSTEMS

The system shall consist of VRF heat pump units, branch circuit controllers, VRF fan coil units, and associated controls. The heat pump units shall be inverter driven and shall utilize R410A refrigerant. The branch circuit controllers shall include multiple branch connections allowing for simultaneous heating and cooling utilizing hot gas refrigerant or sub-cooled liquid. The total capacity of the branch controllers shall be between 50% and 150% of the rated capacity.

All refrigerant piping shall be sized and installed in strict compliance with the manufacturer's requirements. Refrigerant piping shall be clean, dry, and leak free. Prior to installation all refrigerant pipes shall remain sealed. During installation and prior to filling, nitrogen shall be used to maintain cleanliness and prevent oxidation and scaling while brazing. Each system shall be installed to provide proper oil return. Refrigerant piping shall be copper, ACR type, ASTM B280. All joints shall be sil-brazed. All thicknesses of piping shall remain the same throughout the system. Each refrigerant circuit shall be individually pressure tested and commissioned. Pressure testing shall be performed using nitrogen at 1-1/2 times the system operating pressure. Each system shall be designed to meet Refrigerant Piping and Heat Transfer Components ASME B31.9, Building Services Piping Code and shall be designed to allow for expansion and contraction.

D3040 DISTRIBUTION SYSTEMS

D304001 AIR DISTRIBUTION, HEATING & COOLING

D304001 1.1 DUCTWORK

Except as specified herein, provide ductwork constructed, braced, reinforced, installed, supported, and sealed per SMACNA standards.

D304001 1.1.1 Flexible Ducts

Use insulated flexible duct only for connections to air distribution devices to adapt to minor offsets. Flexible duct shall be UL 181 listed and per SMACNA 1966 duct construction standards with a minimum R

value of 4. Maximum length of flexible ductwork shall be 5 feet (1.5 meters).

D304001 1.1.2 Flexible Connections

Provide flexible connectors between fans and ducts.

D304001 1.1.3 Volume Dampers

Provide manual volume dampers in each branch take-off from the main duct to control air quantity except for primary supply ductwork on VAV systems. Dampers shall conform to SMACNA 1966 duct construction standards and shall be seal class "A" construction.

D304001 1.1.4 Fire Dampers

Fire dampers shall be rated per UL 555. Fire dampers shall be dynamic type rated for closure against a moving airstream. Provide fire dampers that do not intrude into the air stream when in the open position.

D304001 1.1.5 Smoke Dampers

Smoke dampers shall be rated per UL 555S.

D304001 1.1.6 Sound Attenuators

Fabricated attenuators that will reduce the rated sound pressure level of the fan down to at least 65 decibels in the 250 Hz (third octave band) center frequency by using a reference sound source calibrated in decibels of sound power at 10 to 12 watts. Maximum permissible pressure drop shall not exceed 0.63 inch of water (157 Pa).

D304001 1.2 LOUVERS & HOODS

D304001 1.2.1 Louvers

Louvers shall bear AMCA ratings seal for air performance and water penetration in accordance with AMCA 500L and AMCA 511. Louvers shall be constructed of anodized aluminum alloy or stainless steel. Provide birdscreens.

D304001 1.2.2 Hoods

Hoods shall be constructed of anodized aluminum alloy or stainless steel. Provide with birdscreens.

D304001 1.3 GRILLES, REGISTERS, & DIFFUSERS

Factory-finished grilles, registers, and diffusers. Exterior and exposed edges shall be rolled, or otherwise stiffened and rounded.

D304001 1.4 INSULATION

Provide external thermal insulation for all ductwork. Insulate ductwork in concealed spaces with blanket flexible mineral fiber. Insulate ductwork in Mechanical Rooms and exposed locations with rigid mineral fiber insulation.

Provide insulation with factory applied all-purpose jacket with integral vapor retarder. In exposed locations, provide a jacket with white surface suitable for painting. Flame spread/smoke developed rating for all insulation shall not exceed 25/50. Minimum insulation thickness shall be the minimum thickness required by ASHRAE 90.1. Insulate the backs of all supply air diffusers with blanket flexible mineral fiber insulation.

D304001 1.5 VAV BOXES

Pressure-independent type variable air volume units rated per AHRI 880. Boxes shall not be allowed to fully shut-off. Provide each box with a heating coil unless not required by space reheat or heating. Provide electronic controls.

D304001 1.6 VARIABLE AIR VOLUME VAV FAN-POWERED UNITS

Pressure-independent, fan powered, VAV units rated per AHRI 880 and UL listed. Provide each box with a heating coil. Provide electronic controls with speed controller, discharge volume control damper(s), and return/recirculation air frame and filter. If discharge dampers are not provided with the unit, coordinate installation with the sheet metal contractor. Insulate in accordance with ASHRAE 90.1.

D304002 STEAM DISTRIBUTION SYSTEMS

D304002 1.1 STEAM PIPING

Steam piping shall be ASTM A 106/A 106M or ASTM A 53/A 53M Grade B, Schedule 40, black steel, electric-resistance welded or seamless.

D304002 1.2 CONDENSATE RETURN PIPING

Condensate return piping shall be ASTM A 106/A 106M or ASTM A 53/A 53M, Grade B, Schedule 80, black steel, electric-resistance welded or seamless.

D304002 1.3 STEEL PIPE FITTINGS

For piping 2 inch (50 mm) and smaller, provide ASME B16.3 malleable iron screwed fittings or ASME B16.11 socket welding (Class 3000) or threaded type (Class 2000). Provide ASME B16.9 butt-welding fittings or ASME/ANSI B16.5 flanged type for piping 2-1/2 inch (63 mm) and larger.

D304002 1.4 INSULATION

Insulate steam and condensate return piping with mineral fiber or cellular glass insulation with all-purpose jacket.

D304002 1.5 STEAM PRESSURE REDUCING STATION

For each building, provide steam pressure reducing station(s).

D304002 1.6 STEAM TRAPS

Provide steam traps and accessories in accordance with UFC 3-401-01.

D304003 HOT WATER DISTRIBUTION SYSTEMS

D304003 1.1 HOT WATER PIPING

Hot water piping shall be electric resistance welded or seamless Schedule 40 black steel pipe conforming to ASTM A 53/A 53M. Piping 4 inch (100 mm) and smaller may be ASTM B 88 Type K or L copper.

D304003 1.2 STEEL PIPE FITTINGS

For piping 2 inch (50 mm) and smaller, provide ANSI/ASME B16.3 malleable iron screwed fittings or ASME B16.11 socket welding (Class 3000) or threaded type (Class 2000). Provide ASME/ANSI B16.9 butt-welding fittings or ASME/ANSI B16.5 flanged type for piping 2-1/2 inch (63 mm) and larger. Grooved joint pipe coupling systems of appropriate pressure rating are acceptable in lieu of welded or screwed fittings.

D304003 1.3 COPPER FITTINGS

ASME B16.18 cast bronze solder joint type or ASME B16.22 wrought copper solder joint type.

D304003 1.4 ISOLATION VALVES

Provide isolation valves on supply and return lines at take-offs for service to each building(s). Valves shall be located in valve boxes.

D304003 1.5 INSULATION

Insulate hot water piping with mineral fiber insulation with factory-applied all-purpose jacket. Provide aluminum metal wrap over insulation for all exterior piping.

D304003 1.6 VALVES

Provide shut off valves, appropriately sized relief valves, and appropriately sized balancing valves as necessary to balance water flows, protect components and isolate equipment for service and repairs.

D304003 1.7 APPURTENANCES

Provide appurtenances such as air separators, expansion tanks, suction diffusers, strainers, and other required features to allow for proper operation of hot water systems.

D304003 1.8 TEST PORTS

Provide test ports in piping at inlet and outlet of all major system components including boilers, pumps, and other equipment as required.

D304004 CHANGEOVER DISTRIBUTION SYSTEMS

Provide as specified for Hot Water Distribution Systems see D304003.

D304005 GLYCOL DISTRIBUTION SYSTEMS

Provide as specified for Chilled Water Distribution Systems see D304006.

D304006 CHILLED / CONDENSER WATER DISTRIBUTION SYSTEMS

D304006 1.1 ABOVEGROUND CHILLED AND CONDENSER WATER PIPING

Aboveground chilled water piping shall be electric resistance welded or seamless Schedule 40 black steel pipe conforming to ASTM A 53/A 53M. Piping 4 inch (100 mm) and smaller may be ASTM B 88 Type K or L copper.

D304006 1.2 STEEL PIPE FITTINGS

For piping 2 inch (50 mm) and smaller, provide ASME B16.3 malleable iron screwed fittings or ASME B16.11 socket welding (Class 3000) or threaded type (Class 2000). Provide ASME B16.9 butt-welding fittings or ASME/ANSI B16.5 flanged type for piping 2-1/2 inch (63 mm) and larger.

D304006 1.3 COPPER FITTINGS

ANSI B16.18 cast bronze solder joint type or ASME/ANSI B16.22 wrought copper solder joint type.

D304006 1.4 ISOLATION VALVES

Provide isolation valves on supply and return lines at take-offs for service to each building(s). Valves shall be located in valve boxes.

D304006 1.5 INSULATION

Insulate chilled water pumps and accessories for the temperature and service in rigid block, semi-rigid board, or flexible unicellular insulation to fit as closely as possible to equipment. Insulate above ground chilled water piping with cellular glass insulation (ASTM C 552, Type II, and Type III). Flexible unicellular insulation may be used on small piping runouts. Insulate condenser water piping with mineral fiber insulation. Provide all-purpose jacket with vapor retarder. Provide aluminum metal wrap over insulation for all exterior piping.

D304006 1.6 VALVES

Provide shut off valves, appropriately sized relief valves, and appropriately sized balancing valves as necessary to balance water flows, protect components and isolate equipment for service and repairs.

D304006 1.7 TEST PORTS

Provide test ports in piping at inlet and outlet of all major system components including chillers, pumps, and other equipment as required.

D304007 EXHAUST SYSTEMS

D304007 1.1 FANS

Fans shall be AMCA 210 certified, with AMCA seal. Fan bearings shall have a minimum average life of 200,000 hours at design operating conditions. Provide bird screens for outdoor inlets and outlets. Provide direct-drive type fans with means for verifying operation via the building DDC system or with speed controllers

D304007 1.2 IN-LINE FANS

UL-Listed centrifugal fans.

D304007 1.3 WALL FANS

Propeller fans with fan guards. Provide centrifugal fans with backdraft dampers and wall bracket.

D304007 1.4 ROOFTOP FANS

UL-Listed centrifugal fans with roof curb.

D304007 1.5 UTILITY SETS

AMCA 210 with AMCA seal.

D304007 1.6 BATHROOM FANS

UL 507 and UL-listed, Home Ventilating Institute (HVI) certified and with AMCA seal for ceiling installation.

D304007 1.7 RANGE HOODS

UL 507 and UL-listed, with AMCA seal, range hood with light over stove. Minimum fan capacity shall be 160 cfm with maximum sound level of 5.6 sones.

D304008 AIR HANDLING UNITS

AMCA 210 certified fans with AMCA seal. Fan bearings shall have a minimum average life of 200,000 hours at design operating conditions. Provide bird screens for outdoor inlets and outlets.

D304008 1.1 CENTRAL STATION AIR HANDLERS

Modular construction, double wall air handling units with minimum of 1 inch (25 mm) casing insulation. Provide AHRI 430 certified fans and AHRI certified coils. Provide stainless steel, positive draining condensate drain pan. For 100% outside air units provide capability for cooling, heating, dehumidification and reheat.

D304008 1.1.1 Ultraviolet Disinfection System

For central station air handling units provide an ultra violet c-band (UVC) disinfection system for mold, bacteria and odor control in each air handler that has a chilled water or DX cooling coil. Irradiation-

emitters and fixtures are to be installed in sufficient quantity and in such an arrangement so as to provide an equal distribution of UVC energy on the coil and in the drain pan. To maintain energy efficiency, the UVC energy produced shall be of the lowest possible reflected and shadowed losses. Energy Efficiency - Power supplies shall be of the high efficiency electronic type and matched to the emitter. Intensity - The minimal UVC energy striking the leading edge (if installed upstream) or trailing edge (if installed downstream) of all the coil fins shall not be less than 820 μW/cm2 at the closest point and through placement, not less than 60% of that value at the farthest point. Equal amounts are to strike the drain pan, either directly or indirectly through reflection. The foregoing sets the placement and minimum quantity of fixtures to be installed. Installation - emitters and fixtures shall be installed at right angles to the conforming lines of the coil fins, such that through incident angle reflection, UVC energy bathes all surfaces of the coil and drain pan as well as all of the available line of sight airstream. One complete set of spare bulbs will be supplied.

D304090 OTHER DISTRIBUTION SYSTEMS

D304090 1.1 PUMPS

Centrifugal circulating pumps with motor, motor starter, and motor enclosure conforming to the appropriate NEMA standards. Provide suction diffusers on base-mounted pumps. Insulate pumps used for hot service and chilled water service.

D304090 1.1.1 In-Line Pumps

Pumps constructed of manufacturer’s standard materials suitable for chilled, condenser, and hot water heating systems.

D304090 1.1.2 Base Mounted Pumps

Single stage end suction pumps suitable for chilled, condenser, and hot water heating systems.

D304090 1.2 VARIABLE FREQUENCY DRIVES (VFD)

Factory-assembled variable frequency drive control systems for variable speed control. All air handling unit and pump VFD’s shall be from the same manufacturer. Each VFD shall include motor starter, motor disconnects and controls as required for a complete system. Units shall be UL-listed and comply with the National Electric Code.

Provide the following accessories:

Disconnect switch

Control circuit transformer, with primary and secondary fuses

Manual bypass

System hand-off-auto switch with provisions for remote start/stop of the system.

System initialized light

Run light

Failure alarm

LCD digital display with numeric keypad

Provide a control interface for remote monitoring of VFD functions and alarms from the DDC control system computer.

D304090 1.3 AIR SEPARATORS

ASME rated air separators with tangential inlet and outlet connections and automatic air vent.

D304090 1.4 SOLIDS SEPARATORS

Provide centrifugal solids separator with automatic drain in open systems.

D304090 1.5 EXPANSION TANKS

ASME rated expansion tanks with polypropylene or butyl diaphragm or compression tanks as indicated in UFC 3-400-01.

D304090 1.6 MAKE-UP WATER STATION

Station shall consist of a water pressure-reducing valve, and a relief valve in the make-up water line to the chilled and hot water systems to maintain the operating pressure. Provide a 3/4 inch (20 mm) globe valve by-pass around this pressure reducing station. Provide reduced pressure backflow preventer upstream of the by-pass.

D304090 1.7 GLYCOL MAKE-UP STATION

If required, provide a glycol makeup system to maintain system proper operating mixture.

D304090 1.8 CONDENSATE DRAIN PIPING

ASTM B 88, Type M or L, hard drawn copper.

D304090 1.9 CONDENSATE DRAIN INSULATION

Insulate condensate drain piping with flexible cellular insulation.

D304090 1.10 CHEMICAL TREATMENT

If required, Provide chilled and hot water systems with automatic chemical treatment system for the control of pH, scale formation, and corrosion inhibition. Provide shot-type feeders for manual chemical feed. Feeders shall be rated for use with pressures up to 130 PSI (900 kPa) (gage).

Provide condenser water systems with automatic chemical treatment systems that monitor conductivity, and pH, and provide for water metering and bleed-off. Provide chemicals in accordance with EPA and equipment manufacturer's recommendations.

D304090 1.11 PIPING IDENTIFICATION

Provide piping identification labels or Stencil names or code letters for piping systems in clearly visible letters and symbols. Provide arrow-shaped markings to indicate direction of flow.

D304090 1.12 PIPE SLEEVES

Provide pipe sleeves at each wall and floor penetration. The sleeve shall be of a material suitable to protect the carrier pipe (two pipe sizes larger) and sealed with an appropriate flexible material. Provide fire stopping in fire rated walls in accordance with IBC.

D304090 1.13 SYSTEM FLUSHING

Thoroughly flush hydronic systems prior to system startup. Isolate coils during initial flushing until water is clear.

D304090 1.14 HEAT TAPE

UL-Listed, self-regulating, heat tape on piping subject to freezing.

D3050 TERMINAL & PACKAGE UNITS

D305002 UNIT HEATERS

See D302004 for gas fired unit heaters.

D305002 1.1 STEAM

UL-Listed, factory assembled, unit heaters.

D305002 1.2 HOT WATER

UL-Listed, factory assembled, unit heaters.

D305002 1.3 CABINET UNIT HEATER

UL-Listed, factory assembled, heaters.

D305003 FAN COIL UNITS

UL-Listed, factory assembled and tested fan coils, AHRI 440 and AHRI certified.

D305004 FIN TUBE RADIATION

D305004 1.1 FIN TUBE RADIATORS AND CONVECTORS

Fin tube radiators and Convectors shall be provided with copper tubes and aluminum fins. Provide normally open, spring return control valves.

D305005 ELECTRIC HEATING

D305005 1.1 UNIT HEATERS

Factory assembled, UL-1025, unit heaters.

D305005 1.2 BASEBOARD HEATERS

Factory assembled, UL-1042, heaters.

D305005 1.3 WALL HEATERS

Factory assembled, UL-1025, cabinet heaters.

D305005 1.4 INFRARED HEATERS

Factory assembled, UL-Listed and labeled heaters.

D305006 PACKAGE UNITS

D305006 1.1 ROOFTOP AIR HANDLERS

Factory packaged units in accordance with AHRI 430 and suitable for outdoor installation. Provide with manufacturer’s roof curb.

D305006 1.2 DUCT HEATER

Factory assembled, UL-listed heaters. Provide control cabinet and heating coil.

D3060 CONTROLS AND INSTRUMENTATION

D306001 HVAC CONTROLS

D306001 1.1 DIRECT DIGITAL CONTROLS

Provide one of the following as directed in ESR Section D30.

a. Provide Direct Digital Controls (DDC) to comply with the requirements specified in UFGS Section 23 09 23.13 20, *BACNET Direct Digital Control Systems for HVAC*.

b. Provide a partial direct digital control (DDC) system to that will communicate with the existing DDC system. If using BACnet protocol, comply with the requirements specified in UFGS Section 23 09 23.13 20, *BACnet Direct Digital Control Systems for HVAC.* Notwithstanding any other provisions of this contract, no other product will be acceptable other than that indicated in ESR Section D30. Provide a distributed control system. Integrate all new DDC points on the existing server providing a seamless logical flow from the existing facilities to the new integrated facility.

The Designer of Record shall use UFGS Section 23 09 23.13 20 if using BACnet protocol, and submit the edited specification section as a part of the project design submittal.

Design requirements shall be in accordance with all specification notes and the BAS Owner shall be identified and designated early in the design documentation.

The system shall have stand alone digital controllers, a communication network, and a workstation computer with control software. Provide stand-alone control routines that operate without connection to the network during a loss of communication. Provide trending, scheduling and alarm tables (may be included with the sequence of operation). Provide reset routines (based on outdoor air temperature or zone demand) for hot water loop temperature setpoints and supply air static pressure control. Use alarming and trending services during performance testing or commissioning. Alarm every sequence routine when out-of-limits or control/response failure occurs. Display all graphic floor plans, equipment graphics, DDC ladder diagrams, and sequence of operations graphic pages.

All 120-volt wiring shall comply with NFPA 70. All 24-volt wiring shall comply with the IMC and terminal device manufacturer’s recommendations.

Provide training on the installed system according to the maximum training days in UFGS 23 09 23.13 20. All operator workstation functions requiring BACnet services, i.e., navigating through the graphic displays, trending, alarming and monitoring of the new controls system must be demonstrated from the existing operator workstation using only the existing application software and without the need to launch other applications or logon to other vendor applications.

D306001 1.2 ELECTRONIC CONTROLS

If required, provide programmable thermostats with built in keypads for scheduling of day and night temperatures with two setback periods per day. Provide independent summer and winter programs. Thermostats shall have temporary and manual override of schedule and battery backup.

D3070 SYSTEMS TESTING AND BALANCING

D3070 1.1 HVAC SYSTEM

Provide HVAC systems testing and balancing that complies with the requirements specified in UFGS Specification Section 23 05 93, *Testing, Adjusting, and Balancing for HVAC*. The Designer of Record shall prepare UFGS Specification Section 23 05 93, as a part of the project specification and shall include the prepared specification section in the design submittal for the project.

D3090 OTHER HVAC SYSTEMS AND EQUIPMENT

D309001 GENERAL CONSTRUCTION ITEMS

D309001 1.1 SEISMIC DESIGN

Provide in accordance with UFC 3-401-01, *Mechanical Engineering*.

D309002 REFRIGERATION SYSTEMS

D309090 OTHER SPECIAL MECHANICAL SYSTEMS

D309090 1.1 ENERGY RECOVERY WHEELS

Total energy (enthalpy) type energy recovery wheels (heat wheels). Media shall be aluminum or a lightweight polymer coated with a corrosion-resistant finish. Etched or oxidized surfaces are not acceptable. Heat transfer surfaces shall be coated with a non-migrating (permanently bonded) absorbent specifically developed for the selective transfer of water vapor. Equal sensible and latent recovery efficiencies shall be documented through a certification program conducted per ASHRAE 84 and AHRI 1060. The energy recovery wheel shall have an insulated housing of double wall construction, rotor seals that are specifically designed to limit cross-contamination, and a rotation detector. Should rotation stop, the rotation detector shall alarm the HVAC control system. Filter sections shall be readily accessible for maintenance.

D309090 1.2 HEAT PIPES

Factory fabricated, assembled and tested heat pipes with counter-flow arrangement. Provide hermitically sealed, seamless aluminum tube cores with extended surfaces. Heat exchanger frame shall be constructed of not less than 16-gage galvanized steel and fitted with intermediate tube supports, and flange connections. Provide tube end covers and a partition of galvanized steel to separate exhaust and supply air streams without cross-contamination. A refrigerant shall be used as the working fluid. Type I refrigerants are not allowed.

-- End of Section --

SECTION D40

FIRE PROTECTION
09/15

D40 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

D40 1.1 DESIGN GUIDANCE

Provide the design and installation of fire protection systems in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

D40 1.1.1 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s):
UFC 1-200-02	High Performance and Sustainable Buildings
UFC 3-600-01	Fire Protection Engineering for Facilities)
UFC 3-600-10N	Fire Protection Engineering

D40 1.2 QUALITY ASSURANCE

Materials and assemblies installed in the work shall be inspected and found to be in compliance with industry standards and these specifications prior to acceptance of the work. Items found not to be in compliance shall be removed, or corrective measures taken, to assure compliance with the referenced standard.

Qualifications, Training Plans, and Test Plans and Procedures indicated herein, shall be submitted 45 calendar days prior to the expected date of execution. Notify the Contracting Officer 14 calendar days prior to all testing. Submit test results within 7 calendar days of completion of testing.

D40 1.2.1 Qualified Workers

D40 1.2.1.1 Fire Protection Designer of Record

Services and qualifications of the FPDOR shall be as specified in UFC 3-600-01 and UFC 3-600-10N. The FPDOR shall review and approve all fire protection engineering submittals.

D40 1.2.1.2 Fire Protection Engineering Technicians

Workers required herein to be certified by the National Institute for Certification in Engineering Technologies (NICET) as an engineering technician in the Fire Protection Engineering Technology program shall be thoroughly trained and experienced, and completely familiar with the specified requirements and the methods needed for proper performance of the work in this section. All documentation required to be submitted for record and/or approval shall include the NICET engineering technician's signature, along with the technician's current NICET certification number, certification subfield, and level.

Installation drawings, shop drawings or working plans, calculations, other required pre-construction documentation and as-built drawings shall be prepared by, or under the direct supervision of a NICET engineering technician as specified in Section 6 D40 of Part 3.

D40 1.2.1.3 Qualified System Installers

Fire Suppression System and Fire Alarm System installers shall be regularly engaged in the installation of the type and complexity of system specified in the Contract documents, and shall have served in a similar capacity for at least three systems that have performed in the manner intended for a period of not less than 6 months.

Installers of Chlorinated Poly Vinyl Chloride (CPVC) sprinkler systems shall be certified by the manufacturer and maintain a copy of their certification on hand at all times.

D40 1.2.1.4 Fire Protection QC Specialist

The Fire Protection (FP) QC Specialist shall be a U.S. Registered Fire Protection Engineer (FPE) and shall be an integral part of the Prime Contractor's Quality Control Organization. This FPE shall have no business relationships (owner, partner, operating officer, distributor, salesman, or technical representative) with any fire protection equipment device manufacturers, suppliers or installers for any such equipment provided as part of this project. The Fire Protection Designer of Record (FPDOR) may serve as the FPQC Specialist provided the following qualifications are met.

a. Qualifications/Experience: The FPQC Specialist shall have obtained their professional registration by successfully completing the Fire Protection Engineering discipline examination. This FPE shall have a minimum of 5 years full time and exclusive experience in every aspect of facility design and construction as it relates to fire protection, which includes, but is not limited to, building code analysis, life safety code analysis, design of automatic detection and suppression systems, passive fire protection design, water supply analysis, and a multi-discipline coordination reviews, and construction surveillance.

b. Area of Responsibility: The FPQC Specialist is responsible for assuring the proper construction and installation of life safety and fire protection features across all disciplines and trades. The FPQC Specialist shall be responsible for assuring that life safety and fire protection features are provided in accordance with the design documents, approved construction submittals, and manufacturer's requirements. Examples include, but are not limited to, water distribution systems including fire pumps and fire hydrants, fire resistive assemblies such as spray-applied fire proofing of structural components and fire rated walls/partitions, fire alarm and detection systems, fire suppression and standpipe systems, and emergency and exit lighting fixtures.

c. Construction Surveillance: The FPQC Specialist shall visit the construction site as necessary to ensure life safety and fire protection systems are being constructed, applied, and installed in accordance with the approved design documents, approved construction submittals, and manufacturer's requirements. Frequency and duration of the field visits are dependent upon particular system components, system complexity, and phase of construction. At a minimum, field visits shall occur just prior to installation of suspended ceiling system to inspect the integrity of passive fire protection features and fire suppression system piping, preliminary inspections of fire alarm/detection and suppression systems, and final acceptance testing of fire alarm/detection and suppression systems. The FPQC Specialist shall prepare a written report detailing compliance of any outstanding submittal review comments, summarizing the results of all tests, detailing all discrepancies discovered, corrective action taken, all forms as required by the respective NFPA codes, and recommendations/certifications for acceptance. Forward one copy of the report with attachments to the Naval Facilities Engineering Command Fire Protection Engineer.

D40 1.2.2 Performance Verification Testing

All systems shall have operational tests to demonstrate compliance with contract requirements and respective NFPA codes, International Building Code and as noted below. Test procedures shall be in full compliance with the respective NFPA codes, the equipment manufacturer recommendations, and UFC 3-600-10N. Provide all personnel, equipment, and materials for tests. Return trips to witness repeat acceptance tests due to failure of previous tests will be at the Contractor’s expense.

D40 1.2.2.1 Preliminary Inspections and Final Acceptance Testing

The FPQC Specialist shall personally witness all preliminary inspections of fire alarm/detection and suppression systems. Once preliminary inspections have been successfully completed, the FPQC Specialist shall submit a signed certificate to the QC Manager that systems are ready for final inspection and testing. The Naval Facilities Engineering Command Fire Protection Engineer will witness formal tests and approve all systems before they are accepted. The QC Manager shall submit the request for formal inspection at least 15 days prior to the date the inspection is to take place. The QC manager shall provide 10 days advance notice to the Contracting Officer and the activity Fire Inspection Office of scheduled final inspections.

D40 1.2.2.2 Final Life Safety/Fire Protection Certification

The FPQC Specialist shall provide certification that all life safety and fire protection systems have been installed in accordance with the contract documents, approved submittals, and manufacturer's requirements. This certification shall summarize all life safety and fire protection features, and shall bear the professional seal of the FPQC Specialist.

D40 1.2.2.3 System Manufacturers Representatives

The systems manufacturer technical representative shall be present for the final inspection and test for the following systems: fire alarm and detection, fire pump, carbon dioxide, foam generating and clean agent extinguishing.

D40 1.2.2.4 Fire Suppression Water Supply and Equipment

The fire hydrants shall be inspected prior to backfilling the trench surrounding the fire hydrants. A report, including pictures, shall be provided to the Contracting Officer.

Fire pump tests shall be conducted in the presence of the pump, controller, and engine manufacturer technical representatives. The fire pump manufacturer shall also be present for the preliminary test of the fire pump system.

D40 1.2.2.5 Kitchen Hood Fire Extinguishing Systems

The kitchen hood fire extinguishing system shall contain water for the actual performance testing. The nozzles may be bagged in order to minimize damage from water spray.

D40 1.2.2.6 Spray-Applied Fire Proofing and Fire Stopping

See Section C1030 for requirements.

D40 1.2.5 Training

The contractor shall provide training for the active systems within 6 weeks of final acceptance of the systems. The training shall be scheduled at least 2 weeks in advance.

D40 1.3 DESIGN SUBMITTALS

Design Submittals shall be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures,* FC 1-300-09N, *Navy and Marine Corps Design Procedures* and UFC 3-600-10N, *Fire Protection Engineering*.

D40 1.4 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

All fire protection engineering submittals including:

a. Shop Drawings. Provide shop drawings for all systems.

b. Product Data. Provide product data for all equipment.

c. Design Data. Provide design data for all system calculations.

d. Test Reports

e. Certificates

D4010 FIRE ALARM AND DETECTION SYSTEMS

D401001 FIRE ALARM DISTRIBUTION

D401001 1.1 REMOTE ANNUNCIATORS

Remote annunciators shall have a minimum 80 character alphanumeric display with alarm acknowledge, alarm silence, and reset functions.

D401001 1.2 TRANSMITTED SIGNALS

Provide the following signals to be sent to the fire alarm receiving station:

a. Sprinkler Water Flow

b. Smoke Detector

c. Manual Pull Station

d. Supervisory (i.e., valve tamper switch, fire pump loss of power, fire pump phase reversal)

e. Duct Smoke Detector

f. Fire Pump Running

g. Sleeping Room Smoke Detector

D4020 FIRE SUPPRESSION WATER SUPPLY AND EQUIPMENT

D402001 FIRE PROTECTION WATER PIPING AND EQUIPMENT

The design point of connection to the existing water supply shall require the approval of the Contracting Officer. The FP DOR shall conduct additional flow tests after contract award prior to any design submissions. Tests shall be conducted under the supervision of the Contracting Officer.

D4040 SPRINKLERS

D404001 SPRINKLERS & RELEASING DEVICES

D404001 1.1 DESCRIPTION

Areas subject to freezing shall be provided with a dry pipe system. Loading docks may be protected with dry-type sidewall sprinklers supplied by the wet-pipe system.

D404001 1.2 REQUIREMENTS

Utilize upright sprinklers with ordinary temperature rating and color to match finish in normally occupied rooms without a finished ceiling (i.e., laboratories, and other spaces with exposed ceilings).

D4090 OTHER FIRE PROTECTION SYSTEMS

D409001 CARBON DIOXIDE SYSTEMS

Supply shall include storage cylinders, racks, manifolds, beam scales, and associated equipment. Arrange the primary cylinders for automatic discharge upon activation of the main control, and the secondary cylinders for discharge both manually and upon no discharge from the primary cylinders.

D409002 FOAM GENERATING EQUIPMENT

D409002 1.1 SYSTEM CRITERIA

Foam fire protection systems shall incorporate the necessary elements for foam storage, pumping, piping, proportioning, delivery, and detection, activation and alarm systems.

D409002 1.2 SYSTEM OPERATION

Once activated, foam system(s) shall operate until shut down manually. Provide separate circuits from the releasing control panel to each zone of initiating devices. Transmission of signals from more than one zone over a common circuit is prohibited.

D409002 1.3 AFFF CONCENTRATE PUMPS

The foam concentrate pump shall be positive displacement, electric motor driven, drip proof, 240/480 volts, 60 Hz AC. System operation shall be fully automatic, with manual over-ride and manual shutdown.

D409002 1.4 FOAM CONCENTRATE STORAGE TANK

A gage or unbreakable sight glass shall permit visual determination of level of tank contents, unless liquid level is clearly visible through shell of tank.

D409002 1.5 LOW-LEVEL LOW-EXPANSION FOAM SYSTEM

D409002 1.5.1 Discharge Devices

Where used the low-level AFFF nozzle system shall utilize the Viking Grate Nozzle TM, Model GN 200 (or equivalent that is acceptable to the NAVFAC Chief Fire Protection Engineer for this use).

D409002 1.5.2 Test Header

Where used a foam system test header connection with integral gate valves shall be located at each foam system riser. Sufficient 2-1/2 inch (65 mm) male National Standard hose threads, with cap and chain, shall be installed to allow testing of the riser at the design flow rate. A wall escutcheon plate with “FOAM TEST HEADER” in raised letters cast in plate shall be installed.

D409002 1.6 AUTOMATIC WATER CONTROL VALVE ASSEMBLY (DELUGE VALVE)

Where used, the water control valve shall be an electrically actuated type. Valve shall be resettable without opening the valve. Solenoid valve shall be of the normally closed, de-energized type, which opens when energized upon receipt of an electrical signal from the releasing control panel to which it is connected. Solenoid valves used with diaphragm-type valves shall be rated for a maximum pressure differential of 175 psi (1207 kPa). Water control valves used for low-level foam systems shall be capable of recycling to the closed position at an adjustable speed. Valves located in hazardous locations shall be approved for the hazard classification of the area where located.

D409002 1.7 FOAM SYSTEM RELEASING CONTROL SYSTEM

D409002 1.7.1 Manual Releasing Stations

Where used the units shall be dual-action type located inside a clear plastic tamper cover that must be lifted prior to actuating the station. Any lettering on the cover must be “FOAM”; the words “fire” or “fire alarm” shall not appear on the cover. The station shall not require the breaking of glass to actuate. Unit shall have operating instructions clearly marked on the station cover. Unit shall be compatible with the control panel to which it is connected. Operation of a station shall result in immediate release of the foam system for that space.

D409002 1.7.2 Flame Detectors

Where used flame detectors shall operate on the infrared (IR) principle. Detector shall employ three IR sensors to provide multi-spectrum detection. Each detector shall have a manufacturer’s swivel mounting bracket. Locate a permanent engraved rigid plastic or metal

label at each detector with detector aiming information (degrees horizontal and vertical) for the corresponding detector.

D409002 1.7.3 Abort Switch

Where used a foam release abort switch shall be installed adjacent to each manual releasing station and at the releasing panel and be properly labeled (Minimum 1½ inch high lettering stating: CONTINUOUS OPERATION OF SWITCH WILL ABORT FOAM FLOW UNTIL SYSTEM IS RESET". Switch shall be deadman type which when depressed ceases flow of foam solution (both water and foam concentrate). Upon release of the switch, the system shall return to its previous operational state. Switch and wiring shall be supervised.

D409003 CLEAN AGENT SYSTEMS

D409003 1.1 SYSTEM INSTALLATION

The system shall be supplied and installed by a factory-authorized distributor. The distributor shall be trained by the manufacturer to design, install, test, and maintain the system and shall be able to provide proof of training upon request.

D409003 1.2 RELEASING CONTROL SYSTEM

Where provided manual release stations shall be dual-action type located inside a clear plastic tamper cover that must be lifted prior to actuating the station. The words "fire" or "fire alarm" shall not appear on the cover. The station shall not require the breaking of glass to actuate. Unit shall have operating instructions clearly marked on the station cover. Unit shall be compatible with the control panel to which it is connected. Operation of a station shall result in immediate release of the clean agent system for that space.

D409004 HOOD & DUCT FIRE PROTECTION

Exhaust hoods with grease extractors listed by UL or FM are not required to have protection downstream of the grease extractor.

--End Of Section--

SECTION D50

ELECTRICAL
09/15

D50 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Specifications (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

D50 1.1 NARRATIVE

This section covers installations inside the facility and out to the five foot line. See PTS Section G40, *Site Electrical*, for continuation of systems beyond the five foot line.

D50 1.2 ELECTRICAL DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

When all product Quality Control information is included in the Unified Facility Criteria (UFC) and there are requirement options identified in the ESR, then the Uniformat Level 4 titles (and possible subtitles) are included without additional verbiage. One example of this is D501090, OTHER SERVICE AND DISTRIBUTION.

D50 1.2.1 Government Publications

UNITED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-501-01, Electrical Engineering)
UFC 1-200-02	High Performance and Sustainable Buildings
UFC 3-580-10	Navy and Marine Corps Intranet (NMCI) Standard Construction Practices

UNITED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS 26 08 00	Apparatus Inspection and Testing
UFGS 26 20 00	Interior Distribution System
UFGS 26 23 00	Low Voltage Switchgear
UFGS 26 24 13	Switchboards
UFGS 26 29 23	Variable Frequency Drive Systems Under 600 Volts
UFGS 26 32 13.00 20	Single Operation Generator Sets
UFGS 26 32 26	Motor Generator Sets, 400 Hertz
UFGS 26 33 53.00 20	Uninterruptible Power Supply (UPS)
UFGS 26 35 43	400 Hertz Solid State Frequency Converters
UFGS 26 36 23.00 20	Automatic Transfer Switches
UFGS 26 41 00	Lightning Protection System
UFGS 26 51 00	Interior Lighting
UFGS 27 10 00	Building Telecommunications Cabling Systems
UFGS 28 20 00.00 20	Electronic Security System (ESS), Commercial

D50 1.3 QUALITY ASSURANCE

Qualifications, certifications, and Test Plans indicated herein shall be submitted 45 calendar days prior to the expected date of execution. Notify the Contracting Officer 14 calendar days prior to all testing. Submit test results within 7 calendar days of completion of testing.

The Designer of Record is responsible for approving the submittals listed below.

D50 1.3.1 Qualified Testing Organization

Contractor shall engage the services of a qualified testing organization to provide inspection, testing, calibration, and adjustment of the electrical distribution system and equipment listed in paragraph entitled "Acceptance Tests and Inspections" herein. Organization shall be independent of the supplier, manufacturer, and installer of the equipment. The organization shall be a first tier subcontractor.

Submit name and qualifications of organization. Organization shall have been regularly engaged in the testing of electrical materials, devices, installations, and systems for a minimum of 5 years. The organization shall have a calibration program, and test instruments used shall be calibrated in accordance with NETA ATS.

Submit name and qualifications of the lead engineering technician performing the required testing services. Include a list of three comparable jobs performed by the technician with specific names and telephone numbers for reference. Testing, inspection, calibration, and adjustments shall be performed by an engineering technician, certified by NETA or the National Institute for Certification in Engineering Technologies (NICET) with a minimum of 5 years' experience inspecting, testing, and calibrating electrical distribution and generation equipment, systems, and devices.

D50 1.3.2 NEC Qualified Worker

Provide in accordance with NFPA 70. Qualified Workers shall be allowed to be assisted by helpers on a 1 to 1 ratio, provided such helpers are registered in recognized apprenticeship programs. Submit a certification confirming NEC Qualified Worker requirements.

D50 1.3.3 Qualified PV Installer

Installation of photovoltaic systems shall be by experienced and trained installers. At minimum the PV installation supervisor shall hold a "PV Installer Certification" as issued by the North American Board of Certified Energy Practitioners (NABCEP) and hold a Certified Solar Roofing Professional (CSRP) credential issued by RISE "Roof Intergrated Solar Energy Inc".

D50 1.3.3 Qualified Telecommunications Worker

All installers assigned to the installation of telecommunications systems or any of its components shall be Building Industry Consulting Services International (BICSI) Registered Cabling Installation Technicians or have a minimum of 3 years experience in the installation of the specified copper and fiber optic cable and components. Include names and locations of two projects successfully completed using optical fiber and copper communications cabling systems. Include written certification from users that systems have performed satisfactorily for not less than 18 months. Include specific experience in installing and testing structured telecommunications distribution systems using optical fiber and Category 5e cabling systems.

D50 1.3.4 Material Standards

Ensure service support and provide manufacturer’s nameplate in accordance with PTS Section Z10, *General Performance Technical Specification*.

D50 1.3.4.1 Warning Labels

Provide arc flash warning labels.

D50 1.3.4.2 Field-Required Nameplates

Provide laminated plastic nameplates for each switchboard, switchgear, panelboard, equipment enclosure, motor controller, relay, and switch. Each nameplate must identify the function and, when applicable, the position. Provide melamine plastic nameplates, 0.125 inch (3 mm) thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be 1-inch by 2-1/2 inches (25 mm by 65 mm). Lettering shall be a minimum of 0.25 inch (6.35 mm) high normal block style.

D50 1.3.5 Factory Testing

The Government reserves the right to witness all factory testing. The manufacturer shall have a calibration program that assures that all applicable test instruments are maintained within rated accuracy.

D50 1.3.6 Electrical System Startup and Testing

Submit test plans for approval. The test plans shall be tailored to the systems provided.

The test plan shall list make and model and provide functional description of the test instruments and accessories and shall describe the setup of the tests to be conducted. Test instruments shall be capable of measuring and recording or displaying test data at a higher resolution and greater accuracy than specified for the equipment’s performance.

D50 1.3.6.1 Factory Trained Engineer

Provide a factory trained engineer to supervise start-up and testing as required in referenced specifications.

D50 1.3.6.2 Performance Verification Testing

The Contractor shall show by demonstration in service that all circuits and devices are in operating condition. Tests shall be such that each item of control equipment will function not less than five times. The Contractor shall provide all necessary test equipment, tools, fuel, load banks, labor, and materials for testing. As a minimum, all systems shall be tested in accordance with manufacturer’s recommendations. Additional testing requirements for the various systems are described with those systems, hereinafter. The Contractor shall assure that all applicable test instruments are maintained within rated accuracy. Dated calibration labels shall be visible on all test equipment.

Submit a separate electrical field test plan in accordance with manufacturer’s recommendations and that conforms to NETA ATS for each piece of Electrical Distribution Equipment and System requiring Performance Verification Testing.

The following items identify specific test requirements. Additional test requirements are contained in the applicable UFGS.

a. Panelboards - Field test each GFI and AFI circuit breaker with a UL 1436-certified outlet circuit tester to verify correct operation.

b. Motor control centers – Test motor control centers and motor starters in accordance with NETA ATS.

c. Surge Protective Devices (SPD) -

1) Inspect for physical damage and compare nameplate data with the drawings and specifications, if applicable. Verify from the nameplate data that the SPD equipment is appropriate for the system voltage.

2) Verify lead length between the SPD equipment and the circuit connection is less than one foot.

3) Verify wiring between the SPD equipment and the circuit connection does not include high-inductance coils or sharp bends.

4) Confirm circuit breaker used for SPD circuit connection is sized in accordance with TVSS manufacturer’s requirements.

5) Ensure SPD equipment is grounded in accordance with SPD manufacturer’s requirements. Check the ground lead on each device for individual attachment to the ground bus or electrode.

6) Check tightness of connections in accordance with NETA ATS.

7) For SPD equipment with visual indications of proper operation, verify that it displays normal operating characteristics.

d. Busway – Conduct standard tests for busway in accordance with NETA ATS.

e. Receptacles – Test GFI receptacles with a UL 1436-certified outlet circuit tester to verify correct operation.

f. Lighting - Aim photocell switches and locate light level sensors in accordance with the manufacturer's recommendations. Verify that equipment operates in accordance with user’s requirements and in accordance with manufacturer’s recommendations. Fluorescent lamps on electronic dimming ballast control shall be burned in at full light output for 100 hours before dimming.

g. Telecommunication - Test telecommunications systems in accordance with applicable EIA/TIA requirements.

h. Public address and intercommunications systems - Tests shall include originating and accepting messages at each station, at proper volume levels, without cross-talk or noise from other links or non-designated units. Test shall utilize the phonetically balanced monosyllabic work intelligibility test in accordance with ANSI S3.2 (ASA 85). In order to be acceptable, a

score of at least 75 percent must be obtained for each system test.

i. Community Antenna Television Systems - Confirm design and installation is in compliance with NCTA-02, 47 CFR 76.605 and in accordance with FCC proof of performance requirements. Test plan shall define tests required to ensure that the system meets technical, operational, and performance specifications. Test plan shall include plan for testing for signal leakage.

j. Electronic security systems (ESS) – Test ESS in accordance with UFGS requirements.

k. Grounding systems - Test the grounding system in accordance with NETA ATS.

l. Lightning protection - Upon completion of the installation, Contractor shall furnish the UL Lightning Protection Inspection Certificate certified to UL 96A for the system.

m. Emergency lighting - Test emergency lighting that is intended for means of egress in accordance with NFPA 101, Section 5-9. Confirm the emergency lighting system operates for a minimum of 90 minutes and emergency illumination satisfies NFPA 101, Section 5-9, specified levels.

n. Photovoltaic Energy System - Provide test plan that meets the requirements of IEC 62446. Test plan shall include expected performance values. System performance shall be compared to expected performance and shall include at a minimum solar irradiance, DC energy, AC energy, ambient air temperature and PV cell temperature. System performance shall be measured and reported for at least one full day. If the performance monitoring of the installed array indicates the array is not meeting its required performance predictions it shall be corrected by the Contractor at the Contractor's expense. Following correction, performance monitoring will again be performed until the array meets required performance predictions. Measurements made under actual installation and temperature shall be normalized to Standard Test Conditions (STC).

1) Verify that non-current carrying metal parts are grounded.

2) Verify that all components are labeled.

3) Verify mounting supports are installed properly and all fasteners are installed correctly and torqued to manufacturer's instructions.

4) Test open circuit voltage of each string in full sunlight.

5) Submit startup and testing report.

D50 1.3.6.3 Acceptance Tests and Inspections

The Government reserves the right to witness all Acceptance Tests and Inspections, review data, and request other such additional

inspections and repeat tests as necessary to ensure that the system and provided services conform to the stated requirements.

The Qualified Testing Organization shall provide the Acceptance Tests and Inspections test plan and perform the acceptance tests and inspections. Test methods, procedures, and test values shall be performed and evaluated in accordance with NETA ATS, the manufacturer's recommendations, and paragraph entitled "Field Quality Control" of each applicable specification section. Tests identified as optional in NETA ATS are not required unless otherwise specified. Equipment shall be placed in service only after completion of required tests and evaluations of the test results have been completed. Contractor shall supply to the testing organization complete sets of shop drawings, settings of adjustable devices, and other information necessary for an accurate test and inspection of the system prior to the performance of any final testing. Perform acceptance tests and inspections on Diesel-Electric Generators, Uninterruptible Power Supply (UPS) Systems, 400-Hertz Motor Generator Sets, 400-Hertz Solid State Frequency Converters, Automatic Transfer Switches, and Switchboards and Switchgear.

D50 1.4 DESIGN SUBMITTALS

Design Submittals shall be in accordance with PTS Section Z10, *General Performance Technical Specifications*, UFGS Section 01 33 10.05 20, *Design Submittal Procedures,* FC 1-300-09N, *Navy and Marine Corps Design Procedures,* and UFC 3-501-01, *Electrical Engineering*.

Submit all PV submittals to the Contracting Officer for approval.

In addition, UFGS sections listed below or in the body of the PTS text are to be used by the Designer of Record (DOR) as a part of the design submittal. If the UFGS products or systems are applicable to the project, the DOR shall edit these referenced UFGS sections and submit them as a part of the design submittal specification. Edit the specification sections in accordance with the limitations stated in PTS Section Z10, *General Performance Technical Specifications*.

UFGS 26 08 00, *Apparatus Inspection and Testing*

UFGS 26 20 00, *Interior Distribution System*

UFGS 26 23 00, *Low Voltage Switchgear*

UFGS 23 24 13, Switchboards

UFGS 26 29 23, *Variable Frequency Drives System Under 600 Volts*

UFGS 26 32 13.00 20, *Single Operation Generator Sets*

UFGS 26 32 26, *Motor Generator Sets, 400 Hertz*

UFGS 26 33 53.00 20, *Uninterruptible Power Supply (UPS)*

UFGS 26 35 43, 400 *Hertz Frequency Converters*

UFGS 26 36 23.00 20, *Automatic Transfer Switches*

UFGS 26 41 00., *Lightning Protection System*

UFGS 26 51 00, *Interior Lighting*

UFGS 27 10 00, *Building Telecommunications Cabling Systems*

UFGS 28 20 00.00 20, *Electronic Security System (ESS), Commercial*

D50 1.4.1 Sustainable Design Submittal

Submit sustainable design submittals in accordance with UFGS 01 33 29.05 20, *Sustainability Reporting for Design-Build*.

D50 1.5 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the PTS Section Z10 requirements, the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

Electrical Equipment, OMSI information for equipment, and Quality Assurance Submittals listed above.

Provide certification that all adjustable protective device settings have been set in accordance with the coordination study for the as-built equipment and configuration.

D50 1.4.1 Sustainable Construction Submittal

Submit sustainable design submittals in accordance with UFGS 01 33 29.05 20, *Sustainability Reporting for Design-Build*.

D5010 ELECTRICAL SERVICE AND DISTRIBUTION

D501001 MAIN TRANSFORMERS

Pad mounted distribution transformers shall be in accordance with PTS Section G40, *Site Electrical Utilities*.

D501002 SERVICE ENTRANCE EQUIPMENT

When a switchboard is required, the Designer of Record shall utilize UFGS Section 26 24 13 for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

When low voltage switchgear is required, the Designer of Record shall utilize UFGS Section 26 23 00 for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

When digital metering is required for connection to the Direct Digital Controls (DDC) system, the Designer of Record shall utilize UFGS Section 26 24 13 to specify the digital metering requirements and shall submit the edited specification section as a part of the design submittal for the project.

D501003 INTERIOR DISTRIBUTION TRANSFORMERS

D501004 PANELBOARDS

Panelboards shall comply with UL 67 and UL 50. UL 869A shall apply if used as service entrance equipment. Panelboards for non-linear loads shall be UL listed, including heat rise tested, in accordance with UL 67, except with the neutral assembly installed and carrying 200 percent of the phase bus current during testing.

Provide molded case circuit breakers in accordance with UL 489. Ground fault circuit interrupting circuit breakers shall comply with UL 943. Arc fault circuit breakers shall comply with UL 489 and UL 1699.

D501005 ENCLOSED CIRCUIT BREAKERS

Provide molded case circuit breakers in accordance with UL 489. UL 869A shall apply if used as service entrance equipment. Provide with solid neutral when grounded conductor is present.

D501006 MOTOR CONTROL CENTERS

Motor control centers shall comply with UL 845, NEMA ICS 2, and NEMA ICS 3. Motor controllers shall comply with UL 508. Provide disconnecting means capable of being locked out for machines and other equipment to prevent unexpected startup or release of stored energy in accordance with 29 CFR 1910.147.

D501006 1.1 VARIABLE FREQUENCY DRIVES (VFD)

When Variable Frequency Drives are required, the Designer of Record shall utilize UFGS Section 26 29 23 for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

D501090 OTHER SERVICE AND DISTRIBUTION

D501090 1.1 SURGE PROTECTIVE DEVICE (SPD)

D501090 1.2 BUSWAY

Busway shall comply with NEMA BU 1 and UL 857.

D5020 LIGHTING AND BRANCH WIRING

D502001 BRANCH WIRING

Provide wiring and connections for special outlets where required. All homerun circuits must contain no more than 3 phase conductors. Switches shall comply with NEMA WD-1 and UL 20.

D502002 LIGHTING EQUIPMENT

Installation shall meet requirements of manufacturer's recommendations and the additional requirements for "Severe Seismic Disturbance" contained in ASTM E 580. Fixture support wires shall conform with ASTM A 641/A 641M, galvanized regular coating, soft temper.

D502002 1.1 BALLASTS

Electronic ballasts shall include a 5-year warranty.

D5030 COMMUNICATIONS AND SECURITY

D503001 TELECOMMUNICATIONS SYSTEMS

D503002 PUBLIC ADDRESS SYSTEMS

D503003 INTERCOMMUNICATIONS SYSTEMS

D503004 TELEVISION SYSTEMS

D503004 1.1 CLOSED CIRCUIT TELEVISION (CCTV) FOR VIDEO TRAINING

D503004 1.2 COMMUNITY ANTENNA SYSTEM (CATV)

D503005 SECURITY SYSTEMS

D503005 1.1 ELECTRONIC SECTURITY SYSTEMS (ESS)

When an ESS system is required, the Designer of Record shall utilize UFGS Section 28 20 00.00 20 for the project specification and shall submit the edited specification section as a part of the design submittal for the project.

D5030005 1.2 PROTECTED DISTRIBUTION SYSTEMS (PDS)

Protected Distribution Systems shall be in accordance with UFC 3-580-10 and IA PUB-5239-22, Information Assurance Protected Distribution System (PDS) Guide Book.

D5030005 1.3 SENSITIVE COMPARTMENTED INFORMATION FACILITIES (SCIF)

Electrical systems installed within SCIF spaces or facilities shall comply with ICD 705, ICS 705-1, ICS 705-2, and with IC Tech Spec for ICD/ICS 705.

D503006 INDUSTRIAL CONTROL SYSTEMS (ICS)

D503090 OTHER COMMUNICATIONS AND ALARM SYSTEMS

D5090 OTHER ELECTRICAL SERVICES

D509001 GENERAL CONSTRUCTION ITEMS (ELECTRICAL)

D509002 EMERGENCY LIGHTING AND POWER

D509002 1.1 EMERGENCY LIGHTING

D509002 1.2 EMERGENCY GENERATORS

When an emergency generator is required, the Designer of Record shall utilize UFGS Section 26 32 13.00 20 for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

D509002 1.3 AUTOMATIC TRANSFER AND BYPASS/ISOLATION SWITCHES

When an Automatic Transfer Switch is required, the Designer of Record shall utilize UFGS Section 26 36 23.00 20 for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

D509002 1.4 UNINTERRUPTIBLE POWER SUPPLY (UPS) SYSTEM

When a UPS system is required, the Designer of Record shall utilize UFGS Section 26 33 53.00 20 and shall submit the edited specification section as a part of the design submittal for the project.

D509003 GROUNDING SYSTEMS

D509004 LIGHTNING PROTECTION

When a lightning protection system is required the designer of record shall utilize UFGS section 26 41 00 and shall submit the edited specification section as a part of the design submittal for the project.

D509005 ELECTRIC HEATING

D509006 ENERGY MANAGEMENT CONTROL SYSTEM

D509007 PHOTOVOLTAIC ENERGY SYSTEM

Provide a grid tied photovoltaic energy system including roof mounted crystalline photovoltaic panels, combiner boxes, inverters, and support system.

Provide all labor, materials, equipment and supervision required to implement the design and to provide a fully operational system.

Provide crystalline photovoltaic modules with a 20-year limited manufacturer warranty that generates no less than 80% of the rated output under Standard Test Conditions (STC). PV modules shall comply with IEC-61215 and UL-1703. Provide with integrated bypass diodes, IP65, IP67 connectors.

Provide inverters that comply with UL-1741 and IEEE-1547. Provide with output THD 5% maximum, ambient operating temperature range of -25 degree C to 55 degree C with a minimum efficiency of 95 percent at full load, grid

tied.

Provide start-up and testing utilizing certified technician. Submit startup and testing report.

D509007 1.1 CODES AND STANDARDS

The PV system hardware and services shall meet or exceed all local, State and utility requirements, conform to the applicable codes and standards, and have passed the listing and qualification tests, listed below. (Comply with the most recent version of each document).

a. IEEE 1262 "Recommended Practice for Qualification of Photovoltaic Modules".
b. PowerMark certification for PV modules.
c. IEEE Standard 928-1986, Recommended Criteria for Terrestrial Photovoltaic Power Systems (PV system performance criteria).
d. IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems.
e. Underwriters Laboratories 1741-2001 (UL Standard for Inverters and Charge Controllers).
f. Underwriters Laboratories 1703 (UL Standard for Listing Photovoltaic Modules).
g. Certification of PV Equipment: All PV modules, inverters, and electrical components shall be required to be listed or recognized by an appropriate and recognized United States Safety Laboratory (for example: UL or ETL).

D509007 1.2 PHOTOVOLTAIC ROOFTOP APPLICATION ANALYSIS

Provide a comprehensive "Photovoltaic Application Analysis" with a detailed description of system, application, site shading conditions and expected kW output of the rooftop photovoltaic applications. The analysis shall utilize the Solmetric Suneye or the Solar Pathfinder shading analyzers to analyze the effects of the existing site shading conditions. Analysis shall include estimated PV output in kW and kWh per year. Coordinate rooftop application analysis with other equipment that is required to be placed on the roof to determine space available and proper solar orientation for photovoltaic equipment.

D509007 1.3 TECHNICAL REQUIREMENTS

The contractor work responsibilities include at a minimum: system design, equipment selection, and PV system installations. System shall be individually capable of providing peak power output of at least proposed PV system size, 208 or 480 volt, 3-phase, 4-wire power.

The final System configuration shall allow automatic operation without operator intervention. System design and equipment specifications shall minimize maintenance requirements. System shall include metering that must be incorporated with current AMI network (Advanced Metering Infrastructure) and planned energy metering projects.

The inverter(s) disconnects and associated electrical equipment must be located in an area that is accessible, weather-protected, and secure from vandalism and personal injury.

Disconnects and over current devices shall be mounted in approved boxes, enclosures, or panel boards. Disconnects and switches shall be DC rated when used in DC applications. Metal enclosures and boxes shall be bonded to the grounding conductor.

At a minimum, electrical meters shall capture the following data on individual system performance (minimum solar irradiance, DC power, AC real power, AC current, AC voltage, and power factor (recommend ION 8600 for AC); ambient air temperature, PV cell temperature, kW, and kWh). This data shall be captured at hourly intervals for a minimum one year. Units of temperature, power, and current shall be in Fahrenheit, Watts, and Amps respectively.

Transformers, if required, shall have a minimum efficiency based on factory test results of not less than the efficiency indicated in 10 CFR 431, Subpart K, paragraph 431.196(b). Transformers shall be housed in a NEMA 4X enclosures.

Layout of modules on roof shall meet the requirements of NFPA-1 including labeling, roof access, and roof pathways. Coordinate roof venting requirements with fire protection engineer.

Mounting structures shall be corrosion resistant to marine environment.

Provide permanent plaque or directory at each building service and power source identifying all other building services and power sources.

Refer to RFP Part 4, PTS B30 *Roofing*for additional layout and installation requirements.

D509007 1.4 OPERATORS MANUALS AND TRAINING

Operators manuals for each system component shall include detailed instructions on how to operate the system, programming and installation instructions, emergency operating procedures, default program values and set points, listing of field programmed variables and set points, equipment wiring diagrams, product model number, with Name, Address and Telephone number of local representative, and starting, operating, and shut down procedures. Include normal and emergency shut down procedures, schedule of maintenance work, if any, recommended cleaning agents and methods, replacement parts list, including internal fuses, and warranty information.

Provide a formal 2-hour on-site training session instructing operators in the operation and maintenance of the new system, including operation and maintenance of inverters, disconnects and other system components. Instruct personnel in removal and installation of panels, including wiring and all connections. At the time of training the Contractor shall furnish, for the equipment specified, operation and maintenance manuals, record drawings and recommended spare parts lists identifying components adequate for competitive supply procurement for operation and maintenance of system.

D509007 1.5 FIELD QUALITY CONTROL

Schedule connection of the photovoltaic system with the Contracting Officer such that the Contracting Officer or his representative can be present when the photovoltaic system is tied to the grid.

Provide test plan that meets the requirements of IEC 62446. Test plan shall have expected values for testing. Provide test results.

Tests shall include the following:

a. Verify that non-current carrying metal parts are grounded.
b. Verify that all components are labeled.
c. Verify mounting supports are installed properly, and all fasteners are installed correctly and torqued to manufacturer's instructions.
d. Test open circuit voltage of each string in full sunlight.
e. Test output of inverter. Measure solar irradiance. Perform calculations to show inverter output is consistent with the expected performance.

D509090 OTHER SPECIAL SYSTEMS AND DEVICES

D509090 1.1 400 HERTZ SYSTEMS

The Designer of Record shall utilize UFGS Section 26 32 26 or UFGS Section 26 35 43 for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

--End Of Section--

SECTION E10

EQUIPMENT
09/15

E10 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

E10 1.1 GENERAL REQUIREMENTS

Where required by the project program, the contractor shall obtain the services of equipment specialists to specify any audiovisual, shop, fitness equipment, or other specialty equipment. Equipment specialists shall not have any affiliation with the product specified. All specialty equipment will be installed by qualified installers regularly engaged in installing the specialty equipment. Systems furnishings installers must be the systems furniture manufacturer’s dealer of record.

E10 1.2 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and Government standards that are referenced in the section text that are not found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website, are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the standard at the time of contract award.

E10 1.2.1 Industry Standards and Codes

Loading Dock Equipment Manufacturers' Association (LODEM)

E10 1.2.2 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-101-01, Architecture UFC 3-120-10, Interior Design)

E10 1.3 PERFORMANCE VERIFICATION AND COMPLIANCE TESTING

Verification of satisfactory special equipment and furnishing systems performance shall be via Performance Verification Testing, as detailed in this section of the RFP.

E10 1.3.1 Field Tests for Dock Leveling Equipment

a. Roll-over Tests - Move roll-over load of 20,000 pounds (9,072 kg) over the dock leveler between the bed of a freight carrier and the building loading dock surface for ten cycles. With the ramp extension retracted and the ramp platform leveled with the building loading dock surface, run a 20,000 pound (9,072 kg) roll-over load over the ramp in various directions for 20 cycles. No permanent deformation or hydraulic fluid leakage shall occur subsequent to examination after these tests.

b. Drop Tests - Twice, drop test the dock leveler at the indicated rated capacity as follows: With the load on the platform and the load resting on a vehicle carrier bed not less than 10 inches (254 mm) above loading dock surface, pull the carrier or pull away from the lip, leaving the loading ramp unsupported. The measured vertical drop of the dock leveler taken at the point where the lip rests on the vehicle carrier shall not exceed 4 inches (102 mm) during each of the drop tests. Inspect the loading ramp after each drop and ensure no damage or distortion to the mechanical, electrical, or structural components. There shall be no leakage from the hydraulic system.

c. Acceptance Tests - Perform an acceptance test in the presence of the dock leveler manufacturer and the Contracting Officer subsequent to the roll-over load and drop tests. Conduct operation of the equipment through all of its motions and specified checks as follows: (a) extend lip to rest on a variety of freight carriers with beds up to 12 inches (305 mm) above and below deck level; (b) test 102 mm (4 inches) drop limitation with 7,000 pound (3,175 kg) load on ramp, evenly distributed; (c)test level compensation with the ramp, loaded with a minimum of 7,000 pounds (3,175 kg); and (d) test proper compensation (float) for various compression of counter-springs, with ramp loaded and unloaded.

G20 1.4 DESIGN SUBMITTALS

Design Submittals shall be in accordance with UFGS section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures*, UFC 3-101-01, *Architecture*, UFC 3-120-10, *Interior Design*.

E10 1.5 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

Field tests of equipment, vault door, loading dock equipment, kitchen equipment and unit kitchens.

Energy efficiency ratings for food service equipment, as applicable.

E1010 COMMERCIAL EQUIPMENT

E101005 SECURITY & VAULT EQUIPMENT

E101005 1.1 VAULT AND DOORS

The Vault ("Weapons Storage Area" (WSA) or "Armory", or other title according to the project program) space shall be designed in accordance with criteria in MIL-HDBK-1013/1A to provide at least 10 minutes of delay time against low and medium threat severity levels of forced entry. The space is required to be built to the construction standards described in MIL-HDBK-1013/1A for Class A vaults. The reinforced concrete must have minimum 28-day compressive strength of at least 3000 PSI (20,684 kPa) and the floor, walls, and ceiling/roof components of this space must all be cast in place and at least 8 inches (200 mm) thick. The door into the vault must be a GSA-Approved and labeled Class 5 Security Vault Door that conforms to Federal Specification AA-D-00600. Provide door manufacturer's modified standard or custom Day Gate, designed for use with the vault door furnished, for access control and weapons issue. Except for the door opening, penetrations and openings through the structural "security" envelope of the floor, walls, and ceiling/roof of the Vault that are 96 sq. inches (618 sq. cm) or greater with the least dimension greater than 6 inches (150 mm) are not allowed. PTS Section D50, *Electrical*, includes requirements for Intrusion Detection System (IDS) within the space and for Security Lighting at the outside of the Vault Door to the space.

E101005 1.1.1 Set-backs

Where the perimeter walls of the WSA spaces are part of the facility exterior walls, the vault walls shall be set back from the exterior part of the exterior wall to allow at least 4 inches (100 mm) for the normal wall facing to cover the vault walls.

E101005 1.1.2 Egress

Where a WSA space exceeds 1000 square feet (90 sq m) in floor area, or will have more than eight occupants, the space shall have a minimum of 2 exits for safety purposes. When more than one entrance / exit is required, each shall be equipped with a Security Vault Door, with only one used for normal entry access.

E101005 1.2 SECURITY VAULT DOOR

Security Vault Door must be GSA-Approved and labeled Class 5 Security Vault Door that conforms to Federal Specification AA-D-00600. Provide GSA-Approved and labeled Class 5 Security Vault Door that conforms to Federal Specification AA-D-00600. Door(s) for normal or special entry access shall be Class 5, either Type IIR- right opening swing without optical device or Type IIL- left opening swing without optical device as determined by design arrangement, Style K- Key change combination lock, Design S- single lock.

