



WORK ORDER NO. 639861

**First Naval Construction Division Operations Control  
Facility**

At the

**NAVPHIBASE Little Creek, Norfolk, Virginia**

(P-851)

PREPARED BY:

NAVFAC Hampton Roads IPT  
Norfolk, VA 23665

Architectural: Robert L. Jones  
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Submitted By:

Date: February 8, 2010

APPROVED BY:

Hampton Roads Capital Improvements  
Business Line Team Leader:  
For Commander, NAVFAC Mid-Atlantic:  
Date: February 8, 2010

Robert L. White, P.E.





## **Proposal Forms and Documents**

First Naval Construction Division Operations  
Control Facility

P-851

FY 2010

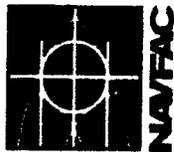
Category Code 143.65

NAVPHIBASE Little Creek  
Norfolk, Virginia

**Date (Final) February 8, 2010**

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Naval Facilities Engineering Command, Mid-Atlantic  
 Hampton Roads Integrated Product Team, Bldg Z-140  
 9742 Maryland Avenue  
 Norfolk, Virginia 23511-3095

Work Order Number 639861  
 FY-2010 Project P-851, 1 NCD Operations Control Facility  
 Naval Amphiblan Base Little Creek  
 Virginia Beach, Virginia

**Checklist for Design-Build Project Solicitation Package  
 Acceptance Satisfactory To the Participants – “Sat-To”**

The checklist is provided to ensure that the project solicitation package has been reviewed and meets the requirements of the sponsors and users, is within the scope of the DD Form 1391 documents, and meets constructability needs.

**SPONSOR CLIENT**

- The Project Program accurately represents the requirements as stated in the DD Form 1391 and as clarified in solicitation preparation meetings between Sponsor, Users (if different from Sponsor), and Design Team.

**USER CLIENT**

- The Project Program accurately represents the requirements as stated in the DD Form 1391 and as clarified in solicitation preparation meetings between Sponsor, Users (if different from Sponsor), and Design Team.

**CAPITAL IMPROVEMENTS**

- The Project Program accurately represents the requirements as stated in the DD Form 1391 and the final Government Estimate identifies a Base Bid that is within the Funds Authorized in the DD Form 1391.

**PWD**

- The Project Program requirements provide the basis for a constructible facility.

**Signatures of Project Program Development Participants for  
 Sat-To:**

**CLIENTS:**

NAME Kenneth L. Varkatis, LCDR, USN DATE 29 JAN 10  
 (RESERVED 19 JAN 10)

**CAPITAL IMPROVEMENTS:**

DATE

**PWD:**

DATE





## **General Requirements**

First Naval Construction Division Operations  
Control Facility

P-851

FY 2010

Category Code 143.65

NAVPHIBASE Little Creek  
Norfolk, Virginia

**Date (Final) February 8, 2010**

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## SECTION 01 14 00.05 20

## WORK RESTRICTIONS FOR DESIGN-BUILD

11/07

## PART 1 GENERAL

## 1.1 DEFINITIONS

## 1.1.1 State

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

## 1.2 SUBMITTALS

The use of a "G" following a submittal indicates that a Government approval action is required. Submit the following 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

Visit Request for Pearl Harbor Naval Shipyard Form (PHNSY 14ND-SYD-5512/28); G

Completed Special Access Determination (NAVSEA 5510/15); G

Pier parking authorization; G

Government guard services; G

Meal Signature Record Book (MSRB); G

Dining and lodging requirements; G

Housing plan; G

Medical plan; G

Contractor regulations; G

Transportation of personnel, materials, and equipment; G

Purchase orders; G

Personnel List; G

Vehicle List; G

Statement of Acknowledgement Form SF 1413; G

## 1.3 SPECIAL SCHEDULING REQUIREMENTS

- a. The project site shall be ready for operation as approved by Contracting Officer before work is started on which would interfere with normal operation.

- b. Have materials, equipment, and personnel required to perform the work at the site prior to the commencement of the work. Specific items of work to which this requirement applies include:
- c. The surrounding site will remain in operation during the entire construction period. Conduct operations so as to cause the least possible interference with normal operations of the activity.
- d. Permission to interrupt any Activity roads, railroads, and/or utility service shall be requested in writing a minimum of 15 calendar days prior to the desired date of interruption.
- e. 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.
- f. NMCI Contractor Access: The NMCI Contractor must be allowed access to the facility towards the end of construction (finishes 90% complete, rough-in 100% complete, Inside Plant (ISP)/Outside Plant (OSP) infrastructure in place) to provide equipment in the telecommunications rooms and make final connections. The Contractor will be required to coordinate their efforts with the NMCI contractor to facilitate joint use of building spaces during the final phases of construction and work the coordination effort into the construction schedule. Requirements for NMCI are specified in Part 4, D50 ELECTRICAL and G40 SITE ELECTRICAL UTILITIES.

#### 1.4 CONTRACTOR ACCESS AND USE OF PREMISES

##### 1.4.1 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. Wear hard hats in designated areas. Do not enter any restricted areas unless required to do so and until cleared for such entry. The Contractor's equipment shall be conspicuously marked for identification.

##### 1.4.1.1 Subcontractors and Personnel Contacts

Furnish 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.

##### 1.4.1.2 Identification Badges

Identification badges, if required, will be furnished without charge. Application for and use of badges will be as directed. Furnish a completed EMPLOYMENT ELIGIBILITY VERIFICATION form (DHS FORM I-9) for all personnel requesting badges. This form is available at <http://uscis.gov/graphics/formsfee/forms/files/i-9.pdf>. Immediately report instances of lost or stolen badges to the Contracting Officer.

#### 1.4.1.3 Personnel Entry Approval

Failure to obtain entry approval will not affect the contract price or time of completion.

#### 1.4.2 Working Hours

Regular working hours shall consist of an 8 1/2 hour period established by the Contracting Officer, between 7 a.m. and 3:30 p.m., 7:00 a.m. and 3:30 p.m., Monday through Friday, , excluding Government holidays.

#### 1.4.3 Work Outside Regular Hours

Work outside regular working hours requires Contracting Officer approval. Make application 15calendar days prior to such work to allow arrangements to be made by the Government, 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 shall be lighted in a manner approved by the Contracting Officer.

#### 1.4.4 Occupied and Existing Buildings

The Contractor shall be working in an existing building, (during demolition of building 3006) and around existing buildings which are occupied. Do not enter the buildings without prior approval of the Contracting Officer.

The Government will remove and relocate other Government property in the areas of the building3006, within ninety (90) days after receiving beneficial occupancy of the new facility. (First Naval Construction Division Operations Control Facility).

#### 1.4.5 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, and steam shall be considered utility cutovers pursuant to the paragraph entitled "Work Outside Regular Hours."
- d. Operation of Station Utilities: The Contractor shall 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 shall notify the Contracting Officer giving reasonable advance notice when such operation is required.

##### 1.4.5.1 Location of Underground Utilities

Obtain digging 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 surface where existing underground utilities or utilities encased in pier structures are discovered. Verify the elevations of existing piping, utilities, and any type of underground or 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. Contact Miss Utility 48 hours prior to excavating. Contractor is responsible for marking all utilities not marked by Miss Utility.

## 1.5 SECURITY REQUIREMENTS

### 1.5.1 Joint Expeditionary Base, Little Creek - Fort Story Norfolk, VA

a. Contractor registration. Register with the Base Police Truck Investigation Team, Pass and ID Office on Shore Drive, Joint Expeditionary Base, Little Creek - Fort Story, Norfolk, VA. .

b. Storage and office trailer registration. Register storage and office trailers to be used on base with the truck investigation team. Trailers shall meet State law requirements and shall be in good condition.

(1) Trailers shall be lockable and shall be locked when not in use.

(2) Trailers shall have a sign in the lower left hand corner of left door of trailer with the following information: Company name, address, registration number of trailer or vehicle identification number, location on base, duration of contract or stay on base, contract number, local on-base phone number, off-base phone number of main office, and emergency recall person and phone number.

c. Equipment markings. Equipment owned or rented by the company shall have the company name painted or stenciled on the equipment in a conspicuous location. Rented equipment is to be conspicuously marked with a tag showing who rented the equipment. Register the equipment with the truck investigation team.

d. Procedure information. For additional information regarding registration procedures, contact the Officer in Charge of Construction at (757) 445-1463 or Base Police at (757) 322-4500.

## 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

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.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EP-1110-1-8 (2003) Construction Equipment Ownership and Operating Expense Schedule, Vol 1-12

## 1.2 SUBMITTALS

The use of a "G" following a submittal indicates that a Government approval action is required. Submit the following 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

Schedule of prices; G

## 1.3 SCHEDULE OF PRICES

## 1.3.1 Schedule Instructions

Payments will not be made until the Preliminary Schedule of Prices or Cost Loaded Critical Path Method (CPM) schedule has been submitted to and accepted by the Contracting Officer. In addition to the Contracting Officer, submit information copy of the Preliminary Schedule of Prices or the first Cost Loaded CPM Schedule directly to the NAVFAC Chief Cost Engineer at the following mailing or email address:

- a. Commander  
NAVFAC Atlantic, FEAD, PWD, Little Creek, 1450 Gator Boulevard.  
Joint Expeditionary Base, Little Creek - Fort Story, Norfolk, VA  
Attention: CI Cost
- b. FacilityCostData@navy.mil

The Schedule of Prices or the Cost Loaded CPM Schedule shall identify the cost for site work, and include incidental work to the 1.5 m( 5 foot) line. Identify costs for the building(s), and include work out to the 1.5 m( 5 foot) line. Work out to the 1.5 m( 5 foot) line shall include construction encompassed within a theoretical line 1.5 m( 5 feet) from the face of exterior walls and shall include attendant construction, such as cooling towers, placed beyond the 1.5 m( 5 foot) line.

## 1.3.2 Schedule Requirements for HVAC TAB

The field work required by PTS Section D30, HVAC, shall be broken down in

the NAS by separate line items which reflect measurable deliverables. Specific payment percentages for each line item shall be determined on a case by case basis for each contract. The line items shall be as follows:

- a. Approval of Design Review Report
- b. Approval of the pre-field engineering report
- c. Season I field work
- d. Approval of Season I report
- e. Completion of Season I field QA check
- f. Approval of Season II report

#### 1.3.3 Data Required

If the contract requires the use of a cost loaded CPM, the information required for the Schedule of Prices will be entered as an integral part of the Network Analysis Schedule (NAS) and its Mathematical Analysis. Provide a detailed breakdown of the contract price, giving quantities for each of the various kinds of work, unit prices, and extended prices therefore. Costs shall be summarized and totals provided for each construction category.

#### 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 shall 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 shall include items required by FAR 52.232-5, "Payments under Fixed-Price Construction Contracts" and the following:

- a. The Contractor's invoice certified by QC, on the form furnished by the Government for this purpose, showing in summary form, the basis for arriving at the amount of the invoice. Submit number of copies required by the Contracting Officer.
- b. The Contract Performance Statement on the form furnished by the Government for this purpose, showing in detail, the estimated cost, percentage of completion, and value of completed performance for each of the construction categories stated in this contract. Submit number of copies required by the Contracting Officer.
- c. Final invoice shall be accompanied by Final Release Form. If the contractor is incorporated, the release shall contain the corporate seal. An officer of the corporation shall sign the release and the corporate secretary shall certify the release.

- d. Updated schedule if not already submitted per Section 01 32 17.05 20.
- e. Contractor Safety Self Evaluation Checklist (original).
- f. Monthly Work-hour Report.
- g. Solid Waste Disposal Report.

1.5.2 Mailing of Invoices

- a. All invoices shall be forwarded with specific marking on the envelope. This marking shall be in the front lower left hand corner, in large letters, "INVOICES - ENCLOSED."
- b. Invoices not completed in accordance with contract requirements will be returned to the Contractor for correction of the deficiencies.
- c. Final invoices not accompanied by Final Release Form 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.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --



## SECTION 01 30 00.05 20

## ADMINISTRATIVE REQUIREMENTS FOR DESIGN-BUILD

11/07

## PART 1 GENERAL

## 1.1 SUBMITTALS

The use of a "G" following a submittal indicates that a Government approval action is required. Submit the following 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

Insurance; G

## 1.2 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.

## 1.3 CONTRACTOR PERSONNEL REQUIREMENTS

## 1.3.1 Subcontractor Special Requirements

## 1.3.1.1 Asbestos Containing Material

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

## 1.3.1.2 HVAC TAB

All contract requirements of TAB work required by PART 4, D30, HVAC, shall be accomplished directly by a first tier subcontractor. No TAB work required by PART 4, D30, HVAC, shall be accomplished by a second tier subcontractor.

## 1.3.1.3 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, shall 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 shall be accomplished by a second tier subcontractor.

#### 1.4 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, the Quality Control (QC) representative shall also have fluent English communication skills.

#### 1.5 AVAILABILITY OF CADD DRAWING FILES

After award and upon request, the electronic "Computer-Aided Drafting and Design (CADD)" drawing files will 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 shall 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 shall be at the sole risk of the Contractor and without liability or legal exposure to the Government. The Contractor shall 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 shall, 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 shall 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) shall be removed.

#### 1.6 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. Replace 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

11/07

## 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. Submit the following in accordance with Section 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

CDW Facilitator Experience Resume; G

CDW Preliminary Concept Design; G

CDW Basis of Design with Cost Estimate; G

CDW Concept Design Report; G

## 1.3 POST AWARD KICKOFF MEETING

The Post Award Kickoff (PAK) meeting is made up of Contract Administration, Concept Design Presentation/ 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 consecutive multi-day meeting or separate meetings.

## 1.3.1 PAK Meeting Schedule and Location

Within 21 calendar days after contract award, and prior to commencing work, meet with the Contracting Officer for the PAK meeting(s). The meeting shall 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 UFGS Section 01 32 17.05 20, Network Analysis Schedule (NAS) for Design-Build. Discuss design milestones and events that need to be included in the Quality Control Communication Plan.

g. Establish clear expectations for facility turnover.

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.

#### 1.3.3 PAK Meeting Contractor Attendees

The following Contractor key personnel shall 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, and the Commissioning Authority. 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 Concept Design Workshop (CDW)

Provide as specified in Appendix 01 31 19.05 20-1, CONCEPT DESIGN WORKSHOP.

##### 1.3.5.1 CDW Meeting Attendees

The following Contractor key personnel shall 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.

#### 1.3.6 Partnering

**LEVEL A PARTNERING:** The Contractor shall conduct partnering sessions with key personnel of the project team, including Contractor's personnel and government personnel. The partnership will draw on the strength of each organization in an effort to achieve a quality project done right the first time, within budget, on schedule, and without any safety mishaps..

To most effectively accomplish this contract, the Government requires the formation of a cohesive partnership with the Contractor and its

subcontractors. Key personnel, including the client who will occupy the facility, principal individuals from NAVFAC (Echelon III and/or IV), PWD FEAD, PM&E Branch, Construction Manager (CM)/ Resident Officer in Charge of Construction (ROICC), the project sponsor, and representative(s) of the facility owner will be invited to participate in the partnering process. Key members of the prime and subcontractors teams, including senior management, must participate.

The Contractor shall pay all costs associated with the partnering effort including facilitator, meeting room and other incidental items. Before the partnering session, the contractor shall coordinate with the facilitator requirements for incidental items (audio-visual equipment, two 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 shall bear their own costs for meals, lodging and transportation associated with partnering.

a. The Initial Partnering Session shall be a duration of one day minimum Located at a place off base as agreed to by the partners. May take place concurrently with the PAK Meeting with Contractor's Participants to include those listed in paragraph "PAK Meeting Attendees". The Contractor shall provide a Facilitator who is experienced in conducting Partnering Workshops. The Facilitator is responsible for leading the team in a timely manner and making sure that issues are identified and resolved. The Facilitator shall be acceptable to the CM/ROICC.

b. The Follow on Partnering Session(s) generally lasts a half day or less and is 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. Schedule quarterly meetings and may be held concurrently with other scheduled meetings, such as QC meetings. Participants may be only those required to resolve current issues. No facilitator required unless desired by the partners.

#### 1.3.7 Performance Assessment Plan (PAP)

The Performance Assessment Plan (PAP) shall 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 finalized 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.

#### 1.3.8 Project Schedule

Provide in accordance with Section 01 32 17.05 20 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 shall 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 shall 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

Provide Quality Control and Production Meetings in accordance with UFGS Section 01 45 00.05 20, Design and Construction Quality Control.

##### 1.6.2 Safety Meetings

Provide Safety Meetings in accordance with UFGS Section 01 35 29.05 20, Safety and Occupational Health Requirements for Design-Build.

#### 1.7 FACILITY TURNOVER PLANNING MEETINGS (NAVFAC RED ZONE - NRZ)

Key personnel will meet 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 and convene the Facility Turnover Meetings once the project has reached approximately 75% completion or three

to six months prior to Beneficial Occupancy Date (BOD), whichever comes first. The Contracting Officer's Representative will lead the meetings and guide the discussions based on an agenda provided by the Government. The Facility Turnover effort shall include the following:

a. PAK Meeting - Contracting Officer's Technical Representative (COTR) will provide the NRZ Checklist and the Contractor, Client, and NAVFAC Representatives will compare Contractor's schedule to NRZ Checklist to ensure all Contractor Checklist Items are included in the schedule and to discuss the scheduling impact of Client and NAVFAC Checklist Items.

b. Facility Turnover Meetings -

1. Fill in the NRZ Checklist including Contractor, Client, and NAVFAC Checklist Items and assign a person to be responsible for each item and a due date. The Contracting Officer's Representative will facilitate the assignment of responsibilities and fill out the NRZ Checklist.

2. Review the Contractor's updated schedule. The Contracting Officer's Representative shall develop a POAM for the completion of all Contractor, Client, and NAVFAC Checklist items.

3. Confirm that all NRZ Checklist items will be completed on time for the scheduled Facility Turnover.

#### 1.7.1 Facility Turnover Meeting Attendees

The following key personnel shall attend the Facility Turnover Meetings: Contractor QC Manager, Design Quality Control Manager, Superintendent, Major Subcontractors, Designer-of-Record, Contracting Officer's Representative, Representative(s) of NAVFAC, the Facility Owner, and the Client.

#### PART 2 PRODUCTS

Not Used.

#### PART 3 EXECUTION

Not Used.



Appendix 01 31 06-1  
CONCEPT DESIGN WORKSHOP (CDW)

Provide the following information:

- a. CDW Facilitator Experience Resume
- b. CDW Preliminary Concept Design
- c. CDW Basis of Design with Cost Estimate
- d. CDW Concept Design Report

1. General

- 1.1 Methodology. A Concept Design Workshop will be conducted for this project. 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.
- 1.2 Facilitator. The Contractor will provide a Facilitator who is experienced in conducting Concept Design Workshops. 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.
- 1.3 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.
- 1.4 Concept Design Workshop Report. Produced almost entirely on-site, the Concept Design Workshop Report will summarize the final conceptual design.
- 1.5 Award Amount. At each contract stage, the Contractor shall verify that the concept is within the contract award amount.

2. Procedure

- 2.1 Preliminary Work. The Contractor's Design Team shall complete the following prior to the on-site workshop:
  - a. Review the contract documents and references explaining the project scope and history.
  - b. At the Post Award Kickoff meeting, the User(s) makes a presentation of their functional requirements.
  - c. Prepare and submit, at least 14 days in advance of the Concept Design Workshop, 15 copies of a preliminary concept design (Concept #1), a Basis of Design, and a statement that the concept provided is within the award amount.
  - d. 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.

e. 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.

f. Facilitator conducts meeting with NAVFAC representatives before the Concept Design Workshop to review preparations, relationships, and the status of work to be accomplished.

2.2 On-Site Workshop. The Design Team shall accomplish the following items during the on-site phase of the Concept Design Workshop. (Typically conducted in four to six working days, minimizing breaks so as to maintain momentum. The Design Team should expect longer than normal workdays.)

a. On the first day of the workshop, meet with the using activity, Station and other Government representatives. The Facilitator will describe the Concept Design Workshop 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.

b. Present the revised Concept #1 and respond to questions.

c. 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.

d. Create a new concept design. Design concepts shall include drawings, sketches, and other graphics as necessary to fully describe the concept. Prepare at least 20 copies for distribution at all presentations.

e. Repeat applicable steps as necessary. Usually, three concepts are required. The final concept must be within the contract award amount.

f. The final concept shall include the following:

(1) 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.

(2) 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.

(3) 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.

(4) Mechanical Plans: Provide plans as necessary to show the essential work and intent of the design. Suggestions include equipment layouts, zones, etc.

(5) 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.

(6) Cost Estimate: Provide a statement that the concept presented can be constructed within the award amount.

(7) Basis of Design: Describe, in layman's terms, the intent of the design by discipline. Address material quality, energy efficiency and life cycle costs.

(8) Sustainable Design: Demonstrate ability to achieve LEED self-certification.

(9) System Safety Engineering

g. 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.

h. 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:

(1) Endorsements: Include a copy of the signature/endorsement sheet.

(2) Comments: Include comments and resolutions concerning the final concept design.

(3) Executive Summary: Summarize the workshop, including how the various concepts differed and were improved during the workshop.

(4) 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.

(5) 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.

(6) Environmental Summary: Provide a summary of environmental issues, listing completed actions and items requiring further coordination, waivers or permits.

(7) 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.

i. 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.

j. 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.

### 2.3 Concept Design Workshop Report

Within 14 calendar days of completion of the on-site Concept Design Workshop, the Design Team shall submit to the NAVFAC Project Manager an electronic copy of the Concept Design Workshop Report as one file in \*.PDF format.

-- End of Section --

## SECTION 01 32 17.05 20

## NETWORK ANALYSIS SCHEDULES (NAS) FOR DESIGN-BUILD

11/07

## PART 1 GENERAL

## 1.1 DESCRIPTION

The Contractor is responsible for scheduling all design, procurement and construction. A single schedule shall 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.

Design activities shall include design decision points, design submittal packages, such as site and building, as well as design submittals, such as design development and final design. Review times for design development packages shall be included in the schedule. Refer to Specification Section 01 33 10.05 20 Design Submittal Procedures, for specific requirements.

If Government approval is required for any portion of a final signed and sealed design package prior to construction, that review time shall be included in the schedule. The schedule shall 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, that submittal review time shall be included in the schedule.

The schedule is a tool to manage the project, both for Contractor and Government activities. It will also be used to measure progress and to evaluate time extensions. If cost-loaded, it will provide the basis for progress payments.

The Contractor shall 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. Submit the following 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

Network Analysis Schedule (NAS); G

Final Schedule; G

## SD-07 Certificates

Monthly Network Analysis Schedule Updates; G

### 1.3 SCHEDULE ACCEPTANCE PRIOR TO START OF WORK

Review comments made by the Government on the Contractor's schedule(s) will not relieve the Contractor from compliance with requirements of the Contract Documents. The Contractor is responsible for scheduling, sequencing, and prosecuting the Work to comply with the requirements of the Contract Documents.

The NAS must be submitted and accepted by the Government before the Contractor will be allowed to start work on the construction stage(s) of the contract.

Only bonds will be paid prior to acceptance of the Schedule.

Submittal of the Network, and subsequent schedule updates, will be 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 will be accomplished, and accurately reflects the work that has been accomplished and how it was sequenced (as-built logic).

### 1.4 SOFTWARE

Use the scheduling software Primavera Project Planner (P3)<sup>TM</sup>, Current Version, or Primavera SureTrak<sup>TM</sup>, Current Version, by Primavera Systems, Inc. Save files in Concentric P3 format (.prx).

### 1.5 NETWORK SYSTEM FORMAT

The system shall include time scaled logic diagrams and specified reports.

#### 1.5.1 Diagrams

With the exception of the Contract Award, and End Contract milestone activities, no activities will be open-ended. The diagram shall clearly show the activities of the critical path. Once an activity exists on the schedule it may not be deleted or renamed, and must remain in the logic. No more than 20 percent of the activities may be critical or near critical.

Show the following information on the diagrams 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

Provide a time-scaled logic network diagrams plotted/printed in color on ANSI D sheets.

### 1.5.2 Schedule Activity Properties and Level of Detail

#### 1.5.2.1 Activity Categories

- a. Design Activities
- b. Procurement Activities
- c. Government Activities
- d. Quality Management (QM) Activities
- e. Construction Activities:  
No on-site construction activity (definable feature of work) shall have a duration in excess of 20 working days. Contractor activities will be driven by calendars that reflect Saturdays, Sundays and all Federal Holidays as non-work days, unless otherwise defined in this contract.

#### 1.5.2.2 Contract Milestones and Constraints

- a. Contract Start Date Milestones: The Contractor shall include as the first milestone and equal to the Contract Award and NTP dates.
- b. Facility Turnover: The Contractor shall utilize the Facility Turnover Meetings and the NAVFAC Red Zone Checklist to determine any necessary revisions to the schedule. Coordinate with UFGS Section 01 31 19.05 20, Post Award Meetings.
- c. Last Activity Milestone: The Contractor shall include "End Contract" as the last milestone and equal to the contract completion date.
- d. All float calculation shall reflect positive float.
- e. Early Contract Completion: If the event the Contractor's schedule shows completion prior to the contract completion date, the Contractor shall include an activity named "Contractor Early Completion". The only successor activity to this activity will be the "End Contract" milestone.

#### 1.5.2.3 Activity Code

The Contractor shall establish a maximum of 6 activity codes, identified prior to schedule development. The activity codes allow for grouping activities for different situations and sorting, and shall be sufficient for reports and tracking for the project.

#### 1.5.2.4 Anticipated Weather Delays

Use where available, National Oceanic and Atmospheric Administration's (NOAA) historical monthly averages for the NOAA location closest to the contract site. The number of anticipated adverse weather delays allocated to an activity will be reflected in the activity's calendar.

### 1.5.3 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 shall match the dates on the Contractor Quality Control and Production Reports.
- c. Software Settings: Schedule calculations and Out-of-Sequence progress (if applicable) shall 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".

#### 1.5.4 Required Tabular Reports

The following reports shall be included with the schedule and update submittals:

- a. Log Report: List all changes made between the previous schedule and current updated schedule.

Show changes for: Added & Deleted Activities, Durations, Remaining Durations, Activity Percent Complete, Total Float, Free Float, Calendars, Descriptions, Constraints, Added/Deleted Relations, Changed Relation Lags, Changed Driving Relations, and Changed Critical Status.

- b. Late Start / Late Finish Report: Use Late start/Actual start ---Late finish/Actual finish sort (sorted by late start in chronological order).
- c. Narrative Report: Include abstract of what activities are and are not on schedule, critical path events for the following month, milestones that must complete the following month.

#### 1.6 SUBMISSION AND ACCEPTANCE

The Contractor shall submit a preliminary schedule prior to the Post-Award Kickoff (PAK). This preliminary schedule shall include detailed design and preliminary construction activities. It shall reflect the logic of the Contractor's approach to the project. The Contractor shall present this schedule for discussion at the PAK. The discussion shall include the logic and reasonableness of the schedule, its ability to help the Government schedule work, and how the contractor intends to use the schedule.

The Contractor shall develop the schedule as design progresses, with detailed construction activities when each design package is final. Payment for completed work is dependent on an accepted, detailed schedule for that portion of work. Provide the following with each scheduled submittal:

- a. Network diagrams.
- b. Reports listed in paragraph entitled "Required Tabular Reports."
- c. Data disks containing the project schedule. Include the

back-up native .prx files.

#### 1.6.1 Monthly Network Analysis Updates

At monthly intervals the Contractor and Government representatives will meet to jointly update and/or discuss and agree to be 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 shall 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 shall agree on percentage of payment for each activity progressed during the update period.

#### 1.6.2 Final Schedule

As a condition precedent to the release of retention and making final payment, submit a "Final Schedule," as the last schedule update showing all activities at 100 percent completion. This schedule shall reflect the exact manner in which the project was actually constructed.

#### 1.7 CONTRACT MODIFICATION

Submit a Time Impact Analysis with each cost and time proposal for a proposed change.

Time Impact Analysis (TIA) shall illustrate the influence of each change or delay on the Contract Completion Date or milestones.

- a. Each TIA shall include a Fragmentary Network (fragnet) demonstrating how the Contractor proposes to incorporate the impact into the contract schedule. A fragnet is defined as the sequence of new activities and/or activity revisions, logic relationships and resource changes that are proposed to be added to the existing schedule to demonstrate the influence of impacts to the schedule. The fragnet shall identify the predecessors to the new activities and demonstrate the impacts to successor activities.

The Contractor shall run the schedule calculations and submit the impacted schedule with the proposal or claim.

- b. Following the Contractor's receipt of a conformed contract modification, all changes in the fragnet used to determine impacts shall be incorporated into the schedule.

#### 1.8 FLOAT

Contract float available in the schedule, at any time shall not be considered for the exclusive use of either the Government or the Contractor. Project Float will be a resource available to both the Government and the Contractor.

Use of float suppression techniques is prohibited.

#### 1.9 MONTHLY LOOK AHEAD SCHEDULE

Prepare a Monthly look ahead schedule from the Contract CPM Schedule showing planned work for the current week and subsequent three-week period.

The monthly look ahead schedule shall be reviewed during each QC/Production Meeting.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

## SECTION 01 33 00.05 20

## CONSTRUCTION SUBMITTAL PROCEDURES

11/07

## 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 Unified Facilities Guide Specifications (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.
- Submittal register.
- Schedule of values.
- Health and safety plan.
- Work plan.
- Quality control and Commissioning plan.
- 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.

#### 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 ensuring 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.

## 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.

OMSI manuals submitted at various stages and progression of construction.

## 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.

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 will 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 UFGS 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 shall 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 register for that design package.

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 where specified in paragraph SUBMITTALS RESERVED FOR GOVERNMENT SURVEILLANCE.

#### 1.4.2 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 19.05 20 TEMPORARY ENVIRONMENTAL CONTROLS FOR DESIGN-BUILD and 01 57 19.01 20, SUPPLEMENTARY TEMPORARY ENVIRONMENTAL CONTROLS.

In addition to the Government approvals required by RFP Part 2 GENERAL REQUIREMENTS, the following submittals shall be certified by the QC Manager and the DOR, and approved by the Contracting Officer.

- a. FIRESTOPPING; All fire protection system submittals; G
- b. INTERIOR FIRE ALARM SYSTEM; All fire protection system submittals; G
- c. FIRE SUPPRESSION SPRINKLERS; All fire protection system submittals; G
- d. BACnet DIRECT DIGITAL CONTROL SYSTEMS FOR HVAC; SD-06 field test report submittals; G
- e. HVAC TESTING/ADJUSTING/BALANCING; All submittals; G
- f. PAD-MOUNTED TRANSFORMERS; All submittals; G
- g. MEDIUM VOLTAGE SWITCHGEAR; All submittals; G

- h. MEDIUM VOLTAGE CABLES; All submittals; G
- i. EMERGENCY GENERATORS; All submittals; G
- j. AUTOMATIC TRANSFER SWITCH; All submittals; G
- k. UNINTERRUPTIBLE POWER SUPPLIES; All submittals; G
- l. ELECTRONIC SECURITY SYSTEMS; All submittals; G
- m. ELEVATORS; All submittals; G

#### 1.4.2.1 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.

#### 1.4.3 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 shall 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. Submit all Structural Observation Reports and the Final Report of Special Inspections.
- i. Submit Final LEED Certification Documentation for US Green Building Council Certification.

1.4.4 Constraints

- a. Submittals shall 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 Variations

Variations from contract requirements require Government approval and will be considered where advantageous to the Government.

1.4.5.1 Considering Variations

Variations from contract requirements including the solicitation, the accepted proposal, and the final design, require Government approval and will be considered where advantageous to the Government. Variations to the contract requirements must be approved by the Designer of Record prior to submittal to the Government for approval of the Variation.

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 shall be QC organization member designated in the approved QC plan. The signatures shall 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 Designer of Record, the DOR shall 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 (insert contract number here), 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 shall be QC organization member designated in the approved QC plan. The signatures shall 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 shall be resubmitted with appropriate changes. No work shall 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.

#### 1.6 QUANTITY OF SUBMITTALS

##### 1.6.1 1.6.1 Quantity of Submittals Reserved for Government Approval

Submit four copies 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 if not electronically submitted in WebCM. Submit two additional copies of elevator submittals directly to the NAVFAC Elevator Specialist responsible for the NAVFAC elevator certification of the project.

-- End of Section --



## SECTION 01 33 10.05 20

## DESIGN SUBMITTAL PROCEDURES

11/07

## 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 shall be used.

## U.S. DEPARTMENT OF DEFENSE (DOD) UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01	General Building Requirements
UFC 1-300-08	Criteria for Transfer and Acceptance of Military Real Property Handbook
UFC 1-300-09N	Design Procedures
UFC 3-100-10N	Architecture
UFC 3-120-10	Interior Design
UFC 3-200-10N	Civil
UFC 3-201-02	Landscape
UFC 3-220-01N	Geotechnical Engineering Procedures for Foundation Design of Buildings and Structures
UFC 3-300-10N	Structural
UFC 3-400-10N	Mechanical
UFC 3-500-10N	Electrical
UFC 3-600-01	Fire Protection Engineering for Facilities
UFC 3-600-10N	Fire Protection
UFC 3-800-10N	Environmental

## 1.3 GENERAL DOCUMENTATION REQUIREMENTS

Contractor-originated design documents shall represent a project design that complies with the Request For Proposal (RFP), UFC 1-300-09N and the architectural and engineering discipline UFC's design guidance listed below.

- a. UFC 1-200-01
- b. UFC 3-100-10N
- c. UFC 3-120-10
- d. UFC 3-200-10N
- e. UFC 3-201-02
- f. UFC 3-220-01N
- g. UFC 3-300-10N
- h. UFC 3-400-10N
- i. UFC 3-500-10N
- j. UFC 3-600-01
- k. UFC 3-600-10N
- l. UFC 3-800-10N

#### 1.4 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.

##### 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

Design Analysis; G

DD Form 1354; G

Design Submittals; G

Sustainable Design; G

Project Rendering; G

## SD-07 Certificates

LEED Green Building Rating System (GBRS)); G

LEED Certification Registration Application; G

LEED Certification; G

## SD-11 Closeout Submittals

Record Documents; G

## 1.5 DESIGN QUALITY CONTROL

## 1.5.1 Contractor Reviewing and Certifying Authority

The QC organization is responsible for reviewing and certifying that design submittals are in compliance with the contract requirements.

## 1.5.2 Government Approving Authority

The Contracting Officer is the approving authority for design submittals.

## 1.5.3 Designer of Record Certifying Authority

The Designer of Record (DOR), as registered and defined in UFC 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.

## 1.5.4 Contractor Construction Actions

Upon submission of sealed and signed design documents certified by the DOR, the Commissioning Authority (CA) 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.

## 1.5.4.1 Exception to Contractor Construction Actions

The Government will approve the following final submittals before the Contractor shall be allowed to proceed with construction:

- a. All site drawings indicating utilities and site development including: Civil, Mechanical and Electrical.
- b. All building Architectural floor plans and elevation drawings.
- c. Electronic Security System (ESS) drawings.
- d. Protected Distribution System (PDS) drawings.

## 1.5.5 Contractor's Responsibilities

- a. With the Designer or 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.

- b. Indicate on the transmittal form accompanying submittal which design submittals are being submitted as shop drawings.
- c. Advise Contracting Officer of variations, as required by paragraph "Variations."
- d. 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.

1.5.6 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 shall 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 Commissioning Authority \_\_\_\_\_, Date \_\_\_\_\_

Certified by QC Manager \_\_\_\_\_, Date \_\_\_\_\_"

- c. Sign certifying statement. The persons signing certifying statements shall be the QC organization members designated in the approved QC plan. The signatures shall 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.

1.5.7 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.

#### 1.5.7.1 Actions Possible

Submittals will be returned with one of the following notations:

- a. Submittals may be marked "approved."
- b. Submittals marked "not reviewed" will 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 shall be resubmitted with appropriate changes. If work has been started on the unacceptable portion of the design submittal, the Contractor shall propose corrective action. No further work shall proceed until the issue is resolved in a manner satisfactory to the Government.

### 1.6 DESIGN DRAWINGS

#### 1.6.1 Shop Drawings Used as Design Drawings

Design drawings may be prepared more like shop drawings to minimize construction submittals after final designs are approved. Therefore, the Contractor is encouraged to prepare and submit with the design drawings, appropriate connection, fabrication, layout, and product specific drawings.

#### 1.6.2 Drawing Format For Shop Drawings Used as Design Drawings

The Contractor-originated drawings will be used as the basis for the record drawings. Shop drawings included as design documents shall comply with the same drawing requirements such as drawing form, sheet size, layering, lettering, and title block used in design drawings.

#### 1.6.3 Identification of Shop Drawings Used as Design Drawings

The Contractor's transmittal letter and submittal register shall indicate which shop drawings are being submitted as design drawings.

#### 1.6.4 Drawing Standards

Prepare, organize, and present design drawings in accordance with the requirements of UFC 1-300-09N.

Submit all CADD files for the final drawings on CD-ROM disks in AutoCAD 2006 format. Drawing files shall be full files, uncompressed and unzipped.

##### 1.6.4.1 Electrical

Electrical drawings shall use Legend and Symbols that conform to UFC 3-500-10N Appendix D "Design Details". Appendix D may also be found on the WBDG.

#### 1.6.5 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.

#### 1.6.6 Seal on Documents

All final Contractor-originated design drawings shall be signed, dated, and bear the seal of the registered architect or the registered engineer of the respective discipline in accordance with UFC 1-300-09N. This seal shall 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 shall electronically sign and date final drawings and cover sheet, in accordance with UFC 1-300-09N. Application of the electronic seal and signature accepts responsibility for the work shown thereon.

### 1.7 SPECIFICATIONS

Provide a Contractor-originated design specification that, in conjunction with the drawings, demonstrates compliance with materials, equipment, execution, and field quality control requirements of the RFP. The specified products, equipment, fixtures, devices, and systems submitted by the Contractor and approved by the Contracting Officer shall be used to construct the project. Prescriptive Technical Sections contained in Part 5 of this RFP shall become a part of the Contractor-originated specification without any changes and as provided in the RFP.

#### 1.7.1 Specifications Format

Unless the use of a UFGS section is required, the Contractor may prepare design specifications that include manufacturer specific data and catalog cuts in lieu of prescriptive specifications. Organize the specifications using Construction Specification Institute (CSI) Masterformat<sup>TM</sup>. A prescriptive specification is required for all items for which the Contractor has not made final materials and equipment choices. Provide specifications to include the following:

- a. Cover sheet and table of contents.
- b. Specification sections.
- c. Manufacturer's Product Data.

#### 1.7.2 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 shall be either prepared by, or reviewed and approved by the Fire Protection Designer of Record.

#### 1.7.3 Identification of Manufacturer's Product Data Used as 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.

#### 1.7.4 Submittal Register

Submit a current submittal register with each design submittal. Provide a cumulative register that identifies the design and construction submittals required by each design package along with previous submittals. The DOR shall 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.

#### 1.7.5 Specification Software

Submit the final specification source files in SpecsIntact.

### 1.8 DESIGN ANALYSIS

Prepare, organize, and present design analysis in accordance with the requirements of UFC 1-300-09N. The design analysis shall 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. The "Permits Record of Decision" (PROD) form provided shall be used for recording permits.
- b. Code and criteria search shall 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. Section titled "Sustainable Design" that addresses sustainable concepts and LEED Rating Analysis Report prepared by a LEED Accredited Professional recognized by the U.S. Green Building Council.
- e. Section titled "Antiterrorism" that documents the antiterrorism features.

#### 1.8.1 Basis of Design Format

The basis of design for each design discipline shall 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.

#### 1.8.2 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.

#### 1.8.3 Sustainable Design

Integrate sustainable strategies and features into the design to minimize the energy consumption of the facilities; conserve resources; minimize adverse effects to the environment; and improve occupant productivity, health, and comfort to reduce the total cost ownership of the project using a whole building, life cycle approach. In accordance with the Engineering and Construction Bulletin 2008-1 and other directives, the facility and all site features shall be designed and constructed using USGBC-NC..

The minimum sustainable design rating level for the project is to achieve LEED-NC Silver, Version 2. The maximum sustainable design rating level for the project is to achieve LEED-NC Gold, Version 2. The USGBC LEED-NC credits and additional sustainable requirements in Part Three, 2.3.1 Sustainable Design and Part Six Attachments are mandatory unless not applicable due to project scope. Table 1 (silver) and Table 2 (gold) (see LEED checklist in RFP, Part 6 Attachments ) identifies the LEED credit items that are designed into or otherwise required for this project. No variations or substitutions to the LEED credits identified for this contract shall be allowed without written consent from the Contracting Officer. Should there be a case where there is any problem meeting the full requirements of a LEED credit identified for this project in Table 1 (silver) or Table 2 (gold), the Contractor must bring this to the attention of the Contracting Officer immediately. The design and construction shall incorporate sustainable design strategies and features to the fullest extent possible, consistent with mission, budget and client requirements. Ensure sustainable strategies and features in the design phase are incorporated in the construction phase.

Information and resources on sustainable design principles and guidelines are explained in the "Whole Building Design Guide" that can be found at [www.wbdg.org](http://www.wbdg.org).

##### 1.8.3.1 LEED Green Building Rating System (GBRS) Submittals - USGBC Certification

Provide copies of the LEED Certification Registration Application and the complete LEED support documentation to the U.S. Green Building Council (USGBC) to obtain the minimum certificate level specified herein.

a. Provide the following information for the Basis of Design:

- (1) A completed USGBC LEED-NC Project Checklist indicating all LEED Prerequisites and Credits to be implemented into the facility design and total LEED score for the project.
- (2) Description of how each LEED Prerequisite and Credit will be achieved.
- (3) List of Architects or Engineers from Contractor's Design Team and

who on the team is responsible for implementing each LEED Prerequisite and Credit into the facility design.

- (4) Identify the Design Team's USGBC LEED Accredited Professionals.

b. For the submission specified, provide the following:

- (1) At 35% Design submittal, provide documentation of the USGBC LEED Certification Registration Application.
- (2) At 100% Design submittal, provide a USGBC LEED-NC Project Checklist preliminary LEED documentation, in the form of a three-ring binder, of all LEED Prerequisites and Credits to be obtained as required by the USGBC LEED-NC Rating System.
- (3) At final design submittal, update the USGBC LEED-NC Project Checklist and LEED documentation binder with any changes and include an electronic copy of the LEED documentation.
- (4) Within thirty (30) days of Beneficial Occupancy Date, develop and submit the project case study for the U.S. Department of Energy's Federal Energy Management Program "High Performance Federal Buildings Database" (<http://www.eere.energy.gov/femp/highperformance/>).
- (5) Within sixty (60) days after the beneficial Occupancy Date (BOD), submit LEED Certification Registration Application and complete LEED Certification Documentation to USGBC for certification. After LEED certification is obtained, provide the plaque and 5 color copies of the LEED Certification to the Contracting Officer. Mat and frame the original LEED Certification document.

#### 1.8.3.2 Sustainable Designer

The design team shall include at least one LEED Accredited Professional as reconized by the U.S. green Building Council. The LEED Accredited Professional shall have an active role in the design of the facility and be responsible for the implementation and documentation of the sustainable strategies and materials in the project.

#### 1.8.3.3 EPA Designated Products

Use products that meet or exceed the minimum requirements of this RFP and the EPA guideline standards for recovered content to the maximum practicable extent in the performance of the contract. See [www.epa.gov/cpg/products.htm](http://www.epa.gov/cpg/products.htm) for a list of EPA designated products and a list of manufacturers and suppliers of EPA designated products.

### 1.9 PROJECT RENDERING

Provide a full color rendering of the proposed facility by a company that regularly does this work as a major component of their normal business. Use the final rendering to produce the image for the signboard and the framed photographic copies provided to the Contracting Officer.

#### 1.9.1 Final Framed Rendering and Copies

Provide the final rendering within 30 days of concept design approval. Provide the final original color rendering, two full size photographic

reproduction(s) of the original rendering, and the photographic negative. Mount original and reproductions on acid free board, matted with metal frames, and utilizing non-glare glass. Print the project name, location, and Architect/Engineer/Contractor firm's name on the matting.

Ship the rendering, the photographic copies, and the negative in resilient packaging to ensure damage-free delivery. Deliver to:

NAVFAC Facilities Engineering Command  
Hampton Roads IPT, BLDG. Z-140 RM. 211  
9742 Maryland Ave.  
Norfolk, Va. 23508

#### 1.10 RECORD DOCUMENTS

##### 1.10.1 Record Drawings

The as-built modifications shall 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 0.1 feet relative to the station datum. All pipe utilities shall be surveyed at each fitting and every 100 LF of run length. Electrical and communication ductbank, direct buried conduit, and direct buried conductor shall be surveyed every 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 incorporates 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 file of each individual record drawing in conformance with UFC 1-300-09N. Electronic signatures are not required on record drawings.

##### 1.10.2 Source Documents

Provide the specifications, design analysis, reports, surveys, calculations, and any other contracted documents on the CD-ROM disk with the record drawings.

##### 1.10.3 DD Form 1354

DOR shall prepare a DD Form 1354 TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY, in accordance with UFC 1-300-08, available at [http://65.204.17.188/report/doc\\_ufc.html](http://65.204.17.188/report/doc_ufc.html). Submit interim form for Government approval a minimum of 30 days prior to final acceptance of work. Submit Final DD Form 1354 at Beneficial Occupancy of facility.

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 shall allocate the total cost of construction to the appropriate category codes.

When documenting demolition work, the DD Form 1354 shall 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 30 days after contract award, but at least 7 days before the contractors Concept Design Workshop (CDW), provide one electronic and nine (9) hard copies of a 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.

#### 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 shall 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
- 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 (35% - 50%) - Government Progress QA. 21 calendar day Government review time.
- c. Prefinal (100 percent) Design - Government Progress QA. 21 calendar day Government review time.
- d. Final Design - Government QA.

#### 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 (Prefinal) Design - Government Progress QA. 21 calendar day Government review time.
- b. Final Design - Government QA

#### 2.2.4 Review Copies of Design Submittal Packages

a. Provide copies of each design submittal package for review to the following reviewers. Addresses for mailing will be furnished at the PAK meeting.

(1) 11 copies to the NAVFAC component.

4 copies to the First Naval Construction Division .

[(3). 2 copies to the Activity Public Works Officer (PWO) .

b. Provide the same quantities of copies for resubmittals, as required for each design submittal.

## 2.3 IDENTIFICATION OF DESIGN SUBMITTALS

Provide a title sheet to clearly identify each submittal, the completion status, and the date. The title sheet shall use the standard format indicated in the UFC 1-300-09N for title sheets. The title sheet shall 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.

## 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 shall be a complete package that includes all the required, specified components of that design submittal. Government required resubmittal for conformance to the contract is not a delay in the contract. 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 VARIATIONS

Variations from contract requirements require Government approval and will be considered where advantageous to the Government. The Designer of Record must approve any proposed variation prior to submittal to the Government.

### 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 a conflict or inconsistency between any of the below described portions of the conformed contract, precedence shall 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 approved 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 shall not relieve the Contractor from responsibility for errors or omissions with respect thereto.

-- End of Section --

**SUBMITTAL REGISTER**

TITLE AND LOCATION		CONTRACTOR															
TRANSMITTAL NO	ACTIVITY NO	SPEC	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	CLASSIFICATION	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY			MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS		
						APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTHER REVIEWER	ACTION	DATE OF ACTION				
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01 14 00.05 20	SD-01 Preconstruction Submittals														
			List of contact personnel	1.4.1.1	G												
			Visit Request for Pearl Harbor		G												
			Naval Shipyard Form (PHNSY 14ND-SYD-5512/28)														
			Completed Special Access		G												
			Determination (NAVSEA 5510/15)														
			Pier parking authorization		G												
			Government guard services		G												
			Meal Signature Record Book (MSRB)		G												
			Dining and lodging requirements		G												
			Housing plan		G												
			Medical plan		G												
			Contractor regulations		G												
			Transportation of personnel, materials, and equipment		G												
			Purchase orders		G												
			Personnel List		G												
			Vehicle List		G												
			Statement of Acknowledgement		G												
			Form SF 1413														
		01 20 00.05 20	SD-01 Preconstruction Submittals														
			Schedule of prices	1.3	G												
		01 31 19.05 20	SD-01 Preconstruction Submittals														

**SUBMITTAL REGISTER**

TITLE AND LOCATION		CONTRACTOR															
TRANSMITTAL NO	ACTIVITY NO	SPEC SECT	PARRAG#	DESCRIPTION ITEM SUBMITTED	CLASSIFICATION	GOVT OR A/EA/REV	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY			MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS	
							APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTHER REVIEWER	ACTION	DATE OF ACTION			
(a)	(b)	(c)	(e)	(d)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
	01 31	19.05 20		Design Submittal Packaging Proposal	G												
				Project Schedule	G												
				Performance Assessment Plan (PAP)	G												
				CDW Facilitator Experience	G												
				Resume	G												
				CDW Preliminary Concept	G												
				Design	G												
				CDW Basis of Design with Cost Estimate	G												
				CDW Concept Design Report	G												
	01 32	17.05 20		SD-01 Preconstruction Submittals	G												
				Network Analysis Schedule (NAS)	G												
				Final Schedule	G												
				SD-07 Certificates	G												
				Monthly Network Analysis Schedule Updates	G												
	01 33	00.05 20		SD-01 Preconstruction Submittals	G												
				Submittal Register Format	G												
	01 33	10.05 20		SD-01 Preconstruction Submittals	G												
				Consolidated RFP Documents	G												
				Submittal Register	G												
				SD-04 Samples	G												
				Final framed rendering	G												

**SUBMITTAL REGISTER**

TITLE AND LOCATION		CONTRACTOR															
TRANSMITTAL NO	ACTIVITY NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT OR A/EA REVIEW CLASSIFICATION	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY			MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS		
						APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION	DATE FWD TO APPR AUTH/	DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTHER REVIEWER	ACTION			DATE OF ACTION	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01 33 10.05 20	SD-05 Design Data														
			Design Drawings	1.6	G												
			Specifications	1.7	G												
			Design Analysis	1.8	G												
			DD Form 1354	1.10.3	G												
			Design Submittals	2.2	G												
			Sustainable Design	1.8	G												
			Project Rendering	1.9	G												
			SD-07 Certificates														
			LEED Green Building Rating		G												
			System (GBRS)														
			LEED Certification Registration	1.8.3.1	G												
			Application														
			LEED Certification	1.8.3.1	G												
			SD-11 Closeout Submittals														
			Record Documents	1.10	G												
		01 35 29.05 20	SD-01 Preconstruction Submittals														
			Accident Prevention Plan	1.6.2.2	G												
			Activity Hazard Analysis	1.6.2.2	G												
			Crane Critical Lift Plan	3.4.1	G												
			SD-06 Test Reports														
			Reports	1.7													
			Accident Reports	1.7.1													
			Monthly Work-Hour Reports	1.7.3													
			SD-07 Certificates														

**SUBMITTAL REGISTER**

TITLE AND LOCATION		CONTRACTOR															
TRANSMITTAL NO	ACTIVITY NO	SPEC DESCRIPTION	PARRA#	GOVT OR CLASSIFICATION	DESCRIPTION ITEM SUBMITTED	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY			MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS		
						APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTHER REVIEWER	ACTION	DATE OF ACTION				
(a)	(b)	(c)	(e)	(f)	(d)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
	01 35 29.05 20		1.4	G	Contractor Safety Self-Evaluation Checklist												
	01 35 40.00 20		1.8	G	SD-01 Preconstruction Submittals												
			1.9.1		Environmental Protection Plan												
			1.7.2		Instructor Qualifications												
			2.1.2		SD-03 Product Data												
					Life Cycle Assessments												
					Packaging												
					SD-06 Test Reports												
			3.2		Field Quality Control Reports												
					SD-07 Certificates												
			1.6		Environmental Regulatory Requirements												
					SD-08 Manufacturer's Instructions												
			1.7.1		Material Safety Data Sheets												
					SD-11 Closeout Submittals												
			1.9.3		Training Program												
			3.1		Protection of Natural Resources												
	01 45 00.05 20				SD-01 Preconstruction Submittals												
			1.3.1	G	Design Quality Control (DQC) Plan												
					Construction Quality Control (CQC) Plan												
			1.3.1	G	Commissioning Plan												
			1.3.2	G	SD-07 Certificates												

**SUBMITTAL REGISTER**

TITLE AND LOCATION		CONTRACTOR														
TRANSMITTAL ACTIVITY NO	SPEC SECT	PARRA#	DESCRIPTION ITEM SUBMITTED	GOVT OR CLASSIFICATION	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY			REMARKS			
					APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION	DATE FWD TO APPR AUTH/	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	DATE OF ACTION	DATE RCD FROM APPR AUTH		DATE OF ACTION		
(a)	(b)	(c)	(d)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01 45 00.05 20	Preliminary Inspections and Final Acceptance Testing	1.4.3.1 G												
			Final Life Safety/Fire Protection Certification	1.4.3.1 G												
			IBC Special Inspections Certification	1.4.3.3 G												
			SD-11 Closeout Submittals													
			Summary Commissioning Report	1.3.3												
			Training Course Outline	1.7 G												
			Training Video Recording	1.7 G												
		01 50 00.05 20	SD-01 Preconstruction Submittals													
			Traffic control plan	1.8.1.1 G												
			Backflow preventers; G													
			SD-06 Test Reports													
			Backflow Preventer Tests	3.3 G												
			SD-07 Certificates													
			Backflow Tester	1.6 G												
			Backflow Preventers	1.4												
		01 78 24.05 20	SD-06 Test Reports													
			Validation Site Visit and Presentation	3.1 G												
			SD-11 Closeout Submittals													
			Preliminary Submittal	1.4.1 G												
			Prefinal Submittal	1.4.2 G												
			Final Submittal	1.4.3 G												



## SECTION 01 35 29.05 20

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS 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 NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A10.32	(2004) Personal Fall Protection - Safety Requirements for Construction and Demolition Operations
ANSI/ASSE Z359.0	(2007) Definitions and Nomenclature Used for Fall Protection and Fall Arrest
ANSI/ASSE Z359.1	(2007) Safety Requirements for Personal Fall Arrest System, Subsystems and Components
ANSI/ASSE Z359.2	(2007) Minimum Requirements for a Comprehensive Managed Fall Protection Program
ANSI/ASSE Z359.3	(2007) Safety Requirements for Positioning and Travel Restraint Systems
ANSI/ASSE Z359.4	(2007) Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components
ANSI/ASSE A1264.1	(2007) Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace Floor and Wall Openings; Stairs and Guardrails Systems
ANSI/HFES 100	(2007) Human Factors Engineering of Computer Workstations

## ASME INTERNATIONAL (ASME)

ASME B30.3	(2004) Construction Tower Cranes
ASME B30.5	(2004) Mobile and Locomotive Cranes
ASME B30.8	(2004) Floating Cranes and Floating Derricks
ASME B30.22	(2005) Articulating Boom Cranes

## ASTM INTERNATIONAL (ASTM)

ASTM F 855 (2004) 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

## U.S. DEPARTMENT OF DEFENSE (DOD)

MIL-STD-1472F (1999) Military Standard, Human Engineering Design Criteria for Military Systems, Equipment and Facilities

DoD-HDBK 743A (1991) Anthropometry of US Military Personnel

## NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241 (2004) Standard for Safeguarding Construction, Alteration, and Demolition Operations

NFPA 51B (2003) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work

NFPA 70 (2008) National Electrical Code

NFPA 70E (2004) Standard for Electrical Safety in the Workplace

## U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2003) Safety -- Safety and Health Requirements

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

29 CFR 1910 Occupational Safety and Health Standards

29 CFR 1910.146 Permit-required Confined Spaces

29 CFR 1915 Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment

29 CFR 1926 Safety and Health Regulations for Construction

29 CFR 1926 Subpart M Fall Protection

## 1.2 SUBMITTALS

The use of a "G" following a submittal indicates that a Government approval action is required. Submit the following 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

Accident Prevention Plan; G

Activity Hazard Analysis; G

Crane Critical Lift Plan; G

SD-06 Test Reports

Reports

Accident Reports

Monthly Work-Hour Reports

Submit reports as their incidence occurs, in accordance with the requirements of paragraph, REPORTS.

SD-07 Certificates

Contractor Safety Self-Evaluation Checklist; G (Obtain copy from Contracting Officer)

Submit one copy of each permit/certificate attached to each Daily Production Report.

1.3 DEFINITIONS

Weight Handling Equipment (WHE) Accident. A WHE accident occurs when any one or more of the six 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; and/or collision, including unplanned contact between the load, crane, and/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, roll over, etc.).

1.4 CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST

Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor at the pre-construction conference. The checklist will be completed monthly by the Contractor and submitted 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, will result in a retention of up to 10 percent of the voucher.

1.5 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 SITE QUALIFICATIONS, DUTIES AND MEETINGS

### 1.6.1 Personnel Qualifications

#### 1.6.1.1 Site Safety and Health Officer (SSHO)

Site Safety and Health Officer (SSHO) shall perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The assignment of the SSHO contractually does not relieve the Contractor from the regulatory requirements governing safety responsibility. The Contractor Quality Control (QC) person cannot be the SSHO on this project, even though the QC has safety inspection responsibilities as part of the QC duties.. The SSHO shall meet the following requirements:

##### Level 4:

A minimum of 10 years safety work of a progressive nature with at least 5 years of experience on similar projects.

30-hour OSHA construction safety class or equivalent within the last 5 years.

An average of at least 24 hours of formal safety training each year for the past 5 years with training for competent person status for at least the following 4 areas of competency:

Excavation; ; Fall protection; Hazardous energy; ; ; Personal protective equipment and clothing to include selection, use and maintenance; .

The SSHO have no other duties other than site safety and health officer.

### 1.6.2 Personnel Duties

#### 1.6.2.1 Site Safety and Health Officer (SSHO)

In addition to duties required in EM 385-1-1, perform the following duties:

a. Conduct daily safety and health inspections and maintain a written DEFICIENCY TRACKING log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractors' daily production report and posted at the jobsite.

b. Attend the pre-construction meeting, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.

Failure to actively apply an acceptable safety program will result in dismissal of the superintendent and/or SSHO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a

suitable replacement.

#### 1.6.2.2 Pre-design Submittals

Prior to start of design, provide the following submittals based on the requirements of the U.S. Army Corps of Engineers Safety & Health Manual EM 385-1-1, using the latest version. Provide a description of the safety controls for design investigations and field work. No field work allowed until submittals are accepted by the Contracting Officer.

##### a. Accident Prevention Plan (APP)

Follow the format included in Appendix A of EM 385-1-1.

##### b. Activity Hazard Analysis (AHA)

Use format indicated in Section 01.A.3, Figure 1-2 of EM 385-1-1

### 1.7 REPORTS

#### 1.7.1 Accident Reports

a. For recordable injuries and illnesses, and property damage accidents resulting in at least \$2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the Navy Contractor Significant Incident Report (CSIR) form and provide the report to the Contracting Officer within 5 calendar day(s) of the accident. The Contracting Officer will provide copies of any required or special forms.

b. For any weight handling equipment accident (including rigging gear accidents) the Prime Contractor shall conduct an accident investigation 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. Crane operations shall not proceed 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.

#### 1.7.2 Accident Notification

Notify the Contracting Officer as soon as practical, but not later 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. Information shall 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.

#### 1.7.3 Monthly Work-Hour Reports

Monthly work-hour reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of

employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

## 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.

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.

## 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).

## PART 3 EXECUTION

### 3.1 CONSTRUCTION AND OTHER WORK

The Contractor shall comply with USACE EM 385-1-1, 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 shall prevail.

#### 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-isocyanates, 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.

### 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 construction operations is encountered, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine 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 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 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.

### 3.3 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

The Contractor shall establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The program shall 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 in accordance with 29 CFR 1926 Subpart M and ANSI/ASSE Z359.0, ANSI/ASSE Z359.1, ANSI/ASSE Z359.2, ANSI/ASSE Z359.3, AND ANSI/ASSE Z359.4 and ANSI A10.32.

#### 3.3.1 Fall Protection for Roofing Work

Fall protection controls shall be implemented based on the type of roof being constructed and work being performed. The roof area to be accessed shall be evaluated for its structural integrity including weight-bearing capabilities for the projected loading.

- a. A safety monitoring system by itself is not adequate fall protection and is not authorized.
- 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.

#### 3.3.2 Fall Prevention During Design Phase

During design phase the Contractor shall consider and eliminate fall hazards encountered at the facility, building, crane, structure, etc. during maintenance evolutions, whenever possible. If it is not feasible to eliminate or prevent the need to work at heights with its subsequent

exposure to fall hazards, control measure 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 29 CFR 1915 Standards and ANSI/ASSE Z359.0, ANSI/ASSE Z359.1, ANSI/ASSE Z359.2, ANSI/ASSE Z359.3, ANSI/ASSE Z359.4 and ANSI/ASSE A1264.1.

### 3.4 EQUIPMENT

#### 3.4.1 Weight Handling Equipment

a. Crane Critical Lift Plan: Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. The plan shall be submitted 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.C.18. and the following:

(1) For lifts of personnel, the plan shall demonstrate compliance with the requirements of 29 CFR 1926.550(g).

(2) For barge mounted mobile cranes, barge stability calculations identifying barge list and trim based on anticipated loading; and load charts based on calculated list and trim. The amount of list and trim shall be within the crane manufacturer's requirements.

b. Certificate of Compliance: The Contractor shall provide a Certificate of Compliance for each crane entering an activity under this contract (see Contracting Officer for a blank certificate). Certificate shall state that the crane and rigging gear meet applicable OSHA regulations (with the Contractor citing which OSHA regulations are applicable, e.g., cranes used in construction, demolition, or maintenance shall comply with 29 CFR 1926 and USACE EM 385-1-1 section 16 and Appendix H. Certify on the Certificate of Compliance that the crane operator(s) is qualified and trained in the operation of the crane to be used. For cranes at DOD activities in foreign countries, the Contractor shall certify that the crane and rigging gear conform to the appropriate host country safety standards. The Contractor shall also certify that all of its crane operators working on the DOD activity have been trained in the proper use of all safety devices (e.g., anti-two block devices). These certifications shall be posted on the crane.

c. The Contractor shall notify the Contracting Officer 15 days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Contractor's operator shall remain with the crane during the spot check.

d. The Contractor shall comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Erection shall be performed under the supervision of a designated person (as defined in ASME B30.5). All testing shall be performed in accordance with the manufacturer's recommended procedures.

- e. The Contractor shall 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.
- f. Under no circumstance shall a Contractor make a lift at or above 90% of the cranes rated capacity in any configuration.
- g. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and shall follow the requirements of USACE EM 385-1-1 section 11 and ASME B30.5 or ASME B30.22 as applicable.
- h. The Contractor shall use cribbing when performing lifts on outriggers.
- i. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.
- j. 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.
- k. 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.
- l. Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).
- m. 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 the contractor shall 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.

### 3.5 EXCAVATIONS

#### 3.5.1 Utility Locations

Prior to digging, the appropriate digging permit must be obtained. All underground utilities in the work area must be positively identified by a private utility locating service 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

#### 3.5.2 Utility Location Verification

The Contractor must physically verify underground utility locations 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 0.061 m (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 the utility shall be exposed by hand digging every 30.5 m (100 feet) if parallel within 1.5 m (5 feet) of the excavation.

### 3.6 UTILITIES WITHIN CONCRETE SLABS

Utilities located within concrete slabs or pier structures, bridges, and the like, are extremely difficult to identify due to the reinforcing steel used in the construction of these structures. Whenever contract work involves concrete chipping, saw cutting, or core drilling, the existing utility location must be coordinated with station utility departments in addition to a private locating service. Outages to isolate utility systems shall 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.

### 3.7 ELECTRICAL

#### 3.7.1 Conduct of Electrical Work

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. Positive cable identification must be made prior to submitting any outage request for electrical systems. 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. Attachment of temporary grounds shall be in accordance with ASTM F 855 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 with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide 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.

### 3.8 WORK IN CONFINED SPACES

In addition to the requirements of Section 06.I of USACE EM 385-1-1, OSHA 29 CFR 1910.146 and OSHA 29 CFR 1926.21(b)(6) 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.

c. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.

### 3.9 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 35 40.00 20

## ENVIRONMENTAL MANAGEMENT

07/06

## 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 NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z400.1 (2004) Hazardous Industrial Chemicals -  
Material Safety Data Sheets - Preparation

## ASTM INTERNATIONAL (ASTM)

ASTM D 4840 (1999; R 2004) Sampling Chain-Of-Custody  
Procedures

ASTM D 5663 (1997; R 2003) Validating Recycled Content  
in Packaging Paper and Paperboard

ASTM E 1991 (2005) Environmental Life Cycle Assessment  
of Building Materials/Products

ASTM E 2114 (2008) Standard Terminology for  
Sustainability Relative to the Performance  
of Buildings

## NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

NIST BEES 4.0 (2007) Building for Environmental and  
Economic Sustainability Technical Manual  
and User's Guide

## U.S. DEPARTMENT OF AGRICULTURE (USDA)

Biomass R&D Act (2000) Biomass Research and Development Act

U.S. Farm Bill (2002) U.S. Farm Bill of May 2002

## U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

NPDES (1972; R 2005) National Pollutant  
Discharge Elimination System

## U.S. GREEN BUILDING COUNCIL (USGBC)

LEED (2002; R 2005) Leadership in Energy and  
Environmental Design(tm) Green Building  
Rating System for New Construction  
(LEED-NC)

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

40 CFR Protection of Environment  
40 CFR 261 Identification and Listing of Hazardous Waste

## 1.2 DEFINITIONS

Definitions pertaining to sustainable development are as defined in ASTM E 2114 and as specified.

- a. "Biobased content" is calculated as the weight of the biobased material divided by the total weight of the product, and is expressed as a percentage by weight.
- b. "Biobased materials" include fuels, chemicals, building materials, or electric power or heat produced from biomass as defined by the Biomass R&D Act. Minimum biobased content shall be as defined in the U.S. Farm Bill.
- c. "Chain-of-custody" is a process whereby a product or material is maintained under the physical possession or control during its entire life cycle.
- d. "Pollution and environmental damage" is caused by the presence of chemical, physical, or biological elements or agents. Human health or welfare is adversely affected; ecological balances are unfavorably altered; the utility of the environment for aesthetic, cultural, or historical purposes degrades.

## 1.3 PRECONSTRUCTION MEETING

After award of Contract and prior to commencement of the work, the Contractor shall schedule and conduct a meeting with the Contracting Officer to discuss the proposed Environmental Protection Plan and to develop a mutual understanding relative to the details of environmental protection. The requirements for this meeting may be fulfilled during the coordination and mutual understanding meeting as specified in Section 01 45 02 NAVFAC QUALITY CONTROL.

## 1.4 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 shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

## SD-01 Preconstruction Submittals

Environmental Protection Plan; G

Instructor Qualifications

Submit reference data to demonstrate instructors' individual and firm's capabilities and experience.

## SD-03 Product Data

## Life Cycle Assessments

## Packaging; (LEED)

Submit documentation indicating percentage of post-industrial and post-consumer recycled content per unit of product. Indicate relative dollar value of recycled content products to total dollar value of products included in project.

## SD-06 Test Reports

## Field Quality Control Reports

## SD-07 Certificates

## Environmental Regulatory Requirements

For Government's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with environmental regulations bearing on performance of the work.

## SD-08 Manufacturer's Instructions

## Material Safety Data Sheets

## SD-11 Closeout Submittals

## Training Program

Submit two copies of instructional program outline for demonstration and training, including a schedule of dates, times, length of instruction, instructors' names, learning objective, and teaching outline for each training module. At completion of training, submit one complete training manual for Government's use, and a list of participants with each participant's results of performance-based test for each training module. For Government's records, submit Contractor 40 CFR employee training records upon request of the Contracting Officer.

## Protection of Natural Resources

## 1.5 CONTRACTOR'S ENVIRONMENTAL MANAGER

Designate an on-site Environmental Manager responsible for overseeing the environmental goals for the project and implementing procedures for environmental protection.

## 1.5.1 Duties

The Environmental Manager shall be responsible for the following:

- a. Compliance with applicable federal, state, and local environmental regulations, including maintaining required documentation.
- b. Implementation of the Waste Management Plan.

- c. Implementation of the Indoor Air Quality (IAQ) Management Plan.
- d. Implementation of the Environmental Protection Plan.
- e. Environmental training for Contractor personnel in accordance with their position requirements.
- f. Monitoring and documentation of environmental procedures.

#### 1.5.2 Qualifications

Minimum 5 years construction experience on projects of similar size and scope; minimum 2 years experience with environmental procedures similar to those of this project; familiarity with Environmental Management Systems (EMSs); familiarity with environmental regulations applicable to construction operations.

#### 1.6 ENVIRONMENTAL REGULATORY REQUIREMENTS

The Contractor shall be responsible for knowing federal, state, and local regulatory requirements pertaining to legal disposal of all construction and demolition waste materials. Comply with all applicable regulations and maintain records of permits, licenses, certificates, and other environmental regulatory requirement correspondences.

#### 1.7 ENVIRONMENTAL REQUIREMENTS FOR PRODUCTS

##### 1.7.1 Material Safety Data Sheets (MSDS)

Submit an MSDS for each product specified in other sections or required by OSHA to have an MSDS. MSDS shall be prepared within the previous five years. Include information for MSDS Sections 1 through 16 in accordance with ANSI Z400.1 and as follows:

- a. Section 11: Include data used to determine the hazards cited in Section 3. Identify acute data, carcinogenicity, reproductive effects, and target organ effects.
- b. Section 12: Include data regarding environmental impacts during raw materials acquisition, manufacture, and use. Include data regarding environmental impacts in the event of an accidental release.
- c. Section 13: Include data regarding the proper disposal of the chemical. Include information regarding recycling and reuse. Indicate whether or not the product is considered to be "hazardous waste" according to 40 CFR 261.
- d. Section 14: Identify hazard class for shipping.
- e. Section 15: Identify federal, state, and local regulations applicable to the material.
- f. Section 16: Include additional information relative to recycled content, biobased content, and other information regarding environmental and health impacts.

##### 1.7.2 Life Cycle Assessments (LCAs)

For the following products, submit LCA data developed in accordance with

ASTM E 1991; and where BEES data exists, submit NIST BEES 4.0 analysis using 50 percent Environmental Performance Weighting and the EPA Scientific Advisory Board Equal Environmental Impact Category Weights.

- a. Masonry
- b. Finish Carpentry
- c. Plastic Fabrications
- d. Building Insulation
- e. Roofing
- f. Joint Sealers
- g. Wood & Plastic Doors
- h. Windows
- i. Skylights
- j. Glazed Curtain Wall
- k. Gypsum Board
- l. Tile
- m. Acoustical Ceilings
- n. Resilient Flooring
- o. Carpet
- p. Toilet Compartments
- q. Loading Dock Equipment
- r. Office Equipment
- s. Furnishings & Accessories
- t. Renewable Energy Equipment
- u. Elevators
- v. HVAC equipment
- x. Lighting equipment

#### 1.8 ENVIRONMENTAL PROTECTION PLAN

Prepare and submit an Environmental Protection Plan not less than 10 days before the preconstruction meeting. At a minimum, address the following elements in accordance with this section:

- a. Identification and contact information for Environmental Manager.
- b. General site information, including preconstruction description and

photographs.

- c. Summary of training program.
- d. Procedures to address water resources.
- e. Procedures to address land resources.
- f. Procedures to address air resources.
- g. Procedures to address fish and wildlife resources.
- h. Monitoring and quality control procedures.

Revise and resubmit Plan as required by the Contracting Officer. Approval of Contractor's Plan will not relieve the Contractor of responsibility for compliance with applicable environmental regulations.

#### 1.9 ENVIRONMENTAL DEMONSTRATION AND TRAINING

Contractor shall provide environmental training for workers performing work on the project site.

##### 1.9.1 Instructor Qualifications

Training shall be given by a firm or individual experienced in providing training or education similar in content and extent to that indicated for this project.

##### 1.9.2 Coordination

Coordinate instruction schedule with Government operations. Adjust schedule as required to minimize disruption of Government operations. Coordinate instruction with demonstration and training of general building systems.

##### 1.9.3 Training Program

Develop a training program for all site workers that includes the following topics:

- a. Overview of environmental and sustainability issues related to the building industry.
- b. Overview of environmental and sustainability issues related to the project.
- c. Compliance with applicable federal, state, and local environmental regulations.
- d. Review of site specific procedures and management plans implemented during construction, including the Waste Management Plan, Indoor Air Quality (IAQ) Management Plan, Environmental Protection Plan, and procedures for noise and acoustics management.

##### 1.9.3.1 Scheduling

Provide instruction at mutually agreeable times.

### 1.9.3.2 Training Modules

Develop a learning objective and teaching outline for each topic in the Training Program. Include a description of specific skills and knowledge that each participant is expected to acquire. Instructors shall be well-versed in the particular topics that they are presenting.

### 1.9.3.3 Evaluation

At the conclusion of each training module, assess and document each participant's understanding of the module by use of a written performance-based test.

## PART 2 PRODUCTS

### 2.1 ENVIRONMENTALLY PREFERABLE PRODUCTS

Consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, and disposal of products, and provide products and materials with the least effect on the environment, determined by LCA analysis, released toxins, and other methods.

#### 2.1.1 Prohibited Materials

The use of the following materials is prohibited:

- a. Products containing asbestos.
- b. Products containing urea formaldehyde.
- c. Products containing polychlorinated biphenyls.
- d. Products containing chlorinated fluorocarbons.
- e. Solder or flux containing more than 0.2 percent lead and domestic water pipe or pipe fittings containing more than 8 percent lead.
- f. Paint containing more than 0.06 percent lead.

#### 2.1.2 Packaging

Where Contractor has the option to provide one of the listed products or equal, preference shall be given to products with minimal packaging and easily recyclable packaging, and to manufacturers with policies that take back product packaging.

##### 2.1.2.1 Industrial Paperboard

Minimum 100 percent post-consumer recycled content in accordance with ASTM D 5663.

##### 2.1.2.2 Carrier Board

Minimum 100 percent recycled content with a minimum of 15 percent post-consumer recycled content in accordance with ASTM D 5663.

##### 2.1.2.3 Brown Papers

Minimum 40 percent recycled content with a minimum of 20 percent

post-consumer recycled content in accordance with ASTM D 5663.

### 2.1.3 Substitutions

Notify the Contracting Officer when Contractor is aware of materials, equipment, or products that meet the aesthetic and programmatic intent of Contract Documents, but which are more environmentally responsible than materials, equipment, or products specified or indicated in the Contract Documents. Submit the following for initial review by the Contracting Officer:

- a. Product data including manufacturer's name, address, and phone number.
- b. Description of environmental advantages of proposed substitution over specified product.

## PART 3 EXECUTION

### 3.1 PROTECTION OF NATURAL RESOURCES

Comply with applicable regulations and these specifications. Preserve the natural resources within the project boundaries and outside the limits of permanent work performed under this Contract in their existing condition or restore to an equivalent or improved condition as approved by the Contracting Officer. Where violation of environmental procedures requirements will irreversibly damage the site, documentation of the progress shall be required.

#### 3.1.1 General Disturbance

Confine demolition and construction activities to maximum 40 feet beyond the building perimeter, 5 feet beyond solid paving, and 25 feet beyond pervious paving. Remove debris, rubbish, and other waste materials resulting from demolition and construction operations from site. Transport materials with appropriate vehicles and dispose of them off site to areas that are approved for disposal by governing authorities having jurisdiction. Avoid spillage by covering and securing loads when hauling on or adjacent to public streets or highways. Remove spillage and sweep, wash, or otherwise clean project site, streets, or highways. Burning is prohibited.

#### 3.1.2 Water Resources

Comply with requirements of the NPDES and the applicable State Pollutant Discharge Elimination System (SPDES). Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water. Store and service construction equipment at areas designated for collection of oil wastes. Prevent ponding of stagnant water conducive to mosquito breeding habitat. Prevent run-off from site during demolition and construction operations. Equipment will not be permitted to ford live streams.

#### 3.1.3 Land Resources

Prior to construction, identify land resources to be preserved within the work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and landforms without permission from the Contracting Officer. Coordinate protection practices

with work specified in Division 2 SITEWORK.

#### 3.1.3.1 Erodible Soils

Plan and conduct earthwork to minimize the duration of exposure of unprotected soils, except where the constructed feature obscures borrow areas, quarries, and waste material areas. Clear areas in reasonably sized increments only as needed to use the areas developed. Form earthwork to final grade as shown. Immediately protect side slopes and back slopes upon completion of rough grading.

#### 3.1.3.2 Erosion and Sedimentation Control Devices

Construct or install temporary and permanent erosion and sedimentation control features as required.

#### 3.1.3.3 Tree and Plant Protection

Protect as specified in Division 2 SITEWORK and as specified. Prior to start of construction, tag each tree and plant scheduled to remain. In the event of damage to tree or plant, the Government may, at the Contracting Officer's discretion, deduct the indicated value of the damaged tree or plant from the Contract Sum.

#### 3.1.4 Air Resources

Comply with Indoor Air Quality (IAQ) Management Plan and as follows:

- a. Prevent creation of dust, air pollution, and odors.
- b. Sequence construction to avoid unnecessary disturbance to site.
- c. Use mulch, water sprinkling, temporary enclosures, and other appropriate methods as needed to limit dust and dirt rising and scattering in air. Do not use water when it may create hazardous or other adverse conditions such as flooding and pollution.
- d. Store volatile liquids, including fuels and solvents, in closed containers. Do not store with materials that have a high capacity to adsorb VOC emissions or in occupied spaces.
- e. Properly maintain equipment to reduce gaseous pollutant emissions.

#### 3.1.5 Fish and Wildlife Resources

Manage and control construction activities to minimize interference with and damage to fish and wildlife. Do not disturb fish and wildlife. Do not alter water flows or otherwise significantly disturb the native habitat related to the project and critical to the survival of fish and wildlife, except as indicated or specified.

### 3.2 FIELD QUALITY CONTROL

Comply with requirements of agencies having jurisdiction and as specified herein. Provide field practices, shipping, and handling of samples in accordance with ASTM D 4840. Provide Field Quality Control Reports in accordance with approved Environmental Protection Plan.

-- End of Section --



## SECTION 01 45 00.05 20

## DESIGN AND CONSTRUCTION QUALITY CONTROL

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 in the text by the basic designation only.

## ASTM INTERNATIONAL (ASTM)

ASTM E 329 (2002) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

## U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2003) Safety -- Safety and Health Requirements

## U.S. GREEN BUILDING COUNCIL (USGBC)

LEED-NC (2002; R 2005) Leadership in Energy and Environmental Design (TM) Green Building Rating System for New Construction (LEED-NC)

## 1.2 SUBMITTALS

The use of a "G" following a submittal indicates that a Government approval action is required. Submit the following 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

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 agent.

## 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 shall 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 Design and Construction Quality Control Plans

The Contractor shall provide a project specific Design Quality Control (DQC) Plan and Construction Quality Control (CQC) Plan, for review and approval by the Government. The Contractor shall perform no design until the DQC Plan is approved and no construction until the CQC Plan is approved. The Contractor's plan shall 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, and Commissioning Authority, and their authority.
- c. QC Manager qualifications.
- d. Commissioning Authority qualifications and certification.
- e. List of Definable Features of Work (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 QC Plan, a plan to implement the "Three Phases of Control" for each DFOW.
- g. For the QC 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.
- h. Submittal Log including design submittals, listing personnel who will review submittals and noting submittals for Government review.

- i. Procedures for submitting and reviewing variations prior to submission to the Government.
- j. As a part of the Contractor's plan, a statement of Special Inspections shall be prepared by the Designer of Record (DOR) describing a complete list of materials and work requiring special inspections, the inspections to be performed and any applicable quality assurance plans and structural observations. The Contractor's plan shall implement the applicable requirements of the International Building Code (IBC), Chapter 17 "Structural Tests and Special Inspections." The plan shall include a listing of the individuals, approved agencies or firms that will be retained for conducting the required special inspections accompanied by a description of individual inspector's experience and a copy of all required certifications. Structural tests and special inspections, as outlined in Chapter 17 of the IBC shall be conducted by individuals and agents that are under the direct supervision of a Registered Design Professional (RDP) and meet the requirements of ASTM E 329.
- k. A plan for assuring the proper design, construction, installation of all life safety and fire protection features across all disciplines and trades. 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 and 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. As a part of the plan, a statement of Special Inspections shall be prepared by the Fire Protection Engineer Designer of Record (DOR) describing a complete list of materials and work requiring special inspections, the inspections to be performed and any applicable quality assurance plans and fire protection observations. The plan will include a listing of the individuals, approved agencies or firms that will be retained for conducting the required special inspections accompanied by a description of individual inspector's experience and a copy of all required certifications.
- l. For the DQC plan, submit a formal Communication Plan the indicates the frequency of design meetings and what information is covered in those meetings, key design decision points tied to the Network Analysis Scheduled 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 to be written by the Commissioning Authority and confirmed during the Post Award Kick off Partnering. Update the Communication Plan at every Partnering meeting.

m. For the DQC Plan, procedures for insuring the design documents are submitted in accordance with UFC 1-300-09N, Design Procedures and other procedures to ensure disciplines have been properly coordinated to eliminate conflicts.

n. For the DQC Plan, a list of design subcontractors and the scope of the work which each firm will accomplish.

### 1.3.2 Commissioning Plan

The Commissioning Authority shall provide a project specific Commissioning Plan for review and acceptance by the Government. 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 shall include all items required by the LEED-NC version 2.2 and shall also include the following:

a. Provide a description of the Commissioning Authority's roles and responsibilities as well as organizational relationships with the Contractor's QC Manager and verification and testing personnel.

b. Provide a schedule of inspections during construction that includes periodic inspections by the system designer. Specify a minimum of three inspections.

c. Define 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.

d. Provide a schedule for all verification and functional performance tests. The Commissioning Authority shall be present for all functional performance tests.

e. Provide a schedule detailing training sessions for Government personnel. Training sessions are to address maintenance and operation of systems required to be commissioned.

### 1.3.3 Summary Commissioning Report

The Commissioning Authority shall provide a Summary Commissioning Report. The Summary Commissioning Report shall include all items required by LEED-NC version 2.2.

## 1.4 QC ORGANIZATION

The QC Manager shall report to an officer of the firm and shall not be subordinate to the Project Superintendent or the Project Manager.

### 1.4.1 QC and Alternative QC Manager

QC and Alternative QC Manager qualifications:

a. Complete the course entitled "Construction Quality Management (CQM) for Contractors" and shall maintain a current certificate.

b. 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 experience as a QC Manager.

c. Familiar with requirements of USACE EM 385-1-1, and experience in the areas of hazard identification and safety compliance.

QC and Alternative 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 and plans and specifications, 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. Ensure that Contractor Production Reports are prepared daily.

i. Hold weekly QC meetings with the Commissioning Authority, DOR (or representative), Superintendent and the Contracting Officer; participation shall be suitable for the phase of work. Distribute minutes of these meetings.

j. 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 log.

k. Update As-built drawings daily, maintaining up-to-date set on site.

l. 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.

m. Maintain rework log on site, noting dates deficiency identified, and date corrected.

n. Certify and sign statement on each invoice that all work to be paid under the invoice has been completed in accordance with contract requirements.

- o. Perform Punch-out and participate in Pre-final and Final 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.
- p. 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.
- q. Assure that all applicable tests, special inspections, and observations required by the contract are performed.
- r. Coordinate all factory and on-site testing, Testing Laboratory personnel, QC Specialists, and any other inspection and testing personnel required by this Contract.
- s. Notify the Contracting Officer of any proposed changes to the QC plan.
- t. Retain a copy of approved submittals at project site, including Contractor's copy of approved samples.
- u. 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.

#### 1.4.2 Commissioning Authority

The Commissioning Authority shall be a member of the QC organization, shall coordinate actions with the QC Manager, shall not be subordinate to the Project Superintendent or the Project Manager, and shall report findings directly to the government.

The Commissioning Authority shall meet the requirements of LEED-NC with the following additional qualifications:

- a. A minimum of 5 years 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 certified by a recognized Building Commissioning Organization. Acceptable minimum certifications are "Certified Cx Agent" from the Associated Air Balance Council (AABC); "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.

Commissioning Authority responsibilities:

- a. Lead the Design Quality Control actions and be responsible for the design integrity, professional design standards, and all design services required.

- b. May be a member of the Designer of Record's (DOR) firm if independent of the project's design and construction management.
- c. Be responsible for development of the design portion of the QC Plan, the Commissioning Plan, incorporation and maintenance of the approved Design Schedule, and the preparation of DQC Reports, Summary Commissioning Report, 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 Commissioning Plan and shall 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, and have been properly coordinated.
- g. Develop the submittal register. Coordinate with each DOR to determine what items need to be submitted, and who needs to approve.
- h. Coordinate all training issues and validate that the testing and training requirements of this contract are accomplished.
- 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.

#### 1.4.3 QC Specialists

QC Specialists shall 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.

##### 1.4.3.1 Fire Protection QC Specialist

The Fire Protection 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 may serve as the lead Fire Protection QC Specialist, provided the following qualifications are met.

- a. Qualifications/Experience: The FPE 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 FPE is responsible for assuring the proper construction and installation of life safety and fire protection features across all disciplines and trades. The FPE 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, emergency and exit lighting fixtures, etc.

c. Construction Surveillance: The FPE 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, 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: FPE shall personally witness all preliminary inspections of fire alarm/detection and suppression systems. Once preliminary inspections have been successfully completed, the FPE 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.

(2) Final Life Safety/Fire Protection Certification Documentation: The FPE shall provide certification that all life safety and fire protection systems have been inspected and, in the FPE's professional judgment, 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 fire protection engineer.

1.4.3.2 Mechanical QC Specialist

<u>Qualification/Experience in Area of Responsibility</u>	<u>Area of Responsibility</u>	<u>Frequency</u>
---	-----------------------------------	------------------

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
Elevator Inspector, International Conference of Building Officials (ICBO) Certified/ 5 years minimum	Testing of Elevators	Minimum 3 times a week during installation and full-time during testing
Mechanical Testing QC Specialist/Registered Mechanical Engineer, (PE)	Testing of Mechanical Systems	Full-time during testing

[1.4.3.3 Soils Testing/Pile Installation and Testing QC Specialists

Provide IBC Special Inspections Certification provided by the following specialist(s):

<u>Qualification/Experience in Area of Responsibility</u>	<u>Area of Responsibility</u>	<u>Frequency</u>
Under Supervision of P.E.	Soil Testing Pile Installation And Testing	See IBC Chapter

1.5 THREE PHASES OF CONTROL

The Three Phases of Control shall adequately cover both on-site and off-site work and shall 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 shall be conducted by the QC Manager and attended by the Project Superintendent, QC Specialists, and the foreman responsible for the DFOW. The Commissioning Authority shall 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 shall attend the preparatory phase meeting. Document the results of the preparatory phase actions 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 Project Superintendent, the QC Specialists, and the foreman responsible for that DFOW. The Commissioning Authority shall 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 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 shall 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 DFW 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 COMPLETION INSPECTIONS

The Contractor shall perform the necessary prefinal inspections, compile punchlists, and correct deficiencies. Notify the Contracting Officer 5 calendar days prior to the date a prefinal inspection can be held. Notify the Contracting Officer at least 14 calendar days prior to the date a final acceptance inspection can be held. The Government will perform final inspection to verify that the facility is complete and ready to be occupied. All items previously identified on the prefinal punchlist will have been corrected and acceptable.

#### 1.7 TRAINING

The Commissioning Authority shall 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) provided as a part of this Contract. Training shall 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 VHS or DVD format. Confirm media format required with the using activity. The recording shall capture, in video and audio, all instructors training presentations including question and answer periods with the trainees.

## 1.8 DOCUMENTATION

Maintain current and complete records of on-site and off-site QC program operations and activities.

-- End of Section --





<b>CONTRACTOR QUALITY CONTROL REPORT</b>				DATE	Enter (DD/MMM/YY)
(ATTACH ADDITIONAL SHEETS IF NECESSARY)				REPORT NO	Enter Rpt # Here
PHASE	CONTRACT NO	Enter Cnt# Here	CONTRACT TITLE Enter Title and Location of Construction Contract Here		
<b>PREPARATORY</b>	WAS PREPARATORY PHASE WORK PREFORMED TODAY?				YES <input type="checkbox"/> NO <input type="checkbox"/>
	IF YES, FILL OUT AND ATTACH SUPPLEMENTAL PREPARATORY PHASE CHECKLIST.				
	Schedule Activity No.	Definable Feature of Work			Index #
<b>INITIAL</b>	WAS INITIAL PHASE WORK PREFORMED TODAY?				YES <input type="checkbox"/> NO <input type="checkbox"/>
	IF YES, FILL OUT AND ATTACH SUPPLEMENTAL INITIAL PHASE CHECKLIST.				
	Schedule Activity No.	Definable Feature of Work			Index #
<b>FOLLOW-UP</b>	WORK COMPLIES WITH CONTRACT AS APPROVED DURING INITIAL PHASE?				YES <input type="checkbox"/> NO <input type="checkbox"/>
	WORK COMPLIES WITH SAFETY REQUIREMENTS?				YES <input type="checkbox"/> NO <input type="checkbox"/>
	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)			REWORK ITEMS CORRECTED TODAY (FROM REWORK ITEMS LIST)		
Schedule Activity No.	Description	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
<b>GOVERNMENT QUALITY ASSURANCE REPORT</b>				DATE	
QUALITY ASSURANCE REPRESENTATIVE'S REMARKS AND/OR EXCEPTIONS TO THE REPORT					
Schedule Activity No.	Description				
GOVERNMENT QUALITY ASSURANCE MANAGER				DATE	







# INITIAL PHASE CHECKLIST

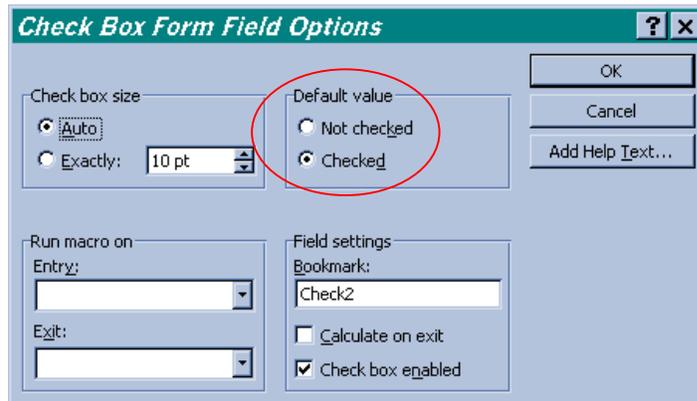
<b>INITIAL PHASE CHECKLIST</b>		SPEC SECTION Enter Spec Section # Here	DATE Enter Date (DD/MMM/YY)
CONTRACT NO Enter Cnt# Here	DEFINABLE FEATURE OF WORK Enter DFOW Here	SCHEDULE ACT NO. Enter Sched Act ID Here	INDEX # Enter Index# Here
<b>PERSONNEL PRESENT</b>	GOVERNMENT REP NOTIFIED _____ HOURS IN ADVANCE:      YES <input type="checkbox"/> NO <input type="checkbox"/>		
	NAME	POSITION	COMPANY/GOVERNMENT
<b>PROCEDURE COMPLIANCE</b>	IDENTIFY FULL COMPLIANCE WITH PROCEDURES IDENTIFIED AT PREPARATORY. COORDINATE PLANS, SPECIFICATIONS, AND SUBMITTALS.		
	COMMENTS: _____		
<b>PRELIMINARY WORK</b>	ENSURE PRELIMINARY WORK IS COMPLETE AND CORRECT. IF NOT, WHAT ACTION IS TAKEN?		
<b>WORKMANSHIP</b>	ESTABLISH LEVEL OF WORKMANSHIP.		
	WHERE IS WORK LOCATED? _____		
	IS SAMPLE PANEL REQUIRED?      YES <input type="checkbox"/> NO <input type="checkbox"/>		
	WILL THE INITIAL WORK BE CONSIDERED AS A SAMPLE?      YES <input type="checkbox"/> NO <input type="checkbox"/>		
(IF YES, MAINTAIN IN PRESENT CONDITION AS LONG AS POSSIBLE AND DESCRIBE LOCATION OF SAMPLE) _____			
<b>RESOLUTION</b>	RESOLVE ANY DIFFERENCES.		
	COMMENTS: _____		
<b>CHECK SAFETY</b>	REVIEW JOB CONDITIONS USING EM 385-1-1 AND JOB HAZARD ANALYSIS		
	COMMENTS: _____		
<b>OTHER</b>	OTHER ITEMS OR REMARKS		



## Instructions for Using Report Forms in MS-Word

In the Report Header, fields that have instructional text such as “Enter Title and Location of Construction Contract Here” prompt the user to enter the information in a specific location, governed by the field. Single mouse click anywhere in the field and the field will darken. Entry of text/data at this point will delete the instructional text in the field and will be replaced with entered text/data.

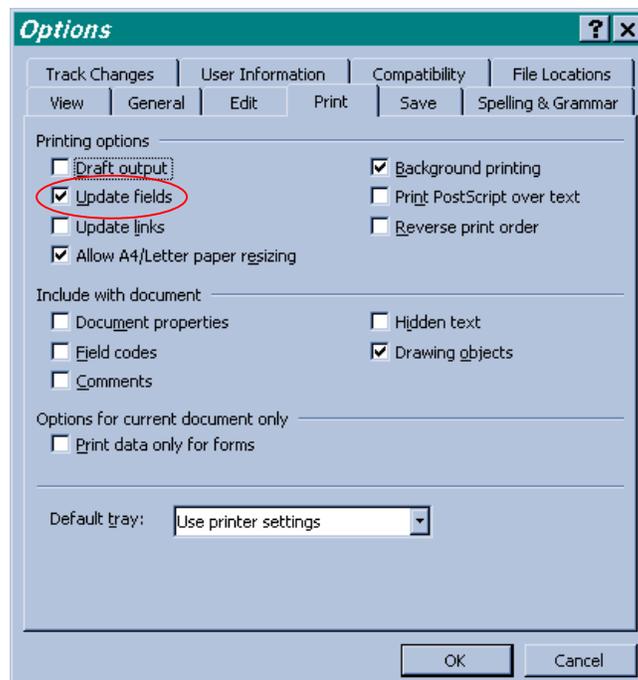
All check boxes are all defaulted as unchecked (i.e.; ). To check the box (i.e.; ) , double click the box and the “Check Box Form Field Options” box will appear. In the “Default value” section of the box, click in the Radio Button for “Checked”, then click on the “OK” button and the box will be checked.



The “Hour” fields were intentionally not programmed to total. If the Contractor deleted the formula in a field within the range that was to be totaled, the total would be wrong.

With the ability to [unlimitedly] expand the Contractor Production Report and Contractor Quality Control Representative Report, their Continuation Sheets are obsolete.

In the footer of each form are data fields for the Sheet number and the total number of sheets in the report (Sheet 1 of 2). The first number will generate itself when pages of the report are added. But MS-Word will not automatically update the second number. To update the NumPages field, click the field or the field results and then press F9. You can also click **Options** in the **Tools** menu, click the **Print** tab, and then select the **Update fields** check box.





# PREPARATORY PHASE CHECKLIST

(CONTINUED ON SECOND PAGE)

		SPEC SECTION	DATE
		Enter Spec Section # Here	Enter Date (DD/MMM/YY)
CONTRACT NO	DEFINABLE FEATURE OF WORK	SCHEDULE ACT NO.	INDEX #
Enter Cnt# Here	Enter DFW Here	Enter Sched Act ID Here	Enter Index# Here
<b>PERSONNEL PRESENT</b>	GOVERNMENT REP NOTIFIED _____ HOURS IN ADVANCE:		YES <input type="checkbox"/> NO <input type="checkbox"/>
	NAME	POSITION	COMPANY/GOVERNMENT
<b>SUBMITTALS</b>	REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER. HAVE ALL SUBMITTALS BEEN APPROVED? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED? _____		
	ARE ALL MATERIALS ON HAND? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF NO, WHAT ITEMS ARE MISSING? _____		
<b>MATERIAL STORAGE</b>	ARE MATERIALS STORED PROPERLY? YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF NO, WHAT ACTION IS TAKEN? _____		
<b>SPECIFICATIONS</b>	REVIEW EACH PARAGRAPH OF SPECIFICATIONS. _____		
	DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK. _____		
	CLARIFY ANY DIFFERENCES. _____		
<b>PRELIMINARY WORK &amp; PERMITS</b>	ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.		
	IF NOT, WHAT ACTION IS TAKEN? _____		







## RESPONSIBILITIES/AUTHORITY OF THE QC MANAGER

1. Appointing letter to the QC manager shall detail his/her authority and responsibility to act for the contractor and outline his/her duties, responsibilities and authority. He/she shall have no job-related responsibilities other than QC unless specifically permitted in the specification.
2. He/she 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/her absence, approved backup shall be on the site.
3. 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.
4. Conduct daily inspection of work performed for compliance with plans and specifications.
5. 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.
6. Supervise and coordinate the inspection and tests made by the members of the Quality Control Organization, including subcontractors.
7. Assure QC staff is adequate to meet its responsibilities.
8. Maintain a copy of the ROICC approved QC Plan on file at the jobsite complete with up-to-date approved revisions/filled-in log of submittals. Maintain at the jobsite an up-to-date QC Submittal Register (provided in the specification) showing the status of all submittals required by the contract.
9. Maintain at the jobsite a testing plan showing status of all tests required by the contracts. Ensure that all tests required are performed and report the results of same. Indicate whether test results show the item tested conforms to contract requirements or not.
10. Authority to remove any individual from the site who fails to perform his/her work in a skillful and workmanlike manner or his/her work does not comply with the contract plans and specifications.
11. QC manager does not have authority to deviate from plans and specifications without prior approval, in writing, from the ROICC.
12. 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.
13. Maintain at the jobsite the up-to-date QC Rework Items List.

ATTACHMENT A











## 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 (1997) 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 (9th Edition) Manual of Cross-Connection Control

## NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241 (2000) Safeguarding Construction, Alteration, and Demolition Operations

NFPA 70 (2005) National Electrical Code

## U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA)

FHWA SA-89-006 (1988) Manual on Uniform Traffic Control Devices for Streets and Highways

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

40 CFR 247 Comprehensive Procurement Guideline for Products Containing Recovered Materials

## 1.2 SUBMITTALS

The use of a "G" following a submittal indicates that a Government approval action is required. Submit the following 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

Traffic control plan; G

Backflow preventers; G

## 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 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.

## 1.4.1 Backflow Prevention Training Certificate

The Contractor shall 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.

## 1.5 TEMPORARY UTILITIES

Reasonable amounts of the following utilities will be made available to the Contractor at the prevailing rates.

Electricity  
Potable Water  
Salt Water  
Compressed Air  
Steam  
Natural Gas  
Sanitary Sewer

The point at which the Government will deliver such utilities or services and the quantity available shall be coordinated with the Contracting Officer. The Contractor shall pay all costs incurred in connecting, converting, and transferring the utilities to the work. The Contractor shall make connections, including providing backflow-preventing devices on connections to domestic water lines; and providing transformers; and make disconnections. Under no circumstances will taps to base fire hydrants be allowed for obtaining domestic water.

## 1.6 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 shall not be affiliated with any company participating in any other phase of this Contract.

## 1.7 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.

### 1.7.1 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 shall 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.

#### 1.7.1.1 Hurricane Condition of Readiness

Unless directed otherwise, comply with:

- a. Condition FOUR (Sustained winds of 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 4 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. Condition THREE (Sustained winds of 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. Condition TWO (Sustained winds of 58 mph or greater expected within 24 hours): Secure the jobsite, and leave Government premises.
- d. Condition ONE (Sustained winds of 58 mph or greater expected within 12 hours): Contractor access to the jobsite and Government

premises is prohibited.

## 1.8 STATION OPERATION AFFECT ON CONTRACTOR OPERATIONS

### 1.8.1 Special Restrictions Regarding Access of Vehicles and Parking

#### 1.8.1.1 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 shall be in accordance with State and local regulations and the FHWA SA-89-006, Part VI. 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.

#### 1.8.1.2 Commercial Vehicles In/Out of Joint Expeditionary Base (JEB) Little Creek - Fort Story Norfolk, VA

- a. Definitions. Commercial vans and trucks are differentiated as follows:
  - (1) Closed truck. A truck enclosed on four sides, top, and bottom to which entry can be made only through end or side doors and to which a seal can be applied.
  - (2) Open truck. A truck which is either fully open, such as flatbed, or contained by wooden slats or sideboards; or any truck to which a seal cannot be applied.
  - (3) Commercial vehicles. A common contract or commercial truck without a decal issued by Norfolk, VA.
  - (4) Trailer. A non-self-propelled enclosed cargo container used for the transportation of goods, e.g., a trailer pulled by a truck.
- b. Instructions and directions. Ensure that commercial trucks and trailers follow the instructions below to provide for effective control over their entry and exit from the base, movement within the base, and to reduce congestion both at the gates and within the base. In general, commercial trucks and common carriers are required to enter and exit through specified gates and process immediately to a truck control point for cargo manifest check. The driver shall be issued a Material Movement Control and Gate Pass, routing instructions, and directions to depart the base via a designated exit point where the pass is to be turned in.
  - (1) Common contract and commercial trucks going to the area of Joint Expeditionary Base (JEB) Little Creek - Fort Story, JEB Norfolk shall enter and exit Gate 3. Gate 3 hours of operations are 5:30 a.m. through 6:30 p.m. and 10:30 p.m. through 3:00 a.m., 7 days a week. The gate is closed on holidays.

(2) Other common contract and commercial trucks, except as noted below are allowed to enter the JEB through any Gate and exit through Gate 3.

(3) Common contract and commercial trucks which enter the base may depart through Gate 3 only. The exit Truck Control Point at Gate 3 is operated from 7:00 a.m. to 5:00 p.m.

(4) For concrete- and asphalt-carrying trucks, the Resident Officer in Charge of Construction (ROICC), FEAD, PWD, Little Creek, Norfolk VA shall arrange entry and exit through any gate other than Gate 3.

c. Movement and Exit

(1) Material movement control and gate pass. A Material Movement Control and Gate Pass (5ND GEN 5510/1) is required for the removal of Government, public, or private property from Joint Expeditionary Base (JEB) Little Creek - Fort Story Norfolk complex via commercial vans and truck.

(a) The Material Movement Control and Gate Pass shall be originated by the Naval Base Police Truck Control Officer, and shall be given to drivers of commercial trucks for retention during transit to intermediate stops and to the exit gates. The pass shall be presented by the driver to the Truck Control Officer at the exit truck stop. If the driver has more than one delivery or pickup point, the driver shall present the pass at each stop so the new activity may fill in appropriate information on the pass. A copy of the pass shall be retained by each activity after appropriate information has been entered; remaining copies of the pass shall be returned to the driver. Passes are subject to review by the Joint Expeditionary Base (JEB) Little Creek - Fort Story Police Department during transit and within command areas by activity officials for verification of cargo content and to determine if drivers are transiting promptly and by the proper route. For trailers expecting to be picked up and depart outside normal working hours, pre-prepared passes shall be provided by the activity duty officer or authorized supervising person prior to close of working hours. Trucking companies expecting to pick up trailers after working hours should be instructed to pick up a Material Movement Control and Gate Pass from the responsible activity. The activity duty officer or official shall notify Base Police Headquarters to clear the truck for exit at Gate 5 if the seal and Material Movement Control and Gate Pass are in order.

(b) When filling out a Material Movement Control and Gate Pass, the last activity where business is conducted on the base is responsible to ensure that the original of the pass is given to the driver to turn in to the Truck Control officer at the truck control stops.

(c) The Material Movement Control and Gate Pass shall be turned in by the vehicle driver to a base police officer at a truck control stop when he departs from the base.

(d) Government or commercial vehicles departing Joint Expeditionary Base (JEB) Little Creek - Fort Story, Norfolk with

Government, public, or private property shall possess a Material Movement Control and Gate Pass filled out by a naval officer or equivalent grade civilian within the driver's chain of command. The Material Movement Control and Gate Pass shall be inspected and verified during random gate departure searches.

(2) Car Seals

(a) Commercial, sealable, closed trailers and trucks, full, partially full, or empty, destined to leave the base shall be sealed upon departure from any activity. The seal number and trailer or truck number shall be entered on the Material Movement Control and Gate Pass.

(b) Commercial closed trailers and trucks received empty for loading with Government material shall have a Navy car seal affixed to cargo doors after loading and prior to departing through designated gates.

(c) Closed trailers and trucks which have been only partially loaded or off-loaded shall be sealed completely at the end of working hours with a Navy car seal.

(d) Application of Navy car seals is the responsibility of the activity in charge of loading and unloading of trailers and trucks.

(e) The Joint Expeditionary Base (JEB) Little Creek - Fort Story Police Department will conduct random checks of contents, seals, and forms of trailers and trucks on the Naval Base complex.

(f) A truck driver whose van or truck does not have a properly completed Material Movement Control and Gate Pass or car seal will be refused exit clearance.

## 1.9 STORAGE AREAS

The Contract Clause entitled "FAR 52.236-10, Operations and Storage Areas" and the following apply:

### 1.9.1 Storage in Existing Buildings

The Contractor shall be working in and around existing buildings; the storage of material will be allowed in areas designated during the preconstruction meeting. The contractor shall 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 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.

#### 1.11 TEMPORARY BUILDINGS

Temporary facilities (including trailers) shall be in like new condition and shall 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 shall result in the removal of non-complying units at the Contractor's expense. A sign not smaller than 24 by 24 inches shall be conspicuously placed on the trailer depicting the company name, business phone number, and emergency phone number. Trailers shall be anchored to resist high winds and must meet applicable state of local standards for anchoring mobile trailers. Maintenance and repair services are available on a cost reimbursable basis.

##### 1.11.1 Maintenance of Temporary Facilities

Suitably paint and maintain the temporary facilities. Failure to do so will be sufficient reason to require their removal.

### PART 2 PRODUCTS

#### 2.1 BACKFLOW PREVENTERS

Reduced pressure principle type conforming to the applicable requirements AWWA C511. Provide backflow preventers complete with 150 pound flanged bronze 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 shall be included in the latest edition of the List of Approved Backflow Prevention Assemblies issued by the FCCCHR List and shall 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 shall be provided in accordance with attached Plates 1, 3, and 4. The signboard shall be provided at a conspicuous location on the job site where directed by the Contracting Officer.

- a. The field of the sign shall consist of a minimum of 4 by 8 foot sheet of exterior plywood.
- b. The entire signboard and supports shall be painted. The lettering and sign work shall be performed by a skilled sign painter using paint known in the trade as bulletin colors. The colors, lettering sizes, and lettering styles shall be as indicated.

- c. NAVFAC logo shall 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 shall be rated for a minimum of 2-year exterior vertical exposure. NAVFAC Logo is available at:  
[https://portal.navy.mil/portal/page?\\_pageid=181,3465071&\\_dad=portal&\\_schema=PORTAL](https://portal.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.

### PART 3 EXECUTION

#### 3.1 TEMPORARY PHYSICAL CONTROLS

##### 3.1.1 Access Controls

###### 3.1.1.1 Temporary Barricades

Contractor shall provide for barricading around all work areas to prevent public access.

###### 3.1.1.2 Fencing

Fencing shall 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 250 pounds against it.

Enclose the project work area and Contractor lay-down area with a 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.

###### 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 300 feet. All points of entry shall 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 shall provide and ensure appropriate road closure and detour signs are established as necessary for motor traffic management. All road closures shall be coordinated with the Contracting Officer in advance. Self-illuminated (lighted) barricades shall be

provided during hours of darkness. Brightly-colored (orange) vests are required for all personnel working in roadways. Road closures shall 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 shall include frequent inspection of all equipment and apparatus.

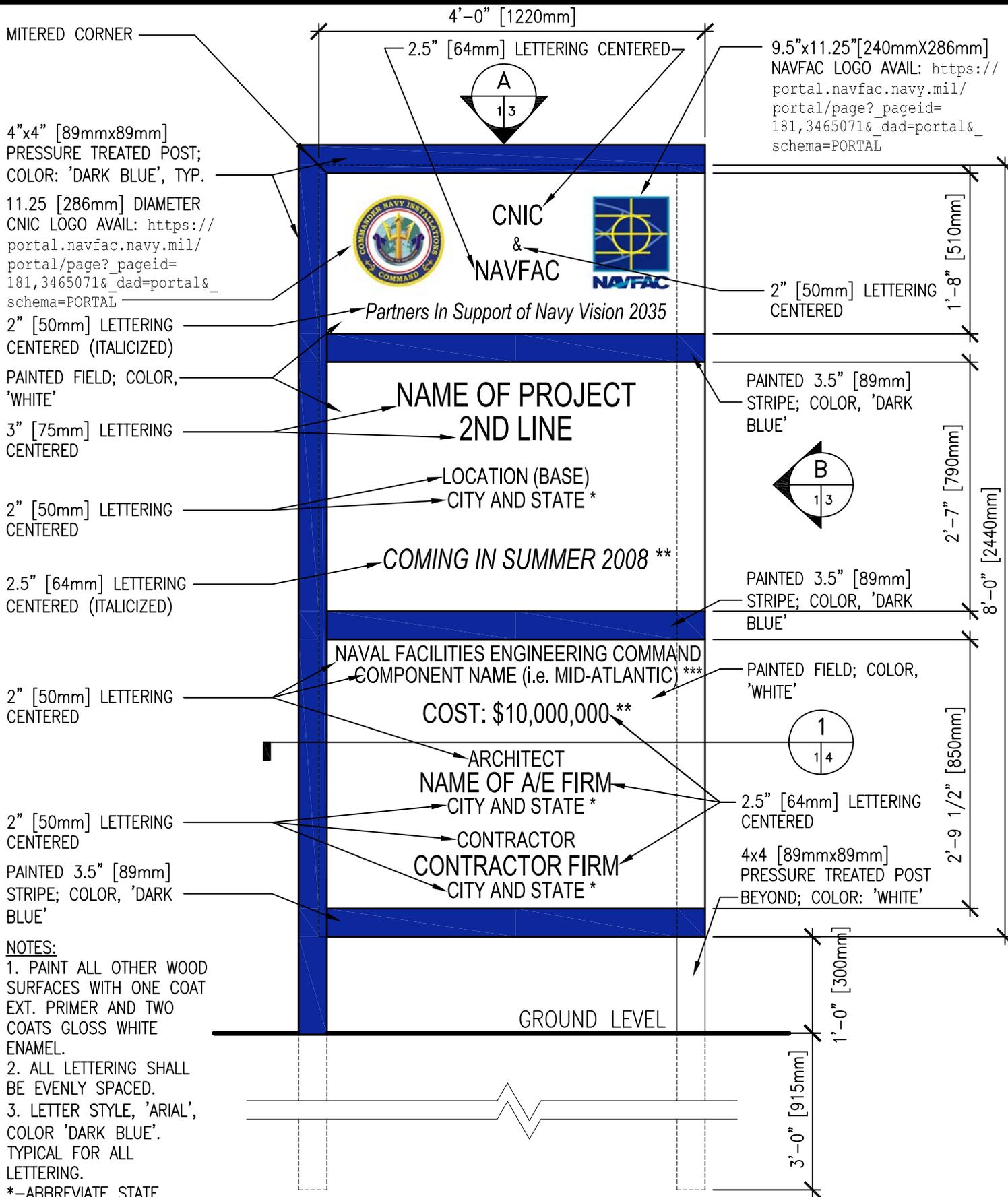
### 3.3 REDUCED PRESSURE BACKFLOW PREVENTERS

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) shall perform testing of backflow preventer(s) for proper installation and operation and provide subsequent tagging. Backflow preventer tests shall 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 monthly thereafter. Tag shall 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.

-- End of Section --



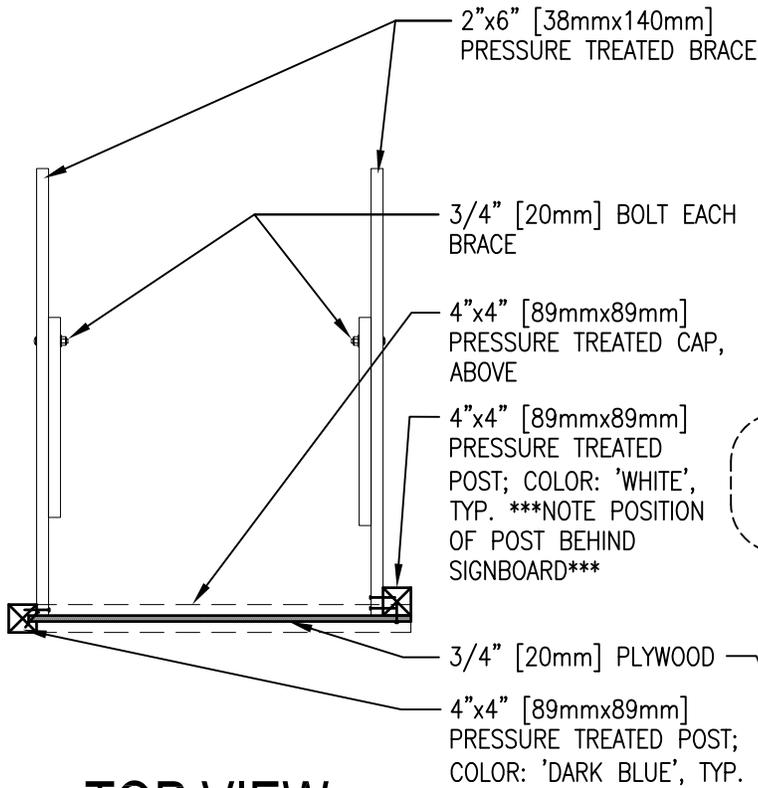


**NOTES:**  
 1. PAINT ALL OTHER WOOD SURFACES WITH ONE COAT EXT. PRIMER AND TWO COATS GLOSS WHITE ENAMEL.  
 2. ALL LETTERING SHALL BE EVENLY SPACED.  
 3. LETTER STYLE, 'ARIAL', COLOR 'DARK BLUE'. TYPICAL FOR ALL LETTERING.  
 \*-ABBREVIATE STATE  
 \*\*-CONFIRM USE WITH CONTRACTING OFFICER  
 \*\*\*-VERIFY NAME WITH CONTRACTING OFFICER.