Where a second or additional door is required for safety purposes, door(s) for exit only shall be Class 5, either Type IR- right opening swing with optical device or Type IL- left opening swing with optical device as determined by design arrangement, Style K- Key change combination lock, Design B- no exterior hardware.

E101005 1.3 DAY GATE

Provide vault door manufacturer's modified standard or custom day gate designed for use with vault door furnished, for access control and weapons

issue. Day gate construction shall be minimum 10 gage (3.4 mm) steel flattened and expanded metal welded to a 1 inch (25 mm) minimum steel channel or angle welded frame; expanded metal pattern shall be 1 inch by 1-3/4 inch (25 by 45 mm) diamond grid. Maximum clearance between sides, top and bottom of the day gate and the vault door-frame and floor shall be 1 inch (25 mm) when the day gate is closed. Provide gate hinged on same side as the vault door, swinging to 180 degrees into the vault from closed to open positions. Provide day gate with locking device operable from both sides; the outside by key and the inside by key, knob, lever, or deadbolt; the inside locking device shall either be positioned so that it is not accessible from the outside or it shall be operable by key only. Day gate shall include an issue port opening, cover with locking mechanism, and shelf. The issue port shall be a framed opening welded to the day gate frame with a hinged door cover. The hinged door shall be minimum 18 gage (1.2 mm) steel and shall be lockable from the inside only. The opening shall be 8 inches (200 mm) high and 12 inches (300 mm) wide; tolerances are plus or minus 0.125 inch (3.2 mm). When the issue port is closed, the hinged door cover shall match the opening to within 0.0625 inch (1.6 mm). The shelf shall be minimum 16 gage (1.5 mm) stainless steel, 12 inches (300 mm) deep by 12 inches (300 mm) wide to match the port opening, and shall be capable of withstanding a vertical force of 100 lbf (445 N) at any point without deformation. Provide the manufacturer’s standard painted finish to match that of the vault door. The day gate shall not interfere with the operation of vault door inner escape device.

E1020 INSTITUTIONAL EQUIPMENT

Institutional equipment includes items that are normally found in hospitals, laboratories, auditoriums, and libraries.

E102001 MISCELLANEOUS COMMON FIXED & MOVABLE EQUIPMENT

This section shall include fixed workbenches, hazardous and non-hazardous shop materials cabinetry, shop tools, and other fixed and movable equipment.

E102009 AUDIO-VISUAL EQUIPMENT

E102009 1.1 CEILING MOUNT FOR PROJECTOR

Provide the ceiling mounted hardware for a digital projector, to be coordinated with support blocking (see PTS Section C10, *Interior Construction*) and electrical and data connections (see Section D50, *Electrical*).

E1030 VEHICULAR EQUIPMENT

E103002 LOADING DOCK EQUIPMENT

This paragraph covers the requirements for dock bumpers, truck-trailer restraining devices, and industrial, mechanical and electro-hydraulic dock levelers of a fixed hinged type. All loading dock equipment shall be Navy certified.

Provide a Loading Dock Equipment System for the protection of service docks and for the loading and unloading of service vehicles.

E103002 1.1 DOCK LEVELERS

Based on the performance requirements of the project program, provide ANSI MH30.2 (see LOEDM) steel tread plate lip and platform, hinged and supported

from beneath by steel framework that contains lifting, positioning, and lowering assembly. The design shall permit washing with water and detergents, and operation in an ambient temperature from 0 degrees F to plus 110 degrees F (–18 degrees C to plus 43 degrees C). Minimum roll over capacity shall be not less than 20,000 pounds (9,072 kg).

E103002 1.1.1 Height Adjustment

Provide a ramp with a minimum incline adjustment of 24 inches (600 mm). Divide 12 inches (300 mm) above and 12 inches (300 mm) below the platform height.

E103002 1.1.2 Loading Ramp Compensation

a. Freight Carrier Out of Level - Allow a minimum correction of one inch for each 18 inches (450 mm) and maximum of 4-inch (100 mm) correction of ramp width over the width of the ramp.

b. Loading and Unloading of the Freight Carrier - When the lip is extended, provide a 4-inch (100 mm) compensation for carrier spring deflection to allow full contact between the lip and the carrier bed.

E103002 1.1.3 Safety Devices

a. Electro-hydraulic System - Provide a device to automatically prevent a drop of more than 4 inches (100 mm) of the lip should the freight carrier move away from the dock leaving the lip unsupported.

b. Mechanical System - Provide a three-position safety system to limit platform fall to dock level and 4 and 8 inches (100 and 200 mm) below dock level.

c. Dock Bumpers - Provide laminated rubber, tire fabric or equivalent dock bumpers along the length of the loading dock.

E103005 1.1.4 Operation

a. Mechanical Control - Mechanical chain activated, with extension-spring operation and counter-balance non-manual, raising and lowering system.

b. Electro-Hydraulic Control - Provide dock leveler with pushbutton control, heavy-duty dust tight and oil tight rated in accordance with NEMA ICS 2, Part ICS2-216 for alternating current.

c. Construction and Materials - The entire live load carrying surface of the ramp and rear attachment shall be not less than 1/4-inch(6 mm) thick, 55,000 PSI (379,200 kPa) minimum yield strength, low alloy, non-skid steel tread plate.

d. Toe Guards - Provide sides or edges of the ramps which rise above the surrounding loading dock with sheet carbon steel skirts or toe guards of minimum 14 gage nominal thickness.

E103002 1.1.5 Electro-Hydraulic Lift System

Provide a complete and separate system for each dock leveler. Design system to withstand not less than 150 percent of the design operating pressure. Provide hose, fittings, pipe and tubing with working pressures based upon a minimum 4 to 1 safety factor of bursting pressure.

E103002 1.1.6 Electrical Requirements

NFPA 70, NEMA ICS 2, NEMA ICS 6 and NEMA MG 1

a. Motor - Conform to NEMA MG 1 and continuous duty or 60-minute time rated, industrial type, single speed rated for operating conditions.

b. Control - NEMA ICS 2, size 0 controller for heavy industrial service.

c. Transformer - Totally enclosed, self-cooled, dry type transformer. Incorporate circuit breakers with ground fault interrupting protection conforming to UL 943.

E103002 1.1.7 Structural Warranty

Present a manufacturer's warranty certifying the leveler against operational malfunction or structural failure, or both, for a period of 10 years from the date of acceptance by the Government. Warranty may exclude failure through overloading evidenced by member breakage or residual deformation; but it may not exclude breakage of welds or fastenings, fatigue breakage of components, or wear of moving parts. Provide warranty to cover the full costs of repairs, or replacements in case of a nonrepairable failure.

E103002 1.1.8 Accessories

a. Dock Truck or Trailer Restraining Device - Provide self-aligning device, with a positive restraining force of not less than 18,000 pounds (8,165 kilograms). Device shall service all truck or trailers with ICC bars located between 12 and 30 inches (300 and 750 mm) above ground level.

E103003 WAREHOUSE EQUIPMENT

This paragraph covers the requirements for storage racks, heavy duty shelving, material handling conveyors, and other warehouse equipment. See the project program.

E103004 AUTOMOTIVE SHOP EQUIPMENT

This paragraph covers the requirements for automotive vehicle lifts meeting the requirements of ANSI/ALI ALCTV-1998 standards, and other automotive shop equipment such as pneumatic liquids delivery systems. See the project program.

E1040 GOVERNMENT FURNISHED EQUIPMENT

Refer to the project program.

E1090 OTHER EQUIPMENT

E109002 FOOD SERVICE EQUIPMENT

Provide Food Service Equipment and the kitchen design in accordance with FC 4-722-01N, Navy and Marine Corps Dining Facilities. This paragraph covers the items of commercial food service equipment. Included are items used for liquid and solid food storage, food preparation, cooking, display, serving, and clean up equipment. Provide 180 degree F (82 degree C) hot water or chemical treatment for sinks, dishwashers, pot washers, and exhaust ventilator wash down systems.

Provide products that meet or exceed the specified energy efficiency requirements of FEMP designated or Energy Star qualified products. Submit documentation certifying that products conform to Public Law 109-58 by meeting

or exceeding Energy Star or FEMP efficiency requirements as defined at "Energy-Efficient Products" at http://femp.energy.gov/procurement. Indicate the Energy Efficiency Rating.

E109002 1.1 COMMERCIAL FOOD SERVICE EQUIPMENT

E109002 1.1.1 Equipment Materials

Fabricate custom and commercial equipment in accordance with NSP 2.

a. Stainless Steel Sheets - ASTM A167, 18-8 Composition, Type 302 or 304 or 316, non-magnetic, with a No. 4 finish on the exposed face.

b. Tubing - ASTM A 270

c. Framing and Cross Bracing - ASTM A 276, Type 302 or Type 304 or Type 316

d. Copper Tubing –

1) Tube - ASTM B 88, Type K, annealed, for buried or embedment in concrete, and Type L, hard drawn, for above grade installation.

2) Fittings - ANSI B16.18, above grade, ASME B16.22 or ASME B16.26, above or below grade.

e. Welded Joints - Use tungsten inert gas process. Use filler metal compatible with the material being welded. Make all visible welds ductile and of same color as adjoining surfaces. Coat welds in hidden areas that are not finished by grinding and polishing and the accompanying discoloration in the factory with a metallic-based paint to prevent progressive corrosion. Grind exposed welded joints flush with the adjoining material and finish and polish to match the adjoining surface. Grind off excess metal and smooth to a No. 4 finish. Remove imperfections such as pits, runs, sputter, cracks, low spots, voids and buckle.

Penetrate entire thickness for the entire length of the joint; make joints flat, continuous and homogeneous with the sheet metal without reliance on straps under seams or spot welding. When stainless steel is joined to dissimilar metals, use stainless steel for fastening devices and welding material.

f. Solder - ASTM B 32, 95.5 tin-antimony solder or other lead-free solder for contact with potable water or food. Provide ASTM B 32, alloy grade 50B for temperatures up to 150 degrees Fahrenheit (65 degrees Celsius).

E109002 1.1.2 Custom-Fabricated Counters, Dishwasher Counters, and Sinks

Fabricate of 14 gage (1.8 mm) stainless steel, with all shop seams and water tight welded corners ground smooth, and polished. Pitch all flat surfaces to drain and eliminate any chance of standing water. Counters and sinks shall be furnished complete with integral stainless steel backsplashes, side splashes, and legs with adjustable feet.

a. Sinks - Provide integral sinks in accordance with the requirements of NSF 2, and ASTM A112.19.3M. Provide minimum of 0.75 inch (19 mm) radius on all corners.

E109002 1.1.3 Exhaust Ventilators

Exhaust ventilators shall conform to NFPA 96, UL 710, and SMACNA DCS. Fabricate exhaust ventilators of minimum 18 gage stainless steel in

segments not longer than 12’-0”. Provide centrifugal grease-extracting design to remove 95% of matter from the air with non-removable extracting baffles located in the plenum chamber. Exhaust ventilators shall provide integral make-up air system in accordance with NFPA 96. Provide automatic wash-down cycle and fan control on adjacent wall.

a. Fire Damper - Provide mechanically driven damper and damper control. Activate by heat-sensing thermostat set to react to a temperature of 350 degrees F (177 degrees C) in exhaust duct at exhaust ventilators.

b. Fire Protection System - Provide a pre-engineered wet system in accord with NFPA 96.

E109002 1.1.4 Pre-Fabricated Walk-in Refrigerators and Freezers

Provide walk-in units manufactured for food service use conforming to NSF 7, UL 207, and UL 471. Provide refrigeration unit complying with ASHRAE 15. Outside compressors, if used, require winter controls, housing, and crankcase heater. Provide monitoring system to alarm abnormally low or high temperatures, and personnel safety alarm. If the unit utilizes the floor of the facility as an interior surface of the unit, it shall be insulated and separated from adjacent floors.

E109002 1.1.5 Food Waste Disposer - ASTM F917

E109002 1.1.6 Beverage Dispenser, Non-Carbonated, Refrigerated - ASTM F918

E109002 1.1.7 Food Slicing Machine - ASTM F919

E109002 1.1.8 Food Mixing Machine - ASTM F952

E109002 1.1.9 Powdered Iced Tea Dispenser - ASTM F1023

E109002 1.1.10 Frying and Braising Pan, Tilting - ASTM F1047

E109002 1.1.11 Food Cutter - ASTM F1126

E109002 1.1.12 Food Waste Pulper - ASTM F1150

E109002 1.1.13 Cooker, Steam - ASTM F1217

E109002 1.1.14 Ovens, Microwave - ASTM F1360

E109002 1.1.15 Vegetable Peeling Machine - ASTM F1371

E109002 1.1.16 Combination Oven - ASTM F1495

E109002 1.1.17 Food Processor - ASTM F1568

E109002 1.1.18 Kettle, Steam Jacketed (20-200 gal) Floor or Wall Mounted - ASTM F1602

E109002 1.1.19 Kettle, Steam Jacketed (32 oz-20 gal), Table Mounted - ASTM F1603

E109002 1.1.20 Freezer, Ice Cream, Soft Serve - ASTM F1604

E109002 1.1.21 Griddle, Single or Double Sided - ASTM F1919

E109002 1.1.22 Deep Fat Fryers - ASTM F1963

E109002 1.1.23 Dough Divider/Rounder - ASTM F1966

E109002 1.1.24 Dishwashing Machines:

a. Hot Water Sanitizing Rack Type, ASTM F857
b. Hot Water Sanitizing Single Tank, ASTM F858
c. Hot Water Sanitizing, Multi-Tank, ASTM F859
d. Hot Water Sanitizing, Multi-Tank, Conveyor, ASTM F860
e. Chemical Sanitizing, Stationary Rack, ASTM F953
f. Chemical Sanitizing, Fresh Water Rinse, ASTM F1022
g. Hot Water Sanitizing, Oval Conveyor, Multi-tank, ASTM F1237

E109002 1.1.25 Pot and Pan Washing Machines

a. Heat Sanitizing, Oscillating Arm Type, ASTM F1202
b. Heat Sanitizing, Rotary Conveyor, ASTM 1203
c. Heat Sanitizing, Rack Type, Rotary Spray, ASTM F1114

E109002 2.1 RESIDENTIAL OR LIGHT COMMERCIAL ELECTRIC KITCHEN EQUIPMENT

E109002 2.1.1 Cooking Top - Conform to UL 197 and UL 858.

E109002 2.1.2 Freezer - UL 250, minimum 14 cubic feet (0.39 cubic meters), frost-free.

E109002 2.1.3 Refrigerator - UL 250, refrigerator with frost-proof freezer, minimum 14.6 cubic feet (0.41 cubic meters).

E109002 2.1.4 Freestanding Ice Maker - UL listed and NSF approved; self-contained, air-cooled model, minimum ice production of 355 pounds (161 kg) per 24 hours, and a minimum bin storage capacity of 180 pounds (82 kg) of ice cubes.

E109002 2.1.5 Griddle - UL 197 and NSF 2, built-in counter-top model. Minimum capacity shall be 260 pancakes or 420 hamburgers 4 ounces (110 g) per hour.

E109002 2.1.6 Microwave Oven - UL 923, minimum 1 cubic foot (0.03 cubic meter) capacity.

E109002 2.1.7 Oven - UL 858, self-cleaning and built-in.

E109002 2.1.8 Trash Compactor - UL 1086, under-counter model with storage compartment and 20 gallon (75 liter) trash disposal bag capacity.

E109002 2.1.9 Kitchen Exhaust Hood - NFPA 96 and NSF 2, factory fabricated of minimum 18 gage stainless steel.

E109002 2.1.10 Range Hood - UL 858, vented or non-vented with two-speed fan.

E109001 2.1.11 Dishwasher - UL 921 or UL 749 with detergent dispenser. For heavy-duty dishwasher, provide stainless steel

commercial grade with approximately 300-dish per hour and 540 glasses per hour ratings.

E109002 2.1.12 Residential Garbage Disposal - UL 430, stainless steel, continuous feed with minimum 1/2 or 3/4 hp motor. Optional 1 hp motor for heavy usage.

E10900=5 UNIT KITCHENS

E109005 1.1 UNIT KITCHENS

Unit kitchens must be complete with countertops, sinks, faucets, appliances, and accessories. Comply with DoD ABAAS in units for the disabled. Provide high pressure laminate or natural wood finish.

E109005 1.2 UNIT KITCHEN COMPONENTS

a. Cabinets - ANSI/FCMA A161.1 wood and plywood cabinetry with drainers and cabinet doors.

   1) Provide 3/4-inch (19 mm) solid wood for face framing, drawer fronts, and shelves up to 36 inch (91.44 cm) wide. Cabinet body members require spline, biscuit, dowel or dado joining.

   2) Provide 1/2-inch (12.8 mm) solid wood for drawer boxes with dovetail or dowelled joints.

   3) Provide 3/8-inch (9 mm) plywood for cabinet box and toe board.

   4) Provide cabinet doors of High Pressure Laminate covered medium density fiberboard or stile and rail doors.

b. Countertop - Provide ASTM 2124.3 and ASTM 2124.6, solid polymer countertop and 3-1/2 inch (89 mm) backsplash.

c. Sink and Faucet - Provide ANSI A112.18.1M, NSF International Standard 61 sink and faucet. Section 9 for sink and faucet. Provide large 22 gauge stainless steel sink with basket strainer in w with water stopper. Faucet shall be a washerless cartridge system

d. Refrigerator-Freezer – 5 cubic foot minimum undercounter refrigerator freezer. Provide interior light, defrost, adjustable shelving, adjustable thermostat features, and zero degree freezer.

e. Microwave Oven/Ventilation Hood Combination. Provide 1.4 cubic foot 900 watt minimum, microwave/hood above cooktop. Ductless hood must be convertible to ducted at the project site.

f. Cooktop – Provide drop-in 2 burner black ceramic cooktop with 1200 watt elements.

g. Dishwasher – Provide 24 inch wide Energy Star Large capacity dishwasher.

h. Accessories:

   1) Back wall shield and end wall shields when against an end wall.

   2) Countertop fluorescent lighting.

   3) Drawer slides rated for 100 pound capacity.

   4) Door hinges to be adjustable, self-closing, and configured to allow screw application to cabinet door from two directions.

E109090 OTHER SPECIALIZED FIXED AND MOVABLE EQUIPMENT

Specialized fixed and moveable equipment not described by the other assembly categories.

E109090 1.1 WEAPONS RACKS

Weapons Storage Racks may be purchased or may be steel fabrications. Comply with OPNAVINST 5530.13c and standard operating procedure for the facility.

E109090 1.2 GEAR DRYING CAGES

Drying cages (racks) for SCUBA gear may be purchased or may be fabrications. Comply with standard operating procedures for the facility.

-- End of Section --

SECTION E20

FURNISHINGS
09/15

E20 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

E20 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and Government standards referenced in the section text that are **not** found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website, are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the standard at the time of contract award:

E20 1.1.1 Industry Standards and Codes

E20 1.1.2 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-101-01, ArchitectureUFC 3-120-10, Interior Design)
UFC 1-200-02	High Performance and Sustainable Buildings

E20 1.2 GENERAL REQUIREMENTS

The Contractor shall have an Interior Designer, certified by the National Council for Interior Design Qualification (NCIDQ), or a state and/or jurisdiction Certified, Registered, or Licensed Interior Designer prepare both the FF&E and the SID Package, attend and participate, in entirety, all kick-off meetings, design meetings, to include, but not limited to, design charettes, concept design workshops, and review meetings to develop the building design, floor plan, and the FF&E package. As required, the Contractor shall obtain services of equipment specialists to specify the

audiovisual, shop, or specialty equipment. The Interior Designer and any specialists shall not be affiliated with any furniture dealership/vendor or manufacturer. The Government Interior Designer reserves the right to approve/disapprove the qualifications of the Contractor's Interior Designer.

Systems furnishings installers must be the systems furniture manufacturer's approved dealer of record. In addition, installation dealers must be located within a 100 mile radius of the project site unless approved by the government Interior Designer.

E20 1.3 DESIGN SUBMITTALS

Design Submittals shall be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures,* FC 1-300-09N, *Navy and Marine Corps Design Procedures, and* UFC 03-120-10, *Interior Design*.

E20 1.4 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

Art work and FF&E Package

E2010 FIXED FURNISHINGS

E201001 FIXED ARTWORK

E201002 WINDOW TREATMENTS

Provide interior window coverings, associated hardware and controls at each exterior window and at any interior view window where privacy may be required. Refer to the Project Program for size, pattern and style of window treatments. At a minimum, functional window coverings such as blinds or solar shades are required on all projects.

E201002 1.1 BLINDS

Venetian blinds shall be one-inch horizontal room-darkening commercial grade aluminum at a minimum thickness of 0.008-inch (0.2 mm) (after coating) with a minimum of 15 slats per foot (45.72 slats per meter). Blinds shall be provided at each exterior window and at any interior window where privacy may be required. One full size sample shall be provided and installed for review and approval.

E201002 1.2 SHADES

Provide energy efficient solar shading systems for exterior windows. The system shall maintain visibility while reducing glare, solar heat gain during the summer and heat loss during the winter. Openness configuration shall be no more than 5% for most areas. The system fabrics and components shall be dimensionally stable and shall be manufactured to withstand fading, fire, mildew, and soiling.

E201002 1.3 DRAPERIES AND HARDWARE

Draperies shall be manufactured under GSA contract as part of FF&E. Drapery can be accordion-fold, ripple-fold, or pinch-pleat with associated hardware suitable for the project requirements. All draperies shall meet the NFPA Code 701 California Fire Marshall's flame retardant requirements.

E201003 SEATING (FIXED)

E201003 1.1 AUDITORIUM, LECTURE AND CLASSROOM SEATING

The system shall permit the standards to be installed on radial lines from a common center for which concentric circles are determined with each row of units utilizing common middle standards. Standards in each row shall be placed laterally so the aisle-end standards will be in alignment as indicated on seating layout drawing. The angle of inclination of backs shall be adjusted for variations in sightlines. Mechanical attachment of components shall be of sufficient flexibility so that when permanently assembled they will compensate for the changing dimensions laterally between standards caused by convergence toward the center. Seat and back attachments shall absorb inaccuracies in lateral spacing of standards at point of attachment caused by unevenness of floor. Varying lateral dimensions of backs and seats shall be in accordance with approved seating layout. Minimum width of seating unit shall be 20 inches and may be used only to complete a specific row dimension.

E201003 1.2 FIXED TABLES FOR AUDITORIUM, LECTURE AND CLASSROOMS

Provide worksurfaces mounted to floor standards shall be tubular steel, sheet steel, or cast iron. The standards shall be formed to fit the floor incline so that the standards will be vertical. The feet shall be formed to eliminate tripping hazards and shall have holes for bolt attachment to the floor. Provide riser standards, cantilevered standards and aisle and end standards as required. Provide communications, data and power routing as required. Provide a high-pressure plastic laminate over medium density particleboard for the worksurfaces with coordinating vinyl or resin edge detail.

E2020 MOVABLE FURNISHINGS

Furnishings, Fixtures, and Equipment (FF&E) shall include furniture, shop equipment, audiovisual equipment, and specialty equipment. Weapon racks, drying cages, and lockers are not considered FF&E. FF&E shall be fully integrated with the building systems and finishes. FF&E may also include specialty items for which the customer activity shall be responsible for specifying.

Design and provide as required FF&E for all areas as developed during client programming. Design an FF&E package and prepare supporting plans and procurement data in accordance with the general interior design requirements in UFC 3-120-10.

E2020 1.1 FF&E PACKAGE

FF&E Package: Design and provide a fully usable and complete facility to include a FF&E movable furnishings package from Government supply sources according to Federal Acquisition Regulations. The FF&E will include, but not limited to, systems and modular furniture, training and conference furniture, seating, tables, artwork, decorative window covering, specialty furniture and equipment, dormitory room furnishings, and accessories. NAVSUP Blanket Purchase Agreements (BPA) must be used whenever possible. The government will provide separate funding for the FF&E package. Construction funds will not be used. The FF&E Package must include

shipping, freight, handling, installation and the HAR percentage as applied to the final FF&E total cost.

E2020 1.1.1 Authorization

The government will provide separate funding for procurement of the FF&E package. Upon receipt of required funding, the Contractor shall be authorized by the Contracting Officer as a planned line item modification to the contract/task order to procure all FF&E using predominately negotiated Federal contracts. The amount of the modification will be the actual cost of these items from the Federal price schedules or NAVSUP BPAs, including any freight and installation charges from the furniture supplier as well as the contractor's FF&E Handling and Administration Rate (HAR). The HAR includes all of the prime contractor's effort related to storage, coordination, handling, administration of subcontractors, and all other associated costs and profit for the procurement of FF&E. The prime contractor will propose in the contract/task order solicitation the FF&E HAR. The contractor's proposed HAR may not exceed 5% of the total FF&E costs, as noted on the bid schedule. No other charges, expenses, fees, markups, etc will be authorized.

The government Interior Designer will approve the final FF&E submittal. The FF&E package will be presented to the Contracting Officer and the Contractor shall provide the FF&E exactly as specified and approved.

The Contractor will receive a letter of authorization from the Contracting Officer citing the name of the furniture dealer and other information to use when accessing the government supply sources.

E2020 1.2 PURCHASE AND INSTALLATION

The Contractor shall coordinate the building completion date with the installation dealer specified in the FF&E Package. The Contractor or contractor's representative is responsible for the following: issuing purchase orders, receiving acknowledgements, sending copies of purchase orders to the installation dealer(s) specified in the FF&E package, and providing necessary deposits to furniture manufacturers.

The FF&E installation dealer(s) is responsible for the following: Receiving and installing all FF&E specified in the FF&E package, coordinating delivery and installation with the Contractor, inspecting for damage, providing delivery receipts to the Contractor, filing necessary freight claims, hanging artwork, bulletin boards, etc., removing packaging material, cleaning up the site upon completion, and adhering to Contractor's safety requirements.

E2020 1.2.1 Use of GSA Schedules and Blanket Purchase Agreements (BPAs)

The prime contractor or FF&E dealer will be authorized to purchase supplies or services from the Navy Furniture BPAs for FF&E requirements, under the terms of the contract. The Contractor will receive a letter of authorization from the Contracting Officer citing the name of the furniture dealer and other information to use when accessing the government supply sources or BPAs.

E2020 1.2.2 Deposits

The Contractor should anticipate providing a deposit of between 30% to 50% of the furniture costs when placing their order.

The Contractor shall also anticipate possible manufacturer price increases. Recommend ordering FF&E product once funds are received to avoid incurring additional costs. Delayed production and delivery dates can be noted at the time of order placement to coincide with building completion dates. Any costs incurred due to manufacturer price increases will be the burden of the contractor.

E2020 1.2.3 Davis Bacon Wages

Davis Bacon wages do not apply to the FF&E installer from the government supply sources. The workforce for the FF&E installation and delivery shall be separate and distinct from the labor workforce performing under the construction contract.

E2020 1.2.4 Sales Tax

Exemptions for certain State or Local taxes may be available to the contractor and/or its subcontractors. The contractor shall take maximum advantage of all exemptions, including obtaining a resale permit, from State and Local taxation authorities whether available to it directly or available to the contractor based on an exemption afforded the government. The responsibility for paying applicable taxes rests with the contractor. State and local taxes applicable to the FF&E line will be included with the subcontractor's quote, if applicable

Any items purchased as building materials such as carpet are taxable.

E2020 1.2.5 Bonds

FF&E line item is not considered construction and the prime contractor shall not be required to secure any additional bond for the award of the FF&E line item unless otherwise indicated in the RFP. If any additional bond is required for the FF&E line item it is to be included in the prime contctor's FF&E HAR.

E2020 1.2.6 Unique Item Identification (IUID) and Validation

Unique item identification and valuation is a system of marking and valuing items delivered to DoD that enhances logistics, contracting, and financial business transactions. The IUID policy is mandatory for all DoD contracts that require the delivery of items. An item is a single article or a single unit formed by a grouping of subassemblies, components or constituent parts. The contractor shall provide DoD Unique item identification, valuation and delivery of data for all required FF&E items for which the government's unit acquisition cost is $5,000 or more.

E2020 1.2.7 Buy American Act and Trade Agreement Act

All supplies under the FF&E line item are subject to the Buy American Act and Trade Agreement Act (TAA). The GSA contracts and NAVSUP Blanket Purchase Agreements are required to comply with the Buy American Act and TAA.

E2020 1.2.8 Small Business Requirements

The FF&E is subject to the Contractor's Small Business Goals however the government requires the furniture be purchased from NAVSUP Blanket Purchase Agreements (BPA). Most manufacturers on the Office Furniture BPA are large business and most manufacturers on the Dorm and Quarters BPA are small business. Installation dealers are small business. Under the terms of the BPA, the FF&E must be ordered directly through the GSA manufacturer. Using pass-through companies to achieve Small Business

Goals will not provide the Contractor credit unless they manufacturer 20% or provide 50% of the service purchased. The government will not incur additional costs to use small business.

E2020 1.2.9 Installation

The FF&E package includes the installation of all furniture and furnishings as specified in the FF&E package. The installation dealer specified in the FF&E package will receive, store, if required, transport to the project site, off load, inside deliver, unpack, assemble, place/install, clean, if required, and dispose of all the trash for all furniture and furnishings. The Contractor’s Interior Designer will be responsible for specifying installation services and warehousing, as required, for all collateral equipment. It is the Contractor’s responsibility to coordinate the building completion, occupancy, and furniture installation dates with the installation dealer specified in the FF&E package. Any costs associated with storing or delaying furniture shipments is the responsibility of the construction contractor.

E2020 1.2.10 Installation Warranty

All movable furnishings shall be installed in accordance with the manufacturer’s instructions and warranty requirements. All movable furnishings shall be level and aligned and all doors, drawers and accessories shall be level and aligned to open, close and otherwise operate smoothly and securely. All systems furniture shall be installed by the systems furniture manufacturer’s dealer of record and not the general Contractor. The Contractor shall repair, to the customer’s satisfaction, any/all damage to any facility finish that is a result of the furniture installation and correct all punch list items for the furniture/furnishings.

E2020 1.2.11 Ordering Documentation

Two copies of all ordering documentation shall be provided to the contracting officer including Factory Order number (FO) and warranty information.

E2020 1.2.12 Post Award Changes

After award of the FF&E line item modification, any request to change the FF&E items must be submitted on the Contracting Officer. The FF&E modification has been accepted, priced, and negotiated based on specific line items as detailed in the final package. Those items have been agreed to considering color, specific type and quality of material, price, sustainability, life cycle, and dealership service. The Government will expect and require the contractor to provide exactly those items. Should changes become necessary, careful consideration is required to ensure that equivalent quality, price and other aspects of the item is maintained. Otherwise, price adjustments must be negotiated. The Contracting Officer will obtain approval from the Government Interior Designer/Collateral Equipment Manager in consultation with the client for any changes to the FF&E.

Post award FF&E manufacturer's price increases are the responsibility of the Contractor and shall not be transferred to the government. Recommend ordering FF&E product once funds are received to avoid incurring additional costs. Delayed production and delivery dates can be noted at the time of order placement to coincide with building completion dates.

E2020 1.3 BEST VALUE DETERMINATION

A best value determination is required by FAR 8.404 when placing orders against Federal Supply Schedules for the selection of furniture and furnishings. A BVD must also be provided for FF&E installation services. Best Value is defined in FAR 2.101 as ensuring that the order to be placed under a Federal Supply Schedule results in the lowest overall cost alternative (considering price, special features, administrative costs and client's needs) to meet the government's needs.

The Contractor's Interior Designer is responsible for the following written BVD justifications:

$3,000 or less:

For any procurement in the FF&E package with a value of $3,000 or less, the interior designer may utilize any BPA holder. If the BPA holders cannot supply the item, then any other manufacturer may be utilized.

Greater than $3,000 and $150,000 or less:

For any procurement in the FF&E package with a value greater than $3,000 and $150,000 or less, the contractor's interior designer shall always review pricing from at least three manufacturers as well as UNICOR. In addition to the review of published list prices, the contractor's interior designer must confirm the pricing with the vendor. Manufacturer's quotes are NOT required. The BVD form must be completed and submitted for all FF&E procurements greater than $3,000 and $150,000 or less.

Greater than $150,000:

The contractor's interior designer shall solicit proposals from all BPA holders under the applicable group for FF&E procurements greater than $150,000. UNICOR must always be solicited. The contractor's interior designer shall develop performance criteria and project requirements based on a generic design for the BPA holders and UNICOR to develop a price and performance proposal. The BVD form must be completed and submitted for all FF&E procurements greater than $150,000 and manufacturer's quotes and a summary of all proposals must be attached.

Federal Prison Industries (UNICOR) must be considered as part of all BVDs. This must be done by sending an email with the requirements and evaluation criteria If they are not comparable in one or more areas of price, quality, and time of delivery, the designer can specify product under NAVSUP BPA or GSA schedule.

The best value determination shall address issues such as space planning; human factors data related to anthropometrics (reach, clearance, adjustability), space, and acoustics; ergonomics; product quality (including construction and materials); sustainability features, product warranties; history of the product and/or manufacturer; ability to service products through dealers or others within a certain geographical range of the project; price (including freight); aesthetics; appropriateness; and lighting, power and telecommunications systems management and/or coordination as related to the facility (when applicable); and other project specific factors as identified and/or required. Emphasis shall be to create a fully integrated design solution by providing quality products to meet the functional needs of the customer. Customer preferences shall be considered. The focus shall be on the best overall value. Use the GSA Best Value Determination forms provided in Part 6 of this RFP as guidelines for information to be provided.

E202001 MOVABLE ART WORK

The Contractor shall provide artwork for wall installation as part of the FF&E Submittal according to the project program. Installation of artwork to be completed by installation dealer specified in the approved FF&E package. Type of artwork to be determined by client requirements and budget as described in the Project Program for the project. Install framed artwork 63 inches (1600 mm) on center above finished floor. Include security mounting hardware as required.

E202002 MODULAR PREFABRICATED FURNITURE

E202002 1.1 FURNITURE SYSTEMS

Provide products that meet the NAVFAC performance specifications for systems furniture. The Government Interior Designer must approve any other systems furniture manufacturer. The typical workstation shall maximize each allocated space with worksurfaces and overhead closed storage with a surface to accommodate a Government provided computer. An attached articulated keyboard/mouse tray shall be selected or provided. Provide a monitor lift if required by the project program.

Powered raceways that will accommodate data and voice wire management shall be completely coordinated with all facility systems. The Contractor's Interior Designer shall ensure the coordination of all electrical/data and furniture locations. Use of power poles will not be permitted to power FF&E. The Contractor shall provide and coordinate all telecommunication receptacles and outlet requirements (i.e. RJ 11/45 receptacles and cover plates) with the Contractor's Interior Designer and the systems furniture installer. The Contractor shall hardwire all pre-wired furniture with the building systems, and coordinate all IT and telephone connections.

E202002 1.2 MODULAR FREESTANDING FURNITURE AND WORKSTATIONS

Provide products that meet the NAVFAC performance specifications for modular freestanding furniture including wood. Provide modular furniture with electrical/data cable trays and grommet holes for private offices and smaller work areas. An attached articulated keyboard/mouse tray (and monitor lift if required by the project program) shall be selected. Wood surfaces shall be provided as appropriate. Include accommodation for a Government provided computer and printer.

E202003 FREESTANDING FURNITURE

E202003 1.1 SEATING

E202003 1.1.1 Task Seating

Provide task seating that is fully ergonomic and coordinated by finish and scale to the workstation. Seating specifications to include: adjustable arms, back, height, and seat pan; 5 star base, appropriate castors for floor surface, lumbar support and availability in a minimum of two (2) sizes. Task seating can be from the same manufacturer as the systems or major furniture supplier or other seating manufacturer as approved by the government Interior Designer, provided it is determined to be a BPA "Best Value".

E202003 1.1.2 Lounge, Reception and Guest Seating

Provide lounge, reception and guest seating with upholsteries consistent with the Project Program. Seating shall be easily reupholstered or have removable covers.

E202003 1.1.3 Training Room Seating

Provide seating with passive ergonomic features in that the seat and back offers some synchronized movement to allow the person seated to change positions. The support can be legs, sled base or single pedestal with 5 star base and casters as determined by user requirements. Provide high density stack chairs or nesting chairs as required. Provide attached, storable tablet arm as required.

E202003 1.2 STORAGE AND FILING

Provide freestanding storage units, file cabinets and file safes to accommodate the specific and unique storage requirements of the user. Coordinate closely with storage provided in PTS Section E10, *Equipment*, for high density filing.

E202003 1.3 CHILD DEVELOPMENT CENTERS

Provide all child care and classroom furnishings such as cribs, rocking chairs, feeding chairs, tables, seating, toy storage, book display storage, activity centers, freestanding floor activity toys, and any other required furnishings. Outdoor structural play equipment may be required. The cribs shall be of stainless steel construction. The chairs and tables shall be appropriately sized for each age group.

E202003 1.4 TRAINING/CONFERENCE ROOM FURNISHINGS

E202003 1.4.1 Tables

Provide single or multi-person worksurfaces or tables as determined from user requirements. Where computers are used, provide tables with wire management capability or pre-wired tables to accommodate data/telecommunications requirements. Powered raceways that will accommodate data and voice wire management shall be completely coordinated with all facility systems. The Contractor’s Interior Designer shall ensure the coordination of all electrical/data and furniture locations. The Contractor shall provide and coordinate all telecommunication receptacles and outlet requirements, hardwire all pre-wired furniture with the building systems and coordinate all IT and telephone connections.

E202003 1.4.2 Movable Presentation Furnishings

Provide audio-visual carts, lecterns, multi-media presentation cabinets to accommodate power/data requirements.

E202003 1.5 DINING ROOM FURNISHINGS

E202002 1.5.1 Cafeteria, Dining Hall Furnishings

Provide stackable seating and associated dollies for transport and storage, tables with folding or fixed legs or flip tops, and associated mobile carts for transport and storage, and trash and recycling containers.

E202002 1.5.2 Executive Dining Furnishings

Provide premium quality dining furnishings to include tables, chairs, buffet and serving units, hutches and cabinets as require by the Project Program.

E202004 RUGS & ACCESSORIES

E202004 1.1 RUGS

Provide Area or Accent rugs. Refer to the Project Program for requirements.

E202004 1.2 LAMPS

Provide decorative lamps. Refer to the Project Program for requirements.

E202004 1.3 INTERIOR LANDSCAPING

Provide artificial plants of a variety of sizes and ‘species’ to provide interior landscaping, including planters or containers for artificial plants to coordinate with the interior finishes and furnishings of the project.

E202004 1.4 OTHER DECORATIVE ITEMS

Refer to the Project Program for requirements.

E202090 OTHER MOVABLE FURNISHINGS

E202090 1.1 MISCELLANEOUS ITEMS

E202090 1.1.1 Containers

Provide waste receptacles, recycling containers, and ash urns as required.

E202090 1.1.2 Accessories

Provide clocks, wall mounted or freestanding literature and coat racks, and mirrors as required.

E202090 1.1.3 Small Equipment

Provide small appliances such as coffee pots, microwaves, refrigerators, washers, dryers, and icemakers, as required.

E202090 1.1.4 Special Equipment

Provide mailroom work and storage tables, mail sorter units, carts and equipment tables as required.

-- End of Section --

SECTION F10

SPECIAL CONSTRUCTION
09/15

F10 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

F10 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and Government standards referenced in the section text that are **not** found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website, are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the standard at the time of contract award.

F10 1.1.1 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-101-01, Architecture UFC 3-301-01, Structural Engineering)
UFC 1-200-02	High Performance and Sustainable Buildings

F10 1.2 PERFORMANCE VERTIFICATION AND ACCEPTANCE TESTING

Verification of satisfactory special construction system performance shall be via Performance Verification Testing, as detailed in this section of the RFP. Provide special tests and special inspections in accordance with UFGS Section 01 45 00.05 20, *Design and Construction Quality Control.*

F10 1.3 DESIGN SUBMITTALS

Design submittals shall be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures,* FC 1-300-09N, *Navy and Marine Corps Design Procedures,* UFC 3-101-01, *Architecture,* and UFC 3-301-01, *Structural Engineering.*

F10 1.4 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications.* In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following submittals as a minimum:

All structural elements necessary for construction.

For a pre-engineered metal building, provide shop drawings showing engineering data and complete building drawings, signed and sealed by a registered professional engineer.

F1010 SPECIAL STRUCTURES

F101001 METAL BUILDING SYSTEMS

F101001 1.1 DESIGN REQUIREMENTS

The metal building manufacturer shall be accredited in accordance with all Parts of the Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems (AC472) by the International Accreditation Service, Inc. The Metal Building System design shall be in accordance with the Metal Building Manufacturers Association (MBMA) Low Rise Manual.

All structural design shall comply with the provisions of PTS Section B10, *Superstructure*. The steel structure shall be as designed by the structural engineer. If used for thrust bracing, tie rods shall be concrete encased. Design framed openings structurally.

F101001 1.1.1 Additional Roof Design Requirements

a. Roof Decking – In addition to any other load requirements, roof decking shall be designed to support a 200-pound (91 kg) concentrated load at mid-span on a 12-inch (300 mm) wide section of deck.

b. When used as a diaphragm, roof decks shall be designed in accordance with SDEI DDM.

F101001 1.1.2 Deflection

a. Structural Members

1) Maximum deflection of main framing members and for roof members shall not exceed values required by the IBC.

2) Purlins and Roof Panels: The deflection due to live, snow, or wind shall not exceed L/180. The basis of design shall establish that the roof when deflected under dead plus live or snow loads will not result in a negative gradient. Maximum deflections shall be based on sheets continuous across two or more supports with sheets unfastened and free to deflect. Provide bracing of purlin compression flanges as required to resist applied loading.

b. Wall Panels - Maximum deflection of wall panels due to wind loads shall be as required by the IBC and UFC.

F101001 1.2 WALL AND ROOF MATERIALS

F101001 1.2.1 Aluminum/Zinc-Coated Steel Sheet

ASTM A792/ A792M, AZ 55.

F101001 1.2.2 Aluminum Sheet

Alloy 3004 Alclad conforming to ASTM B209.

F101001 1.3 FRAMING AND STRUCTURAL MEMBERS

F101001 1.3.1 Steel

ASTM A992 / A992M, ASTM A529/ A529M, ASTM A572/ A572M, or ASTM A588/ A588M.

F101001 1.3.2 Aluminum

ASTM B221 or ASTM C308.

F101001 1.3.3 Structural Tube

ASTM A500 or ASTM B221.

F101001 1.4 MISCELLANEOUS ITEMS

F101001 1.4.1 Fasteners

Fasteners shall be compatible with the materials they are fastening to, be gasketed when exposed to weather to prevent leaks, and shall provide both shear and tensile strengths not less than 750 pounds (3,336 N) per fastener. The main fastening system shall use concealed fasteners, however, when exposed fasteners are needed, color fasteners shall be color coated to match wall/roof panels.

F101001 1.4.2 Light Transmitting Roof Panels (Non-Insulated)

ASTM D3841, Type II, Grade 1

F101001 1.4.3 Insulation

Blanket-type fiberglass insulation with a factory applied facing on one side and having a permeance rating of 0.05 or less in accordance with ASTM E96.

a. Flame Spread Rating 75 or less, and a Smoke Developed Rating of 150 or less when tested in accordance with ASTM E84.

b. Insulation R-value in accordance with ASTM C236 as determined by energy use analysis or identified in the RFP.

F101001 1.5 FINISH

Factory Color Finish - Provide factory applied baked coatings to the exterior and interior of metal wall panels and metal accessories. Provide exterior finish top coat of 70 percent inorganic pigments with 0.8 mil dry film thickness (DFT). Provide exterior primer standard with panel manufacturer but not less than 0.8 mil DFT over the color topcoat and edge coating for projects within 300 feet (91 meters) of a water shoreline or industrial environments. Field apply 70 percent PVDF clear coat to unfinished panel edges or field cut panels. Interior finish exposed to sun or rain shall be the same coating and DFT as the exterior coating. Interior finish protected from sun or rain exposure shall receive 1.0 mil

DFT coating of siliconized polyester (SMP) resin coating with organic or blended pigments and manufacturer’s standard primer.

F1030 SPECIAL CONSTRUCTION SYSTEMS

F103001 VAULTS

This paragraph is for prefabricated vaults. See PTS Section E10, *Equipment*, for vault doors and day gates.

-- End of Section --

SECTION F20

SELECTIVE BUILDING DEMOLITION
09/15

F20 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

F20 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and government standards that are referenced in the section text that are **not** found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website, are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the standard at the time of contract award.

F20 1.1.1 Industry Standards

Refer to UMRL for reference designation identification.

F20 1.1.2 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-101-01, Architecture)
UFC 1-200-02	High Performance and Sustainable Buildings
UFC 3-800-10N	Environmental Engineering for Facility Construction

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS 01 57 19.00 20, *Temporary Environmental Controls*

UFGS 01 57 19.01 20, *Supplementary Temporary Environmental Controls*

UFGS 02 82 14.00 10, *Asbestos Hazard Control Activities*

UFGS 02 82 16.00 20, Engineering Control of Asbestos Containing Materials

UFGS 02 83 19.00 10, *Lead Based Paint Hazard Abatement, Target Housing and Child Occupied Facilities*

UFGS 02 85 00.00 20, *Mold Remediation*

U.S. ARMY CORPS of ENGINEERS (USACE)

EM 385 -1-1 (2014) Safety -- Safety and Health Requirements or latest edition including changes

F20 1.2 QUALITY ASSURANCE

Materials and assemblies installed in the work shall be inspected and found to be in compliance with industry standards prior to acceptance of the work. Items found not to be in compliance shall be removed, or corrective measures taken, to assure compliance with the referenced standard. Disposal of materials shall be as specified and performed in a manner to protect workers and existing structures to remain.

F20 1.3 PERFORMANCE VERIFICATION AND ACCEPTANCE CRITERIA

Compliance with the requirements will be determined by a review of the design and construction submittals and by field inspection. See UFGS Section 01 33 10.05 20, *Design Submittal Procedures*, and UFGS Section 01 33 00.05 20, *Construction Submittal Procedures*, for additional requirements.

F20 1.4 DESIGN SUBMITTALS

Design Submittals shall be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures,* FC 1-300-09N, *Navy and Marine Corps Design Procedures,* and UFC 3-800-10N, *Environmental Engineering for Facility Construction*.

F20 1.5 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the Z10 requirements and if applicable to this project, the Designer of Record (DOR) shall obtain governing body approval for the construction submittals contained in the following UFGS sections and USACE Safety Manual as a minimum:

UFGS 01 57 19.05 20, *Temporary Environmental Controls for Design-Build*

UFGS 01 57 19.01 20, *Supplementary Temporary Environmental Controls*

UFGS 02 82 14.00 10, *Asbestos Hazard Control Activities*

UFGS 02 82 16.00 20, Engineering Control of Asbestos Containing Materials

UFGS 02 85 00.00 20, *Mold Remediation*

EM 385-1-1, *Safety and Health Requirements*, latest edition including changes

a. Engineering Safety Survey

b. Demolition Plan/ Deconstruction Plan

F2010 BUILDING ELEMENTS DEMOLITION

All demolition materials and appurtenances shall be properly disposed and in accordance with all applicable regulations. Maximize the use of deconstruction and recycling services. Before demolition can commence, any hazardous materials shall be abated in accordance with the requirements of the ESR and other parts of the RFP. Provide a Demolition Plan/ Deconstruction Plan that is based on a Registered Engineers Survey in accordance with EM 385-1-1 and has been approved by the DOR. The Contractor shall obtain approval from the Contracting Officer for the proposed demolition plan and work/outage schedule prior to demolition activities.

F2010 1.1 GENERAL DEMOLITION

The work includes demolition, salvage of identified items and materials and removal of resulting rubbish and debris. Rubbish and debris shall be removed from Government property daily, unless otherwise directed. Materials that cannot be removed daily shall be stored in areas specified in the approved Demolition Plan as described in UFGS 01 57 19.00 20.

Any excavation or ground penetration work must comply with the Joint Region Marianas, Explosives Safety Submission, Munitions Response Sites, GUAM CONSTRUCTION SUPPORT (JRM ESS).

F2010 1.2 UTILITIES

Remove existing utilities and terminate in a manner conforming to the nationally recognized code covering the specific utility. Disturbance to utilities can not cause a failure to utilities to remain operational, unless a planned outage is approved by the FEAD/ROICC and coordinated with on-site personnel.

F2010 1.3 DUST CONTROL

Perform dust control activities in accordance with approved Dirt and Dust Control Plan as described in UFGS 01 57 19.00 20.

F2010 1.4 TRAFFIC CONTROL

Where pedestrian, vehicle, aircraft safety is endangered, use traffic barricades.

F2010 1.5 WEATHER PROTECTION

For portions of the building to remain, protect building interior, materials, and equipment from weather at all times.

F2010 1.6 BURNING

Perform burning operations in accordance with the ESR.

F201001 SUBSTRUCTURE & SUPERSTRUCTURE

Perform substructure or superstructure demolition work in accordance with the ESR.

F201002 EXTERIOR CLOSURE

Perform exterior closure demolition work in accordance with the ESR. For occupied buildings ensure openings to the exterior are secured by the end of the work shift.

F201003 ROOFING

Perform roofing demolition work in accordance with the ESR. For removal and re-roofing projects, remove only as much roofing as can be re-covered by the end of the work shift.

F201004 INTERIOR CONSTRUCTION & FINISHES

Perform interior construction & finishes demolition in accordance with the ESR.

F201005 CONVEYING SYSTEMS

Perform conveying systems demolition in accordance with the ESR.

F201006 MECHANICAL SYSTEMS

Perform mechanical systems demolition in accordance with the ESR.

F201007 ELECTRICAL SYSTEMS

Perform electrical systems demolition in accordance with the ESR.

F201008 EQUIPMENT & FURNISHINGS

Perform special equipment and furnishing demolition in accordance with the ESR.

F201009 OTHER NON-HAZARDOUS SELECTIVE BUILDING DEMOLITION

Perform non-hazardous selective building demolition in accordance with the ESR.

F2020 HAZARDOUS COMPONENTS ABATEMENT

Prior to starting work, conduct any additional testing that may be needed to provide a final design and comply with all applicable Federal, regional, state and local regulations. Refer to UFC 3-800-10N, *Environmental Engineering for Facility Construction*, for restrictions and for additional requirements and criteria.

F2020 1.1 PRIVATE QUALIFIED PERSON (PQP)

The PQP must perform independent inspections, testing and verification of the hazardous components work as indicated in the ESR and the approved work plans as described in UFGS 01 57 19.00 20. The PQP shall be appropriately licensed in the state in which the work will be performed.

F2020 1.2 FURNISHINGS

The government shall remove all uncontaminated furnishings and equipment from the work area prior to the start of the work.

F2020 1.3 ASBESTOS

Perform asbestos related work as indicated in the RFP, in accordance with the ESR, and the approved asbestos removal work plan as described in UFGS 01 57 19..

For asbestos work in DoD schools the Designer of Record shall edit UFGS 02 82 14.00 10, *Asbestos Hazard Control Activities,* as described in UFGS 01 57 19.00 20. The Designer of Record must be an EPA accredited Asbestos Project Designer. Perform asbestos related work in DoD schools in accordance with the approved edited UFGS 02 82 14.00 10.

F2020 1.4 LEAD BASED PAINT

Perform lead based paint related work as indicated in the RFP, in accordance with the ESR and the approved lead based paint removal work plan as described in UFGS 01 57 19.00 20.

All federal, state and local regulations regarding lead based paint within a child occupied facility must be followed. For lead based paint work performed in child occupied facilities the Designer of Record shall edit UFGS 02 83 19.00 10, *Lead Based Paint Hazard Abatement, Target Housing and Child Occupied Facilities,* as described in UFGS 01 57 19.00 20. The Designer of Record must be an EPA accredited Lead Project Designer. Perform lead based paint related work in child occupied facilities in accordance with the approved edited UFGS 02 82 14.00 10.

F2020 1.5 PAINT RELATED WORK

Perform paint related work as indicated in the RFP, in accordance with the ESR and the approved paint removal work plan as described in UFGS 01 57 19..

F2020 1.6 MERCURY & LLR COMPONENTS

Perform work as indicated in the RFP, in accordance with the ESR and the approved mercury & LLR components removal work plan as described in UFGS 01 57 19..

F2020 1.7 PCB’S

Perform PCB related work as indicated in the RFP, in accordance with the ESR and the approved PCB removal work plan as described in UFGS 01 57 19.. Notify the contracting officer immediately on discovery of any equipment leaking PCB containing fluid. Take reasonable preventative measures to contain the leak and prevent movement of the PCB containing fluids.

F2020 1.8 ODS

Perform ODS related work as indicated in the RFP, in accordance with the ESR and the approved ODS removal work plan as described in UFGS 01 57 19..

F2020 1.9 ANIMAL DROPPINGS

Perform animal droppings related work as indicated in the RFP, in accordance with the ESR and the approved animal droppings removal work plan as described in UFGS 01 57 19..

F2020 1.10 MOLDS AND SPORES

Perform mold and spore related work as indicated in the RFP, in accordance with the ESR and the approved mold and spore work plan. The

Designer of Record shall prepare UFGS Specification 02 85 00.00 20 *MOLD REMEDIATION* as part of the project specification and shall include the prepared specification section in the design submittal for the project. UFGS sections shall be edited in accordance with the limitations stated in PTS section Z10, General Performance Technical Specifications.

F2020 1.11 DISPOSAL

All waste materials shall become the property of the Contractor and shall be transported, disposed of and recycled in accordance with the approved disposal plan as described in UFGS 01 57 19.00 20.

F202001 SUBSTRUCTURE & SUPERSTRUCTURE

F202002 EXTERIOR CLOSURE

F202003 ROOFING

F202004 INTERIOR CONSTRUCTION & FINISHES

F202005 CONVEYING SYSTEMS

F202006 MECHANICAL SYSTEMS

F202007 ELECTRICAL SYSTEMS

F202008 EQUIPMENT & FURNISHINGS

F202009 OTHER HAZARDOUS SELECTIVE BUILDING DEMOLITION

Perform all other building components abatement work in accordance with the ESR.

-- End of Section --

SECTION G10

SITE PREPARATION
09/15

G10 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

G10 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and Government standards referenced in the section text that are not found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website, are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the referenced standard at the time of contract award.

G10 1.1.1 Industry Standards and Codes

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

Refer to UMRL for reference designation identification.

G10 1.1.2 Government Standards

CORPS OF ENGINEERS (COE)

COE EM 385-1-1	*Safety and Health Requirements Manual*

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-201-01, Civil Engineering UFC 3-220-01, Geotechnical Engineering)

UFC 1-200-02	High Performance and Sustainable Buildings
UFC 3-800-10N	Environmental Engineering for Facility Construction

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS 31 23 00.00 20, *Excavation and Fill*

G10 1.2 PERFORMANCE VERIFICATION AND ACCEPTABLE TESTING

Compliance with the requirements will be determined by a review of the design and construction submittals and by field inspection. See Section 01 33 10.05 20, Design Submittal Procedures, and Section 01 33 00.05 20, Construction Submittal Procedures, for additional requirements. Verify satisfactory earthwork performance via testing detailed in the paragraph, "Field Quality Control", in UFGS Specification Section 31 23 00.00 20, Excavation and Fill.

G10 1.3 DESIGN SUBMITTALS

Design Submittals must be in accordance with UFGS section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, Navy and Marine Corps *Design Procedures*, UFC 3-201-01, *Civil Engineering*, and UFC 3-220-01, *Geotechnical Engineering.*

In addition, UFGS sections listed below or in the body of the PTS text are to be used by the Designer of Record (DOR) as a part of the design submittal. If the UFGS products or systems are applicable to the project, the DOR shall edit these referenced UFGS sections and submit them as a part of the design submittal specification. Edit the specification sections in accordance with the limitations stated in PTS section Z10, *General Performance Technical Specifications*.

UFGS 31 23 00.00 20 (02315N), *Excavation and Fill*

Provide sustainability submittals in accordance with UFGS 01 33 29.05 20 *Sustainability Reporting for Design Build*.

G10 1.4 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

Submittals in UFGS 01 57 19.00 20, Temporary Environmental Controls.

Submittals in UFGS Specification Section 31 23 00.00 20, Excavation and Fill.

Waste Management Plan in accordance with Section 01 74 19.05 20, Construction and Demolition Waste Management for Design-Build.

Provide sustainability submittals in accordance with UFGS 01 33 29.05 20 *Sustainability Reporting for Design Build*.

G10 1.5 GEOTECHNICAL REPORT

G10 1.5.1 Subsurface Soils Information

Any provided subsurface soil information is included for the Contractor’s information only, and is not guaranteed to fully represent all subsurface conditions. The data included in this RFP are intended for proposal preparation and preliminary design only. The Contractor shall perform, at his expense, such subsurface exploration, investigation, testing, and analysis as his Designer of Record deems necessary for the design and construction of the site improvements.

Any excavation or ground penetration work must comply with the Joint Region Marianas, Explosives Safety Submission, Munitions Response Sites, GUAM CONSTRUCTION SUPPORT (JRM ESS).

G10 1.5.2 Contractor-provided Geotechnical Engineer

The Contractor-provided Geotechnical Engineer is required to be experienced with soil conditions in the region where the project site is located. The Geotechnical Engineer shall evaluate the RFP data, obtain and evaluate all additional data as required to support the design and construction, and prepare a Geotechnical Report.

Coordinate all work, if required, by the Contractor-provided Geotechnical Engineer at the project location with the Contracting Officer so as not to interfere with normal base operations. A minimum of two weeks prior to the Foundation Work Design submittal, provide the Contractor's Geotechnical Report (an editable Adobe Acrobat PDF version on CD and two printed copies) for review and record keeping purposes. The report will become the property of the Government. Provide the geotechnical reports generated during construction, such as pile driving results and analysis, to the Contracting Officer. In addition, provide an editable Adobe Acrobat PDF version and two printed copies for record keeping purposes.

G10 1.5.3 Contractor-Provided Geotechnical Report

Submit a written Geotechnical report based upon Government-provided subsurface investigation data and all additional field and laboratory testing accomplished at the discretion of the Contractor’s Geotechnical Engineer. The Geotechnical Report must include all requirements listed in UFC 3-220-01, Geotechnical Engineering, paragraph entitled "Section 1803 Geotechnical Investigations"; in addition, include the following:

a. The project site description, vicinity map and site map indicating the location of borings and any other sampling locations. Provide 24 hour groundwater observations for at least 20% of the borings, minimum one boring. Provide notes explaining any abbreviations or

symbols used and describing any special site preparation requirements.

b. Results of all applicable field and laboratory testing, whether Government or Contractor-provided. Address existing subsurface conditions, selection and design of the foundation and floor slab, all underground construction including utility installation and all other site specific requirements (such as soil stabilization and slope stability).

c. Engineering analysis, discussion and recommendations Addressing:

1) Settlement analysis - Settlement shall be limited as required in EM 1110-1-1904 “Settlement Analysis”.

2) Bearing Capacity analysis

3) Foundation selection (shallow, deep, special) and construction considerations; dimensions, and installation procedures.

4) Site preparation (earthwork procedures and equipment, compaction requirements, building slab preparation (as applicable), soil sensitivity to weather and equipment, groundwater influence on construction, mitigation of expansive soils or liquefaction potential, and dewatering requirements).

5) Sheeting and shoring considerations, as applicable.

6) Pavement design calculations with parameters defined, actual or assumed, and recommended thicknesses and materials.

7) Stormwater management facility(ies) and permitting requirements, as applicable

8) Haul routes and stockpile locations for earthwork, as applicable.

9) Calculations to support conclusions and recommendations

10) Recommendations shall be presented on a structure-by-structure basis.

A registered Geotechnical Engineer is required to sign the Geotechnical Report.

The submitted report shall be accompanied by a cover letter identifying any report recommendations proposed to be adopted into the design which are interpreted by the Contractor as a changed condition to the Geotechnical or Pavement related requirements of the RFP.

G10 1.5.4 Geotechnical Site Data required in Design Drawings

The Contractor’s final design drawings shall include the Government-provided subsurface data presented in the RFP, as well as any additional borings and laboratory test result data performed by the Contractor. The data provided shall include:

a. Logs of Borings and related summary of laboratory test results and groundwater observations. Provide 24 hour groundwater observations for at least 20% of the borings, minimum one boring. Provide notes explaining any abbreviations or symbols used and describing any

special site preparation requirements.

b. Indicate the locations of all borings on the drawings. Revise the applicable design drawings to reference the Contractor's Geotechnical Report as being a basis for design.

G1010 SITE CLEARING

G1010 1.1 GENERAL

Clear and grub project site as required for project construction.

G1010 1.2 BURNING

Where burning is permitted, adhere to the applicable federal, state, and local regulations.

G101001 CLEARING

G101001 1.1 CLEARING

Clear all trees, shrubs, brush and vegetation necessary for construction of the project. Clearing includes the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within the areas to be cleared.

G101001 1.2 PRESERVATION

Preserve and protect trees, shrubs and vegetation not directly impacted by the construction in accordance with Section 01 57 19.00 20, *Temporary Environmental Controls,* and PTS Section G205005, paragraph 1.1 *Existing Plant Material to Remain or be Transplanted*.

G101002 TREE REMOVAL

Remove and dispose of trees to a depth of at least 18 inches (450 mm) below ground surface. Fill depressions with satisfactory material and compact. Mound fill 2 inches (50 mm) above adjacent surface to allow for settling when not part of a sub-base.

G101003 STUMP REMOVAL

Remove stumps to a depth of at least 18 inches (450 mm) below ground surface and grind stumps 18 to 30 inches (450 to 750 mm) below ground surface. Fill depressions with satisfactory material and compact. Mound fill 2 inches (50 mm) above adjacent surface to allow for settling when not part of a subbase.

G101004 GRUBBING

Within the clearing limits, remove and dispose of all logs, shrubs, brush, matted roots, roots larger than 2 inches (50 mm) in diameter, and other debris to a depth of at least 18 inches (450 mm) below ground surface. Fill depressions made by grubbing with satisfactory material and compact to make the new surface conform to the adjacent surface of the ground.

G101005 SELECTIVE THINNING

G101005 1.1 TREE THINNING

Trim trees to remain of dead branches 1-1/2 inches (38 mm) or more in diameter. Neatly cut limbs and branches in accordance with ANSI A300.

G101006 DEBRIS DISPOSAL

Prevent spillage on pavements, streets, or adjacent areas. Dispose of all surplus and unsuitable material off of Government property.

G1020 SITE DEMOLITION & RELOCATIONS

G1020 1.1 GENERAL

Demolition work shall include the demolition, removal and legal disposal of existing construction debris as required to accommodate the new construction. The Contractor shall take care to prevent damages to existing utilities, construction and materials not scheduled for demolition, repair or replacement, and shall repair damages to the construction and materials to the satisfaction of the Contracting Officer and at no additional cost to the Government.

G1020 1.2 AUTHORIZATION

Do not begin demolition until the Demolition Plan has been approved by and authorization is received from the Contracting Officer.

G1020 1.3 TITLE TO MATERIALS

Whenever possible, all features demolished shall be salvaged or recycled in lieu of being disposed of as waste in a landfill. Existing features to be demolished which are not salvageable or reused, shall become the property of the Contractor and shall be removed from project site. The Government will not be responsible for the condition, loss of, or damage to, such property after contract award. Materials and equipment shall not be viewed by prospective purchasers or sold on the site.

G1020 1.4 REUSE OF MATERIALS AND EQUIPMENT

Remove and store materials and equipment to be reused or relocated to prevent damage, and reinstall as the work progresses.

G1020 1.5 SALVAGED MATERIALS AND EQUIPMENT

Salvage materials and equipment that are to be removed by the Contractor and that are to remain the property of the Government, and deliver to a storage site on the station in accordance with instructions of the Contracting Officer.

G102001 BUILDING MASS DEMOLITION

Refer to Section F20 for additional information.

G102002 ABOVEGROUND SITE DEMOLITION

G102002 1.1 DUST AND DEBRIS CONTROL

Prevent the spread of dust and debris to occupied portions of a building or on pavements and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water for dust control if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution. Sweep pavements as often as necessary to control the spread of debris that may result in foreign object damage potential to aircraft.

G102002 1.2 PROTECTION

G102002 1.2.1 Traffic Control

Where pedestrian and driver safety is endangered in the area of removal work, provide traffic control per FHWA Manual on Uniform Traffic Control Devices (MUTCD).

G102002 1.2.2 Foreign Object Damage (FOD)

Remove potential FOD debris and waste materials on or adjacent to operational airfield pavements due to the Contractor's operations. If necessary, install a temporary barricade at the Contractor's expense. The barricade is required to include a fence covered with a fabric designed to stop the spread of debris. Anchor the fence and fabric to prevent displacement by winds or jet/prop blasts. Remove barricade when no longer required.

G102002 1.2.3 Existing Work

Protect existing work that is to remain in place, be reused, or remain the property of the Government. At no additional expense to the government, repair all items that are damaged during performance of the work to their original condition, or replace with new. Do not overload pavements to remain.

G102002 1.2.4 Noise Pollution

Make the maximum use of low-noise emission products, as certified by the EPA.

G102002 1.3 PAVING AND SLABS

Remove concrete and asphaltic concrete paving and slabs as required for construction of project. Remove the existing aggregate base in areas to receive new pavement to the depth of the proposed pavement section below new finish grade. Remove the existing aggregate base in areas not to receive new pavement to a depth of 8 inches (200 mm) below existing adjacent grade and break remaining pavement (if any) to allow drainage. Provide neat sawcuts at limits of pavement removal; protect sawcuts so that new pavement will butt against the existing without feathering.

G102002 1.4 ABOVEGROUND STORAGE TANKS

Perform aboveground storage tank removal work as indicated in the RFP, in accordance with the ESR and the approved aboveground storage tank removal work plan as described in Section 01 57 19.00 20, *Temporary Environmental Controls*.

G102003 UNDERGROUND SITE DEMOLITION

G102003 1.1 UTILITY TERMINATION

Terminate utilities in accordance with state and local rules and regulations; the nationally recognized code; and the requirements of the utility provider covering the specific utility; UFC 3-201-01, *Civil Engineering*; and approved by the Contracting Officer.

G102003 1.2 PROTECTION OF EXISTING UTILITIES

Protect existing utilities to remain. Where removal of existing utilities and pavement is required, provide approved barricades, temporary covering of exposed areas, and temporary services or connections. Repair damage to existing utilities to remain at no additional expense to the government.

G102003 1.3 UNDERGROUND STORAGE TANKS

Perform underground storage tank removal work as indicated in the RFP, in accordance with the ESR and the approved underground storage tank removal work plan as described in Section 01 57 19.00 20, *Temporary Environmental Controls*.

G102004 BUILDING RELOCATION

Refer to applicable portions of Section F20 for additional information.

G102005 UTILITY RELOCATION

Repair relocated items that are damaged or replace damaged items with new undamaged items as approved by the Contracting Officer and at no additional expense to the government.

G102006 FENCING RELOCATION

Remove and replace post foundations. Repair relocated items that are damaged or replace damaged items with new undamaged items as approved by the Contracting Officer and at no additional expense to the government. Refer to Section G204001 for requirements for new fence systems, as applicable.

G102007 SITE CLEANUP

Remove rubbish and debris from the station daily; do not allow accumulations inside or outside the building(s) or on pavements. Store materials that cannot be removed daily in areas specified by the Contracting Officer.

G1030 SITE EARTHWORK

G1030 1.1 GENERAL

This section includes the design and construction requirements for earthwork and grading related to construction of the roadways, parking, paved areas and other related sitework. Refer to Section A10 for earthwork related to construction of structures, including building, footings, foundations, retaining walls, slabs, tanks, and utility appurtenances.

The Designer of Record shall utilize UFGS Specification Section 31 23 00.00 20, *Excavation and Fill*, for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

Any excavation or ground penetration work must comply with the Joint Region Marianas, Explosives Safety Submission, Munitions Response Sites, GUAM CONSTRUCTION SUPPORT (JRM ESS).

G103001 GRADING

Provide site grading in accordance with the requirements of UFC 3-201-01, *Civil Engineering*.

G103001 1.1 ELEVATIONS

Establish finish floor elevations as required by UFC 1-200-01, General Building Requirements, and UFC 3-101-01, Architecture.

G103001 1.2 SITE GRADING

Preserve natural topographic features to minimize the impact on the existing drainage patterns at and adjacent to the site. Provide site grading in accordance with the requirements of the UFC 3-201-01, *Civil Engineering*.

G103001 1.3 FINISHED SURFACES

Provide finish grading with drainage towards new and existing drainage features and with no resulting low spots that hold water or that direct runoff towards new or existing facilities or site amenities.

G103001 1.4 RODENT AND VEGETATION CONTROL

Prevent and eliminate standing water

G103002 COMMON EXCAVATION

Preserve natural topographic features to minimize cut and fill requirements. Since all unsuitable material and surplus excavation will become the property of the Contractor, dispose of it as indicated in the Project Program.

G103003 ROCK EXCAVATION

If blasting is allowed, it shall be conducted in accordance with EM 385-1-1 and Federal, state, and local safety regulations. Blasting mats shall be provided, and non-electric blasting caps shall be used. Notify the Contracting Officer 24 hours prior to blasting.

Requests for additional compensation shall not be made by the Contractor for degree of hardness or difficulty encountered in removal of material. All unsuitable material and surplus excavation shall become the property of the Contractor and shall be disposed of as indicated in Project Program.

G103004 FILL & BORROW

G103004 1.1 SOURCES

Where sufficient topsoil and satisfactory materials are not available on the project site, provide suitable borrow materials. Test off-site soil in accordance with UFGS 31 23 00.00 20, Excavation and Fill, section titled "Requirements for Off Site Soil".

G103004 1.2 UNSATISFACTORY SOIL MATERIALS

Remove unsatisfactory soil materials from the site in accordance with the Project Program and replace with satisfactory soil materials in accordance with UFGS Specification Section 31 23 00.00 20, *Excavation and Fill*.

G103004 1.3 TOPSOIL

Refer to Section G2050, “Landscaping”. Remove unsatisfactory, existing topsoil from the site in accordance with the Project Program.

G103005 COMPACTION

Provide compaction in accordance with UFGS Specification Section 31 23 00.00 20, *Excavation and Fill*, *and the recommendations of the Contractor’s Geotechnical Engineer*, whichever is greater.

G103006 SOIL STABILIZATION

Provide soil stabilization designed to function as required by site conditions in accordance with the State Highway specifications and standards in the state where the project is located. Apply and install geosynthetics in accordance with the manufacturer’s written instructions.

G103007 SLOPE STABILIZATION

Provide slope stabilization methods in accordance with the State Highway specifications and standards in the state where the project is located. Design and install manufactured products, gabions, geogrids, rock anchors in accordance with the manufacturer’s written instructions.

G103008 SOIL TREATMENT

G103008 1.1 TERMITE CONTROL

Refer to Section A1010 1.2, “Termite Control”.

G103009 SHORING

Provide sheeting, shoring, bracing, cribbing and underpinning in accordance with the Army Corps of Engineer's Safety and Health Requirements Manual (COE

EM 385-1-1), UFC 3-220-01, *Geotechnical Engineering*, UFC 3-301-01, *Structural Engineering*, and all other applicable Federal, State and local codes and requirements

Provide protection of existing structures.

G103010 TEMPORARY DEWATERING

The design of the temporary dewatering system shall account for soil conditions, rainfall, fluctuations in the groundwater elevations and the potential settlement impact on adjacent facilities due to dewatering. Provide dewatering in accordance with UFGS Specification Section 31 23 00.00 20. While the excavation is open, the water level shall be maintained continuously, at least 1.0 foot (0.30 m) below the working level.

French drains, sumps, ditches or trenches will not be permitted within 3 feet (0.9 m) of the foundation of any structure without written approval of the NAVFAC Civil/Geotechnical Reviewer.

G103011 TEMPORARY EROSION & SEDIMENT CONTROL

G103011 1.1 TEMPORARY EROSION & SEDIMENT CONTROL

Develop and implement temporary erosion and sediment control measures and other Best Management Practices (BMPs) prior to or in conjunction with commencement of earthwork in accordance with the state Erosion and Sediment Control Laws and Regulations. Remove all non-permanent erosion control measures after vegetation is fully established.

G103011 1.2 MAINTENANCE

Maintain temporary erosion control measures in accordance with state Erosion and Sediment Control Laws and Regulations throughout the project until areas are fully stabilized.

G103090 OTHER SITE EARTHWORK

G103090 1.1 HISTORIC AND ARCHAEOLOGIC ARTIFACTS

Refer to Section 01 50 00.05 20, *Temporary Facilities and Controls for Design-Build*, in Part 2 of this RFP.

G103090 1.2 PIPELINE CASING UNDER RAILROADS OR PAVEMENTS

Where required by code or local practice provide casing for piping under railroads or pavements. The Contractor is responsible for obtaining permits from all government and nongovernment owners/agencies in designing and providing the work.

G103090 1.3 TOPSOIL AND SEED

Provide topsoil and seed according to UFGS Specification Section 31 23 00.00 20, *Excavation and Fill*, except when landscaping is required.

G1040 HAZARDOUS WASTE REMEDIATION

G1040 1.1 EXCAVATION

Perform excavation of contaminated soil and groundwater as indicated in the RFP, in accordance with the ESR and the approved contaminated soil and groundwater removal work plan as described in Section 01 57 19.00 20, *Temporary Environmental Controls*. Areas of contamination shall be excavated to the depth noted elsewhere in the RFP. Select methods and equipment to minimize disturbance to areas beyond the limits of the excavation area. Material that becomes contaminated as a result of the Contractor's operations shall be removed and disposed of at no additional cost to the Government. Where excavation extends into groundwater levels, dewatering methods shall be employed on a localized basis to facilitate excavation operations. Water generated by dewatering during excavation shall be collected and tested in accordance with the ESR and the approved work plan.

Water that contains contaminants above the levels indicated in the ESR shall be disposed of in accordance with the ESR and the approved work plan.

Non-contaminated water may be disposed of on-site.

G1040 1.2 STOCKPILED SOILS

Soils determined to be contaminated in accordance with the criteria in the ESR must be stockpiled in accordance with the contaminated soil and groundwater removal work plan as described in Section 01 57 19.00 20, *Temporary Environmental Controls*, and shall be disposed of in accordance with the requirements of the ESR.

Soils that are determined to contain contaminants below the criteria listed in the ESR may be used as clean fill.

G1040 1.3 CLEAN FILL

Soils that are determined as clean fill via testing shall be backfilled and compacted in accordance with the requirements listed in the ESR.

G1040 1.4 SPILLS

In the event of a spill or release of hazardous substances, pollutant, contaminant or oil, notify the Contracting Officer immediately. Containment actions shall be taken immediately to minimize the effect of any spill or leak. Clean up shall be performed at the Contractor’s expense in accordance with the ESR and the approved spill work plan as described in Section 01 57 19.00 20, *Temporary Environmental Controls*.

G1040 1.5 DISPOSAL

All waste materials shall become the property of the Contractor and shall be transported, disposed of in accordance with the criteria listed in the ESR and the approved disposal plan as described in Section 01 57 19.00 20, *Temporary Environmental Controls*.

-- End of Section --

SECTION G20

SITE IMPROVEMENTS
09/15

G20 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

G20 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and Government standards referenced in the section text that are not found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website, are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the referenced standard at the time of contract award.

G20 1.1.1 Industry Standards and Codes

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

AMERICAN SOD PRODUCERS ASSOCIATION (ASPA)

U.S CONSUMER PRODUCT SAFETY COMMISSION, PUBLICATION NO. 325

Refer to UMRL for reference designation identification

G20 1.1.2 Government Standards

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FS RR-F-191, *Fencing and Wire and Post Metal (and Gates, Chain-link Fence Fabric, and Accessories)*

FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-201-01, Civil Engineering; UFC 3-201-02, Landscape Architecture; UFC 3-220-01, Geotechnical Engineering

UFC 1-200-02	High Performance and Sustainable Buildings
UFC 3-250-01FA	Pavement Design for Roads, Streets, Walks, and Open Storage Areas
UFC 3-270-01	Asphalt Maintenance and Repair
UFC 3-270-02	Asphalt Crack Repair
UFC 3-270-03	Concrete Crack and Partial Depth Spall Repair
UFC 3-270-04	Concrete Repair
UFC 3-800-10N	Environmental Engineering for Facility Construction
UFC 4-022-02	Selection and Application of Vehicle Barriers

G20 1.2 QUALITY ASSURANCE

G20 1.2.1 Qualifications of Tree Location Contractor

Contractor is required to be a professional tree moving company holding landscape contractor's license in the state where the work is to be performed and have a minimum ten years of tree relocation experience. Contractor must be a Certified Arborist certified by the International Society of Arboriculture. Arborist shall oversee all tree moving operations during construction.

G20 1.2.2 Qualifications of New Landscape Contractor

Construction company shall hold a landscape contractor’s license in the state where the work is to be performed and have a minimum five years of landscape construction experience.

G20 1.3 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

Compliance with the requirements will be determined by a review of the design and construction submittals and by field inspection. See Section 01 33 10.05 20, *Design Submittal Procedures*, and Section 01 33 00.05 20, *Construction Submittal Procedures*, for additional requirements.

Verification of satisfactory performance shall be via Performance Verification, as detailed in this section of the RFP. Verification of satisfactory performance shall also be via testing as detailed in the paragraph, Field Quality Control, in applicable UFGS Specification Sections utilized.

G20 1.3.1 Subgrade Preparation Performance Verification

Perform subgrade preparation in accordance with PTS Section G10. If required by the Designer of Record, perform proof rolling. Proof rolling shall be performed in the presence of the Contracting Officer. Rutting or pumping of material shall be undercut as directed by the Contracting Officer and replaced with satisfactory soil materials as defined in Section G10, *Site Preparation*.

G20 1.3.2 Base Course Performance Verification

G20 1.3.2.1 Aggregate Base Course

a. Sampling: ASTM D 75.

b. Gradation: ASTM C 136.

c. Thickness: Confirm in-place compacted thickness. Acceptable tolerances are plus or minus 0.5 inches (13 mm). One test for every 500 square yards (418 square meters); minimum 2 tests.

d. Density: ASTM D1556 or ASTM D6938. One field test for every 1000 square yards (836 square meters); minimum 2 tests. ASTM D1557, Method A, B or C; one laboratory test for the project.

e. Visual: Surface shall be smooth with no ruts.

G20 1.3.2.2 Other Types of Base Courses

For other types of base courses, provide field testing in accordance with the SHS.

G20 1.3.3 Bituminous Concrete Pavement Performance Verification

a. Visual: Finished surface shall be uniform in texture and appearance and free of cracks and creases.

b. Sampling: ASTM D 979.

c. Job Mix: Determine gradation and bitumen content. One sample for every 400 tons (362,500 kilograms); minimum 1 test.

d. Thickness: ASTM D 3549. Confirm in-place compacted thickness. Acceptable tolerances are plus or minus 0.5 inches (13 mm) for bituminous base course and plus or minus 0.25 inches (6 mm) for bituminous surface course. One test for every 500 square yards (418 square meters); minimum 2 tests.

e. Surface Smoothness: Test surface smoothness by using a 10 foot (3 meter) straightedge in transverse and longitudinal directions to pavement. Acceptable tolerances are plus or minus 0.25 inches (6 mm) for bituminous base and surface courses.

f. Density: Conduct field density of in-place compacted pavement in accordance with ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726. One field test for every 1000 square yards (836 square meters); minimum 2 tests. One laboratory test for the project.

G20 1.3.4 Portland Cement Concrete Pavement Performance Verification

a. Visual: Finished surface shall be uniform in texture and appearance and free of cracks.

b. Sampling: ASTM C 31M (ASTM C 31).

c. Thickness: Acceptable tolerances are plus or minus 0.5 inches (13 mm). One test for every 500 square feet (418 square meters); minimum 2 tests.

d. Surface Smoothness: Test surface smoothness by using a 12 foot (3.6 meter) straightedge in transverse and longitudinal directions to pavement. The finished surfaces of the pavements shall have no abrupt change of 0.12 inch (3 mm) or more.

e. Strength: Samples for strength tests of each mix design of concrete placed each day shall be taken not less than once a day, nor less than once for each 100 cubic yards (120 cubic meters) of concrete, nor less than once for each 5000 square feet (500 square meters).

1) Compressive Strength: ASTM C39/C39M. Make five test cylinders for each set of tests. Test two cylinders at 7 days, two cylinders at 28 days, and hold one cylinder in reserve. Determine each strength test result by the average of two cylinders from the same concrete sample tested at 28 days. If the average of any three consecutive strength test results is less than f'c or if any strength test result falls below f'c by more than 500 psi, take a minimum of three ASTM C42/C42M core samples from the in-place work represented by the low test cylinder results and test. Consider the concrete represented by core test structurally adequate if the average of three cores is equal to at least 85 percent of f'c and if no single core is less than 75 percent of f'c. Retest locations represented by erratic core strengths.

2) Flexural Strength: ASTM C78/C78M. Make four test specimens for each set of tests. Test two specimens at 28 days, and the other two at 90 days. Concrete strength will be considered satisfactory when the minimum of the 90-day test results equals or exceeds the specified 90-day flexural strength, and no individual strength test is less than the design strength. If the ratio of the 28-day strength test to the specified 90-day strength is less than 65 percent, make necessary adjustments for conformance.

f. Remove concrete not meeting strength criteria and provide new acceptable concrete at no expense to the government. Repair core holes with nonshrink grout. Match color and finish of adjacent concrete.

G20 1.3.5 Concrete Joint Performance Verification

Install a test section of 500 linear feet (150 m) at start of sealing operation for each type sealant to be used. Obtain approval of test section by Contracting Officer prior to installing additional joint seal. Joint sealer that fails to cure properly, or fails to bond to joint walls, or reverts to uncured state or fails in cohesion, or shows excessive air voids, blisters, or has surface defects, swells, or other deficiencies, or is not recessed within indicated tolerances shall be rejected. Remove rejected sealer and reclean and reseal joints.

G20 1.3.6 Topsoil Performance Verification

Prior to planting design, provide a commercial soil analysis. Amend planting areas based on the soil test’s interpretation, amendment type, and quantity recommendations (including soil nutrients and texture, with percentages shown). Additional topsoil shall be used only in areas where soil analysis shows that the existing soil is inadequate for growth of plant materials.

G20 1.3.7 Final Inspection for Planting and Irrigation

Final inspection shall be made upon written request from the Contractor at least 10 days prior to the last day of the planting and irrigation Establishment Period. The Landscape Contractor shall attend the inspection with the Contracting Officer and document the inspection. The Landscape Architect-of-Record shall also attend the inspection and provide the Contracting Officer with a letter certifying that the planting and irrigation is installed per the plans and irrigation coverage is correct and appropriate for optimum plant survival. At the end of the Establishment Period, remove all stakes and guy cables.

G20 1.3.8 Landscape and Irrigation Establishment Period and Guarantee

Guarantee all transplanted trees, newly planted vegetation and irrigation systems for a period of one year after the Contracting Officer's final acceptance. This acceptance, and the submittal of irrigation as-builts and controller charts, begins the Establishment Period. Replace all trees, shrubs, and ground covers that die or have 20 percent or more of their crowns that die during planting operations or the guarantee period with healthy plants of the same species or variety during the appropriate planting season. The Landscape Architect-of-Record must, along with the Contracting Officer, attend, approve and document the start of the Establishment Period and document quarterly and final inspections. The Landscape Architect of Record must document quarterly and final inspections by submitting written reports with photographs to the Contracting Officer. During this period, perform tasks including, but not limited to: watering, mowing, overseeding, fertilizing, mulching, pruning, weeding, eradicating pests (rodents, rabbits, insects, mammals and fungus), restaking, adjusting guy wires, adjusting irrigation systems, maintaining erosion control materials, removing dead or broken branches by pruning in accordance with ANSI A300 Part 1, maintaining edging of planter beds, checking for girdling of trees, removal of trash and debris, and replenishing mulch to assure all plant material is in a healthy and thriving condition or replace plant material at Contractor's expense. Reseed broadcast seeded or hydro-seeded areas that do not achieve the 95-percent coverage by the end of the Establishment Period by the same method and maintain an additional 120 days to ensure coverage requirements are met. Maintain turf in a manner that promotes proper health, growth, rich natural green color, and a neat, uniform, manicured appearance, free of bare areas, ruts, holes, weeds, pests, dead vegetation, debris, and unwanted vegetation that present an unsightly appearance. Mow weekly during the growing season and remove excess clippings.

G20 1.4 DESIGN SUBMITTALS

Design Submittals must be in accordance with UFC 1-200-01, General Building Requirements, UFGS section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures*, and UFC 3-201-01, *Civil Engineer*ing.

In addition, UFGS sections listed below or in the body of the PTS text are to be used by the Designer of Record (DOR) as a part of the design submittal. If the UFGS products or systems are applicable to the project, the DOR is required to edit these referenced UFGS sections and submit them as a part of the design submittal specification. Edit the specification sections in accordance with the limitations stated in PTS section Z10, *General Performance Technical Specifications*.

32 11 16.13, *Sand-Clay [Base] [Subbase] Course*

32 11 16.16, *[Base Course for Rigid] [and Subbase Course for Flexible] Paving*

32 11 24, G*raded Crushed Aggregate Base Course for Flexible Pavement*

32 11 26.16, Bituminous Concrete Base Course

32 11 33, *Cement Stabilized [Base] [Subbase] Course at Airfields and Roads*

32 11 36.13, *Lean Concrete Base Course*

32 12 17, *Hot Mix Bituminous Pavement*

32 13 13.16, *Portland Cement Concrete Pavement for Roads and Site Facilities*

32 13 43, *Pervious Concrete Paving*

32 16 15, *Concrete Block Pavements*

Provide sustainability submittals in accordance with UFGS 01 33 29.05 20 *Sustainability Reporting for Design Build*.

G20 1.5 CONSTRUCTION SUBMITTALS

Submit a transplanting plan for all projects which include transplanting trees. Submit the plan showing existing and proposed locations of transplanted trees. Include in the plan delineate methods and times for root pruning, digging, balling, removing, storing, transporting, planting, watering, and maintenance to ensure survivability. Include also in the plan equipment, anti-desiccant, and pesticides to be used. Provide a listing of the plant material to be transplanted by common name and botanical name as listed under "Nomenclature" in ANSI Z60.1; classification; caliper; and height.

Provide sustainability submittals in accordance with UFGS 01 33 29.05 20 *Sustainability Reporting for Design Build*.

G20 1.5.1 Transplanting Plan

Submit a transplanting plan for all projects which include transplanting trees. Submit the plan showing existing and proposed locations of transplanted trees. Include in the plan delineate methods and times for root pruning, digging, balling, removing, storing, transporting, planting, watering, and maintenance to ensure survivability. Include also in the plan equipment, anti-desiccant, and pesticides to be used. Provide a listing of the plant material to be transplanted by common name and botanical name as listed under "Nomenclature" in ANSI Z60.1; classification; caliper; and height.

G20 1.5.2 As-Builts

Submit a complete set of irrigation as-builts to the Contracting Officer, to include the recording of measurements onto a record set of full-size project irrigation plans. Measurements shall locate water meters, pressure supply lines at 100 foot (30 m) intervals, backflow prevention devices, rain/freeze sensors, valves (including quick couplers and hose bibbs), controllers (and control wire, if routed separately from pressure supply line); all dimensioned from two permanent points of reference, such as building corners, sidewalks, and other permanent features.

G20 1.6 ANTITERRORISM (AT) STANDARDS

Incorporate the minimum AT standards indicated in UFC 4-010-01, *DoD Minimum Antiterrorism Standard for Buildings*.

G20 1.7 PROJECT LIMITATIONS

Prior to the start of design, determine the exact limit-of-work line for the project periphery, considering items such as, but not limited to, utility work, landscape areas, and laydown areas. See PTS G2050 for limits of landscape areas.

G2010 ROADWAYS

G2010 1.1 PAVEMENT DESIGN

Provide geometric and pavement design, including minimum pavement sections, in accordance with UFC 3-201-01, *Civil Engineering*, and the State Department of Transportation. Provide pavement calculations in accordance with FC 1-300-09N, *Navy and Marine Corps Design Procedures*. Provide any required additional pavement design to provide a complete and useable facility.

For pavements subject to aircraft traffic or aircraft ground support equipment traffic consult Government Civil Reviewer for design criteria and requirements. State Department of Transportation standards are not acceptable for airfield pavements.

G2010 1.2 PAVEMENT AESTHETICS

Provide surfaces consistent in color and finish.

G2010 1.3 TRAFFIC CONTROL DEVICES

Provide and install new traffic control devices (i.e., signs and markings) in accordance with the United States Department of Transportation Federal Highway Administration's *Manual on Uniform Traffic Control Devices* and their standard, "Rigid Sign Supports". Also provide new traffic control devices along/in the existing streets adjacent to the project site as necessary to provide complete traffic control to the new facilities.

G2010 1.4 EXISTING UTILITY STRUCTURES

Existing utility structures shall be adjusted to meet the new finished pavement grades as required.

G201001 BASES & SUBBASES

Prepare subgrade in accordance with Section G10, *Site Preparation*. Geotextiles may be used for separation or reinforcement in accordance with manufacturer’s instructions. Provide base course under paved areas in accordance with the State Highway specifications (SHS) in the state where the project is located.

Place base course in accordance with the SHS for that particular base course and in layers of equal thickness with no compacted layer more than 6 inches (150 mm) thick. Compact base course at optimum moisture content to 100 percent ASTM D 1557 maximum dry density.

Where SHS are not available or applicable, the Designer of Record shall utilize the applicable UFGS Specification Sections referenced under paragraph 1.1.2 entitled “Government Standards” for the project specification. Submit these specifications in edited form as a part of the design submittal for the project.

G201002 CURBS & GUTTERS

Provide concrete curbs and gutters in accordance with the SHS and standards or as specified in UFC 3-201-01, *Civil Engineering*, whichever is more stringent. Where the SHS do not include concrete materials for curbs and gutters, provide concrete in accordance with the applicable standard mix of the SHS for a minimum compressive strength at 28 days of 3500 psi (25 MPa) concrete.

G201003 PAVED SURFACES

Where SHS are not available or applicable, the Designer of Record shall utilize the applicable UFGS Specification Sections referenced under paragraph

1.1.2 entitled “Government Standards” for the project specification. Submit these specifications in edited form as a part of the design submittal for the project.

G201003 1.1 PAVEMENT MIX

G201003 1.1.1 Bituminous Concrete Pavement

Provide bituminous concrete pavement in accordance with the applicable standard mix of the SHS based on the pavement design and vehicle loading indicated in this RFP.

G201003 1.1.1.1 Bituminous Concrete Placement

Bituminous concrete placement, including minimum temperature during placement, joints, and maximum lift thickness shall be in accordance with the SHS. Compact bituminous concrete in accordance with the SHS, modified to 96 percent of maximum laboratory density.

G201003 1.1.2 Portland Cement Concrete Pavement

If reinforced, provide the welded wire fabric in conformance to ASTM A185. Provide bar reinforcement in conformance to ASTM A615/A615M, Grade 400 (Grade 60).

Provide concrete in accordance with the applicable standard mix of the SHS for the design strength required by UFC 3-201-01, *Civil Engineering*, plus any allowable deviations. Provide a minimum compressive strength at 28 days of 3500 psi (25 MPa) concrete.

If required for applicable LEED credit, provide Portland cement concrete pavement with a Solar Reflectance Index (SRI) greater than or equal to 29.

G201003 1.2 JOINTS FOR PORTLAND CEMENT CONCRETE PAVEMENT

Provide joints in accordance with SHS and the applicable portions of UFC 3-250-01FA, *Pavement Design for Roads, Streets, Walks, and Open Storage Areas*. Install joints in a manner and at such time to prevent random or uncontrolled cracking. Joints must form a regular rectangular pattern. Wherever curved pavement edges occur, make joints to intersect tangents to curve at right angles

G201003 1.2.1 Expansion Joints

Provide thickened edge expansion joints at the intersection of two rigid pavements. Use preformed joint filler, ASTM D 1751. Filler must be compatible with joint sealer material. Preformed joint filler shall be securely held in position during concreting operations.

G201003 1.2.2 Isolation Joints

Provide thickened edge isolation joints by placing a 1/2-inch (12 mm) preformed joint filler (ASTM D 1751) around each structure that extends into or through the pavement before concrete is placed at that location.

G201003 1.2.3 Contraction Joints

Saw joint lines within specified tolerance, straight, and extend for width of transverse joint, and for entire length of longitudinal joint.

G201003 1.2.4 Construction Joints

If an emergency stop occurs remove the concrete back to location of transverse joint and install a construction joint.

G201003 1.2.5 Joint Sealants

ASTM D5893/D5893M; Provide single component cold-applied silicone. Silicone sealant must be self-leveling and non-acid curing.

G201003 1.2.6 Preformed Compression Seals

Use preformed compression seals in areas where silicone joint sealant does not perform, such as areas subject to water inundation, blasts, or constant/repeated fuel spillage.

ASTM D 2628. ASTM D 2835, for lubricant.

G201003 1.3 PRIME COAT

Use prime coat in accordance with the SHS. Prime coat shall be emulsified asphalt materials.

G201003 1.4 TACK COAT

Tack coat is required for bituminous pavement overlays and on vertical cut faces of pavement patches. Tack coat shall be in accordance with the SHS.

G201003 1.5 PAVEMENT PATCHES

Provide pavement patches for existing pavements where required for installation of utility trenches. Sawcut 12 inches beyond edge of trench. Thicknesses of pavement materials shall be equal to or greater than the existing pavement section.

For spalls or repairs of existing concrete pavement, perform repairs in conformance with UFC 3-270-03, *Concrete Crack and Partial Depth Spall Repair*, and UFC 3-270-04, *Concrete Repair*. Spall repair materials must be either Rapid Setting Cementitious Concrete (RSCC), epoxy concrete, or polymer-modified Portland Cement (non-sag mortar) products specially formulated for spall repairs, with a proven record (in service at least three years) of satisfactory use under loading and environmental conditions similar to those at the location of intended use. Provide a manufacturer's data sheet and certificate supporting the satisfactory use to the Contracting Officer with the design. A product manufacturer's representative is required to be present during the initial two days of product application to verify that manufacturer's instructions for use are adhered to. Give the Contracting Officer a 7 day notice prior to the initial application in order to be present.

G201004 MARKING & SIGNAGE

G201004 1.1 MARKING

Pavement markings shall be in accordance with the SHS. Materials shall be designed for life expectancy of at least 3 years under an average daily traffic count per lane of approximately 9000 vehicles. Water based paints shall have durability rating of at least 4 when determined in the wheel path area.

Provide a half-rate initial marking application on bituminous pavements. Provide the remaining application at the end of the normal curing period.

G201004 1.2 SIGNAGE

Provide signage in accordance with the MUTCD.

G201005 GUARDRAILS & BARRIERS

G201005 1.1 GUARDRAILS

Provide guard (guide) rails in accordance with the SHS. Where the SHS do not include materials for guardrails, provide guardrails in accordance with the applicable portions of the *AASHTO Roadside Design Guide*.

G201005 1.2 BOLLARDS

For bollards to prevent damage, provide minimum 4 feet height, 4 inch diameter steel pipe filled with concrete, painted, and embedded in a portland cement concrete foundation.

For bollards located at building entries or other high-visibility areas provide decorative bollards matching the design of the facility or consistent with the Base Exterior Architecture Plan (BEAP) and the Installation Appearance Plan.

Bollards for security are specified in Section G204004, "Security Structures".

G201006 RESURFACING

Adjust rims of existing utility structures to match proposed grades after resurfacing.

G201006 1.1 SLURRY SEAL

ASTM D 3910 and in accordance with the SHS.

G201006 1.2 BITUMINOUS CONCRETE OVERLAY

Remove old pavement by cold milling to depths required to provide new surface and leave underlying materials intact. Clean the pavement of excessive dirt, clay or other foreign matter with power brooms and hand brooms immediately prior to the milling operation.

Repair or replace damaged utility structures, valve boxes, or pavement that is torn, cracked, gouged, rutted, broken or undercut at no addition expense to the government.

Provide bituminous concrete overlay produced from hot or cold recycling of the milled material or from virgin materials in accordance with the applicable provisions of UFC 3-200-01, *Civil Engineering*, and the standard mix of the SHS based on the pavement design and vehicle loading as indicated in this RFP.

G201006 1.3 CRACK SEALING

Use fiber reinforced crack sealer for sealing cracks in asphalt pavement after milling and prior to resurfacing. Provide crack sealing conforming to the following requirements in UFC 3-270-01, *Asphalt Maintenance and*

Repair, and UFC 3-270-02, *Asphalt Crack Repair*.

G2020 PARKING LOTS

Refer to Section G2010.

G2020 1.1 PERMEABLE PAVEMENT

Provide permeable concrete pavers of solid interlocking paving units complying with ASTM C936, resistant to freezing and thawing when tested according to ASTM C67, and made from normal-weight aggregates. If required for applicable sustainability goal, provide permeable concrete pavers with a Solar Reflectance Index (SRI) greater than or equal to 29.

Provide pervious concrete in accordance with UFGS Specification Section 32 13 43, *Pervious Concrete Paving*.

Do not use asphalt-surfaced porous pavement.

G202001 BASES & SUBBASES

Refer to Section G201001.

G202002 CURBS & GUTTERS

Refer to Section G201002.

G202003 PAVED SURFACES

Refer to Section G201003.

G202004 MARKING & SIGNAGE

Refer to Section G201004. Provide water-based paints only.

Mark neatly to denote traffic lanes and parking spaces; mark in accordance with the requirements of UFC 3-200-01, *Civil Engineering*.

G202005 GUARDRAILS & BARRIERS

Refer to Section G201005.

G202005 1.1 WHEELSTOPS

Provide precast concrete wheelstops.

G202006 RESURFACING

Refer to Section G201006.

G2030 PEDESTRIAN PAVING

Locate new sidewalks such that they maintain continuity of pedestrian traffic to and from the existing sidewalks adjacent to the site(s).

G203001 BASES & SUBBASES

Provide as required by local standards or geotechnical report; refer to Section G201001.

G203003 PAVED SURFACES

G203003 1.1 SIDEWALKS

Provide sidewalks of Portland cement concrete pavement with 4 inches (100 mm) thick minimum or permeable pavement Provide concrete and permeable pavement in accordance with Section G201003 and G2020, respectively. For PCC sidewalks, provide a broomed finish. Provide sidewalks of at least 5 feet (1.5 meters) wide, except that sidewalks connecting entry points of housing units to the housing unit's parking are required to be at least 36 inches (900 mm) wide. In housing areas, offset sidewalks paralleling streets to maintain a minimum grassed separation of 5 feet (1.5 meters) from the back face of the curb to the closest edge of the sidewalk.

Unless indicated otherwise, provide a transverse slope of 1/48. Limit variation in cross section to 0.25 inch in 5 feet (6 mm in 1.50 m).

Submit samples boards per ESR G2050 and PTS G2050 and finish schedule on final plans.

G203003 1.1.1 Joints for PCC Pavement Sidewalks

Provide contraction joints spaced at intervals equivalent to the width of the sidewalk. Provide 0.5 inch (13 mm) thick transverse expansion joints at changes in direction where sidewalk abuts curb, steps, rigid pavement, or other similar structures; space expansion joints every 50 feet (15 m) maximum. Provide isolation joints by placing a 1/2-inch (12 mm) preformed expansion joint filler around each structure that extends into or through the sidewalk before concrete is placed at that location.

G203003 1.2 CONCRETE PAVERS

Concrete pavers shall meet ASTM C936. Install in accordance with manufacturers recommendations.

G203003 1.3 HANDICAPPED RAMPS

Provide handicapped ramps of PCC pavement with an exposed aggregate finish, truncated domes, or as required by the SHS at roadway intersections.

G203004 GUARDRAILS & BARRIERS

Refer to Section G201005.

G2040 SITE DEVELOPMENT

G204001 FENCING & GATES

G204001 1.1 CHAIN LINK FENCE

Provide chain link fence designated as security fencing in accordance with paragraph G204001 - 1.3.

Chain link fence fabric shall be at least 9 gauge (3 mm) steel wire mesh material (before any coating) with mesh openings not larger than 2 inches (51 mm). Do not use aluminum fabric, posts or accessories. Install fence in accordance with ASTM F 567 and the manufacturer’s written installation instructions.

G204001 1.1.1 Tensions Wires and Top Rails

Provide rails in accordance with FS RR-F-191/3, Class 1, steel pipe, Grade A.

G204001 1.1.2 Gates

Provide gates in accordance with FS RR-F-191/2 with posts and fabric as specified for fence.

G204001 1.1.3 Posts and Braces

Provide posts and braces in accordance with FS RR-F-191/3, Class 1, steel pipe, Grade A. Each gate, terminal and end post will be braced with truss rods.

G204001 1.1.4 Fencing Accessories

Provide fencing accessories in accordance with FS RR-F-191/4. If PVC coating is required, provide accessories with PVC color coating similar to that specified for chain-link fabric or framework.

G204001 1.2 ORNAMENTAL FENCE

G204001 1.3 SECURITY FENCE

Provide security fencing systems in accordance with UFC 4-022-03, *Security Fences and Gates*, and this RFP.

G204001 1.3.1 Chain Link Security Fence

Provide chain link fence in accordance with paragraph G204001 – 1.1, excepted as noted otherwise. Ensure that the fabric has twisted and barbed selvage at the top and bottom. Do not provide top rails. All posts and structural supports shall be located on the inner side of the fencing. Outriggers shall be installed facing outward except when the fence must be mounted directly on the property line.

G204001 1.3.2 Signage

Provide signage at a minimum of 200 foot (61 m) intervals along the entire perimeter.

G204001 1.3.3 Drainage Culverts and Utility Openings

Provide protective measures to prevent access through culverts, storm drains, sewers, air intakes, exhaust tunnels and utility openings or across drainage ditches or swales as required in UFC 4-022-03.

G204001 1.4 OPENINGS IN PERIMETER AND SECURITY FENCING

Openings in perimeter fencing and security fencing shall not be covered, blocked or laced with material which would prevent a clear view of personnel, vehicles or material in the outer or inner vicinity of the fenceline.

G204001 1.5 FENCE GROUNDING

Grounding and bonding of the fencing must be in accordance with the National Electric Safety Code (NESC) - IEEE C2 and UFC 4-022-03. Ground

fencing on either side of every gate and at other locations when the fencing is near and parallel to high tension power lines. Grounding is also required at intervals of 1000 feet (305 meters) to 1500 feet (457 meters) when the fencing runs through isolated areas and at lesser distances depending on the proximity of the fencing to public roads, highways and buildings where the fencing is around or within any explosive storage, production, operating or handling areas.

G204001 1.6 ENCLOSURES FOR UTILITY EQUIPMENT

Where fencing is used to provide an enclosure for utility equipment, ensure a minimum clearance is provided no less than 3 feet (900 mm) around the equipment to permit maintenance access and ventilation. Provide stone, gravel or concrete paving within the enclosure.

G204002 RETAINING WALLS AND FREESTANDING WALLS

Provide retaining walls to permanently resist soil pressures as well as live loads. Provide wall drainage to minimize lateral loading and protect wall materials against degradation.

G204003 EXTERIOR FURNISHINGS

Refer to ESR G20 and other portions of the RFP for exterior furnishings required on this project. All site furnishings shall be permanently attached to concrete pads. Site furnishings shall conform to the Base Exterior Architecture Plan (BEAP) and or Installation Appearance Plan for each Activity. If no product guidance is given, coordinate material, finish and color with architecture (fiberglass and aluminum are not acceptable) and provide to the greatest extent possible, materials with industrial recycled content, preferably from regionally local manufacturers. At a minimum, provide a trash and ash receptacle at the designated smoking area.

G204003 1.1 PICNIC AND PASSIVE RECREATION AREAS

Include tables, with attached benches, on concrete bases sloped to drain and permanent barbecue grill(s). Additionally, separate receptacles shall be provided for trash, recycling and barbecue ashes. All site furnishings shall be permanently attached to concrete paving which shall extend a minimum of 12 inches (300 mm) past the furnishing, with the exception of picnic tables and benches, which shall extend 2 feet (600mm) minimum on all sides. The elevation of the finished concrete shall be plus 1 inch (25 mm) above adjacent grade.

G204003 1.2 TRASH RECEPTACLES

Trash receptacles, with drain hole, shall have stationary or self-closing lids with anchor chains secured to the receptacle to protect the contents from weather. Receptacles shall be designed to hold heavy-duty plastic or galvanized steel liners of the same manufacturer. Consideration shall be given to potential weight of full containers when deciding on ‘top loading’ or ‘side loading’ receptacles. Trash receptacles shall include a concrete pad 12 inches (300 mm) larger on all sides than the size of the trash receptacles.

G204003 1.3 BENCH

Minimum 6 feet (1.8 meter) length to match trash and recycling receptacle material & color, installed a minimum of 18 inches (450 mm) above finish grade, permanently installed with anchor bolts or in-ground. For benches located in nonpaved areas, provide concrete pads extending a minimum 2 feet

(0.6 meters) beyond the edge of the seat portion of the bench (or both front and back if accessible from either).

G204003 1.4 RECYCLING RECEPTACLES

Provide recycling receptacles, single-piece with separate slots for cans, bottles, newspaper. Height, material, and style shall match trash receptacle.

G204003 1.5 BARBEQUE

Minimum 12 inches (300 mm) x 18 inches (450 mm) with heavy-duty grill and hinged stainless steel lid, factory primed and painted with rust-resistant paint. Install so coal height is a minimum of 36 inches (0.91 meter) above finish grade.

G204003 1.6 HOT ASH RECEPTACLE

Minimum 28 square inches (181 square centimeters) x 42 inches (1.1 meter) high pre-cast reinforced concrete with drain hole with steel ash grate and cast in “Hot Coals Only” logos on each side with white letters on a red background.

G204004 SECURITY STRUCTURES

Where identified for project elsewhere in this RFP, provide active and passive vehicle barriers to effectively stop or detect penetration by explosive-laden vehicles through the perimeter of a protected area in accordance with UFC 4-022-02, *Selection and Application of Vehicle Barriers*.

G204005 SIGNAGE

Provide facility signage as required by local code, the Installation and Appearance Guide, the Base Exterior Architectural Plan (BEAP) and this RFP.

Size messages and graphics on signs according to the functional viewing distance. Typically, at least 1 inch (25 mm) of letter height per 25 feet (7.62 meters) of viewing distance is required for readability.

Refer to Section G201004, “Marking & Signage” for traffic signage.

G204006 PLAYING FIELDS

G204006 1.1 PLAYGROUNDS

Design playgrounds and provide surfacing and equipment in accordance with this RFP and U.S. Consumer Products Safety Commission Publication 325 and ASTM F 1487. Tot-Lots and Play-Lots shall be bordered with reinforced concrete curbing to a depth appropriate to the type safety surfacing utilized. Provisions for shade and wind protection shall be made where these elements may significantly limit the use of the facilities. Tot-lots and play-lots shall have separated areas with appropriately sized equipment and materials to serve their developmental levels. The areas shall be separated by a buffer zone, which can be an area of shrubs, hardscape or benches. Tot-lots and play-lots shall have signage to give guidance to adults as to the age appropriateness of the equipment.

G204006 1.1.1 Tot Lots

Design each “tot lot” to accommodate children from ages 2 through 5 to provide a variety of play activities and motor skill development opportunities which may include, as a minimum:

Multi-activity structures shall have a minimum of two platforms and two slides, one wheel chair accessible, swing set for young children, paired spring mounted ‘riders’ or other similar types of apparatus. At least two benches, with backs, on concrete bases, shall be located for convenience to, and observation of, the tot-lot.

G204006 1.1.2 Play Lots

Design each “play lot” to accommodate children from ages 5 to 12 which provide a wider range of activities and opportunities for greater motor skills development and improvement. These may include, as a minimum:

Multi-activity structure shall have a minimum of three platforms and two slides, one wheel chair accessible. A swing set, or other similar types of apparatus. At least two benches, with backs, on concrete bases, shall be located for convenience to, and observation of, the play-lot.

G204006 1.1.3 Equipment

Tot lot and play lot equipment must be factory finished institutional quality, in compliance with ASTM F1487, the United States Consumer Products Safety Commission's Guidelines for Public Playgrounds, and the UFC 3-201-01, Civil Engineering. Use only equipment that has been approved by International Play Equipment Manufacturers Association (IPEMA) and installed by a National Playground Contractors Association (NPCA) contractor.

Site tot lot and play lot equipment to provide use and no encroachment zones in accordance with ASTM F1487. A use zone is a clear, unobstructed area under and around play equipment where a child would be expected to land when jumping or falling from a piece of play equipment. Requirements for use zones vary for the age group and for different pieces of equipment. Show all use zones for play equipment on the site plan to ensure there is no conflict between play activities on the ground and swinging or jumping from the equipment. The No-encroachment zone is an additional area beyond the use zone where children using the equipment can be expected to move about and should have no encroaching obstacles. This area will vary according to the types of adjacent equipment, and their orientation to one another.

G204006 1.1.4 CCA-Treated Lumber

Do not use chromated copper arsenate (CCA) treated lumber in recreational facilities for children.

G204006 1.1.5 Playground Safety Surface

Provide a playground safety surface, in accordance with ASTM F355 and ASTM F1292, throughout all use zones and under all play equipment in tot lots and play lots. Natural wood products and decomposed granite are not allowed for surfacing. Loose fill surfacing must be a minimum of 4 inches (100 mm) below the top of edging. Consider local climate, soil conditions, location and size of area, type of activity, age of users, and intensity of use when choosing surfacing material. Provide soil separator fabric between playground loose-fill material and subgrade soil. Design play areas with permeable surface and adequate drainage. Drain to sump a minimum of 20 feet out from the playground curbing or to

storm drain.

G204006 1.2 PLAYING FIELDS

Provide playing surfaces in accordance with this RFP. Use synthetic turf systems approved by the reviewing Government Landscape Architect or Civil Engineer.

G204090 OTHER SITE IMPROVEMENTS

Provide other site improvements in conformance to the BEAP or Installation Appearance Plan and to the requirements of UFC 4-010-01.

G204090 1.1 DUMPSTER PADS AND ENCLOSURES

Dumpster pads shall be composed of 8 inch (200 mm) thick reinforced portland cement concrete pavement sized larger than what is required to accommodate the specific dumpsters to be used at the site. Make the concrete pad large enough to accommodate the front wheels of the carrying truck.

The dumpster enclosure’s materials and style shall complement the adjacent buildings and facilities. Walls should be at least 6 feet (1.83 meters) tall. Where possible, orient the openings of enclosures away from building entrances and main streets. Refer to the Base Installation design standards for additional requirements.

G2050 LANDSCAPING

Landscape area is defined as all permeable areas within the project boundaries not covered by buildings, roads, parking lots, sidewalks, and other non-permeable areas. All site areas disturbed by construction must receive landscape improvements.

G2050 1.1 DESIGN

The design of landscaped areas must be in accordance with Presidential Executive Order 13148 of April 2000, with a goal to reduce fertilizers, pesticides, and water use. The intent is to achieve a base-wide ratio of 20 percent maximum non-native plants and 80 percent minimum locally or regionally native plants. Do not use plants deemed invasive by the project state or region's Exotic Pest Plant Council, State Department of Agriculture or local chapter of the American Society of Landscape Architects as a threat to ecosystems or agriculture. Select only plant species which require little or no supplemental irrigation after the initial establishment period. Only nursery-grown plants are acceptable. Cover all non-paved site areas disturbed by construction operations with plant material or inorganic mulch. Stabilized soil, decomposed granite, and organic mulch are not acceptable as ground covers. Provide landscape architectural work in accordance with UFC 3-201-02, *Landscape Architecture*. For all projects with planting and or irrigation areas, utilize the design services of a Landscape Architect licensed in the state of the project. The Landscape Architect of Record must visit the site at least once prior to design, twice during construction, and quarterly during the Establishment Period, including the Establishment Period start and completion. The Landscape Architect of Record must attend the kickoff partnering meeting and CDWs. Courtyards and plazas are to be designed by the Landscape Architect. For the CDW, provide a Site Analysis Plan to demonstrate the design thought process. It is the Contractor's responsibility to coordinate between disciplines including architecture, civil engineering, electrical engineering, mechanical engineering, fire protection, and landscape architecture. Coordinate location of utilities,

structures, and equipment. For projects in dry climates (arid and semi-arid), eliminate or minimize the use of turf, except when needed for active or passive recreation.

The Landscape Architect-of-Record is required to submit 2 sample boards of landscape materials. Sample boards to include but not limited to colors, finishes, textures of hardscape paving, walls, signs, monument piers, inorganic mulches, organic mulches, and other site improvements. Include cut sheets of all proposed plant material.

G205001 FINE GRADING AND SOIL PREPARATION

See Section G10, Site Preparation. Provide 4 inches (102 mm) of topsoil with appropriate soil amendments, as recommended by a current soil composition test, for all areas to be planted with turf grass.

G205002 EROSION CONTROL MEASURES

See Section G10, *Site Preparation*.

G205003 TOP SOIL AND PLANTING BEDS

See paragraph titled, G205005 PLANTINGS.

G205004 SEEDING, SPRIGGING, AND SODDING

Hydroseed areas that are to be seeded and are larger than 1,000 square feet (92.90 square meters). Hydroseed mix composition must be appropriate for surrounding land use and compatible and consistent with local application rates, seed availability and established practice in the project area. If project dates are unknown, specify required planting dates or alternative species for different seasons. Apply seed at a time best suited for germination of the selected species. Seeded areas are required to achieve a 95-percent coverage of the selected species and be weed free at the end of the Establishment Period.

G205005 PLANTINGS

G205005 1.1 EXISTING PLANT MATERIAL TO REMAIN OR BE TRANSPLANTED

Preserve existing trees to the greatest extent possible. Identify preserved trees on the plans with tree species, caliper and dripline. Tag trees to be saved with plastic or vinyl tape tied to the tree caliper. Protect existing trees by fencing planting areas to remain from compaction and any other damage with a barrier of metal poles a maximum 8 feet (2.4 meter) on center with plastic netting to a minimum of 10 feet (3.0 meter) radius from outside of the tree's trunk. Where tree drip lines are greater than 10 feet (3.0 meter) from the tree's trunk, locate barrier fencing at the drip line of the tree. Install signs on each Tree Protection Zone fence indicating that the barrier must not be taken down or moved without the participation of a Certified Arborist. Ensure that the details and specifications clearly state that none of the following activities occur within the tree protection barricade: driving, parking, storing materials, dumping waste, concrete washout, adding fill soil, trenching, removing soil, grubbing, or any other disturbance to the tree or the associated roots. Do not allow debris from tree or stump removal operations to fall on or otherwise damage plants that are not scheduled for removal. Do not remove plastic tape and barrier fencing until planting operations are ready to begin and or instructed by the Contracting Officer. Replace existing trees to remain or to be transplanted that are unhealthy, that die, or have 20 percent or more of their crowns that die during the establishment period

with healthy plants of the same species or variety during the appropriate planting season. During the landscape establishment period, replace trees, turf, shrubs, and ground cover that are damaged or destroyed during construction operations by the Contractor at no additional cost to the Government. At the direction of the Contracting Officer, remove the existing tree and stump and replace it with trees of the same genus and species equal to the total caliper of the existing tree. Minimum caliper of replacement trees must be 4 inch (100 mm). Replace shrubs with 5 gallon (18.9 liter) size container, ground cover with flat containers planted at 8 inches (200 mm) on center, and turf with sod, all of the same genus and species.

G205005 1.2 UTILITIES

Trees shall not be placed within 10 feet (3 meter) of any above or below-grade utility line or structure. Within roadway sightlines, mature shrubs shall not be greater than 3 feet (1 m) in height and trees shall be limbed up a minimum of 6 feet (2 m) so their mature growth will not obstruct views from vehicle intersections or points of vehicle ingress or egress. Coordinate utilities between the Landscape Architect and appropriate disciplines.

G205005 1.3 RECYCLING

Green waste: Contact the Public Works Department for potential green waste collection and hauling by the Government. Green waste not collected by the Government shall be separated from construction debris and delivered to the base’s or local landfill’s green waste recycling area. Quantify and report diverted waste to the Contracting Officer.

G205005 1.4 PLANTING

G205005 1.4.1 Plant Quantities

Provide trees at the minimum rate of one (1) tree per 1,000 square feet (92.9 square meters) of Landscape Area. Parking areas must have a minimum of one (1) tree per every 5 parking spaces around the parking perimeter and one (1) tree per every 10 parking spaces within the parking area. Provide a minimum of one (1) tree in each end aisle planter. Total minimum quantities may be reduced only by the reviewing Government Landscape Architect. Tree quantities reduced by the Government Landscape Architect will be included on the ADD/DEDUCT List by the Contracting Officer. For bioretention areas, minimum quantities of trees, shrubs, and ground covers must be as required by State regulations. Provide a minimum tree size of 24 inch (600 mm) box/2 inch (50 mm) caliper, or if within an anti-terrorism zone provide a minimum size of 36 inch (910 mm) box/3 inch (76 mm) caliper. For trees within concrete or other non-permeable paved areas, allow a minimum non-paved planting area of 4 feet by 8 feet (1.2 m by 2.4 m) per tree.

For dry climates (arid and semi-arid)only:

Plant a minimum of forty percent (40%) of the landscaped areas with shrubs and groundcover so that at 50 percent (50%) plant maturity, they will form mass plantings. Utilize a minimum ratio of 60 percent (60%) 5 gallon (18.9 liter) shrubs or groundcover and 40 percent (40%) 1 gallon (3.79 liter) shrubs or groundcover. The remaining sixty percent (60%) of the landscape area may be inorganic mulch, planted or a combination thereof. For inorganic mulch, provide 3 inch (76 mm) depth of 3/4-inch (19 mm) and smaller rock, and for larger than 3/4-inch (19 mm) size, assure complete ground surface coverage. Provide plant material calculation summary matrix on planting plan.

For all other climate zones:

Plant the majority of shrubs at major entrances to buildings and at other important planting zones that are specific to each site. The overall design intent should be to plant mostly trees and turf, with shrubs and ground covers used sparingly, to reduce maintenance costs while still providing for functional planting requirements (e.g., soil stabilization, energy conservation, force protection, and aesthetics). Provide a minimum size 3 gallon (11.4 liter) container for shrubs and 1 gallon (3.79 liter) container for ground covers.

G205005 1.4.2 Plant Quality

All plants must comply with ANSI Z60.1 and ANSI A300, Part 1, current editions. All plants must be in a healthy, disease and pest free condition. All seed, sod, and sprigs must be State Certified.

G205005 1.4.3 Plant Selection

The reviewing Government Landscape Architect shall have final approval authority on all selected plant material. Species deemed unsuitable for planting by the Government Landscape Architect will not be allowed.

G205005 1.4.4 Plant Installation

Planting operations, including but not limited to planting soil mixes and fertilization, must comply with local established practices and agricultural extension service recommendations. Stake or guy new or transplanted trees with three stakes [2 inch x 2 inch x 8 feet (50 mm x 50 mm x 2.4 m) hardwood], or three guy cables [five-strand, 3/16 inch (5 mm) diameter galvanized steel cable]. Install linear tree root barriers at the edge of paving where trees are planted within 10 feet (3 m) of sidewalks, curbs, walls, columns, and other hard surface areas. Do not encircle tree root balls with root barriers

G205005 1.4.5 Edging Materials and Mulching Materials

Provide 3/16 inch (5 mm) minimum thick by 5 inch (127 mm) minimum deep aluminumedging or 6 inch (150 mm) by 6 inch (150 mm) minimum, concrete edging dividing all turf and planting beds and dividing all planted and non-planted inorganic mulch areas. Provide stake type and spacing for aluminum edging per manufacturer's recommendations. Plastic edging is not allowed. Mulch planted areas not mulched with inorganic mulch with a 3-inch (75 mm) depth of organic shredded hardwood mulch. For inorganic mulch where rock cobble size is greater than half of the profile depth, provide Â¾ inch (19 mm) comparable color and shape rock mulch in bottom half of profile. For dry climates only, organic mulch must be shredded redwood bark unless approved otherwise by the reviewing Government Landscape Architect. All mulches (organic and inorganic) must not be subject to sloughing off on sloped sites. Submit samples of mulches to the reviewing Government Landscape Architect for approval prior to installation. Decomposed granite must not be used. Provide a 3-inch (75 mm) depth of organic shredded hardwood mulch between plants used to form a mass (in dry climates, mulch in the remainder of planting beds with inorganic mulch). Install mulching materials prior to the start of the Establishment Period.

G205005 1.4.6 Fertilizer

Fertilize all transplanted trees, new trees, shrubs, ground covers, turf, perennials and ornamental grasses as recommended by local agricultural extension services.

G205005 1.4.7 Weed Fabric and Erosion Control Fabric

Provide a weed barrier fabric of sheet polypropylene or polyester fabric specifically designed for weed control purposes beneath all planted or mulched non-planted areas. Treat fabric for protection against deterioration due to ultraviolet radiation. Fabric must be a minimum 99 percent opaque to prevent photosynthesis and seed germination from occurring, yet allowing air, water and nutrients to pass through to the roots. Minimum weight must be 5 ounces per square yard (0.11 kg per square meter) with a minimum thickness of 20 mils (0.50 mm) with a 20 year minimum guarantee. Provide a biodegradable product designed specifically for erosion control on all sloped areas 3 (horizontal):1 (vertical) and greater in slope. Do not place weed fabric over the root balls of trees.

G205005 1.4.8 Drainage

Provide for proper grading and drainage of turf and planting areas. Provide sub-surface drainage where soil or other conditions do not allow surface drainage. Do not drain roof gutters into planter areas.

G205006 IRRIGATION SYSTEMS

G205006 1.1 IRRIGATION

Where an irrigation system is required per other parts of this RFP, provide a permanent, below-grade system. Provide 100 percent sprinkler head to head coverage. Provide pop-up heads in turf and landscape zones when adjacent to walks, roads, parking lots, or in sparsely planted landscape areas where pedestrians may circulate. Provide pop-up heads project-wide on high-traffic sites such as, but not limited to, dining, housing, entertainment, daycare, education and recreation facilities. For dry climates, provide deep root watering systems for trees. Verify adequate water pressure for irrigation purposes and provide booster pumps and or pressure regulation as required. Provide minimum 18 inch (450 mm) cover over pressurized (mainline) PVC irrigation pipe and 12 inch (300 mm) cover over non-pressurized (lateral line) PVC irrigation pipe. 1/2-inch (13mm) pipe is not allowed. Provide pressurized (mainline) pipe in conformance with ASTM D1785, PVC 1120, Schedule 40. Provide non-pressurized (lateral) pipe in conformance with ASTM D2241, PVC 1120 SDR 21, Class 200. The Landscape Contractor must test the entire system in the presence of the Contracting Officer and Landscape Architect-of-Record to ensure proper performance. All irrigation components must be commercial or institutional quality. Provide rain shut-off device and watertight splices. Provide sprinkler heads, bodies and nozzles of the same manufacturer. All irrigation heads on the same valve must have nozzles with matched precipitation rates.

G205006 1.2 OPERATION AND CONTROL

Assure systems will automatically operate on an “irrigation window” between 2130-0530. Provide compatible and fully functional control if a central control system exists on base. Otherwise, provide evapotranspiration-measuring control with flow meter and master valve with controller capable of indicating visible or auditory notification, such as a blinking light or beeping sound, of system shut-off.

G205006 1.3 ZONING

Provide separate control valves for differing plant species coefficients, landscape coefficients, and solar exposures, for areas with differing irrigation head types or differing precipitation rates, and top and bottom of slopes. Provide a separate irrigation backflow prevention device and water meter. Turf, trees, and shrubs/groundcover are not allowed on the same valve. Provide separate concrete valve box with cast iron lid and valve ID for each valve and wire splice. Provide quick coupling valves at 100 feet (30 m) on center. Provide in-head check valves for sloped areas with 0.5 feet (150 mm) or more in elevation change.

G205006 1.4 TEMPORARY IRRIGATION

Provide ultra-violet resistant pipe and fittings for above-grade, temporary irrigation. Only non-pressure pipe is allowed above grade. Irrigation systems intended to remain in place longer than one year shall be installed below grade. Provide tags and signage for identification.

G205006 1.5 NON-POTABLE IRRIGATION

Provide lavender-colored pipe, sprinkler head and quick coupler caps, valve tags, signage, and associated filtration equipment.

G205006 1.5.1 Controller Charts

Provide one chart for each new controller or existing re-sequenced controller. The chart must be an actual plan reduced to fit inside maximum dimensions of the controller housing. Use black line print for chart and a different color to indicate each station area of coverage. After chart is completed and approved for final acceptance, seal chart between two 20 mil (0.5 mm) pieces of clear plastic. Affix the chart to the inside of the controller cabinet door using approved mastic or fastening system. Provide one additional copy of the chart in electronic format. Additionally, the Landscape Architect of Record must provide the Base with a maintenance plan and schedule as part of the turn-over items.

-- End of Section --

SECTION G30

SITE CIVIL/MECHANICAL UTILITIES
09/15

G30 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

G30 1.1 DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and Government standards referenced in the section text that are not found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website, are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the referenced standard at the time of contract award.

G30 1.1.1 Industry Standards and Codes

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

G30 1.1.2 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s): UFC 3-201-01, Civil Engineering UFC 3-230-01, Water Storage, Distribution, and Transmission UFC 3-240-01, Wastewater Collection UFC 3-210-10, Low Impact Development UFC 3-401-01, Mechanical Engineering)
UFC 1-200-02	High Performance and Sustainable Buildings
UFC 3-600-01	Fire Protection Engineering
UFC 3-800-10N	Environmental Engineering for Facility Construction

G30 1.2 QUALITY ASSURANCE

Materials and assemblies installed in the work must be inspected and found to be in compliance with industry standards and these specifications prior to acceptance of the work. Remove items found not to be in compliance, or take corrective measures, to assure compliance with the referenced standard. Perform field tests and provide labor, equipment and incidentals required for testing.

G30 1.2.1 Materials

All materials must be new, and bear the label of the standardizing agency whenever standards have been established and label service is normally and regularly furnished by the agency. All equipment provided must be listed and suitably labeled for the specified purpose, environment, and application and installed in accordance with manufacturer’s recommendations.

G30 1.2.2 Additional Work

Provide such other labor and materials as are required for a complete and usable system in accordance with the requirements of the criteria listed, regardless of whether such materials and associated labor are called for elsewhere in this RFP.

G30 1.2.3 Qualifications of Well Drillers for Water Supply Wells

If required by the state waterworks' regulations, the well driller must be certified by the state and remain certified while constructing the well.

G30 1.2.4 Qualifications of Coating Contractors for Water Storage Tanks

All contractors and subcontractors that perform surface preparation or coating application must be certified by the Society for Protective Coatings (formerly Steel Structures Painting Council) (SSPC) to the requirements of SSPC QP 5 for the inspection firm prior to contract award, and remain certified while accomplishing any surface preparation or coating application. The Coating Inspector must also be certified to Level II for exterior and Level III for interior coatings prior to and during the project.

G30 1.2.5 Qualifications of Oil/Water Separator Manufacturers

Manufacturers must have five years of experience producing packaged oil/water separator units of similar size.

G30 1.3 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

Compliance with the requirements will be determined by a review of the design and construction submittals and by field inspection. See Section 01 33 10.05 20, *Design Submittal Procedures*, and Section 01 33 00.05 20, *Construction Submittal Procedures*, for additional requirements.

Verify satisfactory utility system performance via Performance Verification Testing, as detailed in this section of the RFP. Verify satisfactory performance also via testing as detailed in the paragraph, "Field Quality Control", in applicable UFGS Specification Sections utilized.

G30 1.3.1 Water Supply Well Performance Verification

Upon completion of the permanent well, conduct performance testing for well capacity, drawdown and pump equipment. Conduct water quality testing in accordance with AWWA A100 and its appendices and state regulations.

G30 1.3.2 Water Distribution System Verification Testing

Provide testing on water mains and service lines in accordance with the state waterworks' regulations and the following:

a. Ductile Iron and other materials: AWWA C600.
b. PVC: AWWA C605.

Where water mains and water service lines provide fire service, test in accordance with NFPA 24.

Do not begin testing on any section of a pipeline where concrete thrust blocks have been provided until at least 5 days after placing of the concrete.

G30 1.3.3 Fire Distribution System Verification Testing

Test water mains and water service lines providing fire service or water and fire service in accordance with NFPA 24. The additional water added to the system must not exceed the limits given in NFPA 24.

G30 1.3.4 Water Booster Pump Station Verification Testing

Test the water booster pump station in accordance with state regulations. Conduct testing on discharge and site piping in accordance with tests for water distribution mains; see G30, paragraph 1.3.2. Test pumps, controls, and alarms, in operation, under design conditions to ensure proper operation of all equipment.

G30 1.3.5 Sanitary Sewer Distribution System Verification Testing

Provide testing on sewer mains and laterals in accordance with state regulations.

G30 1.3.5.1 Deflection Test

Deflection of pipe in the installed pipeline under external loads must not exceed 4.5 percent of the average inside diameter of pipe, in accordance with ASTM D 2412.

G30 1.3.5.2 VISUAL TEST

Perform a visual inspection of the existing sewer before making a connection to the existing sewer line. Verify existing sewer line does not connect to or drain to the storm drainage system. Visually inspect downstream manholes connecting the existing sewer as well as the upstream and downstream manholes where the point of connection will be made to verify that there is no potential for cross connection to the storm sewer system. Perform visual inspection in the presence of the Contracting Officer's Representative and Public Works PW6 field support. Obtain approval from the Contracting Officer before making the connection.

Perform a dye check from the project to the first manhole on the

next active sewer branch main downstream from the sewer branch main used as the project point of connection. Testing shall continue till the dye visually confirms the design connection is appropriate. Dye shall be a nontoxic non-staining sewer tracing dye. During the test the contractor shall monitor the storm drainage system downstream from the project, either manholes or outfalls for any sign of cross connection.

Perform a smoke test on the project sewer. Testing will verify that project storm drainage inlets or drains have not been connected to the sanitary sewer.

These tests shall be observed by the Contracting officer's representative and the utility operator's inspector.