# PROJECT IDENTIFICATION SIGNBOARD

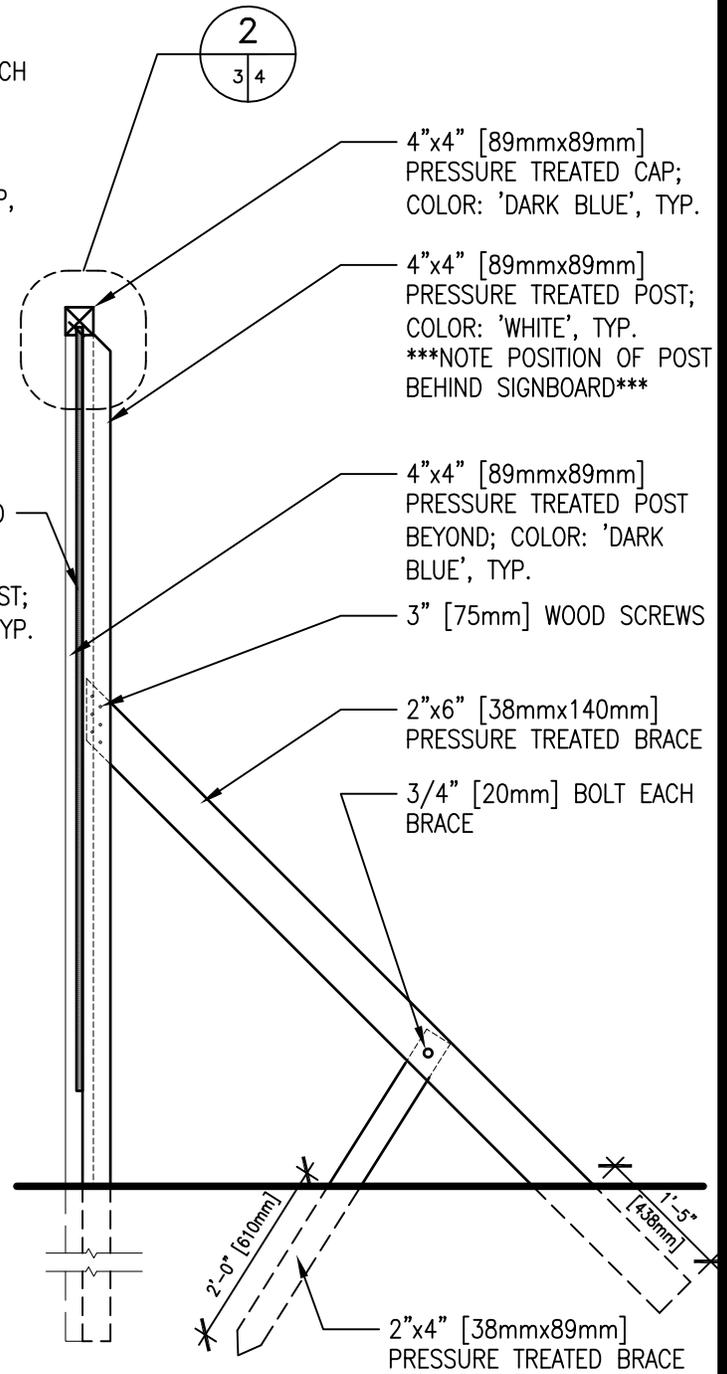
SCALE: 3/4" = 1'-0"

PLATE 1



**A** TOP VIEW  
SCALE: 1/2" = 1'-0"

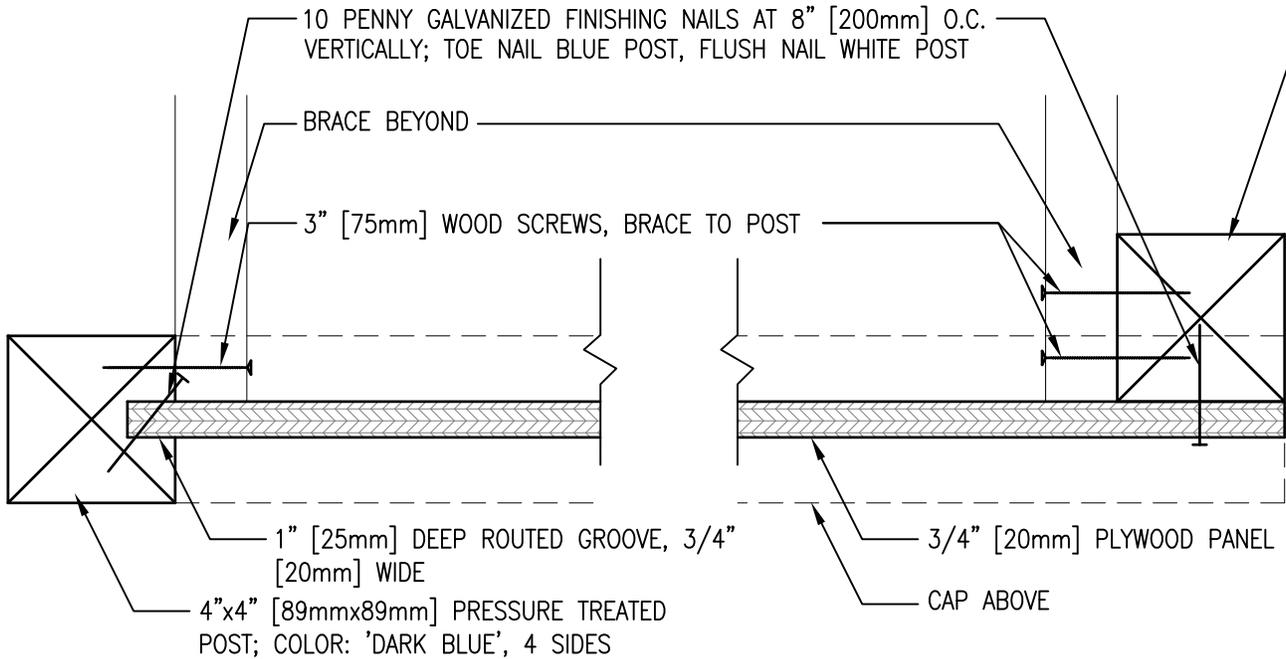
- NOTES:
1. POSTS AND BRACES SHALL BE PRESSURE TREATED.
  2. ALL FASTENERS SHALL BE ZINC COATED.
  3. INCLUDE OPTIONAL BRACING IN UNSTABLE SOIL OR HIGH WIND ENVIRONMENTS.



**B** SIDE VIEW  
SCALE: 1/2" = 1'-0"

# PROJECT IDENTIFICATION SIGNBOARD SUPPORT DETAILS

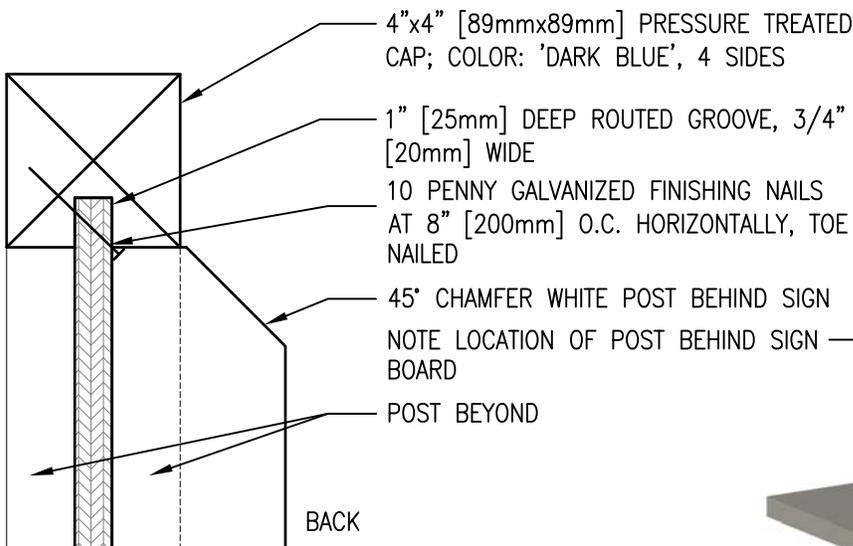
4"x4" [89mmx89mm] PRESSURE TREATED POST; COLOR: 'WHITE',  
TYP. \*\*\*NOTE POSITION OF POST BEHIND SIGNBOARD\*\*\*



1  
1,2 | 4

## PLAN SECTION

SCALE: 3" = 1'-0"



2  
1,2 | 4

## SECTION AT TOP

SCALE: 3" = 1'-0"



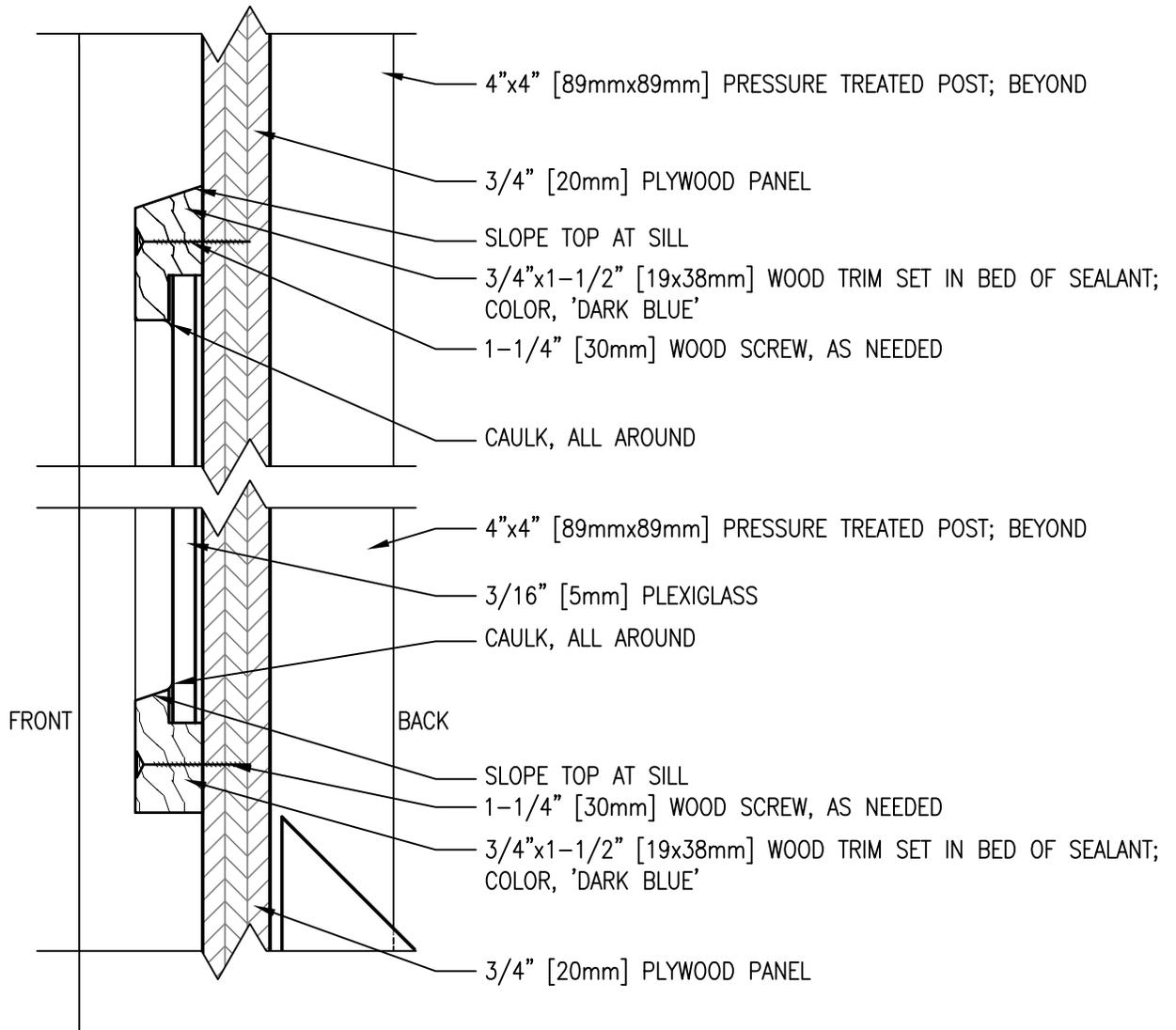
3  
2 | 4

## ISO VIEW

SCALE: NONE

# PROJECT IDENTIFICATION SIGNBOARD SECTIONS

PLATE 4



3  
2/5

### SECTION AT RENDERING FRAME

SCALE: 6" = 1'-0"

# PROJECT IDENTIFICATION SIGNBOARD SECTION

PLATE 5

## SECTION 01 74 19.05 20

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT FOR DESIGN-BUILD  
11/07

## PART 1 GENERAL

## 1.1 GOVERNMENT POLICY

Government policy is to apply sound environmental principles in the design, construction and use of facilities. As part of the implementation of that policy the Contractor shall: (1) practice efficient waste management when sizing, cutting, and installing products and materials and (2) use all reasonable means to divert construction and demolition waste from landfills and incinerators and to facilitate their recycling or reuse.

## 1.2 PLAN

A waste management plan shall be submitted within 15 days after notice to proceed and prior to initiating any site preparation work. The plan shall 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.
- c. Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas and equipment to be used for processing, sorting, and temporary storage of wastes.
- d. Characterization, including estimated types and quantities, of the waste to be generated.
- e. 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.
- f. 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.
- g. List of specific waste materials that will be salvaged for resale, salvaged and reused, or recycled. Recycling facilities that will be used shall be identified.
- h. Identification of materials that cannot be recycled/reused with an explanation or justification.
- i. 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 incineration and/or landfill cost avoidance.

### 1.3 RECORDS

Records shall be maintained 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. The records shall be made available to the Contracting Officer during construction, and a copy of the records shall be delivered to the Contracting Officer upon completion of the construction.

### 1.4 DISPOSAL

Except as otherwise specified in other sections of the specifications, disposal shall be in accordance with the following:

#### 1.4.1 Reuse.

First consideration shall be given 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. Sale or donation of waste suitable for reuse shall be considered. Salvaged materials, other than those specified in other sections to be salvaged and reinstalled, shall not be used in this project.

#### 1.4.2 Recycle.

Waste materials not suitable for reuse, but having value as being recyclable, shall be made available for recycling whenever economically feasible.

#### 1.4.3 Waste.

Materials with no practical use or economic benefit shall be disposed at a landfill or incinerator.

## PART 2 PRODUCTS

Not used.

## PART 3 EXECUTION

Not used.

-- End of Section --

## SECTION 01 78 24.05 20

## FACILITY OPERATION AND MAINTENANCE SUPPORT INFORMATION

11/07

## PART 1 GENERAL

## 1.1 GENERAL REQUIREMENTS

This section provides the requirements for operation and maintenance support information (OMSI). OMSI contains detailed as-built information describing the efficient, economical and safe operation and maintenance, and repair of the facility. OMSI is provided as hard copy, manuals, .pdf files, and computerized maintenance management system (CMMS) data. The OMSI is to be factual, concise, comprehensive and written to be easily used by maintenance personnel. Descriptive matter and theory must include technical details that are essential for a comprehensive understanding of the operation, maintenance and repair of the system. The OMSI preparer shall ensure that OMSI reflect changes to systems and equipment, made during construction. The words "system", "systems", and "equipment", when used in this document refer to as-built systems and equipment.

## 1.1.1 Organization of OMSI

Prepare the OMSI in three parts. PART I - Facility Information, PART II - Primary Systems Information, and PART III - Product Data. Cross-referencing within or between OMSI Parts must be specific.

## 1.1.2 Sources of Data

The sources of data needed to prepare the OMSI include but are not limited to, the design plans and specifications, field visits, approved construction submittals and manufacturer's catalog data for materials, methods, and systems used in this contract.

## 1.1.3 OMSI Units of Measure

Provide OMSI utilizing the units of measure required by the RFP, Refer to UFGS Section 01 33 10.05 20, Design Submittal Procedures. Metric OMSI shall be in SI (System International) metric units exclusively.

## 1.2 SUBMITTALS

The use of a "G" following a submittal indicates that a Government approval action is required. Submit the following in accordance with Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES and Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES.

SD-06 Test Reports

Validation Site Visit and Presentation; G

SD-11 Closeout Submittals

OMSI, Preliminary Submittal; G

OMSI, 100% - Prefinal Submittal; G

## OMSI, Final Submittal; G

## 1.3 SUBMITTAL FORMAT

## 1.3.1 Hard Copies

Bind the OMSI in durable, hard cover, three-ring, water and grease resistant binders, which hold 8.5" X 11" sheets. Binders shall have clear pockets located on the front and on the spine that hold printed sheets. Parts I, II, and III are separate binders with white, blue, and red spine inserts (respectively). Use high quality paper and dividers of heavy-duty paper with plastic reinforced holes and integrated tabs. Tabs must be of varying size and color to distinguish organization. Use plain tabs to show the UNIFORMAT II number and title in Part III, Product Data. Provide a Master Table of Contents for each OMSI binder. Identify each binder on both the cover insert sheet and the spine insert sheet with the following information:

1. OMSI Part I, II or III with appropriate titles
2. Building Number
3. Project Title
4. Activity and Location
5. Construction Contract Number
6. Prepared For: (Contracting Agency)
7. Prepared By
8. Volume Number - Each binder is a single volume. Number each volume consecutively.

## 1.3.2 Electronic Format (PDF)

Provide the OMSI on Compact Disk using Adobe Acrobat 7.0 or similar software capable of producing PDF (Portable Document Format) files. The PDF file is duplicate of the hard copy format. The PDF files shall be indexed by part (Facility Information, Primary Systems Information, and Product Data) and each entry identified in the table of contents.

## 1.3.3 Computerized Maintenance Management System (CMMS) Data

Provide data in format that can be imported into Single Platform Maximo CMMS.

## 1.4 SUBMITTAL REQUIREMENTS

## 1.4.1 Preliminary Submittal

Submit the Preliminary submittal when construction is 50% complete. Provide two hard copies to the Contracting Officer. Present the submittal in sufficient detail to evaluate the data collection and arrangement process. One of these copies, reviewed by the Contracting Officer, with review comments, will be returned to the Contractor for preparation of the 100% submittal. Include in the submittal, as a minimum, all available Part I, Facility Information; all systems of Part II, Primary Systems Information (at least one system shall be essentially complete and the remaining systems shall be at least 50% complete); and at least two divisions of Part III, Product Data.

#### 1.4.2 100% - Prefinal Submittal

Provide two hard copies to the Contracting Officer. The 100% - Prefinal submittal is due 30 days prior to Beneficial Occupancy Date (BOD). This submittal shall be a complete, working document that can be used to operate and maintain the facility.

#### 1.4.3 Final Submittal

Provide two hard copies and two sets of electronically formatted information to the Contracting Officer 30 days prior to the Beneficial Occupancy Date (BOD). The final submittal is due 90 days after BOD. Include the final submittal in the Construction Schedule.

### PART 2 PRODUCTS

#### 2.1 DESCRIPTION OF WORK

##### 2.1.1 OMSI Part I - Facility Information

a. 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 Part II, 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. Include a copy of the final "Completion Certification" which certifies completion and compliance of construction by the Contractor. This documentation will be provided by the Construction Quality Control Manager.

b. Basis of Design - Include the Basis of Design that shows the basic design scope of work, assumptions and the original intentions of the design A/E. Include a copy of the final "Design Quality Control Report Certification" which verifies conformance of the project design to the Request for Proposal. The Commissioning Authority or the Designer of Record will provide this documentation.

c. Safety Hazards - List all residual hazards identified in the Requirements Hazard Analysis as prepared by the design A/E. Provide recommended safeguards for each identified hazard.

d. Floor Plans - Provide uncluttered, legible 11" x 17" floor plans. Include only room numbers, type or function of spaces, and overall facility dimensions on the floor plans. Do not include construction instructions, references, frame numbers, etc.

e. Utility Connection and Cutoff Plans - Provide utility site plans and floor plans that indicate the main interior and exterior connection and cutoff points for all utilities. Include enough information to enable someone unfamiliar with the facility to locate the connection and cutoff points. Indicate the room number, panel number, circuit breaker, valve number, etc., of each connection and cutoff point, and what that connection and cutoff point controls. These plans are in addition to Floor plans.

f. Equipment Warranty Tags and Guarantor's Local Representative - Provide with each warranty the name, address, and telephone number of the guarantor's representative nearest to the location where the equipment and

appliances are installed. The guarantor's representative, upon request of the station representative, shall honor the warranty during the warranty period, and shall provide the services prescribed by the terms of the warranty. At the time of installation, tag each item of warranted equipment with a durable, oil- and water-resistant tag approved by the Contracting Officer. Attach tag with copper wire and spray with a clear silicone waterproof coating. Leave the date of acceptance and QC's signature blank until project is accepted for beneficial occupancy. Tag shall show the following information:

EQUIPMENT/PRODUCT WARRANTY TAG

Type of Equipment/Product \_\_\_\_\_  
Warranty Period \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_  
Contract No. \_\_\_\_\_  
Inspector's Signature \_\_\_\_\_ Date Accepted \_\_\_\_\_

Contractor:  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone: \_\_\_\_\_

Warranty Contact: \_\_\_\_\_  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone: \_\_\_\_\_

STATION PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE

g. Extended Warranty Information - List and include copies of all warranties for products, equipment, components, and subcomponents whose duration exceeds one year. Cross-reference the list to the warranty copies included in Part III, Product Data. 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.

h. Equipment and Warranty Tags Listing - Provide a table that lists the major equipment shown on the design equipment schedules and written warranties for equipment/products provided. Show the item descriptions, warranty information, locations, model numbers; and the names, addresses, and telephone numbers of the manufacturers, suppliers, contractor and subcontractors.

i. HVAC Filters - Provide a table that lists the quantity, type, size, and location of each HVAC filter.

j. Floor Coverings, Wall Surfaces, Ceiling Surfaces - Provide a table that lists by room number (including hallways and common spaces), the type, and area of finish. The table will include a facility summary of the total area for each type of space and floor, wall, or ceiling finish.

k. 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, and special features. The table will include a facility summary of the total number for each type and size of window.

l. Light Fixtures - Provide a table that lists by room number (including

hallways and common spaces), type of light fixture, number of light fixtures, type of bulbs or tubes, and number of bulbs or tubes. The table will include a facility summary of the total number of fixtures of each type and number of bulbs or tubes of each type.

m. Plumbing Fixtures - Provide a table that lists by room number, the number and type of plumbing and bathroom plumbing fixtures (for example, sinks, toilets, urinals, showers and drinking fountains).

n. 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. 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.

#### 2.1.1.2 Part II - Primary Systems Information

OMSI Part II, 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 Part II, Primary Systems Information to emphasize important and critical instructions and procedures.

OMSI Part II, Primary Systems Information are required for the primary systems listed below;

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, VAV boxes, heat recovery wheels, hot and chilled water hydronic systems, control valves, and backflow preventers.
4. Direct Digital Controls/Space Temperature Controls
5. Steam condensate Pumps, Steam PRV valves.
6. Electrical systems, including transformers, diesel electric generator sets, automatic transfer switches, primary switchgear, secondary switchgear, high voltage switches, variable frequency drives, and frequency converters
7. Fire protection systems, and fire alarm and detection systems
8. Site mechanical utilities, including cathodic protection
9. Site electrical utilities, including substations, transformers, and pad mounted switchgear
10. Wastewater pumping stations.

For each system, address;

- a. 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) Diagrammatic Plans - Provide floor plans indicating the location of equipment and configuration of the system installation. Include the configuration of associated piping or wiring. Subordinate structural features to utility features.
- (6) Field Test Reports - Provide Field Test Reports (SD-06) that apply to equipment associated with the system.
- (7) Operator Servicing Requirements - Provide instructions for services to be performed by the operator such as lubrication, adjustments, and inspection.
- (8) Valve List - Provide a list of all valves associated with the system. Show valve type, identification number, function, location and normal operating position.

b. Preventive Maintenance- Preventive Maintenance Procedures, and Schedules - Provide Task Card for each individual maintenance task identified on the PM plan and Schedule. Include detailed PM procedures, safety instructions and precautions including lock out/tag out precautions, required skill level, number of personnel needed, frequency, special tools needed, parts needed, and estimated time required to complete the task. Include lubrication schedules indicating types, grades and capacities.

c. Troubleshooting Guides and Diagnostic Techniques - Provide step-by-step procedures for isolating the cause of system malfunctions. The procedures shall 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 Part III, Product Data.



## **Project Program**

First Naval Construction Division Operations  
Control Facility

P-851

FY 2010

Category Code 143.65

NAVPHIBASE Little Creek  
Norfolk, Virginia

**Date (Final) February 8, 2010**

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Part 3 contains the project description, functional and performance requirements, scope items, and expected quality levels that exceed Part 4. Part 4 identifies design criteria, verification requirements, and performance and quality requirements of products. See "Order of Precedence" paragraph in Part 2 for relationships between all parts of this RFP.

## 1. PROJECT DESCRIPTION

The purpose of this project is to construct a new First Naval Construction Division Headquarters Facility (1NCD). This facility will consolidate 151 personnel from various departments, which are currently located in building 3006 within the Little Creek Amphibious Base, Norfolk, Virginia. The construction of this facility will enhance the daily operations of the 1NCD by providing well configured, adequately sized work spaces capable of handling the computer and communications technology required while improving the quality of life in the workplace for existing personnel. In addition to this, the new facility will be in compliance with the Department of Defense AT/FP requirements, the Master Plan for Joint Expeditionary Base Little Creek and the Installation Appearance Plan (IAP) Naval Amphibious Base Little Creek. The Two-story facility will provide efficiently configured command headquarters, administrative areas, a Sensitive Compartmented Intelligence Facility (SCIF), data processing areas, administrative storage space, support facilities, open work areas, mechanical, electrical, and communications spaces. The government desires the design to be of significant visual quality as this facility will contain office space for high ranking officers and be used to receive high profile visitors. Building 3006 will be demolished once the new First Naval Construction Division Headquarters Facility is complete as part of this project.

The building will be supported by concrete foundation systems on spread footings and constructed of steel bar joists on structural steel with steel deck and a concrete topping slab. Exterior finishes will include brick veneer and ground face concrete masonry with split faced accents. The building will also be provide with aluminum windows, tinted low-e glass, a low sloped modified bitumen roof, and exterior building signage.

The interior walls of the building shall be constructed of gypsum board on metal stud framing with finishes including painted gypsum board and vinyl and fabric wall covering. Floor finishes will be terrazzo, carpet, linoleum, and porcelain tile. Toilet facilities shall be provided with full height ceramic tile walls, phenolic partitions, ceramic tile floors, and gypsum board ceilings with moisture resistant paint. The Quarterdeck Lobby and Executive spaces will have upgraded finishes. Refer to Finish Schedule for specific location of all finishes.

Building systems will include, but not be limited to; DDC Controls, fire protection, heating, ventilation, air-conditioning, plumbing, and electrical power and lighting. Building utility connections will include, but not be limited to; water, natural gas, sanitary sewer, electricity, telephone, and NMCI.

Site improvement will include, but not be limited to; improving existing roads, paving for flag officer parking, site lighting, storm drainage, concrete sidewalks, final grading, and sod.

Based on the Storm Vulnerability Study and Little Creek Amphibious Base criteria, Designer of Record (DOR) shall ensure the design of all critical equipment should be located above CAT III storm levels. This RFP includes 35%± Site Plans and Schematic Floor Plans, Contractors shall use these included documents as the basis of their price proposals and their design. The 1NCD Headquarters building is an integral part the base of master plan Campus Concept. 1NCD Headquarter Building will be approximately 28,331 SF. The

architectural concept for 1NCD shall allow the building to appear cohesive and complement the surrounding facility and future buildings included in the base master plan. For the purposes of this project, 1NCD shall be designed so that it can be modified in the future. Consider the entire site for base master plan "Campus Concept" when designing criteria related to Leadership in Energy and Environmental Design (LEED,) Anti-Terrorism/Force Protection ( AT/FP,) and all other required standards. Contractor is encouraged to implement LID criteria to the greatest extent possible, in anticipation of the follow-on Buildings projects (not in this contract.)

## **2. PROJECT OBJECTIVES**

### **2.1 Mission Statement**

1NCD provides capabilities that support the Global War on Terrorism and Combatant Commander's operational needs, leads force transformation, produces concepts and capabilities and prepares leaders to use them.

### **2.2 Facility Function**

The First Naval Construction Division has several key roles in transforming the U.S. military's capabilities. This facility will serve as the headquarters for 151 1NCD personnel who oversee a force of dedicated men and women, spanning 1NCD service component commands and subordinate activities. The command is comprised of active and reserve personnel of the armed forces, civil servants, and contract employees.

### **2.3 Project Specific Priorities**

The exterior appearance of the building shall comply with the Base Exterior Architecture Plan for NSA Norfolk. Appropriate materials to consider shall be precast concrete with reveal and joint accents, extruded aluminum (at parapet only), and tinted low-e glazing.

#### **2.3.1 Sustainable Design**

Integrate sustainable strategies and features into the design to minimize the energy consumption of the facilities; conserve resources; minimize adverse effects to the environment; and improve occupant productivity, health, and comfort to reduce the total cost of ownership of the project using a whole building, life-cycle approach. In accordance with Engineering & Construction Bulletin 2008-01 and other directives, the facility and all site features shall be designed and constructed using USGBC LEED-NC. The design and construction shall incorporate sustainable design strategies and features to the fullest extent possible, consistent with mission, budget and client requirements.

The preferred sustainable design rating level for the project is LEED-NC Gold. The minimum sustainable design rating level for the project is to achieve LEED-NC Silver and the constructed facility shall be certified by the USGBC as having met the USGBC LEED-NC requirements for the required rating level.

The following LEED-NC v2.2 credits and additional requirements are mandatory unless not applicable to the project due to project scope.

- a. SS-6.1 Storm Water Design, Quantity Control
- b. SS-6.2 Storm Water Design, Quality Control
- c. WE-1.1 Water Efficient Landscaping: Reduce by 50%, as an option provide a rainwater harvesting system to provide water for an irrigation system
- d. WE-3.1 Water Use Reduction: 20% Reduction
- e. EA-1 Optimize Energy Performance. For new construction achieve a 30% energy use reduction below ASHRAE Standards 90.1-2004 for Energy Standard for Buildings Except Low-Rise Residential Buildings. Reduction shall be calculated in accordance with US Code of Regulations 10 CFR 433, 434, 435 dated Dec. 4, 2006.
- f. EA-4 Enhanced Refrigerant Management. Reduce use of Ozone Depleting and Global Warming Compounds. Eliminate the use of ozone depleting compounds during and after construction where alternative environmentally preferable products are available.
- g. EA-5 Measurement and Verification. Install permanent building level meters on all utilities. Use the Energy Star Benchmarking Tool and enter measured data and lessons learned into the High Performance Buildings Database ([www.eere.energy.gov/femp/highperformance/index.cfm](http://www.eere.energy.gov/femp/highperformance/index.cfm))
- h. MR-2.1 Construction Waste Management: Divert 50% from Disposal.
- i. MR-4.1 Recycled Content: 10%. For EPA Designated products, use products meeting EPA's recycled content recommendations.
- j. MR-6 & MR-7 Renewable Products: Use products made from rapidly renewable resources and certified sustainable wood products.
- k. EQ-3.1 & EQ-3.2 Construction IAQ Management: During Construction & Before Occupancy
- l. EQ-4.1, 4.2, 4.3, 4.4 Low Emitting Materials. Specify materials & products with low pollutant emissions, including adhesives, sealants, paints, carpet systems and furnishings.
- m. EQ-7.1 Thermal Comfort: Design. Design to ASHRAE Standards 55-2004 for Thermal Comfort and 62.1-2004 for Ventilation for Acceptable Indoor Air Quality.

- n. EQ-8.1 Daylight & Views. Achieve a minimum daylight factor of 2% excluding direct sunlight in 75% of all space occupied for critical visual tasks. Provide automatic dimming controls or accessible manual controls and appropriate glare control.
- o. Moisture Control. Establish and implement a moisture control strategy for controlling moisture flows and condensation to prevent building damage and mold contamination.
- p. Bio-Based Products: For USDA designated products use products meeting or exceeding USDA's biobased content recommendations.
- q. Energy Efficient Products: All energy using products shall either be Energy Star or FEMP recommended efficiency. Where Energy Star or FEMP recommendations have not been established, efficiency shall be in the top 25% for the type of product procured. All energy using products shall also meet FEMP requirements for low standby power consumption.

Ensure sustainable strategies and features in the design phase are incorporated in the construction phase.

Information and resources on sustainable design principles and guidelines are explained in the "Whole Building Design Guide" that can be found at [www.wbdg.org](http://www.wbdg.org).

### **2.3.2 Energy Conservation**

Energy conservation shall be in accordance with UFC 3-400-01, Design Energy Conservation.

### **2.3.3 Building Commissioning**

Provide Fundamental Commissioning to meet the requirements of USGBC LEED Rating System version 2.2 and UFGS section 01 45 00.05 20, *Design and Construction Quality Control*. At a minimum Commission the following systems: HVAC systems and controls, lighting controls, and if provided, day lighting controls, refrigeration systems and controls, renewable energy systems, and domestic hot water systems. See the following "Engineering System Requirements" sections in Chapter 6 of the Project Program to determine any additional systems to be commissioned.

The designated Commissioning Authority (CA) shall meet the qualifications of USGBC LEED Rating System version 2.2 and UFGS section 01 45 00.05 20, *Design and Construction Quality Control*. The CA shall report results, recommendations, and findings directly to the Government.

### **2.3.4 Accessibility Requirements**

Barrier-free design should be in accordance with the requirements of the Federal Accessibility Standards (UFAS) as required by 42 U.S.C. 4151-4157, Architectural Barriers Act of 1968, and consistent with 29 U.S.C. 794, Rehabilitation Act of 1973, but also meet the requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG). Use the criteria that provide the greatest barrier-free design requirements.

The soon to be released DOD Accessibility Standards will implement the US Access Board's update of the ABA and ADA guidelines and supersede the requirements noted above.

## 2.2.5 Antiterrorism Criteria

Design this facility, in accordance with Unified Facilities Criteria (UFC) 4-010-01, DoD Minimum Antiterrorism Standards for Buildings. UFC 4-010-01 is a multidiscipline UFC therefore all architectural/engineering disciplines need to be aware of the requirements. For example:

- Civil engineers need to be aware that UFC 4-010-01 will affect site location of buildings, roadways, parking, access roads, and landscaping.
- Mechanical engineers need to be aware that UFC 4-010-01 will affect air intake design and location, utility routing, mail room ventilation, HVAC controls, HVAC equipment support, and the site location of chillers, compressors and other heavy equipment.
- Electrical engineers need to be aware that UFC 4-010-01 will affect HVAC controls, utility routing, electrical equipment support, mass notification, and site location of substations, transformers, generators, and other heavy equipment.

The site is located within a controlled perimeter.

Develop the site to provide the standoff requirements listed in UFC 4-010-01

The facility must be designed in accordance with UFC 4-010-01, Standard 6 and UFC 4-023-03, Design of Buildings to Prevent Progressive Collapse is required.

## 2.4 Appropriate Design

Comply with UFC 4-010-01, Standard 6 and UFC 4-023-03 for planning and design requirements for this project.

The Government is interested in a best value proposal that supports the functional needs of the User. The level of quality and durability specified shall be responsive to that function, mission effectiveness, and economics of a military support facility expected to perform for 30 years or longer. The design solution shall provide the best possible work environment for the personnel.

## 2.5 Workflow Process

Refer to Bubble Diagrams in Part 3 paragraph 4.2 space relationships of this RFP.

### 2.5.1 Hours of Operation

The building will have operations on a day shift, 0730 to 1530. There may also be operations taking place at any other time of the day or night.

### 2.5.2 Staffing/Occupancy

Type of Occupancy	No. of Persons	Description of Activity
Staff	151	Administrative, Executive, and Other Support Staff
SCIF	4	
Conference Rms.	78	
Command Center	60	
SIPR Cafe	2	
<b>Maximum Occupancy</b>	<b>295</b>	

## 2.6 Special Design Challenges

Anti-Terrorism and Force Protection

USGBC LEED Certification – minimum requirement Silver level and Optional requirement Gold Level, refer to specification section 01332 - LEEDTM DOCUMENTATION.

Mechanical system selection – Energy efficient / EPACK 2005

Progressive Collapse Avoidance

ATFP window frame design

ESS system shall be fully compatible with existing security systems currently utilized by command and base security; thus insuring a fully functional and maintainable ESS under existing maintenance and operation contacts. Refer to ESR D50 for ESS requirements.

## 2.7 Adaptability and Flexibility

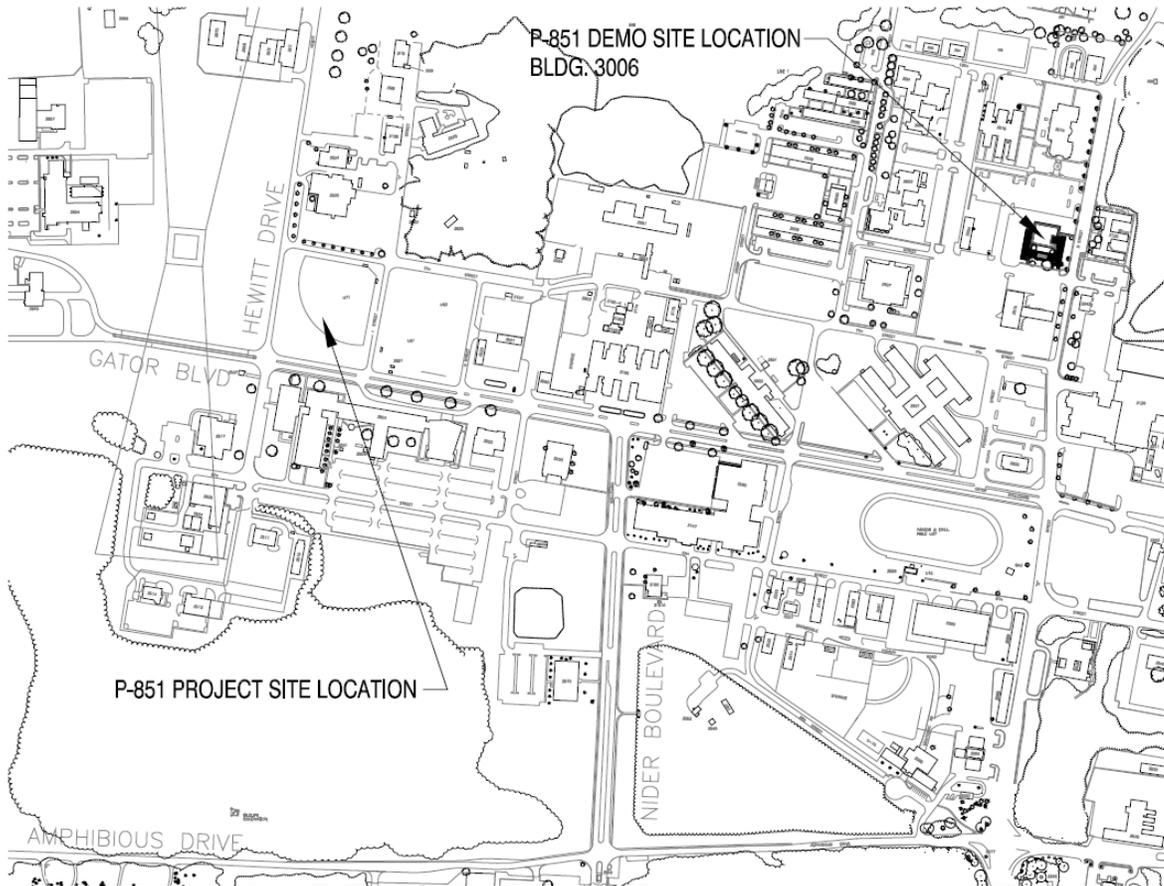
The command requires adequate space for 151 personnel to perform their mission. This project 1NCD Headquarters; provides for 151 personnel. A consolidated site is required to allow management and site

design of proper AT/FP set-backs within limited and constrained available real estate. See proposed base master plan in PART 6 ATTACHMENTS of this RFP.



### 3. SITE ANALYSIS

#### 3.1 Existing Site Conditions – Location Map





### 3. SITE ANALYSIS

#### 3.1 Existing Site Conditions – Location Map





## 3. SITE ANALYSIS

### 3.1 Existing Site Conditions

#### Topography

This project is located at Joint Expeditionary Base Little Creek – Fort Story, VA. The site is currently a baseball field that is maintained on a regular basis. The proposed project site is located off of Gator Blvd. The project site is bordered by 7<sup>th</sup> Street on the North, Gator Boulevard on the South, I Street on the East and Hewitt Drive on the West. At present, there is no vehicular access to the site. Parking is limited to on street parking around the field. Site drainage follows the existing surface contours. Existing dugouts are located on the northeast corner of the site and consist of concrete block construction. The perimeter fence for the area encompasses the entire ball field. There are no cultural resources, AICUZ, explosive arcs, or HERO issues, and no known hazardous material issues associated with this site.

#### Site Utilities

Existing utilities within the project development site include but are not limited to: a 6-inch water main on the north side of 7<sup>th</sup> Street, a 6-inch water main on the west side of I Street, a 12-inch water main on the north side of Gator Blvd., and a 12-inch main on the east side of Hewitt Dr., 30-inch sanitary sewer line located on the south side of Gator Blvd., natural gas crossing the site along the south side of 7<sup>th</sup> Street, overhead and underground power along Hewitt Dr. and 7<sup>th</sup> Street.

#### Geotechnical Information

A Geotechnical report has been prepared for the P-851 Naval Construction Division Ops Facility project site and is included in Part 6, Attachments.

The soils information provided in this RFP is for reference only, and reflects the soil conditions encountered only at the locations indicated. This information shall not be used in the design or construction of the new facilities. The Contractor shall perform soils investigation at the site for use in the design and construction of the new facilities. A report including laboratory analysis of samples and recommendations for foundation and pavement design shall be prepared by a professional engineer in accordance with UFC 3-220-01N, *Geotechnical Engineering*.

#### Topographic Surveys

A topographic survey of the project site has been performed and is included in Part 6, Attachments.

The topographic survey has been provided to show the location of existing facilities, areas of new work required by this RFP and the character of the sites. The contractor is responsible for verifying the topographic survey and providing any additional topographic information that is required to prepare the detailed design of this project. The existence, size and/or location of utilities are not guaranteed by the surveys provided. The Contractor shall verify the location of all utilities prior to construction. Electronic files of the topographic survey will be provided to the Contractor **only after award of the contract**.

## **3.2 Site Development Requirements**

### **3.2.1 BUILDING FOOTPRINT**

The Naval Construction Division Ops Facility shall be developed within the project site boundaries indicated on the SITE LOCATION MAP above and shown in more detail in Part 6, Attachments. The project site development area is limited by ATFP standoff distances from existing roads and parking lots. Locate the Naval Construction Division Ops Facility and related site features to make the most efficient use of the land available after considering all appropriate design factors, including but not limited to access and circulation (vehicular and pedestrian), parking efficiency, building functionality, utility availability, site drainage and stormwater management, energy conservation, and site security. A conceptual site layout is shown on the drawings provided in another part of this RFP.

### **3.2.2 VEHICULAR ACCESS AND CIRCULATION**

Provide convenient and safe vehicular access and circulation for essential services, such as deliveries, trash collection, fire protection, and maintenance. Through traffic should be kept to a minimum.

Provide two-way vehicular access to the facility by constructing an access driveway off of I Street and Hewitt Drive. Provide a controlled service driveway for vehicular access to the facility with sufficient space for delivery and service vehicles to turn around. Provide a paved parking lot, with lighting to accommodate 115 vehicles (105 staff and 10 government). Provide directional and traffic control signage for driveways, entrances, exits, and parking areas.

### **3.2.3 ANTI-TERRORISM FORCE PROTECTION (ATFP) REQUIREMENTS**

Design the facility to comply with UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings. The facility is located within a controlled perimeter. The Division Ops Facility will have an occupancy designated as primary gathering in accordance with UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*. The Facility minimum standoff distance is 82 feet from parking and roadways.

### **3.2.4 DUMPSTER PAD**

Provide a dumpster pad with brick screening walls on three sides. Locate the pad for easy accessibility and minimum disruption of through traffic flows while also meeting ATFP standards (82 foot standoff distance).

### **3.2.5 PEDESTRIAN ACCESS AND CIRCULATION**

Provide concrete sidewalks for pedestrian access between the facility and the new parking lot. Also include pedestrian crosswalk markings and sign for all road crossings.

### **3.2.6 LANDSCAPING**

Provide landscaping to include trees, shrubs, groundcovers, and turf.

### **3.2.7 SITE UTILITIES**

Provide utilities for the new facility by making connections to the existing systems that serve the adjacent buildings.

The Contractor shall provide a complete utility site design. No active piping or utility structures shall remain under new building footprint or within 10 feet outside the perimeter of the building. Existing piping and utility

structures that will not be required in the new design shall be removed from within the project limits. Existing utility structures that remain active within the project limits shall have the rims adjusted to be suitable for finished grade and elevations required for final design. Unless otherwise specified, all utility services shall be run underground. Utilities shall not be run under or within 10 feet of buildings except as required to make building connections.

### **Water Distribution**

Provide domestic and fire protection water supply and service connections to the existing water mains surrounding the project site. Provide additional fire hydrants to meet fire protection requirements, as required. See Part 4, paragraph G3010 and UFC 3-200-10N, *Civil Engineering* for specific requirements.

### **Sanitary Sewer**

Provide service connections to the new facility. Provide gravity service connections to the existing gravity sewer system. Pump stations are to be avoided unless the depth of the adjacent sanitary sewer system is inadequate.

### **Telecommunications**

See Section G4030 "SITE COMMUNICATION AND SECURITY".

### **Cable TV**

See Section G403004, "CABLE TV SYSTEM (CATV)".

### **Electrical**

See Section G40, "SITE ELECTRICAL UTILITIES".

## **3.2.8 STORMWATER MANAGEMENT**

Grade the site to provide positive drainage away from the building, roadways and parking area. Ensure that the grading and associated stormwater runoff do not adversely affect surrounding sites.

The use of Low Impact Development (LID) is required for the project to achieve no net increase in storm water volume. The Designer of Record (DOR) shall refer to *Low Impact Development Navy Guidance Document - Precision Draft - August 2009* located on the Whole Building Design Guide website under NAVFAC – Interim Technical Guidance. Refer to Section G303007 for further guidance.

The Designer of Record will need to determine LID volumes using the 95<sup>th</sup> percentile design storm and TR-55 methodologies. The 95<sup>th</sup> percentile storm for the Norfolk area is 1.63, as referenced in Table 11 in the *Low Impact Development Navy Guidance Document - Precision Draft - August 2009*.

EISA Section 438 (Title 42, US Code, Section 17094) establishes into law new storm water design requirements for Federal development and redevelopment projects. Under these requirements, Federal facility projects over 5,000 square feet must "maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow." Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance (October 5,2009), directed the U.S. Environmental Protection Agency (EPA) to issue EISA Section 438 guidance. DoD shall implement EISA Section 438 and the EPA Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act, using LID techniques in accordance with the policy outlined in the attachment. See attached signed Memorandum in Part 6.

Site Development shall conform to latest Virginia Storm Water Management regulations, UFC 3-200-10N, *Civil Engineering* and COMNAVREG MIDLANT INSTRUCTIONS FOR POST CONSTRUCTION STORMWATER RUNOFF MANAGEMENT INSTRUCTIONS EROSION AND SEDIMENT CONTROL INSTRUCTIONS, and VIRGINIA STORMWATER MANAGEMENT PROGRAM CONSTRUCTION PERMIT INSTRUCTIONS, attached to Part 6 of this RFP.

The Designer of Record shall submit stormwater calculations that demonstrate compliance with LID, LEED and Virginia Storm Water Management regulations.

Incorporate erosion and sediment control features in accordance with the Virginia Erosion and Sediment Control Handbook and COMNAVREG MIDLANT Erosion and Sediment Control Instruction.

### 3.2.9 Demolition

#### P-851 Project Site:

Remove the existing ball field fencing, foul poles and dugout buildings in their entirety. The existing memorial trees and plaques on-site will be relocated by the Government prior to construction.

#### Existing Building 3006 Site:

The existing Naval Construction Division Ops Facility, Building 3006 shall be demolished to include all utility service connections back to the main lines, floor foundations and sidewalks. Building 3006 is currently occupied and will not be available for demolition operations until ninety (90) days after the new facility is ready for occupancy and the occupants and contents have been removed. The existing building is built on a crawl space, with wood-framed construction, siding and asphalt shingle roofing. The building Hazmat Report and demolition drawings (in Part 6 Attachments) identify approximately 600 square feet of asbestos floor tile and mastic to be removed. Electrical generators and transformers shall be turned over to the government. The existing trailers shall remain and are not a part of this project. Once the building is demolished, the site shall be returned to its natural state, maintaining trees and vegetation to the greatest extent possible. Relocate the trademark SeaBee monument from in front of the existing 3006 building to the new site. See utility map in Part 6, Attachments.

**Monument**



### **3.2.10 Finish Floor Elevation and Utility Pads**

The finished floor elevation and mechanical/electrical equipment pads shall be above the 100 year flood plain elevation (10.9 ft) based on Naval Amphibious Base Station Low Water Datum (SLWD). Establish finished floor elevations at least (6 in) above finished grade at the perimeter of the building. In addition, the designer of record shall set the finish floor elevation to provide positive drainage away from the facility and ensure that the grading and associated stormwater runoff do not adversely affect surrounding sites.

### **3.2.11 CONSTRUCTION ACCESS/LAYDOWN AREAS**

The Contracting Officer will determine these locations at his discretion.

### **3.2.12 Permits**

All submittals shall be forwarded to the Contracting Officer for review / distribution.

#### Utilities

Identify and obtain all permits to comply with all federal, state and local regulatory requirements associated with this work. The contractor will submit the "Permits Records of Decision (PROD)" form with the first design submittal package. Contractor will determine correct permit fees and pay said fees. Copy of all permits, permit applications, and the completed PROD form will be forwarded to the Contracting Officer. In addition, the Contractor's Design of Record will complete the NAVFAC Mid-Atlantic Utility Connection Permit Application, attached to Part 6 of this RFP, with the first design submittal package. Point of contact for this application is Mr. John Keeling (email: [john.keeling@navy.mil](mailto:john.keeling@navy.mil), (757) 445-8558 x 319).

#### Stormwater Management

This project will disturb more than one acre, therefore coverage under the construction general permit will be required. The contractor should submit an application for coverage to DCR at least 60 days prior to start of construction. In addition, a SWPPP shall be developed to include an integrated erosion and sediment control plan. The SWPPP must be prepared prior to submitting a registration statement for permit coverage to DCR. The SWPPP is to be retained at the construction site along with a copy of the permit and permit coverage letter. Approval of the SWPPP prior to start of construction is required by MIDLANT Environmental. Point of Contact for MIDLANT Environmental is Mr. Bryan Revell (email: [bryan.revell@navy.mil](mailto:bryan.revell@navy.mil), (757) 444-5865).

NAVFAC MIDLANT requires the contractor to comply with COMNAVREG MIDLANT Instruction, Subject: Post Construction Stormwater Runoff Management Instruction and Subject: Virginia Stormwater Management Program Construction Permit Instruction. The contractor is required to obtain coverage under the Virginia Stormwater Management Plan (VSMP) and shall submit a registration statement and the appropriate fee to the state of Virginia Department of Conservation and Recreation (VDCR) prior to commencing construction. Approval of the Stormwater Management plan will be granted by the MIDLANT Civil reviewer.

Storm drainage and stormwater management shall be designed in accordance with UFC 3-200-10N, "*Civil Engineering*", UFC 3-210-10, "*Low Impact Development*" and the Virginia Department of Conservation and Recreation (VDCR) criteria and policies.

#### Erosion & Sediment Control

The Contractor is responsible for preparing an Erosion and Sediment Control Plan, and obtaining final plan approval from the Regional Environmental Group. The plan shall be in accordance with Virginia Erosion and Sediment Control Handbook (VESCH), latest edition. Approval of the Erosion Control Plan is required, before

start of construction, by MIDLANT Environmental. Point of Contact for MIDLANT Environmental is Mr. Bryan Revell (email: [bryan.revell@navy.mil](mailto:bryan.revell@navy.mil), (757) 444-5865).

## 4. BUILDING REQUIREMENTS

### 4.1 Space Tabulation

P-851 NAVAL CONSTRUCTION DIVISION OPERATIONS FACILITY										
First Floor										
Space No.	Space Name	# of spaces	Unit SF (Net)	Total SF (Net)	Total SQM (Net)	Ideal Dimensions	Ceiling Height (ft)	Ceiling Height (cm)	# of Occupants	Remarks
100	Vestibule	1	88	88	8	2.9m x 2.9m	10	305	0	main entrance from parking area, quarterdeck control
101	Vestibule	1	70	70	7	2.5m x 2.5m	10	305	0	controlled access
102	Vestibule	1	135	135	13	3.5m x 3.5m	10	305	0	controlled access
103	Vestibule	1	216	216	20	4.5m x 4.5m	10	305	0	Main entrance to parade yard, quarter deck controlled
104	Stair 1	1	129	129	12	2.5m x 4.7m	13	396	0	2 hr Fire Rated Separation
105	Stair 2	1	118	118	11	2.5m x 4.3m	13	396	0	2 hr Fire Rated Separation
106	Main Corridor	1	645	645	60	1.8m x 33m	10	305	0	6 ft. minimum width
107	Main Lobby	1	564	564	52	7.2m x 7.2m	10	305	0	Adjacent to Quarterdeck
108	Quarter Deck	1	200	200	19	4.3m x 4.3m	10	274	3	security check point, includes N00 flag driver
109	N6 Comm. / TOA Storage	1	750	46	70	8.3m x 8.3m	9	274	0	Direct access to main corridor or vestibule, exterior access required, close proximity to second floor N6 area.