G30 1.3.5.3 Leakage Tests

Test lines for leakage by either infiltration tests or exfiltration tests, or by low-pressure air tests. Prior to testing for leakage, backfill trench up to at least lower half of pipe. When necessary to prevent pipeline movement during testing, place additional backfill around pipe sufficient to prevent movement, but leaving joints uncovered to permit inspection. The leakage allowance is indicated in AWWA C 600 for ductile iron pipelines; AWWA C 605 for polyvinyl chloride pipelines; and the state sewerage regulations, whichever is more stringent. When leakage or pressure drop exceeds the allowable amount make satisfactory correction and retest pipeline section in the same manner. Correct visible leaks regardless of leakage test results.

a. Exfiltration Tests:

ASTM C 969M (ASTM C 969) and perform calculations in accordance with its Appendix.

b. Low-pressure Air Tests:

i. Pipelines: ASTM C 924M (ASTM C 924) and perform calculations in accordance with its Appendix.

ii. PVC plastic pipelines: UBPPA UNI-PUB-6 and perform calculations in accordance with its Appendix.

G30 1.3.5.4 TV Inspection for Sanitary Sewer

Post-installation TV inspection will be performed on all segments of the installed system when the total footage of sanitary sewer mains installed in the contract is in excess of 300 feet.

Complete the post-installation TV inspection to confirm that the completed lines are free of defects. For video recordings include an audio track recorded by the inspection technician during the actual inspection work describing the parameters of the line being inspected. The minimum information to be included is the pipe material, pipe size, starting and stopping manholes and descriptions of any features as they occur. Video recording playback must be at the same speed that it was recorded. Permanently label CDs / DVDs according to their contents; CDs / DVDs will become the property of the Government.

Provide all TV inspections of sanitary sewer mains in accordance with the Pipeline Assessment and Certification Program as sponsored by the National Association of Sewer Service Companies (NASSCO). Prior to initiating CCTV inspection, provide copies of PACP Certification of the operators that will be performing the work.

Complete pipe segments and manhole work, including pipe penetrations, manhole benches, main line and manhole visual inspection, pressure testing, deflection and leakage tests on a section of line (manhole to manhole) prior to performing TV.

Complete post-installation TV inspection in the presence of the Contracting Officer or his designated representative.

The importance of accurate measurements is emphasized. The meter device must be accurate to one tenth of a foot.

Utilize the full capabilities of the camera equipment to document the completion and the conformance of the work to the Contract Documents. Provide a full 360Â° view of the pipe, joints and service connections. Move the camera through the line in either direction at a moderate rate, stopping when necessary to permit proper documentation of the sewer's condition. The maximum speed must be no greater than 30 feet per minute. Use manual wenches, power winches, TV cable and powered rewinds or other devices that do not obstruct the camera view or interfere with the proper documentation of the sewer conditions to move the camera through the sewer line.

Once video recording has commenced, the recording must be continuous, without interruption, until the termination manhole is reached.

Provide a color video showing the completed work. Prepare and submit Television Inspection Logs providing location of service connections along with the location of any discrepancies.

Keep computer printed location records (Television Inspection Logs) and clearly show the location and orientation in relation to an adjacent manhole for each point observed during the TV inspection. Record features of significance such as locations and orientations of service connections, pipe deflections, leaks, rolled or dislodged gaskets, sags or bellies in the line, or wide joints.

Document noted defects and lateral connections as color digital files and color hard copy prints. Photo logs must accompany each photo submitted.

Prior to submission of the TV inspection video, Television Inspection Logs, and digital photographs to the Contracting Officer, review the submittal items to ensure that they meet the quality criteria set forth in this specification. A copy of such video along with the Television Inspection Logs and Digital photographs must be supplied to the Contracting Officer within five (5) business days of completion of the video-inspection. In the event that the video, Television Inspection Logs or digital photographs are deemed of poor quality or substandard by the Contracting Officer, the videos, and / or Television Logs, or digital photographs will be returned and a re-inspection provided by the Contractor, at no additional cost to the

Government.

G30 1.3.6 Sanitary Sewer Manholes Verification Testing

Provide a visual inspection of all manholes for proper grade and water tightness. Provide testing on sanitary sewer manholes in accordance with state regulations. At minimum, perform hydraulic testing in accordance with ASTM C 969/C 969M.

G30 1.3.7 Wastewater Pump Station Verification Testing

Test the wastewater pump station in accordance with state regulations. Conduct testing on discharge piping and force main in accordance with tests for water distribution mains; see G30, paragraph 1.3.2. Test pumps, controls, and alarms, in operation, under design conditions to ensure proper operation of all equipment.

G30 1.3.8 Storm Sewer System Verification Testing

G30 1.3.8.1 Deflection Test

Deflection of pipe in the installed pipeline under external loads must not exceed 4.5 percent of the average inside diameter of pipe, in accordance with ASTM D 2412.

G30 1.3.8.2 TV Inspection for Storm Sewer Under Pavements

Post-installation TV inspection will be performed on all segments of the installed system when the total footage of storm sewer lines installed in the contract is in excess of 300 feet.

Complete the post-installation TV inspection to confirm that the completed lines are free of defects. For video recordings include an audio track recorded by the inspection technician during the actual inspection work describing the parameters of the line being inspected. The minimum information to be included is the pipe material, pipe size, starting and stopping manholes and descriptions of any features as they occur. Video recording playback must be at the same speed that it was recorded. Permanently label CDs / DVDs according to their contents; CDs / DVDs will become the property of the Government.

Provide all TV inspections of storm sewer lines in accordance with the Pipeline Assessment and Certification Program as sponsored by the National Association of Sewer Service Companies (NASSCO). Prior to initiating CCTV inspection, provide copies of PACP Certification of the operators that will be performing the work.

Complete pipe segments and manhole work, including pipe penetrations, manhole benches, main line and manhole visual inspection, pressure testing, and deflection test on a section of line (manhole to manhole) prior to performing TV.

Complete post-installation TV inspection in the presence of the Contracting Officer or his designated representative.

The importance of accurate measurements is emphasized. The meter device must be accurate to one tenth of a foot.

Utilize the full capabilities of the camera equipment to

document the completion and the conformance of the work to the Contract Documents. Provide a full 360Â° view of the pipe, joints and service connections. Move the camera through the line in either direction at a moderate rate, stopping when necessary to permit proper documentation of the sewer's condition. The maximum speed must be no greater than 30 feet per minute. Use manual wenches, power winches, TV cable and powered rewinds or other devices that do not obstruct the camera view or interfere with the proper documentation of the sewer conditions to move the camera through the sewer line.

Once video recording has commenced, the recording must be continuous, without interruption, until the termination manhole is reached.

Provide a color video showing the completed work. Prepare and submit Television Inspection Logs providing location of service connections along with the location of any discrepancies.

Keep computer printed location records (Television Inspection Logs) and clearly show the location and orientation in relation to an adjacent manhole for each point observed during the TV inspection. Record features of significance such as locations and orientations of service connections, pipe deflections, leaks, rolled or dislodged gaskets, sags or bellies in the line, or wide joints.

Document noted defects and lateral connections as color digital files and color hard copy prints. Photo logs must accompany each photo submitted.

Prior to submission of the TV inspection video, Television Inspection Logs, and digital photographs to the Contracting Officer, review the submittal items to insure that they meet the quality criteria set forth in this specification. A copy of such video along with the Television Inspection Logs and Digital photographs must be supplied to the Contracting Officer within five (5) business days of completion of the video -inspection. In the event that the video, Television Inspection Logs or digital photographs are deemed of poor quality or substandard by the Contracting Officer, the videos, and / or Television Logs, or digital photographs will be returned and a re-inspection provided by the Contractor, at no additional cost to the Government.

G30 1.4 DESIGN SUBMITTALS

Design Submittals must be in accordance with UFGS section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures*, UFC 3-201-01, *Civil Engineering*, and UFC 3-401-01, *Mechanical Engineering*.

Provide sustainability submittals in accordance with UFGS 01 33 29.05 20 *Sustainability Reporting for Design Build*.

G30 1.5 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

All test reports.

Provide sustainability submittals in accordance with UFGS 01 33 29.05 20 *Sustainability Reporting for Design Build*.

G30 1.6 COORDINATION

To the extent that site work is indicated on the RFP drawings, verify that the locations and inverts of all site utility lines are coordinated with building utility lines. If necessary, make adjustments to the locations and inverts indicated on the RFP drawings in accordance with applicable codes and standards.

G30 1.7 ANTITERRORISM (AT) STANDARDS

Incorporate the minimum AT standards indicated in UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*.

G30 1.8 BACKFLOW PREVENTION

Submit backflow prevention training certificates and backflow preventer devices certification in accordance with Section 01 50 00.05 20, *Temporary Facilities and Controls for Design-Build*.

G30 1.9 WATER STORAGE TANK

Submit a certificate signed by a registered professional engineer providing a (1) description of the entire tank and foundation structural design loading conditions; (2) description of structural design methods and codes used in establishing allowable stresses and safety factors; (3) statement that the structural design has been checked by experienced engineers specializing in hydraulic structures to ensure that design calculations for member sizes, dimensions and fabrication processes are as prescribed by ACI and AWWA standards; and (4) certification that the completed work was inspected in accordance with AWWA D100 or AWWA D103 as applicable.

G30 1.10 NACE CERTIFIED CATHODIC PROTECTION SPECIALIST QUALIFICATIONS

Submit qualifications of specialist prior to site welding. Submit documentation of NACE certification. Certifications must not be more than one year old.

G30 1.11 EXCAVATION, BACKFILLING AND COMPACTION OF UTILITIES

Refer to Section G10, *Site Preparation*.

G30 1.12 DELIVERY, STORAGE AND HANDLING OF MATERIALS

Inspect materials delivered to site for damage. Unload and store with minimum handling. Store materials on site in enclosures or under protective covering. Store plastic piping, jointing materials and rubber gaskets under cover out of direct sunlight. Do not store materials directly on the ground. Keep inside of pipes, fittings, valves, and hydrants free of dirt and debris. Handle in a manner to ensure delivery to the trench in sound undamaged condition. Take special care to avoid injury to coatings and linings on pipe and fittings; make satisfactory repairs if coatings or linings are damaged. Carry, do not drag pipe to the trench.

G3010 WATER SUPPLY

G3010 1.1 WATER SYSTEM DESIGN

Determine domestic and fire demands for the facility and shall verify the design of all components of the domestic and fire protection supply systems. The water system design and construction must be in accordance with UFC 3-230-01, *Water Storage, Distribution, and Transmission;* the state waterworks' regulations, and the utility provider's requirements. Design the water supply systems to provide required flows and maintain residual pressures based upon peak demands.

If the new water system is an extension of an existing water system, obtain all necessary static pressure, residual pressure and flow characteristics of the existing distribution system by actual field tests. Conduct flow and pressure tests and provide design calculations that show the existing lines are capable of handling the additional flows. Connect the new water system to the nearest existing fitting or water line capable of handling the additional flows.

Design the connections to the water system including the necessary meter assemblies and backflow-preventing devices in accordance with the requirements of the Activity or utility provider and the state waterworks regulations.

Wherever possible, locate valve boxes and all other utility access structures out of paved areas.

G301001 WELL SYSTEMS

The potable water well system must be designed and constructed in accordance with AWWA A100 and its appendices; the state waterworks' regulations, and the system owner's preferences and requirements.

G301001 1.1 WATER METER

Provide a water meter on the well pump discharge piping aboveground in a pump enclosure or in a meter vault underground. Provide type of water meter and remote reading capability in accordance with system owner's preferences and requirements: AWWA C700, displacement type; AWWA C701, turbine type; or AWWA C702, compound type.

G301001 1.2 TEST HOLE

Drill test hole(s) at the well site before construction of the permanent well to determine the existing site-specific geologic/hydrologic conditions and groundwater-quality parameters. A test hole may be incorporated into the finished construction provided it meets the requirements for a finished well. Seal test holes not used in finished construction as recommended in accordance with AWWA C654 and the state waterworks' regulations. Upon completion of test hole, provide recommendations for permanent wells and submit data obtained at each well site. Include with the recommendations the appropriate depth, details of construction, length and location of screens, screen openings, gravel size, grout, and an estimation of the quantity of water that can be obtained from each water-bearing stratum and from each completed well. Submit electric log, a drillers log drawn to scale with coarseness and fineness modulus of each strata, time penetration log (time to drill through each formation), and sieve analysis to substantiate recommendations.

G301001 1.3 WELL CONSTRUCTION

G301001 1.3.1 Well Development

Provide well development in accordance with AWWA A100 and the state

waterworks' regulations.

G301001 1.3.2 Disinfection

Disinfect well, equipment, and material in accordance with AWWA C654 and the state waterworks' regulations. Provide a sanitary seal for the well to prevent contamination until the pump foundation and pump are installed on the well.

G301001 1.4 ABANDONMENT OF EXISTING WELLS

Abandon and seal existing wells in accordance with AWWA A100 and the state waterworks' regulations.

G301002 POTABLE WATER DISTRIBUTION

G301002 1.1 WATER SYSTEM DESIGN

Provide all materials, equipment, labor, testing, and miscellaneous related items for water distribution mains and service lines to the facility and connections to the existing water system in accordance with UFC 3-230-01, *Water Supply: Storage, Distribution, and Transmission*; the utility provider's requirements; and the state waterworks' regulations; whichever is more stringent.

Determine available flow at the residual pressure at each point of connection by conducting flow tests in accordance with AWWA M17 and NFPA 291.

Water main piping, service lines, fittings, valves, accessories and all other materials must meet the American Water Works Association (AWWA) standards for a minimum system working pressure of 150 psi (1050 kPa).

G301002 1.2 WATER DISTRIBUTION MAINS

For underground applications, water mains 12 inches (300 mm) in diameter and less must be ductile iron, PVC, or high density polyethylene (HDPE). Water mains deeper than 10 feet (3.0 m) or larger than 12 inches (300 mm) in diameter must be ductile iron.

For aboveground applications, water mains shall be flanged ductile iron pipe.

G301002 1.2.1 Materials

a. Ductile Iron Pressure Pipe

1) Pipe: AWWA C151, Pressure Class 350.

2) Fittings: AWWA C110 or AWWA C153.

3) Interior Lining: AWWA C104.

4) Exterior Protection (if required): AWWA C105, polyethylene encasement.

b. PVC Pressure Pipe

1) Pipe: AWWA C900, Pressure Class 150.

2) Fittings: Ductile Iron (AWWA C110 or AWWA C153).

c. Flanged Ductile Iron Pipe

1) Pipe: AWWA C115 and its appendices.

2) Fittings: AWWA C110 or AWWA C153.

3) Lining: AWWA C104.

G301002 1.2.2 Installation

a. Ductile Iron: AWWA C600.
b. PVC: AWWA C605.

Provide nondetectable warning tape and a continuous length of tracer wire for the full length of each run of nonmetallic piping below grade. Warning tape to be color coded with warning and identification of utility type imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (utility type) LINE BELOW" or similar wording. Color to be blue for potable water systems and purple for nonpotable, reclaimed water, and irrigation lines. Terminate tracer wire above grade at valve boxes and at exterior of building.

G301002 1.2.3 Connections to Existing Water Lines

Make connections to existing water lines after approval from the system owner is obtained and with a minimum interruption of service on the existing line. Make connections to existing lines under pressure in accordance with the recommended procedures of the manufacturer of the pipe being tapped.

G301002 1.3 WATER SERVICE LINES

Water service lines less than 4 inches (100 mm) in diameter must be copper tubing or PVC. Water service lines 4 inches (100 mm) and 6 inches (150 mm) in diameter must be ductile iron pipe and PVC pressure pipe; see G301002, paragraph 1.2, "Water Distribution Mains" for additional requirements for ductile iron and PVC piping.

G301002 1.3.1 Materials

a. Copper Tubing

1) Pipe: ASTM B 88/B 88M, Type K.

2) Fittings for Solder-Type Joint: ANSI B16.8 or ASME B16.22.

3) Fittings for Compression-Type Joint: ASME B16.26, flared tube type.

b. PVC Pressure Pipe

1) Pipe: ASTM D1785, Schedule 40 or ASTM D 2241, with SDR rating for 160 psi (1.1 MPa) pressure rating.

2) Fittings: ASTM D 2466.

3) Joints: Elastomeric gaskets for pressure rating; solvent cement joints, ASTM D 2564.

G301002 1.3.2 Service Connections

Connect service lines 2-inch (50 mm) diameter or less to the main by a corporation stop and install a gate valve on service line.

a. Ductile-iron water mains: AWWA C600.
b. PVC water mains: UBPPA UNI-PUB-8 and the recommendations of AWWA M23, Chapter 9, "Service Connections."

G301002 1.3.3 Installation

Install pipe, fittings and accessories in accordance with manufacturer's instructions.

a. Metallic Piping: applicable requirements of AWWA C600.
b. PVC: ASTM D 2774 and ASTM D 2855.

G301002 1.4 CORROSION PROTECTION

G301002 1.4.1 Insulating Joints

Provide insulating joints to prevent contact between dissimilar metals at the joint between adjacent sections of piping in accordance with the pipe manufacturer's recommendations. Ensure that there is no metal-to-metal contact between dissimilar metals after the joint has been assembled.

To prevent the possibility of bi-metallic corrosion, service lines of dissimilar metal to the water mains and the attendant corporation stops must be wrapped with polyethylene or suitable dielectric tape for a minimum clear distance of 3 feet (900 mm) from the main.

G301002 1.5 VALVES

Install valves with the same diameter and have the same joint ends as the mains to which they are installed. Each type of valve must be of one manufacturer.

G301002 1.5.1 Gate Valves

G301002 1.5.1.1 Location

Install valves at all new points of connection. At a minimum, locate valves to ensure that no more than two fire hydrants will be out of service in the event of a single break in a water main. Locate valves outside of pavement and heavy traffic areas whenever possible.

G301002 1.5.1.2 Gate Valves 3-inch (75 mm) and Larger in Diameter

a. Valves (20-inch and smaller in diameter): AWWA C509 or AWWA C515, nonrising stem and of one manufacturer.
b. Valves (greater than 20-inch in diameter): AWWA C500.
c. Valves for Indicator Post: AWWA C509 or AWWA C500, as indicated above, with indicator post flange in accordance with applicable requirements of UL 262.
d. Interior Coating: AWWA C550.

G301002 1.5.1.3 Gate Valves Smaller than 3-inch (75 mm) in Diameter

MSS SP-80, Class 150, solid wedge. Provide valves with flanged or threaded end connections, with unions on both sides of the valve and a handwheel operator.

G301002 1.5.1.4 Valve Box

Provide a cast iron, adjustable, valve box for each gate valve on buried piping. Provide valve boxes of a size suitable for the valve on which it is to be used with a minimum diameter of 5-1/4 inches (130 mm). Provide a round head and cast the word "WATER" on the lid.

G301002 1.5.2 Check Valves

Provide check valves sized 2-inches (50 mm) to 24-inches (600 mm) as swing-check type (AWWA C508) and with a protective epoxy interior coating conforming to AWWA C550. For underground applications, provide check valve in a valve vault.

G301002 1.5.3 Air Release, Air/Vacuum, and Combination Air Valves

AWWA C512 and AWWA M51.

G301002 1.5.4 Corporation Stops

If service lines 2—inch diameter or less are tapping water mains, provide corporation stops. The corporation stops must be ground key type, bronze, ASTM B61 or ASTM B62.

G301002 1.5.5 Installation of Valves

Make and assemble joints to valves as specified for making and assembling the same type of joints between pipe and fittings.

G301002 1.6 WATER METERS

Provide water meter and remote reading as required by the utility provider and in accordance with AWWA standards.

G301002 1.7 BACKFLOW PREVENTION

Provide backflow prevention and cross connection control in accordance with AWWA M-14 and governing local/state plumbing codes and waterworks' regulations.

G301002 1.8 FIRE HYDRANTS

Fire hydrants must be of one manufacturer and in accordance with UFC 3-600-01, *Fire Protection Engineering*. Coordinate with the project's fire protection designer of record. Provide protection for fire hydrants located in areas subject to vehicle damage. Fire hydrants must have National Standard threads on hose and pumper connections. Provide a 6 inch (150 mm) inlet, two 2.5 inch (62 mm) hose connections and one pumper connection sized to accommodate local fire department equipment requirements. Paint hydrants with at least one coat of primer and two coats of enamel paint. Barrel and bonnet colors shall be in accordance with UFC 3-600-01. Stencil hydrant number and main size on the hydrant barrel using black stencil paint.

a. Dry Barrel Fire Hydrants: AWWA C502 with frangible sections.
b. Wet Barrel Fire Hydrants: AWWA C503 or UL 246, "Wet Barrel" design, with breakable features.
c. Installation: Install hydrants with the pumper connection facing the adjacent paved surface. If there are two, paved adjacent surfaces, contact the Contracting Officer for further direction.

G301002 1.9 THRUST RESTRAINT

Provide thrust restraint for all piping, valves, fittings, and other appurtenances of the water distribution system.

Provide thrust restraint using restrained joints in accordance with pipe manufacturer's recommendations, AWWA C600 and if for fire service main, NFPA 24.

G301002 1.10 DISINFECTION

Disinfect new water piping and existing water piping affected by Contractor's operations in accordance with the state waterworks' regulations and AWWA C651.

G301003 POTABLE WATER STORAGE

G301003 1.1 POTABLE WATER STORAGE TANKS

Provide potable water storage facilities in accordance with UFC 3-230-01, *Water Storage, Distribution, and Transmission;* and the state waterworks' regulations.

An elevated, steel water storage tank must be in accordance with AWWA D100. A ground, steel water storage tank must be in accordance with AWWA D100 for welded tanks and AWWA D103 for bolted tanks.

G301003 1.2 TANK ACCESSORIES

Provide piping and valves in accordance with G301002. Install an altitude valve in a valve vault with appropriate shut off valves and check valve.

G301003 1.3 TANK COATINGS

All primer, intermediate coat and topcoat materials must be manufactured by one manufacturer. Secondary materials, which are produced or are specifically recommended by the coating system manufacturer, may be used. Contrasting colors between coats are required.

G301003 1.3.1 Interior Coating System

Provide a commercially available interior coating system that is certified in accordance with AWWA D102, ICS-No. 2 or ICS-No. 5, and with NSF 61 and is in accordance with the state waterworks' regulations.

The color of the final coat must be approved in writing by the Contracting Officer before application begins.

Apply coatings at the following specified thickness:

Coat	Minimum DFT (mils)	Maximum DFT (mils)
Primer	3	5
Intermediate	3	5
Top	3	5
Total Systems	9	15

G301003 1.3.2 Exterior Coating System

Provide a commercially available, zinc/epoxy/polyurethane exterior coating system that is certified in accordance with AWWA D102, OCS-No. 6 and is in accordance with the state waterworks' regulations.

The color of the final coat must be approved in writing by the Contracting Officer before application begins.

Apply coatings at the following specified thickness:

Coat	Minimum DFT (mils)	Maximum DFT (mils)
Primer	3	5
Intermediate	3	5
Top	2	3
Total Systems	8	13

G301004 FIRE PROTECTION WATER DISTRIBUTION

G301004 1.1 GENERAL REQUIREMENTS

Refer to applicable portions of Section G301002 and Section D40, *Fire Protection Systems*. Water main piping, service lines, fittings, valves, accessories and all other materials must meet the American Water Works Association (AWWA) standards for a minimum system working pressure of 200 psi (1380 kPa).

G301004 1.2 DETECTOR CHECKS

UL 312; detector check includes bypass meter, piping, gate valves, check valve and connections to detector check valve. Set valve to allow minimal water flow through bypass meter when major water flow is required.

G301004 1.3 FIRE DEPARTMENT CONNECTIONS

UL 405.

G301004 1.4 INDICATOR POSTS

UL 789.

G301005 FIRE PROTECTION WATER STORAGE

Fire Protection Water Storage shall be in accordance with UFC 3-600-01 and NFPA 22.

G301006 NON-POTABLE WATER DISTRIBUTION

Refer to G301002; note that system disinfection is not required.

G301007 PUMPING STATIONS

If a pump station is allowed, provide a packaged booster pump station including pumps, piping, valves, sensors, controls, and accessories to maintain the water system pressure in accordance with UFC 3-230-01, *Water Storage, Distribution, and Transmission;* and the state waterworks' regulations.

The packaged booster pump station must have an Underwriter's Laboratories (UL) label indicating compliance of the equipment under the packaged pumping systems UL listing category. This label must be inclusive of the entire station with enclosure so as to demonstrate compliance with the National Electrical Code requirements for working clearances and wiring procedures.

All interior coatings of pumps, piping, valves and other accessories must be a National Standard Foundation (NSF) Standard 61 certified material for potable water.

G301008 PACKAGED WATER TREATMENT PLANTS

Provide packaged water treatment plants in accordance with UFC 3-230-03, *Water Treatment;* for pipeline materials and the state waterworks' regulations for treatment plant requirements.

G3020 SANITARY SEWER

G3020 1.1 GENERAL REQUIREMENTS

The gravity sanitary sewage collection system must be designed and constructed in accordance with UFC 3-240-01, *Wastewater Collection;*and the state sewer collection and treatment regulations. Connect the new sanitary sewage collection system to the nearest existing sanitary manholes or sanitary line adjacent to the project site. Provide design calculations that show the existing system is capable of handling the additional flows.

In areas where chemicals and other substances may be stored (including mechanical and electrical rooms), eliminate floor drains or make provisions to prevent spills from entering the sanitary sewer system. If there is process flow from equipment, discharge can be hard piped, with air gap, to the sanitary sewer.

Wherever possible, locate manholes and all other utility access structures out of paved areas.

G302001 SANITARY SEWER PIPING

G302001 1.1 GENERAL REQUIREMENTS

Provide all materials, equipment, labor, testing, and miscellaneous related items to provide sanitary sewage lines necessary for collection and services from the buildings.

G302001 1.2 GRAVITY SEWER PIPING

Gravity sanitary sewer mains and laterals must be Ductile Iron, PVC or Polypropylene sewer pipe and fittings. Use Ductile Iron under roadways or at depths greater than 10 feet (3.0 m). PVC and Polypropylene may only be used under roadways or at depths greater than 10 feet (3.0 m) when written approval is received by the Government's Civil Reviewer or indicated in another part of the RFP.

G302001 1.2.1 Materials

a. PVC Gravity Sewer Pipe

1) Piping and Fittings: ASTM D3034, SDR 35.

2) Joints: ASTM D3212 and ASTM F477.

b. Ductile Iron Gravity Sewer Pipe

1) Piping: ASTM A746. Provide required Thickness Class based on design information and methods in ASTM A746.

2) Fittings: AWWA C110 or AWWA C153.

3) Joints: AWWA C111.

4) Interior Coating: AWWA C104.

5) Exterior Protection (if required): AWWA C105, polyethylene encasement.

c. Dual Wall and Triple Wall Polypropylene Sewer Pipe 12" to 60"

1) Piping and Fittings: ASTM F2736 and ASTMF2764/F2764M.

2) Joints: ASTM D3212 and ASTM F477.

G302001 1.2.2 Connections to Existing Lines

Obtain approval from the Contracting Officer before making a connection to an existing line. Conduct work so that there is minimum interruption of service on existing line and provide a new manhole at the connection point.

G302001 1.2.3 Installation

Install pipe, fittings and accessories in accordance with manufacturer's instructions.

a. PVC and Dual and Triple Wall Polypropylene: ASTM D2321. Do not use ASTM D2321 Class IV or V materials for bedding, haunching or initial backfill materials.

b. Ductile Iron: AWWA C600.

Provide nondetectable warning tape and a continuous length of tracer wire for the full length of each run of nonmetallic piping below grade. Warning tape to be color coded with warning and identification of utility type imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (utility type) LINE BELOW" or similar wording. Color to be green for sewer systems. Terminate tracer wire above grade at valve boxes and at exterior of building.

G302001 1.3 PIPING FOR CLEANOUTS

G302001 1.3.1 Materials

a. Cast-Iron Soil Pipe for Cleanouts

1) Pipe: ASTM A 74, service.

2) Joints: ASTM C 564 compression-type rubber gaskets.

3) Exterior Protection (if required): AWWA C105, polyethylene encasement.

G302001 1.3.2 Installation

Install cast iron pipe and fittings in accordance with the recommendations of the pipe manufacturer.

G302002 SANITARY SEWER MANHOLES & CLEANOUTS

G302002 1.1 GENERAL REQUIREMENTS

Provide all materials, equipment, labor, testing, and miscellaneous related items for the sanitary manholes in accordance with the following:

a. Set manhole rim elevations flush with finished surface of paved areas or 1 inch (25 mm) above finished grade in unpaved areas.
b. Resilient connectors for making joints between manhole and pipes entering manhole must conform to ASTM C 923/C 923M.
c. Provide drop manholes when a gravity sewer pipe enters a manhole at an elevation of 24 inches (610 mm) or more above the manhole invert.

G302002 1.2 PRECAST CONCRETE MANHOLES

ASTM C 478/C 478M; base and first riser must be monolithic.

Precast manhole sections must have:

a. ASTM C 990/C 990M butyl gaskets;
b. ASTM C 443/C 443M rubber O-ring joints; or
c. Astm c 443, Type B gaskets.

G302002 1.3 CAST-IN-PLACE CONCRETE MANHOLES

Reinforced concrete; designed according to ASTM C 890 for A-16 (AASHTO HS20-44), heavy-traffic, structural loading. Provide concrete work in accordance with ACI 301/301M and ACI 350-01; provide a minimum compressive strength of 4000 psi (28 MPa).

G302002 1.4 MANHOLE FRAMES AND COVERS

Frame and cover must be cast gray iron, ASTM A48/A48M, Class 35B, cast ductile iron, ASTM A536, Grade 65-45-12, or reinforced concrete, ASTM C478 ASTM C478M. Frame and cover must be designed to accommodate the imposed live load. Stamp or cast the words "Sanitary Sewer" into covers so that it is plainly visible.

G302002 1.5 MANHOLE STEPS

a. Zinc-coated steel: 29 CFR 1910.27.
b. Plastic or rubber coating pressure molded to steel: ASTM D 4101, copolymer polypropylene; or ASTM C 443/C 443M, except shore A durometer hardness must be 70 plus or minus 5.

Aluminum steps or rungs will not be permitted.

Steps are not required in manholes less than 4 feet (1.2 m) deep.

G302002 1.6 MANHOLE CONSTRUCTION

Where a new manhole is constructed on an existing line, remove existing pipe as necessary to construct the manhole. Cut existing pipe so that pipe ends are approximately flush with the interior face of manhole wall, but not protruding into the manhole. For changes in direction of the sewer and entering branches into the manhole, make a circular curve in the manhole invert of as large a radius as manhole size will permit. For cast-in-place concrete, no parging will be permitted on interior manhole walls.

G302002 1.7 CONNECTIONS TO EXISTING MANHOLES

Center pipe connections to existing manholes on the manhole. Holes for the new pipe must be of sufficient diameter to allow packing cement mortar around the entire periphery of the pipe but no larger than 1.5 times the diameter of the pipe. Cut the manhole in a manner that will cause the least damage to the walls.

G302002 1.8 CLEANOUTS

Construct cleanouts of cast iron soil pipe and fittings; see G302001, paragraph 1.3.

G302003 LIFT STATIONS AND PUMPING STATIONS

G302003 1.1 GENERAL REQUIREMENTS

If a pump station is allowed, provide all materials, equipment, labor, testing and miscellaneous related items for a packaged lift or pump station system for the facility in compliance with the UFC 3-240-01, *Wastewater Collection*; the state sewerage regulations; and the utility provider's requirements.

G302003 1.2 SUBMERSIBLE PUMPS

Provide pumps capable of handling raw wastewater and passing spheres of at least 3 inches (75 mm) in diameter. The pump's suction and discharge openings must be at least 4 inches (100 mm) in diameter.

Provide submersible type sewage pumps, with guide rail system. Include ASTM A48/A48M, Class 25, nonclog, cast-iron impeller; and hermetically sealed motor with moisture-sensing probe, mechanical seals, and waterproof power cable. Construct the guide rail system of stainless steel. Provide a stainless steel lifting chain for raising and lowering the pump in the basin.

G302003 1.3 GRINDER PUMPS

Provide grinder-type sewage pumps, with guide rail system. Include stainless steel or bronze impeller and hermetically sealed motor with moisture-sensing probe, mechanical seals, and waterproof power cable. Construct the guide rail system of stainless steel. Provide a stainless steel lifting chain for raising and lowering the pump in the basin.

G302003 1.4 SUCTION LIFT PUMPS

Provide pumps capable of handling raw wastewater and passing spheres of at least 3 inches (75 mm) in diameter. The pump's suction and discharge openings must be at least 4 inches (100 mm) in diameter.

Provide dry-chamber-mounting, vacuum-primed, nonclog sewage pumps located in dry compartment above wet pit. Include ASTM A48/A48M, Class 25, nonclog, cast iron impeller; mechanical or stuffing box seals; pedestal mounted motor; and suction piping extending to bottom of wet pit.

Provide suction-lift pumps capable of automatic rapid self priming and re-priming at the "lead pump on" elevation. Suction piping must not exceed 25 feet (7.6 meters) in total length. Priming lift at the "lead pump on" elevation must include a safety factor of at least 4 feet (1.2 meters) from the maximum allowable priming lift for the specific equipment at design operating conditions. The combined total of dynamic suction-lift at the "pump off" elevation and the required net positive suction head at design operating conditions must not exceed 22 feet (6.7 meters).

G302003 1.5 PUMP MOTOR

Provide pump motor sized to accommodate pump operation along the entire impeller curve.

G302003 1.6 STATION PIPING WITHIN WET WELL AND VALVE VAULT

G302003 1.6.1 Piping Less than 4-Inch (100 mm) in Diameter

a. PVC Pressure Pipe

1) Pipe: ASTM D 1785, Schedule 80.

2) Fittings: Schedule 80 socket fittings, ASTM D 2467; Schedule 80 threaded fittings, ASTM D 2464.

G302003 1.6.2 Piping 4 inch (100 mm) Diameter and Larger

a. Flanged Ductile Iron Pipe

1) Pipe: AWWA C115 and its appendices.

2) Fittings: AWWA C110 or AWWA C153.

3) Lining: AWWA C104.

G302003 1.7 FORCE MAINS

G302003 1.7.1 Force Mains for Submersible and Suction Lift Pumps

Force mains must be at least 4 inches (100 mm) in diameter and must be either ductile iron or PVC pressure pipe.

a. Ductile Iron Pressure Pipe

1) Pipe: AWWA C151, Pressure Class 350.

2) Fittings: AWWA C110 or AWWA C153.

3) Interior Lining: AWWA C104.

4) Exterior Protection (if required): AWWA C105, polyethylene encasement.

b. PVC Pressure Pipe

1) Pipe: AWWA C900, Pressure Class 150. AWWA C905.

2) Fittings: Ductile Iron (AWWA C110 or AWWA C153).

G302003 1.7.2 Force Mains for Grinder Pumps

Force mains less than 4 inches (100 mm) in diameter must be PVC pressure pipe:

a. PVC Pressure Pipe

1) Pipe: ASTM D 1785, Schedule 40 or ASTM D 2241, with SDR rating for 160 psi (1.1 MPa) pressure rating.

2) Fittings: ASTM D 2466.

3) Joints: Elastomeric gaskets for pressure rating; solvent cement joints, ASTM D 2564.

G302003 1.8 PIPING ACCESSORIES

G302003 1.8.1 Insulating Joints

Provide between pipes of dissimilar metals a rubber gasket or other approved type of insulating joint or dielectric coupling to effectively prevent metal-to-metal contact between adjacent sections of piping.

G302003 1.8.2 Accessories

Provide flanges, connecting pieces, transition glands, transition sleeves, and other adapters as required.

G302003 1.8.3 Flexible Flanged Coupling

Provide flexible flanged coupling applicable for sewage as indicated. Use flexible flanged coupling designed for a working pressure of 350 psi (2400 kPa).

G302003 1.9 VALVES

Provide suitable shutoff and check valves on the discharge line of each pump. Locate the check valve between the shutoff valve and the pump. Locate valves in accordance with state sewerage regulations. Check valves must be suitable for the material being handled and placed on the horizontal portion of the discharge piping except for ball check valves, which may be placed in the vertical run. Provide valves capable of withstanding normal pressure and water hammer. Use valves from one manufacturer.

G302003 1.9.1 Shut Off Valves

G302003 1.9.1.1 Shut Off Valves Less than 4 Inch (100 mm) in Diameter

PVC ball valves.

G302003 1.9.1.2 Shut Off Valves 4 Inch (100 mm) and Larger in Diameter

AWWA C509 or AWWA C515, nonrising stem, and flanged. Provide valves with handwheels that open by counterclockwise rotation of the valve stem. Provide epoxy coating in accordance with AWWA C550.

G302003 1.9.2 Check Valves

G302003 1.9.2.1 Check Valves Less than 4-Inch (100 mm) in Diameter

Neoprene ball check valve with integral hydraulic sealing flange, designed for a hydraulic working pressure of 175 psi (1200 kPa).

G302003 1.9.2.2 Check Valves 4-Inch (100 mm) and Larger in Diameter

AWWA C508, flanged. Provide a nonclog, swing check valve rated for not less than 175 psig (1200 kPa) working pressure capable of passing 3-inch (75 mm) diameter solids.

G302003 1.9.3 Air Relief Valves

Provide air relief valves at high points in the force main to prevent air locking in accordance with AWWA M51. Provide vacuum relief valves, where required, to relieve negative pressures on force mains.

G302003 1.10 IDENTIFICATION TAGS AND PLATES

Provide valves with tags or plates numbered and stamped for their usage. Use plates and tags of brass or nonferrous material and mounted or attached to the valve.

G302003 1.11 THRUST RESTRAINT

Provide thrust restraint for force mains, valves and other features of the wastewater distribution system.

Provide thrust restraint using restrained joints in accordance with pipe manufacturer's recommendations, AWWA C600 and if for fire service main, NFPA 24.

G302003 1.12 STATION CONTROL SYSTEM

G302003 1.12.1 Operating Controls

G302003 1.12.2 Alarm Controls

Provide alarms for all pumping and lift stations; at minimum provide alarms for high level, power failure, pump failure, unauthorized entry or any cause of station malfunction. Provide alarms as required by the pump manufacturer to obtain warranty.

G302003 1.12.3 Telemetry

If required, provide a telemetry system in accordance with state sewer collection and treatment regulations and system owner's requirements to relay alarms to a facility that is manned 24 hours a day.

G302003 1.13 UNDERGROUND ENCLOSURES

G302003 1.14 STATION ACCESSORIES

G302003 1.14.1 Ventilation

Provide covered wet wells with provisions for air displacement venting to the outside. Provide galvanized ASTM A 53/A 53M pipe with insect screening.

Provide adequate ventilation for all pump stations.

G302003 1.14.2 Metering

Provide devices for measuring wastewater flow at all pumping stations. Provide indicating, totalizing and recording flow measurement at

pumping stations with a 1200 gpm (76 l/s) or greater design peak hourly flow. For smaller stations, provide elapsed time meters in conjunction with pumping rate tests.

G302003 1.14.3 Pipe and Valve Supports

Use schedule 40 galvanized steel piping conforming to ASTM A 53/A 53M for pipe and valve supports. Provide either ANSI B16.3 or ANSI B16.11 galvanized threaded fittings.

G302003 1.14.4 Miscellaneous Metals

Use stainless steel bolts, nuts, washers, anchors, and supports for installation of equipment.

G302004 PACKAGED SANITARY SEWER TREATMENT PLANTS

Provide packaged wastewater treatment facilities in accordance with UFC 3-240-02, *Domestic Wastewater Treatment;* for pipeline materials and the state sewer collection and treatment regulations for treatment plant requirements.

G302005 SEPTIC TANKS

Provide septic tanks in accordance with the state and treatment regulations and the International Private Sewage Disposal Code 2000.

G302006 DRAIN FIELDS

Provide drain fields in accordance with the state and treatment regulations and the International Private Sewage Disposal Code 2000.

G302090 OTHER SANITARY SEWER

G302090 1.1 OIL/WATER SEPARATOR

Refer to G303090.

G3030 STORM SEWER

Provide all materials, equipment, labor, testing, and miscellaneous related items to provide storm drainage collection system necessary to drain the site. The storm sewer collection system must be designed and constructed in accordance with UFC 3-201-01, *Civil Engineering*; the utility provider's requirements; and the state stormwater management laws and regulations. Design project site to prevent stormwater runoff in excess of the capacity of the existing utility system.

G303001 STORM SEWER PIPING

G303001 1.1 PIPING

Storm sewer piping 12 inches (300 mm) and larger in diameter shall be reinforced concrete, ductile iron or corrugated steel; PVC, corrugated aluminum, polyethylene and polypropylene pipe may only be used when written approval is received by the Government's Civil Reviewer or indicated in another part of the RFP.

Subsurface drainage piping shall be perforated PVC or HDPE.

G303001 1.1.1 Materials

a. PVC Pipe

1) Piping and Fittings: ASTM D3034, SDR 35.

2) Joints: ASTM D3212 and ASTM F477.

b. Ductile Iron Pipe

1) Piping: ASTM A746. Provide required Thickness Class based on design information and methods in ASTM A746.

2) Fittings: AWWA C110 or AWWA C153.

3) Joints: AWWA C111.

4) Interior Coating: AWWA C104.

5) Exterior Protection (if required): AWWA C105, polyethylene encasement.

c. Reinforced Concrete Pipe

1) Circular Pipe: ASTM C76/C76M. Provide required Class based on design information and methods in ASTM C76/C76M. Class III minimum.

2) Elliptical Pipe: ASTM C507/C507M. Provide required Class based on design information and methods in ASTM C76/C76M.

3) Joints:

a) ASTM C990/C990M butyl gaskets;

b) ASTM C 443/C 443M rubber O-ring joints; or

c) AASHTO M 198, Type B preformed plastic gaskets.

d. Corrugated Aluminum Pipe

1) Piping: ASTM B745/B745M.

2) Joints: Coupling bands conforming to ASTM B745/B745M.

3) Coating: Fully bituminous coated for all applications in accordance with ASTM A849. For applications where piping is part of a piped storm sewer system (not a culvert), provide pipe fully bituminous coated, invert (half) paved with concrete lining in accordance with ASTM A849.

e. Corrugated Steel Pipe

1) Piping: ASTM A760/A760M.

2) Joints: Coupling bands conforming to ASTM A760/A760M.

3) Coating: Fully bituminous coated for all applications in accordance with ASTM A849. For applications where piping is part of a piped storm sewer system (not a culvert), provide pipe fully bituminous coated, invert (half) paved with concrete lining in accordance with ASTM A849.

f. Polyetheylene (PE) Pipe

1) Piping 12" to 60" and Fittings: ASTM 2648/F2648M and AASHTO M 294 Type S, corrugated.

2) Joints: ASTM F477 and ASTM D3212

g. Dual and Triple Wall Polypropylene (PP) Pipe

1) Piping 12" to 60" and Fittings: ASTM F2736, ASTM F2764/F2764M, ASTM F2881 and AASHTO M 330 Type S or D

2) Joints: ASTM F477 and ASTM D3212

h. Perforated PVC Pipe: ASTM D 2729.

i. Perforated PE Pipe

1) Piping and Fittings: AASHTO M 294, Type SP, corrugated.

2) Joints: AASHTO M 294, Soiltight.

G303001 1.1.2 Installation

Install piping in accordance with manufacturer's recommendations and the following standards:

1. PVC, PE and Dual and Triple Wall PP: ASTM D 2321. Do not use ASTM D 2321 Class IV or V materials for bedding, haunching or initial backfill materials.
2. Ductile Iron: AWWA C600.
3. Reinforced Concrete: ACPA 01-102 and 01-103.
4. Corrugated Aluminum: ASTM B 788/B 788M.
5. Corrugated Steel: ASTM A 798/A 798M.
6. Perforated PVC and Perforated PE: ASTM D 2321. Do not use ASTM D 2321 Class IV or V materials for bedding, haunching or initial backfill materials.

Provide nondetectable warning tape and a continuous length of tracer wire for the full length of each run of nonmetallic piping below grade. Warning tape to be color coded with warning and identification of utility type imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (utility type) LINE BELOW" or similar wording. Color to be green for sewer systems. Terminate tracer wire above grade at valve boxes and at exterior of building

G303001 1.2 PIPING FOR CLEANOUTS

G303001 1.2.1 Materials

a. Cast-Iron Soil Pipe for Cleanouts

1) Pipe: ASTM A 74, service.

2) Joints: ASTM C 564 compression-type rubber gaskets.

3) Exterior Protection (if required): AWWA C105, polyethylene encasement.

G303001 1.2.2 Installation

Install cast iron pipe and fittings in accordance with the recommendations of the pipe manufacturer.

G303002 STORM SEWER STRUCTURES

G303002 1.1 GENERAL REQUIREMENTS

Provide all materials, equipment, labor, testing, and miscellaneous related items for the drainage structures in accordance with the following:

a. Set structure rim elevations flush with finished surface of paved areas or 1 inch (25 mm) above finished grade in unpaved areas.
b. Provide resilient connectors for making joints between manhole and pipes entering manhole in conformance with ASTM C 923/C 923M.
c. Provide precast or cast-in-place concrete drainage structures, except cast-in-place concrete is required for airfield drainage structures, headwalls and gutters.

G303002 1.2 PRECAST CONCRETE INLETS

Provide work and materials in accordance with applicable requirements of the State Highway Specifications (SHS) and standards where the project is located.

G303002 1.3 CAST-IN-PLACE CONCRETE DRAINAGE STRUCTURES

Provide work and materials in accordance with drainage structures indicated in the State Highway Specifications (SHS) and standards where the project is located.

For airfield drainage structures, provide work and materials in accordance with FAA ACA 150/5370-10B.

G303002 1.4 DRAINAGE STRUCTURE FRAMES AND COVERS

Frame and cover for gratings shall be cast gray iron, ASTM A48/A48M, Class 35B; cast ductile iron, ASTM A536, Grade 65-45-12; or cast aluminum, ASTM B26/B26M, Alloy 356.OT6. Frame and cover must be designed to accommodate the imposed live loads. Stamp or cast the words "Storm Sewer" into covers so that it is plainly visible.

For airfield drainage structures, fabricate frames and covers of standard commercial grade steel welded by qualified welders in accordance with AWS D1.1/D1.1M. Provide covers of rolled steel floor plate having an approved anti-slip surface. Steel frames and covers must be hot dipped galvanized after fabrication. At the contractor's option, ductile iron covers and frames may be used for airfield drainage structures if designed for a minimum proof load of 100,000 pounds (45,000 kg) in lieu of the steel frames and covers. Covers must be of the same material as the frames (i.e. ductile iron frame with ductile iron cover, galvanized steel frame with galvanized steel cover). Perform proof loading in accordance with ASTM A 48/A 48M. Physically stamp proof loads into the cover. Provide the Contracting Officer copies of previous proof load test results performed on the same frames and covers as proposed for this contract. Modify the top of the structure to accept the ductile iron structure in lieu of the steel structure indicated. The finished structure must be level and non-rocking, with the top flush with the surrounding pavement.

G303002 1.5 DRAINAGE STRUCTURE STEPS

a. Zinc-coated steel: 29 CFR 1910.27.
b. Plastic or rubber coating pressure molded to steel: ASTM D 4101, copolymer polypropylene; or ASTM C 443/C 443M, except shore A durometer hardness shall be 70 plus or minus 5.

Aluminum steps or rungs will not be permitted.

Steps are not required in structures less than 4 feet (1.2 m) deep.

G303002 1.6 DRAINAGE STRUCTURE CONSTRUCTION

Where a new structure is constructed on an existing line, remove existing pipe as necessary to construct the structure. Cut existing pipe so that pipe ends are approximately flush with the interior face of structure wall, but not protruding into the structure.

G303002 1.7 CONNECTIONS TO EXISTING STRUCTURES

Center pipe connections to existing structures on the structure. Holes for the new pipe must be of sufficient diameter to allow packing cement mortar around the entire periphery of the pipe but no larger than 1.5 times the diameter of the pipe. Cut the structure in a manner that will cause the least damage to the walls.

G303002 1.8 CLEANOUTS

Construct cleanouts of cast iron soil pipe and fittings; see G303001, paragraph 1.2.

G303003 LIFT STATIONS

A stormwater pump station(s) will not be allowed.

G303004 CULVERTS

Culverts 12 inches (300 mm) and larger in diameter shall be reinforced concrete or corrugated steel; PVC, corrugated aluminum, polyethylene and polypropylene pipe may only be used when written approval is received by the Government's Civil Reviewer or indicated in another part of the RFP. See G303001, paragraphs 1.1.1 and 1.1.2 for material and installation requirements.

Flared end sections must be the same material as pipe material.

Provide erosion control in accordance with the State Erosion and Sedimentation Control Standards or EPA guidance where State Standards are unavailable.

G303005 HEADWALLS

Provide cast-in-place concrete headwalls in accordance with the State Highway Specification (SHS) and standards where the project is located.

G303006 EROSION & SEDIMENT CONTROL MEASURES

Refer to Section G103011.

G303007 STORMWATER MANAGEMENT

G303007 1.1 STORMWATER COLLECTION AND STORAGE

Provide permanent stormwater management (i.e., detention and retention ponds, LID and other drainage features) to control stormwater runoff in accordance with UFC 3-201-01, *Civil Engineering*, UFC 3-210-10, *Low Impact Development*, FC 1-300-09N Navy and Marine Corps Design Procedures, State and local stormwater management Laws and Regulations and applicable project sustainability goals. Integrate permanent stormwater management features into the site design in accordance with UFC 3-201-01, *Civil Engineering*.

Parking areas, roads, walks, courtyards, training areas and similar site features may not be used to detain or retain stormwater. Manage stormwater within detention or retention ponds and the LID features indicated in Part 3 of this RFP. Prevent upstream and downstream property damage.

G303090 OTHER STORM SEWER

G303090 1.1 OIL/WATER SEPARATOR

Provide an oil/water separator to remove free oil from oil-in-water mixtures originating from proposed facility operations. Provide grit protection upstream of the oil/water separator.

Provide an oil/water separator utilizing coalescing media and conforming to the applicable guidelines of the American Petroleum Institute (API).

Provide materials or a coating system which will protect the separator from the oil-in-water mixture, atmosphere, and in-situ soil conditions.

Use a separator with a completely removable cover.

G3040 HEATING DISTRIBUTION

G304001 OVERHEAD HOT WATER SYSTEMS

G304001 1.1 PIPING & FITTINGS

Hot water piping shall be ASTM A 53, Type E (electric-resistance welded), Grade A or B), or Type S (seamless, Grade A or B); black steel, Weight Class XS (Extra Strong). ASTM A 106, Grade A or B, black steel, Schedule 80 may be used.

G304001 1.2 INSULATION

Mineral fiber, calcium silicate, or cellular glass pipe insulation with aluminum jacket which matches existing or surrounding insulation. Paint jacket to suit Base Architectural Plan. The minimum insulation thickness shall be in accordance with the following table:

Table 1 Insulation Thickness for Hot Water Systems

Nominal Pipe Diameterinches (mm)	Mineral Fiberinches (mm)	Calcium Silicateinches (mm)	Cellular Glassinches (mm)
1.00 (25)	1.5 (38)	1.5 (38)	1.5 (38)
1.5 (38)	1.5 (38)	1.5 (38)	1.5 (38)
2.0 (51)	1.5 (38)	5)	1.5 (38)
2.5 (64)	1.5 (38)	1.5 (38)	1.5 (38)
3.0 (76)	1.5 (38)	1.5 (38)	1.5 (38)
4.0 (100)	2.0 (51)	2.5 (64)	1.5 (38)
5.0 (125)	2.0 (51)	2.5 (64)	1.5 (38)
6.0 (150)	2.5 (64)	2.5 (64)	1.5 (38)
8.0 (200)	2.5 (64)	2.5 (64)	1.5 (38)
10.0 (250)	2.5 (64)	2.5 (64)	1.5 (38)

12.0 (300)	2.5 (64)	2.5 (64)	1.5 (38)
14.0 (350)	2.5 (64)	2.5 (64)	1.5 (38)
16.0 (400)	2.5 (64)	2.5 (64)	1.5 (38)
18.0 (450)	2.5 (64)	2.5 (64)	1.5 (38)

G304001 1.3 EXPANSION

Compensate for piping expansion by utilizing expansion loops and joints. Provide guided slip or flexible ball type expansion joints.

G304001 1.4 SUPPORTS

MSS SP-58 and MSS SP-69, adjustable supports with insulation protection saddles. Provide stainless steel axles for rollers. Provide support poles with guy wires and hardware.

G304002 OVERHEAD STEAM SYSTEMS

G304002 1.1 PIPING & FITTINGS

G304002 1.1.1 Steam Piping

Steam piping shall be ASTM A 53, Type E (electric-resistance welded, Grade A or B) or Type S (seamless, Grade A or B), black steel. Provide Weight Class STD (Standard) for welding end connections. Provide Weight Class XS (Extra Strong) for threaded end connections. ASTM A 106, Grade A or B, black steel, Schedule 40 may be used for pipe sizes through 9 inches (250 mm), and minimum pipe wall thickness of 0.35 inches (9.5 mm) for pipe sizes 12 inches (300 mm) and larger for welding end connections. Provide Schedule 80 for threaded end connections.

G304002 1.1.2 Condensate Piping

Condensate piping shall be ASTM A 53, Type E (electric-resistance welded), Grade A or B), or Type S (seamless, Grade A or B); black steel, Weight Class XS (Extra Strong). ASTM A 106, Grade A or B, black steel, Schedule 80 may be used.

G304002 1.2 INSULATION

Fibrous glass, calcium silicate, or cellular glass pipe insulation with aluminum jacket which matches existing or surrounding insulation. Paint jacket to suit Base Architectural Plan. The minimum insulation thickness shall be in accordance with the following tables:

Table 1 Insulation Thickness for Steam Systems

Nominal Pipe Diameterinches (mm)	Fibrous Glassinches (mm)	Calcium Silicateinches (mm)	Cellular Glassinches (mm)
1.00 (25)	3.5 (90)	4.0 (100)	*

1.5 (38)	3.5 (90)	4.0 (100)	*
2.0 (51)	3.5 (90)	4.0 (100)	*
2.5 (64)	3.5 (90)	4.0 (100)	*
3.0 (76)	4.0 (100)	4.5 (115)	*
4.0 (100)	4.0 (100)	4.5 (115)	*
5.0 (125)	4.5 (115)	5.0 (125)	*
6.0 (150)	4.5 (115)	5.0 (125)	*
8.0 (200)	5.0 (125)	6.0 (150)	*
10.0 (250)	5.0 (125)	6.0 (150)	*
12.0 (300)	5.0 (125)	6.0 (150)	*
14.0 (350)	5.0 (125)	6.0 (150)	*
16.0 (400)	5.0 (125)	6.0 (150)	*
18.0 (450)	5.0 (125)	6.0 (150)	*

* Cellular glass pipe insulation having an insulating efficiency not less than that of the specified thickness of calcium silicate may be provided.

Table 2 Insulation Thickness for Condensate Systems

Nominal Pipe Diameterinches (mm)	Mineral Fiberinches (mm)	Fibrous Glassinches (mm)
1.00 (25)	2.5 (64)	*
1.5 (38)	2.5 (64)	*
2.0 (51)	2.5 (64)	*
2.5 (64)	2.5 (64)	*
3.0 (76)	3.0 (76)	*
4.0 (100)	3.0 (76)	*
5.0 (125)	3.5 (90)	*
6.0 (150)	3.5 (90)	*
8.0 (200)	3.5 (90)	*
10.0 (250)	3.5 (90)	*
12.0 (300)	3.5 (90)	*

14.0 (350)	3.5 (90)	*
16.0 (400)	3.5 (90)	*
18.0 (450)	3.5 (90)	*

* Fibrous glass pipe insulation having an insulating efficiency not less than that of the specified thickness of mineral fiber may be provided.

G304002 1.3 EXPANSION

Compensate for piping expansion by utilizing expansion loops and joints. Provide guided slip or flexible ball type expansion joints.

G304002 1.4 SUPPORTS

MSS SP-58 and MSS SP-69, adjustable supports with insulation protection saddles. Provide stainless steel axles for rollers. Provide support poles with guy wires and hardware.

G304003 UNDERGROUND HOT WATER SYSTEMS

G304003 1.1 PIPING & FITTINGS

Direct buried, factory pre-fabricated, pre-insulated, piping systems shall consist of a service pipe with polyurethane insulation and a high-density polyethylene (HDPE) jacket. Provide factory fabricated fittings and components. Field insulation of fittings will not be allowed.

G304003 1.2 INSULATION

The minimum insulation thickness shall be in accordance with the following tables:

Table 1 Insulation Thickness for Drainable/Dryable Systems

Nominal Pipe Diameterinches (mm)	Parocinches (mm)	Epitherminches (mm)	Kaylo-10 Thermo-12 Super Caltempinches (mm)
1.00 (25)	2.0 (51)	2.5 (64)	4.0 (100)
1.5 (38)	2.0 (51)	2.5 (64)	4.0 (100)
2.0 (51)	2.5 (64)	3.5 (90)	4.5 (115)
2.5 (64)	2.5 (64)	3.5 (90)	4.5 (115)
3.0 (76)	3.0 (76)	4.0 (100)	5.0 (125)
4.0 (100)	3.0 (76)	4.0 (100)	5.0 (125)
5.0 (125)	3.0 (76)	4.0 (100)	5.0 (125)
6.0 (150)	3.5 (90)	4.5 (115)	5.5 (140)

8.0 (200)	3.5 (90)	4.5 (115)	5.5 (140)
10.0 (250)	4.0 (100)	5.0 (125)	6.0 (150)
12.0 (300)	4.0 (100)	5.0 (125)	6.0 (150)
14.0 (350)	4.0 (100)	5.0 (125)	6.0 (150)
16.0 (400)	4.0 (100)	5.0 (125)	6.0 (150)
18.0 (450)	4.0 (100)	5.0 (125)	6.0 (150)

Table 2 Insulation Thickness for Water Spread Limiting Systems

Nominal Pipe Diameterinches (mm)	Calcium Silicateinches (mm)	Polyurethaneinches (mm)
1.00 (25)	N/A	N/A
1.5 (38)	N/A	N/A
2.0 (51)	N/A	N/A
2.5 (64)	N/A	N/A
3.0 (76)	1.00 (25)	1.23 (31)
4.0 (100)	1.00 (25)	1.23 (31)
5.0 (125)	N/A	N/A
6.0 (150)	1.5 (38)	1.34 (34)
8.0 (200)	2.0 (51)	1.21 (30)
10.0 (250)	2.5 (64)	1.31 (33)
12.0 (300)	2.0 (51)	1.29 (33)
14.0 (350)	N/A	N/A
16.0 (400)	N/A	N/A
18.0 (450)	N/A	N/A

G304003 1.3 UHDS DESIGN

Design and provide direct buried, factory-prefabricated, pre-insulated main hot water piping, including piping in manholes. Asbestos cement or plastic conduit is not acceptable. The UHDS representative shall be certified in writing by the UHDS manufacturer to be technically qualified and experienced in the installation of the system. Provide a Certificate of Satisfactory Operation certifying that at least 3 systems installed by the UHDS

manufacturer within the previous 10 years have and are operating satisfactorily for not less than 5 years. The certificate shall include verification information.

G304003 1.4 VALVING

Provide isolation valves on supply and return lines at take-offs for service to each building. Valves shall be located in valve boxes. Valves shall be ASME class 150.

G304003 1.5 EXPANSION

Compensate for piping expansion by utilizing expansion loops.

G304004 UNDERGROUND STEAM DISTRIBUTION SYSTEMS

G304004 1.1 PIPING & FITTINGS

Direct buried, factory pre-fabricated, pre-insulated, steam and condensate piping systems shall consist of a steel service pipe with polyurethane insulation and a high-density polyethylene (HDPE) jacket. Provide factory fabricated fittings and components. Field insulation of fittings will not be allowed.

G304004 1.2 INSULATION

The minimum insulation thickness shall be in accordance with the following tables:

Table 1 Insulation Thickness for Drainable/Dryable Systems

Nominal Pipe Diameterinches (mm)	Parocinches (mm)	Epitherminches (mm)	Kaylo-10 Thermo-12 Super Caltempinches (mm)
1.00 (25)	2.0 (51)	2.5 (64)	4.0 (100)
1.5 (38)	2.0 (51)	2.5 (64)	4.0 (100)
2.0 (51)	2.5 (64)	3.5 (90)	4.5 (115)
2.5 (64)	2.5 (64)	3.5 (90)	4.5 (115)
3.0 (76)	3.0 (76)	4.0 (100)	5.0 (125)
4.0 (100)	3.0 (76)	4.0 (100)	5.0 (125)
5.0 (125)	3.0 (76)	4.0 (100)	5.0 (125)
6.0 (150)	3.5 (90)	4.5 (115)	5.5 (140)
8.0 (200)	3.5 (90)	4.5 (115)	5.5 (140)
10.0 (250)	4.0 (100)	5.0 (125)	6.0 (150)
12.0 (300)	4.0 (100)	5.0 (125)	6.0 (150)
14.0 (350)	4.0 (100)	5.0 (125)	6.0 (150)

16.0 (400)	4.0 (100)	5.0 (125)	6.0 (150)
18.0 (450)	4.0 (100)	5.0 (125)	6.0 (150)

Table 2 Insulation Thickness for Water Spread Limiting Systems

Nominal Pipe Diameterinches (mm)	Calcium Silicateinches (mm)	Polyurethaneinches (mm)
1.00 (25)	N/A	N/A
1.5 (38)	N/A	N/A
2.0 (51)	N/A	N/A
2.5 (64)	N/A	N/A
3.0 (76)	1.00 (25)	1.23 (31)
4.0 (100)	1.00 (25)	1.23 (31)
5.0 (125)	N/A	N/A
6.0 (150)	1.5 (38)	1.34 (34)
8.0 (200)	2.0 (51)	1.21 (30)
10.0 (250)	2.5 (64)	1.31 (33)
12.0 (300)	2.0 (51)	1.29 (33)
14.0 (350)	N/A	N/A
16.0 (400)	N/A	N/A
18.0 (450)	N/A	N/A

Table 3 Insulation Thickness for Condensate Return Systems

Nominal Pipe Diameterinches (mm)	Parocinches (mm)	Epitherminches (mm)	Kaylo-10 Thermo-12 Super Caltempinches (mm)
1.00 (25)	2.0 (51)	2.5 (64)	4.0 (100)
1.5 (38)	2.0 (51)	2.5 (64)	4.0 (100)
2.0 (51)	2.5 (64)	3.5 (90)	4.5 (115)
2.5 (64)	2.5 (64)	3.5 (90)	4.5 (115)
3.0 (76)	3.0 (76)	4.0 (100)	5.0 (125)

4.0 (100)	3.0 (76)	4.0 (100)	5.0 (125)
5.0 (125)	3.0 (76)	4.0 (100)	5.0 (125)
6.0 (150)	3.5 (90)	4.5 (115)	5.5 (140)
8.0 (200)	3.5 (90)	4.5 (115)	5.5 (140)
10.0 (250)	4.0 (100)	5.0 (125)	6.0 (150)
12.0 (300)	4.0 (100)	5.0 (125)	6.0 (150)
14.0 (350)	4.0 (100)	5.0 (125)	6.0 (150)
16.0 (400)	4.0 (100)	5.0 (125)	6.0 (150)
18.0 (450)	4.0 (100)	5.0 (125)	6.0 (150)

G304004 1.3 UHDS DESIGN

Design and provide direct buried, factory-prefabricated, pre-insulated main steam and condensate piping in separate conduits and including piping in manholes. Asbestos cement or plastic conduit is not acceptable. The UHDS representative shall be certified in writing by the UHDS manufacturer to be technically qualified and experienced in the installation of the system. Provide a Certificate of Satisfactory Operation certifying that at least 3 systems installed by the UHDS manufacturer within the previous 10 years have and are operating satisfactorily for not less than 5 years. The certificate shall include verification information.

G304004 1.4 VALVING

Provide isolation valves on supply and return lines at take-offs for service to each building. Valves shall be located in manholes. Valves shall be ASME class 150.

G304004 1.5 EXPANSION

Compensate for piping expansion by utilizing expansion loops. Locate anchors outside manholes.

G304005 REINFORCED CONCRETE MANHOLES & VALVE BOXES

G304005 1.1 MANHOLE CONSTRUCTION

Manholes shall be shall be constructed of reinforced, 3000 psi (206.8 bar) concrete and shall extend a minimum of 6 inches (300 mm) above grade. Depth shall be as required to maintain proper pipe slopes. Construct manhole floor and sides in one monolithic pour. Provide galvanized steel or sectioned aluminum, open grate or solid cover as indicated in ESR Section G30. Provide ventilation openings for solid cover. Provide ladder. Ladder shall be steel with non-slip surfaces and anchored to the wall. Manhole floor and walls shall be watertight. Provide sleeves or core drill openings for pipes with modular mechanical seals. Provide sump pit for pump.

G304005 1.2 VALVE BOX CONSTRUCTION

Cast-iron or ductile-iron box of a suitable size. Provide cast-iron or ductile-iron cover for the box with word(s) describing the utility cast on the cover.

G304005 1.3 MANHOLE SUMP PUMPS

Vertical sump pump. Operating temperature design must be 195 degrees F (93 degrees C) minimum. Provide with 2-pole float control.

G304090 OTHER HEATING DISTRIBUTION

G304090 1.1 WARNING & IDENTIFICATION TAPE

Polyethylene plastic tape manufactured specifically for warning and identifying buried utility lines. Warning tape to be color coded with warning and identification of utility type imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (utility type) LINE BELOW" or similar wording.

G304090 1.2 CORROSION PROTECTION

Provide a cathodic protection system for the underground piping system. System shall be designed by a National Association of Corrosion Engineers (NACE) certified Cathodic Protection Engineer. The corrosion engineer shall obtain soil data and existing system conditions. Corrosion engineer shall supervise, inspect and test the installation and performance of the cathodic protection system. Test stations shall be post mounted and placed at the manhole or nearby building. Test stations shall be located at each end of each cathodically protected section.

G3050 COOLING DISTRIBUTION

G305001 OVERHEAD COOLING SYSTEMS

G305001 1.1 PIPING & FITTINGS

G305001 1.1.1 Chilled and Condenser Water Piping

Chilled and condenser water piping shall be electric resistance welded or seamless Schedule 40 black steel pipe conforming to ASTM A 53. Piping 4 inch (100 mm) and smaller may be ASTM B 88 Type K or L copper.

G305001 1.1.2 Steel Pipe Fittings

For piping 2 inch (50 mm) and smaller, provide ANSI/ASME B16.3 malleable iron screwed fittings or ASME B16.11 socket welding (Class 3000) or threaded type (Class 2000). Provide ASME/ANSI B16.9 butt-welding fittings or ASME/ANSI B16.5 flanged type for piping 2-1/2 inch (63 mm) and larger. Grooved joint pipe coupling systems of appropriate pressure rating are acceptable in lieu of welded or screwed fittings.

G305001 1.1.3 Copper Fittings

Provide ANSI B16.18 cast bronze solder joint type or ASME/ANSI B16.22 wrought copper solder joint type.

G305001 1.2 INSULATION

Mineral fiber, Urethane, cellular glass, Faced Phenolic Foam, or Flexible Cellular pipe insulation with aluminum jacket in accordance with ESR Section

G30. The minimum insulation thickness shall be in accordance with the following table:

Table 1 Insulation Thickness for Cold Water Systems

Nominal Pipe Diameterinches (mm)	Mineral Fiberinches (mm)	Urethaneinches (mm)	Cellular Glassinches (mm)	Faced Phenolic Foaminches (mm)	Flexible Cellularinches (mm)
1.00 (25)	1.00 (25)	0.75 (19)	1.5 (38)	1.00 (25)	0.75 (19)
1.5 (38)	1.00 (25)	0.75 (19)	1.5 (38)	1.00 (25)	0.75 (19)
2.0 (51)	1.00 (25)	0.75 (19)	1.5 (38)	1.00 (25)	0.75 (19)
2.5 (64)	1.00 (25)	0.75 (19)	1.5 (38)	1.00 (25)	0.75 (19)
3.0 (76)	1.00 (25)	0.75 (19)	1.5 (38)	1.00 (25)	0.75 (19)
4.0 (100)	1.5 (38)	0.75 (19)	1.5 (38)	1.00 (25)	0.75 (19)
5.0 (125)	1.5 (38)	0.75 (19)	1.5 (38)	1.00 (25)	0.75 (19)
6.0 (150)	1.5 (38)	1.00 (25)	1.5 (38)	1.5 (38)	1.00 (25)
8.0 (200)	1.5 (38)	1.00 (25)	1.5 (38)	1.5 (38)	1.00 (25)
10.0 (250)	1.5 (38)	1.00 (25)	1.5 (38)	1.5 (38)	1.00 (25)
12.0 (300)	1.5 (38)	1.00 (25)	1.5 (38)	1.5 (38)	1.00 (25)
14.0 (350)	1.5 (38)	1.00 (25)	1.5 (38)	1.5 (38)	1.00 (25)
16.0 (400)	1.5 (38)	1.00 (25)	1.5 (38)	1.5 (38)	1.00 (25)
18.0 (450)	1.5 (38)	1.00 (25)	1.5 (38)	1.5 (38)	1.00 (25)

G305001 1.3 SUPPORTS

Provide MSS SP-58 and MSS SP-69, adjustable supports with insulation protection saddles. Provide stainless steel axles for rollers. Provide support poles with guy wires and hardware.

G305001 1.4 EXPANSION

Compensate for piping expansion by utilizing expansion loops and joints. Provide guided slip or flexible ball type expansion joints.

G305002 UNDERGROUND COOLING SYSTEMS

G305002 1.1 PIPING & FITTINGS

Direct buried, factory-prefabricated, pre-insulated, chilled water piping systems. All fittings and accessories shall be designed and factory-fabricated to prevent moisture from entering into the system. Backfill and overall installation shall meet the requirements of the piping

system manufacturer.

G305002 1.2 VALVES

Provide isolation valves on supply and return lines at take-offs for service to each building. Valves shall be located in valve boxes.

G305090 OTHER COOLING DISTRIBUTION

G305090 1.1 EXPANSION

Compensate for piping expansion by utilizing expansion loops. Locate anchors outside manholes.

G305090 1.2 WARNING & IDENTIFICATION TAPE

Polyethylene plastic tape manufactured specifically for warning and identifying buried utility lines. Warning tape to be color coded with warning and identification of utility type imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (utility type) LINE BELOW" or similar wording.

G305090 1.3 CORROSION PROTECTION

Provide a cathodic protection system for the underground chilled water and condenser water piping system. System shall be designed by a National Association of Corrosion Engineers (NACE) certified Cathodic Protection Engineer. The corrosion engineer shall obtain soil data and existing system conditions. Corrosion engineer shall supervise, inspect and test the installation and performance of the cathodic protection system. Test stations shall be post mounted and placed at the manhole or nearby building. Test stations shall be located at each end of each cathodically protected section.

G3060 FUEL DISTRIBUTION

G306001 LIQUID FUEL DISTRIBUTION PIPING

G306001 1.1 GASOLINE/DIESEL

Fuel piping shall be ASTM A 53, Type E (electric-resistance welded, Grade A or B) or Type S (seamless, Grade A or B), black steel or API SPEC 5L, seamless, submerged-arc weld or gas metal-arc weld, Grade B, black steel. Provide Weight Class STD (Standard) for welding end connections. Provide Weight Class XS (Extra Strong) for threaded end connections.

For underground fuel distribution lines, provide nondetectable warning tape for the full length of each run of piping. Warning tape to be color coded with warning and identification of utility type imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (utility type) LINE BELOW" or similar wording. Color to be yellow for fuel lines.

G306003 LIQUID FUEL STORAGE TANKS

G306003 1.1 STORAGE TANKS

Aboveground, concrete encased or double wall in accordance with UL 142 and UL 2085 with secondary containment and leak monitoring with a capacity to meet the system requirements. Provide with overfill/spill containment, overfill protection and vents.

G306003 1.2 FUEL PUMPS

Fuel pumps shall comply with NEMA MG 1, NFPA 70, and be designed for use with hydrocarbon fuels and working pressure of 275 psig (1896 kilopascals) at 100 degrees F (38 degrees C).

G306003 1.3 FUEL METERS

Continuous duty, positive displacement type, with electronic thermal compensation capability, suitable for outdoor installation, and designed for use with hydrocarbon fuels and working pressure of 275 psig (1896 kilopascals) at 100 degrees F (38 degrees C).

G306004 LIQUID FUEL DISPENSING TANKS

The same as storage tanks except, include tank mounted dispenser with filter, vacuum breaker, safety breakaway, hose and nozzle.

G306006 GAS DISTRIBUTION PIPING (NATURAL & PROPANE)

G306006 1.1 STEEL PIPE

Gas piping shall be ASTM A 53, Type E (electric-resistance welded, Grade A or B) or Type S (seamless, Grade A or B), black steel. Provide Weight Class STD (Standard) for welding end connections. Provide Weight Class XS (Extra Strong) for threaded end connections.

G306006 1.2 POLYETHYLENE (PE)

PE pipe and heat fusion fittings shall conform to ASTM D 2513, Grade PE2406 or PE3408.

G306007 GAS STORAGE TANKS

G306007 1.1 PROPANE STORAGE TANKS

ASME labeled tank in accordance with NFPA 58 with a capacity to meet the system requirements.

G306009 OTHER GAS DISTRIBUTION

G306009 1.1 WARNING & IDENTIFICATION TAPE

Detectable aluminum foil, plastic backed tape or detectable magnetic plastic tape manufactured specifically for warning and identifying buried piping. Warning tape to be color coded with warning and identification of utility type imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (utility type) LINE BELOW" or similar wording. Color to be yellow for gas lines.

-- End of Section --

SECTION G40

SITE ELECTRICAL UTILITIES
09/15

G40 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

G40 1.1 NARRATIVE

This section covers installations exterior to the facility outside the five foot line. See PTS Section D50, *Electrical*, for continuation of systems inside the five foot line, into and inside the building.

G40 1.2 ELECTRICAL DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

When all product Quality Control information is included in the Unified Facility Criteria (UFC) and there are requirement options identified in the ESR, then the Uniformat Level 4 titles (and possible subtitles) are included without repetition of requirements. One example of this is G401008, GROUNDING SYSTEMS.

G40 1.2.1 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(A reference in this PTS section to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs that are listed in UFGS Section 01 33 10.05 20, which includes the following significant UFC(s):UFC 3-501-01, Electrical Engineering)
UFC 1-200-02	High Performance and Sustainable Buildings
UFC 3-570-02N	Electrical Engineering Cathodic Protection

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS 26 11 13.00 20	Primary Unit Substation
UFGS 26 11 16	Secondary Unit Substations

UFGS 26 12 19.10	Three-Phase Pad-Mounted Transformers
UFGS 26 12 19.20	Single-Phase Pad-Mounted Transformers
UFGS 26 13 00.00 20	SF6/High-Firepoint Fluids Insulated Pad-Mounted Switchgear
UFGS 26 23 00	Low Voltage Switchgear
UFGS 26 24 13	Switchboards
UFGS 26 27 14.00 20	Electricity Metering
UFGS 26 56 00	Exterior Lighting
UFGS 33 71 01	Overhead Transmission and Distribution
UFGS 33 71 02	Underground Electrical Distribution
UFGS 33 82 00	Telecommunications Outside Plant

G40 1.3 QUALITY ASSURANCE

Qualifications, certifications, and Test Plans indicated herein shall be submitted 45 calendar days prior to the expected date of execution. Notify the Contracting Officer 14 calendar days prior to all testing. Submit test results within 7 calendar days of completion of testing.

The Designer of Record is responsible for approving the submittals listed below.

G40 1.3.1 Qualified Testing Organization

Contractor shall engage the services of a qualified testing organization to provide inspection, testing, calibration, and adjustment of the electrical distribution system and equipment listed in paragraph entitled "Acceptance Tests and Inspections" herein. Organization shall be independent of the supplier, manufacturer, and installer of the equipment. The organization shall be a first tier subcontractor.

a. Submit name and qualifications of organization. Organization shall have been regularly engaged in the testing of electrical materials, devices, installations, and systems for a minimum of 5 years. The organization shall have a calibration program, and test instruments used shall be calibrated in accordance with NETA ATS.
b. Submit name and qualifications of the lead engineering technician performing the required testing services. Include a list of three comparable jobs performed by the technician with specific names and telephone numbers for reference. Testing, inspection, calibration, and adjustments shall be performed by an engineering technician, certified by NETA or the National

Institute for Certification in Engineering Technologies (NICET) with a minimum of 5 years' experience inspecting, testing, and calibrating electrical distribution and generation equipment, systems, and devices.

G40 1.3.2 NEC Qualified Worker

Provide in accordance with NFPA 70. Qualified Workers shall be allowed to be assisted by helpers on a 1 to 1 ratio, provided such helpers are registered in recognized apprenticeship programs. Submit a certification confirming NEC Qualified Worker requirements.

G40 1.3.3 Qualified Medium Voltage Electrician

All workers on medium voltage electrical crews shall have 5 years experience working medium voltage systems on similar projects involving the same or higher voltage.

G40 1.3.4 Qualified Cable Splicer (Medium Voltage Cable)

The cable splicer/terminator must have a certification from the National Cable Splicing Certification Board (NCSCB) in the field of splicing and terminating shielded medium voltage (5 kV to 35 kV) power cable using pre-manufactured kits (pre-molded, heat-shrink, cold-shrink). Proof of certification for the individuals that will be performing cable splicer and termination work shall be submitted 30 days before splices or terminations are to be made.

G40 1.3.5 Qualified PV Installer

Installation of photovoltaic systems shall be by experienced and trained installers. At minimum the PV installation supervisor shall hold a "PV Installer Certification" as issued by the North American Board of Certified Energy Practitioners or hold a Certified Solar Roofing Professional (CSRP) credential issued by RISE "Roof Intergrated Solar Energy Inc".

G40 1.3.6 Qualified Cable Splicer (Telecommunications)

Certification shall include the training, and experience of the individual on specific type and classification of telecommunications cable to be provided under this contract.

G40 1.3.7 Qualified Cable Installer and Splicer (Fiber Optic Cable)

Certification shall include the training, and experience of the individual on specific type and classification of Fiber Optic media to be provided under this contract.

G40 1.3.8 Qualified Fiber Optic (FO) Cable Manufacturer

The FO media manufacturer shall have a minimum of 3 years experience in the manufacturing, assembly, and factory testing of FO media that complies with RUS REA Bull 1753F-601 (PE-90). Manufacturer shall provide a list of customers with 3 years of maintenance logs documenting experience with government customers.

G40 1.3.9 Material Standards

Ensure service support and provide manufacturer's nameplate in accordance with PTS Section Z10, *General Performance Technical Specification*.

G40 1.3.9.1 Warning Labels

Each enclosure of electrical equipment, including substations, pad-mounted transformers, pad-mounted switches, pad-mounted sectionalizing termination cabinets, and switchgear, shall have a warning label identifying the enclosure as 1) containing energized electrical equipment and 2) an arc flash hazard.

G40 1.3.10 Factory Testing

The Government reserves the right to witness all factory testing. The manufacturer shall have a calibration program that assures that all applicable test instruments are maintained within rated accuracy.

G40 1.3.11 Electrical System Startup and Testing

Submit test plans for approval. The test plans shall be tailored to the systems provided.

The test plan shall list make and model and provide functional description of the test instruments and accessories and shall describe the setup of the tests to be conducted. Test instruments shall be capable of measuring and recording or displaying test data at a higher resolution and greater accuracy than specified for the equipment's performance.

G40 1.3.11.1 Factory Trained Engineer

Provide a factory trained engineer to supervise start-up and testing as required in referenced specifications.

G40 1.3.11.2 Performance Verification Testing

The Contractor shall show by demonstration in service that all circuits and devices are in operating condition. Tests shall be such that each item of control equipment will function not less than five times. The Contractor shall provide all necessary test equipment, tools, fuel, load banks, labor, and materials for testing. As a minimum, all systems shall be tested in accordance with manufacturer's recommendations. Additional testing requirements for the various systems are described with those systems, hereinafter. The Contractor shall assure that all applicable test instruments are maintained within rated accuracy. Dated calibration labels shall be visible on all test equipment.

Submit a separate electrical field test plan in accordance with manufacturer's recommendations and that conforms to NETA ATS for each piece of Electrical Distribution Equipment and System requiring Performance Verification Testing.

The following items identify specific test requirements. Additional test requirements are contained in the applicable UFGS.

a. Cable – Test cable in accordance with the manufacturer's recommendations and NETA ATS. Adhere to precautions and limits as specified in the applicable NEMA/ICEA Standard for the specific cable.
b. Grounding - Test ground systems in accordance with the manufacturer's recommendations and NETA ATS.
c. Site Lighting - Contractor's Quality Control (CQC)

representative shall perform a field survey of site lighting systems in accordance with IESNA for acceptance. Show that the lighting system operates in accordance with the user's requirements and is in accordance with designed levels. Provide certification that the measured lighting levels conform to the design requirements.

d. Telecommunications wiring - Test all cables in accordance with industry standards.

G40 1.3.11.3 Acceptance Tests and Inspections

The Qualified Testing Organization shall provide the Acceptance Tests and Inspections test plan and procedures and perform the acceptance tests and inspections. Test methods, procedures, and test values shall be performed and evaluated in accordance with NETA ATS, the manufacturer's recommendations, and paragraph entitled "Field Quality Control" of each applicable specification section. Tests identified as optional in NETA ATS are not required unless otherwise specified. Equipment shall be placed in service only after completion of required tests and evaluation of the test results have been completed. Contractor shall supply to the testing organization complete sets of shop drawings, settings of adjustable devices, and other information necessary for an accurate test and inspection of the system prior to the performance of any final testing.

Specific test requirements are contained in the UFGS for equipment.

G40 1.4 DESIGN SUBMITTALS

Design Submittals shall be in accordance with PTS Section Z10, *General Performance Technical Specifications*, UFGS Section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures*, and UFC 3-501-01, *Electrical Engineering*.

In addition, UFGS sections listed below or in the body of the PTS text are to be used by the Designer of Record (DOR) as a part of the design submittal. If the UFGS products or systems are applicable to the project, the DOR shall edit these referenced UFGS sections and submit them as a part of the design submittal specification. Edit the specification sections in accordance with the limitations stated in PTS Section Z10, *General Performance Technical Specifications*.

UFGS 26 11 13.00 20, *Primary Unit Substation*

UFGS 26 11 16, *Secondary Unit Substations*

UFGS 26 12 19.10, *Three-Phase Pad-Mounted Transformers*

UFGS 26 12 21, *Single-Phase Pad-Mounted Transformers*

UFGS 26 13 00.00 20, *SF6/High-Firepoint Fluids Insulated Pad-Mounted Switch Gear*

UFGS 26 23 00, *Low Voltage Switchgear*

UFGS 26 24 13, *Switchboards*

UFGS 26 27 14.00 20, *Electricity Metering*

UFGS 33 71 01, *Overhead Transmission and Distribution*

UFGS 33 71 02, *Underground Electrical Distribution*

UFGS 33 82 00, *Telecommunications Outside Plant*

G40 1.4.1 Sustainable Design Submittal

Submit sustainable design submittals in accordance with UFGS 01 33 29.05 20, *Sustainability Reporting for Design-Build*.

G40 1.5 CONSTRUCTION SUBMITTALS

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the PTS Section Z10 requirements, the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

OMSI Information for Electrical Equipment (if OMSI Manual for the entire project is not already required); all "G" item submittals listed in the submittals of the specifications sections identified in the Design Submittals paragraph above; and all "G" item submittals listed in Government Surveillance UFGS Section 01 33 00.05 20, *Construction Submittal Procedures*.

Provide certification that all adjustable protective device settings have been set in accordance with the coordination study for the as-built equipment and configuration.

G40 1.5.1 Sustainable Construction Submittal

Submit sustainable construction submittals in accordance with UFGS 01 33 29.05 20, *Sustainability Reporting for Design-Build*.

G4010 ELECTRICAL DISTRIBUTION

G401001 SUBSTATIONS

When secondary unit substations are required, the Designer of Record shall utilize UFGS Section 26 11 16, *Secondary Unit Substation*, and UFGS Section 26 23 00, *Switchboards and Switchgear*, for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

G401002 TRANSFORMERS

When transformers are required, the Designer of Record shall utilize UFGS Section 26 12 19.10, *Three-Phase Pad Mounted Transformers*, UFGS Section 26 12 19.20, *Single-Phase Pad Mounted Transformers*, or UFGS Section 33 71 01, *Overhead Transmission and Distribution*, for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

G401003 SWITCHES, CONTROLS AND DEVICES

When switches or control devices are required, the Designer of Record shall utilize UFGS Section 26 13 00.00 20, *SF6/High-Firepoint Fluids Insulated Pad Mounted Switchgear*, or UFGS Section 33 71 01, *Overhead Transmission and Distribution*, for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

G401004 OVERHEAD ELECTRIC CONDUCTORS

Power line conductors shall be strung in accordance with manufacturer's standard sag and tension recommendations.

G401005 TOWERS, POLES, CROSSARMS AND INSULATORS

Wood poles shall comply with ANSI 05.1 and RUS 1728F-700. Pressure treat poles in accordance with AWPA C1 and AWPA C4 as referenced in RUS 1728F-700. The quality of each pole shall be ensured with "WQC" (wood quality control) brand on each piece or by an approved inspection agency report. Do not use creosote treated poles, lodgepole pine, and western larch pine poles.

Concrete poles shall comply with ANSI loadings for distribution poles.

The size of poles required, class, height and other data, shall be determined by the designer of record to meet requirements of the pole line. Crossarms shall be wood, steel or fiberglass in accordance with industry and local standards. Insulators, cutouts and associated equipment shall be determined by the Designer of Record to meet system requirements.

G401006 UNDERGROUND ELECTRIC CONDUCTORS

Route underground cables to minimize splices. Cable pulling tensions shall not exceed the maximum pulling tension recommended by the cable manufacturer. Medium voltage cable termination shall be suitable for the location installed and meet IEEE Std. 48 Class 1 requirements.

G401007 DUCTBANKS, MANHOLES, HANDHOLES AND RACEWAYS

Concrete manholes and handholes shall be standard type pre-cast concrete. Composite/Fiberglass handholes shall be polymer concrete reinforced with a heavy weave fiberglass reinforcing as indicated. Load ratings of manholes and handholes shall be suitable for the location installed.

G401008 GROUNDING SYSTEMS

G401009 METERING

When metering is required the Designer of Record shall utilize UFGS section 26 27 14.00 20 for the project specification and shall submit the edited specification section as part of the design submittal for the project.

G401010 CATHODIC PROTECTION SYSTEMS

Cathodic protection systems shall be in accordance with UFC 3-570-02N.

G401011 EQUIPMENT REQUIREMENTS FOR COASTAL AND HIGH HUMIDITY AREAS

G4020 SITE LIGHTING

G402001 EXTERIOR LIGHTING FIXTURES AND CONTROLS

Utilize SSL lighting sources for exterior lighting, except where lighting is required to match an existing source.

Comply with ANSI/ASHRAE/IES 90.1 for all exterior lighting applications and controls. Comply with UFC 3-530-01 for reduction of light pollution.

Provide SPD at panelboards that include circuits feeding exterior lighting systems.

Coordinate the design and luminaire selection with the landscape designer. Such coordination should include the location of poles which may conflict with tree locations.

When exterior lighting is required the Designer of Record shall utilize UFGS section 26 56 00 for the project specification and shall submit the edited specification section as part of the design submittal for the project.

G402002 SPECIAL SECURITY LIGHTING SYSTEM

G402003 OTHER AREA LIGHTING

G402004 LIGHTING POLES

Poles shall meet International Building Code for street lighting poles, and AASHTO loadings for highway and sports lighting poles taking into account the effective projected areas of the luminaries provided. Poles shall be direct set or anchor-base type designed for use with underground supply conductors.

G402005 UNDERGROUND ELECTRIC CONDUCTORS

Provide in accordance with Paragraph G401006.

G402006 DUCTBANKS, MANHOLES AND HANDHOLES

Handholes and underground conduits for site lighting shall be in accordance with Paragraph G401007.

G402007 GROUNDING SYSTEMS

G4030 SITE COMMUNICATION AND SECURITY

G403001 TELECOMMUNICATIONS SYSTEMS

G403002 CABLE TV SYSTEMS (CATV)

G403003 CABLES AND WIRING

Provide underground copper cable pair in accordance with RUS 345-67. Provide aerial cable in accordance with RUS 345-67 except that it shall be suitable for aerial installation and shall be Figure 8 distribution wire with 6,000 pound (26,700 N) Class A galvanized steel or 6,000 pound (26,700 N) aluminum-clad steel strand. Screen-compartmental core cable shall be filled cable meeting the requirements of RUS 345-67. Fiber optic media shall meet all performance requirements of EIA/TIA-568-A and the physical requirements of ICEA S 87-640 and EIA/TIA-598-A.

G403004 DUCTBANKS, MANHOLES AND HANDHOLES

Provide in accordance with paragraph G401007.

G403005 TOWERS, POLES AND STANDS

Provide in accordance with paragraph G401005.

G403006 TV CAMERAS AND MONITORS

G403007 ELECTRONIC SECURITY SYSTEM (ESS)

G403008 OTHER COMMUNICATION AND ALARM

G403009 GROUNDING SYSTEMS

G403010 INDUSTRIAL CONTROL SYSTEMS (ICS)

G4090 OTHER ELECTRICAL UTILITIES

G409007 PHOTOVOLTAIC ENERGY SYSTEM

Provide a grid tied, photovoltaic system, including structural support system, crystalline photovoltaic panels, combiner boxes, and inverters.

Provide all labor, materials, equipment and supervision required to implement the design and to provide a fully operational system.

Provide crystalline photovoltaic modules with a 20-year limited manufacturer warranty that generates no less than 80% of the rated output under Standard Test Conditions (STC). PV modules shall comply with IEC-61215 and UL-1703.

Provide inverters that comply with UL-1741 and IEEE-1547. Inverters shall operate over an ambient temperature range of -25 degree C to 55 degree C with a minimum efficiency of 95 percent at full load.

Provide start-up and testing utilizing manufacturer certified technician. Submit startup and testing report.

G409007 1.1 CODES AND STANDARDS

The PV system hardware and services shall meet or exceed all applicable local, State and utility requirements, conform to the applicable codes and standards, and have passed the listing and qualification tests, listed below. (Comply with the most recent version of each document).

a. IEEE 1262 "Recommended Practice for Qualification of Photovoltaic Modules".
b. PowerMark certification for PV modules.
c. IEEE Standard 928-1986, Recommended Criteria for Terrestrial Photovoltaic Power Systems (PV system performance criteria).
d. IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems.
e. Underwriters Laboratories 1741-2001 (UL Standard for Inverters and Charge Controllers).
f. Underwriters Laboratories 1703 (UL Standard for Listing Photovoltaic Modules).
g. Certification of PV Equipment: All PV modules, inverters, and electrical components shall be required to be listed or recognized by an appropriate and recognized United States Safety Laboratory (for example: UL or ETL).

G409007 1.2 PHOTOVOLTAIC APPLICATION ANALYSIS

Provide a comprehensive "Photovoltaic Application Analysis" with a detailed description of system, application, site shading conditions and expected kW output of the photovoltaic application. The analysis shall utilize the Solmetric Suneye or the Solar Pathfinder shading analyzers to analyze the effects of the existing site shading conditions. Analysis shall include estimated PV output in kWh per year.

G409007 1.3 TECHNICAL REQUIREMENTS

The contractor work responsibilities include at a minimum: system design, equipment selection, and PV system installations. System

shall be individually capable of providing peak power output of at least proposed PV system size, 208 or 480 volt, 3-phase, 4-wire power.

The final System configuration shall allow automatic operation without operator intervention. System design and equipment specifications shall minimize maintenance requirements. System shall include metering that must be incorporated with current AMI network (Advanced Metering Infrastructure) and planned energy metering projects.

The inverter(s) disconnects and associated electrical equipment must be located in an area that is accessible, weather-protected, and secure from vandalism and personal injury.

Disconnects and over current devices shall be mounted in approved boxes, enclosures, or panel boards. Disconnects and switches shall be DC rated when used in DC applications. Metal enclosures and boxes shall be bonded to the grounding conductor.

At a minimum, electrical meters shall capture the following data on individual system performance (minimum solar irradiance, DC power, AC real power, AC current, AC voltage, and power factor (recommend ION 8600 for AC); ambient air temperature, PV cell temperature, kW, and kWh). This data shall be captured at hourly intervals for a minimum one year. Units of temperature, power, and current shall be in Fahrenheit, Watts, and Amps respectively.

Transformers, if required, shall have a minimum efficiency based on factory test results of not less than the efficiency indicated in 10 CFR 431, Subpart K, paragraph 431.196(b). Transformers shall be housed in a NEMA 4X enclosures.

Mounting structures shall be corrosion resistant to marine environment.

Provide permanent plaque or directory at each building service and power source identifying all other building services and power sources.

-- End of Section --

SECTION H10

WATERFRONT STRUCTURES
09/15

H10 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

H10 1.1 NARRATIVE

This Section must be used in conjunction with all parts of the Design Build (D/B) Request for Proposal (RFP) to determine the full requirements of this solicitation.

This Section includes the requirements for the design and construction of waterfront structure, described in ESR H10, *Waterfront Structures*, of Part 3 and as identified on the RFP drawings provided in Part 6.

H10 1.2 WATERFRONT STRUCTURE DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS Section are located in PTS Section Z10, *General Performance Technical Specification*.

H10 1.2.1 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 3-220-01, *Geotechnical Engineering*

UFC 3-301-01, *Structural Engineering*

UFC 4-151-10, *General Criteria for Waterfront Construction*

UFC 4-152-01, *Design: Piers And Wharves*

UFC 4-152-07, *Design: Small Craft Berthing Facilities*

UFC 4-159-03, *Design: Moorings*

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS Section 03 01 30.71, *Concrete Rehabilitation*

UFGS Section 03 31 29, *Marine Concrete*

UFGS Section 09 97 13.26, *Coating of Steel Waterfront Structures*

UFGS Section 09 97 13.27, *Exterior Coating of Steel Structures*

UFGS Section 09 97 13.28, *Protection of Buried Steel Piping and Steel Bulkhead Tie Rods*

UFGS Section 31 23 00.00 20, *Excavation and Fill*

UFGS Section 31 62 13.20, *Precast/Prestressed Concrete Piles*

UFGS Section 31 62 13.24, *Concrete Cylinder Piles*

UFGS Section 32 17 23.00 20, *Pavement Markings*

UFGS Section 35 59 13.13, *Prestressed Concrete Fender Piling*

UFGS Section 35 59 13.14 20, *Polymeric Fender Piles*

UFGS Section 35 59 13.16, *Marine Fenders*

H10 1.2.2 General Requirements

H10 1.2.2.1 Subsurface Soils Information and Geotechnical Report

Any information presented in Part 6 of the RFP with regard to soil sampling and laboratory testing is for the Contractor's information only and is not guaranteed to fully represent all subsurface conditions. Contractor shall perform, at his expense, such subsurface exploration, investigation, testing, and analysis as his Designer of Record deems necessary for the design and construction of the foundation system. Contractor shall assemble all boring logs and present them in the design plans.

H10 1.2.2.2 Earthwork

The Designer of Record shall utilize UFGS Section 31 23 00.00 20 , *Excavation and Fill*, for the project specification.

H10 1.2.2.3 Marine Concrete

The Designer of Record shall utilize UFGS Section 03 31 29, *Marine Concrete*, including the use of epoxy coated rebar, for the project specification covering concrete components used in waterfront superstructure, substructure, deck and mooring and berthing systems, unless noted otherwise. The maximum water-cement ratio and minimum compressive strength shall be 0.40 and 5000 psi (35 MPa) respectively.

H10 1.2.2.4 Concrete Cover

Concrete components submerged in water or subjected to water spray shall have a minimum of 3 inches (75 mm) concrete cover over reinforcing steel or prestressing steel.

H10 1.2.2.5 Coating of Steel Waterfront Structures

The Designer of Record shall utilize UFGS Section 09 97 13.26, *Coating of Steel Waterfront Structures*, for the project specification covering coating of galvanized and non-galvanized steel structure elements such as piles, sheet piles, fender piles, power booms, power mounds, mooring hardware, and other miscellaneous steel items located on the waterfront structure

and exposed to water immersion, water splash and spray, high humidity or tropical environmental condition.

Coating of miscellaneous steel items located on the waterfront structure and not exposed to water immersion, water splash and spray, high humidity or tropical environmental condition can follow UFGS Section 09 97 13.27, *Exterior Coating of Steel Structures*.

H10 1.2.2.6 Stainless Steel

Stainless steel when used shall be Type 316 or 316L.

H10 1.2.2.7 Dewatering

Dewatering requirements and methods shall be established by the Contractor's Structural/Geotechnical Engineers, based on his subsurface exploration and investigation considering soil conditions and local subsurface waters and surface water, including rainfall. Any dewatering discharge will require a NPDES permit.

H10 1.2.2.8 Permit and Environmental Control

Waterfront structure work shall meet the permit and environmental control requirements of Section 01 57 19.00 20, *Temporary Environmental Controls*, in Part 2. In-water construction shall not commence until the required USACOE permits are obtained and shall meet the conditions stipulated in the USACOE permits.

H10 1.2.2.9 Repair and Rehabilitation

Repair and rehabilitation of waterfront structure, if required, shall cover concrete spalls, delaminations and cracks and steel corrosion. Concrete repair and rehabilitation shall follow the requirements of UFGS Section 03 01 30.71, *Concrete Rehabilitation*. Detailed existing condition inspection shall be done during the design phase. Inspection shall be performed by certified concrete technicians or structural engineers to identify and document the size and locations of cracks, spalls, delaminations, corrosion and other deteriorations on the existing structure. Underwater inspection shall be performed by qualified divers with similar qualifications as the underwater inspectors used for Underwater Quality Control (UWOC) described in the "Underwater Inspection" paragraph of this PTS Section.

H10 1.3 QUALITY ASSURANCE

Qualifications, certifications, and Test Plans indicated herein shall be submitted 45 calendar days prior to the expected date of execution. Notify the Contracting Officer 14 calendar days prior to all testing. Submit test results within 7 calendar days of completion of testing.

The Designer of Record is responsible for approving the submittals listed below.

H10 1.3.1 Earthwork

Perform quality assurance for earthwork in accordance with IBC Chapter 17 and UFGS Section 31 23 00.00 20, *Excavation and Fill*. A registered

Professional Engineer shall provide inspection of excavations and soil/groundwater conditions throughout construction. The Engineer shall be responsible for performing pre-construction and periodic site visits throughout construction to assess site conditions. The Engineer, with the concurrence of the Contractor and the Contracting Officer, shall update the excavation, sheeting, and dewatering plans as construction progresses to reflect actual site conditions and shall submit the updated plan and a written report (with professional stamp) at least monthly informing the Contractor and the Contracting Officer of the status of the plan and an accounting of Contractor adherence to the plan; specifically addressing any present or potential problems. The Engineer shall be available to meet with the Contracting Officer at any time throughout the contract duration. The contractor shall bear all costs of the Engineer.

H10 1.3.2 Piles

Perform quality assurance for pile construction in accordance with UFC 3-220-01. Pile installation procedures and installed piles shall be inspected and found to be in compliance with these specifications prior to acceptance of the work. Concrete piles, if used for the project and inspected to contain cracks completely around the piles, shall be replaced at no additional cost to the Government. Refer to the "Underwater Inspection" paragraph of this PTS Section for special inspection requirements.

Install indicator test piles as directed by the Contractor's Structural/Geotechnical Engineer. The load capacity of piles, as determined by pile driving formulae or geotechnical analysis, shall be verified by load tests or by dynamic pile analyzer methods. Test pile installation procedures shall be as directed by the Contractor's Structural/Geotechnical Engineer. Results of the indicator test pile program and final pile installation criteria shall be submitted to the Contracting Officer prior to installation of the production piles.

H10 1.3.3 Underwater Inspection

Contractor's Underwater Quality Control (UWQC) Team shall perform underwater surveillance and inspection of all under water construction. The UWQC lead diver shall be thoroughly familiar with the design plans and specifications to sufficiently understand the engineering aspects of the underwater construction and to be able to recognize and document potential problem areas such as improperly constructed or defective work. A report including photographs and/or videos shall be prepared and submitted with the QC report after each dive. The report shall include a description of all improperly constructed or defective areas and conditions. Frequency of underwater surveillance and inspection shall be after substructure installation and prior to superstructure and deck construction, after project construction is completed, and after all repairs to improperly constructed or defective areas and conditions have been completed. In addition to underwater conditions, survey and inspect above water, below deck conditions.

Contractor shall repair and correct all improperly constructed or defective areas and conditions identified in the report at no additional cost to the Government. Prior to performing any work, submit to the Contracting Officer for approval the repair or corrective actions to be taken including plans and specifications.

H10 1.3.4 Marine Concrete

Quality Assurance requirements for Marine Concrete shall be in

accordance with the UFGS Section 03 31 29, *Marine Concrete*.

If project is located outside of the mainland U.S. and Hawaii, Contractor is advised that the Chloride Ion Test required per UFGS Section 03 31 29, *Marine Concrete*, is a long lead item (the test will take at least 60 days) and it may be necessary to have the test done in the U.S mainland.

H10 1.4 DESIGN SUBMITTALS

Design submittals shall be in accordance with PTS Section Z10, *General Performance Technical Specification*, Section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures*, UFC 3-301-01, *Structural Engineering*, and UFC 4-152-01, *Design: Piers and Wharves*.

Additional design submittals for waterfront structure construction are as follows:

Concept Design Submittal:

Conceptual substructure, superstructure and deck layout and structural framing plans

Concept substructure and slope and wave protection layout plans

Concept design report to describe the system and justification of the selections. The submittal shall include a detailed description including sketches of all proposed in-water construction adequate for the USACOE permit application.

Design Development Submittal:

Existing condition inspection report

Preliminary substructure, superstructure and deck layout and structural framing plans with substructure locations

Preliminary substructure and slope and wave protection plans with locations of facilities and type of construction finalized

Preliminary substructure sections and details with substructure sizes finalized

Preliminary slope and wave protection details

Preliminary calculations to demonstrate that the basis framing and sizing of the major substructure and superstructure elements meet the performance requirements specified in the RFP.

Preliminary geotechnical report(s) including recommendation on test pile program

100% and Final Design Submittal:

Final plans, sections and details

Final design calculations

Final geotechnical report(s)

H10 1.5 CONSTRUCTION SUBMITTALS

The general requirements of this PTS Section are located in PTS Section Z10, *General Performance Technical Specification*. Construction submittals shall be in accordance with Section 01 33 00.05 20, *Construction Submittal Procedures*.

In addition to the Government Approval items listed in Section 01 33 00.05 20, the following waterfront structure related critical items shall be submitted for Government Approval:

Marine Concrete Mix Design

Pile Load Test Reports

Fender Product Data

In additional to the Government Surveillance items listed in Section 01 33 00.05 20, the following waterfront structure related items shall be submitted for Government Surveillance:

Piling Shop Drawings

Fender Piles shop Drawings

Fender Panels Shop Drawings

Mooring Hardware Shop Drawings

H1010 SUBSTRUCTURE

H101001 PILE FOUNDATIONS

Provide foundations in compliance with the requirements of this RFP and in accordance with the recommendations of the Contractor's Geotechnical/ Structural Engineers.

H101001 1.1 PILES

H101001 1.1.1 Restrictions

Restrictions are listed in the "Substructure" paragraph in ESR H10, *Waterfront Structures*, of Part 3.

H101001 1.1.2 Driving Equipment

Install piles to the required tip elevation or capacity with a pile hammer of sufficient weight and energy to suitably drive the piles without damage. Operate hammer at manufacturer's recommended speed, and drive piles without interruption using the appropriate equipment as recommended by the Contractor's Geotechnical Engineer.

a. Drive production piles with the same hammer, cap block and cushion materials, and use the same operating conditions, including pre-drilling (if allowed per this RFP), as indicator test piles.

b. Pile driving equipment shall match the equipment assumptions on which the pile driving formulae used to determine blow counts are based.

H101001 1.1.3 Installation Tolerances

a. Locate pile butts not more than 4 in (100 mm) from the location indicated at cutoff elevation. Manipulation of the piles is not permitted. In addition to the stated tolerances, the clear distance between the heads of piles and the edges of pile caps shall be determined by the Contractor’s Structural Engineer but no less than a minimum of 5 in (125 mm).
b. Locate top of sheet piles at cutoff elevation within 1/2 inch (12 mm) horizontally and 2 inch (50 mm) vertical of the location indicated. Manipulation of the piles is not permitted.
c. A variation of not more than 2 percent from the vertical for plumb piles, or not more than 4 percent from the required angle for batter piles will be permitted.

H101001 1.1.4 Mislocated and Damaged Piles

Remove and replace with new piles those piles that are cracked, damaged, mislocated, or installed out of alignment tolerance or provide additional piles, installed as directed by the Contractor's Structural/Geotechnical Engineer, at no additional cost to the Government.

H101001 1.1.5 Pile Driver Analyzer

The dynamic wave equation method of analysis, pile driver analyzer, shall be used to validate pile and pile hammer compatibility, establish pile driving criteria, and establish terminal penetration resistance.

H101001 1.1.6 Pile Spacing

For cast-in-place concrete or augercast piles, provide adequate distance, as determined by the Contractor's Structural / Geotechnical Engineer, between freshly placed concrete and other pile installation operations to avoid damage to concrete.

H101001 1.1.7 Prestressed Concrete Piling

The Designer of Record shall utilize UFGS Section 31 62 13.20, *Precast/Prestressed Concrete Piles*, or 31 62 13.24, *Concrete Cylinder Piles*, for the project specification.

H101001 1.1.8 Reinforced Concrete Drilled Shaft

Concreting of reinforced concrete drill shaft with water inside the shaft shall be done using the tremie method of concrete placement. Disposition of the displaced water shall meet the environmental control requirements of Section 01 57 19.00 20, *Temporary Environmental Controls*, of Part 2. For concrete placed under water, non-destructive test method shall be specifies to verify the integrity of the concrete.

H101001 1.1.9 Steel Pipe Piles

Steel pipe pile with spiral-butt or spiral-lap seams shall not be used.

H101001 1.1.10 Coating for Steel Piles

For steel piles in contact with water, provide cathodic protection of the piles meeting the requirements of the "Cathodic Protection System" paragraph in PTS Section G40, *Site Electrical Utilities*. In addition, apply protective coating conforming to SSPC PS 11.01 and UFGS Section 09 97 13.26, *Coating of Steel Waterfront Structures*, on all surfaces of the steel piles exposed to water for corrosion protection. Handle treated or coated piles so as to protect the treatment or the coating. Repair damage or defects to treatment or coating.

H101001 1.2 SHEET PILES

Sheet pile can be used to provide vertical support to waterfront structure and shall be of either steel, precast reinforced concrete or fiberglass reinforced plastic construction. Refer to the "Sheet Pile Bulkhead" paragraph of this PTS Section for additional, including corrosion protection, requirements.

H101001 1.3 CAISSONS

Caisson can be used to provide vertical support to waterfront structure. Refer to the "Caissons" paragraph under "Quays" paragraph in this PTS Section for additional requirements.

H101001 1.4 COFFERDAMS

Cofferdam can be used to provide vertical support to waterfront structure and shall be constructed of steel sheet pile cells. Refer to the "Sheet Pile Bulkhead" paragraph in this PTS Section for additional requirements.

H101001 1.5 WRAPS AND ENCASEMENTS

Existing piles can be repaired by wrapping or encasing with non-corrosive material including but not limited to fiberglass reinforced plastic and reinforced concrete.

H101001 1.6 OTHER PILE FOUNDATION ELEMENTS

Not used.

H101002 PILE CAPS

Pile caps that are in contact with water (including ground water), and water spray shall meet the requirements of the "Marine Concrete" paragraph, including the use of epoxy coated rebar, in this PTS Section. Use of non-marine concrete and non-epoxy coated rebar in buried pile caps placed above ground water may be considered. Concrete cover on reinforcing steel, steel piling and other embedded steel items shall be at least 3 inches (75 mm).

H101003 QUAYS

Guidance on seismic performance requirement for tie-back sheet pile bulkheads and gravity retaining structures (including caissons) located in high seismic areas can be found in the Criteria Section of NFESC Technical Report TR-3103-SHR, *Seismic Criteria for California Marina Oil Terminals*(referenced from UFC 4-152-01).

H101003 1.1 SHEET PILES BULKHEAD

Sheet pile bulkhead can be used as a solid retaining structure and can be either of steel, reinforced precast concrete or fiberglass reinforced plastic construction with tie-back anchors or other means of anchors. Backfill behind the bulkhead shall be designed and constructed to minimize its liquefaction potential. Corrosion protection of steel sheet pile shall

be in accordance with the requirements of the "Coating of Steel Piles" paragraph in this PTS Section. Top of sheet piles shall be encased in a reinforced concrete pile caps (refer to the "Pile Caps" paragraph in this PTS Section). Scour protection at the mud-line shall be considered in the design of sheet pile bulkhead.

H101003 1.1.1 Tie-Back Anchors

Design of the bulkhead and its tie-back anchors shall consider liquefaction potential of the site and the backfill behind the bulkhead. For tie-back anchors using piles and piles caps, refer to requirements in the "Piles" and "Pile Caps" paragraphs in this PTS Section.

H101003 1.1.2 Tie Rods

Corrosion protection shall be provided for steel tie-rods. Means of corrosion protection shall include cathodic protection meeting the requirements of "Cathodic Protection System" paragraph in PTS Section G40, *Site Electrical Utilities*, and either coated or tape-wrapped conforming to UFGS Section 09 97 13.28, *Protection of Buried Steel Piping and Steel Bulkhead Tie*.

H101003 1.2 CONCRETE GRAVITY WALLS

Concrete gravity walls can be used as a solid retaining structure and shall be of cast-in-place or precast concrete block construction. Backfill behind the gravity walls shall be designed and constructed to minimize its liquefaction potential. Scour protection at the mud-line shall be considered in the gravity wall design.

H101003 1.3 BLOCK WALLS

Block walls constructed of masonry or stone blocks shall be reinforced with steel reinforcing bar and can be used for minor quay wall construction. Block wall shall not be used to retain the embankment in the primary wharf or pier structure.

H101003 1.4 CAISSONS

Precast reinforced concrete caissons can be used as a solid retaining structure. Backfill behind the caissons shall be designed and constructed to minimize its liquefaction potential. Scour protection at the mud-line shall be considered in the caisson design.

H101003 1.5 CRIBS

Crib wall of precast reinforced concrete units can be used for minor quay wall construction and cannot be used to retain embankment in the primary wharf or pier structure. Crib wall using steel units shall not be allowed.

H101003 1.6 OTHER QUAY ELEMENTS

Not used.

H101004 RELIEVING PLATFORMS

Relieving platform can be used in conjunction with a sheet pile bulkhead (with or without tie-back anchors) to reduce the lateral load on the sheet pile created by heavy surcharge load. Relieving platform consists of the following components: piles, sheet pile, pile caps, deck and fill. Requirements of these components are provided under the "Piles", "Sheet Piles", "Pile Caps" and "Deck" of this PTS

Section.

H101005 REVETMENTS

Revetment can be used to retain the embankment either along the waterfront or upland to the pile-supported wharf or pier. Revetments can be constructed of rock dike or granular fill material. Refer to Section H30, *Coastal Protection*, for additional requirements. Design of the revetment shall consider liquefaction potential of the site. Guidance on seismic performance requirements of revetment in high seismic areas can be found in the Criteria Section of NFESC Technical Report TR-3103-SHR, *Seismic Criteria for California Marina Oil Terminals*(referenced from UFC 4-152-01). A cut-off wall (curtain wall) shall be provided at the interface between the pile-supported wharf/pier and the upland area (refer to the "Cut-Off Wall" paragraph in this PTS Section).

H101006 SEAWALLS

Seawall shall be designed to retain the soil behind the wall and to protect the waterfront from wave erosion. Seawall can be constructed to retain fill above a caisson, cofferdam, revetment, concrete gravity wall or natural ground and shall be of reinforced concrete construction. Scour protection at the base of the wall shall be considered in the seawall design.

H101007 BOAT RAMPS

Boat ramp shall be designed to accommodate the launching of the specified boats and shall be constructed of sheet pile or reinforced concrete walls and reinforced concrete slab.

H101008 CUT-OFF WALLS

Cut-off walls or curtain walls shall be constructed at the interface between the wharf/pier deck and the backland and shall be designed to retain the land side soil without loss of material. Cut-off-wall can be either of reinforced concrete or steel/concrete sheet pile construction.

H101009 FIREWALLS AND HANGING PANELS

H101009 1.1 FIRE WALLS

Fire walls shall be provided for timber wharf/pier.

H101009 1.2 WAVE ATTENUATION PANELS

For site with high waves, pile supported wharf/pier shall be designed for the uplift wave forces. Wave attenuation panels can be installed to mitigate the wave impact to the wharf/pier structure.

Design life of the wave attenuation panels shall be the same as the primary wharf/pier structure.

H101009 1.3 OTHER WALLS AND PANELS

Not used.

H101090 OTHER SUBSTRUCTURE COMPONENTS

Not used.

H1020 SUPERSTRUCTURE

H1020 1.1 STRUCTURAL FRAME

For pile supported waterfront structures, the deck shall be supported on a lateral load resisting structural frame.

Structural frame elements of pile supported waterfront structures will include piling, columns, girders, beams and deck slab. No exposed steel deck framing will be allowed.

H1020 1.2 MAIN LATERAL-FORCE RESISTING SYSTEM

Any main lateral-force resisting system meeting the requirements of this Section may be used.

H102001 BEAM AND GIRDERS

For single level, or the lower level of a double level wharf/pier, beams and girders can be the same as the pile caps. Steel beam and girder shall be encased in non-corrosive material such as reinforced concrete, and fiberglass reinforced plastic. The deck shall be integrated with and composite to the beam and girder system. Beams and girders can be embedded into the deck slab for wharf/pier with thick deck. Refer to the "Deck" paragraph of this PTS Section for additional requirements.

H102002 COLUMNS

For single level wharf/pier, the supporting piles can be the same as the columns. For double level wharf/pier, the upper level can be supported on columns non-continuous from the lower lever columns/piles. Steel columns shall be encased in non-corrosive material such as reinforced concrete, and fiberglass reinforced plastic.

H102003 UTILITY ENCLOSURES

H102003 1.1 UTILITY VAULTS

Provide electrical pits/vaults under electrical power outlet assemblies and for above-deck substations and provide electrical manholes and handholes as required to meet the functional requirements of the "Electrical Utilities" paragraph in PTS Section H50, *Waterfront Utilities*. Use of below-deck substations/transformers (housed in a vault) is discouraged and its use will require special approval as specified in UFC 4-150-02.

Pits, vaults, manholes and handholes shall be constructed of reinforced concrete with water proof joints and seals to prevent sea and ground water infiltration. Manhole and handhole covers shall have sealed joints to preclude runoff and deck surface spills from entering the cavities. These covers shall be of concrete or steel construction and shall be designed for all waterfront structure live load. Manhole and handhole covers shall have lifting devises or means of lifting to facilitate removal of the covers. Provisions shall be made to drain any water accumulation inside the pits.

Concrete pits, vaults, manholes and handholes integrated with the pile supported deck shall meet the requirements of the "Marine Concrete" paragraph in this PTS Section. Use of non-marine concrete in manholes and handholes buried in soil and not integrated with the deck concrete can be used.

All exposed steel shall be protected from corrosion.

H102003 1.2 UTILITY TRENCHES

Provide utility trenches and covers as required to meet the functional requirements of the "Civil/Mechanical Utilities" paragraph in PTS Section H50, *Waterfront Utilities*.

Trenches shall be constructed of reinforced concrete with water proof joints and seals to prevent sea and ground water infiltration. Trench covers, except at location of the utility stations, shall have sealed joints to preclude runoff and deck surface spills from entering the trench. Trench covers shall be of reinforced concrete or steel construction and shall be designed for all waterfront structure live loads. Trench covers shall have lifting devises or means of lifting to facilitate removal of the covers. Provisions shall be made to drain any water accumulation inside the trenches.

Concrete utility trench integrated with the pile supported deck shall meet the requirements of the "Marine Concrete" paragraph in this PTS Section. Use of non-marine concrete in utility trenches buried in soil and not integrated with the deck concrete can be used.

All exposed steel components shall be protected from corrosion.

H102090 OTHER SUPERSTRUCTURE ELEMENTS

Not used.

H1030 DECK

H103001 DECK

For open type of wharf/pier where the deck is supported on piles, waterfront structure deck shall be integrated with the framing system (beams, girders and columns system) meeting the requirements of the "Superstructure" paragraph in this PTS section. This elevated deck shall be of reinforced concrete construction meeting the requirements of the "Marine Concrete" paragraph in this PTS Section.

Electrical and communication conductors shall be contained in conduits embedded in the elevated deck, contained in concrete jacket below the deck, or supported by a raceway system inside an enclosure such as a covered utility trench/tunnel. Thickness of wharf concrete deck element shall be as required to adequately provide for size, number and concentration of conduit. Refer to the "Electrical Utilities" paragraph in PTS Section H50, *Waterfront Utilities*, for additional requirements.

The following systems shall not be used for this project: non-composite or composite concrete slabs on steel form deck, precast concrete soffit slabs without composite cast-in-place concrete overlay, wood deck on concrete, wood, or steel framing, and steel deck on concrete, wood or steel framing.

Elevated deck on wharf/pier shall be sloped to drain to the harbor (where allowed by local resource agencies) or to collection (where required by local resource agencies).

H103002 ON-GRADE SLAB

For wharf/pier deck supported on grade, provide Portland cement concrete pavement, asphalt concrete pavement, or structural reinforced concrete slab as required to meet the specified service conditions and loading in accordance with the requirements of this PTS Section, PTS Section G20 (for pavement design) and other portions of this RFP.

On-grade slab or pavement on wharf/pier shall be sloped to drain to the harbor (where allowed by local resource agencies) or to collection (where required by local resource agencies).

H103003 DECK OVERLAY

Concrete overlay placed on precast concrete soffit slabs shall be of composite reinforced concrete construction with reinforcing ties or stirrups connecting the overlay and precast slabs.

H103004 CURBS AND BULLRAILS

Curbs and bullrails meeting the requirements of Paragraph 4-7.3 in UFC 4-152-01 shall be provided along the waterside edges of wharf/pier. Curbs and bullrails shall be of reinforced concrete construction meeting the requirements of the "Marine Concrete" paragraph in this PTS Section.

H103005 MOORING FOUNDATIONS

Foundation shall be provided for mooring hardware such as bollards, double bitts and cleats. The mooring hardware foundations shall be adequate to resist the rated capacity of the hardware. Mooring hardware foundations on open wharf/pier shall be anchored into the deck and support framing. Mooring hardware foundations on-grade shall be of reinforced concrete construction supported on piles if recommended by the Contractor's Structural/Geotechnical Engineers. Fully embedded anchor bolts shall be galvanized. Anchor bolts with exposed ends shall be of stainless steel.

H103006 HIGH MAST LIGHTING FOUNDATIONS

Foundation shall be provided for high mast light pole or regular light poles. Light pole foundations design shall meet the requirements IBC. Light pole foundations on open wharf/pier shall be anchored into the deck and support frame. Light pole foundations on grade shall be of reinforced concrete construction supported on piles if recommended by the Contractor's Structural/Geotechnical Engineers. Fully embedded anchor bolts shall be galvanized. Anchor bolts with exposed ends shall be of stainless steel.

H103007 UTILITY MOUNDS

Electrical outlet assemblies and other electrical utility components shall be housed inside a power mounds. Power mound enclosure shall be constructed of the concrete or steel as specified in the "Deck" paragraph in ESR H10, *Waterfront Structures*, of Part 3. Power mound shall be designed to be waterproof and to withstand the wind and wave loads that existing at the waterfront.

H103008 EXPANSION JOINTS

Expansion joint shall be armored with steel as specified in the "Deck" paragraph in ESR H10, *Waterfront Structures*, of Part 3. Differential settlement across the joint shall be less than 1/8-inch (3 mm).

H103009 GUARD POSTS AND RAILING

Guard posts shall be provided to protect deck components including, but not limited to, light poles, telecommunication stations, life ring stations, and similar components from damaged by equipment and vehicle moving on the wharf/pier. Railing shall be provided for personnel protection. Guard posts and railing shall be of coated galvanized steel construction.

Pipe railing shall be constructed over utility risers to protect the risers from snagging of mooring lines. This pipe railing shall be constructed of steel piping as specified in the "Pipe Guardrail" paragraph in PTS Section H50, *Waterfront Utilities*, and the "Deck" paragraph in ESR H10, *Waterfront Structures*.

H103010 PAINT STRIPING

Paint striping shall follow the requirements of UFGS 32 17 23.00 20, *Pavement Markings*. Color shall be determined by the Contractor's Designer-of-Record.

H103010 1.1 DECK STRIPING

Striping shall be provided on the wharf/pier deck. Striping requirements shall be determined based on safety consideration and to identify different operational areas. Minimum striping requirements are shown on the RFP drawings provided in Part 6.

H103010 1.2 CURB STRIPING

Paint new station marks on curb and bullrail along waterfront of wharf/pier at spacing of approximately every 25 feet (7.5 meters).

H103090 OTHER DECK COMPONENTS

Not used.

H1040 MOORING AND BERTHING SYSTEM

H104001 PRIMARY FENDER SYSTEM

H104001 1.1 FENDER PILES

Fender piles used in the primary fender system shall be closely spaced to provide adequate support to the fenders, or camels. Fender piles used in secondary fender system shall have maximum spacing of 10 feet (3 m).

Fender pile blockings and chocks shall be of plastic timber construction. Connecting hardware including but not limited to nuts, bolts, washers, brackets and pile collars for the fender pile system shall be of 316 or 316L stainless steel or galvanized steel construction. Provide UHMW polyethylene rubbing strips (secured by stainless steel fasteners) on the front face of each fender pile. For steel fender piles, if used, provide cathodic protection meeting the requirements of the "Cathodic Projection System" paragraph in PTS Section G40, *Site Electrical Utilities*, and apply protective coating conforming to SSPC PS 11.01 and UFGS Section 09 97 13.26, *Coating of Steel Waterfront Structures*.

No timber fender piles will be allowed.

H104001 1.2 FENDER FRAMING

Fender framing or panels may be required to support the fender or fender pile clusters. The framing can be of either stainless steel or coated and cathodically protected steel construction. The fender panels shall be of concrete or coated and cathodically protected steel construction.

H104001 1.3 FENDERS

Support framings or backing panels suitable for the type of fender used shall be provided. Refer to the "Fender Framing" paragraph in this PTS Section for additional requirements.

H104001 1.4 EXTRUDED FENDERS

Extruded fenders shall meet the "extruded fenders" related requirements in UFGS Section 35 59 13.16, *Marine Fenders*.

H104001 1.5 MOLDED FENDERS

Molded fenders shall meet the "molded fenders" related requirements in UFGS Section 35 59 13.16, *Marine Fenders*.

H104001 1.6 FOAM-FILLED FENDERS

Foam-filled fenders shall meet the "foam-filled fenders" related requirements in UFGS Section 35 59 13.16, *Marine Fenders*.

H104001 1.7 PNEUMATIC AND HYDRO-PNEUMATIC FENDERS

Pneumatic and hydro-pneumatic fenders shall meet the "pneumatic and hydro-pneumatic fender" related requirements in UFGS Section 35 59 13.16, Marine Fenders.

H104001 1.8 CAMELS

Camels design shall follow the design guidance in Paragraph 6-8 of UFC 4-152-01.

H104002 SECONDARY FENDER SYSTEM

Secondary fender system shall be provided between the primary fenders along the wharf/pier waterfront to protect wharf/pier from accidental contact with ships or routine berthing of barges and small crafts.

Refer to the "Fender Piles" and "Fender Framing" paragraphs in this PTS Section for requirements of fender piles used in secondary fender system.

H104003 CORNER FENDER SYSTEM

Corner fender system shall be provided at all corners of wharf/pier for accidental contact with ships or routine contact with tug boats. Refer to the "Fender Piles" and "Fender Framing" paragraphs in this PTS Section for additional requirements.

H104004 DOLPHINS

Breasting dolphin or mooring dolphins, if used shall meet the applicable requirements of the "Substructures", "Superstructure", and "Deck" paragraphs in this PTS Section.

H104005 MOORING HARDWARE

H104005 1.1 BOLLARDS

H104005 1.2 DOUBLE BITTS

H104005 1.3 CLEATS

H104005 1.4 QUICK RELEASE HOOKS

Not used.

H104005 1.5 CAPSTANS AND WINDLASSES

Not used.

H104090 OTHER MOORING AND BERTHING COMPONENTS

Not used.

H1050 APPURTENANCES

H1050 1.1 HANDRAILS

H1050 1.2 BROWS

Brow design shall follow the design guidance provided in Paragraph 7-4 of UFC 4-152-01.

H1050 1.3 ELECTRICAL POWER CABLE BOOMS

For requirements for electrical power cable booms, refer to the "Electrical Power Cable Booms for Berthing of Submarine" paragraph in PTS Section H50, *Waterfront Utilities*.

H1050 1.4 FLOATS

Landing float design shall follow the design guidance provided in Paragraph 7-3 of UFC 4-152-01.

H1050 1.5 SAFETY LADDERS

Safety ladders shall be provided along the wharf/pier waterfront. Safety ladders shall be of Type 316 L stainless steel or fiberglass reinforced plastic construction and shall be spaced no more than 200 feet (60 meters). The bottom of the ladders shall be extended at least 2 feet (600 mm) below the MLLW. Member size for connections shall be 3/8-inch (10 mm) thick minimum. Ladder shall be designed for 300 pounds (1.33 kN) rated capacity minimum and a minimum of 250 pounds (1.11 kN) lateral load applied anywhere on the ladder. In all cases, the ladder shall meet OSHA requirements.

H1050 1.6 LIFE RINGS

Life rings with support stands and 90 feet (27 meters) rope minimum, spaced no more than 150 feet (45 meters) shall be provided along the wharf waterfront. The support stand shall be of stainless steel construction.

H1050 1.7 OIL CONTAINMENT BOOM AND SUPPORT ATTACHMENTS

-- End of Section --

SECTION H30

COASTAL PROTECTION
09/15

H30 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

H30 1.1 NARRATIVE

This Section must be used in conjunction with all parts of the Design Build (D/B) Request for Proposal (RFP) to determine the full requirements of this solicitation.

This Section covers the design and construction requirements for the coastal protection, described in ESR H30, Coastal Protection, of Part 3 and as identified on the RFP drawings provided in Part 6.

H30 1.2 COASTAL PROTECTION DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS Section are located in PTS Section Z10, *General Performance Technical Specification*.

H30 1.2.1 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 3-220-01, *Geotechnical Engineering*

UFC 4-150-06, *Military Harbors and Coastal Facilities*

US ARMY CORPS OF ENGINEERS (COE)

COE EM 1110-2-1100, *Coastal Engineering Manual*

COE EM 385-1-1, *Safety and Health Requirements Manual*

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS Section 03 31 29, *Marine Concrete*

UFGS Section 31 23 00.00 20, *Excavation and Fill*

H30 1.2.2 General Requirements

H30 1.2.2.1 Subsurface Soils Information and Geotechnical Data

Any information presented in Part 6 of this RFP with regard to soil sampling and laboratory testing is for the Contractor's information only and is not guaranteed to fully represent all subsurface conditions. Contractor shall perform, at his expense, such subsurface exploration, investigation, testing, and analysis as his Designer of Record deems necessary for the design and construction of the coastal protection system. Contractor shall assemble all boring logs and present them in the design plans.

H30 1.2.2.2 Stone

Quality of Stone used in Coastal Protection system shall conform to the specified requirements when tested as specified in this Section. Visual examination of the quarry, including examination of the blast samples, suitable tests and service records shall be required to determine the acceptability of the stone. To ensure the required quality, stone shall be subject to petrographic analysis and X-ray diffraction analysis conforming to ASTM C 295, as well as specific gravity, absorption, durability and wetting and drying tests as follows:

TEST	TEST METHOD	REQUIREMENT
Apparent Specific Gravity	ASTM C 127	2.55 min.
Absorption	ASTM C 127	2.0% max.
Durability	ASTM C 535	50% max. after 1000 revs.
Sulfate Soundness	ASTM D 5240	10% max. after 5 cycles(magnesium sulphate)

The size and quantity of test specimens used for the tests listed above shall conform to the requirements of ASTM D 4992.

Contractor may be required to provide representative samples of the proposed stone materials from each stone source. The samples shall consist of sufficient individual pieces to allow reviewing of stone quality and gradation. In no case shall the sample be less than 110 pounds (50 kg).

Stone that comes from off-island sources must be thoroughly washed and disinfected at the source in accordance with the provisions of Territory of Guam, Executive Order No. 91-16, Relative to the Importation of Sand and Other Quarried Materials. Stone shall also be suitable for Ocean Dumping

Permit Evaluations.

H30 1.2.2.3 Permit and Environmental Control

Coastal protection work shall meet the permit and environmental control requirements of Section 01 57 19.00 20, *Temporary Environmental Controls*, in Part 2. In-water construction shall not commence until the required USACOE permits are obtained and shall meet the conditions stipulated in the USACOE permits.

H30 1.3 QUALITY ASSURANCE

Qualifications, certifications, and Test Plans indicated herein shall be submitted 45 calendar days prior to the expected date of execution. Notify the Contracting Officer 14 calendar days prior to all testing. Submit test results within 7 calendar days of completion of testing.

The Designer of Record is responsible for approving the submittals listed below.

H30 1.3.1 Earthwork

Perform field quality control required in Section 31 23 00.00 20, *Excavation and Fill*.

H30 1.3.2 Stone Quality

Submit all tests specified in the "Stone" paragraph in this PTS Section for review prior to loading stone for transport. Stone is not to be shipped until the quality of the stone has been certified.

Stone which does not conform in specific gravity, structure, and other characteristics, or that has substances on or within the stone that would make it unsuitable for ocean placement as described in the "Stone" paragraph in this PTS Section, will be rejected. The presence of unsatisfactory stone or objectionable foreign material in any load of stone delivered for use in the work will be deemed sufficient reason for rejection of the whole load. Any such load shall be immediately removed from the work, at Contractor’s expense.