P-851 NAVAL CONSTRUCTION DIVISION OPERATIONS FACILITY										
First Floor										
Space No.	Space Name	# of spaces	Unit SF (Net)	Total SF (Net)	Total SQM (Net)	Ideal Dimensions	Ceiling Height (ft)	Ceiling Height (cm)	# of Occupants	Remarks
110	N6 EKMS Vault	1	100	100	9	3.0m x 3.0m	9	274	0	Direct access to Comm. / TOA Storage
111	N00 Open Office	1	387	387	36	5.9m x 6m	9	274	3	Directly accessible from main corridor, general office spaces, reception area
112	N00 Vice Commander	1	200	200	19	4.3m x 4.3m	9	274	1	Private office
113	N00 Chief of Staff	1	200	200	19	4.3m x 4.3m	9	274	1	Private office
114	N00 Command Head	1	90	90	8	2.8m x 2.9m	9	274	0	Private office
115	N00 Commander	1	300	300	28	5.3m x 5.3m	9	274	1	Private office
116	N00 Conf. Rm.	1	200	200	19	4.3m x 4.3m	9	274	9	Direct access to main corridor and N00 open office
117	N00 Break Rm.	1	25	25	2	1.5m x 1.5m	9	274	0	Direct access to N00 open office
118	N00 Executive Assistant	1	200	200	19	4.3m x 4.3m	9	274	1	Private office
119	N00 Command Master Chief	1	150	150	14	3.7 m x 3.7m	9	274	1	Private office
120	N02 Religious Program Specialist	1	100	100	9	3.0m x 3.0m	9	274	1	Locate away from high pedestrian traffic areas and direct public view, private office adjoining / direct access to N02 CLM
121	N02 Chaplain	1	200	200	19	4.3m x 4.3m	9	274	1	Private office
122	N02 Force JAG Office	1	120	120	11	3.3m x 3.3m	9	274	1	Close proximity to N00 Executive Office area. Private office

<b>P-851 NAVAL CONSTRUCTION DIVISION OPERATIONS FACILITY</b>										
<b>First Floor</b>										
Space No.	Space Name	# of spaces	Unit SF (Net)	Total SF (Net)	Total SQM (Net)	Ideal Dimensions	Ceiling Height (ft)	Ceiling Height (cm)	# of Occupants	Remarks
123	N02 Legalman	1	100	100	9	3.0m x 3.0m	9	274	1	Locate away from high pedestrian traffic areas and direct public view, close proximity to N00 Executive Office area and adjacent to JAG office
124	Lactation Rm.	1	90	90	8	2.8m x 2.9m	9	274	0	Locate away from high pedestrian traffic areas, and direct public view. Handicap accessible and private.
125	N02 Public Affair Office	1	120	120	11	3.3m x 3.3m	9	274	1	Private office, close proximity to N02 area, directly accessible from main corridor,
126	N02 Open Office	1	866	866	264	16.3m x 16m	9	274	5	Directly accessible from main corridor, general office spaces, reception area
127	N02 ACOS Res Mgmt	1	150	150	14	3.7m x 3.7m	9	274	1	Private office, directly accessible to N02 general office area,
128	N02 ACOS Medical	1	200	200	18	4.3m x 4.3m	9	274	1	Private office, directly accessible to N02 general office area,
129	N02 Dental Gen / RNCF Dental Advisor	1	150	150	14	3.7m x 3.7m	9	274	2	Private office, directly accessible to N02 general office area,
130	N02 Safety Chief	1	120	120	11	3.3m x 3.3m	9	274	1	Private office, directly accessible to N02 general office area,
131	N02 Underwater Med / Exam	1	120	120	11	3.3m x 3.3m	9	274	1	Private Medical Examination Rm., directly accessible to N02 general office area,
132	N02 Force Retention	1	120	120	11	3.3m x 3.3m	9	274	1	Private office, directly accessible to N02 general office area,
133	N02 Med Storage	1	150	150	14	3.7m x 3.7m	9	274	0	Private office, directly accessible from N02 general office area,

<b>P-851 NAVAL CONSTRUCTION DIVISION OPERATIONS FACILITY</b>										
<b>First Floor</b>										
Space No.	Space Name	# of spaces	Unit SF (Net)	Total SF (Net)	Total SQM (Net)	Ideal Dimensions	Ceiling Height (ft)	Ceiling Height (cm)	# of Occupants	Remarks
134	Elect. Rm.	1	65	65	6	2.4m x 2.4m	13	396	0	-
135	Elevator 1	1	86	86	8	2.8m x 2.8m	8	244	0	Centrally located, accommodate emergency gurney
136	Coffee Mess	1	90	90	8	2.8m x 2.8m	9	274	0	Centrally located and accessible from main corridor, accommodate vending machines and recycle bends
137	Women's Toilet	1	200	200	19	4.4m x 4.4m	9	274	0	Centrally located and accessible from main corridor
138	Women's Change Rm.	1	194	194	18	4.2m x 4.2m	9	274	0	Direct accessible to women's toilet,
139	Janitor Closet	1	31	31	3	1.7m x 1.7m	9	274	0	Centrally located and accessible from main corridor
140	Men's Toilet	1	169	169	16	18.7m x 19m	9	274	0	Centrally located and accessible from main corridor
141	Men's Change Rm.	1	200	200	19	4.4m x 4.4m	9	274	0	Directly accessible to Men's toilet,
142	N1 Open Office	1	1508	1508	140	12m x 11m	9	274	18	Directly accessible from main corridor, general office spaces, reception area
143	N1 ACOS Admin / Personnel	1	150	150	14	3.7m x 3.7m	9	274	1	Private office, directly accessible to N1 general office area,
144	N1 Admin Officer	1	150	150	14	3.7m x 3.7m	9	274	1	Private office, directly accessible to N1 general office area,
145	N1 Security Spec	1	120	120	11	3.3m x 3.3m	9	274	1	Private office, directly accessible to N1 general office area,

<b>P-851 NAVAL CONSTRUCTION DIVISION OPERATIONS FACILITY</b>										
<b>First Floor</b>										
Space No.	Space Name	# of spaces	Unit SF (Net)	Total SF (Net)	Total SQM (Net)	Ideal Dimensions	Ceiling Height (ft)	Ceiling Height (cm)	# of Occupants	Remarks
146	N1 Dispensary Center	1	90	90	8	2.8m x 2.8m	9	274	0	Dispense building mail. Corridor counter deliver, access from N1 open office area
147	N1 Conf. Rm.	1	200	200	18	4.2m x 4.2m	9	274	9	Direct access to main corridor and N1 open office
148	N41 Open Office	1	120	120	11	3.3m x 3.4m	9	274	2	Directly accessible from main corridor, general office spaces. Corridor pick-up window
149	N41 Supply Storage Area	1	750	750	70	8.3m x 8.3m	16	488	0	Adjacent and direct access to N41 open office, exterior access required for shipping and receiving of Parcel package.
150	Comm. Room	1	66	66	6	2.4m x 2.5m	9	274	0	Accessible from main corridor
151	N8 Open Office	1	308	308	29	5.3m x 5.3m	9	274	10	Directly accessible from main corridor, general office spaces
152	N8 ACOS Res & Requirements	1	200	200	19	4.3m x 4.3m	9	274	1	Private office, directly accessible to N8 general office area
153	N8 Management Analyst Office	1	150	150	14	3.7m x 3.7m	9	274	1	Private office, directly accessible to N8 general office area
154	N8 Deputy Financial Resource Manager	1	150	150	14	3.7m x 3.7m	9	274	1	Private office, directly accessible to N8 general office area
155	N8 Central Files / AC Storage	1	200	200	18	4.3m x 4.3m	9	274	1	Directly accessible from N8 general office area

<b>P-851 NAVAL CONSTRUCTION DIVISION OPERATIONS FACILITY</b>										
<b>First Floor</b>										
Space No.	Space Name	# of spaces	Unit SF (Net)	Total SF (Net)	Total SQM (Net)	Ideal Dimensions	Ceiling Height (ft)	Ceiling Height (cm)	# of Occupants	Remarks
156	AV Rm.	1	60	60	6	2.3m x 2.4m	9	274	0	Directly accessible from main corridor and adjacent to command operations center
157	Command Center	1	1200	1200	111	11m x 10.5m	16	488	60	60 person Command Operations Center, directly accessible from main corridor, exterior exits required
158	Storage Room	1	120	120	11	3.3m x 3.3m	13	274	0	Directly accessible from command operations center, storage of stacking chairs and tables
159	Elevator Equipment Rm.	1	66	66	6	2.4m x 2.5m	13	396	0	Exterior access
160	Electrical Rm.	1	120	120	11	3.3m x 3.3m	13	396	0	Exterior access, main electrical room
<b>Subtotal Net Area</b>				13432	1497					
<b>Net to Gross Factor</b>				1.047	1.05					
<b>TOTAL GROSS AREA FIRST FLR</b>				<b>14063</b>	<b>1572</b>					

<b>P-851 NAVAL CONSTRUCTION DIVISION OPERATIONS FACILITY</b>										
<b>Second Floor</b>										
Space No.	Space Name	# of spaces	Unit SF (Net)	Total SF (Net)	Total SQM (Net)	Ideal Dimensions	Ceiling Height (ft)	Ceiling Height (cm)	# of Occupants	Remarks
203	Janitor Cl.	1	24	24	2	1.4m x 1.5m	9	396	0	Centrally located and accessible from main corridor
204	Stair 1	1	129	129	12	2.5m x 4.7m	13	396	0	2 hr Fire Rated Separation, refer to schematic plans
205	Stair 2	1	118	118	11	2.5m x 4.3m	13	396	0	2 hr Fire Rated Separation, refer to schematic plans
206	Main Corridor	1	1128	1128	141	1.8m x 57m	10	305	0	6 ft. minimum width, includes vending area, etc., refer to schematic plans
207	Conf. Rm.	1	312	312	28	5.3m x 5.3m	9	274	15	Direct access to main corridor, adjacent to N3 Conference Rm.
208	N3 Conf. Rm.	1	574	574	53	7.3m x 7.3m	9	274	30	Direct access to main corridor and N3 open office
209	SIPR Cafe	1	90	90	6	2.8m x 2.9m	9	274	3	Direct access to main corridor, close proximity to N3 area
210	N3 Open Office	1	1444	1444	134	11.5m x 12m	9	274	14	Directly accessible from main corridor, general office spaces
211	N3 Deputy ACOS	1	150	150	14	3.7m x 3.7m	9	274	1	Private office, directly accessible to N3 general office area,
212	N3 ACOS OPS	1	200	200	19	4.3m x 4.3m	9	274	1	Private office, directly accessible to N3 general office area,
213	N3 Draft / Library	1	200	200	19	4.3m x 4.3m	9	274	0	Private office, directly accessible to N3 general office area,
214	N6 Open Office	1	878	878	82	9m x 9m	9	274	11	Directly accessible from main corridor, general office spaces
215	N6 Storage	1	150	150	14	3.7m x 3.7m	9	274	0	Directly accessible from N6 general office area,

<b>P-851 NAVAL CONSTRUCTION DIVISION OPERATIONS FACILITY</b>										
<b>Second Floor</b>										
Space No.	Space Name	# of spaces	Unit SF (Net)	Total SF (Net)	Total SQM (Net)	Ideal Dimensions	Ceiling Height (ft)	Ceiling Height (cm)	# of Occupants	Remarks
216	N6 OPS & PLN DVG General	1	150	150	14	3.7m x 3.7m	9	274	1	Private office, directly accessible to N6 general office area,
217	N6 Deputy ACOS Info Tech	1	150	150	14	3.7m x 3.7m	9	274	1	Private office, directly accessible to N6 general office area,
218	N5 Open Office	1	523	523	49	6.9m x 6.9m	9	274	6	Directly accessible from main corridor, general office spaces
219	N5 ACOS PLNS Staff OPS	1	200	200	19	4.3m x 4.3m	9	274	1	Private office, directly accessible to N5 general office area,
220	Elec. Closet	1	29	29	14	1.6m x 1.6m	9	274	0	Accessible from main corridor
221	Comm. Rm.	1	52	52	11	2.1m x 2.2m	9	274	0	Accessible from main corridor
222	Elevator 1	1	80	80	33	2.7m x 2.7m	9	274	0	Centrally located, accommodate emergency gurney
223	N4 Open Office	1	1596	1596	148	12.2m x 12m	9	274	20	Directly accessible from main corridor, general office space
224	N41 SUPPO	1	150	150	14	3.7m x 3.7m	9	274	1	Private office, directly accessible to N4 general office area
225	N4 ACOS Log	1	200	200	19	4.3m x 4.3m	9	274	1	Private office, directly accessible to N4 general office area
226	N43 Equip. PGM SUP	1	150	150	14	3.7m x 3.7m	9	274	1	Private office, directly accessible to N4 general office area
227	N43 Supv. Log Mgmt Spl.	1	120	120	11	3.3 x 3.3m	9	274	1	Private office, directly accessible to N4 general office area

<b>P-851 NAVAL CONSTRUCTION DIVISION OPERATIONS FACILITY</b>										
<b>Second Floor</b>										
Space No.	Space Name	# of spaces	Unit SF (Net)	Total SF (Net)	Total SQM (Net)	Ideal Dimensions	Ceiling Height (ft)	Ceiling Height (cm)	# of Occupants	Remarks
228	Women's Toilet	1	179	179	17	4.0m x 4.0m	9	274	0	Centrally located and accessible from main corridor
229	Men's Toilet	1	170	170	16	3.9m x 4m	9	274	0	Centrally located and accessible from main corridor
230	N7 Conf. Rm.	1	375	375	35	5.9m x 5.9m	9	274	15	Direct access to main corridor and N7 open office
231	N7 Open Office	1	1969	1969	183	13m x 14m	9	274	26	Directly accessible from main corridor, general office spaces
232	N7 Deputy ACOS Training	1	150	150	14	3.4m x 3.5m	9	274	1	Private office, directly accessible to N7 general office area
233	N7 ACOS Training	1	200	200	19	4.3m x 4.3m	9	274	1	Private office, directly accessible to N7 general office area
234	N7 Dtr. CMD Staff Training	1	120	120	11	3.3m x 3.3m	9	274	1	Private office, directly accessible to N7 general office area
235	N2 Open Office	1	404	404	38	6.1m x 6.1m	9	274	5	Directly accessible from main corridor, general office spaces, office equipment, files, etc.
236	N2 SCIF	1	200	200	19	4.4m x 4.4m	9	274	0	Directly accessible from N2 general office area
237	N2 Comm. Rm.	1	75	75	7	2.6m x 2.6m	9	274	0	Accessible and adjoined to N2 SCIF area
238	N2 Staff	1	150	150	14	3.7m x 3.7m	9	274	1	Private office, directly accessible to N2 general office area
239	N2 Assistant	1	120	120	11	3.4m x 3.3m	9	274	1	Private office, directly accessible to N2 general office area

<b>P-851 NAVAL CONSTRUCTION DIVISION OPERATIONS FACILITY</b>										
<b>Second Floor</b>										
Space No.	Space Name	# of spaces	Unit SF (Net)	Total SF (Net)	Total SQM (Net)	Ideal Dimensions	Ceiling Height (ft)	Ceiling Height (cm)	# of Occupants	Remarks
240	Elect. Closet	1	60	60	6	2.3m x 2.3m	13	274	0	Accessible from main corridor
241	Recycle Rm.	1	63	63	6	2.3m x 2.4m	13	274	0	Accessible from main corridor
242	Coffee Mess	1	90	90	8	2.8m x 2.8m	9	274	0	Accessible from main corridor
243	UPC Rm.	1	94	94	9	2.9m x 3.0m	9	274	0	Accessible from main corridor
<b>Subtotal Net Area</b>				13216	1308					
<b>Net to Gross Factor</b>				1.047	1.05					
<b>TOTAL GROSS AREA - SECOND FLOOR</b>				<b>13837</b>	<b>1373</b>					

<b>P-851 NAVAL CONSTRUCTION DIVISION OPERATIONS FACILITY</b>										
<b>Roof</b>										
Space No.	Space Name	# of spaces	Unit SF (Net)	Total SF (Net)	Total SQM (Net)	Ideal Dimensions	Ceiling Height (ft)	Ceiling Height (cm)	# of Occupants	Remarks
304	Mechanical Rm.	1	400	400	37	6.1m x 6.1m	NA	NA	0	Centrally located and accessible from main corridor
	<b>Subtotal Net Area</b>			400	37					
	<b>Net to Gross Factor</b>			1.047	1.05					
	<b>TOTAL GROSS AREA - ROOF</b>			<b>419</b>	<b>39</b>					

**P-851 NAVAL CONSTRUCTION DIVISION OPERATIONS FACILITY**

<b>First, and Second Floor and Roof</b>										
Space No.	Space Name	# of spaces	Unit SF (Net)	Total SF (Net)	Total SQM (Net)	Ideal Dimensions	Ceiling Height (ft)	Ceiling Height (cm)	# of Occupants	Remarks
100 - 160	First Floor	1	13327	13432	1248	24m x 52m	varies	varies	142	
204 - 243	Second Floor	1	13218	13226	1229	24m x 52m	varies	varies	160	
304	Roof	1	400	400	37	5m x 6m			0	
			<b>Subtotal Net Area</b>	27058	2514					
			<b>Net to Gross Factor</b>	1.047	1.047					
			<b>TOTAL GROSS AREA - BUILDING</b>	<b>28330</b>	<b>2632</b>					

**Room Finish Notes:**

SVT- SOLID VINYL TILE #C302004  
CMU – CONCRETE MASONRY UNITS #C101001 PAINTED #304003  
MRGWB – MOISTURE RESISTANT GYPSUM WALL BOARD #C301003 CEILING #C303002  
MRSAPC – MOISTURE RESISTANT SUSPENDED ACOUSTICAL PANEL CEILING #C303001  
RESILIENT BASE - #C302007  
PAINTED CMU BASE - #C302007  
PORCELAIN TILE WALL #C301004  
PORCELAIN TILE FLOOR # C302001  
PORCELAIN BASE #C302007  
TERR – TERRAZZO #C302002  
EM – ENTRANCE MAT #C103014  
STN – STONE #C302006  
SAPC1 – SUSPENDED ACOUSTICAL PANEL CEILING – GENERAL OFFICE #C303001  
SAPC2 – SUSPENDED ACOUSTICAL PANEL CEILING – UPGRADED AREAS #C303001  
SAPC3 – SUSPENDED ACOUSTICAL PANEL CEILING – TOILETS & KITCHEN #C303001  
CPT1 – CARPET – GENERAL OFFICE #C302005  
CPT2 – CARPET – UPGRADED AREAS, FLAG OFFICES #C302005  
RUBBER TILE #C302004  
LN – LINOLEUM #C302004  
WD – WOOD BASE #C302007  
PNTD – PAINTED #C3040 (REFER TO SUBSTRATE)  
WC1 – WALLCOVERING – VINYL OR HIGH PERFORMANCE FABRIC #C301005  
WC2 – WALLCOVERING – ACOUSTIC TACKABLE FABRIC #C301005  
AWP – ACOUSTICAL WALL PANEL #C301006  
SDT – STATIC DISSIPATIVE TILE #C302004  
CHR – CHAIRRAIL #C301090

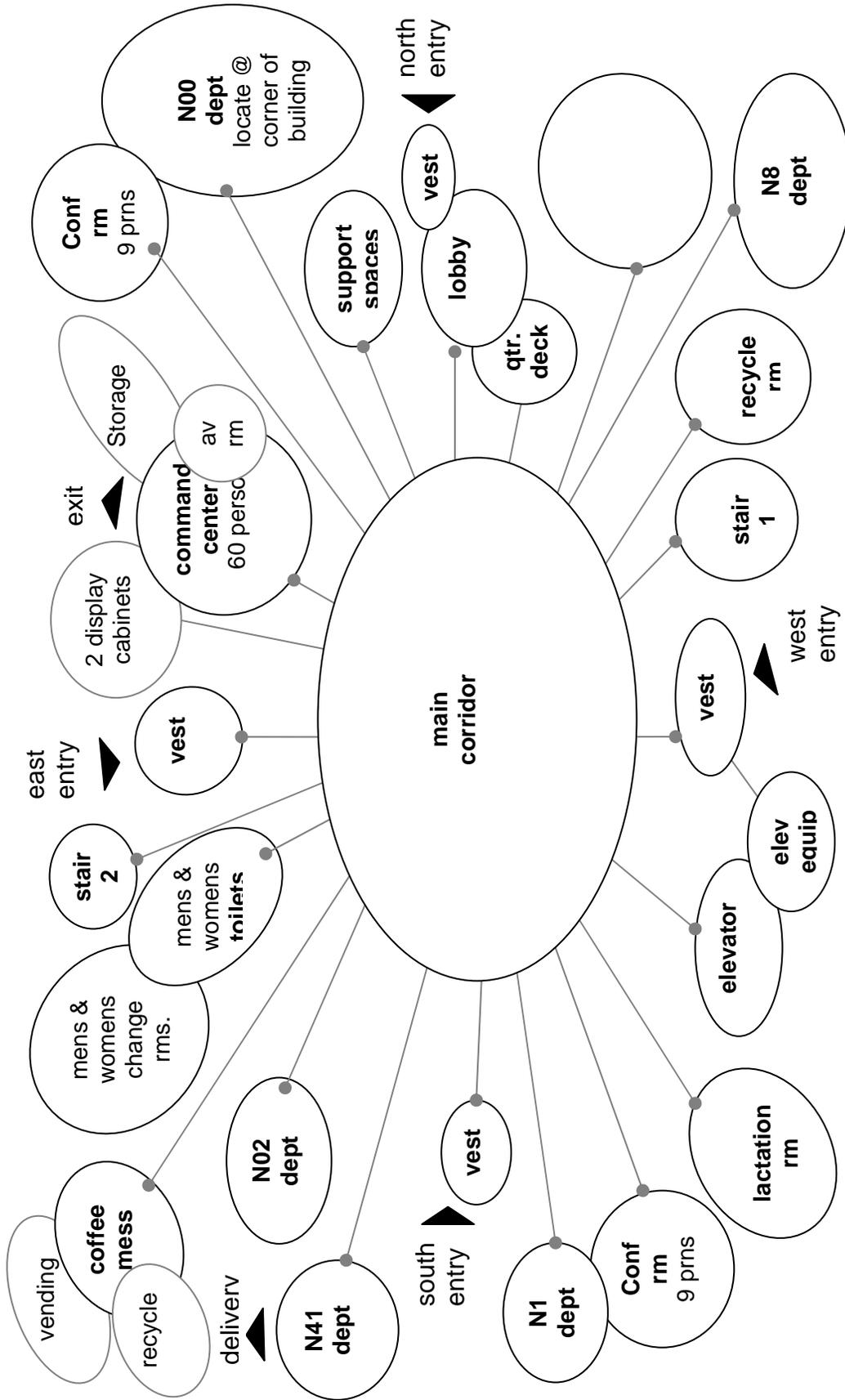
## 4.2 Space Relationships

See bubble diagrams below and Building Plans in Part 6.

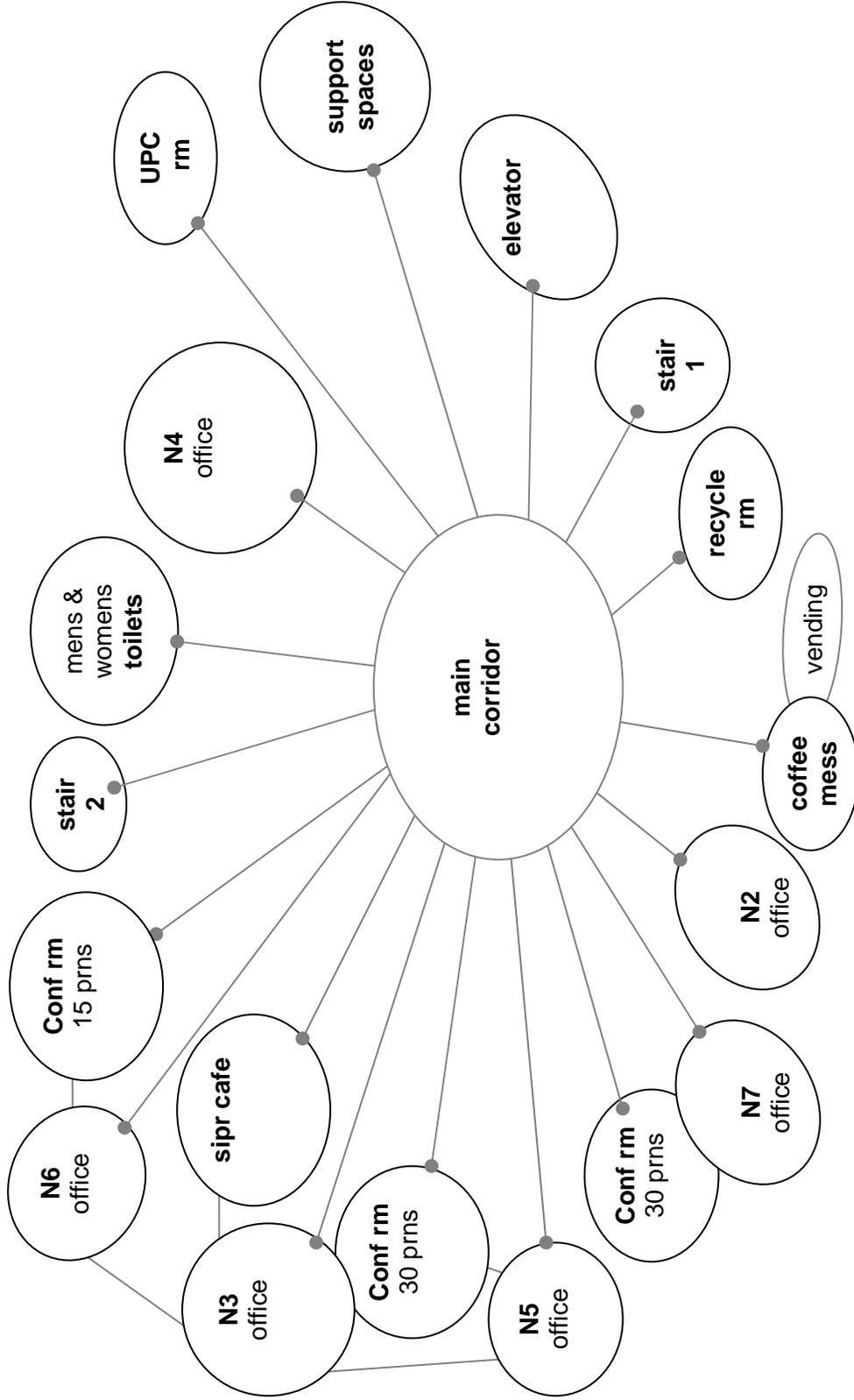
The floor plan, as depicted for each of the two floors in P-851 First Naval Construction Division Operations Control Facility RFP drawings, is representative of one of several possible 1NCD staffing configurations. The actual 1NCD departments and directorates to be accommodated during the design phase are definitively known during the RFP solicitation and subject to change. Any possible revisions will result in a final floor plan similar to what is shown consisting of offices, conference rooms, open administration and utility spaces with appropriate IT, Comm. and Security IDS/Access Control infrastructure.



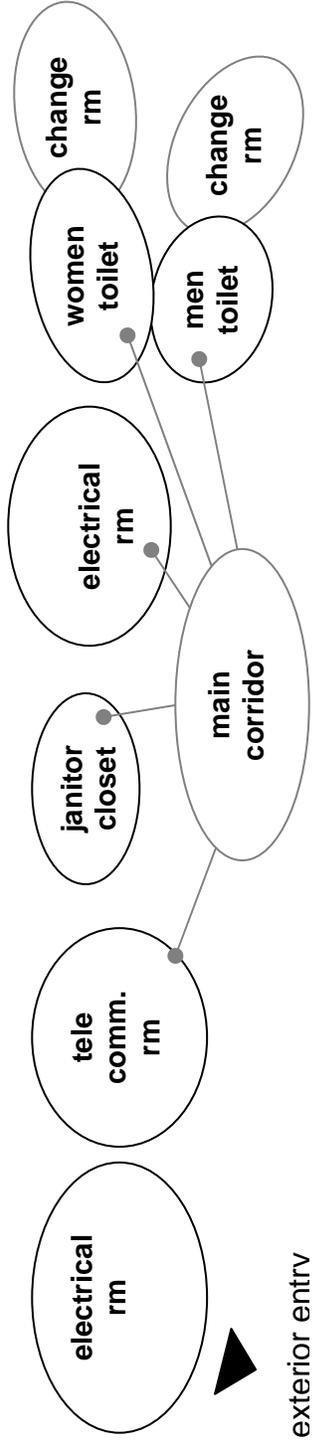
**Overall First floor Bubble Diagram**



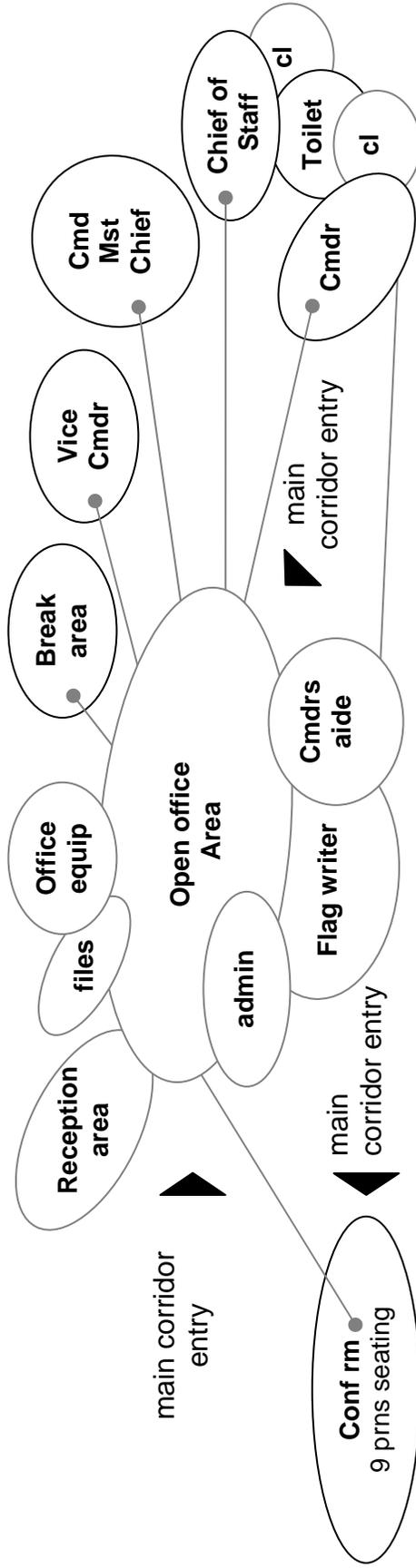
### 4.2 Space Relationships Overall Second Floor Bubble Diagram



## 4.2 Space Relationships Partial First Floor Bubble Diagrams Support Spaces

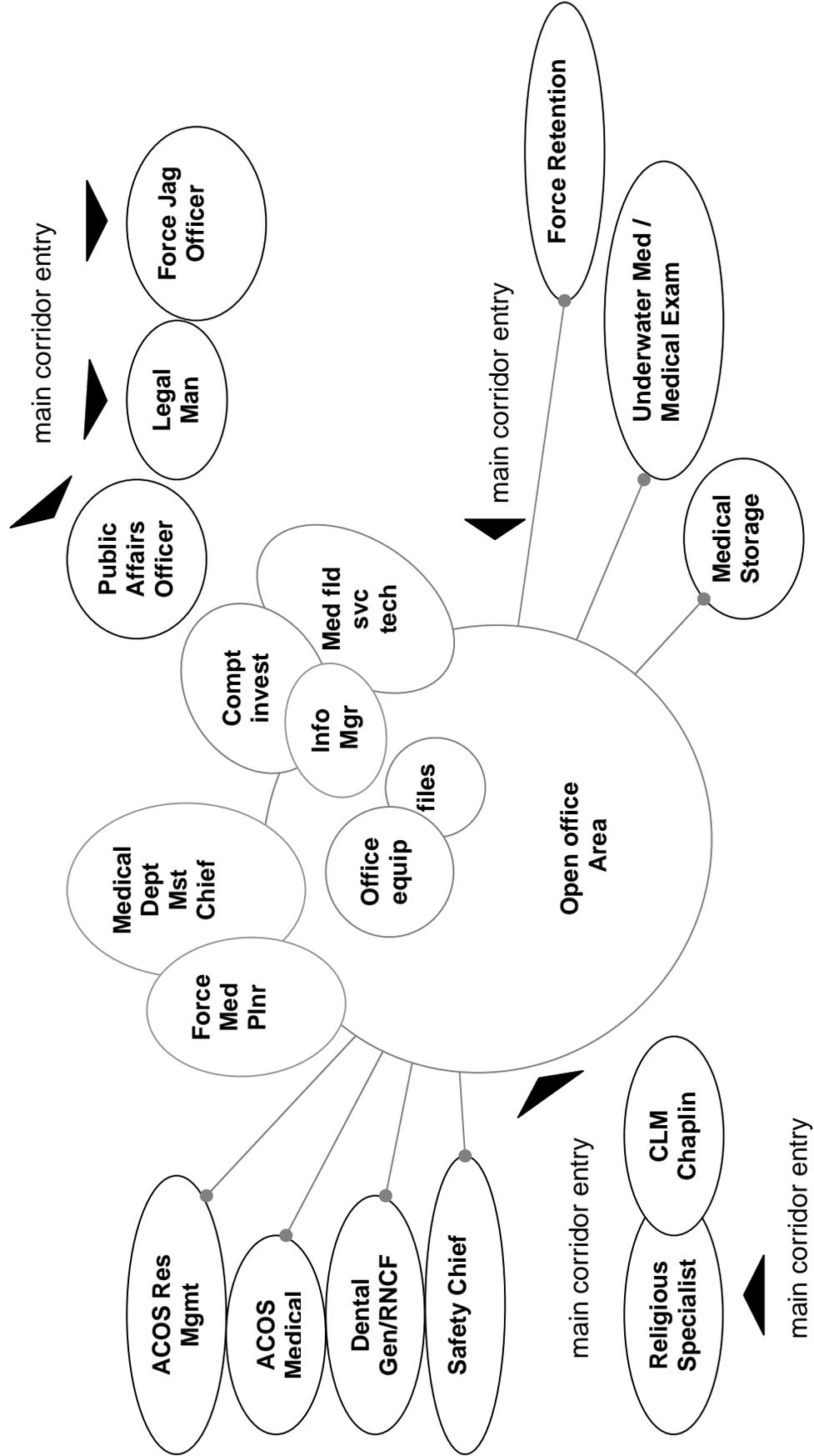


## N00 Executive Department



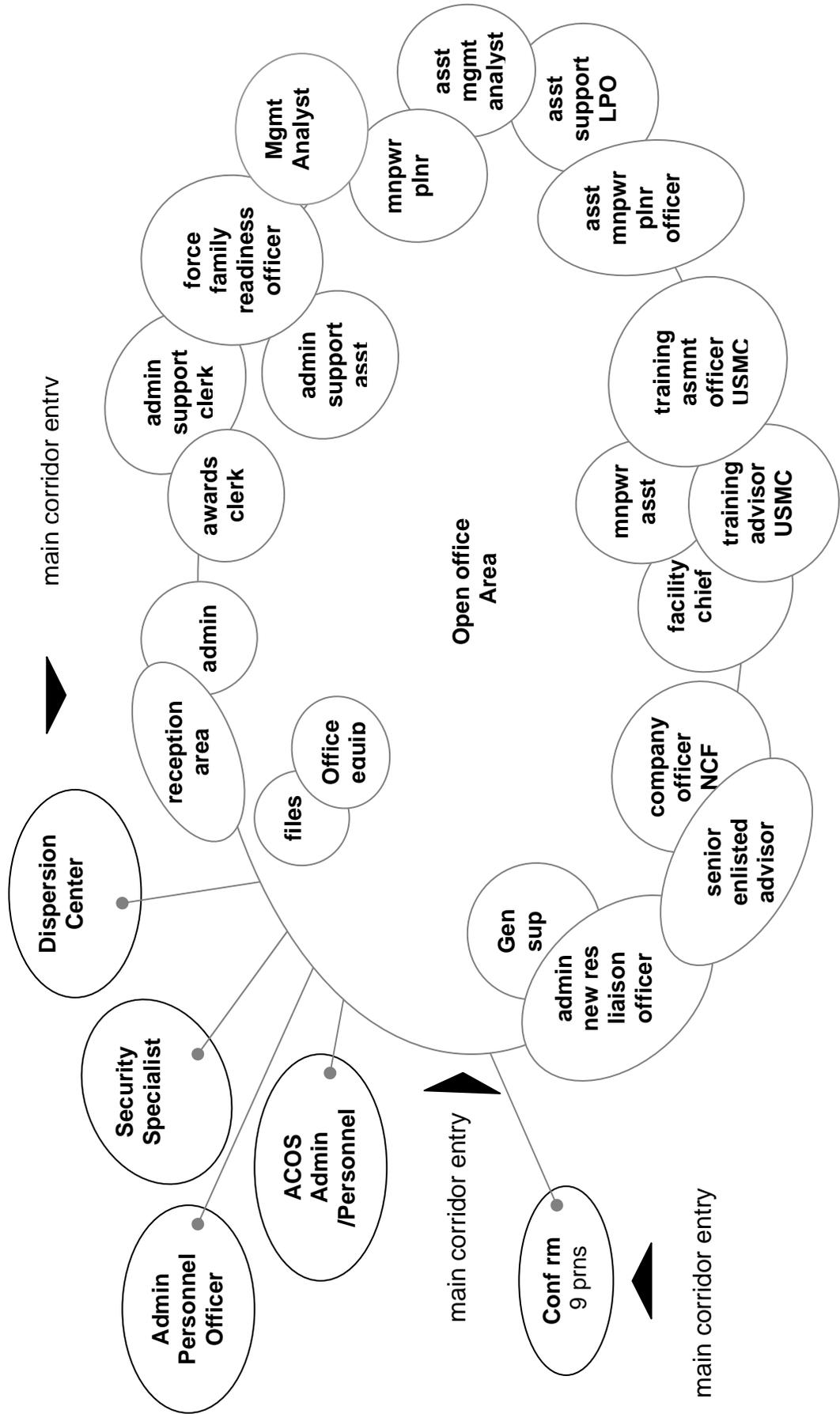
**Partial First Floor Bubble Diagrams**

**N02 Special Assistance Department**



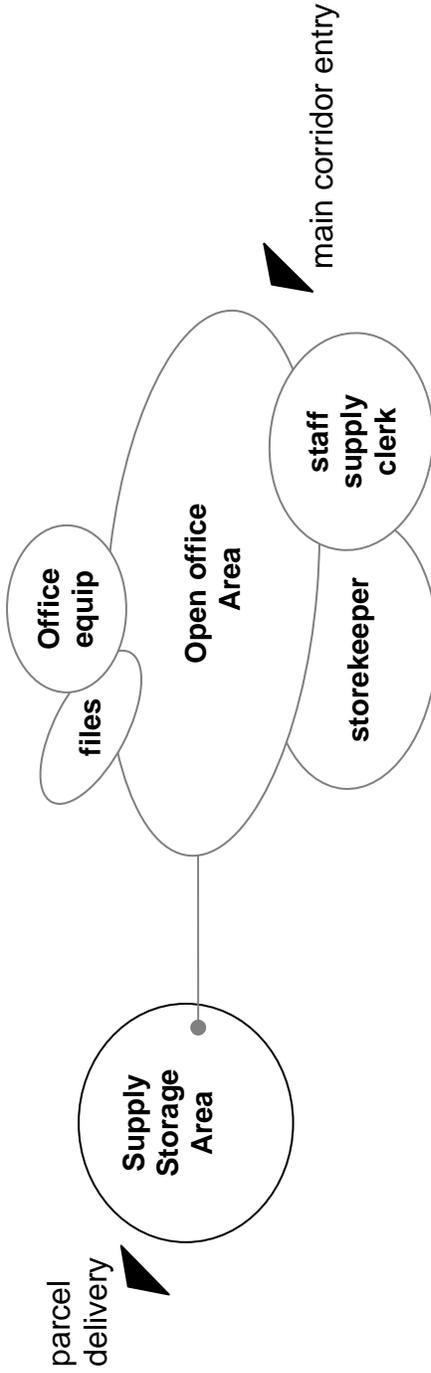
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**Partial First Floor Bubble Diagrams**  
**N1 Special Assistance Department**

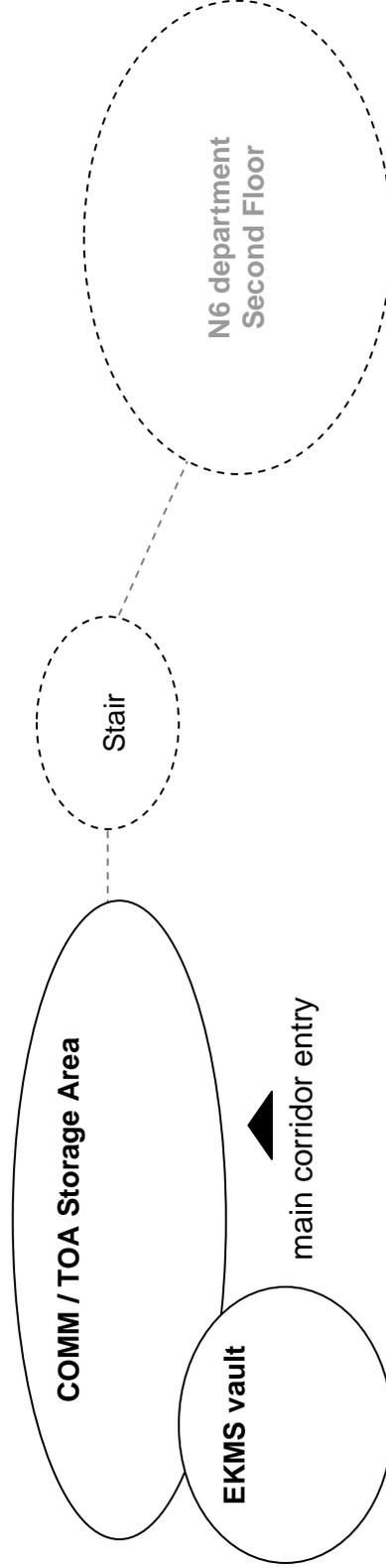


### Partial First Floor Bubble Diagrams

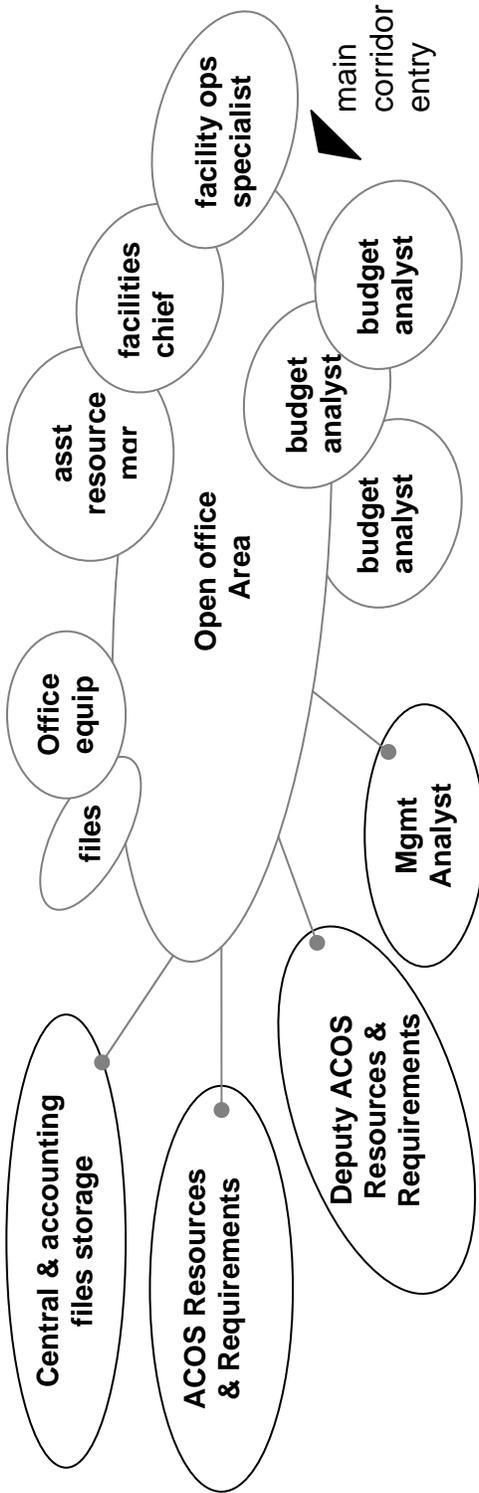
#### N4 Logistics Department



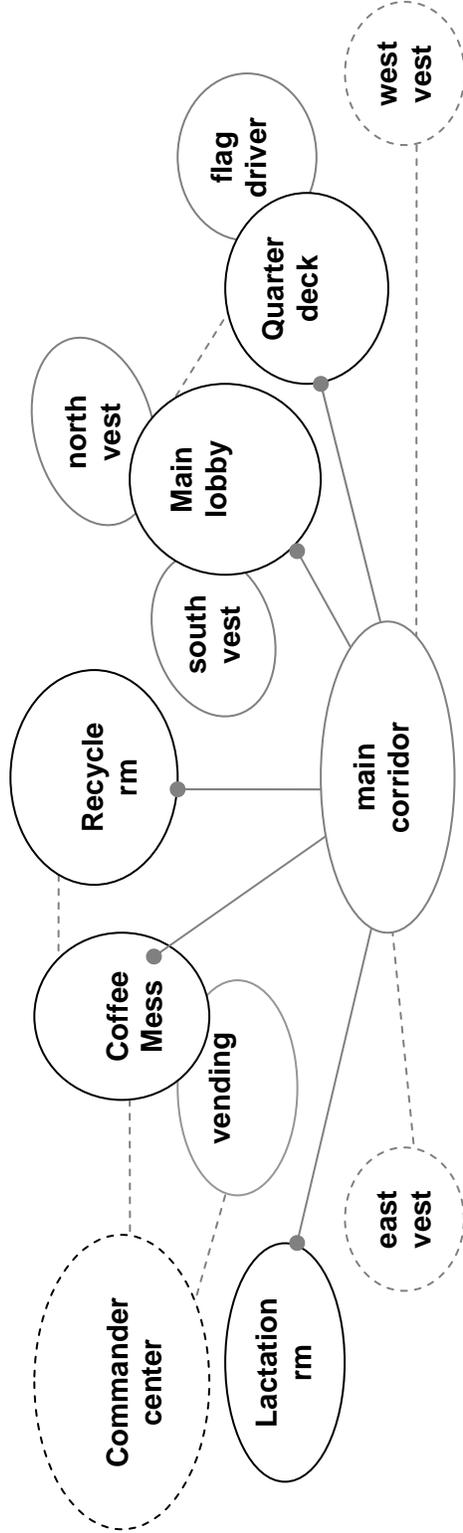
#### N6 Information Tech Department



**Partial First Floor Bubble Diagrams**  
**N8 Comptroller Department**

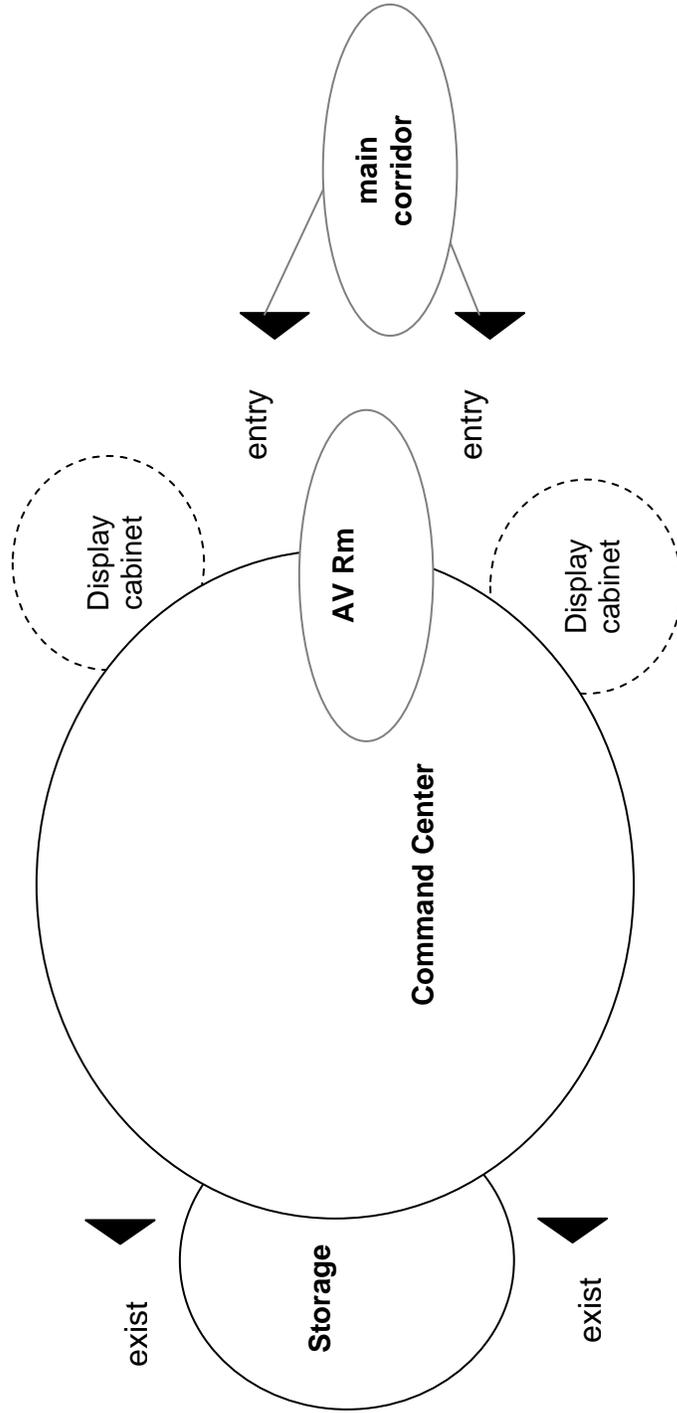


**Common Spaces**



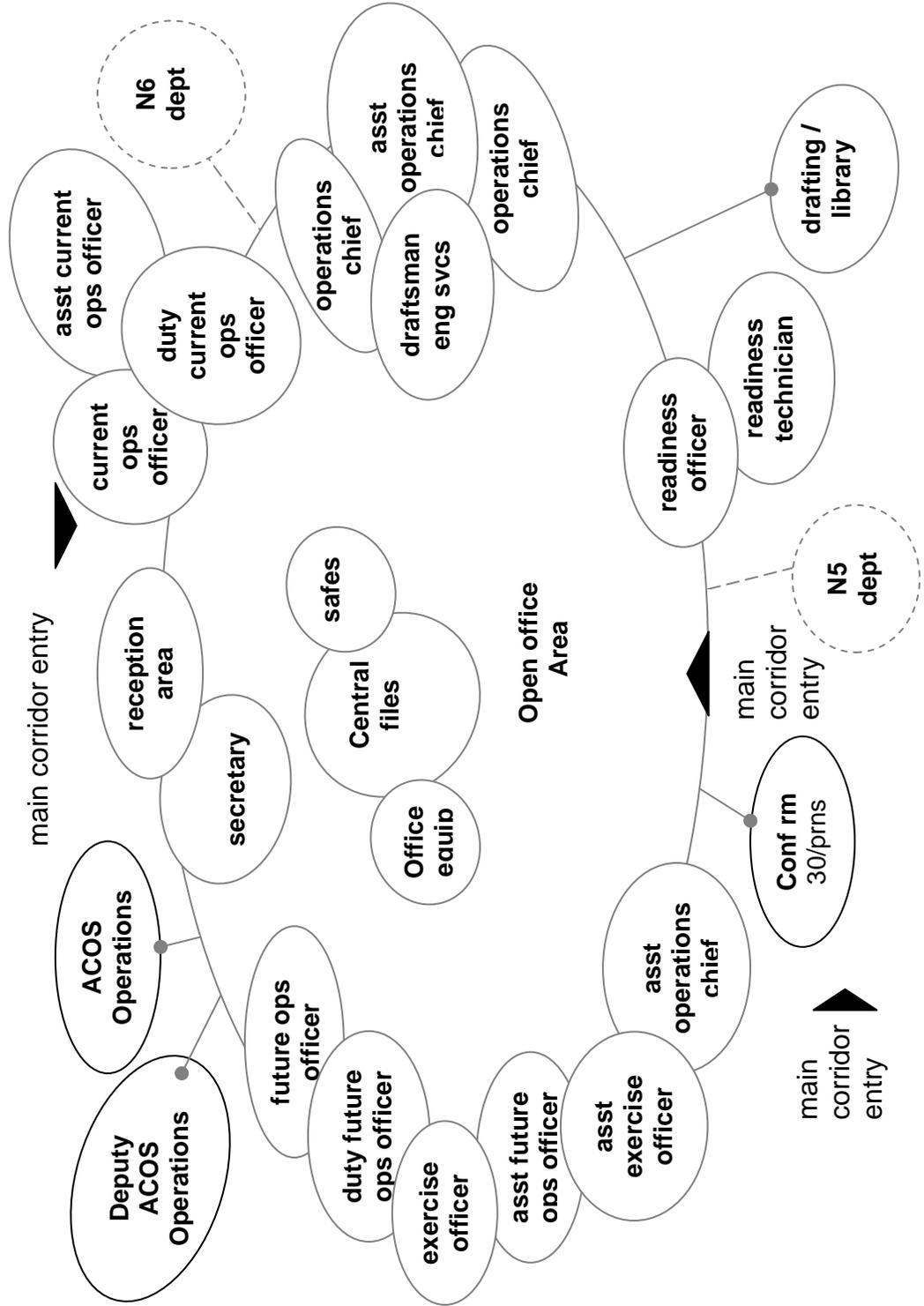
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**Partial First Floor Bubble Diagrams**  
**Command Center**

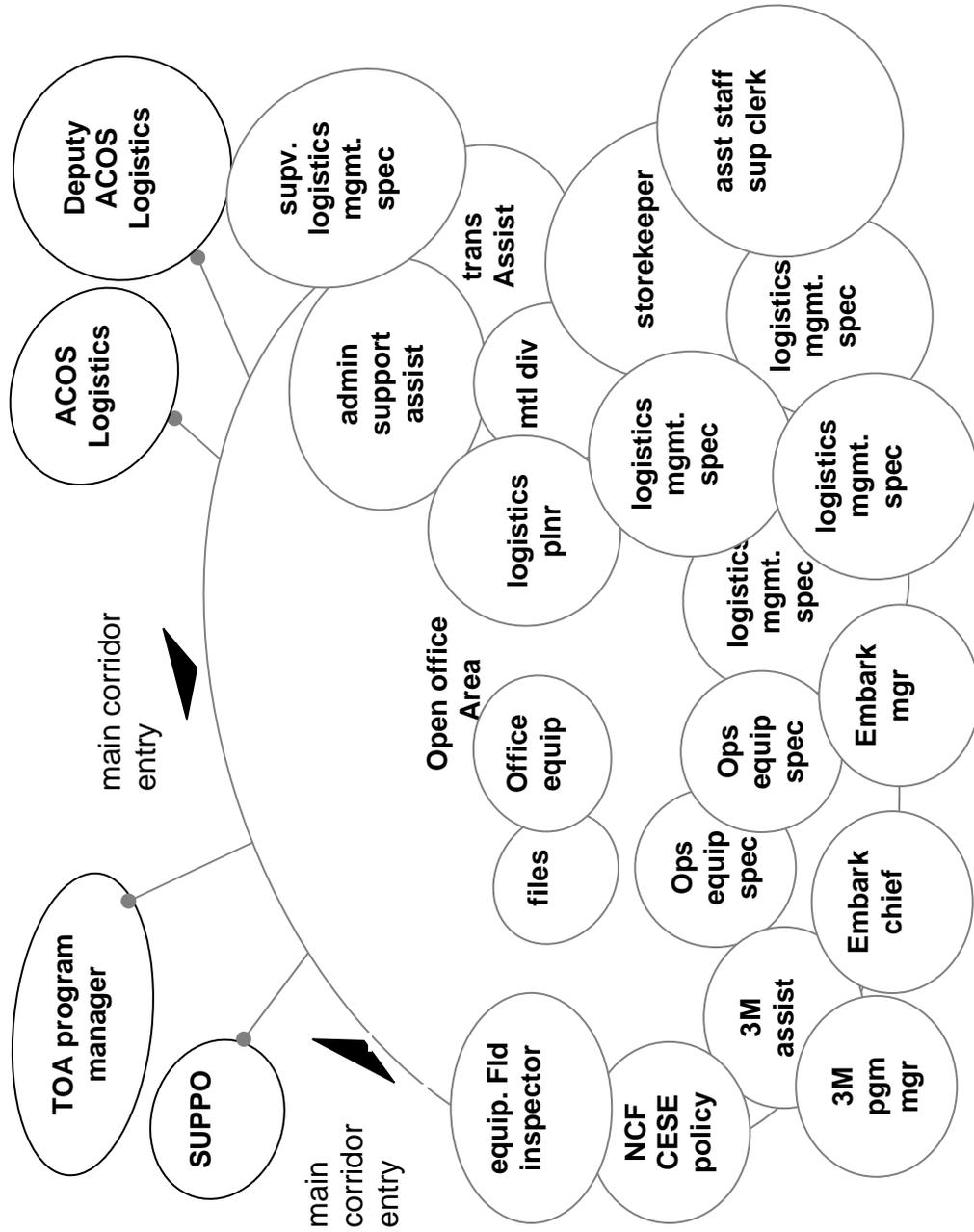




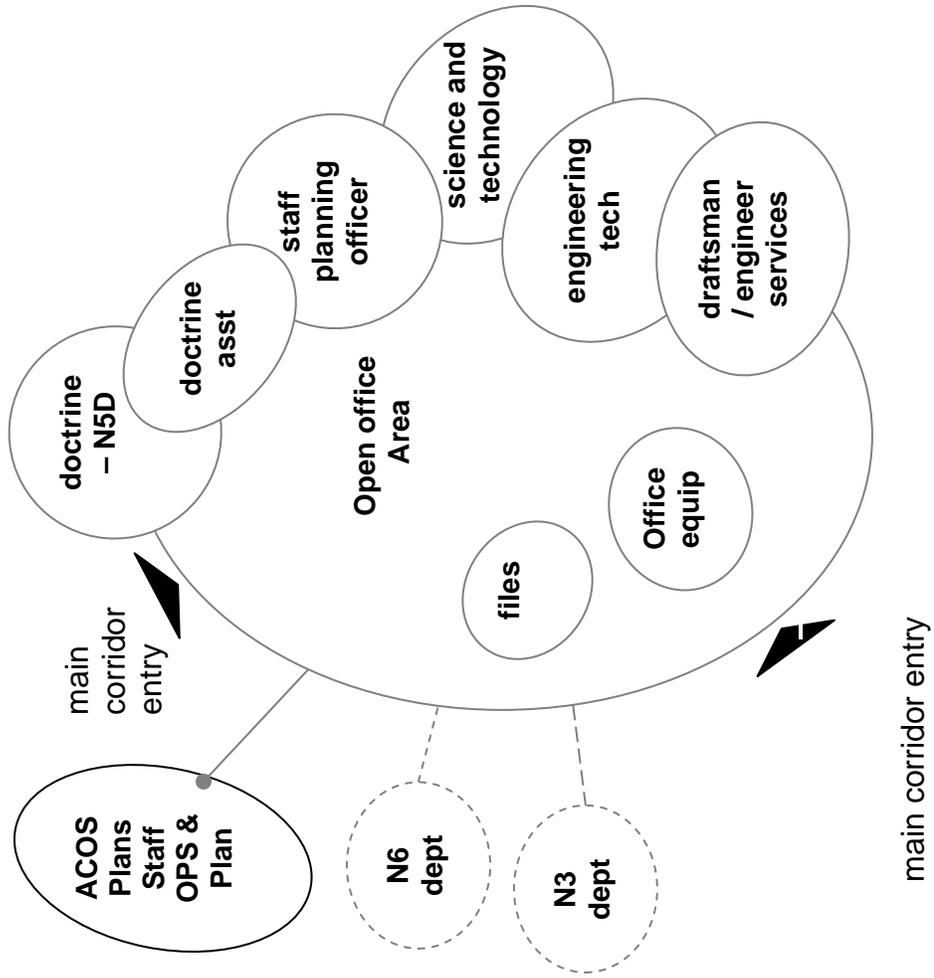
**Partial Second Floor Bubble Diagrams**  
**N3 Operations Department**



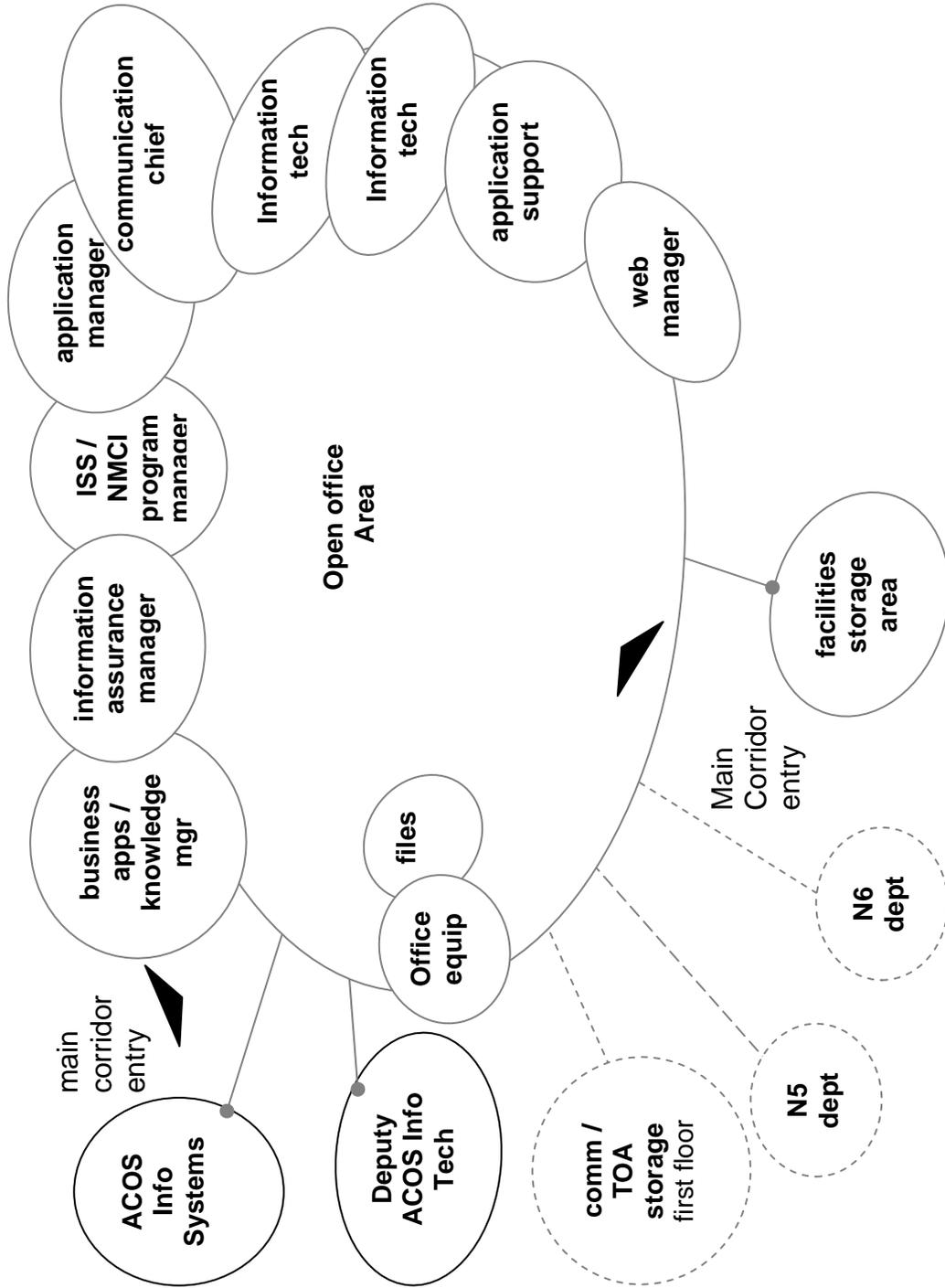
**Partial Second Floor Bubble Diagrams**  
**N4 Logistics Department**



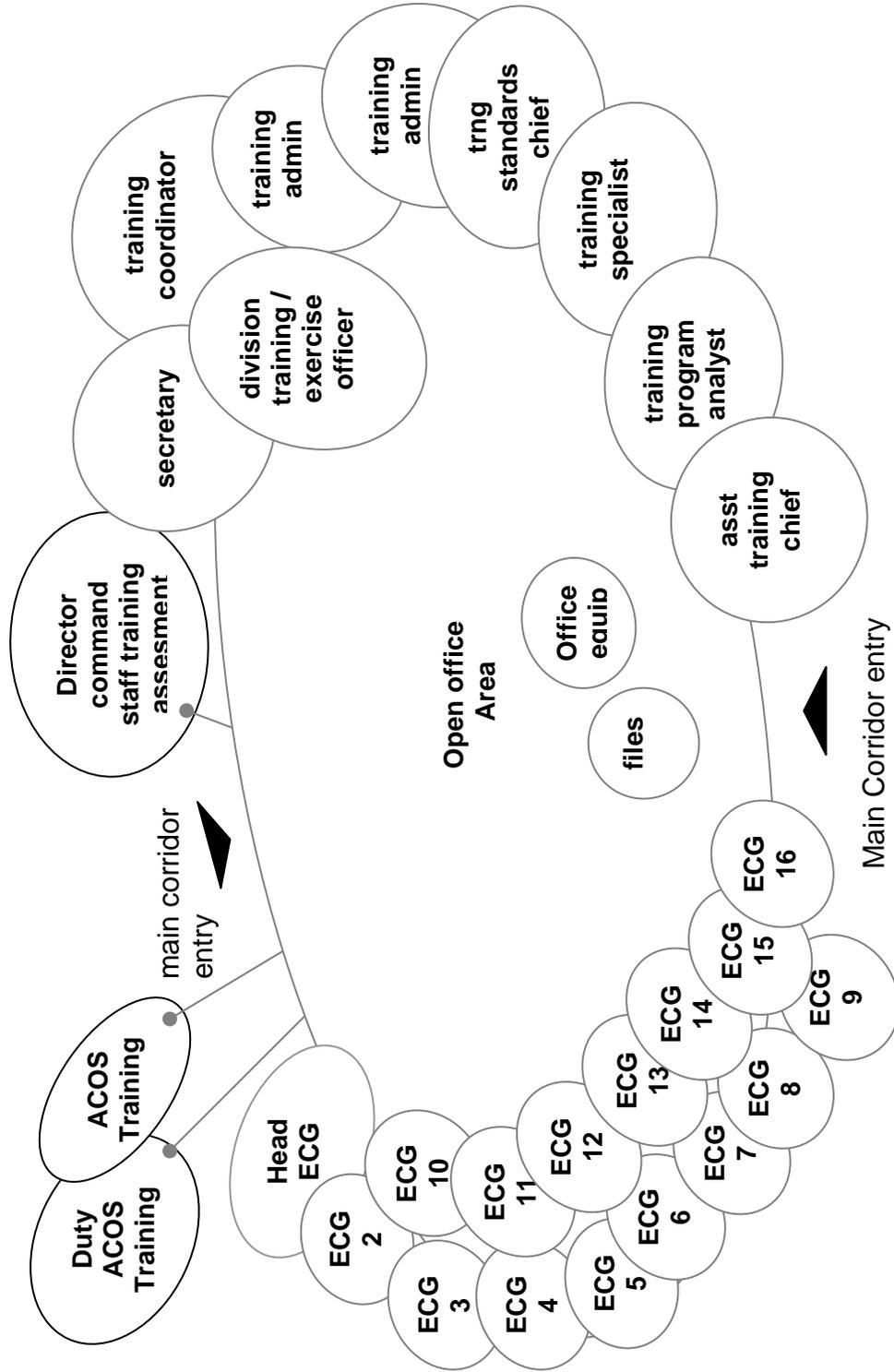
**Partial Second Floor Bubble Diagrams**  
**N5 Plans and Policy Department**



**Partial Second Floor Bubble Diagrams**  
**N6 Information Technology Department**



**Partial Second Floor Bubble Diagrams**  
**N7 Training Department**



## 100 - Vestibule

Space Characteristics				
<b>Function/adjacencies:</b> main entry from parking area. <b>Special Dimensions:</b> Ideal Plan Dimensions: 2.4m x 4.8m Minimum Ceiling Height: 10 ft. <b>Acoustics:</b> <b>Access:</b> Controlled access to Quarter Deck reception area <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b>				
Uniformat Section	Description	Qty	Size	Specific Requirements
B202002	Storefronts	2	3' x 8'	Glazed Exterior Doors, Full Height Glazing,, 2'H Transom, 2'-8" w sidelites
B202002	Storefronts	AR	AR	Glazed Exterior Storefront, Full height Glazing
B202010	Exterior Enclosure	AR	AR	
B203008	Exterior Door hardware	AR	AR	<b>Electronic Entry Control System:</b> Electronic Card Reader, Electronic Strike, push to exit device, electronic access switch connection to quarter deck, balanced magnetic door sensor
B203008	Exterior Door hardware	1 ea	AR	Panic Hardware
C101006	Glazed Partitions & Storefronts	AR	AR	Interior Glazed Storefront, Full height Glazing, Vision to Quarter Deck
C102002	Glazed Interior Doors	2	3' x 7'	Full Height Glazing, 2'H Transom, 2'-8" w sidelites
C102007	Interior Door Hardware	AR	AR	<b>Electronic Entry Control System:</b> Electronic Card Reader, Electronic Strike, push to exit device, electronic access switch connection to quarter deck, request to exit device, balanced magnetic door sensor
C102007	Interior Door Hardware	1 ea	AR	Panic Hardware
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to 4" min. above ceiling
C103004	Identifying Devices	1	AR	Room Signage: Indicate the room name for the space being entered. Locate at each door to an interior space
C302002	Polished Terrazzo Floor	AR	AR	Polished Terrazzo Base or Natural Stone Base
C103014	Entrance Floor Grills & Mats	1	10'-0" x 10'-0"	Recessed Entrance Mat
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP / Painted GWB
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503005	Security Systems	AR	AR	Camera, Card Reader, Balanced Magnetic Switches

## 101 - Vestibule

Space Characteristics				
<b>Function/adjacencies:</b> secondary entry				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 2.2m x 4.1m Minimum Ceiling Height: 10 ft.				
<b>Acoustics:</b>				
<b>Access:</b> Controlled access to Main Corridor & Quarter Deck reception area				
<b>Number of Occupants: 0</b>				
<b>Other/Special Requirements:</b>				

Uniformat Section	Description	Qty	Size	Specific Requirements
B202002	Storefronts	2	3' x 8'	Glazed Exterior Doors, Full Height Glazing,, 2'H Transom, 2'-8" w sidelites
B202002	Storefronts	AR	AR	Glazed Exterior Storefront, Full height Glazing
B203008	Exterior Door hardware	AR	AR	<b>Electronic Entry Control System:</b> Electronic Card Reader, Electronic Strike, push to exit device, electronic access switch connection to quarter deck, balanced magnetic door sensor
B203008	Exterior Door hardware	1 ea	AR	Panic Hardware
B202010	Exterior Enclosure	AR	AR	
C101006	Glazed Partitions & Storefronts	AR	AR	Interior Glazed Storefront, Full height Glazing, Vision to Quarter Deck
C102002	Glazed Interior Doors	2	3' x 7'	Full Height Glazing, 2'H Transom, 2'-8" w sidelites
C102007	Interior Door Hardware	AR	AR	<b>Electronic Entry Control System:</b> Electronic Card Reader, Electronic Strike, push to exit device, electronic access switch connection to quarter deck, request to exit device, balanced magnetic door sensor
C102007	Interior Door Hardware	1 ea	AR	Panic Hardware
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to 4" min. above ceiling
C103004	Identifying Devices	1	AR	Room Signage: Indicate the room name for the space being entered. Locate at each door to an interior space
C302002	Polished Terrazzo Floor Finish	AR	AR	Polished Terrazzo Base or Natural Stone Wall Base
C103014	Entrance Floor Grills & Mats	1	10'-0" x 10'-0"	Recessed Entrance Mat
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP / Painted GWB
D502002	Lighting Equipment	AR		Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503005	Security Systems	AR		Camera, Card Reader, Balanced Magnetic Switches

## 102 - Vestibule

Space Characteristics				
<b>Function/adjacencies:</b> secondary entry				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 2.2m x 2.9m Minimum Ceiling Height: 10 ft.				
<b>Acoustics:</b>				
<b>Access:</b> Controlled access to Main Corridor				
<b>Number of Occupants: 0</b>				
<b>Other/Special Requirements:</b>				

Uniformat Section	Description	Qty	Size	Specific Requirements
B202002	Storefronts	2	3' x 8'	Glazed Exterior Doors, Full Height Glazing,, 2'H Transom, 2'-8" w sidelites
B202002	Storefronts	AR	AR	Glazed Exterior Storefront, Full height Glazing
B203008	Exterior Door hardware	AR	AR	<b>Electronic Entry Control System:</b> Electronic Card Reader, Electronic Strike, push to exit device, electronic access switch connection to quarter deck, balanced magnetic door sensor
B203008	Exterior Door hardware	1 ea	AR	Panic Hardware
B202010	Exterior Enclosure	AR	AR	
C101006	Glazed Partitions & Storefronts	AR	AR	Interior Glazed Storefront, Full height Glazing, Vision to Quarter Deck
C102002	Glazed Interior Doors	2	3' x 7'	Full Height Glazing, 2'H Transom, 2'-8" w sidelites
C102007	Interior Door Hardware	AR	AR	<b>Electronic Entry Control System:</b> Electronic Card Reader, Electronic Strike, push to exit device, electronic access switch connection to quarter deck, request to exit device, balanced magnetic door sensor
C102007	Interior Door Hardware	1 ea	AR	Panic Hardware
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to 4" min. above ceiling
C103004	Identifying Devices	1	AR	Room Signage: Indicate the room name for the space being entered. Locate at each door to an interior space
C302002	Terrazzo Floor Finish	AR	AR	Polished Terrazzo Base or Natural Stone Wall Base
C103014	Entrance Floor Grills & Mats	1	10'-0" x 10'-0"	Recessed Entrance Mat
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP / Painted GWB
D502002	Lighting Equipment	AR	AR	Fixtures
D503005	Security Systems	AR	AR	Camera, Card Reader, Balanced Magnetic Switches

### 103 - Vestibule

Space Characteristics
<b>Function/adjacencies:</b> secondary entry <b>Special Dimensions:</b> Ideal Plan Dimensions: 2.4m x 2.3m Minimum Ceiling Height: 10 ft. <b>Acoustics:</b> <b>Access:</b> Controlled access to Main Corridor & Quarter Deck reception area <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b>

Uniformat Section	Description	Qty	Size	Specific Requirements
B202002	Storefronts	2	3' x 8'	Glazed Exterior Doors, Full Height Glazing,, 2'H Transom, 2'-8" w sidelites
B202002	Storefronts	AR	AR	Glazed Exterior Storefront, Full height Glazing
B203008	Exterior Door hardware	AR	AR	<b>Electronic Entry Control System:</b> Electronic Card Reader, Electronic Strike, push to exit device, electronic access switch connection to quarter deck, balanced magnetic door sensor
B203008	Exterior Door hardware	1 ea	AR	Panic Hardware
C101006	Glazed Partitions & Storefronts	AR	AR	Interior Glazed Storefront, Full height Glazing, Vision to Quarter Deck
C102002	Glazed Interior Doors	2	3' x 7'	Full Height Glazing, 2'H Transom, 2'-8" w sidelites
C102007	Interior Door Hardware	AR	AR	<b>Electronic Entry Control System:</b> Electronic Card Reader, Electronic Strike, push to exit device, electronic access switch connection to quarter deck, request to exit device, balanced magnetic door sensor
C102007	Interior Door Hardware	1 ea	AR	Panic Hardware
C301003	Gypsum Wallboard Finishes	AR	AR	Painted Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to 4" min. above ceiling
C103004	Identifying Devices	1	AR	Room Signage: Indicate the room name for the space being entered. Locate at each door to an interior space
C302002	Terrazzo Floor Finishes	AR	AR	Polished Terrazzo Base or Natural Stone Wall Base
C103014	Entrance Floor Grills & Mats	1	10'-0" x 10'-0"	Recessed Entrance Mat
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP / Painted GWB
D502002	Lighting Equipment	AR	AR	Fixtures
D503005	Security Systems	AR	AR	Camera, Card Reader, Balanced Magnetic Switches

## 104 – Stair 1

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Vertical Circulation <b>Special Dimensions:</b> Ideal Plan Dimensions: 2.5m x 6.0m Minimum Ceiling Height: 13 ft. <b>Acoustics:</b> <b>Access:</b> Controlled access to Main Corridor 106 <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b>				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	CMU
C102001	Standard Interior Door	1	3' x 7'	Fire Rated, Vision Panel
C102007	Interior Door hardware	1	AR	Panic Hardware, Electronic Card Reader, Electronic Strike, balanced magnetic door sensor
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	Full Height Paint
C103004	Identifying Devices	1	AR	Room Signage: Indicate the room name for the space being entered. Locate at each door to an interior space
C302004	Rubber tile / TR	AR	AR	4" Rubber Base
C201002	Fire Escape Stairs	2 Flights	AR	Double Run Multi-landing
C201090	Stair Handrails, Guardrails & Accessories	2 Flights	AR	Painted 2" diameter pipe
D502002	Lighting Equipment	AR	AR	Fixtures
D503005	Security Systems	AR	AR	Camera

## 105 – Stair 2

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Vertical Circulation				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 2.5m x 6.0m Minimum Ceiling Height: 13 ft.				
<b>Acoustics:</b>				
<b>Access:</b> Controlled access to Main Corridor 106				
<b>Number of Occupants: 0</b>				
<b>Other/Special Requirements:</b>				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	CMU
C102001	Standard Interior Door	1	3' x 7'	Fire Rated, Vision Panel
C102007	Interior Door hardware	1	AR	Panic Hardware, Electronic Card Reader, Electronic Strike, balanced magnetic door sensor
C301003	Gypsum Wallboard Finishes	AR	AR	Painted Gypsum Wallboard
C301005	Painting to Walls	AR	AR	Full Height Paint
C103004	Identifying Devices	1	AR	Room Signage: Indicate the room name for the space being entered. Locate at each door to an interior space
C302004	Rubber tile / TR	AR	AR	4" Rubber
C201002	Fire Escape Stairs	2 Flights	AR	Double run Multi-landing
C201090	Stair Handrails, Guardrails & Accessories	2 Flights	AR	Painted 2" diameter pipe
D502002	Lighting Equipment	AR	AR	Fixtures
D503005	Security Systems	AR	AR	Camera

## 106 – Main Corridor

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Core Circulation <b>Special Dimensions:</b> Ideal Plan Dimensions: 1.8m x 61.5m, 6'-0" width minimum Minimum Ceiling Height: 10 ft. <b>Acoustics:</b> <b>Access:</b> main corridor <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b>				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structural slab above
C103007	Fire Extinguisher Cabinets	3	AR	Mounted 5'-0" max. above floor
D201006	Drinking Fountains & Coolers	2	AR	Recessed Handicap Accessible
C302002	Terrazzo Floor Finish	AR	AR	Polished Terrazzo Base or Natural Stone Wall Base
C301005	Wall Coverings	AR	AR	From floor to 4" min. above ceiling
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP / Painted GWB
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	2	AR	Telephone outlets
D503004	Television System	2	AR	CATV outlets
D503005	Security Systems	AR	AR	Camera
E101003	Vending Equipment	3	AR	
E201099	Other Fixed Interior Furnishings	2	12 LF	Built-in Display Cabinetry (Located at Command Center Entrance)

## 107 – Main Lobby

Space Characteristics				
<b>Function/adjacencies:</b> Main entrance to building for visitors & dignitaries. Security check point. Quarter Deck Reception area. Could be used for social functions. / main corridor, main lobby, vestibule 100 & vestibule 101 <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.0m x 4.8m Minimum Ceiling Height: 10 ft. <b>Acoustics:</b> Provide some acoustical treatment in this space. <b>Access:</b> Main Corridor, Vestibules 100 & 101 <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b> Provide wall treatments, panelized wood & acoustical surfaces.				
Unifomat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structural slab above
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to 4" min. above ceiling
C301006	Acoustical Panels Adhered to Walls	AR	AR	Tackable Fabric Wrapped Panels
C301090	Other Wall Finishes	AR	AR	Architectural Millwork with Wood Molding at Walls
C302002	Terrazzo Floor Finishes	AR	AR	Polished Terrazzo Base or Natural Stone Wall Base
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP / Painted GWB
C103004	Identifying Devices	1	AR	Command Display Boards & Building Directory
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

## 108 – Quarter Deck

Space Characteristics				
<b>Function/adjacencies:</b> Security check point / main corridor, main lobby, vestibule 101 <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.2m x 5.4m Minimum Ceiling Height: 10 ft. <b>Acoustics:</b> Provide some acoustical treatment in this space. <b>Access:</b> From Vestibule 101 & Main Corridor <b>Number of Occupants:</b> 3 <b>Other/Special Requirements:</b> Provide wall treatments, panelized wood & acoustical surfaces. Plan for (2) desktop computer workstations at reception desk.				
Unifomat Section	Description	Qty	Size	Specific Requirements
C102001	Standard Interior Door	1	3' x 7'	Fire Rated, Vision Panel
C102007	Interior Door hardware	1	AR	Lockset
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structural slab above
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to 4" min. above ceiling
C301006	Acoustical Panels Adhered to Walls	AR	AR	Fabric Wrapped Panels
C301090	Other Wall Finishes	AR	AR	Architectural Millwork with Wood Molding at Walls
C302002	Terrazzo Floor Finish	AR	AR	Terrazzo or Natural Stone wall base
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP / Painted GWB
C103004	Identifying Devices	1	AR	Room Identifying Device
C103010	Casework	20 LF	AR	Reception Desk with closed storage, natural stone tops suitable for reception area. Wood veneer clad vertical surfaces compatible with any adjoining wall treatment/surfaces. Provide recessed, heavy gauge anodized aluminum cellular phone storage lockers as required by end-user to hold a minimum of 40 phones.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	4	AR	Telephone outlets
D503001	Telecommunications System	4	AR	NIPRNET outlets
D503004	Television System	1	AR	CATV outlets
D503005	Security Systems	AR	AR	Monitors, Computer Terminal

### 109 – (N6) Communication / TOA Storage Area

#### Space Characteristics

**Function/adjacencies:** First floor N6 Information Technology storage area / Main Corridor 106;

**Special Dimensions:**

Ideal Plan Dimensions: 9.5m x 9.7m  
 Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From Main Corridor 106

**Number of Occupants: 0**

**Other/Special Requirements:**

Uniformat Section	Description	Qty	Size	Specific Requirements
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structural slab above. STC 60
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	Extend from floor to 4" min. above ceiling
C102001	Standard Interior Doors	1	3' x 7'	
C102007	Interior Door hardware	1		Lockset, overhead closer
C302004	Resilient Floor Finishes	AR	AR	Linoleum Composition Tile, two color mix pattern
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E202003	Freestanding Furniture - Storage	77	36" x 12"	Metal Utility Shelving
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

## 110 – (N6) Vault

Space Characteristics				
<b>Function/adjacencies:</b> First floor N6 Information Technology storage area / Main Corridor 106; <b>Special Dimensions:</b> Ideal Plan Dimensions: 9.5m x 9.7m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 106 <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b>				
Uniformat Section	Description	Qty	Size	Specific Requirements
F103001	Vaults	AR	AR	Extend from floor to underside of structural slab above. STC 60 min.
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	Extend from floor to 4" min. above ceiling
C102001	Standard Interior Doors	1	3' x 7'	
C102007	Interior Door hardware	1		Lockset, overhead closer
C302004	Resilient Floor Finishes	AR	AR	Linoleum Composition Tile, two color mix pattern
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E202003	Freestanding Furniture - Storage	77	36" x 12"	Metal Utility Shelving
D502002	Lighting Equipment	AR	AR	Fixtures

## 111 – (N00) Executive Department Open Office

Space Characteristics				
<b>Function/adjacencies:</b> Command Suite / Flag Level Open Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 4.8m x 7.5m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 106 <b>Number of Occupants:</b> 3 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (3)				
Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structural slab above
C103004	Identifying Devices	1	AR	Room Identifying Device
C103004	Identifying Devices	3	AR	Workstation Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C102003	Fire Doors	2	3' x 7'	Solid with Vision Panel
C102007	Interior Door Hardware	2		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09. Overhead closer
C302005	Carpeting	AR	AR	Level 2
C302008	Wall Base Finishes	AR	AR	4" Wood or 6" Rubber with Millwork Profile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP with fine-line grid system
C103010	Casework	1		<b>Reception Desk:</b> (Admin workstation) approx 60 sf. with closed storage, natural stone tops suitable for reception area. Wood veneer clad vertical surfaces compatible with adjacent wall treatments or wall surfaces.
C103008	Counters	8 LF min		Solid Surface Counter or Systems Furniture Work Surface with supports (office equipment location)
C103009	Cabinets	8 LF min		Wall and Base Cabinets, Plastic laminate clad, Half Locking
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503005	Security Systems			Provide duress alarm system linked back to the Quarter Deck

**111 – (N00) Executive Department Open Office (cont.)**

**Space Characteristics**  
**Function/adjacencies:** Command Suite / Flag Level Open Office space  
**Special Dimensions:**  
 Ideal Plan Dimensions: 4.8m x 7.5m  
 Minimum Ceiling Height: 9 ft.  
**Acoustics:**  
**Access:** From Main Corridor 106  
**Number of Occupants:** 3  
**Other/Special Requirements:** Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (3)

Uniformat Section	Description	Qty	Size	Specific Requirements
D503005	Number of system control panels			Provide duress alarm system push button in room. Location to be finalized with furniture, during design process.
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the audio visual (AV) system. Provide on the AV wall four (4) VTC cameras (center and two wings on front wall and one (1) rear wall); two (2) low voltage boxes for display cabling; two (2) power boxes for the large displays. All low voltage junction boxes shall have conduits linking to wallplates adjacent to the AV credenza. Location to be finalized during the design process. Provide low voltage controls for audio visual system interface to motorized security shades. Audio visual credenza shall be fitted with forced air ventilation for equipment cooling.
E102009	Audio Visual Equipment	4		VTC cameras center, front, back, each side.
E102009	Audio Visual Equipment	2		Brackets & mounts for twin flat screen display unit, include wood blocking / backing
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

## 112 – (N00) Vice Commander Office

Space Characteristics				
<b>Function/adjacencies:</b> Private Flag level Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height:9 ft. <b>Acoustics:</b> STC 47 <b>Access:</b> From N00 Open Office Space <b>Number of Occupants:</b> 1 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop computer				
Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09.
C302005	Carpeting	AR	AR	Level 2
C302008	Wall Base Finishes	AR	AR	4" Wood or 6" Rubber Base with Millwork Profile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP with fine-line grid system
D503005	Security Systems			Provide duress alarm system linked back to the Quarter Deck
D503005	Number of system control panels			Provide duress alarm system push button in room. Location to be finalized with furniture, during design process.
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the audio visual (AV) system. Provide on the AV wall four (4) VTC cameras (center and two wings on front wall and one (1) rear wall); two (2) low voltage boxes for display cabling; two (2) power boxes for the large displays. All low voltage junction boxes shall have conduits linking to wallplates adjacent to the AV credenza. Location to be finalized during the design process. Provide low voltage controls for audio visual system interface to motorized security shades. Audio visual credenza shall be fitted with forced air ventilation for equipment cooling.

**112 – (N00) Vice Commander Office (cont.)**

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Private Flag level Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height:9 ft. <b>Acoustics:</b> STC 47 <b>Access:</b> From N00 Open Office Space <b>Number of Occupants:</b> 1 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop computer				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
E102009	Audio Visual Equipment	4		VTC cameras center, front, back, each side.
E102009	Audio Visual Equipment	2		Brackets & mounts for twin flat screen display unit, include wood blocking / backing
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

### 113 – (N00) Chief Of Staff Office

Space Characteristics				
<b>Function/adjacencies:</b> Private Flag level Office space / Share command Head 128				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b> STC 47				
<b>Access:</b> From N00 Open Office Space				
<b>Number of Occupants:</b> 1				
<b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop computer				

Unifomat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09.
C302005	Carpeting	AR	AR	Level 2
C302008	Wall Base Finishes	AR	AR	4" Wood or 6" Rubber base with Millwork Profile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP with fine-line grid system
D503005	Security Systems			Provide duress alarm system linked back to the Quarter Deck
D503005	Number of system control panels			Provide duress alarm system push button in room. Location to be finalized with furniture, during design process.
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the audio visual (AV) system. Provide on the AV wall four (4) VTC cameras (center and two wings on front wall and one (1) rear wall); two (2) low voltage boxes for display cabling; two (2) power boxes for the large displays. All low voltage junction boxes shall have conduits linking to wallplates adjacent to the AV credenza. Location to be finalized during the design process. Provide low voltage controls for audio visual system interface to motorized security shades. Audio visual credenza shall be fitted with forced air ventilation for equipment cooling.
E102009	Audio Visual Equipment	4		VTC cameras center, front, back, each side.

**113 – (N00) Chief Of Staff Office (cont.)**

**Space Characteristics**  
**Function/adjacencies:** Private Flag level Office space / Share command Head 128  
**Special Dimensions:**  
 Ideal Plan Dimensions: 3.8m x 4.8m  
 Minimum Ceiling Height: 9 ft.  
**Acoustics:** STC 47  
**Access:** From N00 Open Office Space  
**Number of Occupants:** 1  
**Other/Special Requirements:** Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
E102009	Audio Visual Equipment	2		Brackets & mounts for twin flat screen display unit, include wood blocking / backing
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunsreen and room-darkening shades with black-out capabilities.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

## 114 – (N00) Command Head

Space Characteristics				
<b>Function/adjacencies:</b> N00 Flag Chief of Staff and Commander use only				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 2.7m x 3.0m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Chief of Staff Office 127 and Commander Office 129				
<b>Number of Occupants: 0</b>				
<b>Other/Special Requirements:</b>				

Uniformat Section	Description	Qty	Size	Specific Requirements
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C102001	Standard Interior Doors	2	3' x 7'	
C102007	Interior Door hardware	2		Lockset, overhead closer, kick plate
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301004	Tile & Terrazzo Wall Finishes	AR	AR	Full Height Porcelain Wall Tile
C302007	Wall Base Finishes	AR	6" max	Porcelain Tile
C302001	Tile Floor Finishes	AR	AR	Porcelain Tile
C303002	Gypsum Wallboard Ceiling Finishes	AR	AR	GWB
C303006	Painting and Staining Ceilings	AR	AR	Paint
C103008	Counters	1	2' x 9' min.	Natural Stone surface, 4" h back and side splash
C103009	Cabinets			Vanity Base Cabinet
C103002	Toilet & Bath Accessories	1		Hand Dryer
C103002	Toilet & Bath Accessories	1		Soap Dispenser
C103002	Toilet & Bath Accessories	1		Waste Receptacle, recessed in wall
C103002	Toilet & Bath Accessories	1		Paper Towel Dispenser
C103002	Toilet & Bath Accessories	1	24" x 36"	Mirror
C103002	Toilet & Bath Accessories	1		Toilet Paper Dispenser, 2 roll
C103002	Toilet & Bath Accessories	1	12" x 30"	Convenience Shelf, Solid surface
C103002	Toilet & Bath Accessories	AR	AR	Grab Bar
C103002	Toilet & Bath Accessories	1	AR	Toilet seat cover dispenser
C103002	Toilet & Bath Accessories	1	AR	Curtain and Rod
C103002	Toilet & Bath Accessories	2	AR	Robe Hook, door or wall mounted
C103004	Identifying Devices	2	AR	Room Identifying Device
D201001	Waterclosets	1		

**114 – (N00) Command Head (cont.)**

**Space Characteristics**

**Function/adjacencies:** N00 Flag Chief of Staff and Commander use only

**Special Dimensions:**

Ideal Plan Dimensions: 2.7m x 3.0m  
 Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From Chief of Staff Office 127 and Commander Office 129

**Number of Occupants: 0**

**Other/Special Requirements:**

Uniformat Section	Description	Qty	Size	Specific Requirements
D201003	Lavatories	1		
D201005	Showers / Tubs	1		Shower
D502002	Lighting Equipment	AR	AR	Fixtures

## 115 – (N00) Commander Office

### Space Characteristics

**Function/adjacencies:** Private Flag level Office space / Share Command Head 128

**Special Dimensions:**

Ideal Plan Dimensions: 4.6m x 6.0m  
 Minimum Ceiling Height: 9 ft.

**Acoustics:** STC 47

**Access:** From N00 Open Office Space

**Number of Occupants:** 1

**Other/Special Requirements:** Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09.
C302005	Carpeting	AR	AR	Level 2
C302008	Wall Base Finishes	AR	AR	4" Wood or 6" Rubber Base with Millwork Profile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP with fine-line grid system
D503005	Security Systems			Provide duress alarm system linked back to the Quarter Deck
D503005	Number of system control panels			Provide duress alarm system push button in room. Location to be finalized with furniture, during design process.
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the audio visual (AV) system. Provide on the AV wall four (4) VTC cameras (center and two wings on front wall and one (1) rear wall); two (2) low voltage boxes for display cabling; two (2) power boxes for the large displays. All low voltage junction boxes shall have conduits linking to wallplates adjacent to the AV credenza. Location to be finalized during the design process. Provide low voltage controls for audio visual system interface to motorized security shades. Audio visual credenza shall be fitted with forced air ventilation for equipment cooling.
E102009	Audio Visual Equipment	4		VTC cameras center, front, back, each side.

### 115 – (N00) Commander Office (cont.)

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Private Flag level Office space / Share Command Head 128 <b>Special Dimensions:</b> Ideal Plan Dimensions: 4.6m x 6.0m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> STC 47 <b>Access:</b> From N00 Open Office Space <b>Number of Occupants:</b> 1 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop computer				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
E102009	Audio Visual Equipment	2		Brackets & mounts for twin flat screen display unit, include wood blocking / backing
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

## 116 – (N00) Conference Room

Space Characteristics				
<b>Function/adjacencies:</b> Flag level Conference room <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> STC 47 <b>Access:</b> From N00 Open Office Space and Main Corridor <b>Number of Occupants:</b> 9 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment				
Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above. STC 60
C103004	Identifying Devices	2	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C102003	Standard Interior Doors	2	3' x 7'	Vision Panel
C102007	Interior Door Hardware	2		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09.
C103003	Marker boards & Tack Boards	1	4' x 8'	Dry Erase Marker Board
C103099	Other Interior Specialties			Brackets and mounts for twin flat panel display units, include wood blocking / backing
C302005	Carpeting	AR	AR	Level 2
C302008	Wall Base Finishes	AR	AR	4" Wood or 6" Rubber Base with Millwork Profile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP with fine-line grid system
D502002	Dimmable and low level Lighting systems			Provide dimmable and low level lighting systems for the VTC rooms, types of systems to consider are sconces, cove, track or in-direct lighting
D503005	Security Systems	AR	AR	Provide duress alarm system linked back to the Quarter Deck
D503005	Number of system control panels			Provide duress alarm system push button in room. Location to be finalized with furniture, during design process.

### 116 – (N00) Conference Room (cont.)

Space Characteristics				
<b>Function/adjacencies:</b> Flag level Conference room				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b> STC 47				
<b>Access:</b> From N00 Open Office Space and Main Corridor				
<b>Number of Occupants:</b> 9				
<b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment				

Uniformat Section	Description	Qty	Size	Specific Requirements
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the audio visual (AV) system. Provide on the AV wall four (4) VTC cameras (center and two wings on front wall and one (1) rear wall); two (2) low voltage boxes for display cabling; two (2) power boxes for the large displays. All low voltage junction boxes shall have conduits linking to wallplates adjacent to the AV credenza. Location to be finalized during the design process. Audio visual credenza shall be fitted with forced air ventilation for equipment cooling. Provide next to interior door low voltage junction box and power box (low voltage) for one (1) digital signage display system for reservations and notifications. Location of displays to be finalized during the design process.
E102009	Audio Visual Equipment	1		Credenza / Cabinet for AV equipment, with forced air ventilation
E102009	Audio Visual Equipment	2		Brackets & mounts for twin flat screen display unit, include wood blocking / backing
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
D502002	Lighting Equipment	AR	AR	Fixtures, Dimming controls
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

## 117 – N00 Break Room

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Flag level breakroom / flag level Conference room 131				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 1.5m x 1.5m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From N00 Open Office space				
<b>Number of Occupants: 0</b>				
<b>Other/Special Requirements:</b>				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	Extend 4" min. above ceiling
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C102091	Other interior Personnel Doors	1	5' x 7'	Wood framed casement opening
C302002	Terrazzo Floor Finishes	AR	AR	Terrazzo or Stone wall base
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP / Painted GWB
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C103002	Toilet & Bath Accessories	1	AR	Paper Towel Dispenser
C103004	Identifying Devices	1	AR	Room Identifying Device
C103008	Counters	6 LF	AR	Natural Stone surface with 4" h. back and side splash
C103009	Cabinets	6 LF	AR	Wall & Base cabinets, Plastic Laminate Clad
D201004	S.S. Counter Sink	1	AR	
E109004	Residential Equipment	1	AR	Full size refrigerator, microwave (FF&E)
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

## 118 – (N00) Executive Assistant Office

Space Characteristics				
<b>Function/adjacencies:</b> Private Flag level Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> STC 47 <b>Access:</b> From N00 Open Office Space <b>Number of Occupants:</b> 1 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop computer				
Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09.
C302005	Carpeting	AR	AR	Level 2
C302008	Wall Base Finishes	AR	AR	4" Wood or 6" Rubber Base with Millwork Profile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP with fine-line grid system
D503005	Security Systems	AR	AR	Provide duress alarm system linked back to the Quarter Deck
D503005	Number of system control panels			Provide duress alarm system push button in room. Location to be finalized with furniture, during design process.
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the audio visual (AV) system. Provide on the AV wall a low voltage junction box and power box for one (1) large display. The low voltage junction box shall have a conduit linking to a wallplate adjacent to the AV credenza, location to be finalized during the design process.
E102009	Audio Visual Equipment	1		Brackets & mounts for twin flat screen display unit, include wood blocking / backing
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecomm System	1	AR	SIPRNET outlets

**118 – (N00) Executive Assistant Office (cont)**

**Space Characteristics**

**Function/adjacencies:** Private Flag level Office space  
**Special Dimensions:**  
 Ideal Plan Dimensions: 3.8m x 4.8m  
 Minimum Ceiling Height: 9 ft.  
**Acoustics:** STC 47  
**Access:** From N00 Open Office Space  
**Number of Occupants:** 1  
**Other/Special Requirements:** Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecomm System	1	AR	SIPRNET outlets

## 119 – (N00) Command Master Chief Office

Space Characteristics				
<b>Function/adjacencies:</b> Private Flag level Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.6m x 3.8m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> STC 47 <b>Access:</b> From N00 Open Office Space <b>Number of Occupants:</b> 1 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop computer				
Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09.
C302005	Carpeting	AR	AR	Level 2
C302008	Wall Base Finishes	AR	AR	4" Wood or 6" Rubber Base with Millwork Profile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP with fine-line grid system
D503005	Security Systems	AR	AR	Provide duress alarm system linked back to the Quarter Deck
D503005	Number of system control panels			Provide duress alarm system push button in room. Location to be finalized with furniture, during design process.
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the audio visual (AV) system. Provide on the AV wall a low voltage junction box and power box for one (1) large display. The low voltage junction box shall have a conduit linking to a wallplate adjacent to the AV credenza, location to be finalized during the design process.
E102009	Audio Visual Equipment	1		Brackets & mounts for twin flat screen display unit, include wood blocking / backing

**119 – (N00) Command Master Chief Office (cont.)**

<b>Space Characteristics</b>				
<p><b>Function/adjacencies:</b> Private Flag level Office space  <b>Special Dimensions:</b>            Ideal Plan Dimensions: 3.6m x 3.8m            Minimum Ceiling Height: 9 ft.  <b>Acoustics:</b> STC 47  <b>Access:</b> From N00 Open Office Space  <b>Number of Occupants:</b> 1  <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop computer</p>				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

## 120 – (N02) Religious Program Specialist Office

### Space Characteristics

**Function/adjacencies:** Locate away from high pedestrian traffic and public view / (N02) CLM Chaplin Office

**Special Dimensions:**

Ideal Plan Dimensions: 3.0m x 3.0m  
 Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From Main Corridor 106

**Number of Occupants:** 1

**Other/Special Requirements:** Plan for desktop printer (1)

Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to 4" min. above ceiling
C102003	Fire Doors	1	3' x 7'	
C102007	Interior Door hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" Rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

## 121 – (N02) CLM Chaplin Office

Space Characteristics				
<b>Function/adjacencies:</b> Locate away from high pedestrian traffic and public view / (N02) Religious Program Specialist Office				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Religious Program Specialist Office				
<b>Number of Occupants:</b> 1				
<b>Other/Special Requirements:</b> Plan for desktop printer (1)				

Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to 4" min. above ceiling
C102003	Fire Doors	1	3' x 7'	
C102007	Interior Door hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" Rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets
E201002	Window Treatments	1	AR	2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

## 122 – (N02) Force Jag Officer

Space Characteristics				
<b>Function/adjacencies:</b> Locate away from high pedestrian traffic and public view / (N02) Legalman Office				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.0m x 3.6m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Main Corridor 106				
<b>Number of Occupants:</b> 1				
<b>Other/Special Requirements:</b> Plan for desktop printer (1)				

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to 4" min. above ceiling
C102003	Fire Doors	1	3' x 7'	
C102007	Interior Door hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" Rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

### 123 – (N02) Legalman ADDU FM Office

Space Characteristics				
<b>Function/adjacencies:</b> Locate away from high pedestrian traffic and public view / (N02) Force Jag Officer				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.0m x 3.0m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Main Corridor 106				
<b>Number of Occupants:</b> 1				
<b>Other/Special Requirements:</b> Plan for desktop printer (1)				

Unifomat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to 4" min. above ceiling
C102003	Fire Doors	1	3' x 7'	
C102007	Interior Door hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" Rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets

## 124 – Lactation Room

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Main corridor 106 <b>Special Dimensions:</b> Ideal Plan Dimensions: 2.1m x 3.0m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 106 <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b> ADA accessible				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	Extendd from floor to underside of structure above. Sound attenuation to meet a minimum STC 60.
C103004	Identifying Devices	1	AR	Room Identifying Device, include occupied/vacant signage
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301006	Wall Coverings	AR	AR	From floor to 4" min. above ceiling
C102001	Standard Interior Doors	1	3' x 7'	
C102007	Interior Door hardware	1		User Operated Deadbolt for Privacy, overhead closer
C302004	Linoleum Composition Tile	AR	AR	Linoleum Composition Tile, three color mix pattern
C302008	Wall Base Finishes	AR	AR	4" Rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
C103002	Toilet & Bath Accessories	1	AR	Paper Towel Dispenser, Robe Hook, full-length mirror
C103008	Counters	9 LF	AR	Solid surface with 4" hgt. back and side splash
C103009	Cabinets	11 LF	AR	Wall & Base cabinets, Plastic Laminate Clad. Provide space beneath counter surface for under-counter refrigerator.
D201004	S.S. Counter Sink	1	AR	
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

## 125 – (N02) Public Affairs Officer Office

Space Characteristics				
<b>Function/adjacencies:</b> Private Office space				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From N02 Open Office Space				
<b>Number of Occupants:</b> 1				
<b>Other/Special Requirements:</b> Plan for desktop computer				

Unifomat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets

## 126 – (N02) Special Assistance Department Open Office

Space Characteristics				
<b>Function/adjacencies:</b> Open Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 4.8m x 7.0m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 106 <b>Number of Occupants:</b> 4 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (3)				
Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	2	AR	Room Identifying Device
C103004	Identifying Devices	4	AR	Workstation Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Fire Doors	2	3' x 7'	Solid with Vision Panel
C102007	Interior Door Hardware	2		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09. Overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E101008	Office Equipment	3	AR	Copier / printer / fax
C103008	Counters	8 LF min		Office Equipment (Copier / printer / fax location) solid surface counter
C103009	Cabinets	8 LF min		Wall and Base cabinets, Plastic laminate, Half Locking
D509002	Emergency Lighting and Power	AR	AR	Fixtures
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

**126 – (N02) Special Assistance Department Open Office (cont)**

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Open Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 4.8m x 7.0m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 106 <b>Number of Occupants:</b> 4 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (3)				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
D503001	Telecommunications System	1	AR	NIPRNET outlets
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

**127 – (N02) ACOS Res Mgmt / Cdr Opfor Sel / CO Const For Office**

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Private Office space				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From N02 Open Office Space				
<b>Number of Occupants:</b> 1				
<b>Other/Special Requirements:</b> Plan for desktop computer				

<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

## 128 – (N02) ACOS Medical Office

Space Characteristics				
<b>Function/adjacencies:</b> Private Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From N02 Open Office Space <b>Number of Occupants:</b> 1 <b>Other/Special Requirements:</b> Plan for desktop computer				
Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

### 129 – (N02) Dental Gen / RNCF Dental Advisor Office

Space Characteristics				
<b>Function/adjacencies:</b> Private Office space				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.0m x 4.5m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From N02 Open Office Space				
<b>Number of Occupants:</b> 2				
<b>Other/Special Requirements:</b> Plan for desktop computer				

Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
E202002	Modular Prefabricated Furniture	2		<b>Refer to Basic Facility Requirement worksheet:</b> L-shaped work stations approx. 60 sf. with curved P" top work surface, overhead shelving, under work surface pedestals, acoustic partitions for limited privacy
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	2	AR	NIPRNET outlets
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

### 130 – (N02) Safety Chief Office

Space Characteristics				
<b>Function/adjacencies:</b> Private Office space				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.0m x 3.6m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From N02 Open Office Space				
<b>Number of Occupants:</b> 1				
<b>Other/Special Requirements:</b> Plan for desktop computer				

Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

### 131 – (N02) Underwater Medical Office

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Private Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.0m x 3.6m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From N02 Open Office Space <b>Number of Occupants:</b> 1 <b>Other/Special Requirements:</b> Plan for desktop computer				

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets

### 132 – (N02) Force Retention / Navy Counselor Office

Space Characteristics				
<b>Function/adjacencies:</b> Private Office space				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From N02 Open Office Space				
<b>Number of Occupants:</b> 1				
<b>Other/Special Requirements:</b> Plan for desktop computer				

Unifomat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets

### 133 – (N02) Medical Storage Room

Space Characteristics				
<b>Function/adjacencies:</b> Storage space				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From N02 Open Office Space				
<b>Number of Occupants:</b> 1				
<b>Other/Special Requirements:</b>				

Unifomat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302004	Resilient Floor Finishes	AR	AR	Linoleum Composition Tile, three color mix pattern
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets

### 134 – Electrical Room

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Main corridor 106 <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.6m x 3.8m Minimum Ceiling Height: 13 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 106 <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b>				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above.
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C304002	Concrete Masonry Finishes	AR	AR	Full Height
C102007	Fire Doors	1	3' x 7'	Hollow Metal
C102007	Interior Door hardware	1		Lockset, overhead closer
C302010	Hardeners and Sealers	AR	AR	Sealer
C302099	Other Flooring and Floor Finishes	AR	AR	Anti-Static Mat
C303006	Painting and Staining Ceilings	AR	AR	Paint Exposed
C302090	Anti-Static Mat	1		
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

### 135 – Elevator 1

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Vertical circulation <b>Special Dimensions:</b> Ideal Plan Dimensions: 2.4m x 3.0m Minimum Ceiling Height: 8 ft. <b>Acoustics:</b> <b>Access:</b> Main Corridor 106 <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b> Other/Special Requirements: <b>Accommodate Emergency Gurney</b>				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	Fire Rated Shaft from floor to underside of structure above.
C103004	Identifying Devices	1	AR	Room Identifying Device
C302099	Other Flooring and Floor Finishes	AR	AR	LN or STV
C302008	Wall Base Finishes	AR	AR	Manufacturer's Standard
C301099	Other Wall Finishes	AR	AR	Plastic Laminate, Manufacturer's Standard
C303099	Other Ceilings and Ceiling Finishes	AR	AR	Manufacturer's Standard
C102098	Other interior Specialty Doors	AR	AR	Manufacturer's Standard
C102007	Interior Door Hardware	AR	AR	<b>Electronic Entry Control System:</b> Electronic Card Reader
D101002	Passenger Elevators	1	2 stops	
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

### 136 – Coffee Mess

Space Characteristics				
<b>Function/adjacencies:</b> Kitchenette to be shared by first floor occupants / main corridor				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 1.8m x 4.4m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Main Corridor 106				
<b>Number of Occupants: 0</b>				
<b>Other/Special Requirements:</b> Provide 36 sf. Recycle area. Plan for (5) waste receptacles; glass, plastic, metals, paper, cardboard, & 2 vending machines				
Unifomat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	From floor to 4" min. above ceiling
C102091	Other interior Personnel Doors	1	5' x 7'	Metal casement opening
C102001	Standard Interior Door	1	3' x 7'	Vision Panel
C102007	Interior Door hardware	1	AR	Interior Lockset , overhead closer
C302002	Terrazzo Floor Finish	AR	AR	Terrazzo or Natural Stone wall base
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP / Painted GWB
C302004	Linoleum Composition Tile	AR	AR	Linoleum Composition Tile, three color mix pattern (recycle only)
C302008	Wall Base Finishes	AR	AR	4" Rubber (Recycle area only)
C103002	Toilet & Bath Accessories	1	AR	Paper Towel Dispenser
C103003	Marker Boards & Tack Boards	1	4' x 4'	Tack board or cork board
C103004	Identifying Devices	2	AR	Room Identifying Device
C103008	Counters	9 LF	AR	Solid surface with back and side splash
C103009	Cabinets	11 LF	AR	Wall & Base cabinets, Clad in Plastic Laminate
D201004	S.S. Counter Sink	1	AR	
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503004	Television System	1	AR	CATV outlets
E101003	Vending Equipment	2	AR	

### 137 – Women’s Toilet

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Direct access to Women’s Change Room A113 and Main Corridor 106 / Break Room 109, Men’s Toilet 111, Command Center 158				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.9m x 6.4m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Main Corridor 106				
<b>Number of Occupants: 0</b>				
<b>Other/Special Requirements:</b>				

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C102003	Fire Doors	1	3' x 7'	Hollow Metal
C102007	Interior Door hardware	1		Push and pull plate, overhead closer, kick plate
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301004	Tile & Terrazzo Wall Finishes	AR	AR	Full Height Porcelain Wall Tile
C302007	Wall Base Finishes	AR	6" max	Porcelain Tile
C302001	Tile Floor Finishes	AR	AR	Porcelain Tile
C303002	Gypsum Wallboard Ceiling Finishes	AR	AR	GWB
C303006	Painting and Staining Ceilings	AR	AR	Paint
C103001	Compartments, Cubicles & Toilet Partitions			HDPE, Sized to be ADA Accessible
C103008	Counters	1	2' x 9' min.	ADA compliant, Solid surface, 4" h. back and side splash
C103002	Toilet & Bath Accessories	2		Hand Dryer
C103002	Toilet & Bath Accessories	2		Soap Dispenser
C103002	Toilet & Bath Accessories	1		Waste Receptacle, recessed in wall
C103002	Toilet & Bath Accessories	2		Paper Towel Dispenser
C103002	Toilet & Bath Accessories	2	24" x 36"	Mirror, ADA compliant
C103002	Toilet & Bath Accessories	2		Toilet Paper Dispenser, 2 roll
C103002	Toilet & Bath Accessories	1	12" x 30"	Convenience Shelf, Solid surface
C103002	Toilet & Bath Accessories	AR	AR	Grab Bar
C103002	Toilet & Bath Accessories	AR	AR	Toilet seat cover dispenser
C103004	Identifying Devices	1	AR	Room Identifying Device
D201001	Waterclosets	4		One (1) to be ADA Accessible
D201003	Lavatories	2		ADA Accessible
D502002	Lighting Equipment	AR	AR	Fixtures

### 138 – Women’s Change Room

Space Characteristics				
<b>Function/adjacencies:</b> Women’s toilet 112				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 4.7m x 4.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> Direct from Women’s Toilet 112				
<b>Number of Occupants:</b> 0				
<b>Other/Special Requirements:</b>				

Uniformat Section	Description	Qty	Size	Specific Requirements
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C102001	Standard Interior Doors	1	3' x 7'	Hollow Metal
C102007	Interior Door hardware	1		Push and pull plate, overhead closer, kick plate
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301004	Tile & Terrazzo Wall Finishes	AR	AR	Full Height Porcelain Wall Tile
C302007	Wall Base Finishes	AR	6" max	Porcelain Tile
C302001	Tile Floor Finishes	AR	AR	Porcelain Tile
C303002	Gypsum Wallboard Ceiling Finishes	AR	AR	GWB
C303006	Painting and Staining Ceilings	AR	AR	Paint
C103002	Toilet & Bath Accessories	2		Hand Dryer
C103002	Toilet & Bath Accessories	8		Soap Dispenser
C103002	Toilet & Bath Accessories	1		Waste Receptacle, recessed in wall
C103002	Toilet & Bath Accessories	1	12" x 30"	Convenience Shelf, Solid surface
C103002	Toilet & Bath Accessories	AR	AR	Grab Bar
C103004	Identifying Devices	1	AR	Room Identifying Device
E201003	Seating (Fixed)	AR	26 LF min.	Wood Change Bench
D502002	Lighting Equipment	AR	AR	Fixtures

### 139 – Janitor’s Room

Space Characteristics				
<b>Function/adjacencies:</b> Main corridor 106				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 1.5m x 1 .5m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Main Corridor 106				
<b>Number of Occupants: 0</b>				
<b>Other/Special Requirements:</b>				

Unifomat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to 4" min. above ceiling
C102007	Fire Doors	1	3' x 7'	
C102007	Interior Door hardware	1		Lockset, overhead closer
C302010	Hardeners and Sealers	AR	AR	Sealer
C302001	Tile Floor Finishes	AR	AR	Porcelain Tile
C302008	Wall Base Finishes	AR	6" max	Porcelain Tile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
C103002	Toilet & Bath Accessories	1	24" W	Mop Rack
D201004	Service Sink	1		
D201004	Sinks	1		Mop Sink
D502002	Lighting Equipment	AR	AR	Fixtures

## 140 – Men’s Toilet

Space Characteristics				
<b>Function/adjacencies:</b> Direct access to Men’s Change Room 141 and Main Corridor 106				
<b>Special Dimensions:</b>				
Ideal Plan Dimensions: 3.9m x 6.4m				
Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Main Corridor 106				
<b>Number of Occupants: 0</b>				
<b>Other/Special Requirements:</b>				

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C102001	Fire Doors	1	3' x 7'	Hollow Metal
C102007	Interior Door hardware	1		Push and pull plate, overhead closer, kick plate
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301004	Tile & Terrazzo Wall Finishes	AR	AR	Full Height Porcelain Wall Tile
C302007	Wall Base Finishes	AR	6" max	Porcelain Tile
C302001	Tile Floor Finishes	AR	AR	Porcelain Tile
C303002	Gypsum Wallboard Ceiling Finishes	AR	AR	GWB
C303006	Painting and Staining Ceilings	AR	AR	Paint
C103001	Compartments, Cubicles & Toilet Partitions			HDPE, Sized to be ADA Accessible
C103008	Counters	1	2' x 9' min.	ADA compliant, Solid surface, 4" h. back and side splash
C103002	Toilet & Bath Accessories	2		Hand Dryer
C103002	Toilet & Bath Accessories	2		Soap Dispenser
C103002	Toilet & Bath Accessories	1		Waste Receptacle, recessed in wall
C103002	Toilet & Bath Accessories	2		Paper Towel Dispenser
C103002	Toilet & Bath Accessories	2	24" x 36"	Mirror, ADA compliant
C103002	Toilet & Bath Accessories	2		Toilet Paper Dispenser, 2 roll
C103002	Toilet & Bath Accessories	1	12" x 30"	Convenience Shelf, Solid surface
C103002	Toilet & Bath Accessories	AR	AR	Grab Bar
C103002	Toilet & Bath Accessories	AR	AR	Toilet seat cover dispenser
C103004	Identifying Devices	1	AR	Room Identifying Device
D201001	Waterclosets	2		One (1) to be ADA Accessible
D201002	Urinals	2		One (1) to be ADA Accessible

### 140 – Men’s Toilet (cont)

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Direct access to Men’s Change Room 141 and Main Corridor 106				
<b>Special Dimensions:</b>				
Ideal Plan Dimensions: 3.9m x 6.4m				
Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Main Corridor 106				
<b>Number of Occupants: 0</b>				
<b>Other/Special Requirements:</b>				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
D201003	Lavatories	2		ADA Accessible
D502002	Lighting Equipment	AR	AR	Fixtures

## 141 – Men’s Change Room

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Men's toilet 140 <b>Special Dimensions:</b> Ideal Plan Dimensions: 4.7m x 4.8m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> Direct from Men's Toilet 140 <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b>				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C102001	Standard Interior Doors	1	3' x 7'	Hollow Metal
C102007	Interior Door hardware	1		Push and pull plate, overhead closer, kick plate
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301004	Tile & Terrazzo Wall Finishes	AR	AR	Full Height Porcelain Wall Tile
C302007	Wall Base Finishes	AR	6" max	Porcelain Tile
C302001	Tile Floor Finishes	AR	AR	Porcelain Tile
C303002	Gypsum Wallboard Ceiling Finishes	AR	AR	GWB
C303006	Painting and Staining Ceilings	AR	AR	Paint
C103002	Toilet & Bath Accessories	2		Hand Dryer
C103002	Toilet & Bath Accessories	8		Soap Dispenser
C103002	Toilet & Bath Accessories	1		Waste Receptacle, recessed in wall
C103002	Toilet & Bath Accessories	1	12" x 30"	Convenience Shelf, Solid surface
C103002	Toilet & Bath Accessories	AR	AR	Grab Bar
C103004	Identifying Devices	1	AR	Room Identifying Device
E201003	Seating (Fixed)	AR	26 LF min.	Wood Change Bench
D502002	Lighting Equipment	AR	AR	Fixtures

## 142 – (N1) Administrative Department Open Office

Space Characteristics				
<b>Function/adjacencies:</b> Open Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 9.6m x 14.8m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 106 <b>Number of Occupants:</b> 4 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (6)				
Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	2	AR	Room Identifying Device
C103004	Identifying Devices	19	AR	Workstation Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Fire Doors	2	3' x 7'	Solid with Vision Panel
C102007	Interior Door Hardware	2		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09. Overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E101008	Office Equipment	6	AR	Copier / printer / fax
C103008	Counters	18 LF min		Solid Surface Counter or Systems Furniture Work Surface with supports (office equipment location)
C103009	Cabinets	18 LF min		Wall and Base cabinets, Plastic laminate clad, Half Locking
C103010	Casework	1		<b>Reception Desk:</b> (Admin workstation) approx 60 sf. with closed storage, stone & solid surfacing tops suitable for receptionist. Wood veneer clad vertical surfaces compatible with wall treatments.
D502002	Lighting Equipment	AR	AR	Fixtures
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

**142 – (N1) Administrative Department Open Office (cont)**

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Open Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 9.6m x 14.8m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 106 <b>Number of Occupants:</b> 4 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (6)				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
D503001	Telecommunications System	6	AR	Telephone outlets
D503001	Telecommunications System	6	AR	NIPRNET outlets

### 143 – (N1) ACOS Admin / Personnel Office

Space Characteristics				
<b>Function/adjacencies:</b> Private Office space				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.6m x 3.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From N1 Open Office Space				
<b>Number of Occupants:</b> 1				
<b>Other/Special Requirements:</b> Plan for desktop computer				

Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

## 144 – (N1) Administrative Personnel Office

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Private Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.0m x 3.6m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From N1 Open Office Space <b>Number of Occupants:</b> 1 <b>Other/Special Requirements:</b> Plan for desktop computer				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

## 145 – (N1) Security Specialist Office

Space Characteristics				
<b>Function/adjacencies:</b> Private Office space				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.0m x 3.6m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From N1 Open Office Space				
<b>Number of Occupants:</b> 1				
<b>Other/Special Requirements:</b> Plan for desktop computer				

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

## 146 – (N1) Mail Dispensary Room

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Storage space <b>Special Dimensions:</b> Ideal Plan Dimensions: 2.7m x 3.0m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From N1 Open Office Space <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b>				
<b>Unifomat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302004	Resilient Floor Finishes	AR	AR	Linoleum Composition Tile, three color mix pattern
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
C103008	Counters	17 LF min		Solid Surface Counter or Systems Furniture Work Surface with supports (office equipment location)
C103009	Cabinets	17 LF min		Wall and Base cabinets, Plastic laminate clad, Half Locking
D502002	Lighting Equipment	AR	AR	Fixtures
E109090	Other Specialized Fixed and Moveable Equipment	20	AR	Labeled Locking Mail boxes with corridor access.