Prior to placement, all stone shall be subject to acceptance by the Contracting Officer. Acceptance of any stone shall not constitute acceptance of all rock from a source. All accepted stone shall be of the same litho logy as the original stone from which test results or service records were taken as a basis for approval of the source.

H30 1.4 DESIGN SUBMITTALS

Design submittals shall be in accordance with PTS Section Z10, *General Performance Technical Specification*, Section 01 33 10.05 20, *Design Submittal Procedures*, FC 1-300-09N, *Navy and Marine Corps Design Procedures*, UFC 3-201-01, *Civil Engineering*, and UFC 4-150-06, *Military Harbors and Coastal Facilities*.

Additional design submittals for coastal protection facility construction

are as follows:

Concept Design Submittal:

Concept wave and slope protection layout plans

Concept design report to describe the system and justification of the selections. The report also shall include a detailed description including sketches of all proposed in-water constructions adequate for the USACOE permit application

Design Development Submittal:

Preliminary wave and slope protection plans with locations and limits of facilities and type of construction finalized

Preliminary wave and slope protection details

Preliminary geotechnical report(s)

Design methodology and calculations for wave and slope protection

100% and Final Design Submittal:

Final plans, sections, details and calculations

Final geotechnical report(s)

H30 1.5 CONSTRUCTION SUBMITTALS

The general requirements of this PTS Section are located in PTS Section Z10, *General Performance Technical Specification*. Construction submittals shall be in accordance with Section 01 33 00.05 20, *Construction Submittal Procedures*.

H3010 WAVE PROTECTION

Contractor shall provide wave protection at locations identified on RFP drawings provided in Part 6 and as required based on the Contractor's design.

H3010 1.1 DESIGN REQUIREMENTS

Oceanographic design parameters to be used to generate the design wave forces are as described in ESR H30, *Coastal Protection*, of Part 3. These criteria shall be considered minimum requirements. Waterfront improvements shall be subject to thorough engineering analysis using all relevant criteria that could affect the integrity and performance of the constructed waterfront improvements.

Wave protection armors shall be designed in accordance with the guidance of UFC 4-150-06 and COE EM 1110-2-1100 and to provide for sufficient hydraulic stability.

H301001 WAVE PROTECTION ARMORS

Wave protection armors shall be of natural stone or precast concrete units.

Concrete used shall meet the requirements of UFGS Section 03 31 29, *Marine Concrete*.

Stone shall meet the quality requirements described in the "Stone Quality" paragraph in this PTS Section.

Minimum size of stone used as armor or rip rap for wave protection shall be as specified in "Wave Protection" paragraph in ESR H30, *Coastal Protection*, of Part 3.

H301002 BREAKWATERS

Not used.

H3020 SLOPE PROTECTION

Contractor shall provide slope protection identified on RFP drawings provided in Part 6 and as required based on the Contractor's design.

H3020 1.1 DESIGN REQUIREMENTS

Slope protection shall be provided to retain and protect existing or new embankment along the waterfront. It can either be revetments (dikes) constructed of rock, granular fill or combination of rock and granular fill with wave protection or wave protection over existing embankment. Design of the slope protection shall consider liquefaction potential of the site. Guidance on seismic performance requirements of dikes in high seismic areas can be found in the Criteria Section of NFESC Technical Report TR-3103-SHR, *Seismic Criteria for California Marina Oil Terminals*(referenced from UFC 4-152-01.

Slope protection shall be designed in accordance with the guidance of UFC 4-150-06, UFC 3-220-01 and COE EM 1110-2-1100.

H302001 ROCK REVETMENTS

Stone shall be quarry stone, angular in shape, with its largest dimension not in excess of 3 times its least dimension, and able to form a stable protection structure meeting all requirements of this RFP. Stone shall be sound, durable, hard, resistant to abrasion and free of laminations, weak cleavage planes, and the undesirable effects of weathering. Stone shall be of such character that it will not disintegrate from the action of air, water, or the conditions to be met in handling and placing. All material shall be clean and free from deleterious impurities, including alkali, earth, clay, refuse and adherent coatings.

Stone shall meet the quality requirements described in the "Stone Quality" paragraph in this PTS Section.

H302002 GRANULAR FILL REVETMENTS

Not used.

H302003 COMBINED RCOK AND GRANULAR FILL REVETMENTS

Not used.

-- End of Section --

SECTION H40

NAVIGATION DREDGING AND RECLAMATION
09/15

H40 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

H40 1.1 NARRATIVE

This Section must be used in conjunction with all parts of the Design Build (D/B) Request for Proposal (RFP) to determine the full requirements of this solicitation.

This Section covers the design and construction requirements for navigation dredging, and reclamation, described in ESR H40, *Navigation Dredging and Reclamation*, of Part 3 and as identified on the RFP drawings provided in Part 6.

H40 1.2 NAVIGATION DREDGING AND RECLAMATION DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS Section are located in PTS Section Z10, *General Performance Technical Specification*.

H40 1.2.1 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 4-150-06, *Military Harbors and Coastal Facilities*

U.S. ARMY CORPS OF ENGINEERS (COE)

COE EM 385-1-1, *Safety and Health Requirements Manual*
COE EM 1110-2-1003, *Hydrographic Surveying*

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS Section 31 23 00.00 20, *Excavation and Fill*
UFGS Section 35 20 23, *Dredging*

H40 1.2.2 General Requirements

H40 1.2.2.1 Hydrographic Survey Data

An existing hydrographic survey map is included in Part 6 of this RFP for the Contractor's information only. The Government does not guarantee that this map fully represents all submarine surface conditions. Contractor shall perform, at his expense, such hydrographic survey as his Designer of Record deems

necessary for the design and construction of the navigation dredging and reclamation related work.

H40 1.2.2.2 Dredge Material Management Plan

Government's dredge material characterization and management plan is included in Part 6 of this RFP. Contractor’s dredging and disposal design and field operations shall following the guidelines provided in this report.

H40 1.2.2.3 Geotechnical Data

Any information presented in Part 6 of this RFP with regard to soil sampling and laboratory testing is for the Contractor's information only and is not guaranteed to fully represent all subsurface conditions. Contractor shall perform, at his expense, such subsurface exploration, investigation, testing, and analysis as his Designer of Record deems necessary for the design and construction of the navigation dredging and reclamation work. Contractor shall assemble all boring logs and present them in the design plans.

H40 1.2.2.4 Navigation and Clearance

In-water work shall minimize interference with the use of the navigation channels and passages. The Contracting Officer will direct the shifting and moving of dredges or the interruption of in-water operations to accommodate the movement of vessels and floating equipment, if necessary.

Additional details of scheduling and clearance requirements are provided in Section 01 14 00.05 20, *Work Restrictions for Design-Build*, in Part 2.

H40 1.2.2.5 UXO

If Unexploded Ordnance (UXO) is encountered, Contractor shall stop dredging operation immediately and notify the Contracting Officer for direction.

H40 1.2.2.6 Erosion and Sediment Control Plan

The erosion and sediment control plan shall include the measures required to reduce on-site erosion and off-site runoff and sedimentation. The plan shall comply with all requirements of the state or territory in which the project is located.

H40 1.2.2.7 NPDES General Permit and SWP3

National Pollutant Discharges Elimination System (NPDES) General Permit for Storm Water Discharges is required for construction sites over one acre.

The Storm Water Pollution Prevention Plan (SWP3) shall be prepared by a registered professional engineer. The SWP3 is a comprehensive program document detailing the intended methods

of complying with applicable storm water management regulations and requirements. The plan shall comply with all requirements of the state in which the project is located.

H40 1.2.2.8 Contaminated Material Removal Work Plan

The Contaminated Material Removal Work Plan shall be prepared by a design professional which meets the criteria listed herein and specially address protection of on-site personnel, workers and the environment.

H40 1.2.2.9 Field Sampling and Laboratory Test Plan

The Field Sampling and Laboratory Test Plan prepared by a design professional which meets the criteria listed herein and specially address protection of on-site personnel, workers and the environment.

H40 1.2.2.10 Permit and Environmental Control

Dredging and reclamation work shall meet the permit and environmental control requirements of Section 01 57 19.00 20, *Temporary Environmental Controls*, in Part 2. In-water construction shall not commence until the required USACOE permits are obtained and shall meet the conditions stipulated in the USACOE permits.

H40 1.2.2.11 Vessel Maneuverability Study and Channel Design

Vessel maneuverability study and channel design, if specified in ESR H40, *Navigation Dredging and Reclamation,* in Part 3 shall be performed accordance with the guidance of UFC 4-150-06.

H40 1.3 QUALITY ASSURANCE

Materials installed in the work shall be inspected and found to be in compliance with industry standards and these specifications prior to acceptance of the work. Items found to be not in compliance shall be removed, or corrective measures taken, to assure compliance with the referenced standard.

H40 1.3.1 Hydrographic Surveys

Contractor shall perform pre-dredge hydrographic survey to establish the base line sea bottom profile and post-dredge hydrographic survey to verify that the dredged depth and limits meet the RFP requirements.

Hydrographic surveys shall be performed as detailed in UFGS Section 35 20 23, *Dredging*, and meet or exceed the survey standards listed in the US Army Corps of Engineers EM 1110-2-1003 (Hydrographic Surveying) for Class I surveys. Surveys shall be done in compatible datum as listed in the RFP drawings provided in Part 6. The hydrographic surveying firm selected by the Contractor must be approved by the Contractor's Engineer of Record prior to performing surveys for this Contract.

H40 1.3.2 Earthwork

Perform field quality control required in Section 31 23 00.00 20 , *Excavation and Fill*.

H40 1.4 DESIGN SUBMITTALS

Design submittals shall be in accordance with PTS Section Z10, *General Performance Technical Specification*, UFGS Section 01 33 10.05 20, *Design Submittal Procedures*, UFC 1-300-09N, *Navy and Marine Corps Design Procedures*, UFC 3-201-01, *Civil Engineering*, and UFC 4-150-06, *Military Harbors and Coastal Facilities*.

Additional design submittals for dredging and reclamation are as follows:

Concept Design Submittal:

Preliminary vessel maneuverability study and channel design report if required per ESR H40, *Navigation Dredging and Reclamation*, in Part 3

Concept dredging and reclamation layout plans

Concept design report to provide detailed description including sketches describing all proposed in-water constructions adequate for the USACOE permit application

Detailed dredge disposal plan including where, how and permitting information.

Design Development Submittal:

Final vessel maneuverability study and channel design report if required per ESR H40, *Navigation Dredging and Reclamation*, in Part 3

Preliminary dredging and reclamation plans with locations, limits and phasing of construction and type of construction finalized

Preliminary dredging and reclamation details

Preliminary geotechnical report(s)

100% and Final Design Submittal:

Final plans, sections and details

Final geotechnical report(s)

H40 1.5 CONSTRUCTION SUBMITTALS

The general requirements of this PTS Section are located in PTS Section Z10, *General Performance Technical Specification*. Construction submittals

shall be in accordance with Section 01 33 00.05 20, *Construction Submittal Procedures*.

H4010 DREDGING

Contractor shall dredge to the depths described in ESR H40, *Navigation Dredging and Reclamation*, of Part 3 the channel, turning basin and berth areas as identified on RFP drawings provided in Part 6 or as required to be determined by the Contractor. Contractor's Designer-of Record shall edit UFGS Section 35 20 23, *Dredging*, for the project specification. No blasting will be permitted to perform dredging.

H4020 DREDGE DISPOSAL

Contractor shall dispose of the dredge material at the disposal site(s) described in ESR H40, *Navigation Dredging and Reclamation*, of Part 3.

H402001 OCEAN DISPOSAL

Information on the ocean disposal site if used is provided in ESR H40, *Navigation Dredging and Reclamation*, in Part 3.

H402002 NEW CONFINED DISPOSAL FACILITIES

The new confined disposal facility if required in accordance to ESR H40, *Navigation Dredging and Reclamation*, in Part 3, shall have adequate capacity to store the dredged material including considerations for over-dredge allowance and bulk factor.

H402003 EXISTING CONFINED DISPOSAL FACILITY

Information on the existing confined disposal facility, if used, is provided in ESR H40, *Navigation Dredging and Reclamation*, in Part 3.

H4030 RECLAMATION

Locations of reclamation are identified in the drawings provided in Part 6 or as required to be determined by the Contractor. Handling of the material shall be as specified within UFGS Section 31 23 00.00 20, *Excavation and Fill*.

-- End of Section --

SECTION H50

WATERFRONT UTILITIES
4/08

H50 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

H50 1.1 NARRATIVE

This Section must be used in conjunction with all parts of the Design Build (D/B) Request for Proposal (RFP) to determine the full requirements of this solicitation.

This Section covers installations within the waterfront facility. See PTS Sections G30, *Site Civil/Mechanical Utilities*, G40, *Site Electrical Utilities*, for continuation of systems beyond the five foot line.

H50 1.2 WATERFRONT UTILITIES DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS Section are located in PTS Section Z10, *General Performance Technical Specification*.

H50 1.2.1 Government Standards

UNITED FACILITIES CRITERIA (UFC)

UFC 3-201-01, *Civil Engineering*

UFC 3-600-10N, *Fire Protection Engineering*
UFC 4-150-02, *Dockside Utilities for Ship Service*

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS Section 09 97 13.26, *Coating of Steel Waterfront Structures*
UFGS Section 26 05 33, *Dockside Power Connection Stations*

H50 1.3 QUALITY ASSURANCE

Qualifications, certifications, and Test Plans indicated herein shall be submitted 45 calendar days prior to the expected date of execution. Notify the Contracting Officer 14 calendar days prior to all testing. Submit test results within 7 calendar days of completion of testing.

The Designer of Record is responsible for approving the submittals listed below.

H50 1.3.1 Waterfront Civil/Mechanical Utilities

For waterfront civil/mechanical utilities quality assurance requirements, refer to applicable portion of the "Quality Assurance" paragraph in PTS Section G30, *Site Civil/Mechanical Utilities*.

H50 1.3.2 Waterfront Electrical Utilities

For waterfront electrical utilities quality assurance, refer to applicable portions of the "Quality Assurance" paragraph in PTS Section G40, *Site Electrical Utilities*.

H50 1.3.3 Waterfront Fire Protection

For waterfront fire protection quality assurance requirements, refer to applicable portion of the "Quality Assurance" paragraph in PTS Section D40, *Fire Protection*.

H50 1.4 DESIGN SUBMITTALS

Design submittals shall be in accordance with PTS Section Z10, *General Performance Technical Specification*, Section 01 33 10.05 20, *Design Submittal Procedures* in Part 2, UFC 3-201-01, *Civil Engineering*, UFC 3-401-01, *Mechanical Engineering*, UFC 3-501-01, *Electrical Engineering*, UFC 3-600-10N, *Fire Protection Engineering*, and UFC 4-150-02, *Dockside Utilities for Ship Services*.

H50 1.5 CONSTRUCTION SUBMITTALS

The general requirements of this PTS Section are located in PTS Section Z10, *General Performance Technical Specification*. Construction submittals shall be in accordance with Section 01 33 00.05 20, *Construction Submittal Procedures* in Part 2.

If an OMSI manual is not a contract requirement, then provide product data for all equipment; and submit operation and maintenance data in accordance with Section 01 78 24.00 20, *Electronic Facility Operation and Maintenance Support Information*in Part 2.

Provide certification that all adjustable protective device settings have been set in accordance with the coordination study for the as-built equipment and configuration.

H5010 CIVIL/MECHANICAL UTILITIES

H5010 1.1 PIPE LOCATION

Piping on deck with asphalt concrete pavement can be either placed underground, in a concrete trench or on a ledge outboard of the pier/wharf concrete curb/bullrail. Piping on elevated concrete deck or concrete deck on-grade can be placed in a concrete trench or on a ledge outboard of the pier/wharf concrete curb/bullrail. For utility trench requirements, refer to the "Utility Trenches" paragraph in PTS Section H10, *Waterfront Structures*.

H5010 1.2 TEMPORARY REMOVAL AND REPLACEMENT

Where necessary or as indicated on RFP drawings provided in Part 6, temporary removal and replacement of utilities and installation of interim facilities may be required to maintain services to existing facilities. Temporary replacement facilities shall match the function and quality of existing facilities.

H501001 POTABLE WATER

Requirements for potable water on pier/wharf are provided below. Additional requirements are provided in the "Potable Water Distribution" paragraph in PTS

Section G30, *Site Civil/Mechanical Utilities*.

H501001 1.1 PIPING

Water service lines 100mm and smaller shall be brass pipe, ASTM B43, extra strong. Fittings shall be brass or bronze, FS WW-P-460, 120 psi (825 kPa) minimum. Water lines between 4 inches and 12 inches (100 mm and 300 mm) shall be ductile iron pipe (AWWA C151) or PVC pressure pipe (AWWA 900 DR18). Water lines placed above ground or in a trench shall be flanged ductile iron pipe (AWWA C115). Fittings shall be ductile iron (AWWA C110 or AWWA C153) with rubber sealed gasket joints (AWWA C115). Piping and fittings for ductile iron pipe shall have cement-mortar lining (AWWA C104).

H501001 1.2 VALVES

H501001 1.2.1 Gate Valves

Provide gate valves conforming to AWWA C509, nonrising stem type with flanged ends. Body, bonnet and gate shall be of ductile iron. Valves shall open by counterclockwise rotation of the valve stem. Stuffing boxes shall have O-ring stem seals. Stuffing boxes shall be bolted and constructed so as to permit easy removal of parts for repair. Bronze used in valves shall be Grade A, Grade D or Grade E as specified in AWWA C509. Valves shall have protective epoxy interior coating conforming to AWWA C550.

H501001 1.3 BACKFLOW PREVENTERS

Provide reduced pressure principle type backflow preventers, with epoxy coated and lined ductile iron bodies, replaceable bronze seats, stainless steel internal parts, nonrising stem gate shut-off valves, and suitable for pressures up to 175 psi (1,200 kPa) at 110 degrees F (43 degrees C).

H501001 1.4 PRESSURE REGULATORS

Provide adjustable pressure regulator to reduce incoming water pressure to level specified in the "Portable Water" paragraph of ESR Section H50, *Waterfront Utilities*in Part 3.

H501001 1.5 UTILITY STATION PIPING AND OUTLET

Piping and outlets shall be in accordance with UFC 4-150-02 or as shown in RFP drawings provided in Part 6.

H501002 SALTWATER

Not used.

H501003 SANITARY SEWER

Requirements for sanitary sewer on pier/wharf are provided below. Additional requirements are provided in the "Sanitary Sewer Piping" and "Sanitary Sewer Manholes & Cleanouts" paragraphs in PTS Section G30, *Site Civil/Mechanical Utilities*.

H501003 1.1 PIPING

Piping shall be ductile iron, flanged, conforming to AWWA C115/A21.15, Thickness Class 56. Fittings shall conform to AWWA C110/A21.10 or AWWA C153/A21.53 and shall have a pressure rating at least equivalent to that of the pipe. Pipe and fittings shall have a ceramic epoxy internal lining

resistant to chemical attack.

H501003 1.2 VALVES

H501003 1.2.1 Plug Valves

Provide plug valves with cast iron bodies, MSS SP-78. Valves shall be rated for at least 175 psi (1,200 kPa) at 140 degrees F (60 degrees C). Valves and operators shall be designed for outdoor service. Provide valve with internal lining or coating compatible with ship and submarine sewage discharge.

H501003 1.2.2 Check Valves

Provide swing type check valve with flanged ends. Valves shall be designed for outdoor service. Valve materials shall be compatible with ship and submarine sewage discharge.

H501003 1.3 CAMLOCK HOSE COUPLING

Provide camlock hose coupling with stainless steel coupler body, Viton gasket, and twin cam arms with finger rings and stainless steel pins. Coupling shall have a pressure rating of at least 145 psi (1,000 kPa). Provide matching stainless steel plug with stainless steel connecting chain.

H501004 BILGE AND OILY WASTE

H501004 1.1 PIPING

Piping shall be ductile iron, flanged, conforming to AWWA C115/A21.15, Thickness Class 56. Fittings shall conform to AWWA C110/A21.10 or AWWA C153/A21.53 and shall have a pressure rating at least equivalent to that of the pipe. Pipe and fittings shall have a ceramic epoxy internal lining resistant to chemical attack.

H501004 1.2 VALVES

H501004 1.2.1 Plug Valves

Provide plug valves with cast iron bodies, MSS SP-78. Valves shall be rated for at least 175 psi (1,200 kPa) at 140 degrees F (60 degrees C). Valves and operators shall be designed for outdoor service. Provide valve with internal lining or coating compatible with ship and submarine bilge and oily waste discharge.

H501004 1.3 CAMLOCK HOSE COUPLING

Provide camlock hose coupling with stainless steel coupler body, Viton gasket, and twin cam arms with finger rings and stainless steel pins. Coupling shall have a pressure rating of at least 145 psi (1,000 kPa). Provide matching stainless steel plug with stainless steel connecting chain.

H501005 STEAM

Not used.

H501006 COMPRESSED AIR

Not used.

H501090 OTHER CIVIL/MECHANICAL UTILITIES

Not used.

H501091 MISCELLANEOUS MATERIAL

H501091 1.1 PIPE GUARDRAILS

Provide Schedule 80 pipe guardrails of stainless steel, ASTM A 312/A 312 M, Type 316L, or of galvanized and coated steel, with butt welding fittings of the same material and weight of the piping.

H501091 1.2 PIPE HANGERS AND SUPPORTS

Pipe hangers and supports shall conform with MSS SP-58 and MSS SP-69 and shall be of Type 316 or Type 316L stainless steel or galvanized steel.

H501091 1.3 HARDWARE

Hardware, including bolts, nuts, washers, anchors and screws, shall be of Type 316 stainless steel or galvanized steel.

H501091 1.4 MISCELLANEOUS METAL

Miscellaneous metal shall be standard mill finished structural steel shapes, galvanized ASTM A 36/ASTM A 36M steel, or Type 316L stainless steel.

H5020 ELECTRICAL UTILITIES

H5020 1.1 DUCT/CONDUIT PLACEMENT

Ducts and conduits located on elevated deck shall be embedded in the concrete deck. As an alternative, electrical cables can be contained inside concrete jackets supported below the deck.

H502001 ELECTRICAL POWER DISTRIBUTION

H502001 1.1 ELECTRICAL POWER DISTRIBUTION

Waterfront electrical power distribution systems may include the primary system to the substation and the secondary system that serves electrical power outlet assemblies located on the wharf/pier.

Electrical power distribution shall be in accordance with the requirements of the applicable portion of the "Electrical Distribution" paragraph in PTS Section G40, *Site Electrical Utilities*.

H502001 1.2 ELECTRICAL POWER OUTLET ASSEMBLIES

Refer to the "Utility Mounds" paragraph in PTS Section H10, *Waterfront Structures*, for enclosure for electrical power outlet assembly.

The Designer of Record shall utilize UFGS Section 26 05 33, *Dockside Power Connection Stations*, for work related to waterfront electrical power outlet assemblies. Multiple three phase, three wire power receptacles suitable for the power ratings specified in the "Electrical Power Distribution" paragraph of ESR Section H50, *Waterfront Utilities*in Part 3 shall be provided. These power outlet assemblies shall be served by substations with 3 phase, 3 wire delta secondaries. Each receptacle at the power outlet assembly shall be supplied by a power circuit breaker that is capable of delivering the

specified amperes continuously with adequate long time trip rating to allow continuous operation at specified amperes without nuisance tripping. Provide remote controls for each circuit breaker serving share power receptacles. Provide controls for primary and secondary main circuit breakers at the electrical power outlet assemblies served.

Industrial power outlets shall be provided for portable equipment used at pier side. Industrial power outlets shall include 3 phase 4 wire receptacles and 3 wire receptacles for the specified voltages, and 115 volt convenience receptacles. Industrial power outlets shall be served from a substation or transformer with grounded neutral secondary.

H502002 TELECOMMUNICATION

Refer to the "Utility Mounds" paragraph in PTS Section H10, *Waterfront Structures*, for enclosure for telecommunication stations.

Refer to the "Site Communication and Security" paragraph in PTS Section G40, *Site Electrical Utilities*, for requirements for Cable, wiring, ductbanks, manholes and handholes.

H502003 LIGHTING

Refer to the "Site Lighting" paragraph in PTS Section G40, *Site Electrical Utilities*, for requirements for over deck lighting.

Provide lighting fixtures mounted on high mast poles.

Provide a computer model of the illumination system using photometric data prepared for the fixture by an independent testing laboratory. Follow IES standards for preparation of the computer model. Adjust and modify the design to provide the illumination required. The corrosion protection features shall be suitable for the environmental condition at the site.

H502004 LIGHTNING PROTECTION

Lightning protection system shall be catenary wire type that complies with NFPA 780, MIL-HDBk-1004/6, *Lightning Protection*, and NAVSEA OP 5 Chapter 6, Lightning Protection. Protection system shall be design for protection of ordnance that is placed on the pier/wharf. Provide primary and secondary ground wires and means for connecting portable equipment to the grounding system. Material used shall be suitable for the environmental conditions at the site.

H502005 ELECTRICAL POWER CABLE BOOMS FOR BERTHING OF SUBMARINES

Function of the power boom is to support and deliver power cables from the on pier/wharf power outlet assembly to the points of power connection on the berthed submarine. Locations of the power booms and the ranch of operation are as shown on RFP drawings provided in Part 6.

The power boom shall be of galvanized steel construction with proper corrosion protection coating meeting the requirements of UFGS Section 09 97 13.26, *Coating of Steel Waterfront Structure*. Bolts, nuts and washers shall be hot deep galvanized. When the boom is under its stowed position at the pier/wharf or when the boom is positioned to connect the cables to the submarine, the boom shall be secured from unexpected movement in both horizontal and vertical directions. Both horizontal and vertical movements of the boom shall be activated manually with the assistance of power, mechanical or hydraulic device. Safeguard shall be provided to preclude simultaneous movement in different directions and uncontrolled movement while the boom is in motion.

The power cable shall be supported on a cable tray in the boom with means of delivering the cables to the submarine at different locations as shown on RFP drawings provided in Part 6. Use of electrical hoist may be allowed.

All electrical or hydraulic components shall be suitable for outdoor services in marine environment. The rate of movement at the end of the boom shall be limited to 8 feet/minute (2.5 meters/minute). Moving elements that involve metal-to-metal contact shall have friction reduction components (such as Teflon coatings and bronze bushings).

Structural design requirements for the power boom shall be in accordance with PTS Section H10, *Waterfront Structure*.

H502090 OTHER ELECTRICAL UTILITIES

Not used.

H5030 WATERFRONT FIRE PROTECTION

H503001 FIRE PROTECTION WATER

H503002 FIRE ALARM

---End of Section---

SECTION H60

WATERFRONT DEMOLITION
09/15

H60 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

H60 1.1 NARRATIVE

This Section must be used in conjunction with all parts of the Design Build (D/B) Request for Proposal (RFP) to determine the full requirements of this solicitation.

This Section includes the requirements for the design and construction of waterfront demolition, described in ESR H60, *Waterfront Demolition*, of Part 3 and as identified on the RFP drawings provided in Part 6.

H60 1.2 WATERFRONT DEMOLITION DESIGN GUIDANCE

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS Section are located in PTS Section Z10, *General Performance Technical Specification*.

H60 1.2.1 Government Standards

UNIFIED FACILITIES CRITERIA (UFC)

UFC 3-800-10N, *Environmental Engineering for Facility Construction*

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS Section 02 83 13.00 20, *Lead In Construction*

H60 1.2.2 General Requirements

H60 1.2.2.1 General Demolition

The work includes demolition, salvage of identified items and materials and removal of resulting rubbish and debris. Rubbish and debris shall be removed from Government property daily, unless otherwise directed. Materials that cannot be removed daily shall be stored in areas specified in the Demolition Plan. Remove indicated existing elements of waterfront facilities as identified on drawings provided in Part 6 and as required to be determined by the Contractor.

H60 1.2.2.2 Utilities

Remove existing utilities as identified in ESR H60, *Waterfront Demolition*, and on RFP drawings provided in Part 6 and terminate in a manner conforming to the nationally recognized code covering the specific utility.

H60 1.2.2.3 Dust Control

Prevent the spread of dust and debris and avoid the creation of a nuisance or hazard in the surrounding area.

H60 1.2.2.4 Traffic Control

Where pedestrian and vehicle safety is endangered, use traffic barricades.

H60 1.2.2.5 Burning

Burning will not be permitted.

H60 1.2.2.6 Lead Based Paint

Refer to the "Lead Based Paint" paragraph in PTS Section F20, *Selective Building Demolition*.

H60 1.2.2.7 Mercury and Low Level Radioactive (LLR) Component

Refer to the "Mercury and LLR Components" paragraph in PTS Section F20.

H60 1.2.2.8 PCB's

Refer to the "PCB's" paragraph in PTS Section F20, *Selective Building Demolition*.

H60 1.2.2.9 Ozone Depleting Substance (ODS)

Refer to the "ODS" paragraph in PTS Section F20, *Selective Building Demolition*.

H60 1.2.2.10 Salvage Material

All demolished material will become the property of the Contractor except for the salvage items identified in ESR H60, *Waterfront Demolition*, in Part 3. Salvage items will become the property of the Government.

H60 1.2.2.11 Permit and Environmental Control

Waterfront demolition work shall meet the permit and environmental control requirements of Section 01 57 19.00 20, *Temporary Environmental Controls for Design-Build*, in Part 2. In-water and over-water demolition shall not commence until the required USACOE permits are obtained and shall meet the conditions stipulated in the USACOE permits.

H60 1.3 QUALITY ASSURANCE

Qualifications, certifications, and Test Plans indicated herein shall be submitted 45 calendar days prior to the expected date of execution. Notify the Contracting Officer 14 calendar days prior to all testing. Submit test results within 7 calendar days of completion of testing.

The Designer of Record is responsible for approving the submittals listed below.

H60 1.4 DESIGN SUBMITTALS

Design submittals shall be in accordance with PTS Section Z10, *General Performance Technical Specification*, 01 33 10.05 20, *Design Submittal Procedures*, UFC 1-300-09N, *Navy and Marine Corps Design Procedures*, UFC 3-800-10N, *Environmental Engineering for Facility Construction*.

H60 1.5 CONSTRUCTION SUBMITTALS

The general requirements of this PTS Section are located in PTS Section Z10, *General Performance Technical Specification*. Construction submittals shall be in accordance with 01 33 00.05 20, *Construction Submittal Procedures*.

H6010 IN-WATER OR OVER-WATER DEMOLITION

Demolition of in-water or over-water substructure, superstructure, deck and coastal protection components identified on the RFP drawings provided in Part 6 or as required based on the Contractor's design shall be performed meeting the permit and environmental control requirements specified above.

H6020 NON-IN-WATER OR NON-OVER-WATER WATERFRONT DEMOLITION

For non-in-water or non-over-water waterfront demolition, refer to PTS Section F20, *Selective Building Demolition*.

H6030 HAZARDOUS COMPONENTS ABATEMENT

Refer to the "Hazardous Components Abatement" paragraph in Section F20, *Selective Building Demolition*.

---End of Section---

SECTION Z10

GENERAL PERFORMANCE TECHNICAL SPECIFICATION
09/15

Z10 GENERAL

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

Z10 1.1 NARRATIVE

All Performance Technical Specification (PTS) sections must be used in conjunction with all parts of the Design Build (D/B) Request for Proposal (RFP) to determine the full requirements of this solicitation. This PTS section provides general requirements for the other PTS sections of this RFP and is used in conjunction with the other PTS sections.

Refer to UFGS section 01 33 10.05 20, *Design Submittal Procedures*for the Order of Precedence of the RFP Parts. Requirements listed in the Project Program take precedence over the PTS sections requirements; therefore, requirements identified in the Project Program eliminate options related to that requirement in the PTS sections.

Z10 1.2 DESIGN GUIDANCE

Provide work in compliance with the following design standards and codes, as a minimum. Government standards listed in this RFP take precedence over industry standards.

The PTS Sections reference published standards, the titles of which can be found in the *Unified Master Reference List (UMRL)*on the Whole Building Design Guide at the Unified Facilities Guide Specification (UFGS) Website . The publications referenced form a part of this specification to the extent referenced. The publications are referred to in the section text by the basic designation only. Industry standards, codes, and Government standards referenced in the section text, and not found in the UMRL, are listed at the beginning of the PTS sections.

The advisory provisions of all referenced codes, standards, and specifications shall be mandatory; substitute words such as "shall", "must", or "required" for words such as "should", "may", or "recommended," wherever they appear. The results of these wording substitutions incorporate these code and standard statements as requirements. Reference to the "authority having jurisdiction" for variance from criteria shall be interpreted to mean the "Chief Engineer, NAVFAC" and for contractual obligations on this project shall be interpreted to mean the "Contracting Officer". Comply with the required and advisory portions of the current edition of the standard at the time of contract award.

The following list of codes and standards is not comprehensive and is augmented by other codes and standards referenced and cross-referenced in the RFP.

Z10 1.2.1 INDUSTRY CODES

INTERNATIONAL BUILDING CODE (IBC) as modified by UFC 1-200-01. UFC

1-200-01 applies the IBC to the project and references other commercial standards and UFC criteria that become part of the contract.

Z10 1.2.2 INDUSTRY REQUIREMENTS

WHOLE BUILDING DESIGN GUIDE (WBDG)

WHOLE BUILDING DESIGN GUIDE, Ensure Occupant Safety and Health (Systems Safety Engineering) at http://www.wbdg.org/design/ensure_health.php

Z10 1.2.3 GOVERNMENT STANDARDS

Z10 1.2.3.1 UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements(UFC 1-200-01 is a hub document that provides general building requirements and references other critical UFCs. A reference to UFC 1-200-01 requires compliance with the Tri-Service Core UFCs. A complete list of these Tri-Service Core UFCs is located in UFGS section 01 33 10.05 20)
UFC 1-200-02	High Performance and Sustainable Buildings
UFC 1-300-09N	Design Procedures

Z10 1.2.3.2 FEDERAL STANDARDS

Architectural Barriers Act Accessibility Standard with DEPSECDEF Memorandum 31 Oct 2008, "Access for People with Disabilities"

Occupational Safety and Health Association (OSHA)

Z10 1.3 MATERIALS AND EQUIPMENT REQUIREMENTS IDENTIFICATION

Z10 1.3.1 MATERIALS STANDARD

Refer to the Project Program for identification of Government Furnished Equipment.

The equipment items shall be supported by service organizations that are convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

Materials, equipment, fixtures, and other appurtenances shall comply with applicable Underwriters Laboratories, (UL) Inc., American National Standards Institute, Inc., and National Electrical Manufacturer's Association standards or applicable standards of a similar independent testing organization. All materials shall be new, and shall bear the label of Underwriters Laboratories whenever standards have been established and label service is normally and regularly furnished by the agency. All equipment provided shall be listed and labeled suitable for the specified purpose, environment,

and application and installed in accordance with manufacturer’s recommendations. Insulation shall be asbestos free.

Z10 1.3.2 EQUIPMENT NAMEPLATE IDENTIFICATION

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place. The nameplate of the distributing agent will not be acceptable.

Z10 1.3.3 FIELD-APPLIED NAMEPLATES

Provide laminated plastic nameplates for each piece of equipment. Each nameplate must identify the function and, when applicable, the number designation of that piece of equipment as used in the design documents. Provide melamine plastic nameplates, 0.125 inch (3 mm) thick, white with black center core.

Z10 1.4 COMMISSIONING

Commission the building systems identified in the Project Program paragraph 2.2.3. Refer to UFGS section 01 45 00.05 20, *Design and Construction Quality Control*for commissioning requirements. Test reports must be certified by the Commissioning Authority (CA), that work is in compliance with requirements of the RFP.

Z10 1.5 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTS

Verification of satisfactory construction and system performance shall be via Performance Verification Testing, Acceptance Tests, and submittal of test reports certified by the Designer of Record (DOR), that work is in compliance with requirements of the RFP. The Government reserves the right to witness all Performance Verification and Acceptance Tests, review data, and request other such additional inspections and repeat tests as necessary to ensure that the work and provided services conform to the stated requirements. Contractor shall pay the cost of all testing.

Refer to each PTS section to identify Performance Verification and Acceptance Testing required by the work specified in that PTS section.

Z10 1.6 SUBMITTALS

Contractor's design submittals that combines design and construction submittals, must jointly comply with UFGS sections 01 33 00.05 20, *Construction Submittal Procedures* and 01 33 10.05 20, *Design Submittal Procedures*. Contractor's construction submittals that submitted separate from the design submittals must comply with UFGS 01 33 00.05 20, *Construction Submittal Procedures*.

Refer to “"Construction Quality Control" in UFGS 01 33 00.05 20, *Construction Submittal Procedures* and 01 45 00.05 20, *Design and Construction Quality Control* to define reviewing and approving Authority of design and construction submittals.

Utilize the same materials and equipment that are approved and provided for an initial facility design, on all follow-on facilities that use the same design with-in this contract. Once the initial facility design is approved by the Government, the Contractor must obtain Government approval to change materials and equipment when designing and constructing follow-on facilities utilizing the same design.

Z10 1.6.1 DESIGN SUBMITTALS

Design submittals shall be in accordance with Unified Facility Guide Specification (UFGS) section 01 33 10.05 20, *Navy and Marine Corps Design Submittal Procedures*, UFC 1-300-09N, *Design Procedures*, and other discipline-specific guidelines listed in the applicable PTS sections.

UFGS Section 01 33 10.05 20, *Design Submittal Procedures* requires the use of UFGS sections in the development of the contractor originated specification. The Designer of Record (DOR) shall edit the UFGS sections for the project and submit the edited specification as a part of the design submittal. The DOR shall edit the UFGS as follows:

(1) Prepare UFGS Specifications as part of the project specification,

(2) Delete only portions of the UFGS specification that are not applicable to the project,

(3) Edit only the bracketed choices that are within the UFGS specification text,

(4) Edit blank bracketed options to include requirements that exercise prudence and adherence to acceptable industry standards,

(5) Comply with the directions, directives, and requirements of all UFGS Criteria Notes. The UFGS Criteria Notes are typically bordered on the top and bottom by a line of asterisks to highlight their location.

(6) If proprietary information is provided or required to streamline the construction submittal process, include proprietary information in the edited UFGS sections and added to the end of each UFGS section. Confirm that the proprietary products, materials, and systems listed in the specifications are in compliance with the requirements of the RFP.

Z10 1.6.2 CONSTRUCTION SUBMITTALS

Submit for approval to the Designer of Record (DOR), construction submittals, product data, manufacturer's information, shop drawings, and test reports on all materials and systems installed in the project, unless the DOR designates submittal for QC approval. Refer to each PTS section for further construction submittal requirements relating to the work identified in that particular PTS section. Some PTS sections reference UFGS sections that will require more construction submittals for DOR approval than is stated above. Refer to Section 01 33 00.05 20 for the list of construction submittals reserved for Government Approval and Government Surveillance.

--End of Section--

Solicitation No.
N40192-16-R-2800

SMALL BUSINESS DESIGN-BUILD MULTIPLE AWARD CONSTRUCTION CONTRACT (SB DBMACC)

VARIOUS LOCATIONS, GUAM

PART 5
PRESCRIPTIVE SPECIFICATIONS
(Not Used)

Solicitation No.
N40192-16-R-2800

SMALL BUSINESS DESIGN-BUILD MULTIPLE AWARD CONSTRUCTION CONTRACT (SB DBMACC)

VARIOUS LOCATIONS, GUAM

PART 6
ATTACHMENTS

Attachment 6-1

ORDER FOR SUPPLIES OR SERVICES

PAGE 1 OF

1. CONTRACT/PURCH ORDER/AGREEMENT NO.	2. DELIVERY ORDER/CALL NO.	3. DATE OF ORDER/CALL (YYYYMMMDD)	4. REQUISITION/PURCH REQUEST NO.	5. PRIORITY

6. ISSUED BY — CODE

7. ADMINISTERED BY *(If other than 6)* — CODE

8. DELIVERY FOB
- [ ] DESTINATION
- [ ] OTHER *(See Schedule if other)*

9. CONTRACTOR — CODE — FACILITY

NAME AND ADDRESS

10. DELIVER TO FOB POINT BY *(Date)* (YYYYMMMDD)

11. X IF BUSINESS IS
- [ ] SMALL
- [ ] SMALL DISADVANTAGED
- [ ] WOMEN-OWNED

12. DISCOUNT TERMS

13. MAIL INVOICES TO THE ADDRESS IN BLOCK

14. SHIP TO — CODE

15. PAYMENT WILL BE MADE BY — CODE

MARK ALL PACKAGES AND PAPERS WITH IDENTIFICATION NUMBERS IN BLOCKS 1 AND 2.

16. TYPE OF ORDER

- [ ] DELIVERY/CALL — This delivery order/call is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.
- [ ] PURCHASE — Reference your furnish the following on terms specified herein.

ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.

NAME OF CONTRACTOR | SIGNATURE | TYPED NAME AND TITLE | DATE SIGNED (YYYYMMMDD)

- [ ] If this box is marked, supplier must sign Acceptance and return the following number of copies:

17. ACCOUNTING AND APPROPRIATION DATA/LOCAL USE

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/SERVICES	20. QUANTITY ORDERED/ ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT
					$0.00
					$0.00
					$0.00

**If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle.*

24. UNITED STATES OF AMERICA

BY: CONTRACTING/ORDERING OFFICER

25. TOTAL $0.00

26. DIFFERENCES

27a. QUANTITY IN COLUMN 20 HAS BEEN
- [ ] INSPECTED
- [ ] RECEIVED
- [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED:

b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

c. DATE (YYYYMMMDD)

d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE

f. TELEPHONE NUMBER

g. E-MAIL ADDRESS

28. SHIP. NO.
- [ ] PARTIAL
- [ ] FINAL

29. D.O. VOUCHER NO.

30. INITIALS

31. PAYMENT
- [ ] COMPLETE
- [ ] PARTIAL
- [ ] FINAL

32. PAID BY

33. AMOUNT VERIFIED CORRECT FOR

34. CHECK NUMBER

35. BILL OF LADING NO.

36. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT.

a. DATE (YYYYMMMDD)

b. SIGNATURE AND TITLE OF CERTIFYING OFFICER

37. RECEIVED AT	38. RECEIVED BY *(Print)*	39. DATE RECEIVED (YYYYMMMDD)	40. TOTAL CONTAINERS	41. S/R ACCOUNT NUMBER	42. S/R VOUCHER NO.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

		1. CONTRACT ID CODE	PAGE OF PAGES
2. AMENDMENT/MODIFICAITON NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicble)*
6. ISSUED BY CODE		7. ADMINISTERED BY *(If other than Item 6)* CODE	

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

CODE | FACILITY CODE

(X)

☐ 9A. AMENDMENT OF SOLICIATION NO.

9B. DATED *(SEE ITEM 11)*

☐ 10A. MODIFICATION OF CONTRACT/ORDER NO.

10B. DATED *(SEE ITEM 13)*

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:
(a)By completing items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted;
or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPIRATION DATA *(If required)*

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
☐	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
☐	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.*) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
☐	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
☐	D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (*Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA *(Signature of Contracting Officer)*	16C. DATE SIGNED

QC Manager Duties

- The QC Manager shall have no job-related responsibilities other than QC unless specifically permitted in the particular project's specification.
- He shall be on the site at all times during progress of the work, with complete authority to take any action necessary to ensure conformance with the contract requirements. In the event of his absence, the approved alternate shall be on the site. ***NOTE: See Section 01 45 00.05 20 for further guidance***
- Authority to immediately stop any segments of work, which does not comply with the contract plans and specifications, and directs the removal and replacement of any defective work.
- Will conduct daily inspection of work performed for compliance with plans and specifications.
- Must certify daily that all materials and equipment delivered/installed in the work comply with contract plans and specifications. Certify daily that all work performed on the construction site and off the construction site conforms to plans and specifications. Report any deficiencies and remedial action planned and taken.
- Supervise and coordinate the inspection and tests made by the members of the Quality Control Organization, including subcontractors.
- Assure QC staff is adequate to meet its responsibilities.
- Maintain a copy of the ROICC approved QC Plan on file at the job site, complete with up-to-date approved revisions/filled-in log of submittals. Maintain at the job site an up-to-date QC Submittal Register (provided in the specification) showing the status of all submittals required by the contract.
- Maintain at the job site a testing plan showing status of all tests required by the contracts. Ensure that all tests required are performed and results are reported. Indicate whether test results show the item tested conforms to contract requirements or not.
- Authority to remove any individual from the site who fails to perform their work in a skillful, safe and workmanlike manner or whose work does not comply with the contract plans and specifications.
- QC manager does not have authority to deviate from plans and specifications without prior approval, in writing, from the ROICC.
- Ensure that the Contractor's Quality Control Organization is adequately staffed with qualified personnel to perform all the detailed inspections and testing specified in the plans and specifications.
- Maintain at the job site the up-to-date QC Rework Items List.

Items in Letters of Authority to QC Manager and Alternate.

The appointing letter to the QC Manager and the Alternate shall detail their authority and responsibility to act for the Contractor. It should also outline duties, responsibilities, and authority without any job-related responsibilities other than QC.

The QC Manager or approved Alternate must be on the site at all times during progress, with complete authority to take any action necessary to insure conformance with the contract requirements.

The QC Manager's Letter of Appointment will specifically address the following items:

- Authority to immediately stop any segment of work which does not comply with the contract plans and specifications, and direct the removal and replacement of any defective work.
- Conduct daily inspection of work performed each day for compliance with plans and specifications.
- Certify daily that all materials and equipment delivered/installed in the work comply with contract plans and specifications. Certify daily that all work performed on the construction site and off the construction site conforms to plans and specifications. Report any deficiencies and remedial action planned and taken.
- Supervise and coordinate the inspection and tests made by the members of the Quality Control Organization including subcontractors.
- Assure QC staff is adequate to meet its responsibilities.
- Insure that all tests required are performed and the results reported. Indicate whether test results show the item tested conforms to contract requirements or not. Ensure corrective work achieves acceptable test results.
- Maintain at the job site a testing plan showing status of all tests required by the contracts.
- Authority to remove any individual from the site who fails to perform work in a skillful, safe and workmanlike manner or whose work does not comply with the contract plans and specifications.
- QC Manager has no authority to deviate from plans and specifications without prior approval, in writing, from the Contracting Officer or designated representative.
- Ensure that the Contractor's Quality Control Organization is adequately staffed with qualified personnel to perform all the detailed inspections and testing specified in the plans and specifications.
- Maintain a copy of the approved QC Plan on file at the job site complete with up-to-date approved revisions/filled-in log of submittals.
- Maintain at the job site an up-to-date QC Submittal Status Log showing status of all submittals required by the contract.

- Maintain at the job site an up-to-date Noncompliance Check-off List (Log of deficiencies) on all nonconforming work.
- Assure that As-Built Drawings are kept current by showing all deviations made from the contract drawings on a daily basis.

Sample Letter

1 April 1999

Tom Stone

1000 State Street

San Diego, CA

SUBJECT: QC Manager, Appointment as

RE: Contract N62474-83-C-0000, Maintenance Hanger, NAS

Dear Sir:

You are hereby appointed as the Contractor Quality Control Manager (QC Manager) for Pacific Construction Co., Inc. during the term of this contract.

You are directed to follow the inspection procedures, instructions, and reports in strict compliance with the contract drawings and specifications and any authorized changes thereto. As a direct representative of the company, you are authorized and directed to perform the following duties:

1. Approve all Shop Drawings and submittals for conformance to the contract requirements. You are to keep a status log and Testing Plan up to date and record copies of your approved submittals are to be forwarded to the NAVY Contract Administrator Submittals that require Government approval are to be forwarded to the designated party for appropriate action after your certification.

2. Inspect the work performed on a continual basis for compliance with current drawings and specifications. You have the authority to issue a stop work order on any item or work feature pending satisfactory correction of any deficiency in that work, particularly if the defective work is to be enclosed, is to support further construction, or will be inaccessible if further work proceeds. You have the authority to direct removal and replacement of any defective work.

3. Perform, supervise, or coordinate as required the reviews, inspections, and tests to be made by other members of your Quality Control Organization.

4. Inspect and certify that all material and equipment delivered to the job site complies with the approved submittals.

5. Ensure that all required test and/or inspections are performed, and report the results in the daily Contractor Quality Control Report.

6. File Certified Contractor Quality Control Reports, on the forms provided, with the NAVY Contract Administrator. These reports are to cover prime and subcontractor personnel and equipment on the site, idle

equipment and personnel, material deliveries, weather conditions, work accomplished, inspections, and tests conducted, results of inspections and tests, deficiencies found, and corrective action taken.

7. Maintain as-builts. At the job site, two sets of full-size contract drawings shall be marked to show any deviations that have been made from the contract drawings.

8. Recommend to Mr/Ms (indicate Name & Title) removal of any individual from the project who consistently fails to perform work properly.

9. Report to me any subcontractor who consistently does not conform to the contract drawings and specifications.

10. Keep a copy of the approved QC Plan, with up-to-date approved revisions, on file at the job site.

Very truly yours,

CONSTRUCTION CO., INC.

President

SAMPLE

Table 1. Contents of the QC Plan

Item	Description & Remarks	01450	SF-01450
Table of Contents	The Table of Contents should include Tabs for each required item in the Plan.	Required	Required
QC Organization Chart	The quality control organization depicted in chart form, showing the relationship of the quality control organization to other elements of the Prime Contractor's company as well as subs, suppliers, and other outside organizations.	Required	Not Required
Names & Qualifications	The qualifications for the QC Manager and staff are required. The acceptance of these personnel must be based on the stated qualifications and past experience in comparison to the requirements indicated in the specifications. A list of the proposed requirements must be provided to the EFD CQM Staff for approval prior to advertisement of the contract.	Required	Required
Duties and Responsibilities	Area of responsibility and authority of each individual in the quality control organization, outlined in detail. Some duties and responsibilities may overlap and require clarification as work progresses. NAVFAC policy does not preclude the Prime Contractor from using subcontractor personnel as part of the quality control staff. However, the Prime Contractor should understand that the QC organization acts on behalf of the prime and that the prime is be held responsible for their actions.	Required	Required
Outside Organizations	Outside organizations include design agents, consultants, and subcontractors that will perform work or services for the prime under this contract. The list should also indicate the general scope of the work or services to be performed.	Required	Optional
Appointment Letter(s)	A copy of the letter appointing the QC Manager, signed by an officer of the firm, outlining the QC Manager's duties, responsibilities, and authority. This letter must include the authority to direct removal and replacement of any defective work. This letter provides the authority for the QC Manager to act as an agent of the Contractor. No QC plan can be accepted unless these requirements are satisfactorily addressed in the appointing letter. A sample of the appointing letter is provided in Appendix A.	Required	Optional
Submittal Procedures	Procedures for reviewing all shop drawings, samples, certificates, or other submittals for contract compliance, including the name of the person(s) authorized to sign the submittals for the Contractor as complying with the contract. Procedures for processing submittals and responsibility for approving each submittal must be included in the plan. A sample of the Contractor's proposed approval stamp(s) should be included for verification against the contract requirements. The Contractor shall also include a submittal status log listing all submittals required by the specifications and stating the action required by the Contractor and the Government. The Contractor shall complete columns (a) through (e) of this log and name the persons authorized to review the submittals.	Required	Required
Testing Lab Information	A listing of testing laboratories that will be employed by the Contractor and a description of the services these firms will provide, including statements of their accreditation as required by the contract. If there is any question regarding the capability of a particular testing organization, refer to Appendix B, Approval of Material Testing Laboratories for Construction Contracts.	Required	Optional
Testing Plan and Log	This plan includes the tests required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test.	Required	Required
Rework Procedure	These include the Contractor's internal procedures to identify, document, track, and sign off completion of deficiencies in the construction.	Required	Required

Item	Description & Remarks	01450	SF-01450
Documentation Procedures	The procedures for documenting quality control operation, inspection, and testing must be addressed and a copy of all forms and reports to be used included. The Contractor's reporting requirement includes preparation of daily reports.	Required	Required
List of Definable Features of Work	The listing of Definable Features of Work is the fundamental breakdown of the project into distinct tasks. Special care should be taken to review this list and ensure that the activities not only meet the minimum requirements contained in the specifications, but are practicable for use throughout the project.	Required	Required
Performing The Three Phases of Control	The Preparatory and Initial Phase Checklists provided in Appendices G. and H. will be completed for each DFOW..	Required	Required
Personnel Matrix	Where required, this matrix assigns responsibility by name for documentation of the three phases of control and testing activities, as well as review and approval of submittals. This matrix should assign these responsibilities by Specification Section.	Optional	Optional
Completion Inspection Procedures	The Completion Inspection Procedures outline the turnover process including assignment of responsibility for various phases of turnover. The Punch-Out Inspection is to be completed by the Contractor QC Manager. The Pre-Final Inspection is done by the Government with the QC Manager. The Contracting Officer, based on the completion of the pre-final schedules, conducts the Final Inspection. The Contractor's QC Manager, the Contracting Officer or designated representative and the client representative should be present.	Required	Required

CONTRACTOR QUALITY CONTROL REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE

REPORT NO

PHASE | CONTRACT NO | CONTRACT TITLE

PREPARATORY

WAS PREPARATORY PHASE WORK PREFORMED TODAY? YES ☐ NO ☐

IF YES, FILL OUT AND ATTACH SUPPLEMENTAL PREPARATORY PHASE CHECKLIST.

Schedule Activity No.	Definable Feature of Work	Index #

INITIAL

WAS INITIAL PHASE WORK PREFORMED TODAY? YES ☐ NO ☐

IF YES, FILL OUT AND ATTACH SUPPLEMENTAL INITIAL PHASE CHECKLIST.

Schedule Activity No.	Definable Feature of Work	Index #

FOLLOW-UP

WORK COMPLIES WITH CONTRACT AS APPROVED DURING INITIAL PHASE? YES ☐ NO ☐

WORK COMPLIES WITH SAFETY REQUIREMENTS? YES ☐ NO ☐

Schedule Activity No.	Description of Work, Testing Performed & By Whom, Definable Feature of Work, Specification Section, Location and List of Personnel Present

REWORK ITEMS IDENTIFIED TODAY (NOT CORRECTED BY CLOSE OF BUSINESS)

Schedule Activity No.	Description

REWORK ITEMS CORRECTED TODAY (FROM REWORK ITEMS LIST)

Schedule Activity No.	Description

REMARKS (Also Explain Any Follow-Up Phase Checklist Item From Above That Was Answered "NO"), Manuf. Rep On-Site, etc.

Schedule Activity No.	Description

On behalf of the contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.

AUTHORIZED QC MANAGER AT SITE DATE

GOVERNMENT QUALITY ASSURANCE REPORT

DATE

QUALITY ASSURANCE REPRESENTATIVE'S REMARKS AND/OR EXCEPTIONS TO THE REPORT

GOVERNMENT QUALITY ASSURANCE MANAGER DATE

4296/2 (9/98) SHEET OF

CONTRACTOR QUALITY CONTROL REPORT

(CONTINUATION SHEET)

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE

REPORT NO.

PHASE	CONTRACT NO	CONTRACT TITLE

FOLLOW-UP

WORK COMPLIES WITH CONTRACT AS APPROVED DURING INITIAL PHASE? YES ☐ NO ☐

WORK COMPLIES WITH SAFETY REQUIREMENTS? YES ☐ NO ☐

Schedule Activity No.	Description of Work, Testing Performed & By Whom, Definable Feature of Work, Specification Section, Location and List of Personnel Present

REMARKS (Also Explain Any Checklist Item From Above That Was Answered "NO"), Manuf. Rep. On-Site, etc.

Schedule Activity No.	Description

2496/2A (9/98) SHEET OF

Table 2. Sample Approval Checklist

Item Description	Items to be checked	✓
General Items	• As-built drawing statement. The required full-size set of marked up contract drawings to be maintained on-site, updated monthly and submitted to AOIC after completion of construction.	
Table of Contents	• TOC is included • Page numbers are indicated • Revision sheet is included to indicate any changes made to the plan during the course of construction.	
QC Organization Chart	• Relationship of QC Manager to officer of firm to whom he reports. • Relationship of QC Manager to other members of QC staff. • Relationship of QC Manager to subcontractor QC Managers or foremen. • Relationship of QC Manager to consultants, testing firms, etc. • Relationship of QC Manager to Prime Contractor's superintendent	
Names & Qualifications	• Names and qualifications of personnel in the QC organization. Multi-page resumes are not desired. Qualifications of an individual should be confined to one or two pages and should relate to person's function in the QC organization. Pertinent information would include education and training, construction experience, quality control experience and management experience.	
Duties and Responsibilities	• The area of responsibility and authority of each individual in the QC organization is clearly stated.	
Outside Organizations	• A list of outside organizations such as testing laboratories, architects, and consulting engineers that will be employed and a description of the services they will provide.	
Appointment Letter(s)	• Letter appointing the QC Manager	
Submittal Procedures	• Submittal Review Procedure including names of persons authorized to sign submittals for the Contractor. • Submittal Status Log. • Specification matrix indicating who the authorized submittal reviewer, inspector, and testing lab personnel (both on-site and factory) will be for each technical specification section.	
Testing Lab Information	The Contractor must provide the following information for each independent testing laboratory for Government approval: 1. Functional description of lab's organizational structure. 2. List and resume of testing lab personnel. 3. Affidavit of compliance with applicable ASTM publications and certification that all lab work will be performed in accordance with contract technical specifications. 4. List of inspection equipment corresponding to each test noted in the testing log and equipment calibration certificate. 5. Certification from a nationally recognized agency. 6. Affidavits for special inspections must be submitted to the Contracting Officer before progress payments for the work are approved.	
Testing Plan and Log	• Testing plan includes all formal tests and the specification reference • Responsible parties identified for each test	
Rework Procedures	• Non-compliance check-off list (Log of Deficiencies Form)	

Documentation Procedures	• Specific statement in the QC reports indicating that a Professional Engineer inspected any designs and/or certifications for formwork, falsework, or erection procedures, if applicable. • QC/DRI Daily Report Form.	
List of Definable Features of Work	As a minimum, this will include each section of the specification cross referenced to the production schedule. For projects requiring a progress chart (Bar or Gantt Chart), the list of DFOW shall include but not be limited to all items of work on the schedule. For projects requiring a network analysis, the list of DFOW shall include but not be limited to all critical path activities.	
Preparatory and Initial Phase Checklists	• Dependent on the editing of Specification Section 01450; include a copy of the forms provided in Section 01450 or copies of the forms with the heading partially filled in (Spec Section, Contract Number, DFOW title and Schedule Activity Number) for each DFOW. • No initial development of the checklists is required, beyond inclusion of the sample checklists contained in Appendices G. and H.	
Personnel Matrix	Personnel assignment for each specification section on who is responsible for: • Review and approval of submittals • Perform and document the 3 Phases of Control • Perform and document the testing • Performing punch-out, pre-final, and final inspections	
Completion Inspection Procedures	Identify process and the responsible party(s) for documenting completion inspections for: • Punch-Out Inspections • Pre-Final Inspections • Final Acceptance Inspection	

Instructional Notes for Daily Production Report Form

Reports are required for each day that work is performed and shall accompany the submission of the Contractor QC Report prepared for the same day. This requirement shall commence at the beginning of the construction phase of work and continue through final completion of the Contract. Account for each calendar day throughout the life of the Contract. The reporting of work shall be identified by terminology consistent with the construction schedule. Contractor Production Reports are to be prepared, signed and dated by the Project Superintendent and shall contain the following information:

a. Date of report, report number, name of Contractor, Contract number, title and location of Contract and Superintendent present.
b. Weather conditions in the morning and in the afternoon including maximum and minimum temperatures.
c. Identify work performed by corresponding Schedule Activity No., PC#, Modification No., etc.
d. A list of Contractor and subcontractor personnel on the work site, their trades, employer, work location, description of work performed, hours worked by trade, daily total work hours on work site this date (incl. hours on continuation sheets), and total work hours from start of construction.
e. A list of job safety actions taken and safety inspections conducted. Indicate that safety requirements have been met including the results on the following:
    1) Was a job safety meeting held this date? (If YES, attach a copy of the meeting minutes.)
    2) Were there any lost time accidents this date? (If YES, attach a copy of the completed OSHA report.)
    3) Was crane/man lift/trenching/scaffold/high voltage electrical/high work/hazmat work done? (If YES, attach a statement or checklist showing inspection performed.)
    4) Was hazardous material/waste released into the environment? (If YES, attach a description of incident and proposed action.)
f. Identify Schedule Activity No. related to safety action and list safety actions taken today and safety inspections conducted.
g. Identify Schedule Activity No., Submittal # and list equipment/material received each day that is incorporated into the job.
h. Identify Schedule Activity No., Owner and list construction and plant equipment on the work site including the number of hours used.
i. Include a "remarks" section in this report which will contain pertinent information including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the Contract documents, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered and a record of visitors to the work site. For each remark given, identify the Schedule Activity No. that is associated with the remark.

Contractor Production Report (Continuation Sheet)

Additional space required to contain daily information on the Contractor Production Report will be placed on its Continuation Sheet(s). An unlimited number of Continuation Sheets may be added as necessary and attached to the Production Report.

CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

		DATE
CONTRACT NO	TITLE AND LOCATION	REPORT NO
CONTRACTOR	SUPERINTENDENT	
AM WEATHER	PM WEATHER	MAX TEMP (F) / MIN TEMP (F)

WORK PERFORMED TODAY

Schedule Activity No.	DEFINABLE FEATURE OF WORK, WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS

JOB SAFETY

WAS A JOB SAFETY MEETING HELD THIS DATE? (If YES attach copy of the meeting minutes)	☐ YES	☐ NO
WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? (If YES attach copy of completed OSHA report)	☐ YES	☐ NO
WAS CRANE/MANLIFT/TRENCHING/SCAFFOLD/HV ELEC/HIGH WORK/ HAZMAT WORK DONE? (If YES attach statement or checklist showing inspection performed.)	☐ YES	☐ NO
WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? (If YES attach description of incident and proposed action.)	☐ YES	☐ NO

TOTAL WORK HOURS ON JOB SITE, THIS DATE, INCL CON'T SHEETS	
CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT	
TOTAL WORK HOURS FROM START OF CONSTRUCTION	

Schedule Activity No.	DEFINABLE FEATURE OF WORK AND LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED ☐ SAFETY REQUIREMENTS HAVE BEEN MET.

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Schedule Activity No.	Submittal #	Definable Feature of Work and Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Schedule Activity No.	Owner	Definable Feature of Work and Description of Construction Equipment Used Today (incl Make and Model)	Hours Used

Schedule Activity No.	DEFINABLE FEATURE OF WORK AND REMARKS

CONTRACTOR/SUPERINTENDENT DATE

CONTRACTOR PRODUCTION REPORT

(CONTINUATION SHEET)

CONTRACT NO	TITLE AND LOCATION	DATE
		REPORT NO

WORK PERFORMED TODAY

Schedule Activity No.	DEFINABLE FEATURE OF WORK, WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS

Schedule Activity No.	DEFINABLE FEATURE OF WORK AND LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Schedule Activity No.	Submittal #	Definable Feature of Work and Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Schedule Activity No.	Owner	Definable Feature of Work and Description of Construction Equipment Used Today (incl Make and Model)	Hours Used

Schedule Activity No.	DEFINABLE FEATURE OF WORK AND REMARKS

INCLUDE ALL PERSONNEL WORK HOURS IN THE WORK PERFORMED SECTION ON THIS SHEET
INTO THE FRONT CONTRACTOR PRODUCTION REPORT

Instructional Notes for Preparatory Phase Checklist

Each DFOW that is in the Preparatory Phase shall have this checklist filled out for it. The checklist shall be identified by terminology consistent with the construction schedule. This checklist shall accompany the submission of to the Contractor QC Report of the same date.

a. Specification Section, date of report, and contract number shall be filled out. Duplicate this information in the header of the second page of the report.
b. Definable Feature of Work, Schedule Activity No. and Index # entry and format will match entry in the Preparatory Phase section of the Contractor QC Report
c. Personnel Present: Indicate the number of hours of advance notice that was given to the Government Representative and indicate (Yes/No checkboxes) whether or not the Government Rep was notified. Indicate the Names of Preparatory Phase Meeting attendees, their position and company/government they are with.
d. Submittals: Indicate if submittals have been approved (Yes/No checkboxes), if no indicate what has not been submitted. Are materials on hand (Yes/No checkboxes) and if not, what items are missing. Check delivered material/equipment against approved submittals and comment as required.
e. Material Storage: Indicate if materials/equipment is stored properly (Yes/No checkboxes) and if not, what action is/was taken.
f. Specifications: Review and comment on Specification Paragraphs that describe the material/equipment, procedure for accomplishing the work and clarify any differences.
g. Preliminary Work & Permits: Ensure preliminary work is in accordance with the Contract documents and necessary permits are on file, if not, describe the action taken.
h. Testing: Identify who performs tests, the frequency, and where tests are to occur. Review the testing plan, report abnormalities, and if the test facilities have been approved.
i. Safety: Indicate if the activity hazard analysis has been approved (Yes/No checkboxes) and comment on the review of the applicable portions of the EM 385-1-1.
j. Meeting Comments: Note comments and remarks during the Preparatory Phase Meeting that was not addressed in previous sections of this checklist.
k. Other Items or Remarks: Note any other remarks or items that were a result of the Preparatory Phase.
l. QC Manager will sign and date the checklist.