## 147 – (N1) Conference

Space Characteristics				
<b>Function/adjacencies:</b> Conference room <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> STC 47 <b>Access:</b> From N1 Open Office Space and Main Corridor <b>Number of Occupants:</b> 9 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment				
Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above. STC 60
C103004	Identifying Devices	2	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C102003	Standard Interior Doors	2	3' x 7'	Vision Panel
C102007	Interior Door Hardware	2		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09.
C103003	Marker boards & Tack Boards	1	4' x 8'	Dry Erase Marker Board Surface Treatment, One Cork Board
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" Wood or 6" Rubber base with Millwork Profile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E102009	Audio Visual Equipment	1		Credenza / Cabinet for AV equipment, with forced air ventilation
E102009	Audio Visual Equipment	2		Brackets & mounts for twin flat screen display unit, include wood blocking / backing
D502002	Dimmable and low level Lighting systems			Provide dimmable and low level lighting systems for the VTC rooms, types of systems to consider are sconces, cove, track or in-direct lighting

**147 – (N1) Conference (cont.)**

<p><b>Space Characteristics</b></p> <p><b>Function/adjacencies:</b> Conference room</p> <p><b>Special Dimensions:</b>                  Ideal Plan Dimensions: 3.8m x 4.8m                  Minimum Ceiling Height: 9 ft.</p> <p><b>Acoustics:</b> STC 47</p> <p><b>Access:</b> From N1 Open Office Space and Main Corridor</p> <p><b>Number of Occupants:</b> 9</p> <p><b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment</p>				
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Uniformat Section	Description	Qty	Size	Specific Requirements
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the audio visual (AV) system. Provide on the AV wall four (4) VTC cameras (center and two wings on front wall and one (1) rear wall); two (2) low voltage boxes for display cabling; two (2) power boxes for the large displays. All low voltage junction boxes shall have conduits linking to wallplates adjacent to the AV credenza. Location to be finalized during the design process. Audio visual credenza shall be fitted with forced air ventilation for equipment cooling. Provide next to interior door low voltage junction box and power box (low voltage) for one (1) digital signage display system for reservations and notifications. Location of displays to be finalized during the design process.
D502002	Lighting Equipment	AR	AR	Fixtures, Dimming controls
D503001	Telecommunications System	9	AR	Telephone outlets
D503001	Telecommunications System	9	AR	NIPRNET outlets
D503001	Telecommunications System	9	AR	SIPRNET outlets

## 148 – (N4) Logistics Department Open Office

Space Characteristics				
<b>Function/adjacencies:</b> N41 Logistics Department First Floor Open Office space / Main Corridor 106				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 2.4m x 5.1m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Main Corridor 106				
<b>Number of Occupants:</b> 2				
<b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (1)				
Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C103004	Identifying Devices	2	AR	Workstation Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102005	Interior Overhead Doors	1	4' x 4'	Fire rated coiling metal curtain counter door with concealed tubular motorized hoisting and integral frame and counter ,
C102003	Fire Doors	1	3' x 7'	Solid with Vision Panel
C102007	Interior Door Hardware	1		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09. Overhead closer
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E101008	Office Equipment	1	AR	Copier / printer / fax
C103008	Counters	3 LF min		Solid Surface Counter or Systems Furniture Work Surface with supports (office equipment location)
C103009	Cabinets	3 LF min		Wall and Base cabinets, Plastic laminate clad. Half Locking
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	2	AR	Telephone outlets
D503001	Telecommunications System	2	AR	NIPRNET outlets

## 149 – (N4) Supply Storage Area

Space Characteristics				
<b>Function/adjacencies:</b> N41 Logistics Department First floor storage area / N41 Open Office space				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 4.7m x 14.7m Minimum Ceiling Height: 16 ft. clear				
<b>Acoustics:</b>				
<b>Access:</b> From N41 Open Office Space 151and Exterior				
<b>Number of Occupants: 0</b>				
<b>Other/Special Requirements:</b>				
Uniformat Section	Description	Qty	Size	Specific Requirements
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above. STC 60
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C304002	Concrete Masonry Finishes	AR	AR	Full Height
B203099	Other Exterior Personnel Doors	2	3' x 7'	Double Hollow Metal Doors
B203008	Exterior Door hardware	1		Lockset, (2) overhead closer
C302010	Hardeners and Sealers	AR	AR	Sealer
C302008	Wall Base Finishes	AR	AR	6" Painted
C303006	Painting and Staining Ceilings	AR	AR	Paint Exposed
D502002	Lighting Equipment	AR	AR	Fixtures

## 150 – Telecommunications Room

Space Characteristics				
<b>Function/adjacencies:</b> Support Vertical Circulation / Elev. 1				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 2.1m x 3.0m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> Main Corridor 106				
<b>Number of Occupants:</b> 0				
<b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA Pub-5239-22/Oct 2003				

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated (one hour), from floor to underside of structure above, CMU
C102007	Fire Doors	1	3' x 7'	Hollow Metal
C102007	Interior Door hardware	1		Storeroom Lockset (F-07), Electric Strike (E09321), Combination lock CDX-09, overhead closer
C103004	Identifying Devices	1	AR	Room Identifying Device
C304002	Concrete Masonry Finishes	AR	AR	From floor to 4" min. above ceiling
C302004	Linoleum Composition Tile	AR	AR	Linoleum Composition Tile, two color mix pattern
C302008	Wall Base Finishes	AR	AR	4" Rubber
C302099	Other Flooring and Floor Finishes	AR	AR	Anti-Static Mat
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D409003	Fire Suppression	AR	AR	Provide clean agent fire suppression system.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	AR	AR	Cabinets
D503005	Security Systems	AR	AR	Motion Detector, Card Reader, Balanced Magnetic Switches

### 151 – (N8) Comptroller Department Open Office

Space Characteristics				
<b>Function/adjacencies:</b> Open Office space				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 4.8m x 8.0m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Main Corridor 106				
<b>Number of Occupants:</b> 4				
<b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (6)				

Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	AR	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C103004	Identifying Devices	6	AR	Workstation Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Fire Doors	1	3' x 7'	Solid with Vision Panel
C102007	Interior Door Hardware	1		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09. Overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
E201002	Window Treatments			2" horizontal blinds with Black-out and decorative window treatments, (part of SID) or in lieu of horizontal blinds/draperies provide Manually or Electrically operated double-roller sunscreen and room-darkening shades with black-out capabilities.
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E101008	Office Equipment	1	AR	Copier / printer / fax
C103008	Counters	3 LF min		Solid Surface Counter or Systems Furniture Work Surface with supports (office equipment location)
C103009	Cabinets	3 LF min		Wall and Base cabinets, Plastic laminate clad, Half Locking
D502002	Lighting Equipment	AR	AR	Fixtures

**151 – (N8) Comptroller Department Open Office (cont)**

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Open Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 4.8m x 8.0m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 106 <b>Number of Occupants:</b> 4 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (6)				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
D503001	Telecommunications System	4	AR	Telephone outlets
D503001	Telecommunications System	4	AR	NIPRNET outlets
D505005	Security Systems	AR	AR	Intrusion Detection System (IDS)

## 152 – (N8) ACOS Resource & Requirements Officer Office

Space Characteristics				
<b>Function/adjacencies:</b> Private Office space				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.6m x 3.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From N8 Open Office Space				
<b>Number of Occupants:</b> 1				
<b>Other/Special Requirements:</b> Plan for desktop computer				

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets

### 153 – (N8) Management Analyst Office

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Private Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.6m x 3.8m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From N8 Open Office Space <b>Number of Occupants:</b> 1 <b>Other/Special Requirements:</b> Plan for desktop computer				

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets

### 154 – (N8) Deputy Financial Resource Officer Office

Space Characteristics				
<b>Function/adjacencies:</b> Private Office space				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.6m x 3.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From N8 Open Office Space				
<b>Number of Occupants:</b> 1				
<b>Other/Special Requirements:</b> Plan for desktop computer				

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets

### 155 – (N8) Central Files / Accounting Files Storage

Space Characteristics				
<b>Function/adjacencies:</b> Main Corridor 106; <b>Special Dimensions:</b> Ideal Plan Dimensions: 9.5m x 9.7m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From N8 Open Office Space <b>Number of Occupants: 0</b>  <b>Other/Special Requirements:</b>				
Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	Extend from floor to 4" min. above ceiling
C102001	Standard Interior Doors	1	3' x 7'	
C102007	Interior Door hardware	1		Lockset, overhead closer
C302004	Resilient Floor Finishes	AR	AR	Linoleum Composition Tile, three color mix pattern
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

## 156 – AV Room

Space Characteristics				
<b>Function/adjacencies:</b> Main Corridor 106; Command Operations Center <b>Special Dimensions:</b> Ideal Plan Dimensions: 9.5m x 9.7m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 106 <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b>				
Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structural slab above. STC 60
C101005	Interior Window	1	8' x 4'	Tinted Glass
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Fire Doors	1	3' x 7'	Solid
C102007	Interior Door hardware	1		Lockset, overhead closer
C302004	Resilient Floor Finishes	AR	AR	Linoleum Composition Tile, three color mix pattern
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the Command Operations Center audio visual (AV) system. Location of displays to be finalized during the design process. The contractor shall provide an infrastructure system consisting of empty conduits with pull wires. Low voltage junction boxes and power, to support the Audio Visual (AV) system. Provide next to the entrance door low voltage junction box and power box (low voltage for one (1) digital signage display system for reservation and notifications. Location of display to be finalized during the design process. Audio visual system shall be fitted with forced air ventilation for equipment cooling.

## 157 – (N00) Command Center

Space Characteristics				
<b>Function/adjacencies:</b> Flag level Conference room <b>Special Dimensions:</b> Ideal Plan Dimensions: 6.1m x 12.9m Minimum Ceiling Height: 16 ft. <b>Acoustics:</b> STC 47 <b>Access:</b> From N00 Open Office Space and Main Corridor <b>Number of Occupants:</b> 60 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment, depressed slab in this area with raised flooring.				
Uniformat Section	Description	Qty	Size	Specific Requirements
A201001	Excavation for Basements	AR	AR	
A202001	Basement Wall Construction	AR	AR	
A202002	Moisture Protection	AR	AR	
B101007	Floor Raceway Systems	AR	AR	Electrical wiring support
B101090	Other Floor Construction	AR	AR	Raised Access Panel Flooring System (2' high min.)
B201001	Exterior Closure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above. STC 60
C103004	Identifying Devices	2	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail and Wood Wainscot
C102003	Standard Interior Doors	2	3' x 7'	Vision Panel
C102007	Interior Door Hardware	2		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09.
C102091	Other interior Personnel Doors	2	5' x 7'	Wood trimmed casement opening
B203099	Other Exterior Personnel Doors	2	3' x 7'	Double Hollow Metal Doors
B203008	Exterior Door hardware	2		Lockset, (2) overhead closer
B203008	Exterior Door hardware	2		<b>Electronic Entry Control System:</b> Electronic Card Reader, Electronic Strike, push to exit device, electronic access switch connection to quarter deck, balanced magnetic door sensor
C103099	Other Interior Specialties			Brackets and mounts for twin flat panel display units, include wood blocking / backing
C302005	Carpeting	AR	AR	Level 2
C302008	Wall Base Finishes	AR	AR	4" Wood or 6" Rubber base with Millwork Profile

**157 – (N00) Command Center (cont.)**

**Space Characteristics**  
**Function/adjacencies:** Flag level Conference room  
**Special Dimensions:**  
 Ideal Plan Dimensions: 6.1m x 12.9m  
 Minimum Ceiling Height: 16 ft.  
**Acoustics:** STC 47  
**Access:** From N00 Open Office Space and Main Corridor  
**Number of Occupants:** 60  
**Other/Special Requirements:** Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment

Uniformat Section	Description	Qty	Size	Specific Requirements
C101003	Retractable Partitions	AR		STC 51 rated; include track and anchoring system, with medium-grade level of manufacturer's finish options.
D502002	Dimmable and low level Lighting systems			Provide dimmable and low level lighting systems for the VTC rooms, types of systems to consider are sconces, cove, track or in-direct lighting
D503005	Security Systems	AR	AR	Provide duress alarm system linked back to the Quarter Deck
D503005	Number of system control panels			Provide duress alarm system push button in room. Location to be finalized with furniture, during design process.
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the audio visual (AV) system. Provide on the AV wall Four (4) low voltage junction boxes and power boxes for up to Four (4) VTC cameras (center and two (2) wing on front wall and one (1) rear wall); two (2) low voltage boxes for display cabling; two low voltage boxes for the large displays. All low voltage junction boxes shall have conduits linking to wallplates adjacent to the AV credenza. Location of displays to be finalized during the design process. The contractor shall provide an infrastructure system consisting of empty conduits with pull wires. Low voltage junction boxes and power, to support the Audio Visual (AV) system. Provide next to the entrance door low voltage junction box and power box (low voltage for one (1) digital signage display system for reservation and notifications. Location of display to finalized during the design process. Audio visual system shall be fitted with forced air ventilation for equipment cooling.
E102009	Audio Visual Equipment	4		VTC cameras, center front, back, each side
E102009	Audio Visual Equipment	1		Credenza / Cabinet for AV equipment, with forced air ventilation
E102009	Audio Visual Equipment	2		Brackets & mounts for twin flat screen display unit, include wood blocking / backing
D502002	Lighting Equipment	AR	AR	Fixtures, Dimming controls
D503001	Telecommunications System	40	AR	Telephone outlets
D503001	Telecommunications System	40	AR	NIPRNET outlets
D503001	Telecommunications System	40	AR	SIPRNET outlets

## 158 – Storage

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Command Operations Center AV equipment, stackable chairs and table storage.				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 1.8m x 7.6m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Command Center				
<b>Number of Occupants:</b> 0				
<b>Other/Special Requirements:</b>				
<b>Unifomat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	Extend from floor to 4" min. above ceiling
C103004	Identifying Devices	2	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	Extend from floor to 4" min. above ceiling
C102001	Standard Interior Doors	2	3' x 7'	
C102007	Interior Door hardware	2		Lockset, overhead closer
C302004	Resilient Floor Finishes	AR	AR	Linoleum Composition Tile, two color mix pattern
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures

## 159 – Elevator Equipment Room

Space Characteristics				
<b>Function/adjacencies:</b> Support Vertical Circulation / Elev. 1 <b>Special Dimensions:</b> Ideal Plan Dimensions: 2.4m x 3.0m Minimum Ceiling Height: 13 ft. <b>Acoustics:</b> <b>Access:</b> Vestibule 101 or Main Corridor 106 <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b>				
Uniformat Section	Description	Qty	Size	Specific Requirements
B201001	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Fire Rated, from floor to underside of structure above, CMU Walls
C102003	Fire Doors	1	3' x 7'	Hollow Metal
C102007	Interior Door hardware	1		Lockset, overhead closer
C103004	Identifying Devices	1	AR	Room Identifying Device
C304002	Concrete Masonry Finishes	AR	AR	Full Height Paint
C302010	Hardeners and Sealers	AR	AR	Sealer
C303006	Painting and Staining Ceilings	AR	AR	Paint Exposed
D209003	Oil/Water Separator	1		
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

## 160 – Electrical Room

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Northwest corner of building / site				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.6m x 3.8m Minimum Ceiling Height: 13 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From exterior of building				
<b>Number of Occupants: 0</b>				
<b>Other/Special Requirements:</b>				
<b>Unifomat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
B201001	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above, CMU
C103004	Identifying Devices	1	AR	Room Identifying Device, exterior
C304002	Concrete Masonry Finishes	AR	AR	Full Height Paint
B203099	Other Exterior Personnel Doors	2	3' x 7'	Double Hollow Metal Doors
B203008	Exterior Door hardware	1		Lockset, (2) overhead closer
C302010	Hardeners and Sealers	AR	AR	Sealer
C302099	Other Flooring and Floor Finishes	AR	AR	Anti-Static Mat
C303006	Painting and Staining Ceilings	AR	AR	Paint Exposed
C302090	Anti-Static Mat	1		
C302008	Wall Base Finishes	AR	AR	6" Painted
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

## 203 – Janitors Room

### Space Characteristics

**Function/adjacencies:** Service / Telecommunications room 209; Electrical Room 211

**Special Dimensions:**

Ideal Plan Dimensions: 1.5m x 1 .5m  
 Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From Main Corridor 206

**Number of Occupants: 0**

**Other/Special Requirements:**

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to 4" min. above ceiling
C102007	Fire Doors	1	3' x 7'	
C102007	Interior Door hardware	1		Lockset, overhead closer
C302010	Hardeners and Sealers	AR	AR	Sealer
C302001	Tile Floor Finishes	AR	AR	Porcelain Tile
C302008	Wall Base Finishes	AR	6" max	Porcelain Tile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
C103002	Toilet & Bath Accessories	1	24" W	Mop Rack
D201004	Service Sink	1		
D201004	Sinks	1		Mop Sink
D502002	Lighting Equipment	AR	AR	Fixtures

## 204 – Stair 1

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Vertical Circulation <b>Special Dimensions:</b> Ideal Plan Dimensions: 2.5m x 6.0m Minimum Ceiling Height: 13 ft. <b>Acoustics:</b> <b>Access:</b> Controlled access to Main Corridor 206 <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b>				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	CMU. Extend to the underside of structural slab above
C102001	Standard Interior Door	1	3' x 7'	Fire Rated, Vision Panel
C102007	Interior Door hardware	1	AR	Panic Hardware, Electronic Card Reader, Electronic Strike, balanced magnetic door sensor
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	Full Height Paint
C103004	Identifying Devices	1	AR	Room Signage: Indicate the room name for the space being entered. Locate at each door to an interior space
C302004	Rubber tile / TR	AR	AR	4" rubber
C201002	Fire Escape Stairs	2 Flights	AR	Double run Multi-landing
C201090	Stair Handrails, Guardrails & Accessories	2 Flights	AR	Painted 2" diameter pipe
D509002	Emergency Lighting and Power	AR	AR	Fixtures
D503008	Security Systems	1		Surveillance Camera
D502002	Lighting Equipment	AR		Fixtures
D503005	Security Systems	AR		Camera

## 205 – Stair 2

Space Characteristics				
<b>Function/adjacencies:</b> Vertical Circulation <b>Special Dimensions:</b> Ideal Plan Dimensions: 2.5m x 6.0m Minimum Ceiling Height: 13 ft. <b>Acoustics:</b> <b>Access:</b> Controlled access to Main Corridor 206 <b>Number of Occupants: 0</b> <b>Other/Special Requirements:</b>				
Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	CMU. Extend to the underside of structural slab above.
C102001	Standard Interior Door	1	3' x 7'	Fire Rated, Vision Panel
C102007	Interior Door hardware	1	AR	Panic Hardware, Electronic Card Reader, Electronic Strike, balanced magnetic door sensor
C301003	Gypsum Wallboard Finishes	AR	AR	Painted Gypsum Wallboard
C301005	Painting to Walls	AR	AR	Full Height Paint
C103004	Identifying Devices	1	AR	Room Signage: Indicate the room name for the space being entered. Locate at each door to an interior space
C302004	Rubber tile / TR	AR	AR	4" rubber
C201002	Fire Escape Stairs	2 Flights	AR	Double run Multi-landing
C201090	Stair Handrails, Guardrails & Accessories	2 Flights	AR	Painted 2" diameter pipe
D509002	Emergency Lighting and Power	AR	AR	Fixtures
D503008	Security Systems	1		Surveillance Camera
D502002	Lighting Equipment	AR	AR	Fixtures
D503005	Security Systems	AR	AR	Camera

## 206 – Main Corridor

Space Characteristics				
<b>Function/adjacencies:</b> Core Circulation				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 1.8m x 61.5m, 6'-0" width minimum Minimum Ceiling Height: 10 ft.				
<b>Acoustics:</b>				
<b>Access:</b> main corridor				
<b>Number of Occupants:</b> 0				
<b>Other/Special Requirements:</b>				

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C103007	Fire Extinguisher Cabinets	3	AR	Mounted 5'-0" max. above floor
D201006	Drinking Fountains & Coolers	2	AR	Recessed Handicap Accessible
C302002	Terrazzo Floor Finishes	AR	AR	Terrazzo or Stone wall base
C301005	Wall Coverings	AR	AR	From floor to 4" min. above ceiling
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP / Painted GWB
D503008	Security Systems	3		Surveillance Camera
D509002	Emergency Lighting and Power	AR	AR	Fixtures
E101003	Vending Equipment	3	AR	
E201099	Other Fixed Interior Furnishings	2	12 LF	Built-in Display Cabinetry (Located at Commander Center Entrance)
D502002	Lighting Equipment	AR	AR	Fixtures
D503005	Security Systems	AR	AR	Camera

## 207 – (1NCD) Conference Room

Space Characteristics				
<b>Function/adjacencies:</b> Command Conference room / Conference 208				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b> STC 47				
<b>Access:</b> From N7 Open Office Space and Main Corridor 206				
<b>Number of Occupants:</b> 15				
<b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment				
Unifomat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above. STC 60
C101003	Retractable Partitions	AR		STC 51 rated; include track and anchoring system
C103004	Identifying Devices	4	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C102003	Standard Interior Doors	4	3' x 7'	Vision Panel
C102007	Interior Door Hardware	4		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09.
C103003	Marker boards & Tack Boards	1	4' x 8'	Dry Erase Marker Board Surface Treatment
C103099	Other Interior Specialties			Brackets and mounts for twin flat panel display units, include wood blocking / backing
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" Wood or 6" Rubber base with Millwork Profile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Dimmable and low level Lighting systems			Provide dimmable and low level lighting systems for the VTC rooms, types of systems to consider are sconces, cove, track or in-direct lighting
D503005	Security Systems	AR	AR	Provide duress alarm system linked back to the Quarter Deck
D503005	Number of system control panels			Provide duress alarm system push button in room. Location to be finalized with furniture, during design process.

## 207 – (1NCD) Conference Room (cont.)

Space Characteristics				
<b>Function/adjacencies:</b> Command Conference room / Conference 208				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b> STC 47				
<b>Access:</b> From N7 Open Office Space and Main Corridor 206				
<b>Number of Occupants:</b> 15				
<b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment				

Uniformat Section	Description	Qty	Size	Specific Requirements
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the audio visual (AV) system. Provide on the AV wall four (4) VTC cameras (center and two wings on front wall and one (1) rear wall); two (2) low voltage boxes for display cabling; two (2) power boxes for the large displays. All low voltage junction boxes shall have conduits linking to wallplates adjacent to the AV credenza. Location to be finalized during the design process. Audio visual credenza shall be fitted with forced air ventilation for equipment cooling. Provide next to interior door low voltage junction box and power box (low voltage) for one (1) digital signage display system for reservations and notifications. Location of displays to be finalized during the design process.
E102009	Audio Visual Equipment	1		Credenza / Cabinet for AV equipment, with forced air ventilation
E102009	Audio Visual Equipment	2		Brackets & mounts for twin flat screen display unit, include wood blocking / backing
D502002	Lighting Equipment	AR	AR	Fixtures, Dimming controls
D503001	Telecommunications System	12	AR	Telephone outlets
D503001	Telecommunications System	12	AR	NIPRNET outlets
D503001	Telecommunications System	12	AR	SIPRNET outlets

## 208 – (N3) Conference Room

Space Characteristics				
<b>Function/adjacencies:</b> Command Conference room / Conference Room 207 <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> STC 47 <b>Access:</b> From N6 Open Office Space and Main Corridor 206 <b>Number of Occupants:</b> 30 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment				
Unifomat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above. STC 60
C101003	Retractable Partitions	AR		STC rated; include track and anchoring system
C103004	Identifying Devices	4	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C102003	Standard Interior Doors	4	3' x 7'	Vision Panel
C102007	Interior Door Hardware	4		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09.
C103003	Marker boards & Tack Boards	1	4' x 8'	Dry Erase Marker Board Surface Treatment
C103099	Other Interior Specialties			Brackets and mounts for twin flat panel display units, include wood blocking / backing
C302005	Carpeting	AR	AR	Level 2
C302008	Wall Base Finishes	AR	AR	4" Wood or 6" Rubber base with Millwork Profile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP with fine-line grid system
D502002	Dimmable and low level Lighting systems			Provide dimmable and low level lighting systems for the VTC rooms, types of systems to consider are sconces, cove, track or in-direct lighting
D503005	Security Systems	AR	AR	Provide duress alarm system linked back to the Quarter Deck
D503005	Number of system control panels			Provide duress alarm system push button in room. Location to be finalized with furniture, during design process.

## 208 – (N3) Conference Room (cont.)

Space Characteristics				
<b>Function/adjacencies:</b> Command Conference room / Conference Room 207 <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> STC 47 <b>Access:</b> From N6 Open Office Space and Main Corridor 206 <b>Number of Occupants:</b> 30 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment				
Unifomat Section	Description	Qty	Size	Specific Requirements
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the audio visual (AV) system. Provide on the AV wall four (4) VTC cameras (center and two wings on front wall and one (1) rear wall); two (2) low voltage boxes for display cabling; two (2) power boxes for the large displays. All low voltage junction boxes shall have conduits linking to wallplates adjacent to the AV credenza. Location to be finalized during the design process. Audio visual credenza shall be fitted with forced air ventilation for equipment cooling. Provide next to interior door low voltage junction box and power box (low voltage) for one (1) digital signage display system for reservations and notifications. Location of displays to be finalized during the design process.
E102009	Audio Visual Equipment	1		Credenza / Cabinet for AV equipment, with forced air ventilation
E102009	Audio Visual Equipment	2		Brackets & mounts for twin flat screen display unit, include wood blocking / backing
D502002	Lighting Equipment	AR	AR	Fixtures, Dimming Controls
D503001	Telecommunications System	4	AR	Telephone outlets
D503001	Telecommunications System	4	AR	NIPRNET outlets

## 209 – (N6) SIPR Cafe

### Space Characteristics

**Function/adjacencies:** Communications room / Information Technology Department N6

**Special Dimensions:**

Ideal Plan Dimensions: 3.8m x 4.8m

Minimum Ceiling Height: 9 ft.

**Acoustics:** STC 47

**Access:** From N7 Open Office Space

**Number of Occupants:** 3

**Other/Special Requirements:** Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures, Dimming controls
D503001	Telecommunications System	3	AR	Telephone outlets
D503001	Telecommunications System	3	AR	NIPRNET outlets
D503001	Telecommunications System	3	AR	SIPRNET outlets

## 210 – (N3) Operations Department Open Office

Space Characteristics				
<b>Function/adjacencies:</b> Open Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 4.8m x 7.0m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 206 <b>Number of Occupants: 10</b> <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (10)				
Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	4	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C103004	Identifying Devices	10	AR	Workstation Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Fire Doors	1	3' x 7'	Solid with Vision Panel
C102007	Interior Door Hardware	1		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09. Overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
E201002	Window Treatments			2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E101008	Office Equipment	3	AR	Copier / printer / fax
C103008	Counters	8 LF min		Solid Surface Counter or Systems Furniture Work Surface with supports (office equipment location)
C103009	Cabinets	8 LF min		Wall and Base cabinets, Plastic laminate clad, Half Locking
D509002	Emergency Lighting and Power	AR	AR	Fixtures
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	3	AR	Telephone outlets
D503001	Telecommunications System	3	AR	NIPRNET outlets

## 211 – (N3) Deputy ACOS OPS Office

### Space Characteristics

**Function/adjacencies:** Private Office space

**Special Dimensions:**

Ideal Plan Dimensions: 3.0m x 3.6m  
 Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From N2 Open Office Space

**Number of Occupants:** 1

**Other/Special Requirements:** Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	1	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments	AR	AR	2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

## 212 – (N3) ACOS OPS Office

### Space Characteristics

**Function/adjacencies:** Private Office space  
**Special Dimensions:**  
 Ideal Plan Dimensions: 3.0m x 3.6m  
 Minimum Ceiling Height: 9 ft.  
**Acoustics:**  
**Access:** From N2 Open Office Space  
**Number of Occupants:** 1  
**Other/Special Requirements:** Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	1	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments	AR	AR	2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

## 213 – (N3) Draft/Library Room

Space Characteristics				
<b>Function/adjacencies:</b> Command Conference room <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> STC 47 <b>Access:</b> From N3 Open Office Space <b>Number of Occupants:</b> 9 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment				
Unifomat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C101003	Retractable Partitions	AR		STC rated; include track and anchoring system
C103004	Identifying Devices	4	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C102003	Standard Interior Doors	4	3' x 7'	Vision Panel
C102007	Interior Door Hardware	4		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09.
C103003	Marker boards & Tack Boards	1	4' x 8'	Dry Erase Marker Board
C103099	Other Interior Specialties			Brackets and mounts for twin flat panel display units, include wood blocking / backing
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" Wood or 6" Rubber base with Millwork Profile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Dimmable and low level Lighting systems			Provide dimmable and low level lighting systems for the VTC rooms, types of systems to consider are sconces, cove, track or in-direct lighting
D503005	Security Systems	AR	AR	Provide duress alarm system linked back to the Quarter Deck
D503005	Number of system control panels			Provide duress alarm system push button in room. Location to be finalized with furniture, during design process.

### 213 – (N3) Draft/Library Room (cont.)

<p><b>Space Characteristics</b></p> <p><b>Function/adjacencies:</b> Command Conference room</p> <p><b>Special Dimensions:</b>                  Ideal Plan Dimensions: 3.8m x 4.8m                  Minimum Ceiling Height: 9 ft.</p> <p><b>Acoustics:</b> STC 47</p> <p><b>Access:</b> From N3 Open Office Space</p> <p><b>Number of Occupants:</b> 9</p> <p><b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment</p>
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Unifomat Section	Description	Qty	Size	Specific Requirements
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the audio visual (AV) system. Provide on the AV wall four (4) VTC cameras (center and two wings on front wall and one (1) rear wall); two (2) low voltage boxes for display cabling; two (2) power boxes for the large displays. All low voltage junction boxes shall have conduits linking to wallplates adjacent to the AV credenza. Location to be finalized during the design process. Audio visual credenza shall be fitted with forced air ventilation for equipment cooling. Provide next to interior door low voltage junction box and power box (low voltage) for one (1) digital signage display system for reservations and notifications. Location of displays to be finalized during the design process.
E102009	Audio Visual Equipment	1		Credenza / Cabinet for AV equipment, with forced air ventilation
E102009	Audio Visual Equipment	2		Brackets & mounts for twin flat screen display unit, include wood blocking / backing
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	9	AR	Telephone outlets
D503001	Telecommunications System	9	AR	NIPRNET outlets

## 214 – (N6) Information Technology Department Open Office

Space Characteristics				
<b>Function/adjacencies:</b> Open Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 4.8m x 7.0m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 206 <b>Number of Occupants:</b> 11 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (11)				
Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	4	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C103004	Identifying Devices	11	AR	Workstation Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Fire Doors	1	3' x 7'	Solid with Vision Panel
C102007	Interior Door Hardware	1		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09. Overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
E201002	Window Treatments			2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E101008	Office Equipment	1	AR	Copier / printer / fax
C103008	Counters	4 LF min		Solid Surface Counter or Systems Furniture Work Surface with supports (office equipment location)
C103009	Cabinets	4 LF min		Wall and Base cabinets, Plastic laminate clad, Half Locking
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	12	AR	Telephone outlets
D503001	Telecommunications System	12	AR	NIPRNET outlets

## 215 – (N6) Storage

### Space Characteristics

**Function/adjacencies:** Main Corridor 206;

**Special Dimensions:**

Ideal Plan Dimensions: 9.5m x 9.7m  
 Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From N6 Open Office Space

**Number of Occupants: 0**

**Other/Special Requirements:**

Unifomat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	Extend from floor to 4" min. above ceiling
C102001	Standard Interior Doors	1	3' x 7'	
C102007	Interior Door hardware	1		Lockset, overhead closer
C302004	Resilient Floor Finishes	AR	AR	Linoleum Composition Tile, two color mix pattern
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

## 216 – (N6) Staff OPS & Pln. / Dvg. General Office

### Space Characteristics

**Function/adjacencies:** Private Office space  
**Special Dimensions:**  
 Ideal Plan Dimensions: 3.0m x 3.6m  
 Minimum Ceiling Height: 9 ft.  
**Acoustics:**  
**Access:** From N2 Open Office Space  
**Number of Occupants:** 1  
**Other/Special Requirements:** Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	1	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments	AR	AR	2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

## 217 – (N6) Deputy ACOS Information Tech Office

### Space Characteristics

**Function/adjacencies:** Private Office space

**Special Dimensions:**

Ideal Plan Dimensions: 3.0m x 3.6m

Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From N2 Open Office Space

**Number of Occupants:** 1

**Other/Special Requirements:** Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	1	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments	AR	AR	2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated double-roller sunscreen.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

## 218 – (N5) Plans and Policy Open Office

Space Characteristics				
<b>Function/adjacencies:</b> Open Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 4.8m x 7.0m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 206 <b>Number of Occupants:</b> 7 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (7)				
Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	4	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C103004	Identifying Devices	7	AR	Workstation Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Fire Doors	1	3' x 7'	Solid with Vision Panel
C102007	Interior Door Hardware	1		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09. Overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
E201002	Window Treatments			2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E101008	Office Equipment	1	AR	Copier / printer / fax
C103008	Counters	4 LF min		Solid Surface Counter or Systems Furniture Work Surface with supports (office equipment location)
C103009	Cabinets	4 LF min		Wall and Base cabinets, Plastic laminate clad, Half Locking
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	7	AR	Telephone outlets
D503001	Telecommunications System	7	AR	NIPRNET outlets

## 219 – (N5) ACOS Plans Staff OPS Office

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Private Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.0m x 3.6m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From N2 Open Office Space <b>Number of Occupants:</b> 1 <b>Other/Special Requirements:</b> Plan for desktop computer				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments	AR	AR	2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

## 220 – Electrical Room

### Space Characteristics

**Function/adjacencies:** Service / Janitor Room 210; Telecommunications Room 209

**Special Dimensions:**

Ideal Plan Dimensions: 3.6m x 3.8m  
 Minimum Ceiling Height: 13 ft.

**Acoustics:**

**Access:** From Main Corridor 106

**Number of Occupants: 0**

**Other/Special Requirements:**

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above.
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C304002	Concrete Masonry Finishes	AR	AR	Full Height
C102007	Fire Doors	1	3' x 7'	Hollow Metal
C102007	Interior Door hardware	1		Lockset, overhead closer
C302010	Hardeners and Sealers	AR	AR	Sealer
C302099	Other Flooring and Floor Finishes	AR	AR	Anti-Static Mat
C303006	Painting and Staining Ceilings	AR	AR	Paint Exposed
C302090	Anti-Static Mat	1		
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

## 221 – Telecommunications Room

Space Characteristics				
<b>Function/adjacencies:</b> Support Vertical Circulation / Elev. 1				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 2.1m x 3.0m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> Main Corridor 206				
<b>Number of Occupants:</b> 0				
<b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA Pub-5239-22/Oct 2003				

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated (one hour), from floor to underside of structure above.
C102007	Fire Doors	1	3' x 7'	Hollow Metal
C102007	Interior Door hardware	1		Storeroom Lockset (F-07), Electric Strike (E09321), Combination lock CDX-09, overhead closer
C103004	Identifying Devices	1	AR	Room Identifying Device
C304002	Concrete Masonry Finishes	AR	AR	From floor to 4" min. above ceiling
C302004	Resilient Floor Finishes	AR	AR	Linoleum Composition Tile, three color mix pattern
C302008	Wall Base Finishes	AR	AR	4" rubber
C302099	Other Flooring and Floor Finishes	AR	AR	Anti-Static Mat
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D409003	Fire Suppression	AR	AR	Provide clean agent fire suppression system.
D503001	Telecommunications Systems	AR	AR	Provide Racks as Detailed in the Part 6 Attachments
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	AR	AR	Cabinets
D503005	Security Systems	AR	AR	Motion Detector, Card Reader, Balanced Magnetic Switches

## 222 – Elevator 1

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Vertical circulation				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 2.4m x 3.0m Minimum Ceiling Height: 8 ft.				
<b>Acoustics:</b>				
<b>Access:</b> Main Corridor 206				
<b>Number of Occupants:</b> 0				
<b>Other/Special Requirements:</b> Accommodate Emergency Gurney.				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	Fire Rated Shaft from floor to underside of structure above.
C103004	Identifying Devices	1	AR	Room Identifying Device
C302099	Other Flooring and Floor Finishes	AR	AR	LN or STV
C302008	Wall Base Finishes	AR	AR	Manufacturer's Standard
C301099	Other Wall Finishes	AR	AR	Plastic Laminate, Manufacturer's Standard
C303099	Other Ceilings and Ceiling Finishes	AR	AR	Manufacturer's Standard
C102098	Other interior Specialty Doors	AR	AR	Manufacturer's Standard
C102007	Interior Door Hardware	AR	AR	<b>Electronic Entry Control System:</b> Electronic Card Reader
D101002	Passenger Elevators	1	2 stops	
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

## 223 – (N4) Logistics Department Open Office

Space Characteristics				
<b>Function/adjacencies:</b> Open Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 4.8m x 7.0m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From Main Corridor 206 <b>Number of Occupants:</b> 15 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (15)				
Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	4	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C103004	Identifying Devices	5	AR	Workstation Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Fire Doors	1	3' x 7'	Solid with Vision Panel
C102007	Interior Door Hardware	2		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09. Overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
E201002	Window Treatments			2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E101008	Office Equipment	1	AR	Copier / printer / fax
C103008	Counters	4 LF min		Solid Surface Counter or Systems Furniture Work Surface with supports (office equipment location)
C103009	Cabinets	4 LF min		Wall and Base cabinets, Plastic laminate clad, Half Locking
D509002	Emergency Lighting and Power	AR	AR	Fixtures
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	15	AR	Telephone outlets
D503001	Telecommunications System	15	AR	NIPRNET outlets
D503001	Telecommunications System	15	AR	SIPRNET outlets

## 224 – (N41) SUPPO Office

### Space Characteristics

**Function/adjacencies:** Private Office space

**Special Dimensions:**

Ideal Plan Dimensions: 3.0m x 3.6m

Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From N2 Open Office Space

**Number of Occupants:** 1

**Other/Special Requirements:** Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments	AR	AR	2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

## 225 – (N41) ACOS Logistic Office

### Space Characteristics

**Function/adjacencies:** Private Office space

**Special Dimensions:**

Ideal Plan Dimensions: 3.0m x 3.6m

Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From N2 Open Office Space

**Number of Occupants:** 1

**Other/Special Requirements:** Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments	AR	AR	2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

## 226 – (N43) Equipment Program Supply Office

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Private Office space <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.0m x 3.6m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> <b>Access:</b> From N2 Open Office Space <b>Number of Occupants:</b> 1 <b>Other/Special Requirements:</b> Plan for desktop computer				
<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

## 227 – (N43) Supervisor Logistic Management Specialist Office

### Space Characteristics

**Function/adjacencies:** Private Office space

**Special Dimensions:**

Ideal Plan Dimensions: 3.0m x 3.6m  
 Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From N2 Open Office Space

**Number of Occupants:** 1

**Other/Special Requirements:** Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

## 228 – Women’s Toilet

Space Characteristics				
<b>Function/adjacencies:</b> Main Corridor 206 / Break Room 215, Men's Toilet 216				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.9m x 6.4m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Main Corridor 206				
<b>Number of Occupants: 0</b>				
<b>Other/Special Requirements:</b>				

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C102003	Fire Doors	1	3' x 7'	Hollow Metal
C102007	Interior Door hardware	1		Push and pull plate, overhead closer, kick plate
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301004	Tile & Terrazzo Wall Finishes	AR	AR	Full Height Porcelain Wall Tile
C302007	Wall Base Finishes	AR	6" max	Porcelain Tile
C302001	Tile Floor Finishes	AR	AR	Porcelain Tile
C303002	Gypsum Wallboard Ceiling Finishes	AR	AR	GWB
C303006	Painting and Staining Ceilings	AR	AR	Paint
C103001	Compartments, Cubicles & Toilet Partitions			HDPE, Sized to be ADA Accessible
C103008	Counters	1	2' x 9' min.	ADA compliant, Solid surface, 4" hgt. back and side splash
C103002	Toilet & Bath Accessories	2		Hand Dryer
C103002	Toilet & Bath Accessories	2		Soap Dispenser
C103002	Toilet & Bath Accessories	1		Waste Receptacle, recessed in wall
C103002	Toilet & Bath Accessories	2		Paper Towel Dispenser
C103002	Toilet & Bath Accessories	2	24" x 36"	Mirror, ADA compliant
C103002	Toilet & Bath Accessories	2		Toilet Paper Dispenser, 2 roll
C103002	Toilet & Bath Accessories	1	12" x 30"	Convenience Shelf, Solid surface
C103002	Toilet & Bath Accessories	AR	AR	Grab Bar
C103002	Toilet & Bath Accessories	AR	AR	Toilet seat cover dispenser
C103004	Identifying Devices	1	AR	Room Identifying Device
D201001	Waterclosets	4		One (1) to be ADA Accessible
D201003	Lavatories	2		ADA Accessible
D502002	Lighting Equipment	AR	AR	Fixtures

## 229 – Men’s Toilet

### Space Characteristics

**Function/adjacencies:** Service

**Special Dimensions:**

Ideal Plan Dimensions: 3.9m x 6.4m

Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From Main Corridor 106

**Number of Occupants:** 0

**Other/Special Requirements:**

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C102001	Fire Doors	1	3' x 7'	Hollow Metal
C102007	Interior Door hardware	1		Push and pull plate, overhead closer, kick plate
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301004	Tile & Terrazzo Wall Finishes	AR	AR	Full Height Porcelain Wall Tile
C302007	Wall Base Finishes	AR	6" max	Porcelain Tile
C302001	Tile Floor Finishes	AR	AR	Porcelain Tile
C303002	Gypsum Wallboard Ceiling Finishes	AR	AR	GWB
C303006	Painting and Staining Ceilings	AR	AR	Paint
C103001	Compartments, Cubicles & Toilet Partitions			HDPE, Sized to be ADA Accessible
C103008	Counters	1	2' x 9' min.	ADA compliant, Solid surface, 4" hgt. back and side splash
C103002	Toilet & Bath Accessories	2		Hand Dryer
C103002	Toilet & Bath Accessories	2		Soap Dispenser
C103002	Toilet & Bath Accessories	1		Waste Receptacle, recessed in wall
C103002	Toilet & Bath Accessories	2		Paper Towel Dispenser
C103002	Toilet & Bath Accessories	2	24" x 36"	Mirror, ADA compliant
C103002	Toilet & Bath Accessories	2		Toilet Paper Dispenser, 2 roll
C103002	Toilet & Bath Accessories	1	12" x 30"	Convenience Shelf, Solid surface
C103002	Toilet & Bath Accessories	AR	AR	Grab Bar
C103002	Toilet & Bath Accessories	AR	AR	Toilet seat cover dispenser
C103004	Identifying Devices	1	AR	Room Identifying Device

**229 – Men’s Toilet (cont)**

<b>Space Characteristics</b>				
<b>Function/adjacencies:</b> Service				
<b>Special Dimensions:</b>				
Ideal Plan Dimensions: 3.9m x 6.4m				
Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Main Corridor 106				
<b>Number of Occupants:</b> 0				
<b>Other/Special Requirements:</b>				

<b>Uniformat Section</b>	<b>Description</b>	<b>Qty</b>	<b>Size</b>	<b>Specific Requirements</b>
D201001	Waterclosets	2		One (1) to be ADA Accessible
D201002	Urinals	2		One (1) to be ADA Accessible
D201003	Lavatories	2		ADA Accessible
D502002	Lighting Equipment	AR	AR	Fixtures

## 230 – (N7) Conference Room

Space Characteristics				
<b>Function/adjacencies:</b> Command Conference room / Training Department N7 <b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft. <b>Acoustics:</b> STC 47 <b>Access:</b> From N7 Open Office Space and Main Corridor 206 <b>Number of Occupants:</b> 15 <b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment				
Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above. STC 60
C103004	Identifying Devices	2	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to chair rail
C301005	Wall Coverings	AR	AR	From chair rail to 4" min. above ceiling
C103099	Other Interior Specialties	AR	AR	Millwork Chair Rail
C102003	Standard Interior Doors	2	3' x 7'	Vision Panel
C102007	Interior Door Hardware	2		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09.
C103003	Marker boards & Tack Boards	1	4' x 8'	Dry Erase Marker Board Surface Treatment
C103099	Other Interior Specialties			Brackets and mounts for twin flat panel display units, include wood blocking / backing
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" Wood or 6" Rubber base with Millwork Profile
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Dimmable and low level Lighting systems			Provide dimmable and low level lighting systems for the VTC rooms, types of systems to consider are sconces, cove, track or in-direct lighting
D503005	Security Systems	AR	AR	Provide duress alarm system linked back to the Quarter Deck
D503005	Number of system control panels			Provide duress alarm system push button in room. Location to be finalized with furniture, during design process.

### 230 – (N7) Conference Room (cont.)

Space Characteristics				
<b>Function/adjacencies:</b> Command Conference room / Training Department N7				
<b>Special Dimensions:</b> Ideal Plan Dimensions: 3.8m x 4.8m Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b> STC 47				
<b>Access:</b> From N7 Open Office Space and Main Corridor 206				
<b>Number of Occupants:</b> 15				
<b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. A/V presentation equipment				

Uniformat Section	Description	Qty	Size	Specific Requirements
D503090	Audio Visual Infrastructure Systems			The contractor shall provide an infrastructure system, consisting of empty conduits with pull wires, low voltage junction boxes and power to support the audio visual (AV) system. Provide on the AV wall four (4) VTC cameras (center and two wings on front wall and one (1) rear wall); two (2) low voltage boxes for display cabling; two (2) power boxes for the large displays. All low voltage junction boxes shall have conduits linking to wallplates adjacent to the AV credenza. Location to be finalized during the design process. Audio visual credenza shall be fitted with forced air ventilation for equipment cooling. Provide next to interior door low voltage junction box and power box (low voltage) for one (1) digital signage display system for reservations and notifications. Location of displays to be finalized during the design process.
E102009	Audio Visual Equipment	1		Credenza / Cabinet for AV equipment, with forced air ventilation
E102009	Audio Visual Equipment	2		Brackets & mounts for twin flat screen display unit, include wood blocking / backing
D502002	Lighting Equipment	AR	AR	Fixtures, Dimming controls
D503001	Telecommunications System	12	AR	Telephone outlets
D503001	Telecommunications System	12	AR	NIPRNET outlets
D503001	Telecommunications System	12	AR	SIPRNET outlets

### 231 – (N7) Training Department Open Office

<p><b>Space Characteristics</b></p> <p><b>Function/adjacencies:</b> Open Office space</p> <p><b>Special Dimensions:</b>                  Ideal Plan Dimensions: 4.8m x 7.0m                  Minimum Ceiling Height: 9 ft.</p> <p><b>Acoustics:</b></p> <p><b>Access:</b> From Main Corridor 206</p> <p><b>Number of Occupants:</b> 11</p> <p><b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (16)</p>
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Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	4	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C103004	Identifying Devices	11	AR	Workstation Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Fire Doors	1	3' x 7'	Solid with Vision Panel
C102007	Interior Door Hardware	1		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09. Overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" Rubber
E201002	Window Treatments			2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E101008	Office Equipment	1	AR	Copier / printer / fax
C103008	Counters	4 LF min		Solid Surface Counter or Systems Furniture Work Surface with supports (office equipment location)
C103009	Cabinets	4 LF min		Wall and Base cabinets, Plastic laminate clad, Half Locking
D509002	Emergency Lighting and Power	AR	AR	Fixtures
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	12	AR	Telephone outlets
D503001	Telecommunications System	12	AR	NIPRNET outlets

## 232 – (N7) Deputy ACOS Training Office

### Space Characteristics

**Function/adjacencies:** Private Office space

**Special Dimensions:**

Ideal Plan Dimensions: 3.0m x 3.6m  
 Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From N7 Open Office Space

**Number of Occupants:** 1

**Other/Special Requirements:** Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
B202001	Exterior Windows	1	4' x 10' Min.	
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments			2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

### 233 – (N7) ACOS Training Office

#### Space Characteristics

**Function/adjacencies:** Private Office space  
**Special Dimensions:**  
 Ideal Plan Dimensions: 3.0m x 3.6m  
 Minimum Ceiling Height: 9 ft.  
**Acoustics:**  
**Access:** From N7 Open Office Space  
**Number of Occupants:** 1  
**Other/Special Requirements:** Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments			2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

### 234 – (N7) Director Command Staff Training Assessment Office

<b>Space Characteristics</b>				
Function/adjacencies: Private Office space				
Special Dimensions: Ideal Plan Dimensions: 3.0m x 3.6m Minimum Ceiling Height: 9 ft.				
Acoustics:				
Access: From N7 Open Office Space				
Number of Occupants: 1				
Other/Special Requirements: Plan for desktop computer				

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments			2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets

### 235 – (N2) Intel Open Office

Space Characteristics				
<b>Function/adjacencies:</b> Open Office space				
<b>Special Dimensions:</b>				
Ideal Plan Dimensions: 4.8m x 7.0m				
Minimum Ceiling Height: 9 ft.				
<b>Acoustics:</b>				
<b>Access:</b> From Main Corridor 206				
<b>Number of Occupants:</b> 5				
<b>Other/Special Requirements:</b> Controlled Access Area (CAA). Construct in accordance with IA PUB-5239-22 / Oct 2003. Plan for desktop printers (5)				

Uniformat Section	Description	Qty	Size	Specific Requirements
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C103004	Identifying Devices	5	AR	Workstation Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Fire Doors	1	3' x 7'	Solid with Vision Panel
C102007	Interior Door Hardware	2		<b>Electronic Entry Control System:</b> Electronic Card Reader Storeroom Lockset (F07), Electronic Strike (E09321), Combination Lock CDX-09. Overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
E201002	Window Treatments			2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E101008	Office Equipment	1	AR	Copier / printer / fax
C103008	Counters	4 LF min		Solid Surface Counter or Systems Furniture Work Surface with supports (office equipment location)
C103009	Cabinets	4 LF min		Wall and Base cabinets, Plastic laminate clad, Half Locking
D509002	Emergency Lighting and Power	AR	AR	Fixtures
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	6	AR	Telephone outlets
D503001	Telecommunications System	6	AR	NIPRNET outlets
D503001	Telecommunications System	6	AR	SIPRNET outlets

## 236 – (N2) SCIF Office

### Space Characteristics

**Function/adjacencies:** Communications Room

**Special Dimensions:**

Ideal Plan Dimensions: 3.0m x 3.6m  
 Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From N2 Open Office Space

**Number of Occupants:** 3

**Other/Special Requirements:** Plan for desktop computer (3)

Uniformat Section	Description	Qty	Size	Specific Requirements
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Solid
C102007	Interior Door hardware	1		Storeroom Lockset (F-07), Electric Strike (E09321), Combination lock CDX-09, overhead closer
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	4		Telephone outlets
D503001	Telecommunications System	4		NIPRNET outlets
D503001	Telecommunications System	4	AR	SIPRNET outlets
D503001	Telecommunications System	2	AR	JWICS outlets

## 237 – (N2) Telecommunications Room

### Space Characteristics

**Function/adjacencies:** Support Vertical Circulation / Elev. 1

**Special Dimensions:**

Ideal Plan Dimensions: 2.1m x 3.0m

Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** Main Corridor 223

**Number of Occupants:** 0

**Other/Special Requirements:** Controlled Access Area (CAA). Construct in accordance with IA Pub-5239-22/Oct 2003

Uniformat Section	Description	Qty	Size	Specific Requirements
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Fire Rated (one hour), from floor to underside of structure above.
C102007	Fire Doors	1	3' x 7'	Hollow Metal
C102007	Interior Door hardware	1		Storeroom Lockset (F-07), Electric Strike (E09321), Combination lock CDX-09, overhead closer
C103004	Identifying Devices	1	AR	Room Identifying Device
C304002	Concrete Masonry Finishes	AR	AR	From floor to 4" min. above ceiling
C302004	Resilient Floor Finishes	AR	AR	Linoleum Composition Tile, two color mix pattern
C302008	Wall Base Finishes	AR	AR	4" rubber
C302099	Other Flooring and Floor Finishes	AR	AR	Anti-Static Mat
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D409003	Fire Suppression	AR	AR	Provide clean agent fire suppression system.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	AR	AR	Cabinets

## 238 – (N2) Staff Office

### Space Characteristics

**Function/adjacencies:** Private Office space

**Special Dimensions:**

Ideal Plan Dimensions: 3.0m x 3.6m

Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From N2 Open Office Space

**Number of Occupants:** 1

**Other/Special Requirements:** Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
E201002	Window Treatments	AR	AR	2" horizontal blinds or in lieu of horizontal blinds provide Manually or Electrically operated roller sunscreen.
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

### 239 – (N2) Assistant Office

#### Space Characteristics

**Function/adjacencies:** Private Office space

**Special Dimensions:**

Ideal Plan Dimensions: 3.0m x 3.6m  
 Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From N2 Open Office Space

**Number of Occupants:** 1

**Other/Special Requirements:** Plan for desktop computer

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Extend from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	Extend from floor to 4" min. above ceiling
C102003	Standard Interior Doors	1	3' x 7'	Vision Panel
C102007	Interior Door Hardware	1		Lockset, overhead closer
C302005	Carpeting	AR	AR	Level 1
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
D503001	Telecommunications System	1	AR	NIPRNET outlets
D503001	Telecommunications System	1	AR	SIPRNET outlets

## 240 – Electrical Room

### Space Characteristics

**Function/adjacencies:** Main corridor 206

**Special Dimensions:**

Ideal Plan Dimensions: 3.6m x 3.8m

Minimum Ceiling Height: 13 ft.

**Acoustics:**

**Access:** From Main Corridor 206

**Number of Occupants:** 0

**Other/Special Requirements:**

Uniformat Section	Description	Qty	Size	Specific Requirements
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above.
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C304002	Concrete Masonry Finishes	AR	AR	Full Height
C102007	Fire Doors	1	3' x 7'	Hollow Metal
C102007	Interior Door hardware	1		Lockset, overhead closer
C302010	Hardeners and Sealers	AR	AR	Sealer
C302099	Other Flooring and Floor Finishes	AR	AR	Anti-Static Mat
C303006	Painting and Staining Ceilings	AR	AR	Paint Exposed
C302090	Anti-Static Mat	1		
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets

## 241 – Recycle Room

### Space Characteristics

**Function/adjacencies:** Storage / Elevator 208

**Special Dimensions:**

Ideal Plan Dimensions: 1.5m x 2.8m

Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From Main Corridor 206

**Number of Occupants: 0**

**Other/Special Requirements:** Plan for (3) trash receptacles

Uniformat Section	Description	Qty	Size	Specific Requirements
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C103004	Identifying Devices	1	AR	Room Identifying Device
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Painting to Walls	AR	AR	From floor to 4" min. above ceiling
C102001	Standard Interior Doors	1	3' x 7'	
C102007	Interior Door hardware	1		Lockset, overhead closer
C302004	Resilient Floor Finishes	AR	AR	Linoleum Composition Tile, three color mix pattern
C302008	Wall Base Finishes	AR	AR	4" rubber
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP
D502002	Lighting Equipment	AR	AR	Fixtures

## 242 – Coffee Mess

### Space Characteristics

**Function/adjacencies:** Kitchenette to be shared by first floor occupants / Main Corridor 206; Men's toilet 216; Women's toilet 217

**Special Dimensions:**

Ideal Plan Dimensions: 1.8m x 4.4m  
 Minimum Ceiling Height: 9 ft.

**Acoustics:**

**Access:** From Main Corridor 206

**Number of Occupants: 0**

**Other/Special Requirements:**

Uniformat Section	Description	Qty	Size	Specific Requirements
B202010	Exterior Enclosure	AR	AR	
C101001	Fixed Partitions	AR	AR	Fire Rated from floor to underside of structure above
C301003	Gypsum Wallboard Finishes	AR	AR	Gypsum Wallboard
C301005	Wall Coverings	AR	AR	From floor to 4" min. above ceiling
C102091	Other interior Personnel Doors	1	5' x 7'	Metal casement opening
C302002	Terrazzo Floor Finishes	AR	AR	Terrazzo or Natural Stone wall base
C303001	Acoustical Ceiling Tiles & Panels	AR	AR	SACP / Painted GWB
C103002	Toilet & Bath Accessories	1	AR	Paper Towel Dispenser
C103003	Marker Boards & Tack Boards	1	4' x 4'	Fabric Clad Tack board
C103004	Identifying Devices	1	AR	Room Identifying Device
C103008	Counters	9 LF	AR	Solid Surface Counter or Systems Furniture Work Surface with supports (office equipment location)
C103009	Cabinets	11 LF	AR	Wall & Base cabinets, Plastic Laminate clad
D201004	S.S. Counter Sink	1	AR	
D502002	Lighting Equipment	AR	AR	Fixtures
D503001	Telecommunications System	1	AR	Telephone outlets
E101003	Vending Equipment	2	AR	

## 6. ENGINEERING SYSTEMS REQUIREMENTS

### A10 FOUNDATIONS

**All requirements noted within section A10 will be enforced during the government review process. Discovered deficiencies relating to these requirements will be required to be corrected prior to subsequent submittals.**

#### SYSTEM DESCRIPTION

Provide the building foundation system in accordance with UFC 3-300-10N, *Structural Engineering*. Foundation shall be designed to suit subsurface conditions, and shall be capable of transmitting all building loads to the ground.

##### DESIGN PARAMETERS SHALL BE:

Occupancy Category II

Soil Site Class D

Seismic Design Category B

Wind Exposure C

### A10 GENERAL

The Contractor shall commission the services of a qualified geotechnical engineer registered as a Professional Engineer to better ascertain soil conditions for the new construction. All geotechnical investigations and reports shall be in accordance with UFC 1-300-09N, Chapter 9. No additional soils exploration or testing is required unless deemed necessary by the commissioned geotechnical engineer. Subsurface soil information, including a geotechnical report, has been provided in other portions of this RFP. The Contractor shall base his/her proposal on the Government-provided geotechnical data contained in the RFP and upon recommendations of the commissioned geotechnical engineer.

The contractor's geotechnical engineer must prepare a geotechnical report for the site that, at a minimum, contains the requirements of Performance Technical Specification A10 1.2.2.3 within this RFP. At his own expense, the general contractor may choose to have his geotechnical engineer perform additional site soil borings or site soils analysis beyond that provided within this RFP, but is not required to do so. The General Contractor assumes all responsibility for adequacy and performance of foundations. A site-specific seismic ground motion study is not required.

The General Contractor's geotechnical engineer must field verify conformance with design requirements noted within their soils report and noted within the RFP throughout construction.

### A1010 STANDARD FOUNDATIONS

See "System Description" above. The foundation construction may include any foundation system meeting the requirements of this section, with the limitation that timber footings or wood foundations are not allowed.

It is anticipated that a shallow foundation system will be utilized.

## **A1020 SPECIAL FOUNDATIONS**

If required by the Contractor's structural and geotechnical engineer, a deep foundation system may be utilized. The actual foundation type, capacity, etc. will be determined after contract award by the Contractor's structural and geotechnical engineer based on the actual loads and the available geotechnical data. Seismic requirements are specified herein. Timber piles are not allowed. The Contractor shall bear all costs of the actual foundation provided.

The load capacity of piles, as determined by pile driving formulae, shall be verified by load tests or by dynamic pile analyzer methods. Provide separate unit prices for compression pile load tests and tension pile load tests to establish the credit to the Government for load tests that are not performed.

Perform pile load tests as recommended by the Contractor's Geotechnical Engineer and as required by all applicable building codes. Load test(s) are required for piles with a design capacity of 40 tons or greater. Additional load test requirements are stated in Part 4 of this RFP.

## **A1030 SLAB ON GRADE**

As determined by the designer of record to be applicable, provide either a standard or structurally supported concrete slab on grade. Where slab on grade is below the existing adjacent exterior grade, provide a perimeter drainage system to remove ground water from the area immediately adjacent to the buildings. Provide perimeter insulation. When providing a structurally supported slab, provide for support of all utilities that may be adversely affected by soil consolidation or expansive soils. Provide stainless steel supports sized adequately to support the in-service utility.

Where possible, provide a standard reinforced concrete slab on grade as recommended by the contractor's geotechnical and structural engineer. Slab on grade shall, at a minimum, contain a steel reinforcing ratio to concrete area of .001, or greater where required by ACI318. Slab on grade finish elevation shall be at least six inches above adjacent grade. Provide a perimeter drainage system to remove ground water from the building footprint.

All mechanical equipment resting at grade must be supported by a concrete foundation system as recommended by the contractor's structural engineer. Said system shall, at a minimum, contain a steel reinforcing ratio to concrete area of .001, or greater where required by ACI318.

## **6. ENGINEERING SYSTEMS REQUIREMENTS**

### **A20 BASEMENT CONSTRUCTION**

#### **SYSTEM DESCRIPTION**

Provide the basement construction in accordance with UFC 3-300-10N, *Structural Engineering*.

#### **A2010 BASEMENT EXCAVATION**

Basement excavation at raised access floors shall include provision for a concrete mud slab and membrane waterproofing below the slab on grade or structural slab.

#### **A2020 BASEMENT WALLS**

Basement walls include exterior walls below the ground floor level of the building, including walls that are below grade, elevator pits and other pits, such as slabs lowered to provide access flooring. Provide basement walls constructed of cast-in-place concrete, precast concrete or masonry. Provide rubber or other membrane waterproofing and insulation of basement walls, pits and lowered slabs.

--End of Section--



## 6. ENGINEERING SYSTEMS REQUIREMENTS

### B10 SUPERSTRUCTURE

All requirements noted within this section (B10) will be enforced during the government review process. Discovered deficiencies relating to these requirements will be required to be corrected prior to subsequent submittals.

#### SYSTEM DESCRIPTION

Provide the building framing system in accordance with UFC 3-300-10N, UFC 3-310-01, and UFC 3-310-04 subject to the following limitations:

- A pre-engineered structure is not allowed (i.e. structural systems composed of built up plate sections as member elements).
- Wood/timber elements are not allowed as part of the foundation or superstructure.
- Gypsum board (sheetrock) shear walls are not allowed as part of the primary lateral force resisting system.
- Load bearing cold formed metal studs are not allowed.

The building shall be designed to accept a future third floor and shall be designed in accordance with UFC 4-023-03, Design of Buildings to Resist Progressive Collapse.

#### B1010 FLOOR CONSTRUCTION

##### FLOOR SYSTEM

Provide the structural floor system in accordance with UFC 1-200-01, UFC 3-310-01, and UFC 3-300-10N.

##### DECKING

Where the floor or roof system is composed of metal deck, the capacity of said metal deck to resist code imposed loads shall come from an ICC ES Legacy report ([http://www.icc-es.org/Evaluation\\_Reports/index.shtml](http://www.icc-es.org/Evaluation_Reports/index.shtml)), or equivalent independent testing agency/firm, and not from the manufacturer. An ES Legacy report must be submitted as part of the deck demand/capacity calculations. Where proprietary connections/systems are specified, capacity of said connections must also be provided within an ICC ES Legacy report.

##### SHEAR TRANSFER

Where concrete occurs over metal deck (including form deck), shear transfer between concrete fill and lateral resisting beam/girder elements will not be permitted through metal deck attachments alone, but must occur through positive, direct connection between concrete and lateral resisting elements such as welded studs, welded dowels, or similar connections. An exception will be granted where justifiable lateral shear capacity is demonstrated within an ES Legacy Report.

##### BLOCKING

Full depth blocking shall be provided between bearing beams, bearing joists, and bearing joist seats at all collector lines (beams and girders on

lines of lateral resistance) and over all lateral force resisting elements (e.g. over moment/brace frames or shearwalls). Blocking and associated connections shall be calculated to resist maximum diaphragm shear and be clearly detailed within the design drawings. Blocking may be omitted where bearing beams, joists, and joist seats can be demonstrated, by calculation, to have sufficient capacity to resist bending (roll over) when subjected to maximum diaphragm shear.

#### FLOOR VIBRATION

Elevated floor systems shall be designed to limit vibration due to walking and rhythmic excitations according to the requirements of AISC Design Guide 11, "Floor Vibrations Due to Human Activity". Peak floor acceleration shall be limited according to that indicated in Figure 2.1 of said AISC design guide.

## **B1020 ROOF CONSTRUCTION**

### ROOF SYSTEM

Provide the structural roof system in accordance with UFC 1-200-01, UFC 3-310-01, and UFC 3-300-10N. Requirements of B1010 shall also apply to Roof Construction (B1020) where applicable. The roof construction shall match the selected floor construction and shall accommodate the addition of the third floor at a later date. Design of the structure to facilitate the addition of a third floor at a later date requires a progressive collapse analysis and subsequent design considerations.

## **B1030 LATERAL FORCE RESISTING SYSTEM**

### SYSTEM

Provide the lateral force resisting system in accordance with UFC 1-200-01, UFC 3-310-01, and UFC 3-300-10N.

### SEISMIC VS WIND

Provide a clear overall comparison between seismic base shear and wind base shear for each orthogonal direction. In addition to overall base shear, provide individual story shear checks comparing seismic and wind for building greater than three stories. Code mandated seismic detailing must occur regardless of whether or not wind governs the lateral design of the structure (e.g. collector design and detailing per ASCE 7-05 12.10.2).

### SEISMIC RESPONSE FACTOR

Where a structure is categorized as Seismic Design Category C, or where a site soil classification of 'E' or greater exists, a seismic response factor (R) of type 2003 IBC Table 1617.6.2, item 8 shall not be allowed.

### OVERSTRENGTH FACTOR

Where required by code, individual elements subjected to the over strength factor (Omega) must be checked for capacity to resist load combinations incorporating  $E_m$ . This typically applies to collectors and lateral force resisting connections subjected to seismic design category 'C' and higher (ASCE 7-05, 12.10.2.1).

## COLLECTORS AND CHORD ELEMENTS

Continuous chords and collector elements shall be designed and specified regardless of seismic design category. Calculations for these elements shall be provided and said elements shall be clearly called out and detailed within the design drawings. Where collector/chord forces are to be resisted by beam/girder elements, include said axial forces in beam/girder design calculations. Where collector/chord forces are to be resisted by slab reinforcing, provide positive connection between slab and lateral force resisting beams/girders per B1010 (Elevated Floor Construction). Chord/Collector detailing shall include splicing requirements where applicable. Re-entrant corners and diaphragm openings shall have chord/collector elements extended sufficiently beyond the irregularity or opening to fully develop forces within the diaphragm's allowable shear capacity. Where required by code, an over strength factor,  $\Omega$ , must be included in collector design.

## PROPRIETARY ELEMENTS

Proprietary members and/or connections of any type must have an ICC ES report (or equivalent) with supporting load capacity data. ([http://www.icc-es.org/Evaluation\\_Reports/index.shtml](http://www.icc-es.org/Evaluation_Reports/index.shtml))

# **B1040 LATERAL FORCE RESISTING CONNECTIONS**

## MOMENT FRAME CONNECTIONS

Where moment frames are chosen as the primary lateral force resisting system, a FEMA 350 prequalified moment resisting connection shall be specified. Calculations and details for prequalified moment frame connections shall be according to the requirements of FEMA 350 section 3. If a FEMA 350 partially restrained connection is specified, the associated reduced stiffness of the system must be incorporated into the analysis or modeling of the structure as required by FEMA section 4.5.2.2. Column weak axis moment frame connections will not be allowed.

## BRACED FRAME CONNECTIONS

Where concentric braced frames are utilized, connections shall be calculated and detailed according to the requirements of the Uniform Force Method as explained within the AISC Manual of Steel Construction. Column weak axis braced frame connections are discouraged. However, where weak axis braced frame connections must be used, provide fully welded plate stiffeners at either side of column web in order to fully engage the gusset with column flanges. Where a braced frame connection occurs at a tube column, gusset plates shall be knifed through the tube column element and welded to both faces of the tube column. Tension rod bracing shall not be utilized as part of the primary lateral force resisting system, with the exception of single story pre-engineered buildings where allowed (reference System Description).

## CALCULATIONS AND DETAILS

Moment and/or braced frame connection calculations and details must be submitted for review as part of the final submittal or earlier. This shall be true regardless of whether the connection design has been delegated to others. Where required by the latest edition of the AISC seismic provisions, an over strength factor ( $\Omega$ ) must be used in the design of lateral force resisting connections. Calculations and details shall be stamped and signed by a professional engineer licensed and qualified to practice structural engineering within the State of Virginia.

## **B1060 STRUCTURAL COMPUTER MODEL**

### REQUIRED MODELING OUTPUT

Computer model output shall be comprehensive. In addition to text output, also include screen shot elevation views and plan/maps which show member labels, sizes, column orientation, node labels, loads (uniform, point, and line), connection fixity, center of mass/rigidity, and appropriate and relevant information required to interpret textual data. It is acceptable to submit computer model output electronically (e.g. CD) in lieu of paper output. However, output data must be converted directly to PDF format. Scans of calculations are not acceptable. Where incomplete computer output is submitted as part of a pre-final package, government review time shall be extended the number of days required to receive missing data. This extension shall not negatively impact the construction schedule. Final electronic computer models files (RAM, SAP, RISA, etc) shall be provided on compact disk to the government as part of the final submittal. Electronic models must be capable of being opened and reviewed in the entirety using the same structural software used to create the original Model.

## **B1070 BRICK VENEER**

### WALL TIES

Brick veneer wall ties, and their associated spacing requirements, shall be shown/noted on the structural details. Spacing requirements shall be according to ACI 530 6.6.6.5.

## **B1080 HURRICANE WINDOWS**

### DEBRIS IMPACT RESISTANCE

In wind-borne Debris regions, windows shall be subjected to the requirements of 2006 IBC section 1609.1.2 for hurricane debris impact resistance. A Wind-borne Debris Region is an area within one mile of the coastal mean high water line where the basic wind speed is 110 mph or greater. In addition to other locations, wind – borne debris regions typically encompass Little Creek Amphibious Base, Fort Story, and Damneck Annex, but not Naval Station Norfolk or the Norfolk Naval Shipyard. Windows shall also conform to all ATFP requirements as defined elsewhere within this RFP.

## **B1090 COLD FORMED METAL FRAMING**

Calculations and detailing of cold formed metal framing, which encloses the structure, or is wholly exterior to the structure (e.g. parapets), shall be submitted as part of the final submittal package or earlier. This shall be true regardless of whether the cold formed metal framing design has been delegated to others. Detailing shall indicate: material type, size, gages, layout, and method of connection. Calculations shall demonstrate capacity of members and connections to meet code imposed loads and deflection criteria. Calculations and details shall be stamped and signed by a professional engineer licensed and qualified to practice structural engineering within the State of Virginia.

--End of Section--

## **6. ENGINEERING SYSTEMS REQUIREMENTS**

### **B20 EXTERIOR ENCLOSURE**

#### **SYSTEM DESCRIPTION**

This system consists of the exterior facing of the facility, which includes all vertical and horizontal exterior closure such as exterior walls, exterior windows, and exterior doors. This system excludes roofing (See System B30, *Roofing*). Load bearing exterior walls will be included here, and not in System B10, *Superstructure*. Structural frame elements at exterior such as columns, beams, and spandrels are included in Superstructure, with only the applied exterior finishes (e.g., paint, stucco) being included here. Finishes to the inside face of walls which are not an integral part of the wall construction will be included in System C30, *Interior finishes*.

#### **GENERAL SYSTEMS REQUIREMENTS**

##### **B2010 EXTERIOR WALLS**

The primary exterior material of the building shall be a mix of brick masonry and ground face-concrete masonry with split-faced accents.

Back-up wall system for veneer construction shall be metal framing.

##### **B201001 EXTERIOR CLOSURE**

Provide brick veneer exterior wall closure.

Provide ground face concrete masonry unit exterior wall closure with split face accents.

Align exterior appearance with guidelines established in Part 6 Attachments, Naval Amphibious Base Little Creek Installation Appearance Plan (IAP) and Master Plan Joint Expeditionary Base Little Creek.

##### **B201002 EXTERIOR WALL BACKUP CONSTRUCTION**

Provide Exterior Wall Construction System (back-up systems for wall veneer) including metal framed wall systems with insulation as described below:

Exterior bearing walls consisting of metal studs as the primary floor or roof supporting structural element are not permitted.

##### **B201003 INSULATION AND VAPOR RETARDER**

Provide insulation and vapor barriers.

##### **B201004 PARAPETS**

Provide parapets for exterior wall construction, where required for low-slope roofs.

##### **B201005 EXTERIOR LOUVERS & SCREENS**

Provide exterior louvers and screens, where required, that match the finish of the existing windows and detailed to integrate with the architecture of the building, as appropriate to the design of the building.

## **B201006 BALCONY WALLS & HANDRAILS**

Not Used

## **B201007 EXTERIOR SOFFITS**

Provide exterior soffit system painted exterior grade gypsum board.

## **B201009 EXTERIOR PAINTING AND COATINGS**

Provide field applied exterior coatings for all items that are not prefinished, and to prefinished items when required to provide a color other than a standard prefinished color.

## **B201010 EXTERIOR JOINT SEALANTS**

Provide exterior application of joint sealants to seal joints and prepare for finish material installation.

## **B201011 SUN CONTROL DEVICES (EXTERIOR)**

Provide fixed horizontal type. Sun control devices shall be detailed to integrate with the architectural wall system.

## **B201012 SCREEN WALL**

Provide screen walls where required to screen mechanical units, electrical substations, loading docks, and trash receptacles. Screen walls shall be compatible with the building architecture. Rooftop mechanical screens shall be designed to minimize roofing penetrations.

## **B2020 EXTERIOR WINDOWS**

As much as practical, windows shall be provided in each area of the building that is regularly occupied, to enhance the working environment, without compromising visual acuity and comfort. Natural daylighting is preferred. Exterior windows shall be prefinished aluminum. Windows shall meet Antiterrorism requirements.

If approved by the DOR, the sample window may be installed in an opening in a framed wall, and the mock-up may be left during construction as a cut-away of the installation. For masonry walls, the sample window shall be installed in the precast concrete sample panel.

## **B202001 WINDOWS**

Determine the construction of security windows by evaluating the project program security requirements, using the Mil Hdbk 1013/1A, *Design Guidance for Physical Security of Facilities*, to define window requirements.

Windows shall be aluminum fixed.

Provide a mockup of one combination window unit for the project to be used for a field mockup test of compliance with AAMA 502 Method A and Method B

## **B202002 STOREFRONTS**

Storefronts shall be aluminum.

## **B202003 CURTAIN WALLS**

A curtain wall is a reinforced window wall that spans more than one story in height.

Provide a multi-story glazed curtain wall system.

System shall be a standard architectural type Stick Unit and Mullion system, with mullions, horizontal rails, and or non-integral spandrel panels. Fully coordinate system accessories directly incorporated and adjacent to contiguous related work and insure materials compatibility, deflection limitations, thermal movements, and clearances and tolerances.

System shall be a totally glazed system or a combination of glazed panels and opaque panels. For design purposes, base provisions for thermal movement on assumed ambient temperature in UFC 3-400-02, *Engineering Weather Data*.

Provide a mockup of one 1 designated Curtain Wall System unit for the project to be used for a field test of compliance with AAMA 503 Method A and Method B

#### **B202004 EXTERIOR GLAZING**

Glazing color shall be Aqua Blue. Where bullet resistant glazing is required the materials shall be listed by UL ABPMED as bullet resisting, with a power rating of Medium--Small Arms in accordance with UL 752.

Glazing shall be clear insulating glass units and fragment retention.

#### **B202090 OTHER EXTERIOR WINDOWS**

Not Used.

#### **B2030 EXTERIOR DOORS**

Provide solid door assemblies other than at the main entrance. Exterior doors and frames shall be non-corroding galvanized steel.

Doors shall be Extra Heavy Duty Doors -- ANSI /SDI A250.8, Level 3, physical performance Level A, Model 1

Glazing shall match the window glazing.

#### **B203001 SOLID DOORS**

Provide solid steel door assemblies other than at main storefront/curtainwall entrances including painted heavy-duty, non-corroding, insulated doors with frames and hardware. Also provide louvers accessories and wall opening elements such as lintels, sills and flashings.

#### **B203002 GLAZED DOORS**

Glazed Doors - Provide Exterior Glazed Doors and Entrances System. including factory-finish aluminum framed door assemblies with insulated, frames, and hardware compatible with other buildings on the base and wall opening elements such as lintels, sills, through-wall flashings and joint sealers.

#### **B203004 OVERHEAD AND ROLL-UP DOORS**

Not Used.

#### **B203005 HANGAR DOORS**

Not Used.

#### **B203006 BLAST RESISTANT DOORS**

Not Used.

### **B203008 EXTERIOR DOOR HARDWARE**

Provide the services of a certified door hardware consultant to prepare the door hardware schedule.

Provide hardware keying compatible with the existing base-wide keying system. Replacement interchangeable cores shall be compatible with the Best Lock system.

Provide a electronic type card key system. Provide the services of a certified door hardware consultant to prepare the door hardware schedule.

Door hardware finish shall be chrome-plated brass or bronze, or stainless steel.

### **B203090 OTHER EXTERIOR SPECIALTY DOORS**

Provide automatic swinging entrance doors at the main entrance to the building.

--End of Section--

## 6. ENGINEERING SYSTEMS REQUIREMENTS

### B30 ROOFING

#### B30 GENERAL SYSTEM DESCRIPTION

Roof systems shall be watertight and compatible with facility function, construction, and service conditions. Provide complete roof system design and construction services for the entire new facility roof system, including all ancillary and incidental work necessary for a complete, new, watertight roof system installation.

Submittal Requirements: Components of a minimum roof submittal shall include the roof plan, method of drainage, standard details and details unique to the project, wind load calculations and requirements.

Built-in gutter systems where drainage passes through an interior space or is concealed in the exterior cavity wall shall be prohibited.

Refer to UFC 3-110-03, *Roofing*, and UFC 3-100-10N, *Architecture*, for additional roofing requirements.

#### B3010 ROOF COVERINGS

##### B301001 STEEP SLOPE ROOFING SYSTEMS

The current design does not employ the use of a steel sloped metal roof. If such a system is utilized in the final design it must adhere to the following regulations:

The roof system 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. [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 50 coating; or aluminum-coated steel.

Sub-purlins for the Structural Metal Roof System shall be galvanized .

[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 the PTS section , and the 20-year Manufacturer's Material Warranties, and the manufacturer's 20-year system weather-tightness warranty.

##### B301002 LOW SLOPE ROOFING SYSTEMS

Wind Uplift - The complete roof covering assembly shall be rated Class 1-90 or appropriate in accordance with FM P7825, capable of withstanding an uplift pressure of 90 pounds per square foot (with a safety factor of 2) (2.15 kPa), and FM I-49 for perimeter and flashing attachment.

Fire Safety - Complete roof covering assembly shall:

1. Be Class A rated in accordance with ASTM E 108 and
2. Be listed as part of Fire-Classified roof deck construction in UL RMSD..

A three ply modified system consisting of modified base sheet, modified bitumen interply sheet, and modified bitumen cap sheet is the system of choice for new low sloped roofing.

Use a ventilating base sheet over any materials which may contain moisture which may need to transpire out of the building.

Low slope roofing systems that are acceptable include three-ply built-up roofing systems with modified bitumen cap sheet surfacing.

Provide polyester reinforced cap sheet on Modified Bitumen roofs expected to experience high levels of traffic, on roofs expected to receive regular service or high maintenance, and where other service conditions warrant.

### **B301003 ROOF INSULATION AND FILL**

For fastening roof insulation on low-slope membrane roofs, fasteners shall be placed to withstand and obtain an uplift pressure of 90 pounds per square foot (with a safety factor of 2) (2.15 kPa) in the field of the roof and FM LPDS 1-49 for perimeter component and flashing attachment.

### **B301004 FLASHINGS AND TRIM**

Flashing and sheet metal work shall include scuppers, splash pans, and sheet metal roofing. Flashings shall be Steel Sheet, Zinc-Coated (Galvanized) - ASTM A 653/ A 653M. Galvanized steel items shall have a baked-on, factory applied finish of polyvinylidene fluoride or an equivalent fluorocarbon coating. All roof flashing and trim shall be included in the roof warranty.

### **B301005 GUTTERS AND DOWNSPOUTS**

Provide gutters and downspouts compatible with roofing material and finish. Concealed (interior) gutters and downspouts are prohibited.

### **B301006 ROOF OPENINGS AND SUPPORTS**

Provide insulated roof hatch and skylights and rails or guards.

### **B301090 OTHER ROOFING**

Provide lightning protection, without penetrating the roof membrane or flashing components

--End of Section--

## **6. ENGINEERING SYSTEMS REQUIREMENTS**

### **C10 INTERIOR CONSTRUCTION**

#### **SYSTEM DESCRIPTION**

Interior construction includes interior partitions, interior doors, and fittings.

Provide durable construction appropriate to the buildings use. Acoustic properties of materials, as well as durability, shall be considered during material selection.

#### **GENERAL SYSTEMS REQUIREMENTS**

Areas of the Project are subject to abuse and require that “impact Resistant” systems be provided. See “Room Requirements” for specific requirements on “Partitions”, “Interior Doors”, and “Fittings”.

#### **C1010 PARTITIONS**

All interior partitions shall be constructed of metal studs with gypsum board on each side unless otherwise noted.

##### **C101001 FIXED PARTITIONS**

Provide fixed interior partitions, except where demountable or retractable partitions are specifically required by the “Room Requirements.” Sound-rated partition assemblies shall have a minimum Sound Transmission Coefficient (STC) of 36 in accordance with ASTM E 90 or ASTM E 413 for frequency data.

Glass masonry units shall transmit 75 percent light.

##### **C101002 DEMOUNTABLE PARTITIONS**

Not Used.

##### **C101003 RETRACTABLE PARTITIONS**

Provide retractable partitions to include operable panel partitions. Sound-rated partition assemblies shall have a minimum Sound Transmission Coefficient (STC) of 42 in accordance with ASTM E 90 or ASTM E 413 for frequency data.

##### **C101004 INTERIOR GUARDRAILS AND SCREENS**

Provide balustrades where required by code. Provide screens where required to prohibit view of a particular area.

##### **C101005 INTERIOR WINDOWS**

Provide fixed interior windows of aluminum.

##### **C101006 GLAZED PARTITIONS & STOREFRONTS**

Provide glazed storefront system.

### **C101007 INTERIOR GLAZING**

Interior glazing shall be clear glass.

### **C1020 INTERIOR DOORS**

#### **C102001 STANDARD INTERIOR DOORS**

All interior doors shall be solid wood, except where hollow metal doors are required to meet fire rating. All interior door frames shall be hollow metal. Flush wood doors shall be WDMA I.S.1A-04, premium custom grade, heavy duty. Flush wood doors shall be WDMA I.S.-97 SCLC-5 5-ply structural composite lumber core.

Doors shall have Factory Finish of AWI Quality Standards Section 1500, specification for Conversion varnish alkyl urea, catalyzed polyurethane or acrylated uv curable epoxy.

#### **C102002 GLAZED INTERIOR DOORS**

Provide vision glazing in doors where it is required by the "Room Requirements" portion of this RFP, or it is deemed advantageous to be able to see through the door, either for safety of pedestrian traffic, or other functional reason.

#### **C102003 FIRE DOORS**

Provide interior fire doors.

#### **C102004 SLIDING AND FOLDING DOORS**

Not Used.

#### **C102005 INTERIOR OVERHEAD DOORS**

Provide fire rated interior overhead motorized coiling door with door hardware, integral metal frame and metal countertop.

#### **C102006 INTERIOR GATES**

Not Used.

#### **C102007 INTERIOR DOOR HARDWARE**

Provide special door hardware, such as combination locks and card key system as indicated in the Room Requirements..

Provide card key type access units for specialized entries. Provide lithium battery powered, magnetic stripe keycard locksets that are 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.

Door hardware finish shall be chrome-plated brass or bronze, or stainless steel.

Locks, if provided, shall not require the use of a key, a tool, or special knowledge or effort for operation from the egress side. When the building is occupied, doors must be able to be opened easily from the side from which egress is to be made. Doors with magnetic locks, with room access via a card reader can be considered a normal door if the door has a lever handle (or panic hardware as required bu code) with an integral switch that releases the lock to allow free egress by the occupants.

**C102090 OTHER INTERIOR SPECIALTY DOORS**

Not Used.

**C102091 OTHER INTERIOR PERSONNEL DOORS**

Not Used.

**C1030 SPECIALTIES**

**C103001 COMPARTMENTS, CUBICLES, & TOILET PARTITIONS**

Provide [solid plastic toilet partitions in all toilet rooms with more than one water closet or urinal. Provide toilet accessories as indicated in Chapter 3, "Room Requirements" portion of this RFP.

**C103002 TOILET AND BATH ACCESSORIES**

Provide toilet and bath accessories. Coordinate toilet accessories with base maintenance contract.

**C103003 MARKER BOARDS AND TACK BOARDS**

Provide marker boards and tack boards.

**C103004 IDENTIFYING DEVICES**

Provide interior directional signage as required for facility wayfinding. Provide an identifying device at each interior door. Signs must meet ADA requirements.

**C103005 LOCKERS**

Not Used.

**C103006 SHELVING**

Provide plastic laminate clad shelving.

**C103007 FIRE EXTINGUISHER CABINETS**

Provide fire extinguisher cabinets.

**C103008 COUNTERS**

Provide solid surface counter tops and integral back splashes.

**C103009 CABINETS**

Provide cabinetry and millwork items with associated accessories. Cabinetry shall be AWI premium grade and have concealed hinges with adjustable standards for shelves. All exposed surfaces will be covered with high pressure plastic laminate clad or hardwood veneer with exposed edges of solid hardwood.

Provide specific cabinetry as shown on the Room Requirements Sheets.

**C103010 CASEWORK**

Casework shall comply with Mil Std 1691.

Provide specific casework as shown on the Room Requirements Sheets.

**C103011 CLOSETS**

Not Used.

**C103012 FIRESTOPPING PENETRATIONS**

Provide all sleeves, caulking, and flashing for firestopping penetrations.

**C103013 SPRAYED FIRE-RESISTIVE MATERIALS**

Not Used.

**C103014 ENTRANCE FLOOR GRILLES AND MATS**

Provide recessed pan floor mats at all building entrances.

**C103015 ORNAMENTAL METAL WORK**

Provide ornamental metalwork stair handrails.

**C103090 OTHER INTERIOR SPECIALTIES**

Provide above ceiling mounted motorized projection screen as approved by client.

Provide brackets and mounts for ceiling mounted projectors and other wall or ceiling mounted electronic equipment as approved by client.

--End of Section--

## **6. ENGINEERING SYSTEMS REQUIREMENTS**

### **C20 STAIRS**

#### **SYSTEM DESCRIPTION**

Stairs, including stair construction and stair finishes, shall be provided as required by the building code to provide egress from the building from above or below grade level floors. Stairs shall be in accordance with UFC 1-200-01, *General Building Requirements*.

#### **GENERAL SYSTEMS REQUIREMENTS**

##### **C2010 STAIR CONSTRUCTION**

###### **C201001 INTERIOR AND EXTERIOR STAIRS**

Enclosed Interior stairs shall be constructed of steel with concrete filled pans.

Steel stairs shall be primed and painted.

###### **C201002 FIRE ESCAPE STAIRS**

Design fire escapes of the type and arrangement to conform to Fire Escape Stairs, of NFPA 101, *Life Safety Code*.

###### **C201090 HANDRAILS, GUARDRAILS, AND ACCESSORIES**

Handrails and guardrails shall be prefinished aluminum, prefinished steel, glass and or wood. Handrails and guardrails shall present a smooth, unbroken surface throughout the length of the stair.

Handrails and guardrails shall be finished to withstand extreme wear conditions.

Metal ladders and railings complying with OSHA requirements shall be provided for access and protection to any mechanical mezzanines, lofts or other similar spaces.

--End of Section--

## **6. ENGINEERING SYSTEMS REQUIREMENTS**

### **C30 INTERIOR FINISHES**

#### **SYSTEM DESCRIPTION**

Interior finishes include wall finishes, floor finishes, wall base finishes, and ceiling finishes.

Provide aesthetically pleasing, functional, durable finishes appropriate to the building's function. Acoustic properties of materials, as well as durability and ease of maintenance, shall be considered during material selection. Maximize the use of sustainable materials.

#### **GENERAL SYSTEMS REQUIREMENTS**

See "Room Requirements" for specific requirements on "Interior Finishes."

#### **C30 SSPC QP 1 CERTIFICATION**

The Project requires industrial coatings on exposed structural steel surfaces. 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.

#### **C3010 WALL FINISHES**

All interior wall finish materials shall be painted gypsum board. Provide Type II, high performance fabric or acoustic tackable wall boards with tackable wall covering in spaces such as conference rooms and entrance lobby, and Type II, high performance vinyl wall coverings in corridors as indicated in the "Room Requirements" or "Room Finish Schedule".

Provide porcelain tile at full height in all toilet rooms, all walls. Type II, high performance vinyl wall coverings for wall finish at backsplash wall and Solid Surface backsplashes at all wet-kitchen areas. At a minimum, provide all of manufacturer's offerings of medium priced selections for all wall tiles. When applicable provide product selections that include recycled content. Provide accent tile design incorporating a minimum of three tile colors; one field color, two accent tile colors and accessory ceramic tile shapes as an integral part of the ceramic wall tile system.

All interior wall finishes shall be as indicated in the "Room Requirements" or "Room Finish Schedule" portion of this RFP.

#### **C3020 FLOOR FINISHES**

Primary floor finish shall be carpet tile, except ceramic tile shall be provided in toilets and shower areas and natural stone or terrazzo at areas noted in room requirements..

a. Carpet Requirements

CPT1- General Office and Corridors Surface

Color: Multi-colored and Patterned  
Surface Texture: Cut/Loop  
Yarn Weight: 26 oz. Minimum.  
Dye Method: Primary Solution Dyed 80% with Yarn Dyed 20%  
Backing: High Performance

Density: 6600 minimum

CPT2- Upgrade in Command Areas and Other Areas as noted in Room Requirements

Color: Multi-colored and Patterned  
Surface Texture: Cut/Loop and Tip-sheared  
Yarn Weight: 32 oz. Minimum.  
Dye Method: Solution Dyed Minimum of 50% with some Yarn Dyed  
Backing: High Performance with attached cushion

Density: 7000 minimum

Building entrances shall be stone tile or terrazzo with recessed permanent entryway systems as entrance mats. Building entrances shall have a depressed slab with a permanent entryway system consisting of metal and carpet inserts. Entryway system shall cover a minimum distance of 10'-0" in length in the primary direction of travel, when feasible, in order to meet LEED 3.0 requirements.

Kitchen areas and restrooms shall be porcelain tile. Copy rooms and break rooms shall be sheet linoleum or linoleum composition tile (LCT) or bio-based tile. Provide at a minimum, a two-color pattern for LCT, linoleum composition tile or bio-based tile.

Utilitarian areas such as server/communication rooms, electrical and mechanical rooms shall be sealed concrete.

Exposed concrete floors shall be coated with a sealer appropriate to the function of the space. Floor finishes shall be as indicated in the "Room Requirements" or "Room Finish Schedule" portion of this RFP.

Non-slip, thru-color, porcelain tiles with coordinating tile base shall be used as indicated in the "Room Requirements". Provide matching porcelain tile cove base and pre-formed corners.

## **C3030 CEILING FINISHES**

Primary ceiling finish shall be 24 inch by 24 inch by 5/8 inch minimum thickness suspended acoustical panel ceiling system. Provide up-graded suspended acoustical panel ceiling with up-graded "fineline" ceiling grids in the entrance lobby, CLC (Command Center) and N00 Executive Suite spaces or as indicated in the Room Requirements. Upgraded "fineline style" ceiling grids shall be provided where upgraded suspended acoustical panel ceilings are located.

Provide a suspended gypsum board ceiling in showers and suspended acoustical ceiling in toilets, kitchen and break room areas, and both products must be suitable for moisture control and endure environments with up to 100% relative humidity and temperatures up to 104 °F. Suspended acoustical panels shall have a tegular edge in all areas except kitchen, break rooms and toilets.

Exposed structural systems shall be painted according to PTS Section C3040 INTERIOR COATINGS AND SPECIAL FINISHES.

Ceiling finishes shall be as indicated in the “Room Requirements.”

## **C3040 INTERIOR COATINGS AND SPECIAL FINISHES**

Paint all interior exposed surfaces including metal items, such as interior grilles, registers, diffusers, access panels, and panel boxes.

Provide special high performance architectural coatings in all areas.

Provide roll-on dry erase/white board surface treatment on all walls at conference rooms, at one primary wall location in Command Center, and at primary wall locations in N00 Executive Suites or as noted in Room Requirements.

Provide decorative film to provide designated glass surfaces at building entry with simulated etched glass window or door surface with squadron logo or other user selected logo design.

All finish coatings shall be as indicated in the “Room Requirements.”

--End of Section--

## 6. ENGINEERING SYSTEMS REQUIREMENTS

### D10 CONVEYING

#### SYSTEM DESCRIPTION

Conveying System shall include elevators sized to accommodate emergency gurney.

#### D1010 ELEVATORS AND LIFTS

Design assembly and arrangement of elevator, accessories, and supporting systems in accordance with ASME/ANSI A17.1 and NAVFAC ITG FY01-1, *Elevator Design Guide*. Provide all materials and equipment, including but not limited to elevator cab and hoist equipment, operating and signal fixtures, doors, door and car frames, car enclosure, controllers, motors, guide rails, brackets, and testing.

##### D101001 GENERAL CONSTRUCTION ITEMS

Provide a traffic analysis.

##### D101002 PASSENGER ELEVATORS

Provide a minimum of one hydraulic passenger elevator, located adjacent to the lobby area. Speed and rated load capacity of the elevator(s) shall be based on designer's survey of the facility user needs.

Elevator finishes and fixtures shall be derived from manufacturer's selections. Coordinate finishes with the interior architectural design, and be responsive to the user's needs and function. Passenger elevators shall be sized to vertically transport the largest movable equipment, emergency gurney or furniture used on the project. Coordinate the design of the elevator machine room with applicable codes and the elevator manufacturer's requirements.

##### D101003 FREIGHT ELEVATORS

Not Used.

##### D101004 WHEELCHAIR LIFT

##### D101005 DUMBWAITERS

Not Used.

##### D101090 OTHER VERTICAL TRANSPORTATION EQUIPMENT

Not Used.

##### D1020 WEIGHT HANDLING EQUIPMENT

Not Used.

##### D102001 OVERHEAD CRANES

Not Used

**D102002 MONORAILS**

Not Used.

**D1030 ESCALATORS AND MOVING WALKS**

**D103001 ESCALATORS**

Not Used.

**D103002 MOVING WALKS**

Not Used.

**D103003 OTHER MOVING STAIRS & WALKS**

Not Used.

**D1090 OTHER CONVEYING SYSTEMS**

**D109001 PNEUMATIC TUBE SYSTEMS**

Not Used.

**D109002 CONVEYORS**

Not Used.

**D109003 LINEN, TRASH, AND MAIL CHUTES**

Not Used.

**D109004 TURNTABLES**

Not Used.

**D109005 OPERABLE SCAFFOLDING**

Not Used.

--End of Section--

## **6. ENGINEERING SYSTEM REQUIREMENTS**

### **D20 PLUMBING**

Refer to Part 4 Section D20 for performance requirements of the building elements included in the plumbing system.

In view of meeting the requirements of the second LEED credit for Water Use Reduction as part of achieving the requirement for LEED Gold and Low Impact Development (LID), provide a complete rainwater collection, storage, treatment, and distribution system. Refer to paragraphs D2090 OTHER PLUMBING SYSTEMS (and following) for the system description and requirements for this system type.

These items shall be life cycle cost effective, meet EPACT 2005, 30% energy efficiency requirement, and the LEED Silver requirement

### **SYSTEM DESCRIPTION**

The plumbing system for the building consists of all fixtures, potable cold and hot water piping and equipment, piping insulation, water heating equipment, sanitary waste and vent piping systems, and other specialty piping and equipment within 5 foot (1.5 meter) of the building. Refer to Building Requirements, Space Tabulations Section of the Project Program for building occupancy levels.

### **GENERAL SYSTEM REQUIREMENTS**

Provide working space around all equipment. Provide concrete pads under all equipment. Provide all required fittings, connections and accessories required for a complete and usable system. All equipment shall be installed per the criteria of PTS section D20 and the manufacturer's recommendations. Design and installation shall be in accordance with IPC and UFC 3-420-01, *Plumbing Systems*. Where the word "should" is used in the manufacturer's recommendations, substitute the word "shall".

### **D2010 PLUMBING FIXTURES**

Provide quantity and type of plumbing fixtures required for the occupancy, use, and functions described for this facility. Refer to Room Requirements Section for additional specific requirements for spaces with plumbing fixtures. Provide handicapped fixtures in accordance with the referenced criteria in the Project Program.

#### **D201001 WATER CLOSETS**

Refer to Room Requirement Section for the number and type of water closets required.

Provide floor mounted flush valve type water closets with electronic control in all public restroom spaces.

Provide floor mounted flush tank type water closets with electronic control in private restroom spaces.

Provide handicapped flush valve type water closets in all public restroom spaces.

#### **D201002 URINALS**

Refer to Room Requirement Section for the number and type of urinals required.

Provide 1/2 GPF (gallon per flush) Maximum flow rate flush valve type urinals with electronic control in all public restroom spaces.

Provide handicapped flush valve type urinals in all public restroom spaces.

### **D201003 LAVATORIES**

Refer to Room Requirement Section for the number and type of lavatories required.

Provide countertop lavatories with metering faucet with electronic control in each restroom space.

Provide handicapped lavatories in all public restroom spaces.

### **D201004 SINKS**

Refer to Room Requirement Section for the number and type of sinks required.

Provide countertop sink with one compartment in the break space.

Provide service sink in the janitor spaces.

### **D201005 SHOWERS/TUBS**

Refer to Room Requirement Section for the number of showers required.

Provide a terrazzo shower floor and shower supply fittings in the shower room space.

### **D201006 DRINKING FOUNTAINS AND COOLERS**

Refer to Room Requirement Section for the number and type of water coolers required.

Provide handicapped units.

### **D201090 EMERGENCY FIXTURES**

Not used.

## **D2020 DOMESTIC WATER DISTRIBUTION**

Perform a flow test to determine system requirements.

### **D202001 PIPES AND FITTINGS**

Provide Copper tubing or CPVC piping and fittings for above ground and buried piping.

### **D202002 VALVES & HYDRANTS**

Provide isolation valves at supply to each floor. Provide hose bibbs in mechanical rooms. Provide wall hydrants along the building exterior such that all points along the perimeter can be reached with a 100 foot (30 meter) long hose.

### **D202003 DOMESTIC WATER EQUIPMENT**

Provide backflow preventers of types and at points within domestic water systems as specified by IPC. Locate inside the mechanical room on service entrance lines where not provided exterior to the building.

Provide an architectural screen for backflow preventer located outside.

Provide water meter.

Provide electric or natural gas fired water heater for heating of domestic water.

Provide in-line circulator for domestic hot water distribution system.

#### **D202004 INSULATION & IDENTIFICATION**

Provide mineral fiber insulation with vapor barrier on domestic water (hot and cold) supply and recirculation piping. Provide identification for piping and equipment.

#### **D202005 SPECIALTIES**

Provide ice maker connector box for refrigerators.

Provide valve box for buried valves.

#### **D202090 OTHER DOMESTIC WATER SUPPLY**

Provide piping supports in accordance with the IPC.

Provide inspections, disinfection, and testing in accordance with the IPC.

#### **D2030 SANITARY WASTE**

##### **D203001 WASTE PIPE & FITTINGS**

Provide plastic PVC piping, fittings, and solvent cement for above and below ground installation.

##### **D203002 VENT PIPE & FITTINGS**

Provide plastic PVC piping, fittings, and solvent cement.

##### **D203003 FLOOR DRAINS**

Provide in mechanical rooms, restrooms, plumbing chase areas, and to receive condensate from air handling equipment.

##### **D203004 SANITARY & VENT EQUIPMENT**

Provide sump pump in the elevator equipment room.

#### **D2040 RAIN WATER DRAINAGE**

##### **D204001 PIPE & FITTINGS**

Provide PVC piping, fittings, and solvent cement.

##### **D204002 ROOF DRAINS**

Provide roof drains that are compatible with the roofing system.

##### **D204004 INSULATION & IDENTIFICATION**

Provide the same as domestic water piping.

##### **D204090 OTHER RAIN WATER DRAINAGE SYSTEM**

Not Used.

#### **D2090 OTHER PLUMBING SYSTEMS**

## **D209001 SPECIAL PIPING SYSTEMS**

Provide a complete and usable natural gas supply system as detailed in the specification in accordance to NFPA 54 and International Building Code, Virginia Mechanical Code requirements, and natural gas supplier requirements. The system shall supply all natural gas fired equipment.

Provide natural gas connections for all gas-fired equipment. Vents and flues for gas fired equipment shall meet NFPA 211 and be U.L. listed. All vents on gas control valves shall be routed outdoors as required by NFPA 54. See also D30 and G30 requirements

## **D209002 ACID WASTE SYSTEMS**

Not used.

## **D209003 INTERCEPTORS**

Not used.

## **D209005 RAINWATER MANAGEMENT SYSTEM**

To achieve Low Impact Development (LID) and LEED credit(s), provide a complete rainwater management system. The system shall be complete and shall serve plumbing fixtures within the facility in accordance with LEED guidance. The system shall collect, treat, store, and distribute rainwater as “gray water” in sufficient capacity to achieve the corresponding water efficiency reduction for LEED credit(s). The system shall be designed and installed in accordance with the most stringent requirements from the applicable government criteria, including the requirements/recommendations of the following:

- EPA Manual “EPA/625/R-04/108 September 2004, Guidelines for Water Reuse” Web link is <http://www.epa.gov/nrmrl/pubs/625r04108/625r04108.pdf>
- The Texas Manual on Rainwater Harvesting, latest edition, web link is [http://www.twdb.state.tx.us/publications/reports/RainwaterHarvestingManual\\_3rdedition.pdf](http://www.twdb.state.tx.us/publications/reports/RainwaterHarvestingManual_3rdedition.pdf)

Depending on the rainwater collection capability and average rainfall, the irrigation system shall be served only by gray water. To distinguish gray water from potable water, and embossed or integrally stamped or painted "CAUTION: RECLAIMED WATER - DO NOT DRINK". The gray water piping system shall have its own particular identification color and pipe ID code/name. The gray water system will not require a potable water back-up for supplement during dry spells. Provide drainage of cooled condensate to rainwater collection system.

--End of Section--

## 6. ENGINEERING SYSTEMS REQUIREMENTS

### D30 HVAC

Refer to Part 4 Section D30 for performance requirements of the building elements included in the HVAC system.

#### SYSTEM DESCRIPTION

Provide a heating, ventilating and air conditioning (HVAC) system for the building that attains the following objectives: Occupant comfort, Indoor air quality, Acceptable noise levels, Energy efficiency, Reliable operation, and Ease of maintenance. Design and installation shall be in accordance with IMC and Series UFC 3-400, *Mechanical Engineering*. Refer to Building Requirements, Space Tabulations Section of the Project Program for building occupancy levels. Any combination of equipment that attains these goals, and meets the requirements outlined below, will be acceptable.

Economizer cycles shall not be used.

The following three systems shall be studied but the design is not limited to them.

System one shall consist of a Water source heat pumps with dedicated outdoor air system. Natural gas fired boilers (used to maintain loop temperature. during heating season). Closed circuit cooler (used to maintain loop temperature during cooling season).

System two shall consist of a Variable Air Volume (VAV) air handling units. Water cooled chiller with closed circuit cooler or Cooling Tower for cooling meeting the minimum IPLV in accordance with ASHRAE 90.1-2004. Natural gas fired boilers for heating.

System three shall consist of Variable Air Volume (VAV) air handling units. Air-cooled chillers meeting minimum IPLV in accordance with ASHRAE 90.1-2004 for cooling and natural gas fired hot water boilers for heating.

System four shall be at the contractor option consisting of any mechanical system that means the requirements of this RFP.

#### GENERAL SYSTEM REQUIREMENTS

Provide working space around all equipment. Provide all required fittings, connections and accessories required for a complete and usable system. All equipment shall be installed per the criteria in PTS Section D30 and the manufacturer's recommendations. Where the word "should" is used in manufacturer's instructions, substitute the word "shall".

Provide air conditioning and heating for spaces as indicated and for the following Design conditions:

Outside Conditions					
Summer	93	Degrees F dry bulb	Winter	20	Degrees F
	34	Degrees C dry bulb		-7	Degrees C
	77	Degrees F wet bulb			
	25	Degrees C wet bulb			

Inside Conditions					
Summer	75	Degrees F dry bulb	Winter	68	Degrees F
	23.8	Degrees C dry bulb		20	Degrees C
	50	%RH			

Heating & Ventilating Inside Conditions					
Summer			Winter	50	Degrees F
				10	Degrees C
	10	Air changes per hour			

Provide Ventilation rates and systems per the latest edition of ASHRAE Standard 62.1, *Ventilation for Acceptable Indoor Air Quality*.

The HVAC system shall provide each zone with the choice of heating or cooling year round unless otherwise indicated. Each zone shall have its own limited range of control, as allowed by the control system central workstation.

Provide minimum 4-inch (100 mm) thick concrete housekeeping pads and vibration isolators under all floor-mounted equipment.

All mechanical equipment shall have painted finishes that pass a salt-spray test conducted per ASTM B117 for duration of at least 500 hours.

All outside mechanical equipment HVAC coils shall be provided with a manufacturer approved coating system. The heat transfer rating shall be as installed.

## D3010 ENERGY SUPPLY

### D301001 OIL SUPPLY SYSTEM

Not used.

### D301002 GAS SUPPLY SYSTEM

Obtain natural gas pressures from the local natural gas utility provider, Virginia Natural gas. Contractor is responsible for providing any applications and permits and shall provide the complete natural gas system from the load side of the utility meter to the heating equipment. The Contractor shall have the local natural gas utility provider install piping and appurtenances up to the load side of the meter.

### D301003 STEAM SUPPLY SYSTEM (FROM CENTRAL PLANT)

Refer to Section G30, *Site Civil/Mechanical Utilities*.

Not used.

### **D301004 HOT WATER SUPPLY SYSTEM (FROM CENTRAL PLANT)**

Refer to Section G30, *Site Civil/Mechanical Utilities*.

Not used.

## **D3020 HEAT GENERATING SYSTEMS**

The heating load for this facility shall be served by 1 boilers providing 100 % of the load.

Boiler(s) located outside are not acceptable.

### **D302001 BOILERS**

Provide a packaged gas fired condensing, hot water boiler. Provide a boiler stack meeting the boiler makers' recommendations.

### **D302002 FURNACES**

Provide gas-fired condensing furnaces with cooling coil.

### **D302003 FUEL-FIRED UNIT HEATERS**

Not used

### **D302004 AUXILIARY EQUIPMENT**

Not used.

### **D302005 EQUIPMENT THERMAL INSULATION**

Provide insulation for hot water pumps and other associated heating equipment.

## **D3030 COOLING GENERATING SYSTEMS**

### **D303001 CHILLED WATER SYSTEMS**

Provide chilled water system for service to the building HVAC equipment. Chilled water reset is not allowed. Provide glycol/water mix for protection down to 10 degrees F.

Provide rotary screw water-cooled or rotary screw air-cooled or scroll air-cooled chillers using a primary/secondary variable speed pumping system and cooling tower with closed circuit cooler. The cooling load for this facility shall be served by 1 chiller providing 100 % of the load.

Chiller shall operate in temperatures down to 40 degrees F.

Provide heat recovery for reheat and domestic hot water.

Provide insulation and vapor barrier on all chilled water equipment.

Provide complete start-up and operational testing of chiller equipment.

Provide factory assembled fiberglass cooling tower closed circuit cooler to serve the water-cooled chiller. Provide with basin heater. The load may be served by a single cooling tower.

### **D303002 DIRECT EXPANSION SYSTEMS**

Provide a dedicated air-cooled direct expansion (DX) ductless split system heat pump unit for the NMCI/Telecom space.

Provide vertical water source ground-coupled heat pump units with ducted air distribution and controls to serve the heating and cooling requirements of the facility. One vertical water source ground-coupled heat pump unit shall be provided for each zone and shall be located within a mechanical closet. The mechanical closet shall be lockable and allow adequate space for maintenance. Provide each water source ground-coupled heat pump with a return filter grille to ease maintenance. If space does not allow for a vertical heat pump unit, provide horizontal heat pump units in the overhead with a means for removal and maintenance of the system through lockable access panels. Install flexible stainless steel piping connections (hose kits) between water source ground-coupled heat pumps and piping. Install vibration isolators on heat pumps.

### **D3040 DISTRIBUTION SYSTEMS**

#### **D304001 AIR DISTRIBUTION, HEATING & COOLING**

Provide insulated, galvanized steel ductwork constructed, braced, reinforced, installed, supported, and sealed per the IMC, ASHRAE and SMACNA standards.

Provide a Variable Air Volume (VAV) system using ducted returns and sound attenuators. VAV units shall be located above ceilings and allow for maintenance and removal of units through lockable access panels.

Direct expansion variable air volume systems are not acceptable.

Provide VAV Fan-Powered Units.

Provide grilles, registers, and diffusers. Provide filter grilles for return air.

#### **D304002 STEAM DISTRIBUTION SYSTEMS**

Not used.

#### **D304003 HOT WATER DISTRIBUTION SYSTEMS**

Provide a variable speed pumping system to serve the HVAC hot water equipment throughout the facility. Provide insulated steel or copper hot water supply and return piping to serve the HVAC equipment throughout the facility.

Provide air control and chemical treatment equipment for hot water piping system.

Provide an expansion tank for the hot water piping system.

Provide system flushing and start-up for the hot water piping system.

#### **D304004 CHANGEOVER DISTRIBUTION SYSTEMS**

Not used.

### **D304005 GLYCOL DISTRIBUTION SYSTEMS**

Not used.

### **D304006 CHILLED WATER DISTRIBUTION SYSTEMS**

Provide a variable primary or primary/secondary variable speed pumping system to serve the HVAC chilled water equipment throughout the facility.

Provide steel or copper chilled water supply and return piping to serve the HVAC equipment throughout the facility. Insulate piping with polyisocyanurate insulation.

Provide air control and chemical treatment equipment for the chilled water piping system.

Provide an expansion tank for the chilled water piping system.

Provide system flushing and start-up for the chilled water piping system.

### **D304007 EXHAUST SYSTEMS**

Provide ductwork constructed, braced, reinforced, installed, supported, and sealed per the IMC and SMACNA standards.

Provide ducted exhaust ventilation systems and exhaust fans to serve all ventilated zones of the facility. Provide rooftop centrifugal exhaust fans.

### **D304008 AIR HANDLING UNITS**

Provide central station constant volume or variable volume air handlers. Provide with MERV 13 filters.

Provide with ultraviolet disinfection system.

### **D304090 OTHER DISTRIBUTION SYSTEMS**

Provide in-line or base mounted circulating pumps with variable frequency drives.

### **D3050 TERMINAL & PACKAGE UNITS**

#### **D305002 UNIT HEATERS**

Provide unit heaters to serve the heating requirements of Mechanical room area of the facility.

#### **D305003 FAN COIL UNITS**

Not used.

#### **D305004 FIN TUBE RADIATORS**

Provide fin tube radiators for heating of stairs spaces.

#### **D305005 ELECTRIC HEATING**

Provide electric baseboard heaters for heating of stairs spaces.

#### **D305006 PACKAGE UNITS**

Provide 100% Outside Air Makeup Air Conditioning Units to precondition outside air prior to distributing to central station air handling.

## **D3060 CONTROLS AND INSTRUMENTATION**

### **D306001 HVAC CONTROLS**

#### **D306001-1.1 DIRECT DIGITAL CONTROLS (DDC)**

Provide Direct Digital Controls (DDC) to comply with UFGS 23 09 23.13 20 BACnet Direct Digital Control Systems for HVAC. The Designer of Record shall use UFGS Specification Section 23 09 23.13 20, BACnet Direct Digital Control Systems for HVAC, and submit the edited specification section as a part of the project design submittal. Use Standard English units of measure, not metric. Design requirements shall be in accordance with all specification notes and the BAS Owner shall be identified and designated early in the design documentation.

Provide workstation and notebook computers and complete application software with all licenses.

Provide training on the installed system according to the maximum training days in UFGS 23 09 23.13 20.

Provide trending, scheduling and alarm tables (may be included with the sequence of operation). Use alarming and trending services during performance testing or commissioning.

Provide air handlers and all terminal units, including VAV boxes, with discharge/supply air temperature sensors.

Use sequences of control providing energy savings, like free cooling.

Provide stand-alone control routines that operate without connection to the BACnet/IP and MSTP networks during a loss of communication.

Provide a DDC option for automatic operation of building circulating pumps whenever outdoor air temperature is below 35 degrees F or when there is a high potential for freeze damage.

Provide control to automatically start back-up pumps (or other HVAC equipment) if the primary device fails. Primary and back-up equipment starter circuits shall be wired to prevent both pieces of equipment from operating at the same time. Alarm every sequence routine when out-of-limits or control/response failure occurs.

Rotate primary and back-up HVAC equipment monthly (adjustable) with a lead/lag control routine.

Start/stop pumps via DDC, not with internal equipment controllers.

Provide reset routines (based on outdoor air temperature or zone demand) for hot water loop temperature setpoint and supply air static pressure control.

Provide meters, monitored by DDC, on all of the building's incoming utilities (steam, water, gas and electric). Set up trend reports to record data daily and store values in the front-end DDC computer.