PREPARATORY PHASE CHECKLIST

(CONTINUED ON SECOND PAGE)

CONTRACT NO	DEFINABLE FEATURE OF WORK	SPEC SECTION	DATE
		SCHEDULE ACT NO.	INDEX #

PERSONNEL PRESENT

GOVERNMENT REP NOTIFIED _____ HOURS IN ADVANCE: YES ☐ NO ☐

NAME	POSITION	COMPANY/GOVERNMENT

SUBMITTALS

REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER. HAVE ALL SUBMITTALS BEEN APPROVED? YES ☐ NO ☐

IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED?

ARE ALL MATERIALS ON HAND? YES ☐ NO ☐

IF NO, WHAT ITEMS ARE MISSING?

CHECK APPROVED SUBMITTALS AGAINST DELIVERED MATERIAL. (THIS SHOULD BE DONE AS MATERIAL ARRIVES.)

COMMENTS:

MATERIAL STORAGE

ARE MATERIALS STORED PROPERLY? YES ☐ NO ☐

IF NO, WHAT ACTION IS TAKEN?

SPECIFICATIONS

REVIEW EACH PARAGRAPH OF SPECIFICATIONS.

DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK.

CLARIFY ANY DIFFERENCES.

PRELIMINARY WORK & PERMITS

ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.

IF NOT, WHAT ACTION IS TAKEN?

PREPARATORY PHASE CHECKLIST

(CONTINUED FROM FIRST PAGE)

CONTRACT NO	DEFINABLE FEATURE OF WORK	SPEC SECTION	DATE
		SCHEDULE ACT NO.	INDEX #

TESTING

IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM.

WHEN REQUIRED?

WHERE REQUIRED?

REVIEW TESTING PLAN.

HAS TEST FACILITIES BEEN APPROVED?

SAFETY

ACTIVITY HAZARD ANALYSIS APPROVED? YES ☐ NO ☐

REVIEW APPLICABLE PORTION OF EM 385-1-1.

MEETING COMMENTS

NAVY PWD/ROICC COMMENTS DURING MEETING.

OTHER ITEMS OR REMARKS

OTHER ITEMS OR REMARKS:

QC MANAGER DATE

Instructional Notes for Initial Phase Checklist

Each DFOW that is in the Initial Phase shall have this checklist filled out for it. The checklist shall be identified by terminology consistent with the construction schedule. This checklist shall accompany the submission of the Contractor Quality Control Report of the same date.

a. Specification Section, date of report, and contract number shall be entered.
b. Definable Feature of Work, Schedule Activity No. and Index # entry and format will match entry in the Initial Phase section of the Contractor QC Report.
c. Personnel Present: Indicate the number of hours of advance notice that was given to the Government Representative and indicate (Yes/No checkboxes) whether or not the Government Rep was notified. Indicate the Names of Initial Phase Meeting attendees, their position and company/government they are with.
d. Procedure Compliance: Comment on compliance with procedures identified at Preparatory Phase of Control and assurance that work is in accordance with contract documents.
e. Preliminary Work: Ensure preliminary work being placed is in compliance and if not, what action is/was taken.
f. Workmanship: Identify where initial work is located; if a sample panel is required (Yes/No checkboxes); is the initial work the sample (Yes/No checkboxes); and if Yes, describe the panel location and precautions taken to preserve the sample.
g. Resolution: Comment on any differences and the resolutions reached.
h. Check Safety: Comment on the safety review of the job conditions.
i. Other: Note any other remarks or items that were a result of the Initial Phase.
j. QC Manager will sign and date the checklist.

INITIAL PHASE CHECKLIST

		SPEC SECTION	DATE
CONTRACT NO	DEFINABLE FEATURE OF WORK	SCHEDULE ACT NO.	INDEX #

PERSONNEL PRESENT

GOVERNMENT REP NOTIFIED _____ HOURS IN ADVANCE: YES ☐ NO ☐

NAME	POSITION	COMPANY/GOVERNMENT

PROCEDURE COMPLIANCE

IDENTIFIY FULL COMPLIANCE WITH PROCEDURES IDENTIFIED AT PREPARATORY. COORDINATE PLANS, SPECIFICATIONS, AND SUBMITTALS.

COMMENTS:

PRELIMINARY WORK

ENSURE PRELIMINARY WORK IS COMPLETE AND CORRECT. IF NOT, WHAT ACTION IS TAKEN?

WORKMANSHIP

ESTABLISH LEVEL OF WORKMANSHIP.

WHERE IS WORK LOCATED?

IS SAMPLE PANEL REQUIRED? YES ☐ NO ☐

WILL THE INIITAL WORK BE CONSIDERED AS A SAMPLE? YES ☐ NO ☐

(IF YES, MAINTAIN IN PRESENT CONDITION AS LONG AS POSSIBLE AND DESCRIBE LOCATION OF SAMPLE)

RESOLUTION

RESOLVE ANY DIFFERENCES.

COMMENTS:

CHECK SAFETY

REVIEW JOB CONDITIONS USING EM 385-1-1 AND JOB HAZARD ANALYSIS

COMMENTS:

OTHER

OTHER ITEMS OR REMARKS

QC MANAGER DATE

Instructional Notes for Testing Plan and Log

As tests are performed, the QC Manager shall record on the "Testing Plan and Log" the date the test was conducted, the date the test results were forwarded to the Contracting Officer, remarks and acknowledgement that an accredited or Contracting Officer approved testing laboratory was used. Attach a copy of the updated "Testing Plan and Log" to the last daily Contractor QC Report of each month.

TESTING PLAN AND LOG

CONTRACT NUMBER			CONTRACT TITLE AND LOCATION							CONTRACTOR	
SPECIFICATION SECTION AND PARAGRAPH A NUMBER	SCHEDULE CTIVITY ID	TEST REQUIRED	ACCREDITED/ APPROVED LO LAB		SAMPLED BY	TESTED BY	CATION OF TEST		DATE COMPLETED	DATE FORWARDED TO CONTR. OFF.	REMARKS
			YES	NO			ON SITE	OF F SITE			

Instructional Notes for Rework Item List

The QC Manager shall maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. Attach a copy of the "Rework Items List" to the last daily Contractor QC Report of each month. The Contractor shall be responsible for including on this list items needing rework including those identified by the Contracting Officer.

REWORK ITEMS LIST

Contract No. and Title:

Contractor:

NUMBER	DATE IDENTIFIED	DEFINABLE FEATURE OF WORK AND DESCRIPTION	CONTRACT REQUIREMENT (Spec. Section and Par. No., Drawing No. and Detail No., etc.)	ACTION TAKEN BY QC MANAGER	RESOLUTION	DATE COMPLETED

CONSTRUCTION CONTRACT NON-COMPLIANCE NOTICE (CCN) NAVFAC 4330/36

A. DESCRIPTION/PURPOSE

This form is used to notify construction Contractors of deficiencies and to record corrective action taken. It is drafted by QA personnel, signed by the appropriate Government representatives and delivered to the appropriate representative of the Construction Contractor who signs to acknowledge receipt of it.

B. PREPARATION INSTRUCTION

Contractor/Responsible Individual: Enter Construction Contractor's company name.
Contract Number and Title: Enter the number of the construction Contract, the title of the Contract."
Notice Number: Number notices sequentially by construction contract.
Date: Enter date of notice using Navy dating system; e.g., 11 Dec 2004
Spec Paragraph and/or Drawing Number: Enter appropriate reference to construction contract documents.
Reference: Enter applicable reference, if any, to shop drawings, certifications, QC Reports.
Contractor Reply by Date: Enter a date that the PWD/ROICC expects a reply from the Contractor.
Deficiency in Workmanship and/or Material: Enter brief narrative description of item not in compliance. Be specific.
Corrective Action Accomplished: Completed by Construction Contractor indicating corrective action to correct deficiency noted.
QA Representative: Signed by QA Representative.
CM: Signed by the Designated Government Representative for the particular construction Contract.
Contractor's Acknowledgement: Signed by the responsible individual.

C. GENERAL INSTRUCTIONS.

When the QA Rep notes a construction deficiency, the form should be completed listing only one deficiency on each notice. The QA Rep fills out the form, then sign and date the notice. The QA Rep then obtains the signature of the appropriate Government representative. After the Government representative signs the form, the QA Rep presents it to the QC Manager. The QC Manager should acknowledge receipt of the notice by signing.

After the Construction Contractor’s Representative signs the form, that person is given the original. When the item has been corrected, the Contractor should return the original with the corrective actions noted to the QA Rep. The form should be accepted only after the QA Rep is satisfied that the item is properly corrected.

If appropriate, the QA Rep shall take a photograph of the deficiency and attach a copy to the CCN.

E. CONTRACTOR REPLY DATE

Due with the daily QC Report for the day the deficiency was noted.

F. DISTRIBUTION

The original is given to the Contractor’s QC Manager or Superintendent so the corrective action can be recorded. When the original is received back from the Contractor indicating that corrective action has been taken the original is filed with the appropriate QC Report.

The QA Rep retains a copy with their files. It is used to follow up correction. At the close of each contract the QA Rep shall transfer all uncorrected deficiencies still remaining to the final inspection punch list. Payment deductions or appropriate retention of progress payments should be taken until all corrective actions are acceptable to the QA Rep.

CONSTRUCTION CONTRACT NON-COMPLIANCE NOTICE
NAVFAC 4330/36 (Rev. 3/03)

CONTRACTOR/RESPONSIBLE INDIVIDUAL	NOTICE NUMBER
CONTRACT NUMBER AND TITLE	DATE
SPECIFICATION PARAGRAPH AND/OR DRAWING NUMBER	CONTRACTOR REPLY BY DATE
REFERENCE (Shop Drawing, Certification, CQC Report Number, etc.)	

DEFICIENCY IN WORKMANSHIP AND/OR MATERIAL

CORRECTIVE ACTION ACCOMPLISHED (This block filled in by Contractor)

QA REPRESENTATIVE

NAME: TITLE:

DATE NOTED: SIGNATURE: _____

CM

NAME: TITLE:

DATE ISSUED: SIGNATURE: _____

CONTRACTOR'S ACKNOWLEDGMENT

NAME: TITLE:

DATE RCV'D: SIGNATURE: _____

This Notice does NOT authorize any work not included in the Contract and shall not constitute a basis for additional payment or time. If you are in disagreement with this Notice, notify the Contracting Officer immediately in writing.

DISTRIBUTION
Original - QC Manager or Superintendent (Original)
Copies to - Contractor's Home Office, QA Representative, Contract File

☐ Initial Report
☐ Follow-up Report
☐ Final Report

Contractor Significant Incident Report (CSIR)

1. General Information

Contracting Activity/ROICC Office:

Accident Classification:

☐ Injury ☐ Fatality ☐ Environment ☐ Procedural Issues ☐ Lessons Learned
☐ Illness ☐ Property Damage ☐ Other_____

Involving:

☐ Confined Space ☐ Equip/Mrt Ver/Mat Handling (Heavy Construction Equip.) ☐ Hazardous Material
☐ Crane and Rigging ☐ Equip/Mrt Ver/Mat Handling (Material Handling) ☐ Trenching/Excavation
☐ Diving ☐ Equip/Mrt Ver/Mat Handling (Man-Lift/Elevated Platform) ☐ Waterfront/Marine
☐ Demolition/Renovation ☐ Fall from Ladder ☐ Fall from Scaffold ☐ Other_____
☐ Electrical ☐ Fall from Roof ☐ Fire

2. Personal Information

Name (Last. First. MI):	**Age:**	**Sex:**

Job Title/Description:	**Employed By:**
Supervisor Name (Last, First, MI) & Title:	**Was the person trained to perform this activity/task?** ☐ **Yes** ☐ **No**
What type of training was received (OJT, classroom, etc)?	**Date of the most recent formal training and topics discussed?**

3. Witness Information

Witness #1: Name (Last, First, MI):	**Job Title/Description:**
Employed By:	**Supervisor Name (Last, First, MI):**
Witness #2: Name (Last, First, MI):	**Job Title/Description:**
Employed By:	**Supervisor Name (Last, First, MI):**

Additional Witnesses: ☐ **Yes** ☐ **No**
(List any additional witnesses on a separate sheet and attach.)

4. Contract Information

Type of Contract:

A/E BOS CLEAN Construction Design Build FSCC FSSC

JOC RAC Service Other_____

Contract Number & Title:	**Industrial Group & Industrial Type:**
Prime Contractor Name/Address/Phone & Fax No:	**Sub Contractor Name/Address/Phone & FAX No:**
Safety Manager (Last, First, MI):	**Safety Manager (Last, First, MI):**
Insurance Carrier:	**Insurance Carrier:**

5. Accident Description

Date of Accident:	**Time of Accident:**	**Exact Location of Accident:**

Describe the accident in detail in your words: ***(Use the back of page if you need additional space)***

Direct Cause(s) of Accident:

Indirect Cause(s) of Accident:

Action(s) taken to prevent re-occurrence or provide on-going corrective actions:

Corrective Action Beginning Date:	**Anticipated Completion Date:**

Personal Protective Equipment:

☐ Available and used ☐ Available and not used ☐ Not Required

☐ Not related to Mishap ☐ Wrong PPE for job

List PPE Used:

Type of Construction Equipment (Make, Model, Serial #, VIN#) Involved:

Was Hazardous Material Spilled/Released? ☐ **Yes** ☐ **No**

Please List Hazardous Material(s) Involved:

Who provided first aid or cleanup of mishap site?

Any blood-borne pathogen exposure, other than EMTs? ☐ **Yes** ☐ **No**

Who?

List OSHA and WM-385-1-1 standards that were violated:

Was site secured and witness statements taken immediately? ☐ **Yes** ☐ **No**

By Whom?

6. Injury Illness/Fatality Information

Severity of Injury/Illness:

- ☐ Fatality
- ☐ Lost Workday Case Involving Days Away From Work
- ☐ Temporary Disabillity
- ☐ Recordable Workday Case Involving Restricted Duty
- ☐ Permanent Total Disability
- ☐ Other Recordable Case
- ☐ Recordable First Aid Case
- ☐ Permanent Partial Disability
- ☐ Non-Recordable Case
- ☐ No Injury

Estimated Days Lost:	**Estimated Days Hospitalized:**	**Estimated Days Restricted Duty:**

List Primary Body Part Affected:	**List Other Body Part(s) Affected:**

Nature of Injury/Illness for Primary Body Part (Examples: Amputation, Burn, Hernia):

Type of Accident (Examples: Fall same level, Lifting, Bitten, Exerted):

Source of Accident (Examples: Crane, Carbon Monoxide, Ladder, Welding Equipment):

7. Casual Factors *(Explain answers on supplementary sheet)*

• **Design – Design of facility, workplace, or equipment was a factor?**	☐ **Yes**	☐ **No**
• **Inspection/Maintenance – Inspection & Maintenance procedures were a factor?**	☐ **Yes**	☐ **No**
• **Persons Physical Condition – In your opinion, the physical condition of the person was a factor?**	☐ **Yes**	☐ **No**
• **Operation Procedures – Operating procedures were a factor?**	☐ **Yes**	☐ **No**
• **Job Practices – One or more job safety/health practices not being followed when the accident occurred contributed to the accident?**	☐ **Yes**	☐ **No**
• **Human Factors – One or more human factors, such as a person's size or strength contributed to the accident?**	☐ **Yes**	☐ **No**
• **Environmental Factors – Heat, cold, dust, sun, glare, etc., contributed to the accident?**	☐ **Yes**	☐ **No**
• **Chemical and Physical Agent Factors – Exposure to chemical agents, such as dust, fumes, mist, vapors, or physical agents such as noise, radiation, etc., contributed to the accident?**	☐ **Yes**	☐ **No**
• **Office Factors – Office setting such as lifting office furniture, carrying, stooping, contributed to the accident?**	☐ **Yes**	☐ **No**
• **Support Factors – Inappropriate tools/resources were provided to perform the task?**	☐ **Yes**	☐ **No**
• **PPE – Improper selection, use or maintenance of PPE contributed to the accident?**	☐ **Yes**	☐ **No**
• **Drugs/Alcohol – In your opinion, were drugs or alcohol a factor?**	☐ **Yes**	☐ **No**
• **Job Hazard Analysis – The lack of an adequate (IAW-EM-385-1-1 Sec 01.A) activity hazard analysis was a contributing factor.**	☐ **Yes**	☐ **No**
• **Job Hazard Analysis – JHA was not site specific and/or did not address the type of work/operations performed when the mishap occurred.**	☐ **Yes**	☐ **No**
• **Management – A lack of adequate supervision contributed to the accident.**	☐ **Yes**	☐ **No**
• **Management – Inadequate information was provided at pre con meeting.**	☐ **Yes**	☐ **No**

8. OSHA Information			
Date OSHA was Notified:	**Date(s) of Investigation:**	**Date of citation:** ***(Attach Copy)***	**Dollar amount of Penalties:**

9. Report Preparer	
Name (Last, First, MI):	**Date of Report:**
Title: **Employer:** **Phone #:**	**Signature:**

CONTRACTOR SIGNIFICANT INCIDENT REPORT (CSIR) INSTRUCTIONS

Complete Sections Appropriate to Incident (Rev. 06/02).

NOTE: THE ATTACHED CSIR FORM IS TO BE USED BY CONTRACTORS TO RECORD THE RESULTS OF THEIR ACCIDENT/INCIDENTS INVESTIGATIONS AND SHALL BE PROVIDED TO THE CONTRACTING OFFICER WITHIN THE REQUIRED TIMEFRAMES.

GENERAL. Complete a separate report for each person who was injured in the accident. A report needs to be completed for all OSHA recordable accidents, property damage in excess of $2000.00 (This amount is for record purposes only. GOV is not required to enter property damage reports into FAIR database if it is less than $10,000.00.), WHE accidents, or near miss/high visibility mishaps. Please type or print legibly. Appropriate items shall be marked with an "X" in box(es), non-applicable sections shall be marked "N/A". If additional space is needed, provide the information on a separate sheet of paper and attach to the completed form.

Mark the report:
INITIAL – If this form is being used as initial notification of a Fatality or High Visibility Mishap. The initial form is due within 4 hours of a serious accident. A form marked 'Follow-up' or 'Final' is required within 5 days.
FOLLOW-UP – If you are providing additional information on a report previously submitted.
FINAL – If you are providing a completed report and expect no changes.

SECTION 1 – GENERAL INFORMATION

CONTRACTING ACTIVITY/ROICC OFFICE - Enter the name and address of the Contracting Office administering the contract under which the mishap took place (e.g. ROICC MCBH, ROICC NORFOLK, PWC GUAM, etc.).

ACCIDENT CLASSIFICATION - INJURY/ILLNESS/FATALITY/PROPERTY DAMAGE/-PROCEDURAL ISSUES/-ENVIRONMENTAL/LESSONS LEARNED/OTHER – Mark the appropriate block(s) if the incident resulted in any of these conditions.

INVOLVING - If the mishap involved any of the conditions listed under "Involving" mark the appropriate box(es). Specific questions associated with each of these conditions are available from the Contracting Officer to assist you in your investigation. When these questions are used they shall be attached as part of this report.

SECTION 2 - PERSONAL INFORMATION

NAME - Enter last name, first name, middle initial of person involved.
AGE - Enter age.
SEX - Enter M for Male and F for Female.
JOB TITLE/DESCRIPTION - Enter the job title/description assigned to the injured person (e.g. carpenter, laborer, surveyor, etc.).
EMPLOYED BY - Enter employment company name of the person involved.
SUPERVISOR'S NAME & TITLE - Enter name and title of the immediate supervisor.
WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? - For the purpose of this section "trained" means the person has been provided the necessary information (either formal and/or on-the-job (OJT) training) to competently perform the activity/task in a safe and healthful manner.
TYPE OF TRAINING - Indicate the specific type of training (classroom or on-the-job) that the injured person received before the accident happened.
DATE OF MOST RECENT FORMAL TRAINING/TOPICS DISCUSSED - Enter the month, day, and year of the last *formal* training completed that covered the activity/task being performed at the time of the accident. List topics that were discussed at the training identified above.

SECTION 3 - WITNESS INFORMATION

The following applies to Witness #1 and Witness #2:
WITNESS NAME - Enter last name, first name, middle initial of the witness.
JOB DESCRIPTION/TITLE - Enter the job title/description assigned to the witness (e.g. carpenter, laborer, surveyor, etc.).
EMPLOYED BY - Enter the name of the employment company of the witness.
SUPERVISORS NAME - Enter name of immediate supervisor of the witness.
ADDITIONAL WITNESSES - Provide same information, as above, for each witnesses. Use additional pages if necessary.

SECTION 4 - CONTRACTOR INFORMATION

TYPE OF CONTRACT - Mark appropriate box. A/E means architect/engineer. If "OTHER" is marked, specify type of contract on line provided.
CONTRACT NUMBER/TITLE - Enter complete contract number and tile of prime contract (e.g. N62477-85-C-0100, 184 Pearl City Hsg. Revitalization).
CONSTRUCTION INDUSTRIAL GROUP AND INDUSTRIAL TYPE – This is the type of construction that will be done at this project.

1. First, you must choose the Industrial Group. You have 4 choices to choose from: (**NOTE**! Review of the Industrial Types below and knowing what the projects scope of work is will assist you in deciding what the Industrial Group should be.)
   a. Buildings
   b. Heavy Industrial
   c. Infrastructure
   d. Light Industrial
2. Once you have chosen the Industrial Group, you now select the Industrial Type. You have multiple choices under each Group, chose the one you feel fits the project most closely because on most projects there won't be an exact match:
   a. Buildings:
      (1) Communications Ctr.
      (2) Dormitory/Hotel
      (3) High-rise Office
      (4) Hospital
      (5) Housing
      (6) Laboratory
      (7) Low-rise Office
      (8) Maintenance Facility
      (9) Parking Garage
      (10) Physical Fitness Ctr.
      (11) Restaurant/Nightclub
      (12) School
      (13) Warehouse
   b. Heavy Industrial:
      (1) Chemical Mfg.
      (2) Electrical (Generating)
      (3) Environmental
      (4) Metals Refining/Processing
      (5) Mining
      (6) Natural Gas Processing
      (7) Oil Exploration/Production
      (8) Oil Refining
      (9) Pulp and Paper
   c. Infrastructure:
      (1) Airport
      (2) Electrical Distribution
      (3) Flood Control
      (4) Highway
      (5) Marine Facilities
      (6) Navigation
      (7) Rail
      (8) Tunneling
      (9) Water/Wastewater
   d. Light Industrial:
      (1) Automotive Assembly/Mfg.
      (2) Consumer Products Mfg.
      (3) Foods
      (4) Microelectronics Mfg.
      (5) Office Products Mfg.
      (6) Pharmaceuticals Mfg.

CONTRACTOR'S NAME/ADDRESS/PHONE NUMBER

(1) PRIME - Enter the exact name (title of firm), address, phone and fax numbers of the prime contractor.
(2) SUBCONTRACTOR - Enter the exact name, address, phone and fax numbers of any subcontractor involved in the accident.

SAFETY MANAGER'S NAME

(1) PRIME - Enter the name of the prime contractor safety manager.
(2) SUBCONTRACTOR - Enter the name of the subcontractors safety manager.

INSURANCE CARRIER

(1) PRIME - Enter the exact name/title of the prime's insurance company. Policy number not required.
(2) SUBCONTRACTOR - Enter the exact name of the subcontractor's insurance company. Policy number not required.

SECTION 5 - ACCIDENT DESCRIPTION

DATE OF ACCIDENT - Enter the month, day, and year of accident.
TIME OF ACCIDENT - Enter the local time of accident in military time. Example: 14:30 hrs (not 2:30 p.m.).
EXACT LOCATION OF ACCIDENT - Enter facts needed to locate the accident scene (installation/project name, building/room number, street, direction and distance from closest landmark, etc.).
DESCRIBE THE ACCIDENT IN DETAIL. Fully describe the accident in the space provided. If property damage involved, give estimated dollar amount of damage and/or repair costs involved. If additional space is needed continue on a separate sheet and attach to this report. Give the sequence of events that describe what happened leading up to and including the accident. Fully identify personnel and equipment involved and their role(s) in the accident. Ensure that relationships between personnel and

equipment are clearly specified. Ensure questions below regarding direct cause(s), indirect cause(s), and actions taken are answered. **NOTE!** Review questions in Section 7 below before completing.
DIRECT CAUSE(S) - The direct cause is that single factor which most directly lead to the accident. See examples below.
INDIRECT CAUSE(S) - Indirect cause are those factors, which contributed to, but did not directly initiate the occurrence of the accident.

Examples for Direct and Indirect Cause:
1. Employee was dismantling scaffold and fell 12 feet from unguarded opening.
Direct cause: Failure to provide fall protection at elevation
Indirect causes: Failure to enforce safety requirements: improper training/motivation of employee (possibility that employee was not knowledgeable of fall protection requirements or was lax in his attitude toward safety); failure to ensure provision of positive fall protection whenever elevated; failure to address fall protection during scaffold dismantling in phase hazard analysis.

2. Private citizen had stopped his vehicle at intersection for red light when vehicle was struck in rear by contractor vehicle. (note contractor vehicles was in proper safe working condition.)
Direct cause: Failure of contractor driver to maintain control of and stop contractor vehicle within safe distance.
Indirect cause: Failure of employee to pay attention to driving (defensive driving).

ACTION(S) TAKEN TO PREVENT RE-OCCURRENCE OR PROVIDE ON-GOING CORRECTIVE ACTIONS. Fully describe all the actions taken, anticipated, and recommended to eliminate the cause(s) and prevent reoccurrence of similar accidents/illnesses. Continue on back or additional sheets of paper if necessary to fully explain and attach to the complete report form.
CORRECTIVE ACTION DATES -
(1) Beginning - Enter the date when the corrective action(s) identified above will begin.
(2) Anticipated Completion - Enter the date when the corrective action(s) identified above will be completed.
PERSONAL PROTECTIVE EQUIPMENT (PPE) - Mark appropriate box(es) and list PPE which was being used by the injured person at the time of the accident (e.g. protective clothing, shoes, glasses, goggles, respirator, safety belt, harness, etc.)
TYPE OF CONTRACTOR EQUIPMENT - Enter the Serial Number, Model Number and specific type of equipment involved in the mishap (e.g. dump truck (off highway), crane (rubber tire), pump truck (concrete), etc.).
WAS HAZARDOUS MATERIAL SPILLED/RELEASED? - Mark appropriate block and list name(s) of any reportable quantities of hazardous materials spilled/released during the mishap.
WHO PROVIDED FIRST AID OR CLEAN-UP OF MISHAP SITE? - List name(s) of individual(s) and employer, if known.
ANY BLOOD-BORNE PATHOGEN EXPOSURE, OTHER THAN EMT? - Mark appropriate block and list name(s) of individual(s) and employer, if known.
LIST OSHA AND/OR EM 385-1-1 STANDARDS THAT WERE VIOLATED. - Self explanatory.
WAS SITE SECURED AND WITNESS STATEMENT TAKEN IMMEDIATELY? - Mark appropriate block and list by whom.

SECTION 6 - INJURY/ILLNESS/FATALITY INFORMATION

SERVERITY OF INJURY/ILLNESS – Mark appropriate box.
ESTIMATED DAYS LOST - Enter the estimated number of workdays the person will lose from work. Update when final data is known.
ESTIMATED DAYS HOSPITALIZED - Enter the estimated number of workdays the person will be hospitalized. Update when final data is known.
ESTIMATED DAYS RESTRICTED DUTY - Enter the estimated number of workdays the person, as a result of the accident, will not be able to perform all of their regular duties. Update when final data is known.
BODY PART(S) AFFECTED - Enter the most appropriate primary and when applicable, secondary, etc. body part(s) affected (e.g. arm: wrist: abdomen: single eye; jaw : both elbows: second finger: great toe: collar bone: kidney, etc.).
NATURE OF INJURY/ILLNESS FOR PRIMARY BODY PART - Enter the most appropriate nature of injury/illness (e.g. amputation, back strain, dislocation, laceration, strain, asbestosis, food poisoning, heart conditions, etc.).
TYPE AND SOURCE OF INJURY/ILLNESS - Type and Source Codes are used to describe what caused the incident.
(1) TYPE Code stands for an "Action" (Example: Worker, installing conduit, lost his balance and fell five feet from a ladder. Type Code: Fell different levels".) Select the most appropriate Type of injury from the list below:

TYPE OF INJURY/ILLNESS

STRUCK BY/AGAINST	CONTACTED CONTACTED WITH (INJURED PERSON MOVING) CONTACTED BY (OBJECT WAS MOVING)
FELL, SLIPPED, TRIPPED SAME LEVEL/DIFFERENT LEVEL/NO FALL	EXERTED LIFTED, STRAINED BY (SINGLE ACTION) STRESSED BY (REPEATED ACTION)
CAUGHT ON/IN/BETWEEN	EXPOSED INHALED/INGESTED/ABSORBED/EXPOSED TO
PUNCTURED, LACERATED PUNCTURED BY/CUT BY/STUNG BY/BITTEN BY	TRAVELING IN

(2) SOURCE Code stands for an "object or substance." (Example: Worker, installing conduit, lost his balance and fell five feet from a ladder. Source Code: "Ladder".) Select the most appropriate Source of injury from the list below:

SOURCE OF INJURY/ILLNESS

BUILDING OR WORKING AREA WALKING/WORKING AREA STAIRS/STEPS LADDER FURNITURE BOILER/PRESSURE VESSEL EQUIPMENT LAYOUT WINDOWS/DOORS ELECTRICITY	DUST, VAPOR, ETC. DUST (SILICA, COAT, ETC.) FIBERS ASBESTOS GASES CARBON MONOXIDE MIST, STEAM, VAPOR, FUME WELDING FUMES PARTICLES (UNIDENTIFIED)
ENVIRONMENT CONDITION TEMPERATURE EXTREME (INDOOR) WEATHER (ICE, RAIN, HEAT, ETC.) FIRE, FLAME, SMOTE (NOT TABACCO) NOISE RADIATION LIGHT VENTILATION TOBACCO SMOKE STRESS (EMOTIONAL) CONFINED SPACE	CHEMICAL, PLASTIC, ETC. DRY CHEMICAL - CORROSIVE DRY CHEMICAL - TOXIC DRY CHEMICAL - EXPLOSIVE DRY CHEMICAL - FLAMMABLE LIQUID CHEMICAL - CORROSIVE LIQUID CHEMICAL - TOXIC LIQUID CHEMICAL - EXPLOSIVE LIQUID CHEMICAL - FLAMMABLE PLASTIC WATER MEDICINE
MACHINE OR TOOL HAND TOOL (POWERED: SAW, GRINDER, ETC.) HAND TOOL (NON POWERED) MECHANCIAL POWER TRANSMISSION APPARATUS GUARD, SHIELD (FIXED, MOVEABLE, INTERLOCK) VIDEO DISPLAY TERMINAL PUMP, COMPRESSOR, AIR PRESSURE TOOL HEATING EQUIPMENT WELDING EQUIPMENT	INANIMATE OBJECT BOX, BARREL, ETC. PAPER METAL ITEM, MINERAL NEEDLE GLASS SCRAP, TRASH, WOOD FOOD CLOTHING, APPAREL, SHOES
MACHINE OR TOOL HAND TOOL (POWERED: SAW, GRINDER, ETC.) HAND TOOL (NON POWERED) MECHANCIAL POWER TRANSMISSION APPARATUS GUARD, SHIELD (FIXED, MOVEABLE, INTERLOCK) VIDEO DISPLAY TERMINAL PUMP, COMPRESSOR, AIR PRESSURE TOOL HEATING EQUIPMENT WELDING EQUIPMENT	INANIMATE OBJECT BOX, BARREL, ETC. PAPER METAL ITEM, MINERAL NEEDLE GLASS SCRAP, TRASH, WOOD FOOD CLOTHING, APPAREL, SHOES
VEHICLE AS DRIVER OF PRIVATELY OWNED, RENTAL VEH. AS PASSENGER OF PRIVATELY OWNED, RENTAL VEH. DRIVER OF GOVERNMENT VEHICLE PASSENGER OF GOVERNMENT VEHICLE COMMON CARRIER (AIRLINE, BUS, ETC.) AIRCRAFT (NOT COMMERCIAL) BOAT, SHIP, BARGE	ANIMATE OBJECT DOG OTHER ANIMAL PLANT INSECT HUMAN (VIOLENCE) HUMAN (COMMUNICABLE DISEASE) BACTERIA, VIRUS (NOT HUMAN CONTACT)
MATERIAL HANDLING EQUIPMENT EARTHMOVER (TRACTOR, BACKHOE, ETC.) CONVEYOR (FOR MATERIAL AND EQUIPMENT) ELEVATOR, ESCALATOR, PERSONNEL HOIST HOIST, SLING CHAIN, JACK CRANE FORKLIFT HANDTRUCK , DOLLY	PERSONAL PROTECTIVE EQUIPMENT PROTECTIVE CLOTHING, SHOES, GLASSES, GOGGLES RESPIRATOR, MASK DIVING EQUIPMENT SAFETY BELT, HARNESS PARACHUTE

SECTION 7 - CAUSAL FACTORS

Review thoroughly. Answer each question by marking the appropriate block. **NOTE!** If any answer is yes, explain in section 5 above.

(1) **DESIGN** - Did inadequacies associated with the building or work site play a role? Would an improved design or layout of the equipment or facilities reduce the likelihood of similar accidents? Were the tools or other equipment designed and intended for the task at hand?

(2) **INSPECTION/MAINTENANCE** - Did inadequately or improperly maintained equipment, tools, workplace, etc., create or worsen any hazards that contributed to the accident? Would better equipment, facility, work site or work activity inspections have helped avoid the accident?
(3) **PERSONS PHYSICAL CONDITION** - Do you feel that the accident would probably not have occurred if the employee was in "good" physical condition? If the person involved in the accident had been in better physical condition, would the accident have been less severe or avoided altogether? Was overexertion a factor?
(4) **OPERATION PROCEDURES** - Did lack of or inadequacy within established operating procedures contribute to the accident? Did any aspect of the procedures introduce any hazard to, or increase the risk associated with the work process? Would establishment or improvement of operating procedures reduce the likelihood of similar accidents?
(5) **JOB PRACTICES** - Were any of the provision of the Safety and Health Requirements Manual (EM 385-1-1) violated? Was the task being accomplished in a manner which was not in compliance with an established job hazard analysis or activity hazard analysis? Did any established job practice (including EM 385-1-1) fail to adequately address the task or work process? Would better job practices improve the safety of the task?
(6) **HUMAN FACTORS** - Was the person under undue stress (either internal or external to the job)? Did the task tend toward overloading the capabilities of the person: i.e., did the job require tracking and reacting to many external inputs such as displays, alarms, or signals? Did the arrangement of the workplace tend to interfere with efficient task performance? Did the task require reach strengths, endurance, agility, etc., at or beyond the capabilities of the employee? Was the work environment ill-adapted to the person? Did the person need more training, experience, or practice in doing the task? Was the person inadequately rested to perform safely?
(7) **ENVIRONMENTAL FACTORS** - Did any factors such as moisture, humidity, rain, snow, sleet, hail, ice, fog, cold, heat, sun temperature changes, wind, tides, floods, currents, terrain; dust, mud, glare, pressure changes, lighting, etc., play a part in the accident?
(8) **CHEMICAL AND PHYSICAL AGENT FACTORS** - Did exposure to chemical agents (either single shift exposure or long-term exposure such as dusts, fibers, (asbestos, etc.), silica, gases (carbon, monoxide, chlorine, etc.), mists, steam, vapors, fumes, smoke, other particulates, liquid or dry chemicals that are corrosive, toxic, explosive or flammable, by-products of combustion or physical agents such as noise, ionizing radiation, non-ionizing radiation (UV radiation created during welding, etc.) contribute to the accident/incident?
(9) **OFFICE FACTORS** - Did the fact that the accident occurred in an office setting or to an office worker have a bearing on its cause? For example, office workers tend to have less experience and training in performing tasks such as lifting office furniture. Did physical hazards within the office environment contribute to the hazard?
(10) **SUPPORT FACTORS** - Was the person using an improper tool for the job? Was inadequate time available or utilized to safely accomplish the task? Were less than adequate personnel resources (in terms of employee skills, number of workers, and adequate supervision) available to get the job done properly? Was funding available, utilized and adequate to provide proper tools, equipment, personnel, site preparation, etc.
(11) **PERSONAL PROTECTIVE EQUIPMENT** - Did the person fail to use appropriate personal protective equipment (gloves, eye protection, hard-toed shoes, respirator, etc) for the task or environment? Did protective equipment provided or worn fail to provide adequate protection from the hazard(s)? Did lack of or inadequate maintenance of protective gear contribute to the accident?
(12) **DRUGS/ALCOHOL** - Is there any reason to believe the person's mental or physical capabilities, judgment, etc., were impaired or altered by the use of drugs or alcohol? Consider the effects of prescription medicine and over the counter medications as well as illicit drug use. Consider the effect of drug or alcohol induced "hangovers".
(13) **JOB/ACTIVITY HAZARD ANALYSIS** - Was a written Job/Activity Analysis completed for the task being performed at the time of the accident? If one was made, did it address the hazard adequately or does it need to be updated? If none made, will one be made? These may also need to be addressed in the Corrective Actions Taken section. Mark the appropriate box. If one was made, attach a copy of the analysis to the report.
(14) **MANAGEMENT** - Did the lack of supervisor or management support play a part in the mishap? Mark the appropriate box.

SECTION - 8 OSHA INFORMATION - Complete this section if applicable

SECTION 9 - REPORT PREPARER

Providing a completed CSIR to the Contracting Officer is the PRIME CONTRACTOR'S RESPONSIBILITY. Enter the name, date of report, title, employer, phone number and signature of person completing the accident report and provide it to the Contracting Officer, or his representative, responsible for oversight of that contractor activity. **NOTE!** If prepared by other than the Prime Contractor, a person employed by the Prime Contractor must sign that they have reviewed and concur with the report and it's findings (e.g. company owner, project supervisor/foreman, Safety Officer, etc.).

CONTRACTOR SITE SAFETY ASSESSMENT

ROICC OFFICE: _____ **DATE:** _____

CONTRACTOR: _____

CONTRACT TITLE: _____ **CONTRACT % COMPLETE:** _____

CONTRACTOR SUPERINTENDENT: _____

CATEGORY:

PREPARATORY PHASE (Planning) Comments/Notes:	(Yes)	(No)	(N/A)	1) Activity Hazard Analysis performed and used on the site for each definable feature of work?	
	(Yes)	(No)	(N/A)	2) Are weekly safety meetings and indoctrination held on site and documented for all workers?	
	(Yes)	(No)	(N/A)	3) Is the submitted safety plan on site and in use?	
	(Yes)	(No)	(N/A)	4) Is the Activity Hazard Analysis reviewed during the preparatory inspection?	
	(Yes)	(No)	(N/A)	5) Hazardous materials program in place with MSDS sheets on site and maintained?	
	(Yes)	(No)	(N/A)	6) EM 385-1-1 available on the site?	
	(Yes)	(No)	(N/A)	7) Other? Extra Credit?	
OFFICE TRAILER GENERAL Comments/Notes:	(Yes)	(No)	(N/A)	8) Are office and storage trailers anchored?	
	(Yes)	(No)	(N/A)	9) Are emergency phone numbers posted?	
	(Yes)	(No)	(N/A)	10) Is a phone available?	
	(Yes)	(No)	(N/A)	11) First aid log maintained (contractors must use OSHA Form 300)?	
	(Yes)	(No)	(N/A)	12) Toilet facilities available?	
	(Yes)	(No)	(N/A)	13) Site posted "HARD HAT AREA," "NOISE HAZARD," "CONSTRUCTION AREA," etc., as required?	
	(Yes)	(No)	(N/A)	14) Garbage cans and dumpsters available?	
	(Yes)	(No)	(N/A)	15) Jobsite cleaned daily?	
	(Yes)	(No)	(N/A)	16) Is traffic control around site adequate?	
	(Yes)	(No)	(N/A)	17) Other? Extra Credit?	
FIRE PREVENTION Comments/Notes:	(Yes)	(No)	(N/A)	18) Are fire extinguishers available, fully charged, and easily visible within 75 feet for low hazard areas?	
	(Yes)	(No)	(N/A)	19) Is fuel stored in proper containers?	
	(Yes)	(No)	(N/A)	20) Are hot work permits being obtained?	
	(Yes)	(No)	(N/A)	21) Are fire watches provided?	
	(Yes)	(No)	(N/A)	22) Are gas cylinders stored upright and secured with chain or rope?	
	(Yes)	(No)	(N/A)	23) Is Housekeeping acceptable?	
	(Yes)	(No)	(N/A)	24) Other? Extra Credit?	
SCAFFOLD SAFETY Comments/Notes:	(Yes)	(No)	(N/A)	25) Are daily scaffold inspections performed by designated competent person?	
	(Yes)	(No)	(N/A)	26) Planks overlapped not less than 6" or more than 12" over end supports with toe boards in place?	
	(Yes)	(No)	(N/A)	27) Tubing pinned properly and all cross bracing in place?	
	(Yes)	(No)	(N/A)	28) If scaffold height is 4X smallest base dimension, is system secured to structure?	
	(Yes)	(No)	(N/A)	29) All guardrails are in place?	
	(Yes)	(No)	(N/A)	30) Full work platform at each working level with no cracks/splits?	
	(Yes)	(No)	(N/A)	31) Safe access provided to each working level?	
	(Yes)	(No)	(N/A)	32) Scaffold and components not overloaded?	
	(Yes)	(No)	(N/A)	33) Is scaffold system plumb and level?	
	(Yes)	(No)	(N/A)	34) Suspended scaffold systems using independent personal fall arrest system?	
	(Yes)	(No)	(N/A)	35) Other? Extra Credit?	
FALL PROTECTION Comments/Notes:	(Yes)	(No)	(N/A)	36) Is a full body harness used where required?	
	(Yes)	(No)	(N/A)	37) Tied off at all times to structural element capable of supporting 5,000 lbs/person?	
	(Yes)	(No)	(N/A)	38) Is protection provided for all personnel working in areas where they could fall 6' or more?	
	(Yes)	(No)	(N/A)	39) Are employees trained for fall protection systems in use?	
	(Yes)	(No)	(N/A)	40) Does the contractor have a certified competent person?	
	(Yes)	(No)	(N/A)	41) Have standard guardrails been provided where required?	
	(Yes)	(No)	(N/A)	42) Have horizontal life lines been designed and installed under supervision of a qualified person?	
	(Yes)	(No)	(N/A)	43) Other? Extra Credit?	

CATEGORY:

LADDER SAFETY	(Yes)	(No)	(N/A)	44) Do ladders extend 3' above landing platform and tied to structure?	
Comments/Notes:	(Yes)	(No)	(N/A)	45) Are ladders used with hand tools only?	
	(Yes)	(No)	(N/A)	46) Are ladder base distances from structure 1/4 height?	
	(Yes)	(No)	(N/A)	47) Are floor openings either covered or surrounded by a guardrail?	
	(Yes)	(No)	(N/A)	48) Electricians not using portable "conductive" ladders?	
	(Yes)	(No)	(N/A)	49) Stairways provided on all structures over 20' during construction and supplied with guardrail?	
	(Yes)	(No)	(N/A)	50) Portable step ladders over 20' not used on the site?	
	(Yes)	(No)	(N/A)	51) Are ladders properly used?	
	(Yes)	(No)	(N/A)	52) Other? Extra Credit?	
EXCAVATIONS	(Yes)	(No)	(N/A)	53) Does excavation over 4' deep have a ladder within 25' and two means of egress?	
Comments/Notes:	(Yes)	(No)	(N/A)	54) Has proper slope or trench box/shoring been provided?	
	(Yes)	(No)	(N/A)	55) Is water controlled/removed?	
	(Yes)	(No)	(N/A)	56) Is excavated material at least 2' back from trench edge?	
	(Yes)	(No)	(N/A)	57) Is excavation barricaded, etc., to prevent workers and public from falling into trench/hole?	
	(Yes)	(No)	(N/A)	58) In locations of known or suspected contamination, is excavation atmosphere monitored?	
	(Yes)	(No)	(N/A)	59) Does contractor have certified competent person on site?	
	(Yes)	(No)	(N/A)	60) Other? Extra Credit?	
ELECTRICAL	(Yes)	(No)	(N/A)	61) Are temporary power panels and receptacles protected from weather?	
Comments/Notes:	(Yes)	(No)	(N/A)	62) Are GFCI's in use for site tools ?	
	(Yes)	(No)	(N/A)	63) Are temporary lights rigged and secured to supports properly, and with covers?	
	(Yes)	(No)	(N/A)	64) If overhead power lines are in area, are operations maintaining required distance or isolation?	
	(Yes)	(No)	(N/A)	65) Is lockout/tagout program in effect?	
	(Yes)	(No)	(N/A)	66) Has a sketch of proposed temporary power distribution been submitted/accepted before installing?	
	(Yes)	(No)	(N/A)	67) Other? Extra Credit?	
	(Yes)	(No)	(N/A)	68) Other? Extra Credit?	
CRANES	(Yes)	(No)	(N/A)	69) Has periodic inspection been performed prior to use on site IAW EM 385-1-1, App. H?	
Comments/Notes:	(Yes)	(No)	(N/A)	70) Are App. H daily start up inspections performed by operator and submitted with DRI?	
	(Yes)	(No)	(N/A)	71) Is crane operator qualified IAW EM 385-1-1, App. G, and is crane certification posted in cab?	
	(Yes)	(No)	(N/A)	72) Are workers protected from the crane swing radius and prevented from passing under the load?	
	(Yes)	(No)	(N/A)	73) Are rigging cables and slings in good repair free of kinks and cracks?	
	(Yes)	(No)	(N/A)	74) Is the crane level and on firm ground and outriggers in use with appropriate cribbing?	
	(Yes)	(No)	(N/A)	75) Is crane side loading prohibited?	
	(Yes)	(No)	(N/A)	76) Near electric power sources, are rules followed for clearance/isolation in operating zone?	
	(Yes)	(No)	(N/A)	77) Is crane equipped with anti two-block device if required?	
	(Yes)	(No)	(N/A)	78) Other? Extra Credit?	
CONFINED SPACES	(Yes)	(No)	(N/A)	79) Has entry plan been submitted and accepted?	
Comments/Notes:	(Yes)	(No)	(N/A)	80) Is atmosphere being monitored?	
	(Yes)	(No)	(N/A)	81) Is space being ventilated?	
	(Yes)	(No)	(N/A)	82) Are entrants, attendants and entry supervisor properly trained?	
	(Yes)	(No)	(N/A)	83) Is rescue/retrieval system in place?	
	(Yes)	(No)	(N/A)	84) Are daily entry permits posted at point of entry and signed by entry supervisor?	
	(Yes)	(No)	(N/A)	85) Is point of entry posted "**DANGER CONFINED SPACE**"?	
	(Yes)	(No)	(N/A)	86) Has blanking or locking out of systems taken place?	
	(Yes)	(No)	(N/A)	87) Other? Extra Credit?	
ROOFING	(Yes)	(No)	(N/A)	88) Are kettles at least 25 feet away from buildings?	
Comments/Notes:	(Yes)	(No)	(N/A)	89) Has an employee fall protection system been implemented and in proper use?	
	(Yes)	(No)	(N/A)	90) Are skylights and roof penetrations covered or barricaded appropriately?	
	(Yes)	(No)	(N/A)	91) Has the roof been evaluated for its ability to support the intended construction loads?	
	(Yes)	(No)	(N/A)	92) Has the roof been surveyed for deterioration?	
	(Yes)	(No)	(N/A)	93) Are two fire extinguishers at the kettle?	
	(Yes)	(No)	(N/A)	94) Fuel cylinder a minimum of 10' from open flame?	
	(Yes)	(No)	(N/A)	95) Other? Extra Credit?	
	(Yes)	(No)	(N/A)	96) Other? Extra Credit?	

CATEGORY:

EQUIPMENT

Comments/Notes:

(Yes)	(No)	(N/A)	97) Are forklift operators qualified through training at the site (certificate included in Safety Plan)?	
(Yes)	(No)	(N/A)	98) Does mobile equipment have rollover cages and backup alarms, with moving parts adequately guarded?	
(Yes)	(No)	(N/A)	99) Are equipment operations maintaining safe clearance from electrical power lines?	
(Yes)	(No)	(N/A)	100) Do modifications meet safety rating per manufacturer (i.e., lifting personnel with forklift)?	
(Yes)	(No)	(N/A)	101) Are safety lashings provided for high pressure hose connections, i.e., air compressors?	
(Yes)	(No)	(N/A)	102) Are workers clear of blind spots associated with mobile construction equipment?	
(Yes)	(No)	(N/A)	103) Do aerial lifts have basket/platform with guardrail?	
(Yes)	(No)	(N/A)	104) Are workers not extending over guardrail of aerial lifts?	
(Yes)	(No)	(N/A)	105) Are articulating boom platforms (JLG type) used with Full Body Harness attached to boom or basket?	
(Yes)	(No)	(N/A)	106) Other? Extra Credit?	
(Yes)	(No)	(N/A)	107) Other? Extra Credit?	

DEMOLITION

Comments/Notes:

(Yes)	(No)	(N/A)	108) Has demolition plan been submitted and accepted?	
(Yes)	(No)	(N/A)	109) If waste is being dropped > 6' is it in an enclosed chute and is area secured from traffic?	
(Yes)	(No)	(N/A)	113) For building demolition, has notification been made to State having jurisdiction?	
(Yes)	(No)	(N/A)	114) Are nails removed from scrap lumber/materials?	
(Yes)	(No)	(N/A)	115) Other? Extra Credit?	
(Yes)	(No)	(N/A)	116) Other? Extra Credit?	

PPE

Comments/Notes:

(Yes)	(No)	(N/A)	117) Workers wearing leather shoes (not tennis), long pants, sleeved shirts, and steel toes where required?	
(Yes)	(No)	(N/A)	118) Are hare hats being worn?	
(Yes)	(No)	(N/A)	119) Are safety glasses where appropriate?	
(Yes)	(No)	(N/A)	120) Hearing protection where appropriate? (if you need to yell to converse)	
(Yes)	(No)	(N/A)	121) Respirators where appropriate?	
(Yes)	(No)	(N/A)	122) Impalement protection provided where personnel could work above vertical impalement?	
(Yes)	(No)	(N/A)	123) Is lighting adequate?	
(Yes)	(No)	(N/A)	124) Other? Extra Credit?	

ABATEMENT

Comments/Notes:

(Yes)	(No)	(N/A)	125) Has abatement plan been submitted and accepted?	
(Yes)	(No)	(N/A)	126) Is independent air monitoring being performed as required inside and outside barriers?	
(Yes)	(No)	(N/A)	127) Is containment in place without integrity compromise?	
(Yes)	(No)	(N/A)	128) Are employees utilizing appropriate PPE?	
(Yes)	(No)	(N/A)	129) If negative air is used, are fans used continuously and monitored for pressure differential?	
(Yes)	(No)	(N/A)	130) Has baseline been performed and necessary final clearance readings taken?	
(Yes)	(No)	(N/A)	131) Are inspections by independent PQP performed prior to barrier removal?	
(Yes)	(No)	(N/A)	132) Is waste material properly containerized and stored?	
(Yes)	(No)	(N/A)	133) Are air monitoring results provided to ROICC?	
(Yes)	(No)	(N/A)	134) Are waste shipment records provided to ROICC?	
(Yes)	(No)	(N/A)	135) Other? Extra Credit?	

WATERFRONT ACTIVITIES

Comments/Notes:

(Yes)	(No)	(N/A)	136) Are employees wearing appropriate flotation devices (PFDs)?	
(Yes)	(No)	(N/A)	137) Is a rescue skiff available?	
(Yes)	(No)	(N/A)	138) Are emergency life rings available?	
(Yes)	(No)	(N/A)	139) If diving operations are taking place, has a dive plan been submitted and accepted?	
(Yes)	(No)	(N/A)	140) Does dive team consist of proper number and qualifications for employees?	
(Yes)	(No)	(N/A)	141) Other? Extra Credit?	

SCORING: **Total applicable for each category = X (where X includes responses for category of "Yes" and "No" but does not include N/A)**

Total with "Yes" responses for each category = Y

SCORE FOR EACH CATEGORY: **SCORE RATE EQUATION = Y / X**

1 PREPARATORY PHASE: _____

2 OFFICE TRAILER GENERAL: _____

3 FIRE PREVENTION: _____

4 SCAFFOLD SAFETY: _____

5 FALL PROTECTION: _____

6 LADDER SAFETY: _____

7 EXCAVATIONS: _____

8 ELECTRICAL: _____

9 CRANES: _____

10 CONFINED SPACES: _____

11 ROOFING: _____

12 EQUIPMENT: _____

13 DEMOLITION: _____

14 PPE: _____

15 ABATEMENT: _____

16 WATERFRONT ACTIVITIES: _____

OVERALL RATING = AVERAGE RATING FOR ALL CATEGORIES: _____

DZSP 21 PROCEDURE	NUMBER: FME-P-0004
	DATE: 11-08-2007
ANNEX 1501 – Facilities Management Engineering	
OFFICE OF PRIMARY RESPONSIBILITY: FME	REVISION: 1

1.0 SUBJECT: SCHEDULED UTILITY OUTAGE PROCEDURE

2.0 PURPOSE:

To establish standard procedures for processing Utility Outage Requests (UOR).

3.0 SCOPE:

This procedure applies to all DZSP 21 organizations, including applicable subcontractors and to all Navy-owned utilities on Guam.

4.0 DEFINITIONS:

AAFB	Andersen Air Force Base
ACO	Administrative Contracting Officer for the Navy
CNM	Commander Naval Forces Marianas
COR	Contracting Officer's Representative – the government liaison for the Annex Manager
FACENG	Facilities Engineering Department
G-Net	The on line document manager https://www.icemakr.com/G-Net/
GPA	Guam Power Authority
GWA	Guam Waterworks Authority
JON	MAXIMO Job Order Number
MAXIMO	Trade name for the Computer Maintenance Management System provided by the Navy and utilized by DZSP 21
NFM	Naval Facilities Engineering Command Marianas
PCC	Production Control Clerk
POC	Point of Contact
Procedure	A document providing procedural information and requirements for work performed in compliance with contractual requirements of a cross - functional nature that includes more than one Annex.
Requester	Contractor, DZSP 21 Annex, or other entity requesting a Utility Outage/Connection/Disconnection.

SSC	DZSP 21 Service Support Center
UT	Utilities Department; may refer to any or all of Annexes 1602 (electrical), 1605 (wastewater), 1606 (steam and demineralized water) or 1607 (water). 1600 refers to all four Annexes.
Utility Outage	Encompasses scheduled outage, connection, disconnection or service of water, sewer, electricity, steam, fire alarm or fire sprinkler system.

5.0 REFERENCE DOCUMENTS:

5.1 Base Operations Support Contract No. N62742-05-C-3501

5.2 FIN-P-0001 Payment Procedure for Credit Cards, Checks and Cash

6.0 RECORDS:

Record	Responsible Organization	Retention Period
Maximo Work Orders	Maximo Database	6 years & 3 mos after final payment
Project Files	Annex 1501	6 years & 3 mos after final payment
Project List	Annex 1501	Length of contract

7.0 PROCEDURE:

7.1 General:

7.1.1 DZSP 21 is responsible for processing and implementing all scheduled utility and facility outages on Naval Facilities Guam.

7.1.2 Utility Outage Requests (UORs) are generated by contractors hired by the Navy or AAFB. The contractors hired by DZSP 21, other utilities such as GWA, GPA, or by maintenance personnel within DZSP 21 and DZSP 21 subcontractors (including Annexes 1502 and 1600s) who require a utility outage in order to complete their work.

7.2 Requirements:

7.2.1 UOR Submission:

a. UORs are submitted to the SSC. UORs can be submitted by faxing the information to 339-5025, e-mail to DZSP21ssc@navfacmar.navy.mil or by hand delivery to the SSC located in Building 372.

b. UORs are submitted by completing SSC-F-006 R1, Utility Outage / Connection / Service Request (Appendix A).

c. UORs from external requesters shall follow the payment procedures as listed in FIN-P-0001, Payment Procedure for Credit Cards, Checks and Cash, and submit the appropriate forms with the UOR.

d. All submittals must include a site location map and a map showing clearly where the work will be done that requires the outage.

7.2.2 UOR Processing:

a. Upon receipt, the PCC responsible for coordinating UORs will:
   1. Add the UOR to the Tracking Log and assign it a UOR number.
   2. Forward the UOR to the annex manager for approval to process & obtain a project abbrev from Finance.
   3. Send the approval of the annex manager with a completed Request for Project Abbrev Form to Finance to obtain a project abbrev. Update Maximo with the project abbrev.
   4. Send out an e-mail Preliminary Notice of the outage to the DZSP 21 Utility Outage group with a cc: to the Building Manager(s) using the most recent Building Manager List provided by the Navy.
   5. If the outage has been requested by DZSP 21 and is for a fire alarm, fire sprinkler outage, or an existing JON under Annex 1502, e-mail the COR to obtain permission to complete the work. After completing the steps in paragraph d below.
   6. Create a JON for the UOR. The work subtype will be “UOR.” The naming convention for the job orders is as follows:
      i. For an electrical outage: DZSP21 – POWER – (Work Type POWER/Work Subtype - UOR)
      ii. For a steam outage: DZSP21 – STEAM – (Work Type – SDMN/Work Subtype - UOR)
      iii. For a water outage: DZSP 21 WATER – POTABLE WATER – (Work Type – WATER/Work Subtype - UOR)
      iv. For a wastewater outage: DZSP 21 WASTEWATER – WASTEWATER – (Work Type – WASTEWATER/Work Subtype - UOR)
      v. For a fire alarm or fire sprinkler outage or an existing JON under Annex 1502: DZSP 21 FACILITIES - FIRE ALARM/SPRINKLER – (Work Type – AAJO/Work Subtype - UOR)

7. If the requester asks for an estimate, provide the UOR to the Annex Manager of the Annex that will perform the outage to obtain an estimate for the work. The Annex Manager may designate a POC for the PCC to contact and work with for all UORs.
8. Provide a copy of the UOR to the Annex Manager or Annex POC for review.

b. In accordance with Annex 1501 requirements, the Government must be notified of the outage at least 5 business days before the outage takes place. Should the requester desire the outage within 5 business days or less, the PCC will inform the requester that the Navy requires at least 5 business days notice and that the PCC does not have the authority to schedule any outage in less than 5 business days.
    1. Should the requester insist on having the outage in less than 5 business days, the PCC will e-mail the Annex 1501 and/or ACO requesting permission to schedule the outage less than 5 working days of notification.
    2. If the COR and/ or ACO responds that the outage may be held on the scheduled date, the PCC will schedule the outage. IF THE ACO OR COR DOES NOT PROVIDE DIRECTION TO SCHEDULE THE OUTAGE IN LESS THAN 5 BUSINESS DAYS, THE OUTAGE MUST BE SCHEDULED FOR A LATER DATE. The requestor will be informed accordingly.

c. Outages that impact certain customers have special scheduling requirements. For an outage that impacts Housing customers, the Housing Office requests at least 14 days notice to ensure that all customers can be properly notified.
    1. The PCC will make every reasonable attempt to meet special scheduling requests, while keeping the requester informed.
    2. If Housing is impacted, the PCC will inform the requester of the special requirement for housing and schedule the outage accordingly.
    3. Should the customers and the requester not be able to agree on a date or if any other significant issues arise with the outage scheduling, the PCC will alert the FACENG Manager, who will resolve the issue with the NFM Operations and Acquisition Departments.
    4. When the issue has been resolved, the FACENG Manager will notify the PCC to continue scheduling the outage on the agreed upon date.

d. The respective Annex Manager who will perform the outage will assign the UOR to an engineer or estimator to review the requirements for completing the outage and provide an estimate if needed. The engineer/estimator (reviewer) will:
    1. Review the UOR and its attachments to determine if there is adequate information to perform the outage and, if needed, develop an estimate.
    2. Coordinate with the PCC to obtain the information from the requester, if additional information is needed or the reviewer has questions. If the questions are complicated or technical the engineer / estimator may coordinate directly with the POC listed on the UOR.
    3. Request from the POC (either directly or via SSC) that they provide drawings / sketches of the modifications to take place. After completion of the outage the reviewer will provide those drawings to the DZSP 21 FACENG Drafting Group to update the facility or utility drawings as appropriate.
    4. Verify the customers impacted by the outage. If the reviewer determines that additional or fewer customers than noted will be impacted, he / she will inform SSC. The PCC will then notify the additional customers and an e-mail Preliminary Notice to the DZSP 21 Utility Outage group.
    5. Take note of any additional requirements that are needed such as the addition of a backflow preventer for a water line.
    6. In the case where the “outage” is a temporary or permanent utility service connection, verify that the requestor has provided a NFM billing account number (obtained from the NFM Comptroller) for billing of the service to be utilized.
    7. In the case where the outage will result in a facility or utility being permanently taken out of service, the reviewer shall verify that all components such as poles and secondary lines are also removed, and / or that water lines will be properly capped and sewer lines appropriately plugged. He / she will verify that the removal of power / capping of water lines / plugging of sewer lines will be done at the appropriate place and all defunct lines / auxiliary systems will be removed.
    8. Take note any other discrepancies to code, Navy instruction, or other requirements. All discrepancies / problems will be reported to the POC. If the POC declines to address the problem, the issues will be reported to the COR of the relevant Annex.
    9. When all issues have been resolved (or elevated to the COR), sign off on the UOR and return it to SSC with the estimate if required.

7.2.3 Payment will be processed in accordance with FIN-P-0001, Payment

Procedure for Credit Cards, Checks and Cash.

7.2.4 Outage Scheduling:

a. The PCC will then schedule the outage. The PCC will:
   1. Call the Building Manager(s) (BM) of the affected building(s) to inform them of the requested outage date noted on the UOR.
   2. If the BM has concerns regarding the date, he / she will recommend an alternate date.
   3. If the requester is DZSP 21 and the date requires overtime, the PCC will obtain Annex Manager or COR authorization for the overtime as required.

b. For outage at AAFB, the contractor is responsible for notifying affected customers.
   1. At least five (5) business days before the outage, the contractor must provide written confirmation to the PCC that all affected customers have been notified.
   2. If the PCC does not receive such notice within five (5) business days, the PCC will notify the DZSP 21 Utility Outage group and AAFB personnel that the outage has been postponed.
   3. The outage will only be scheduled within five business days of such notice in accordance with paragraph 7.2.2.b above and with the concurrence of AAFB personnel.

c. Once the date for the outage has been confirmed, the PCC will:
   1. Send out a Scheduled Outage notification to the DZSP 21 Utility Outage group with a cc: to the Building Manager(s) and the requester.
   2. For Housing, the PCC will notify the Housing Representative and the Housing Representative shall notify all tenants regarding outage schedules. Housing Tenants shall contact Housing representative for concerns and or questions regarding outages.
   3. For a power, water, fire alarm or sprinkler system outage, notify the fire department.
   4. Notify the requester via telephone.
   5. For a power or steam outage, notify DZSP21 Power dispatch via telephone.
   6. For a water or sewer outage, notify the Annex 1607 Supervisor via telephone.
   7. For a water outage, notify the Annex 1800 Supervisor via telephone.

7.2.5 On the day of the outage:

a. The personnel conducting the outage will provide SSC with updates as to the status of the outage including when the outage begins and at major milestones (e.g. partial power restoration or outage is taking longer than expected). They will also inform SSC once the outage is complete.

b. The PCC will provide regular status updates to the DZSP 21 Utility Outage group with a cc: to the Building Manager(s) using the Notification Form in MS Excel.

c. The PCC will provide a final notification when the outage is complete.

7.2.6 Once the outage has been completed, the PCC will:

a. Cut and paste the Notification Form into the trade and SSC MAXIMO JONs.

b. For all outages except those completed by Annexes 1602 and 1606, change the MAXIMO status to complete.

c. Update the UOR log.

d. File all documents.

e. The MAXIMO JON will be closed out by:

1. For outages completed by Annexes 1602 and 1606, the Annex will close out the MAXIMO JON.
2. For all other outages, when the DZSP 21 utility or facility personnel turn in the completed chit SSC will close out the JON.

7.3 Roles and Responsibilities:

7.3.1 UOR Requestor(s) are responsible for ensuring that:

a. All required documentation is submitted to SSC within the required time frame as stated in this procedure.

b. Payments are disbursed on a timely manner.

7.3.2 Annex Managers are responsible for:

a. Ensuring that provisions of this procedure are communicated to and understood by their respective Annex.

b. Performing the outage on the scheduled date.

c. Keeping SSC updated on outage progress.

7.3.3 FACENG Manager is responsible for:

a. Overseeing the UOR program.

b. Forwarding UORs to the Government for approval, where outage is scheduled in less than 5 business days.

c. Resolving scheduling issues that could not be settled between SSC, customers or affected areas.

7.3.4 SCC is responsible for:

a. Receiving, reviewing, and processing UORs.

b. Creating and closing Maximo Work Orders.

c. Scheduling UORs.

d. Monitoring progress of the project.

e. Coordinating with Finance for payment processing.

7.3.5 Finance Department will follow guidelines of FIN-P-0001 when processing UOR payments.

8.0 EXHIBIT:

Appendix A: Utility Outage Request Form

SCHEDULED UTILITY OUTAGE PROCEDURE	PROCEDURE NO. FME-P-0004	REV. 1	DATE 11-08-07	PAGE 9	OF 11

9.0 APPROVALS:

ORIGINATED BY:

11/8/07

George K. Joseph — Date
Facilities Management Manager

CONCURRED BY:

11/8/07

Mark Lopez — Date
Public Works Director

CONCURRED BY:

11/8/07

George Harvey — Date
Quality Manager

CONCURRED BY:

8 NOV 07

Grady Lynn Holt — Date
Safety Manager

CONCURRED BY:

11/8/07

Mary Hogan — Date
Environmental Manager

APPROVED BY:

11/8/07

Douglas Markel — Date
Deputy Project Director

SCHEDULED UTILITY OUTAGE PROCEDURE	PROCEDURE NO. FME-P-0004	REV. 1	DATE 11-08-07	PAGE 10	OF 11

Appendix A
Utility Outage Request Form (page 1 of 2)

DZSP 21 **UTILITY OUTAGE/CONNECTION/SERVICE REQUEST NO**

☐ STEAM AND DEMINERALIZED WATER ☐ ELECTRICAL POWER ☐ POTABLE WATER ☐ WASTEWATER

☐OTHER (Describe) ☐ OUTAGE ☐ CONNECTION ☐ DISCONNECTION ☐ SERVICE

FROM (Name)	PHONE/FAX NO.	DATE
(Organization)	PHONE/FAX NO.	WR/CONTRACT OR PROJECT NO
Navy Contracting POC (If Contractor Originated)	PHONE/FAX NO.	PROJECT ABBREV.
LOCATION/AREA		ROM $

LENGTH AND DATE OF OUTAGE (MUST BE SUBMITTED TO DZSP21 14 DAYS BEFORE REQUESTED DATE)

FIRST CHOICE:	FROM DATE/TIME:		TO DATE/TIME:	
SECOND CHOICE:	FROM DATE/TIME:		TO DATE/TIME:	

JUSTIFICATION

OTHER/SPECIAL INSTRUCTIONS (SPECIFY)

AFFECTED LOCATIONS(S): HYDRANT NO., VALUE NO., STREET NAME, ETC.

ATTACHMENTS ☐ DRAWINGS ☐ PERMITS ☐ SCOPE OF WORK

AFFECTED FACILITIES

BLDG. NO.	BLDG. NAME	BLDG. NO.	BLDG. NAME
☐		☐	
☐		☐	
☐		☐	
☐		☐	

SIGNATURE DATE COPY TO

PWC COMPTROLLER

DATE RECEIVED	ELECTRICAL SERVICE $	CONNECTION JO# CONSUMPTION JO#
DATE RECEIVED	WATER SERVICE $	CONNECTION JO# CONSUMPTION JO#
DATE RECEIVED	OTHER SERVICE/SPECIFY $	CONNECTION JO# CONSUMPTION JO#
DATE RECEIVED		
	COMPTROLLER POC/SIGNATURE	

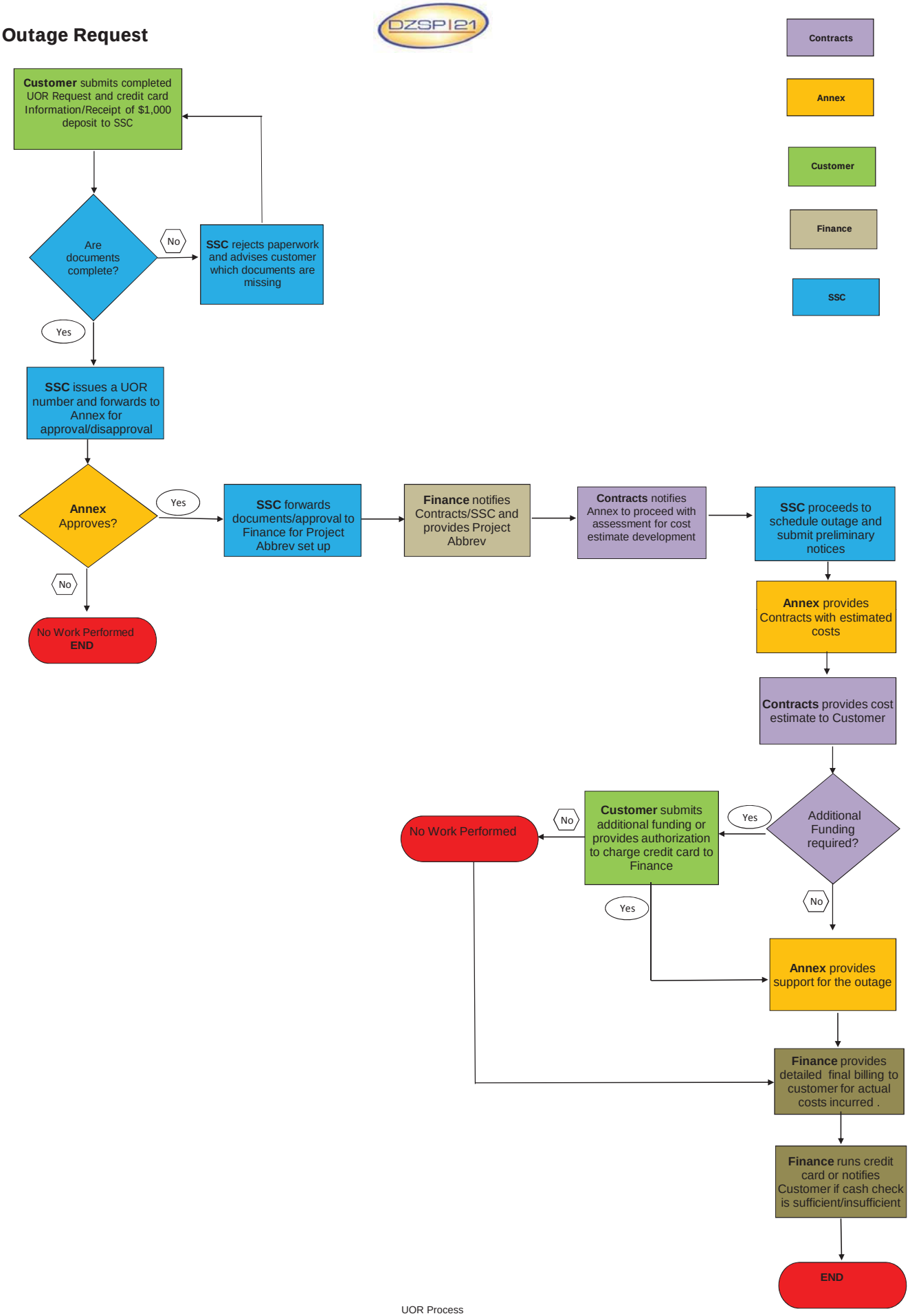
SCHEDULED UTILITY OUTAGE PROCEDURE	PROCEDURE NO. FME-P-0004	REV. 1	DATE 11-08-07	PAGE 11 OF 11

Appendix A
Utility Outage Request Form (page 2 of 2)

DZSP 21 **UTILITY OUTAGE/CONNECTION/SERVICE REQUEST NO _____**

OUTAGE COORDINATED BY DZSP 21			
ORG./DEPT NA	**ME**	**DATE**	**NOTES**
☐ SERVICE SUPPORT			
☐ FME (STEAM/ ELEC/ WATER/ WW)			
☐ SET			
☐ HOUSING			
☐ FIRE DEPT.			
☐ AAFB			
☐ NFM PWO/APWO			
☐ MWR			
☐ SECURITY			
☐ BLDG MANAGER			
☐ ENVIRONMENTAL			
☐ SAFETY			
☐ PAO			
☐ HOUSING			
☐			
☐			
☐			

Utility Outage Request



UOR Process

BOSC Utility Services

Requesting and Paying for Work Directly Through DZSP 21

The procedure for contractors to schedule and pay for utility services from the Navy Base Operations Support Contractor are as follows:

- **Contractors must submit the following required documents to Service Support Center (SSC):**
  1. Completed Utility Outage/Connection/Service Request Form
  2. Completed customer Payment Information Sheet.

     Note: Payments made by check or credit card must be issued by the organization listed on the "Utility Outage/Connection/Service Request" form.

  3. Drawings/sketches and other required documents for the appropriate Annexes.

  Note: DZSP 21 will not accept any incomplete paperwork.

- **Contractors are encouraged to submit work requests via e-mail and appropriate forms will be provided upon request.**

- **Service Support Center (SSC) can be reached at (671) 333-2011 or in person in building 372 between the hours of 0730 and 1630, or via e-mail at dzsp21ssc@dzsp21.com.**
  - Services including, but not limited to, water, sewer, electrical, steam or fire system outages, trailer hook-ups, and meter installations should be requested through SSC.
  - DZSP 21 requires a minimum of 30 days advance notice for utility outages before the 1st requested date. NOTE: Requested dates are subject to change due to the extent of the outage requested.

- **Contractors must submit payment to DZSP 21 before any work will be scheduled.**
  - DZSP 21 accepts credit cards, cash, or company checks made payable to DZSP 21 LLC.
  - Credit cards – Credit card information must be submitted to DZSP 21 Finance.
- Cash or check - A minimum deposit of $1,000.00 is required for each Utility Outage Request. NOTE: The $1,000.00 deposit is for DZSP 21 labor hours for the assessment of the outage. This amount does not include any costs associated with utilities consumption or meters.

Rev. 3 7/24/12

- **Upon receipt of deposit/credit card information, SSC will coordinate with the appropriate Annexes.**
    - The Annex performing the outage will assess the areas affected and provide an estimate to DZSP 21 Contracts who will then provide a cost estimate to the customer.
    - If the cost estimate is less than the $1,000.00 deposit, the difference will be refunded to the customer once the outage is complete. However, if the estimate is greater than the $1,000.00 deposit, the customer will need to fund the difference prior to commencement of scheduling the outage request.

- **Once the work is completed, DZSP 21 Finance will submit a detailed final invoice to the customer for the actual costs.**
    - Credit Card – DZSP 21 will charge the credit card for the actual costs of the outage if it exceeds the funded amount.
    - Cash, check or credit card – If actual costs are less than the funded amount, the refund for the difference will be issued by check to the organization listed on the "Utility Outage/Connection/Service Request" form. If actual costs are greater than the funded amount, customer will need to submit additional funding.

UTILITY OUTAGE/CONNECTION/SERVICE REQUEST NO

☐ STEAM AND DEMINERALIZED WATER ☐ ELECTRICAL POWER ☐ POTABLE WATER ☐ WASTEWATER

☐ OTHER (Describe) ☐ OUTAGE ☒ CONNECTION ☐ DISCONNECTION ☐ SERVICE

FROM (Name)	PHONE/FAX NO.	DATE
(Organization)	PHONE/FAX NO.	WR/CONTRACT OR PROJECT NO
Navy Contracting POC (If Contractor Originated)	PHONE/FAX NO.	PROJECT ABBREV.
LOCATION/AREA		ROM $

LENGTH AND DATE OF OUTAGE (MUST BE SUBMITTED TO DZSP21 30 DAYS BEFORE REQUESTED DATE)

FIRST CHOICE:	FROM DATE/TIME:		TO DATE/TIME:	
SECOND CHOICE:	FROM DATE/TIME:		TO DATE/TIME:	

JUSTIFICATION

OTHER/SPECIAL INSTRUCTIONS (SPECIFY)

AFFECTED LOCATIONS(S): HYDRANT NO., VALUE NO., STREET NAME, ETC.

ATTACHMENTS ☐ DRAWINGS ☐ PERMITS ☐ SCOPE OF WORK

AFFECTED FACILITIES

BLDG. NO.	BLDG. NAME	BLDG. NO.	BLDG. NAME
☐		☐	
☐		☐	
☐		☐	
☐		☐	

SIGNATURE DATE COPY TO

PWC COMPTROLLER		
DATE RECEIVED	ELECTRICAL SERVICE $	CONNECTION JO# CONSUMPTION JO#
DATE RECEIVED	WATER SERVICE $	CONNECTION JO# CONSUMPTION JO#
DATE RECEIVED	OTHER SERVICE/SPECIFY $	CONNECTION JO# CONSUMPTION JO#
DATE RECEIVED		
	COMPTROLLER POC/SIGNATURE	

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UTILITY OUTAGE/CONNECTION/SERVICE REQUEST NO _____

OUTAGE COORDINATED BY DZSP 21			
ORG./DEPT	**NAME**	**DATE**	**NOTES**
☐ SERVICE SUPPORT			
☐ FME (STEAM/ ELEC/ WATER/ WW)			
☐ HOUSING			
☐ FIRE DEPT.			
☐ AAFB			
☐ NFM PWO/APWO			
☐ MWR			
☐ SECURITY			
☐ BLDG MANAGER			
☐ ENVIRONMENTAL			
☐ SAFETY			
☐ PAO			
☐ **Does the project require future outages of this utility in addition to this one?**			
☐ **Can the work requiring this outage be incorporated into a future outage without significant negative impact on the project completion date?**			
☐			
☐			
☐			

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Customer Payment Information Sheet

Company or Command	**Date**
Point of Contact	**Telephone & Fax No.**
Address	**E-mail Address**

Brief Description of Work:

Payment Information **Please indicate your method of payment:**

Credit Card	**Cash**	**Pre-paid/Purchase Order**

If submitting payment via credit card, please fill in the following information:

Name on the Credit Card:	
Credit Card No.	**Expiration Date**:
Type of Credit Card: (DZSP does NOT accept AMERICAN EXPRESS) VISA or MASTERCARD	
Printed Name:	
Signature:	

(NOTE: Failure to provide this information will cause delay in processing payment).

COMPLETED BY DZSP 21

MAXIMO Work Order No.:

Project Abbreviation:

TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

Form Approved
OMB No. 0704-0188

PAGE OF PAGES

The public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Executive Services Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE ABOVE ORGANIZATION.

1. FROM *(Installation/Activity/District and ZIP Code)*	2. DATE PREPARED *(YYYYMMDD)*	3. PROJECT/JOB NUMBER	4. SERIAL NUMBER
5. TO *(Installation/Activity/Service, ZIP Code & INSNO)*	6. SITE/INSNO/ NAME	7. CONTRACT NUMBER(S)	8. DRAWING NUMBER(S)

9. TRANSACTION DETAILS

a. ☐ NEW CONST. ☐ EXISTING FAC. ☐ CAPITAL IMP. ☐ OTHER *(Specify)*

b. ☐ PHYS. COM. AVAIL. ☐ BENF/O ☐ PARTIAL BOD ☐ FINANCIAL COM. ☐ OTHER *(Specify)*

c. ☐ DRAFT ☐ FINAL ☐ INTERIM

d. EFFECTIVE DATE *(YYYYMMDD)*

10. ITEM NO.	11. FACILITY NO.	12. CATEGORY CODE	13. CATCODE DESCRIPTION	14. TYPE	AREA 15. UNIT OF MEAS 1	AREA 16. TOTAL QUANTITY UM 1	OTHER 17. UNIT OF MEAS 2	OTHER 18. TOTAL QUANTITY UM 2	19. COST	20. FUND SOURCE	21. FUND ORG	22. INTER-EST CODE	23. ITEM REMARKS

24. STATEMENT OF COMPLETION. The facilities listed hereon are in accordance with maps, drawings, and specifications and change orders approved by the authorized representative of the using agency except for the deficiencies listed on the reverse side.

a. TRANSFERRED BY *(Typed Name and Signature)*

b. DATE SIGNED *(YYYYMMDD)*

c. TITLE *(Area Engr./Base Engr./DPW)*

25.a. ACCEPTED BY *(Typed Name and Signature)*

b. DATE SIGNED *(YYYYMMDD)*

c. TITLE *(DPW/RPAO)*

26. PROPERTY VOUCHER NUMBER

DD FORM 1354, MAR 2004 PREVIOUS EDITION IS OBSOLETE. Adobe Professional 7.0

27. CONSTRUCTION DEFICIENCIES *(attach blank sheet for continuations)*	28. PROJECT REMARKS *(attach blank sheet for continuations)*

INSTRUCTIONS

GENERAL. This form has been designed and issued for use in connection with the transfer of military real property between the military departments and to or from other government agencies. It supersedes ENG Forms 290 and 290B (formerly used by the Army and Air Force) and NAVDOCKS Form 2317 (formerly used by the Navy).

Existing instructions issued by the military departments relative to the preparation of DD Form 1354 are applicable to this revised form to the extent that the various items and columns on the superseded forms have been retained. The military departments may promulgate additional instructions, as appropriate.

For detailed instructions on how to fill out this form, please refer to Unified Facilities Criteria (UFC) 1-300-08, dated 17 December 2003.

SPECIFIC DATA ITEMS.

1. **From.** Name and address of the transferring agency.

2. **Date Prepared.** Date of actual preparation. Enter all dates in YYYYMMDD format (Example: March 31, 2004 = 20040331).

3. **Project/Job Number.** Project number on a DD Form 1391 or Individual Job Order Number.

4. **Serial Number.** Sequential serial number assigned by the preparing organization (e.g., 2004-0001).

5. **To.** Name and address of the receiving installation, activity, and service of the Real Property Accountable Officer (RPAO).

6. **Site/INSNO and Name.** Site or installation number and site name where the constructed facility is located.

7. **Contract Number(s).** Contract number(s) for this project.

8. **Drawing Number(s).** Drawing number(s) or CAD identifier(s) for project components.

9. **Transaction Details.**
   a. Type of Transaction. Mark (X) only one box.
   b. When/Event. When or event causing preparation of DD Form 1354. X only one box.
   c. Version. Draft, interim, or final DD Form 1354. X only one box.
   d. Effective Date. Effective date for transaction; start date for depreciation.

10. **Item Number.** Use a separate item number for each facility, no item number for additional usages.

11. **Facility Number.** Unique facility number identified in Real Property Inventory.

12. **Category Code.** The category code describes the facility usage.

13. **Catcode Description.** The category code name which describes the facility usage.

14. **Type.** Type of construction: P for Permanent; S for Semipermanent; T for Temporary.

15. **Area: Unit of Meas 1.** Area unit of measure; use SF, SY, AC only.

16. **Total Quantity UM 1.** The total area for the measure identified in Item 15. Use negative numbers for demolition.

17. **Other: Unit of Meas 2.** Unit of Measure 2 is the capacity or other measurement unit (e.g., LF, MB, EA, etc.).

18. **Total Quantity UM 2.** The total capacity/other for the measure identified in Item 17.

19. **Cost.** Cost for each facility; for capital improvements to existing facilities, show amount of increase only.

20. **Fund Source.** Enter the Fund Source Code for this item, i.e., 01-MILCON, 02-BRAC, 03-O&M, etc.

21. **Funding Organization.** Enter the code for the organization responsible for replacing this facility at the end of its useful life, i.e., 00-Army Active, 01-Army Reserve, 02-Army National Guard, etc.

22. **Interest Code.** Enter the code that reflects government interest or ownership in the facility, i.e., 01-Owned by DoD, 02-Owned by Federal Government (non-DoD), etc.

23. **Item Remarks.** Remarks pertaining only to the item number identified in Item 10; show cost sharing.

24. **Statement of Completion.** Typed name, signature, title, and date of signature by the responsible transferring individual or agent.

25. **Accepted By.** Typed name, signature, title, and date of signature by the RPAO or accepting official.

26. **Property Voucher Number.** Next sequential number assigned by the RPAO in voucher register.

27. **Construction Deficiencies.** List construction deficiencies in project during contractor turnover inspection.

28. **Project Remarks.** Project level remarks, continuation of blocks, and used to explain "other" entries in Item 9.

DD FORM 1354 (BACK), MAR 2004

DZSP21 A WORKFORCE committed TO EXCELLENCE and continual improvement	DOCUMENT TYPE	NUMBER: **FME-P-0001**
		EFFECTIVE DATE: 09-11-13
ANNEX 1501 – FACILITIES MANAGEMENT AND ENGINEERING SERVICES		REVISION: 8
OFFICE of PRIMARY RESPONSIBILITY: ANNEX 1501		

1.0 SUBJECT: EXCAVATION PERMIT CLEARANCE PROCEDURE

2.0 PURPOSE:

The purpose of the excavation permit clearance procedure is to detail the process and requirement in receiving and issuing excavation permits for all proposed excavations within U.S. Navy property and easements.

3.0 SCOPE:

This procedure applies to DZSP 21 organizations, including requesters.

4.0 DEFINITIONS:

AAFB	Andersen Air Force Base
CAD	Computer-Aided Design
CE	Clearing Element
CEPOC	Clearing Element Point of Contact
Clearing Elements	Elements which require investigation and clearance prior to issuance of excavation permit clearance: - Electrical distribution - Water distribution - Communication line - Steam and hot water distribution - Sewerage - Petroleum/fuel oil lines - TV Cable - Environmental hazards and historical sites
Customer (Requester)	An entity requesting an excavation permit clearance under the following categories: - Funded Government - Non-Funded Government - Commercial - DZSP21 (Internal)
DZSP 21 A1501	Annex 1501 Facilities Management and Engineering Services

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DZSP 21 A1800	Annex 1800 Environmental
Easement	Strip of land used to construct and maintain underground utilities
Encroachment	Physical intrusion (location) of structure/utilities and part of structure/utilities, or land used in the area of the easement
MAXIMO	Contractor-owned Computerized Maintenance Management System (CMMS)
NAVFAC	Naval Facilities Engineering Command
NEPA	National Environmental Policy Act
POC	Point of Contact

5.0 REFERENCE DOCUMENTS:

5.1 PWD Guam Instruction 113310.2C *Utilities Excavation and Site Clearing Permit*

5.2 Base Operations Support Contract No. N40192-10-C-3000 PWS 3.5.2 *Dig Permit/Utility Underground Locating Services*

5.3 ENV-D-0101 *NEPA Coordinator Desk Guide*

6.0 RECORD:

Record	Responsible Organization	Retention Period
Excavation Permit Clearance Request	Facilities Management and Engineering Services	6 years and 3 months after final payment

7.0 PROCEDURE:

7.1 General

7.1.1 Excavation is defined as digging, grading, tunneling, trenching, vertical, and horizontal drilling below grade. Penetrations through concrete slab on grade, including asphalt and sidewalk are also treated as excavation.

Excavation permit clearance applies only for areas outside the building. This procedure requires that all required documentation to support the excavation permit clearance request shall be reviewed thoroughly for hazards.
The Excavation Permit Clearance Procedure has been established to:

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a. Assure the safety of personnel
b. Protect environmental and historical sensitive sites
c. Ensure operational reliability
d. Protect communication links
e. Protect underground structures
f. Ensure utilities system maps reflect existing conditions
g. Locate and mark unknown or abandoned utilities

7.2 Pre-permit Initiation Requirement:

7.2.1 Customer shall complete and submit the following to DZSP 21 A1501 Excavation Permit POC:

a. FME-F-0004 (a) (Current revision), *Excavation Permit Clearance Request,* (see Appendix A)
b. Detailed scope of work
c. Vicinity map showing location of project
d. Site map showing boundaries of areas to excavate (preferably colored) including estimated excavation depth
e. Outline perimeter of proposed excavation in white (whiskers, flags, or paint) at the construction site

   NOTE: Excavation permit clearance request will be returned to the Customer if proposed area of excavation is not outlined at the construction site.
f. NEPA documentation

   NOTE: Excavation permit clearance will not be issued without NEPA documentation, refer to ENV-D-0101 NEPA Coordinator Desk Guide
g. If payment is required, the following must be completed:
   - FME-F-0004 (b) *(Current revision), Excavation Payment Responsibility Form*, (see Appendix B)
   - FME-F-0004 (c) *(Current revision), Customer Payment Information Sheet*, (see Appendix C)

   NOTE: All Customer payment information will be kept confidential
h. For excavation permit clearance validity for more than 15 days, submit FME-F-0007 *(Current revision), Request for Excavation Long-Term Permit Extension*, (see Appendix E)
i. Coordinate excavation permit clearance request with the following CEPOC, and submit cleared documents to DZSP 21 A1501 Excavation Permit POC.
   - Docomo Pacific
   - GTA Teleguam

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7.2.2 Maximum validity period of an initial excavation permit clearance is **15 calendar days from the issuance date**

7.2.3 Maximum validity period of a long-term excavation permit clearance is **six months from the issuance date**

NOTE: Customer may request for an extension of validity period. Extension of validity period shall be considered as new request following the same procedure, including payment responsibility while referencing original excavation permit number.

7.3 Requirements:

7.3.1 The following CEs must be cleared prior to excavation on:

a. U.S. Navy properties and within encroachment of easements:
- Electrical distribution
- Water distribution
- Communication line
- Steam/hot water distribution
- Sewerage
- Petroleum/oil fuel line
- TV cable line
- Environmental hazards and historical sites. Possible delay if there is no complete NEPA such as, State Historic Preservation Office (SHPO, Section 106 Consultation- as applicable), refer to ENV-D-0101 NEPA Coordinator Desk Guide

b. AAFB
- Primary electrical lines

7.3.2 When excavation permit clearance request is received, DZSP 21 A1501 Excavation Permit POC shall:

a. Assign an excavation permit number
b. Create a MAXIMO work order (WO)
c. Coordinate and provide a copy of excavation permit clearance request to the following CEPOC:
- Navy Base Communication for communication lines
- Navy Fuel Division for petroleum/fuel oil lines
- DZSP 21 A1800 for environmental and historical/cultural

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impact

d. Coordinate excavation permit clearance request to CEPOC for the following clearing elements. Clearing elements are routinely cleared within five working days. Processing time begins next working day after clearance request is received.
   - Electrical distribution
   - Water distribution
   - Steam/hot water distribution
   - Sewerage
   - Storm drains

7.3.3 If CEPOC returns the excavation permit clearance request with a remark or statement of pre-requisite that must be addressed prior to issuing the excavation permit, DZSP 21 A1501 Excavation Permit POC shall coordinate the requirement to the Customer. Excavation permit clearance request will be on-hold until Customer meets the pre-requisite.

7.3.4 If Customer has a comment or statement of concern, DZSP 21 A1501 Excavation Permit POC shall provide feedback to CEPOC.

7.3.5 When excavation permit clearance have been received from CEPOC, DZSP 21 A1501 Excavation Permit POC shall:

a. Prepare final excavation permit by entering required information from original excavation permit clearance request (see Appendix A)
b. Enter all data from clearing elements including job site POC, and CEPOC comment including verbal communication (if any). Final excavation permit clearance request becomes the excavation permit.
c. Obtain approval signature of authorized person from DZSP21 A1501 once excavation permit is completed.
   - DZSP 21 A1501 Manager or Deputy Manager shall approve all long-term permit extension requests.
   - DZSP 21 A1501 Excavation Permit POC shall approve all excavation permits with validity dates of 15 calendar days.

7.3.6 Once the excavation permit has been signed, DZSP 21 A1501 Excavation Permit POC shall:

a. Issue approved excavation permit to Customer through email or fax.
b. Provide a copy of approved excavation permit to NAVFAC through email.
c. Close MAXIMO work order (WO).

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7.4 Roles and Responsibilities:

7.4.1 CEPOC shall:

a. Mark identified utilities per *Utility Location and Coordination Council of the American Public Works Association* (see Appendix D).
b. Comply with applicable Federal and State Health and Safety Regulations.

7.4.2 DZSP 21 A1501 shall:

a. Receive and process excavation permit clearance request. See Typical Permit Flow Chart (see Appendix F)
b. Initiate and process emergency excavation permit clearance request. See Emergency Permit Flow Chart (see Appendix G)
c. Assign personnel and resources to process excavation permit clearance
d. Coordinate with CEPOC to clear excavation area as required by provisions of Ref. 5.3. NAVFACMAR Guam Instruction 11310.2C
e. Mark identified and unknown utilities per Supplementary Marking (see Appendix D)
f. Report discrepancies to DZSP 21 A1501 CAD Section to ensure utilities system maps reflect existing conditions
g. Maintain a record of all excavation permits
h. Update tracker to identify status of excavation permits, as required
i. Notify Customer and NAVFAC representatives:
j. When an excavation permit cannot be issued within five working days due to inclement weather or overload request; provide tentative issuing date.

7.4.3 The Customer shall:

a. Maintain utility markings
b. Comply with excavation permit clearance validity
c. Report damage to underground utilities, structures, or historical sensitive sites as a result of permitted excavation

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8.0 EXHIBIT(S):

Appendix A : FME-F-0004 (a) (Current revision), *Excavation Permit Clearance Request*

Appendix B : FME-F-0004 (b) (Current revision), *Excavation Payment Responsibility Form*

Appendix C : FME-F-0004 (c) (Current revision), *Customer Payment Information Sheet*

Appendix D : Uniform Color Code

Appendix E : FME-F-0007 (Current revision), *Request for Excavation Long-Term Permit Extension*

Appendix F : Typical Permit Flow Chart

Appendix G : Emergency Permit Flow Chart

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9.0 APPROVAL:

PAUTARD.ALAIN.H.1296675748
2013.10.02 10:05:51 +10'00'

Alain Pautard — Date
Facilities Management and Engineering Services Manager

CONCURRED BY:

Concepcion.Shiela.R.ORC1000020211.ID
2013.10.02 15:12:18 +10'00'

Shiela Concepcion — Date
Quality Manager

CONCURRED BY:

10/22/13

Shannon Quihata — Date
Contracts Manager

CONCURRED BY:

10-22-13

O'Neal McAfee — Date
Project Safety Manager

CONCURRED BY:

Suzuki.Joseph.W.ORC1000023229.ID
Digitally signed by Suzuki.Joseph.W.ORC1000023229.ID
DN: c=US, o=U.S. Government, ou=ECA, ou=ORC, ou=DZSP 21 LLC, cn=Suzuki.Joseph.W.ORC1000023229.ID
Date: 2013.10.07 11:44:26 +10'00'

Joseph "Bill" Suzuki — Date
SRM Manager

CONCURRED BY:

10/8/13

Alejandro Soto — Date
Environmental Manager

CONCURRED BY:

10-21-13

Arnold Acojido — Date
Facilities Services Manager

CONCURRED BY:

10/22/13

Anna Sanchez — Date
Power System Manager

CONCURRED BY:

10/23/13

Rafael Mesa — Date
Water System Manager

CONCURRED BY:

WEAKLEY.DAVID.W.1398115585
Digitally signed by WEAKLEY.DAVID.W.1398115585
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=CONTRACTOR, cn=WEAKLEY.DAVID.W.1398115585
Date: 2013.10.07 14:59:11 +10'00'

David Weakley — Date
Wastewater System Manager

APPROVED BY:

10/21/13

Mark W. Lopez — Date
Public Works Director (PWD)

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APPENDIX A
EXCAVATION PERMIT CLEARANCE REQUEST

DZSP21

ANNEX 1501 FACILITIES MANAGEMENT AND ENGINEERING SERVICES

EXCAVATION PERMIT CLEARANCE REQUEST
PERMIT NO. _____

To be completed by Requestor

1 FROM (DEPT/ACTIVITY)	2 JOB NO	3 WORK REQUEST NO	4 DATE

5 TO	6 CONTRACT/REF/IO NO	7 DATE REQUIRED
DZSP 21 FACILITY MANAGEMENT AND ENGINEERING SERVICES		

8 AREA STAKED BY REQUESTOR (NOTE REQUEST WILL BE RETURNED IF PROPOSED AREA OF EXCAVATION IS NOT OUTLINED/MARKED AT THE CONSTRUCTION SITE)
- ☐ YES
- ☐ NO

9 EXCAVATION DEPTH	10 LOCATION AREA

11 METHOD OF EXCAVATION
- ☐ HAND TOOLS
- ☐ DITCHER
- ☐ POWER SHOVEL
- ☐ POWER EXCAVATOR
- ☐ OTHER (INDICATE) ____

12 SERVICES IDENTIFIED ON PLANS
- ☐ A) ELECTRICAL DISTRIBUTION
- ☐ B) WATER DISTRIBUTION
- ☐ C) COMMUNICATION LINE
- ☐ D) STEAM/HOT WATER DISTRIBUTION
- ☐ E) SEWERAGE
- ☐ F) PETROLEUM/FUEL OIL LINES
- ☐ G) TV CABLE

13 SCOPE OF WORK

14 HAS NEPA DOCUMENTATION BEEN COMPLETED? NOTE: IF NEPA HAS NOT BEEN COMPLETED FOR THE PROJECT, EXCAVATION PERMIT WILL NOT BE PROCESSED
- ☐ YES ☐ NO ☐ NOT Required per Environmental (See attached exclusion)

15 JOB SITE POINT OF CONTACT	16 TELEPHONE/FAX NOS	17 SIGNATURE CODE

Printed document may be obsolete-validate before use

FME-F-0004 (a) Current Revision

Printed 9/19/2013

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ANNEX 1501 FACILITIES MANAGEMENT AND ENGINEERING SERVICES

To be completed by DZSP 21 and approving officials

CLEARANCE REVIEW/APPROVAL

CLEARING ELEMENTS	REMARKS	SIGNATURE/CODE
A) ELECTRICAL DISTRIBUTION		
B) WATER DISTRIBUTION		
C) COMMUNICATION LINE		
D) STEAM/HOT WATER DISTRIBUTION		
E) SEWERAGE		
F) PETROLEUM/FUEL OIL LINES		
G) TV CABLE ☐ MARIANAS CABLE VISION (MCV) ☐ GTA TELEGUAM		
ENVIRONMENTAL		

18 REMARKS

This excavation permit does not grant easement to the U.S. Navy land or right of way. The requester shall secure and provide proof of authority from the owner/owners of the land where the excavation is required prior to release of this permit. This requirement is for private parties only as defined on PW/CGUAM INST 11310.2C. Normal engineering diligence was used in determining the possible existence of underground utilities and other items in the area covered by this permit. However, research capabilities are limited by outdated maps and other intrinsic equipment limitations. For this reason, the issuance of this permit provides no representation or guarantee of the underground conditions you may encounter and you assume total responsibility and risk associated with the work under this permit. If any damages occur due to improper marking or Subcontractor negligence, the Subcontractor must contact DZSP 21 immediately. Prior to repair of any utility lines, an inspection and approval to proceed must be conducted by DZSP 21. Contact DZSP 21 Facility Management and Engineering Services Dig Permit at 339-6200 or 339-4300 (Alternate)

19 IS EXPLOSIVE SAFETY SUBMISSION COMPLIANCE REQUIRED? ☐ YES (See Note) ☐ NO ☐ Work Plan Approved

NOTE: FOR DZSP21 INTERNAL REQUESTS AND DZSP21 CONTRACTED WORK, EXCAVATION PERMIT WILL NOT BE APPROVED WITHOUT A PROJECT SPECIFIC MEC/UXO CLEARANCE WORK PLAN. FOR ALL OTHERS, EGC COMPLIANCE IS THE RESPONSIBILITY OF THE REQUESTING DEPARTMENT/ACTIVITY (SEE BLOCK NO. 1). CONTACT NBG PWD AT 333-1326 FOR COMPLIANCE REQUIREMENTS.

20 CLEARANCE VALID UNTIL	21 APPROVAL ☐ Approved ☐ Disapproved	22 DATE	23 SIGNATURE

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FME-F-0004 (a) Current Revision

Printed 9/19/2013

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APPENDIX B
EXCAVATION PAYMENT RESPONSIBILITY FORM

DZSP21

ANNEX 1501 FACILITIES MANAGEMENT AND ENGINEERING SERVICES

EXCAVATION PAYMENT RESPONSIBILITY FORM

Determine what customer's ACRN will pay for the utilities excavation permit request

Contractor Name:	
Address:	
Phone No.	Fax No.
Email address:	
CME Name:	Contact No.
ET Name:	Contact No.

MILCON ☐ MCAF Title: _____ *(e.g. Arclight Realignment or Construct Gym Addition)*

☐ NAVY

Request DZSP 21 LLC to perform construction clearance for Contract No. _____

T.O. No _____ at _____ (specific location)

For Navy projects, the Annex 1501 COR or PAR must approve. For Housing projects, the appointed Ordering Officer must approve. Government Rep will ensure that funds are available under the appropriate Annex 1501 ACRN prior to work being requested

Routing:
- Contractor shall submit completed form/paperwork to the CME or ET
- CME or ET will submit form to
- A 1501 COR or PAR for submission to DZSP 21

Please indicate ACRN to be charged:

☐ ACRN _____

☐ Credit Card X X X X - X X X X - X X X X - _____ ☐ $1,650 (contract amount $750K and greater) ☐ $525 (contract amount less than $750K)

Requests for non-Navy projects must have an established ACRN or pay by credit card

☐ No ACRN – Contractor shall pay DZSP 21 directly

_____

CONTRACTING OFFICER REPRESENTATIVE (COR)

Print Name, Government Rep assigned to contract (COR, PAR, or Ordering Officer)

_____

Signature (COR, PAR or Ordering Officer)

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Printed: 9/19/2013

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APPENDIX C
CUSTOMER PAYMENT INFORMATION SHEET

DZSP21

ANNEX 1501-FACILITIES MANAGEMENT AND ENGINEERING SERVICES

CUSTOMER PAYMENT INFORMATION SHEET

Company or Command	Date
Point of Contact	Telephone and Fax No
Address	E-Mail Address

Brief Description of Work

Payment Information

Please indicate your method of payment:

☐ Credit Card	☐ Cash	☐ Pre-paid

If submitting payment via credit card, please fill in the following information:

Name on the Credit Card	
Credit Card No	Expiration Date
Type of Credit Card (DZSP 21 does NOT accept AMERICAN EXPRESS) ☐ VISA ☐ MASTERCARD	
Printed Name:	
Signature	

(NOTE: Failure to provide this information will cause delay in processing payment). Please email this to: DZSP21CommercialProject@dzsp21.com or Fax it to 479-3987-Finance.

TO BE COMPLETED BY DZSP 21

MAXIMO Work Order No	Project Abbreviation

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APPENDIX D
UNIFORM CODE

UNIFORM COLOR CODE

Utility Location and Coordination Council of the American Public Works Association

RED	Electrical Power Lines (by DZSP21)
YELLOW	Steam or Gaseous Materials (by NAVY)
BLUE	Water Distribution Lines (by DZSP21)
GREEN	Sewer and Storm Drains (by DZSP21)
WHITE	Proposed Excavation (by requester)
ORANGE	Comm. (by NAVY) and TV Cable Lines (by GTA, MCV)

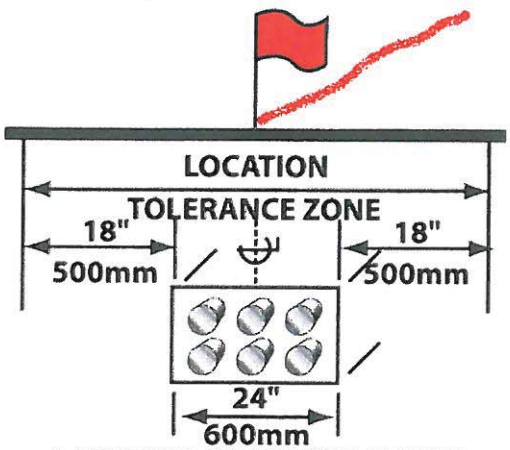
SUPPLEMENTARY MARKING

By DZSP21

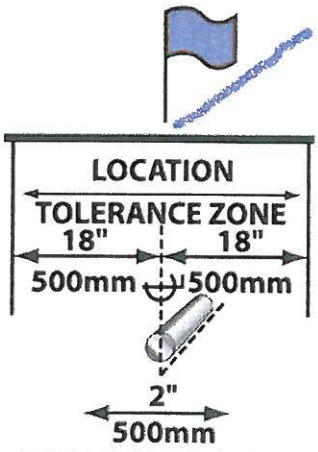
? RED	Unknown or Abandoned Utilities (by DZSP21)
E RED	Electrical Power Lines (by DZSP21)

NOTES:

- **Unknown or abandoned utilities are marked in red with a "?".**
- **Initial survey by Ground Penetrating Radar (GPR) are marked with dots (Unspecified color)**



LARGE PIPE OR MULTIPLE DUCTS



SMALL PIPE OR CABLE(S)

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APPENDIX E
REQUEST FOR EXCAVATION LONG-TERM PERMIT EXTENSION

DZSP21

ANNEX 1501-FACILITY MANAGEMENT AND ENGINEERING SERVICES

REQUEST FOR EXCAVATION LONG-TERM PERMIT EXTENSION

Contractor: _____

Project Number/Title: _____

Location: _____

Validity of Requested Permit: _____

Contractor's Signature: _____

Date: _____

The Contractor listed herein, by accepting this Dig Permit Extension, assumes all risk of damage and/or loss to any underground utilities, structures, and/or historically sensitive sites as a result of any excavation or other activity covered by this Dig Permit and agree to indemnify and hold DZSP 21 LLC harmless from and against any such liabilities. This assumption of risk extends final acceptance of the work by the Government or DZSP 21 LLC, or until DZSP 21 issues a renewed dig permit following the Utility Excavation Permit process. The Contractor receiving the permit is solely held responsible for all work under this permit, whether performed by the Contractor or others. The Contractor is responsible for maintaining the visibility of all paint markings for the duration of this permit extension. The Contractor is encouraged to stake or flag the paint markings in the event the paint markings become non-visible. The Contractor can request DZSP 21 re-mark the area if there are questions regarding the locations of the original paint markings. If any damages occur due to improper marking or Subcontractor negligence, the Subcontractor must contact DZSP 21 immediately. Prior to repair of any utility lines, an inspection and approval to proceed must be conducted by DZSP 21. Contact DZSP 21 Facility Management and Engineering Services, Dig Permit at 339-8296 or 339-4386 (Alternate). The Contractor shall have a copy of the permit on the job site at all times.

Official Use Only

Dig Permit No.: _____ **MAXIMO Number:** _____

DZSP 21 Facilities Engineering Manager Approval:

Print Name: _____

Signature: _____

Date: _____

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FME-F-0007 Current Revision Printed 9/19/2013

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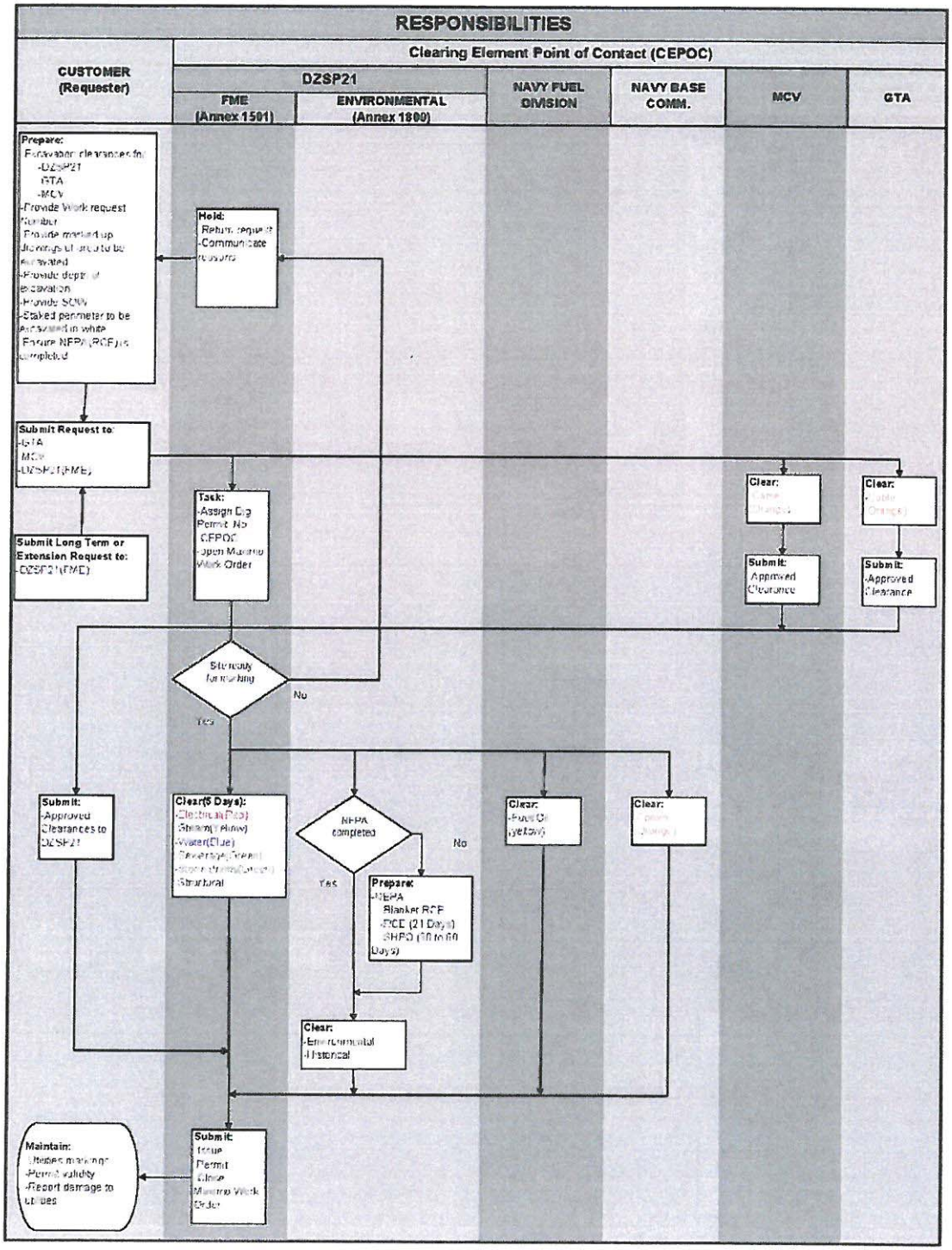
APPENDIX F
TYPICAL PERMIT FLOW CHART



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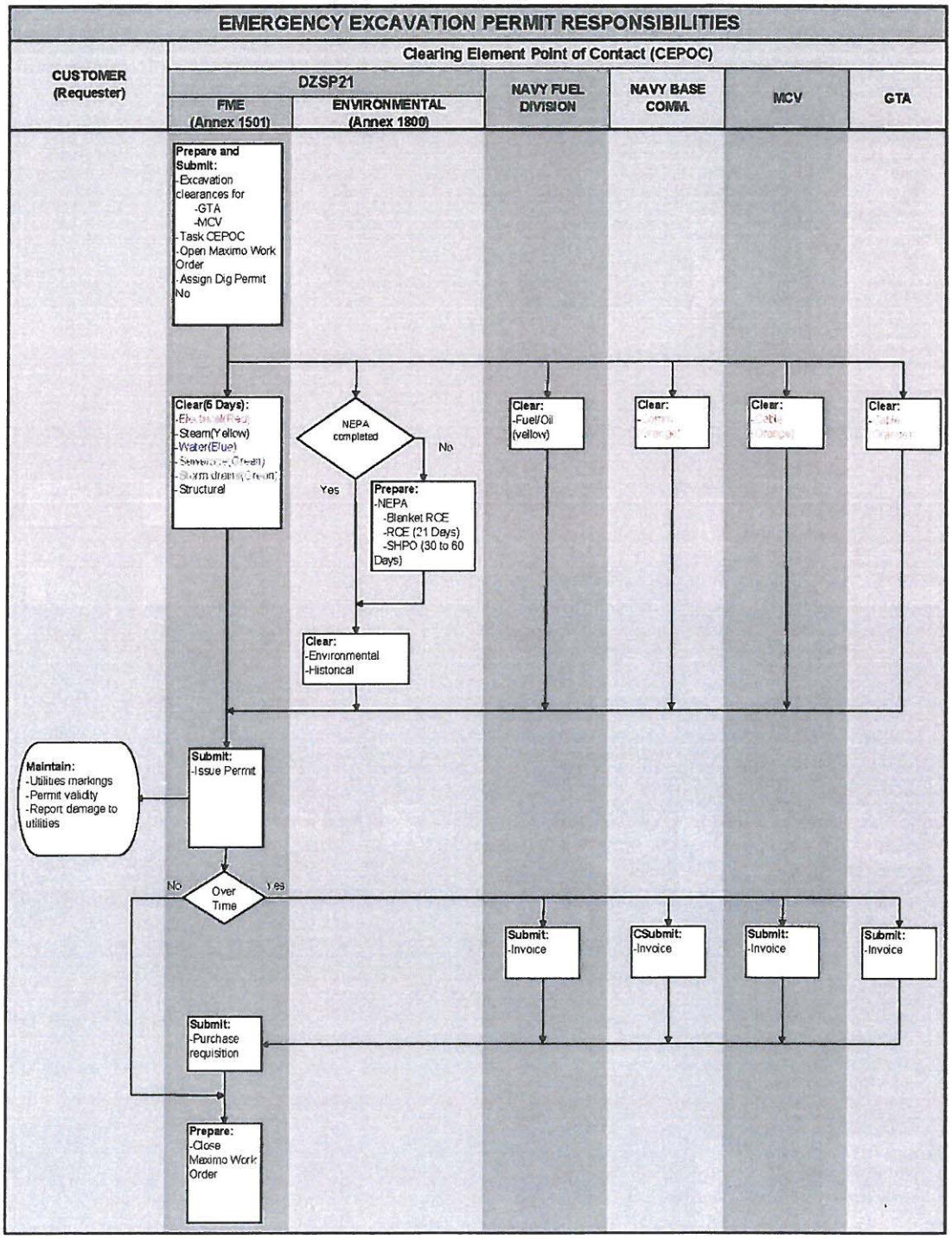
APPENDIX G
EMERGENCY PERMIT FLOW CHART



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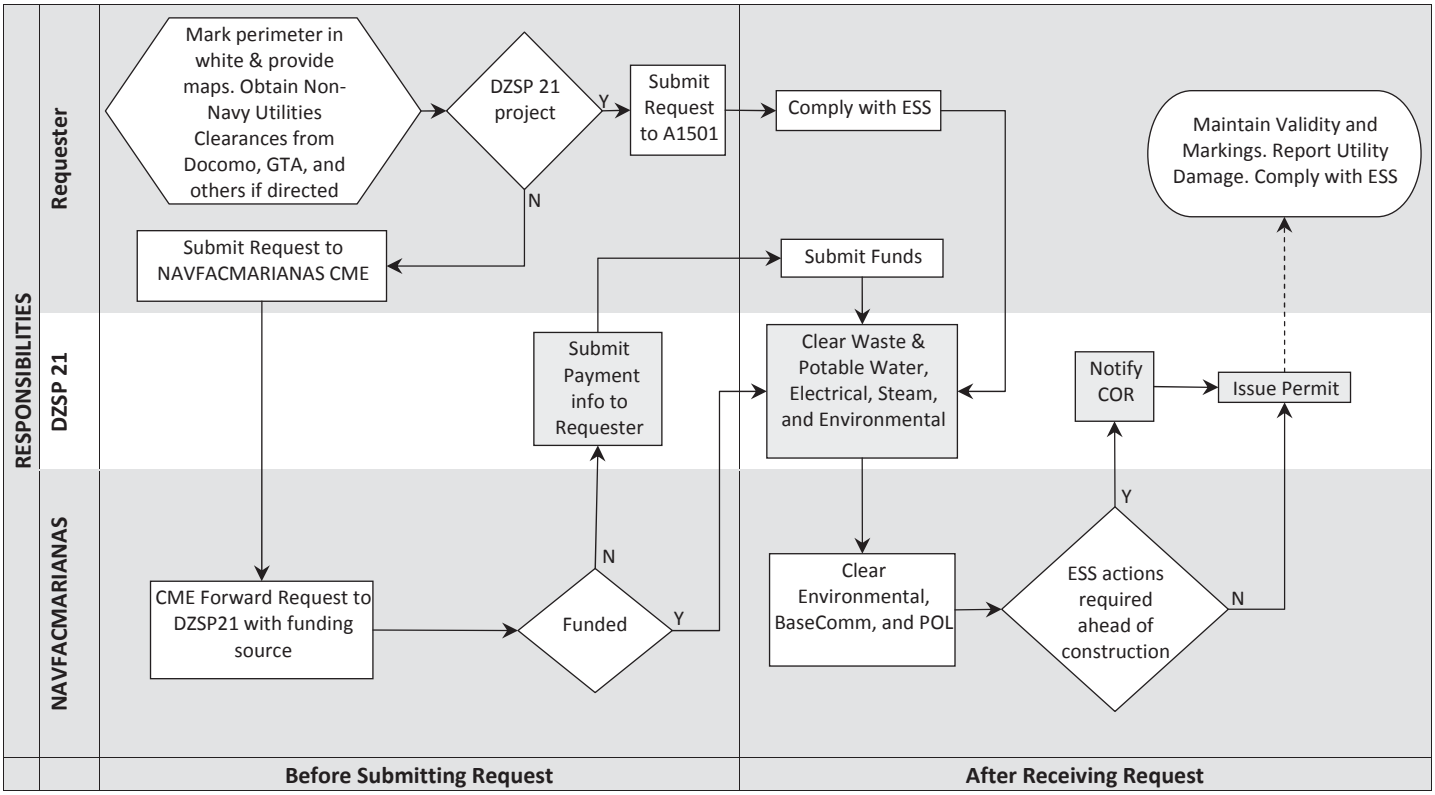
U.S. NAVAL BASE GUAM

EXCAVATION PERMIT CLEARANCE REQUEST

PERMIT NO. _____

SECTION A – EXCAVATION PERMIT PROCESS FLOWCHART AND COLOR CODE MARKINGS



UNIFORM COLOR CODE

Utility Location and Coordination Council of the American Public Works Association

COLOR		CLEARANCE RESPONSIBILITIES
	WHITE	Proposed Excavation by Requester
	PINK	Survey by Surveyor
	RED	Electrical by DZSP 21
	YELLOW	Petroleum, Oil, & Lubricant(POL) by Fuel Division Steam by DZSP 21
	ORANGE	Communication line by BaseComm Cable Television by GTA and Docomo Pacific
	BLUE	Potable Water by DZSP 21
	GREEN	Waste water by DZSP 21

NOTES:

- Initial survey by Ground Penetrating Radar (GPR) are marked with dots (Unspecified color)
- Unknown or abandoned utilities are marked in RED with a "? "
- "E" denotes electrical

Printed document may be obsolete - validate before use.

ANNEX 1501 FACILITIES MANAGEMENT AND ENGINEERING SERVICES

SECTION B – EXCAVATION PERMIT/CLEARANCE REQUEST *(To be completed by Requester)*

NOTE: Non-Navy utilities require clearances. Directly communicate with respective owner for excavation requests and clearances. Forward approved/signed documents to be attached with this request. This excavation permit will not be release without clearance documents from Docomo Pacific and GTA TeleGuam. Others may be required as applicable.

1. FROM *(ANNEX/DEPT/CONTRACTOR'S NAME)*	2. WORK ORDER NO.	3. DATE *(MM/DD/YYYY)*

4. LOCATION OF EXCAVATION (Specify the Bldg. no./area)

☐ Within DoD Property _____

☐ Outside DoD Property _____

5. CONTRACT/MEMO NO.

6. HOW IS THE EXCAVATION AREA OUTLINED/MARKED? *(NOTE: Request will be returned if area of excavation is not outline/marked at the construction site)*

☐ White paint ☐ White flags (do not use flags with metal rods) ☐ Other *(Specify)* _____

7. EXCAVATION DEPTH

8. METHOD OF EXCAVATION (Check all applicable)

☐ Hand Tools
☐ Ditcher
☐ Power Shovel
☐ Power Excavator
☐ Other *(Specify)*

9. ACTIVITIES *(Check all applicable, if any)*

☐ Vegetation Clearing
☐ Requester in block no.1 is the MEC contractor
☐ Collecting samples; installing erosion control materials, fence posts, sign posts, rods, anchors; vertical drilling, boring
☐ Excavation limited to an existing trench foot print
☐ Grading
☐ Non DoD Project
☐ Routine/Preventive Maintenance
☐ Modification/Demolition to a building or structure
☐ Trenching new utilities
☐ Penetrations through concrete slab on grade, including asphalt and sidewalk
☐ Penetrations through existing building concrete slab
☐ Excavation in the vicinity of wetland/navigable waters
☐ Other *(Specify)* _____

10. PROJECT TITLE	11. REQUESTED PERMIT VALIDITY *(MM/DD/YYYY)*

12. SCOPE OF WORK

This permit does not grant encroachment to DoD easement or right of way, unless Requester has permission from the land owner(s). Engineering diligence was used in determining the location of underground utilities and other items. However, research capabilities are limited by outdated maps and other intrinsic equipment limitations. For this reason, the issuance of this permit provides no representation or guarantee of the underground conditions you may encounter. The Contractor, by accepting this Dig Permit, assumes all risk of damage and/or loss to any underground utilities, structures, and/or historically sensitive sites as a result of any excavation or other activity and agrees to indemnify and hold DZSP 21 LLC harmless from and against any such liabilities. This assumption of risk extends until final acceptance of the work by the Government or DZSP 21 LLC. The Contractor receiving the permit is solely held responsible for all work under this permit, whether performed by a Sub-contractor or others. The Contractor is responsible for maintaining the visibility of all temporary paint markings for the duration of this permit. The Contractor is encouraged to stake or flag the markings. The Contractor can request DZSP 21 to re-mark the utilities based on funding availability. If any damages occur, contact DZSP 21 immediately. Prior to repair of any utility lines, an inspection and approval to proceed must be conducted by DZSP 21. Contact DZSP 21 Facility Management and Engineering Services, Dig Permit at 339-4386. The Contractor shall comply with ESS. The Contractor shall have a copy of the permit on the job site at all times. Submit all dig permit correspondence to DZSP21Annex1501DigPermitTeam@dzsp21.com

13. NAVFACMARIANAS CONSTRUCTION MANAGEMENT ENGINEER (CME)/CONTACT NO.

14. JOB SITE POINT OF CONTACT/CONTACT NO.	15. REQUESTOR SIGNATURE	16. TELEPHONE/FAX NOS.

SECTION C – PAYMENT RESPONSIBILITY *(To be completed by NAVFACMARIANAS CME)*

1. FUNDING SOURCE (ACRN or Flat rate)

☐ ACRN: _____

Flat rate *(Contractor shall pay DZSP 21 directly)*

☐ $525 *(Contract Amount less than $750K)*

☐ $1,650 *(Contract Amount $750K and greater)*

2. NAME OF APPROVING GOVERNMENT REPRESENTATIVE *(COR/PAR)*	3. SIGNATURE *(COR/PAR)*

ANNEX 1501 FACILITIES MANAGEMENT AND ENGINEERING SERVICES

SECTION D – CLEARANCE APPROVAL ***(To be completed by DZSP 21)***		
CLEARING ELEMENTS	REMARKS	SIGNATURE
1. NAVY ELECTRICAL DISTRIBUTION		
2. NAVY POTABLE WATER DISTRIBUTION		
3. NAVY STEAM DISTRIBUTION		
4. NAVY WASTE WATER DISTRIBUTION		
5. ENVIRONMENTAL	(See attached Clearance, reference Form. no. ENV-F-0120/Annex 1800 document)	
SECTION E – CLEARANCE REVIEW/APPROVAL ***(To be completed by NAVFACMARIANAS, coordinated by DZSP21)***		
1. NAVY COMMUNICATION LINE (by BaseComm)		
2. NAVY POL (by Fuel Division)		

SECTION F – CLEARANCE REVIEW/APPROVAL ***(To be provided by Requester)***	
1. OTHERS (Non NAVY Utilities) (by respective owner) ☑ DOCOMO PACIFIC ☐ GPA ☑ GTA TELEGUAM ☐ GWA ☐ Others (Specify)_____	(See attached Clearance documents submitted by CME/Requester)

SECTION G – ESS COMPLIANCE/UNEXPLODED ORDNANCE (MEC/MPPEH) ***(To be completed by DZSP 21)***

Per Explosives Safety Submission Munitions Response Sites GUAM CONSTRUCTION SUPPORT, Amendment series.

NOTE: For DZSP21 internal requests and DZSP21 contracted work, Excavation Permit will not be approved without ESS Compliance. For all others, ESS Compliance is the responsibility of the requesting Department/Activity (See section B1). Contact NBG PWD AT 333-1326 for compliance requirements.

LIKELIHOOD *(See JRM ESS Figures 1-2 Series)*	**ACTION REQUIRED AHEAD OF CONSTRUCTION** *(For DZSP 21 INTERNAL ONLY)*	**TECHNIQUE** *(For DZSP 21 INTERNAL ONLY)*	**DIRECTION**
☐ Not Applicable (Non DoD Project) ☐ Low (Green)			☐ No action required ahead of construction. Construction site is managed as a low likelihood area.
☐ Moderate (Yellow) or High (Red). Site requires compliance for the construction foot-print to applicable depths	☐ Full Clearance	☐ Surface Clearance ☐ Intrusive Investigations	☐ Actions required ahead of construction ☐ Execute per attached documentation(s)
	☐ Mitigation Work plan		
		☐ Execute Excavation per Anomaly Avoidance technique as per JRM ESS Sec 6.1.5.	

SECTION H – REMARKS/CAVEATS/VALIDITY/APPROVAL ***(To be completed by DZSP 21)***

If unexploded ordnance is uncovered, **STOP EXCAVATION**, and call the following:
- 911
- JRM Region Operation Center (ROC) at 349-4004
- NBG Emergency Operation Center (EOC) at 339-7760/7338

If any utility damages occur, contact DZSP 21 Service Support Center (SSC) at 339-4400.
If any inadvertent archeological discovery, **STOP WORK**, and contact NAVFAC Environmental at 339-2093.
Upon project completion, discard utility marking flags, if any.

1. CLEARANCE VALID UNTIL *(MM/DD/YYYY)*	2. SIGNATURE	3. DATE *(MM/DD/YYYY)*

UTILITY OUTAGE COORDINATION
Andersen Air Force Base, Guam

DATE SUBMITTED: _____

-Areas 1-3 to be completed by requester
-Areas 4-7 must be completed by requester & project inspector 10 days prior to outage.

DATE OF UTILITY OUTAGE: TIME:

1. REASON:

2. See Attachment

3. REQUESTER'S NAME, COMPANY, UNIT, AND CONTACT NUMBER

4.PUBLIC ANNOUNCEMENT USED: [ ] BASE BULLETIN [ ] PACIFIC EDGE [ ] CHANNEL 28

5.COORDINATED WITH: (BY VISIT / PHONE) NAME AND DATE/TIME CONTACTED

A. ELECTRICAL SUPPORT SYSTEM	366-4275	24-hr notification rqrd
B. POWER PRODUCTION SUPPORT	366-5203	24-hr notification rqrd
C. INFRASTRUCTURE SUPPORT	366-5028	
D. FIRE DEPT ALARM CONTROL CENTER	366-5284	24-hr notification rqrd
E. COMMUNICATIONS	366-2626	
F. UTILITIES/WATER SUPPORT	366-4305	
G. CHIEF, ENGINEERING FLIGHT	366-1178	
H. 554 RED HORSE (1LT UNDERWOOD)	366-6115	
I. DZSP 21 ELECTRICAL SUPPORT	333-2011	24-hr notification rqrd

6. OUTAGE COMMAND NOTIFICATION

_____ _____
COMMANDER, 36TH CIVIL ENGINEER SQUADRON DATE TIME

7. OUTAGE AUTHORIZATION SIGNATURE

_____ _____
CHIEF, OPERATIONS FLIGHT DATE TIME

8. RETURN TO CES CUSTOMER SUPPORT

_____ _____
OPERATIONS MANAGEMENT REPRESENATIVE DATE TIME

UTILITY OUTAGE COORDINATION
Andersen Air Force Base, Guam

DATE SUBMITTED: _____

-Areas 1-3 to be completed by requester
-Areas 4-7 must be completed by requester & project inspector 10 days prior to outage.

2. BLDG #	PRINT	SIGNATURE	PHONE	DATE/TIME
A.				
B.				
C.				
D.				
E.				
F.				
G.				
H.				
I.				
J.				
K.				
L.				
M.				
N.				
O.				
P.				
Q.				
R.				
S.				
T.				
U.				
V.				
W.				
X.				
Y.				
Z.				
AA.				
BB.				
CC.				
DD.				
EE.				
FF.				
GG.				
HH.				
II.				
JJ.				
KK.				
LL.				
MM.				

Electrical Outage Notice N40192-09-D-2706-0011 Replace Outdated/Deteriorated/Switchgears - Outage Scheduled for 08 and 15 February, 2015

- **Facilities Affected**
  - **B25009 – Kosrae Hall**
  - **B25045 – Gymnasium**
  - **B25014 - Chiller**
  - **B25010 – Magellan Inn**
  - **B25017 – Rota Hall**
  - **B27005 – Dormitory**
  - **B1088 – Cart Parking**
  - **B1098 – Lift Station**
  - **B1091 – Golf Course Clubhouse**
  - **B28140- Pump Station**
- **Facilities Affected BY A/C only;**
  - **B25016 –Palau Hall**
  - **B25007 - Saipan Hall**
  - **B25003 – Billeting**
  - **B27000 – Phonapie – Hall**
  - **B27001 – BEQ**
  - **B25005 – Hot Spot/Bowling Alley**
- **Projected Dates/Time**
  - **08 and 15 February 2015, 0800-1800**
- **Coordinating Agencies**
  - 36 CES**:** Mr. Edwin Leonin,366-5746
  - 36 CES: Roger Nafrada, 366-2558
  - AAFB DZSP
  - AAFB Power Shop

- **Details**
  - **Removal of existing 250MCM cable from existing SW to MH's at SW 148 to SW 154**
  - **Install new 350MCM cable from MH's to SW.**
  - **Install Primary Switches at SW 148 to SW 154.**

SAMPLE NOTICE