Provide flow rate meters, monitored by the DDC, for central hot and chilled water flow and central air handling unit outside air CFM.

Contact Information for Building Automation Systems (BAS) owner - NAVFAC MIDLANT Utilities & Energy Code BMPW-61 DDC Group. Information regarding BACnet addressing, communications, training, site conditions, and general technical support are available through the BAS Owner. The BAS Owner and point of contact is NAB Little Creek/Fort Story; Ernie Bryant or Karl Blackburn (757) 462-7059, Building 3165 DDC Office.

Provide integration of the new DDC system to the existing BACnet front-end server and existing application software. Display all graphic floor plans, equipment graphics, DDC ladder diagrams, and sequence of operations graphic pages. Provide all alarming, trend services, schedules and other BACnet services as described in the 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 BACnet controls system must be demonstrated from the existing BACnet front-end server using only the existing application software and without the need to launch other applications or logon to other vendor applications. Integrate all new BACnet points on the existing server so that there is a seamless logical flow from the existing facilities to the new integrated facility.

Access and technical support for the existing BACnet server and software is available via the BAS owner. Provide BACnet Building Controllers (B-BC), BACnet/MSTP routers, and DSL modems as required for BACnet/IP and MSTP communications. Communication between the B-BC and the existing server will be the responsibility of the BAS owner. No new front-end desktop workstation is required, but a notebook computer shall be provided with all the features and graphic requirements configured as a full front-end workstation in accordance with the UFGS 23 09 23.13 20, BACnet Direct Digital Control Systems for HVAC. For the Hampton Roads area the only BACnet protocol analyzer required is the free tool available through Wireshark or an equivalent. Location of the existing BACnet server is located at NAB Little Creek and is a BACnet ALC WebCTRL server located in building 3165.

## **D3070 SYSTEMS TESTING AND BALANCING**

Provide complete Testing and Balancing (TAB) of all air and water distribution systems and HVAC equipment.

### **D307001 WATER SIDE TESTING & BALANCING – HEATING & COOLING**

Refer to paragraph D3070.

### **D307002 AIR SIDE TESTING & BALANCING – HEATING, COOLING & EXHAUST**

Refer to paragraph D3070.

### **D307003 HVAC COMMISSIONING**

Refer to Project Program section 2.3.3 for Building Commissioning requirements. Mechanical systems to be commissioned, if provided, include HVAC systems and controls, refrigeration systems and controls, renewable energy systems, and domestic hot water systems.

## **D3090 OTHER HVAC SYSTEMS AND EQUIPMENT**

### **D309001 GENERAL CONSTRUCTION ITEMS**

Provide seismic restraints and Comply with the Force Protection Criteria.

### **D309090 OTHER SPECIAL MECHANICAL SYSTEMS**

Provide ultraviolet disinfection systems If mechanical equipment manufacturer has the option of supplying one with their units.

Provide total energy (enthalpy) type energy recovery wheels (heat wheels) or a heat pipe energy recovery in the air handling system

-- End of Section --

## **6. ENGINEERING SYSTEMS REQUIREMENTS**

### **D40 FIRE PROTECTION**

Refer to Part 4 Section D40 for performance requirements of the building elements included in the fire protection systems.

#### **SYSTEM DESCRIPTION**

Provide an integrated fire alarm and fire suppression system capable of notifying building occupants and controlling any fire that may start inside the facility.

#### **GENERAL SYSTEM REQUIREMENTS**

Provide working space around all equipment. Provide concrete pads under all equipment. Provide all required fittings, connections and accessories required for a complete and usable system. All equipment shall be installed per the criteria of PTS section D40 and the manufacturer's recommendations. Where the word "should" is used in the manufacturer's recommendations, substitute the word "shall".

All Design Documents, (i.e. Building Code/Life Safety Analysis, plans, specifications, and calculations) developed for Section D40 shall be prepared by, or under the supervision of the design/build contractor's Qualified Fire Protection Engineer, the Fire Protection Designer of Record (FPDOR).

Provide training for the active systems consisting of two (2) eight (8)-hour sessions to accommodate all shifts of the base fire department and allow for rescheduling for unforeseen fire department responses.

For SCIF penetrations, provide one penetration for the fire alarm system and for the sprinkler system. Comply with DCID 6/9 for all work related to the SCIF.

### **D4010 FIRE ALARM AND DETECTION SYSTEMS**

Provide a complete, electrically supervised, addressable intelligent, manual and automatic, annunciated fire alarm and detection system throughout the facility. The system shall be a voice evacuation type system and shall also serve as a mass notification system. The fire reporting portion of the system shall be compatible with the existing base fire reporting system.

The fire alarm system shall include manual stations, system smoke detectors, duct smoke detectors, audio/visual alarms, fire alarm telegraphic transmitterelectrical supervision of all sprinkler system alarm and supervisory devices. The existing base fire reporting system is a 100 mil telegraphic type system.

The fire alarm control panel shall be capable of handling a minimum of 500 individually identified sensors within the main control panel. Provide Class B Notification Appliance Circuits, Class B, Style 4 Signaling Line Circuits, and Class B Initiation Device Circuits. The speakers serving inside the SCIF shall utilize wiring with a relay that is normally open and only closes upon a building fire alarm signal which would also activate the speakers inside the SCIF.

Manual pull stations shall be flush or semi-flush..

Provide a remote annunciator located at the quarterdeck.

Provide a crossed zoned smoke detection system for activation of the clean agent suppression system.

Turn over all demolished fire alarm equipment and fire alarm master boxes to the base public works department.

## **D4020 FIRE SUPPRESSION WATER SUPPLY AND EQUIPMENT**

Base hydraulic calculations on a static pressure of 62 psig (gauge) with 1060 gpm available at a residual pressure of 56 psig (gauge) at the junction with the water distribution piping system.

The incoming sprinkler service shall be provided with a reduced pressure principle backflow preventer..

Provide horizontal split-case centrifugalelectric driven fire pump if required. The minimum rated capacity shall be 300 gpm.

## **D4030 STANDPIPE SYSTEMS**

A standpipe system is not required.

## **D4040 SPRINKLER SYSTEMS**

Provide wet pipe automatic sprinkler protection to provide complete coverage throughout the building.

For light hazard areas the sprinkler rate of application shall be 0.1 gpm/ft<sup>2</sup>, over an area of 3000 ft<sup>2</sup> with hose stream allowance of 500 gpm. For ordinary hazard areas the sprinkler rate of application shall be 0.15 gpm/ft<sup>2</sup>, over an area of 3000 ft<sup>2</sup> with hose stream allowance of 500 gpm.

Provide quick-response recessed sprinklers with ordinary temperature rating in areas with finished ceilings. Provide white sprinklers and escutcheon plates to match ceiling color.

## **D4090 OTHER FIRE PROTECTION SYSTEMS**

Provide a total flooding clean agent fire suppression system for complete fire protection coverage throughout each communications room, including raised floor areas, main room spaces and the above ceiling spaces within each communications room.

--End of Section--

## **6. ENGINEERING SYSTEMS REQUIREMENTS**

### **D50 ELECTRICAL**

#### **SYSTEM DESCRIPTION**

Provide an interior electrical system consisting of Service Entrance Wiring and Equipment, Distribution and Lighting Panelboards, Dry Type Transformers, Conduits, Feeder and Branch Circuits, Motor Control Equipment, Lighting and Branch Wiring, Communications, Community Antenna Television (CATV), Electronic Security Systems including Access Control System, Intrusion Detection System (IDS), CCTV, Panic Alarms and Alarm Systems, Emergency Generator, Emergency Lighting and Power, Grounding, Lightning Protection, UPS, including accessories and devices as necessary and required for a complete and usable system. This section covers installations out to the building 5 foot (1.5 meter) line.

The interior distribution system shall consist of insulated conductors in conduit.

#### **GENERAL SYSTEM REQUIREMENTS**

Provide an Electrical System complete in place, tested and approved, as specified throughout this RFP, as needed for a complete, usable and proper installation. All equipment shall be installed per the criteria of PTS Section D50 and the manufacturer's recommendations. Where the word "should" is used in the manufacturer's recommendations, substitute the word "shall".

#### **D5010 ELECTRICAL SERVICE AND DISTRIBUTION**

##### **D501001 MAIN TRANSFORMERS**

Main transformer(s) are defined in Section G40, *Site Electrical Utilities*.

##### **D501002 SERVICE ENTRANCE EQUIPMENT**

All service into the facility shall be underground.

Provide a switchboard or main distribution panel as service equipment with transient voltage surge suppression (TVSS) device. Provide each switchboard with digital metering. The digital metering shall consist of a Multi-Function Meter.

##### **D501003 INTERIOR DISTRIBUTION TRANSFORMERS**

Provide dry type transformers to step down secondary voltages for general purpose outlets and other low voltage equipment. Provide transformers with K-13 K-factor rating for electronic load receptacles and electronic equipment connections.

##### **D501004 PANELBOARDS**

Provide distribution and branch circuit panelboards (Hinged-in -Hinged) with bolt-on type breakers throughout to serve loads as required by UFC 3-520-01. All secondary panels shall be supplied through a breaker at the main panel of each derived system.

For panelboards supplying Sensitive Electronic Equipment (SEE) in accordance with the IEEE Standard 1100-2005 IEEE Recommended Practice for Powering and Grounding Electronic Equipment and NEC 2008 Article 647 Sensitive Electronic Equipment, provide coordinated multistage, two stage or cascade, transient voltage surge suppression devices (TVSS) and dedicated neutral sized for each circuit.

Dedicated panels are required in the Telecommunication rooms.

## **D501005 ENCLOSED CIRCUIT BREAKERS**

Provide enclosed circuit breakers as required.

## **D501006 MOTOR CONTROL CENTERS**

Provide individual motor starters with disconnect switches variable speed drives, reduced voltage controllers and manual motor starters for motor controls as required by mechanical equipment. Provide all circuits and connections for motor loads.

## **D501090 OTHER SERVICE AND DISTRIBUTION**

Provide transient voltage surge suppressors (TVSS) at the following locations: Service Entrance, Telecommunications rooms, Security Equipment room, HVAC equipment containing electronic controls and Audio Visual equipment rooms.

## **D5020 LIGHTING AND BRANCH WIRING**

Provide electrical connections for all systems requiring electrical service.

Provide lighting and general purpose receptacles throughout all spaces as required.

Lighting shall have local controls via wall mounted switches and each working space shall have occupancy sensors (LEED). Wall switches shall over ride occupancy sensors. General purpose receptacles shall be located to meet requirements of room and allow for flexibility in room layout.

Provide lighting and general receptacles throughout all spaces as required by UFC 3-520-01.

Provide dedicated circuits and connections for all furniture system (per NEC requirement), plumbing and mechanical services as a minimum.

Provide dedicated circuits and connections for the following: copiers, shredders, printers, projectors and Smart boards, Telecommunication equipment, Audio Visual equipment, VTC equipment, UPS unit, Elevators, IDS and Security/Alarm equipment, Vending machines, NMCI racks, and kitchen/breakroom equipment. A dedicated circuit to support test bench area in N6 – Information Tech. Dept. Any electrical equipment rated 8 amperes and above shall be a dedicated circuit.

## **D502001 BRANCH WIRING**

All branch wiring shall be insulated conductors in conduit

Provide electrical circuits and wiring to support systems furniture requirements. Provide manufacturer's modular wiring system Provide a minimum of two 125 volts duplex outlets per workstation. These duplex outlets shall be in addition to duplex provided for offices spaces indicated herein. Provide

modular furniture power poles to support furniture power requirements in large office where modular furniture is not mounted along a wall.

## **D502002 LIGHTING EQUIPMENT**

Provide a complete lighting system consisting of exit and emergency lighting and area lighting consisting of fluorescent and lighting control system, full cut-off exterior lighting including switches and automatic controls including occupancy sensors, automatic lighting shutoff systems, and dimming systems. Lighting intensity/design shall be in accordance with IES Lighting Handbook and UFC 3-530-01, Design: Interior and Exterior Lighting and Controls and UFC 3-520-01. Type of the Lighting Fixtures shall comply with the hazardous Classification.

Lighting shall meet DOE Federal Energy Management Program, LEED and Energy Star requirements.

Fluorescent lighting fixtures shall be used throughout except as noted. Office type spaces with Video Display Terminal's (VDT) and dropped ceilings shall utilize fluorescent lighting fixtures meeting the requirements of IES RP-01 and RP-24 for VDT lighting criteria.

All fluorescent lighting fixtures shall utilize T5, T8 or compact fluorescent lamps, with electronic ballasts.

Provide illumination levels, as specified and as required to meet customer needs. Design to conserve energy, meet LEED and provide a pleasant and comfortable working environment. Lighting levels as follows minimum:

a. Offices Spaces/Work Surfaces	500 lux (50 footcandles)
b. General Office Area/Maintenance/Spares	300 lux (30 footcandles)
c. Computer rooms/Telecom Equip rooms	500 lux (50 footcandles)
d. Conference rooms	500 lux (50 footcandles)
e. Lobbies/Vestibules	250 lux (25 footcandles)
f. Bathrooms	200 lux (20 footcandles)
General	200 lux (10 footcandles)
Mirror & Inside Stalls	200 lux (20 footcandles)
h. Stairways	200 lux (20 footcandles)
I Elec/Mech Equip rooms/Corridors	200 lux (20 footcandles)
j. Custodial Closets	150 lux (15 footcandles)
k. Storage Rooms	100 lux (10 footcandles)
Command and Control Center	500 lux(50 footcandles)

Provide multi-level switching in spaces as follows:

a. Office Spaces	200 lux (20 footcandles) low
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	500 lux (50 footcandles) high
b. Brief/Debrief rooms	200 lux (20 footcandles) low
	500 lux (50 footcandles) high

Security Warning Lighting – Provide a Red rotating beacon within SCIF space as indicated in D503005 Security. Beacons shall be visible from any location within the space to indicate there are non-cleared guest within the space. The control of these lights will be a toggle switch located at the entry point within the space with a label to read, "Non-Cleared Personnel".

Provide occupancy sensors as a minimum to control lighting in toilets, storage rooms, janitor closets and other low-use spaces.

Provide electronic ballasts with programmed start.

Provide exterior lighting to illuminate the Courtyard, Service Compound and all entrance areas.

## **D5030 COMMUNICATIONS AND SECURITY**

The Room Requirements Section identifies locations for communications and security systems and equipment, unless noted otherwise in the following sub-elements.

The entire building shall be Control Access Area (CAA)

Communication and security systems in Sensitive Compartmented Information Facilities (SCIF) spaces shall be in accordance with Director Of Central Intelligence Directive (DCIC) 6/9 "Physical Security Standards for Sensitive Compartmented Information Facilities".

### **D503001 TELECOMMUNICATIONS SYSTEMS**

Provide a complete building entrance facility, backbone distribution system, and horizontal distribution system including, but not necessarily limited to, all wiring, pathway systems, grounding, backboards, connector blocks, protectors for all copper service entrance pairs, patch panels, fiber optic distribution panels, terminators for all fiber optic cables, outlet boxes, telephone jacks, data jacks cover plates, grounding and system furniture support. All copper telecommunications cables shall be CAT 6. The telecommunications systems provided are to meet all activities requirements and allow for future telecommunications system flexibility. This facility will have NMCI service for NIPRNET and SIPRNET and will need to meet the requirements of UFC 3-580-10 in addition to the requirements of UFC 3-580-01. The Top-Secret data system shall use 2 strand multimode Fiber Optic (FO), cables located on 2<sup>nd</sup> floor, Intel Department (N2). All FO cable connectors and matching jacks shall be type MTRJ.

Color Code Jackets Requirements: NIPR colored Green/Blue and SIPR colored Red

Intel Dept (N2)

Provide Category 6 Unshielded Twisted Pair (UTP) copper cable for horizontal voice and data cables.

Provide a minimum of two telephone, two NIPRNET, and two SIPRNET in all conference rooms. Provide four SIPRNET connections (two per side) in the Command Center. Provide pathways and cabling for all monitors, audio/video equipment, smart boards, and projector screens. All equipment in Command Center shall be tied into the Audio/Visual control console in the back of the center.

## **D503002 PUBLIC ADDRESS SYSTEMS**

Provide a Public Address system with speakers in all common spaces and exterior speakers for outside activity spaces.

## **D503003 INTERCOMMUNICATIONS SYSTEMS**

Not used

## **D503004 TELEVISION SYSTEMS**

Provide a CCTV system for training purposes including, but not necessarily limited to, cable supporting structures, including equipment racks, empty conduits with pull strings, junction boxes, outlet boxes, outlet connectors, and cover plates.

Provide CCTV outlets.

Provide a CATV system consisting of empty raceways and outlet boxes to enable system installation by the commercial CATV supplier.

Provide a complete CATV system to be owned and maintained by the Government including all interior equipment required to provide high quality TV signals to all outlets with a return path for interactive television and cable modem access. System shall include, but is not necessarily limited to, head end amplifiers, splitters, combiners, line taps, cables, outlets, tilt compensators and all other parts, components, and equipment necessary to provide a complete and usable system. Provide CATV outlets in following areas:

- A. Command Operations Center
- B. Intel Dept. (N2 space)
- C. Conference Rooms

Conduct CATV testing at each of the following points in the system:

- At each outlet.
- Head end and Distribution amplifier inputs and outputs.

## **D503005 SECURITY SYSTEMS**

An Electronic Security System (ESS) is the integrated electronic system that encompasses one or more of the following subsystems; access control system (ACS), intrusion detection system (IDS), and closed circuit television (CCTV) systems for assessment of alarm conditions.

The ESS for this project shall consist of an ACS and IDS and a CCTV system for alarm assessment and shall be compatible with the existing base security office LENEL system.

This project will reutilize some existing ESS/CCTV equipment as directed by the contracting officer. Existing equipment to be re-utilized includes:

DX4500 Series, 16 channel DVR

TruVision IR Bullet Cameras

Provide an electronic security system (ESS) including equipment and supporting infrastructure complete, tested, and operational. ESS shall be compatible with the Installation's central monitoring system and monitored within the protected zone/area and at the Installation central monitoring station.

Provide an ACS utilizing credential devices, coded devices and biometric devices to monitor and control personnel movement through and within protected areas the facility. The ACS shall log and archive all transactions and alert authorities of unauthorized entry attempts. ACS shall be interfaced with the CCTV system to archive unauthorized entry attempts and assist security personnel in the assessment of unauthorized entry attempts.

Provide an IDS to detect intruders or unauthorized personnel in protected areas/zones. Provide point sensors on all windows, doors, and man passable openings. Provide volumetric sensors within protected areas/zones to detect movement within protected areas/zones. System shall annunciate, print, and archive alarm conditions within the facility and at central monitoring station.

Provide an interior and exterior CCTV system consisting of devices to provide visual assessment and digital archiving of alarm conditions. Features shall include interface to ESS for control of camera call up to video monitors, pan-tilt-zoom camera control, and digital video archiving based on alarm event triggers. Video archiving capacity shall be a minimum of 30 days. Integration shall provide means to associate archived alarm events with recorded video at the location(s).

The building will contain an accredited SCIF space. See Room requirements section for location of space. Provide in accordance with DCID 6/9.

## **D503090 OTHER COMMUNICATIONS AND ALARM SYSTEMS**

### **D5090 OTHER ELECTRICAL SERVICES**

#### **D509001 GENERAL CONSTRUCTION ITEMS (ELECTRICAL)**

Provide General Construction Items (Electrical) including, but not necessarily limited to, all connections, fittings, boxes and associated equipment needed by this and other sections of this RFP as required for a complete and usable system.

Conduits, cable trays and bus ways that penetrate fire-rated walls, fire-rated partitions, or fire-rated floors shall be fire stopped in accordance with Section C10, *Interior Construction*.

#### **D509002 EMERGENCY LIGHTING AND POWER**

Provide power and wiring for emergency lights and exit lights throughout the facility.

Provide emergency power system for the entire building.

Provide an emergency generator (natural gas) to power the entire building. Sizing of the generator shall be done by the Design/build contractor.

Uninterruptible Power Supply (UPS) with 208Y/120VAC output for Telecommunications rooms, quarterdeck electronic systems, Fire Alarm Panel, Direct Digital Control system, Electronic Security

System, Command Center, N00- Executive and N2 – Intel Dept. and other critical electronic loads as designated.

### **D509003 GROUNDING SYSTEMS**

Provide a complete grounding system for the facility electrical and telecommunications systems.

### **D509004 LIGHTNING PROTECTION**

Provide a complete lightning protection system with a UL Lightning Protection Inspection Certificate certified to UL 96A, including, but not necessarily limited to, strike termination devices, conductors, ground terminals, interconnecting conductors, surge suppression devices, and other connectors and fittings required for a complete and usable system.

Work shall include installation of a complete lightning protection system on new site such that the entire system meets the UL Lightning Protection Inspection Certificate certified to UL 96A.

Lightning Protection Systems shall not void the roof warranty.

### **D509005 ELECTRIC HEATING**

Provide power wiring and connections as required for all electric heating systems and equipment.

### **D509006 ENERGY MANAGEMENT CONTROL SYSTEM**

Provide power wiring and connections as required for all systems and equipment. Coordinate connection requirements with switchgear, mechanical systems and pad mounted transformer kWH metering.

### **D509090 OTHER SPECIAL SYSTEMS AND DEVICES**

Not used.

--End of Section--

## **6. ENGINEERING SYSTEMS REQUIREMENTS**

### **E10 EQUIPMENT**

#### **GENERAL SYSTEMS REQUIREMENTS**

##### **E1010 COMMERCIAL EQUIPMENT**

The contractor shall obtain the services of equipment specialists to specify audiovisual 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.

##### **E101005 SECURITY AND VAULT EQUIPMENT**

The N6 EKMS Vault 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.

Provide a vault door where indicated in the "Room Requirements."

Vault door shall be provided with a day gate.

##### **E1020 INSTITUTIONAL EQUIPMENT**

###### **E102003 LABORATORY EQUIPMENT**

Not used.

##### **E1030 VEHICULAR EQUIPMENT**

Not Used.

##### **E1040 GOVERNMENT FURNISHED EQUIPMENT**

Rough-in and provide connections for Government-furnished equipment such that equipment will operate as intended, including providing miscellaneous items such as plugs, receptacles, wire, cable, conduit, flexible conduit and outlet boxes or fittings. Contractor shall pick up equipment at 1NCD security and transfer to site for storage until ready for installation. Testing requirements of Government Furnished equipment shall be the responsibility of the Contractor and shall follow the same guidelines as though the Contractor had provided the equipment. The following items will be furnished by the Government and shall be installed and tested by the Contractor: entrance security cameras

##### **E1090 OTHER EQUIPMENT**

Not Used.

**E109002 FOOD SERVICE EQUIPMENT**

Not used.

--End of Section--



## 6. ENGINEERING SYSTEMS REQUIREMENTS

### E20 FURNISHINGS

#### SYSTEM DESCRIPTION

Furnishings shall include fixed furnishings as part of the Structural Interior Design (SID) and funded as part of the construction contract and movable furnishings as part of the Furniture, Fixtures and Equipment (FF&E) funded separately as part of Collateral Equipment.

The movable furniture and furnishings (FF&E) for this facility include, but are not limited to movable artwork, standard room furnishings, furniture systems, freestanding furniture, area/accent rugs, appliances, accessories and other miscellaneous items to support facility functions.

AV equipment will not be funded as part of the FF&E Package. The occasional flat screen for "TV" purposes for lounges, BQs, etc. can remain in FF&E funding. AV Equipment will be purchased using separate funding. The AV Equipment will be identified as a separate line item, and priced separately from the FFE. AV Equipment will be funded as an option. See Part 3 Section E10.

FF&E (Furniture, Fixtures and Equipment) shall also include shop equipment.

FF&E is estimated in the following amounts: **\$1,095,500**. This estimate includes the contractor's Handling and Administration Rate (HAR).

Fixed furnishings such as specialty equipment (drying cages, weapon racks and lockers), security cameras, motorized projection screens, and blinds/shades are part of the SID and funded, purchased and installed as part of the construction contract.

#### GENERAL SYSTEMS REQUIREMENTS

Design and provide fixed and movable furnishings for all areas as developed during client programming and as indicated in the Room Requirements matrix if provided. Design a complete FF&E package and prepare supporting plans and procurement data. FF&E items identified in this RFP are a guideline for minimum facility requirements only and do not relieve the Contractor's Interior Designer from gathering and including the Customer's complete requirements in the FF&E package. Design per specific UFC (i.e. Youth center, BEQ, etc.) and in conjunction with Interior Design UFC.

The contractor shall have an Interior Designer with a minimum of one of the following credentials: National Council for Interior Design Qualification (NCIDQ) certification, or state and/or jurisdiction Interior Design Certification, Registration, or License. The interior designer must prepare both the SID and the FF&E Package and participate in all design charrettes and review meetings to develop the building floor plan. When shop or specialty equipment, such as audio visual equipment, is required in the project, the contractor shall obtain services of equipment specialists to specify the shop or specialty equipment. The Interior Designer and any Specialists shall not have any affiliation with the products specified. The NAVFAC Interior Designer reserves the right to approve/disapprove the qualifications of the Contractor's Interior Designer.

All fixed and movable furnishings selections shall be closely coordinated with Sections C10, Interior Construction, and C30, Interior Finishes. The FF&E package shall be fully integrated with the building systems and finishes.

The contractor shall be responsible for specifying and providing all FF&E, procurement, delivery, and installation for the facilities built under this contract as directed by the NAVFAC Interior Designer using NAVSUP Blanket Purchase Agreements (BPA's), GSA schedules, and other Federal contracts and complying with priorities found in FAR Part 8.404. A list of current BPA contract holders is located in Part 6 of this RFP.

The FF&E package shall be fully integrated into the design and construction schedule for the building.

## **INTERIOR DESIGN SUBMITTAL AND MEETING REQUIREMENTS**

### **STRUCTURAL INTERIOR DESIGN (SID) SUBMITTAL**

The SID submittal process shall begin following the award of the RFP. The SID submittal shall include Interior Design programming documents and exterior & interior finish/color and material sample boards.

- a. At the Concept Design Workshop (CDW) or Initial Design Meeting, per Z10 General Performance Technical Specification and section 01 33 10.05 20 Design Submittal Procedures, the contractor's Interior Designer shall meet with the client to develop the Interior Design programming documents. Interior Design programming documents include a preliminary FF&E Summary List and Cost Estimate and Furniture Footprint Plan. Minutes of this meeting shall be submitted to the NAVFAC Interior Designer within 14 business days.

Prior to the next design review meeting, the contractor's interior designer shall meet with the NAVFAC Interior Designer for an over-the-shoulder review meeting to present interior building finishes/colors/materials. Provide a minimum of two (2) exterior and interior finish/color/material color options. Finishes shall display manufacturer's label/specification and be presented in "loose" format for preliminary approval prior to client presentation. The over-the-shoulder review meeting is to be held at NAVFAC Mid-Atlantic.

- b. At approximately the 35% - 50% building design submittal, per Z10 General Performance Technical Specification and section 01 33 10.05 20 Design Submittal Procedures, the contractor's interior designer shall submit the FF&E Summary List and Cost Estimate, and the Furniture Footprint Plan shall be incorporated into the contractor's drawing set to ensure coordination with all other project disciplines. Three (3) sets of the FF&E Summary List will be required for Government review and approval; one each to the IPT, FEAD/ROICC and User/Customer.

In addition, the contractor's interior designer shall present the NAVFAC approved exterior and interior building finishes/color/material options, to the client for approval. Once approved, these finishes shall be documented in 8x10 binder format and distributed to all recipients identified below. The NAVFAC/client approved exterior and interior building finishes/colors/materials shall be included in subsequent Contractor submitted finish schedules. Three (3) sets of binders with the Building Finishes will be required for Government review and approval; one each to the IPT, FEAD/ROICC and User/Customer.

- c. At the 100% building design, per Z10 General Performance Technical Specification and section 01 33 10.05 20 Design Submittal Procedures, the Contractor's Interior Designer shall incorporate the approved final Furniture Footprint Plan into the contractor's final drawing set, and submit updated 8x10 Building Finishes SID binder pages as required. All Final SID color boards shall be submitted in heavy-duty plastic sheet protectors. Three (3) sets of the Collateral Equipment List will be also be required; (1) each to the Project Manager, FEAD/ROICC, and User/Customer.

### **SID CONSTRUCTION SUBMITTALS**

No changes shall be made to the SID furnishings 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 submitted to the Contracting Officer for approval by the NAVFAC Interior Designer before substitutions can be made.

### **FIXTURES, FURNISHINGS AND EQUIPMENT (FF&E) SUBMITTAL**

The FF&E submittal process shall begin with approximately the 65% design submittal. The submittal shall include furniture, furnishings, artwork, and equipment. The submittal shall be in the format provided by the NAVFAC Interior Designer. Develop design as described and in accordance with the client's requirements. Include in the design all loose furnishings required to produce an optimum functional facility, consistent with quality commercial design. This project also includes the preparation of specific detailed information for each selected item. Each submittal shall demonstrate thorough interaction with the client requirements and complete coordination with the facility design and the SID. Three (3) sets of the Building Finishes will be required for Government review and approval; one each to the IPT, FEAD/ROICC and User/Customer.

For Fast Track projects, the contractor shall be responsible for sufficiently scheduling all SID/FF&E submittals early enough to obtain the required government approvals, and meet all ordering and installation lead times to complete the project by the contract completion date.

- a. At the CDW or Initial Design Meeting, per Z10 General Performance Technical Specification and section 01 33 10.05 20 Design Submittal Procedures, the Contractor's Interior Designer shall meet with the NAVFAC Interior Designer for a FF&E Requirements meeting. At this time, the NAVFAC Interior Designer will give the Contractor's Interior Designer a sample format of the FF&E submittal, review the Best Value Determination process, and discuss Blanket Purchase Orders (BPAs), GSA sources and other mandatory sources.
- b. Within 21 days following the FF&E Requirements meeting, per Z10 General Performance Technical Specification and section 01 33 10.05 20 Design Submittal Procedures, the contractor's Interior Designer shall meet with the NAVFAC Interior Designer for an over-the-shoulder review to present furniture, furnishings and finish options for preliminary approval prior to client presentation.
- c. The Preliminary FF&E Best Value submittal shall be due at pre-final submission per Z10 General Performance Technical Specification and section 01 33 10.05 20 Design Submittal Procedures. It shall be presented to the client and NAVFAC Interior Designer. Submit the following in a 3-ring binder (with the exception of the 16x20 color boards) for both client and NAVFAC Interior Designer review and approval:
  1. FF&E list (Item Coded Cost Summary)
  2. Furniture placement plans coded to the FF&E list and furnishings specifications
  3. Catalog cuts and finish samples for all specified items
  4. 8x10 color boards of furniture/furnishings and finishes specified for client presentation to indicate overall design intent
  5. 8x10 color photographs of the color boards
  6. Complete RFQ package to include Scope of Work cover letter, FF&E specifications and copy of letter/email to UNICOR and all BPA contract holders
  7. Copy of all price proposals received
  8. Copy of all bid/no-bid responses from UNICOR and other vendors
  9. RFQ Evaluation Spreadsheet reflecting all received price proposals
  10. CD containing all product specifications submitted with vendor responses to RFQ.
- d. The Final FF&E submittal shall be due 30 calendar days following the receipt of review comments on the preliminary FF&E submittal. It shall be presented to the client and NAVFAC, as required. The Final submittal shall incorporate all previous review comments and the same items listed at the Preliminary submittal, unless

deemed inappropriate per previous review comments. It shall also include the 8x10 color boards and a CD copy of the Final FF&E binder. The Contractor's Interior Designer and any consultants shall submit the Best Value Determination worksheets as a separate addendum accompanying the final FF&E submittal. All Final color boards in the FF&E binder shall be submitted in heavy-duty plastic sheet protectors.

These are minimum requirements and the Contractor shall be prepared to provide any/all additional meetings and submittals that may be necessary to support the Interior Design effort/FF&E coordination.

#### **FF&E CONSTRUCTION SUBMITTALS**

Submit any revisions or deviations caused by discontinued items to the Contracting Officer for approval by the NAVFAC Interior Designer.

SD-10 Operation and Maintenance Data

List Operation and Maintenance Manuals for seating, systems furniture and keyboard trays.

### **E2010 FIXED FURNISHINGS (SID)**

Fixed furnishings (SID) are funded as part of the construction project and are not funded as part of Collateral Equipment. Each submittal must demonstrate complete coordination with the facility design and with the package for movable furnishings.

#### **E201001 FIXED ARTWORK**

As required, provide wall mosaic, painted mural, graphics and/or logo of activity in appropriate locations.

#### **E201002 WINDOW TREATMENTS**

All windows and other glazed openings to the exterior of the building shall be provided with horizontal blinds or solar shading system manually or electrically operated double-roller sunscreen and room darkening shades are considered SID and are funded as part of the construction project.

Soft window treatments, such as draperies, are considered Collateral Equipment and shall be included in the FF&E package, as required.

#### **E201006 RECEPTION AREA**

Design and provide a reception area that is consistent with quality commercial design and is architecturally significant in scale and coordinated with the interior finishes. Reception areas should reflect the mission of the client and be designed to accommodate the function and storage required. Elements to be included (at a minimum) but not limited to: logos or seals, Command Identification Boards, display cases, floor inlay, graphics, and decorative lighting.

#### **E201007 INTERIOR SIGNAGE**

All necessary interior signage shall be incorporated as part of the architectural drawings. Interior signage is not collateral equipment. Interior signage shall demonstrate complete coordination with the facility design, SID and FF&E submittals. Coordinate with section C1000.

### **E2020 MOVABLE FURNISHINGS (FF&E)**

The design of the FF&E package is funded as part of the construction contract base bid. The purchase and installation coordination of FF&E is a planned modification to the contract and funded separately as part of

Collateral Equipment. The specific process is outlined in PTS E20 in Part 4 of this RFP. If a FF&E list is provided within this RFP, the costs associated with the purchase and installation of these items are NOT to be included in the base bid. The estimated FF&E cost is provided for information purposes only. The contractor only needs to propose their Handling and Administrative Rate (HAR).

Design and provide a FF&E package in accordance with UFC 03-120-10, *Interior Design*, and other portions of this RFP for all areas as developed during client programming to provide a fully usable and complete facility. FF&E may also include specialty items for which the client activity shall be responsible for specifying. The contractor would be responsible for incorporating the client specifications into the FF&E package

The FF&E Package must include shipping, freight, handling, and professional installation. A Best Value Determination shall be performed on a minimum of three manufacturers for orders exceeding a total procurement of \$3000 from an individual manufacturer. Documentation shall be provided to the Government with the final FF&E package. Specific Procedures and Documentation requirements are indicated in Part 4 of the RFP. The BVD Statement shall be completed and signed by the contractor's interior designer. Sample BVD form and instructions are provided in Part 6 of this RFP.

The contractor, as a planned modification for the FF&E contract line item, shall be authorized by the Government Contracting Officer to procure all furniture/furnishings in the approved final FF&E package using predominately negotiated Federal contracts as directed by the Contracting Officer and the NAVFAC Interior Designer. When the FF&E line item for turnkey furniture procurement is negotiated and awarded, the Contractor's proposed Handling and Administrative Rate (HAR) shall not exceed 5% of the total cost of the FF&E, shipping, freight, handling, and installation. The HAR includes all of the prime contractor's effort related to the storage, coordination, handling and administration of subcontractors, and all other associated costs and profit for the procurement of FF&E. No other charges, fees, or markups will be authorized. The Contractor shall establish and submit a fixed percentage figure, for the administration effort of this modification (HAR), with the initial project proposal as part of the Contractor's Pricing Schedule.

## **E202001 MOVEABLE ARTWORK**

Provide moveable artwork as required.

## **E202002 MODULAR PREFABRICATED FURNITURE**

Provide Workstation systems product or modular freestanding workstations as required. Provide an articulating keyboard tray with left or right handed mouse extension for each computer location, as required.

## **E202003 FREESTANDING FURNITURE AND FILES**

Provide ergonomic task seating, lounge, reception and guest seating, storage, filing, tables, etc., as required.

## **E202090 OTHER MOVABLE FURNISHINGS**

Provide waste receptacles, recycling containers, fire extinguishers, clocks, literature racks, stacking washers, stacking dryers, microwaves, refrigerators, and other appliances as required.

The Command Operations Center has triple functionality: 1 -Conference/theatre; 2 -Stand up/formation ceremonial indoor; 3 -Command Operations Center (COC).

To maintain versatility it must include a raised floor with electrical and computer outlets for 30 (+- 5 stations, TBD) computers and the appropriate furniture as required.

Conference room/Theatre: Must seat 75 personnel. Stand up/Ceremonial room: Must have storage for the chairs and tables, which service the 75 personnel (maximum capacity), provide dollies for stacking chairs and folding tables as required.

Command Center needs largest storage room possible for modular tables, desks, chairs, computers, etc.

--End of Section--

## **6. ENGINEERING SYSTEMS REQUIREMENTS**

### **F20 SELECTIVE BUILDING DEMOLITION**

#### **GENERAL SYSTEMS REQUIREMENTS**

Perform all off-site work necessary to meet the requirements of the project, local codes, reference standards, technical specifications and performance criteria.

Identify and obtain all permits to comply with all federal, state, and local regulatory requirements associated with this work. The contractor shall submit complete the "Permits Record of Decision" (PROD) form with the first design submittal package. A blank PROD form is in the UFC 3-200-10N, *Civil Engineering*. Contractor shall determine correct permit fees and pay said fees. Copies of all permits, permit applications, and the completed PROD form shall be forwarded to the EFD Environmental Reviewer.

Coordinate and obtain approval from the Contracting Officer for proposed haul route(s), work site access point(s), employee parking location(s) and material lay down and storage area(s).

#### **F2010 BUILDING ELEMENTS DEMOLITION**

This project includes the complete demolition and removal of Building No. 3006. Building 3006, Little Creek Amphibious Base, is a two story, 21,222 square foot, wood-framed structure. The existing structure is 26 feet in height. (Refer to Demolition Site Plan and Photos in Part 6 – Attachments)

##### **F2010 1.1 GENERAL DEMOLITION**

Remove indicated existing structure to 2'-0" feet below existing grade.

##### **F2010 1.2 UTILITIES**

Utility demolition and removal must be coordinated with on-site personnel for planned outages.

##### **F2010 1.3 DUST CONTROL**

Prevent the spread of dust and debris and avoid the creation of a nuisance or hazard in the surrounding area.

##### **F2010 1.4 TRAFFIC CONTROL**

Site Access will be from Gator blvd. to the south and Hewitt Drive from the west. Both Roads are to remain open and accessible to the base during construction. Truck access should be via Gator Blvd. to minimize impact to the surrounding facilities.

##### **F2010 1.5 WEATHER PROTECTION**

Provide weather protection per Part 2 Section 01571 Temporary Environmental Controls.

##### **F2010 1.6 BURNING**

Burning will not be permitted.

**F201001 SUBSTRUCTURE & SUPERSTRUCTURE**

[Describe the substructure or superstructure to be demolished.]

**F201002 EXTERIOR CLOSURE**

The exterior walls are wood framed.

**F201003 ROOFING**

The roof system is asphalt shingles over wood sheathing and trusses.

**F201004 INTERIOR CONSTRUCTION & FINISHES**

Wood framed walls with painted gypsum board on each side. The floor finishes are primarily carpet. The toilets floors are porcelain tile and toilet walls are wainscot ceramic tile.

**F201005 CONVEYING SYSTEMS**

Not Used.

**F201006 MECHANICAL SYSTEMS**

[Describe the mechanical systems to be demolished.]

**F201007 ELECTRICAL SYSTEMS**

The existing fire alarm system equipment and its components, including the master box, shall be turned over to the base public works department.

**F201008 EQUIPMENT & FURNISHINGS**

Existing Vault.

**F201090 OTHER NON-HAZARDOUS SELECTIVE BUILDING DEMOLITION**

Not Used

**F2020 HAZARDOUS COMPONENT ABATEMENT**

Not Used.

**F2020 1.1 PRIVATE QUALIFIED PERSON (PQP)**

The General Contractor is required to hire as a first tier subcontractor a PQP to ensure compliance with the approved work plans and perform independent inspections, testing and verification of the hazardous components work including: asbestos, lead containing paint, PCBs animal droppings and molds and spores.

**F2020 1.2 FURNISHINGS**

Not Used.

**F2020 1.3 ASBESTOS**

Remove and dispose of all asbestos-containing materials and debris.

The Contractor may elect to leave Category I & II Non-Friable Asbestos-Containing Materials in place during demolition and dispose of the entire waste contents as Category I & II ACM. If the Contractor elects to follow this method, all procedures, monitoring, waste disposal, dust control measures, and other work activities shall be addressed within the asbestos work plan. In addition, the Contractor will not be allowed to segregate/salvage waste materials, or compact debris for transport. The Contractor shall also submit certification that the landfill to be used for disposal has been notified and is willing to accept Category I & II ACM.

#### **F2020 1.4 LEAD BASED PAINT**

The work includes removal and disposal of material and debris containing lead paint. For more detailed information regarding concentrations and locations of lead based paint, see the lead based paint report in Part 6 of the RFP.

#### **F2020 1.5 PAINT RELATED WORK**

Not Used

#### **F2020 1.6 MERCURY & LLR COMPONENTS**

Remove all fluorescent light tubes, thermostats and switches, smoke detectors, and exit signs, as mercury vapor containing and LLR components..

#### **F2020 1.7 PCB'S**

Remove all light ballasts, transformers, capacitors, compressors oil without markings regarding PCB content ("NO PCB", "NON PCB") as PCB containing.

#### **F2020 1.8 OZONE DEPLETING SUBSTANCES (ODS)**

Remove the following equipment which contains ODS : air conditioning equipment or fire suppression system cylinders and canisters.

#### **F2020 1.9 ANIMAL DROPPINGS**

Not Used.

#### **F2020 1.10 MOLDS AND SPORES**

Not Used.

#### **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 Part 2, Section 01571 Temporary Environmental Controls.

**F202001 SUBSTRUCTURE & SUPERSTRUCTURE**  
Not Used.

**F202002 EXTERIOR CLOSURE**  
Not Used.

**F202003 ROOFING**  
Not Used.

**F202004 INTERIOR CONSTRUCTION & FINISHES**  
Not Used.

**F202005 CONVEYING SYSTEMS**  
Not Used.

**F202006 MECHANICAL SYSTEMS**  
Not Used.

**F202007 ELECTRICAL SYSTEMS**  
Not Used.

**F202008 EQUIPMENT & FURNISHINGS**  
Not Used.

**F202090 OTHER HAZARDOUS SELECTIVE BUILDING DEMOLITION**  
Not Used.

--End of Section--

## **6. ENGINEERING SYSTEMS REQUIREMENTS**

### **G10 SITE PREPARATION**

#### **SYSTEM DESCRIPTION**

The site preparation system consists of site clearing, demolition, salvage, relocation, earthwork, and hazardous waste remediation necessary to ready the site for other work associated with the project.

#### **GENERAL SYSTEM REQUIREMENTS**

Develop the project site and perform all off-site work necessary to meet the requirements of the project, antiterrorism criteria, local codes, reference standards, technical specifications and performance criteria.

A topographic survey of the existing site has been performed. The survey is from November 2008 and subsequent survey data from March 2009 and is included in Part 6. The topographic survey has been provided to show the location of existing facilities, areas of new work required by this RFP and the character of the sites. Prior to starting work, the Contractor shall physically verify the location of all existing utilities and obtain all additional survey data required to provide a quality final design. The existence, size and/or location of the utilities are not guaranteed by the surveys provided. The Contractor shall verify the location of all utilities prior to construction. Electronic files of the topographic surveys will be provided to the Contractor only after award of the contract.

Subsurface soil information, including a geotechnical report is included in other portions of this RFP.

Any included subsurface data and information is only for the Contractor's information and is not guaranteed to fully represent all subsurface conditions. The Government shall not be responsible for any interpretation or conclusion drawn by the Contractor from the data or information.

Any geotechnical report included with site investigation data is provided only to better convey data (boring logs, testing, etc.) or to document observed site conditions. The assumptions, analysis, and recommendations of the accompanying report were developed for preliminary planning purposes only and may not be based upon present project requirements. Requirements stated in Parts 3 and 4 of the RFP take precedence over any content of any included geotechnical report.

The Contractor is required to retain a Geotechnical Engineer experienced and licensed in the geographic region of the project to interpret the provided data as related to his design concept and develop requirements for bidding. Additional requirements for the geotechnical design of this project are provided elsewhere in this RFP.

Minor variations between borings should be anticipated. The Contractor shall bear all costs associated with the site preparation and actual foundation except as allowed by the Contract Clause FAR 52.236-2, "Differing Site Conditions". The Contractor's Geotechnical Engineer shall perform any and all additional subsurface investigations as required to adequately determine the applicable geotechnical factors including the type and capacity of the project foundation(s). The Contractor's Geotechnical Engineer shall consider the provided information and any additional information obtained and prepares a report as described in other portions of this RFP.

A 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, 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 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.

Unless otherwise noted, provide new facilities at the locations indicated on the drawings in another part of this RFP.

Minimize the impact of construction activity on operations and neighboring facilities.

Identify and obtain all permits to comply with all federal, state, and local regulatory requirements associated with this work. The contractor shall submit a complete "Permits Record of Decision" (PROD) form with the first design submittal package. A blank PROD form can be obtained at the Download Tab of Part 6 of the NAVFAC Design-Build website at the following link: <http://www.wbdg.org/ndbm/Download/Download.html?Tab=Download>. The Contractor shall determine correct permit fees and pay said fees. Copies of all permits, permit applications, and the completed PROD form shall be forwarded to the Government's Civil Reviewer and Environmental Reviewer.

Jurisdictional tidal and non-tidal wetlands have not been identified on the project site.

Coordinate and obtain the Resident Officer In Charge of Construction's (ROICC) approval for proposed haul route(s), work site access point(s), employee parking location(s) and material laydown and storage area(s).

Refer to Site Analysis and Building Requirements Sections for additional site preparation functional program information.

## **G1010 SITE CLEARING**

### **G101001 CLEARING**

Clear site as required. Preserve trees as much as possible. The project site does not have saleable timber.

Burning will not be allowed.

### **G101002 TREE REMOVAL**

Remove trees as required for project construction.

### **G101003 STUMP REMOVAL**

Not used.

### **G101004 GRUBBING**

Not used.

### **G101005 SELECTIVE THINNING**

Not used.

## **G101006 DEBRIS DISPOSAL**

All grubbing and clearing residue, demolished material, rubbish and debris generated by this project shall be hauled off-site and off station by the Contractor.

## **G1020 SITE DEMOLITION & RELOCATIONS**

### **G102001 BUILDING MASS DEMOLITION**

The existing Naval Construction Division Ops Facility, Building 3006 shall be demolished to include all utility service connections back to the main, floor foundations, asphalt parking lot and sidewalks. Building 3006 is currently occupied and will not be available for demolition operations until the new facility is ready for occupancy and the occupants and contents have been moved. The existing building is built with a crawl space, with wood-framed construction, siding and asphalt shingle roofing. Once demolished the site is to be returned to natural state, maintaining trees and vegetation to the greatest extent possible.

Refer to Section F2020, "Hazardous Component Abatement" for requirements regarding removal of hazardous components.

### **G102002 ABOVEGROUND SITE DEMOLITION**

Preserve and relocate the following aboveground site elements: Relocate the Seabee Monument to the front of the new building. The existing generator shall become property of the Government.

#### **G102002 1.1 ABOVEGROUND STORAGE TANKS**

Not used.

### **G102003 UNDERGROUND SITE DEMOLITION**

Preserve the following underground site elements: all existing utilities required for proposed project.

Abandonment of utility systems shall be done in a manner that conforms to applicable codes and regulations, removes their presence from the ground surface and clearly indicates that they have been abandoned. Utilities shall not be abandoned in place underneath or within 10 feet (3.0 m) of any new facilities. Remove and relocate existing utility piping, conduits, and utility structures under the proposed building.

All conduits to be abandoned shall have wiring removed.

All piping to be abandoned shall be removed. Piping shall be removed under pavements subject to potential vehicle loadings.

Remove existing utility structures to 3 feet (900 mm) below existing or new adjacent grade, whichever is greater. Break up bases to permit drainage. Fill with clean sand.

#### **G102003 1.1 UNDERGROUND STORAGE TANKS**

Not used.

### **G102004 BUILDING RELOCATION**

Relocate building elements as indicated in another part of this RFP. Refer to Section F2020, "Hazardous Component Abatement" for requirements related to removal of hazardous components.

**G102005 UTILITY RELOCATION**

Comply with the requirements of the utility provider concerning the utility relocation:

**G102006 FENCING RELOCATION**

Relocate or reuse existing fence and its appurtenances as needed.

**G102007 SITE CLEANUP**

Return existing site to natural state.

**G102090 OTHER SITE DEMOLITION & RELOCATIONS**

Relocate the Seabee Monument to the front of the new building.

**G1030 SITE EARTHWORK**

**G103001 GRADING**

Finish floor elevations for new facilities shall be above the 100year flood elevation. Provide elevations for mechanical/electrical equipment pads above the 100 year flood elevation. Topsoil, seed and fertilize grass areas and other pervious areas disturbed by Contractor operations.

**G103002 COMMON EXCAVATION**

Refer to Section G10 in Part 4 of this RFP for performance requirements associated with this work.

**G103003 ROCK EXCAVATION**

Blasting will not be permitted.

**G103004 FILL & BORROW**

Borrow and select fill shall come from off-base sources.

**G103005 COMPACTION**

Contractor will be required to perform compaction in accordance with UFGS Specifications and the contractor's geotechnical engineer's recommendations.

**G103006 SOIL STABILIZATION**

Provide soil stabilization using geosynthetics such as geotextiles and geogrids designed to function as required by site conditions.

**G103007 SLOPE STABILIZATION**

Provide slope stabilization through appropriate grading and site design. No slope stability analysis or specialized geotechnical construction to provide slope stability is anticipated for this project

**G103008 SOIL TREATMENT**

Treat the area around the entire foundation of each building for termite control in accordance with manufacturer's instructions.

**G103009 SHORING**

Provide a sheeting and shoring plan if required by local codes and/or OSHA. The plan will be signed and sealed by a professional engineer registered in the State of Virginia.

### **G103010 TEMPORARY DEWATERING**

Depending on the time of construction, the presence of groundwater or perched water in the surface soil may present a detrimental effect on site preparation and/or grading operations. The effects will be mostly evident during the wetter winter months when groundwater levels are likely to be elevated. Provide pumps, ditching and grading during construction as necessary to prevent conditions that would promote deterioration of the soil, or cause interruptions to construction progress.

### **G103011 TEMPORARY EROSION & SEDIMENT CONTROL**

Construct temporary measures including but not limited to filter barriers, sediment fence, tree protection, inlet protection, construction entrance, dust suppressors, temporary seeding and erosion control matting to reduce on-site erosion and off-site runoff and sedimentation. Provide erosion and sediment control in accordance with Virginia Erosion and Sediment Control Handbook.

### **G103090 OTHER SITE EARTHWORK**

Not used.

### **G1040 HAZARDOUS WASTE REMEDIATION**

Refer to Section F2020 "Hazardous Waste Component Abatement" of this project program for information pertaining to hazardous materials.

#### **G1040 1.1 EXCAVATION**

Not used

#### **G1040 1.2 STOCKPILED SOILS**

Not used.

#### **G1040 1.3 CLEAN FILL**

Not used.

#### **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/Control actions shall be taken immediately to minimize the effect of the spill or leak. Clean up shall be performed at the Contractor's expense in accordance with applicable federal, state and local regulations.

#### **G1040 1.5 DISPOSAL**

Excess soils that cannot be re-utilized as backfill at the same location from which it was removed will not require any special handling or sampling for disposal unless petroleum or chemical contamination is discovered during excavation activities.

--End of Section--



## **6. ENGINEERING SYSTEMS REQUIREMENTS**

### **G20 SITE IMPROVEMENTS**

#### **SYSTEM DESCRIPTION**

The site improvements system consists of pavements and pavement related features, landscaping and other exterior site development work related to this project.

#### **GENERAL SYSTEMS REQUIREMENTS**

Provide site improvements as required to make a useable facility that meets functional and operational requirements, incorporates all applicable anti-terrorism, force protection and physical security requirements and blends into the existing environment.

Provide site improvements in conformance with applicable requirements of the Uniform Federal Accessibility Standards.

Identify and obtain all permits to comply with all federal, state, and local regulatory requirements associated with this work. The contractor shall complete the "Permits Record of Decision" (PROD) form with the first design submittal package. A blank PROD form can be obtained at the Download Tab of Part 6 of the NAVFAC Design-Build website at the following link: <http://www.wbdg.org/ndbm/Download/Download.html?Tab=Download>. Contractor shall determine correct permit fees and pay said fees. Copies of all permits, permit applications, and the completed PROD form shall be forwarded to the Government's Civil Reviewer.

Provide improvements as required to conform to all applicable anti-terrorism and physical security requirements.

Minimize the impact of construction activity on operations and neighboring facilities.

Locate new site improvements at locations indicated on the drawings in another part of this RFP. If specific locations are not provided, site the improvements to develop appropriate and positive relationships with other facilities and to conform to existing development patterns.

Refer to Site Analysis and Building Requirements Sections for additional site improvement functional program information.

#### **G2010 ROADWAYS**

Provide roadways, as required, to allow for safe, convenient and logical circulation, while discouraging through traffic. The design of pavements shall take into consideration the anticipated daily traffic (450 cars, 10 single unit trucks) over the life of the project (20 years) as well as the existing soil conditions at the site.

Provide roadways of bituminous pavement between the new facility and the adjacent existing road. Porous asphalt pavement and gravel pavement may not be used.

Provide other roadway improvements including markings and signage.

### **G201001 BASES & SUBBASES**

Crushed concrete meeting specified gradation for aggregate base or subbase courses may be used.  
Recycled asphalt may not be used.

### **G201002 CURBS & GUTTERS**

Provide curb and gutter to tie into adjacent facilities if needed. Limit the use of curb and gutter to help comply with Low Impact Development.

### **G201003 PAVED SURFACES**

Recycled asphalt pavement material may not be used for bituminous concrete pavement as permitted by the SHS.

### **G201004 MARKING & SIGNAGE**

Provide permanent pavement markings and signage (regulatory, warning, and guidance) to promote safe traffic flow around the facility, in accordance with Manual of Uniform Traffic Control Devices (MUTCD). Signage will also indicate no parking or limited parking in service driveways, conforming to requirements of UFC 4-010-01 *DoD Minimum Antiterrorism Standards for Buildings*.

Provide temporary pavement markings and signage throughout construction to meet phasing requirements indicated in the project program. Provide temporary signage in accordance with the MUTCD.

### **G201005 GUARDRAILS & BARRIERS**

Not used.

### **G201006 RESURFACING**

If required, resurface the existing pavement with a bituminous overlay.

### **G201090 OTHER ROADWAYS**

Not used.

## **G2020 PARKING LOTS**

Provide parking for 105 private motor vehicles (PMVs) and 10 government vehicles. The design of pavements shall take into consideration the anticipated daily traffic (450 cars, 10 single unit trucks) over the life of the project (20 years) as well as the existing soil conditions at the site.

Provide parking lots of bituminous pavement. Gravel pavement may not be used. Permeable pavers and porous concrete pavement may be used to help comply with Low Impact Development. The minimum allowable pavement section will consist of 2-inches of bituminous surface material over 8-inches of aggregate base material.

Provide other parking improvements including a minimum of 2 parking entrances for two way traffic and the appropriate markings and signage.

Provide safe, convenient, and logical circulation through the parking area while discouraging through traffic. Account for all traffic types which may be associated with the parking area including emergency response, trash collection, school buses, and delivery vehicles. Maintain compliance with all antiterrorism requirements.

Provide handicapped parking in accordance with the Uniform Federal Accessibility Standards.

### **G202001 BASES & SUBBASES**

Crushed concrete meeting specified gradation for aggregate base or subbase courses may be used.  
Recycled asphalt may not be used.

### **G202002 CURBS & GUTTERS**

Limit the use of curb and gutter to help comply with Low Impact Development.

### **G202003 PAVED SURFACES**

Portland cement concrete shall have a minimum design flexural strength of 650 to 700 psi (4.48 to 4.83 MPa) in not more than 28 days.

Recycled asphalt pavement material may be used for bituminous concrete pavement.

### **G202004 MARKING & SIGNAGE**

Provide permanent and temporary pavement markings and signage (regulatory, warning and guidance) to promote safe traffic flow around the facility, in accordance with Manual of Uniform Traffic Control Devices (MUTCD). Signage will also indicate no parking or limited parking in service driveways, conforming to the requirements of UFC 4-010-01 *DoD Minimum Antiterrorism Standards for Buildings* and other traffic control devices as required to facilitate proper utilization of the parking areas.

Provide pavement markings including crosswalks.

Provide temporary pavement markings and signage to meet phasing requirements indicated in the project program. Provide temporary signage in accordance with the MUTCD.

### **G202005 GUARDRAILS & BARRIERS**

Provide wheelstops and bollards, where necessary, in accordance with the UFC 3-200-10N, *Civil Engineering*.

### **G202006 RESURFACING**

Not used.

### **G202007 MISCELLANEOUS STRUCTURES AND EQUIPMENT**

Not used.

### **G202090 OTHER PARKING LOTS**

Not used.

### **G2030 PEDESTRIAN PAVING**

Provide a network of Portland cement concrete sidewalks, separated from, but connected to vehicular circulation systems, to allow pedestrian circulation between various elements of the project. Sidewalks shall be at least 5 feet wide, except main corridor sidewalks (e.g., such as parking lot to front entrance) shall be at least 8 feet wide. Permeable pavers and porous concrete pavement may be used to help comply with Low Impact Development

### **G203001 BASES & SUBBASES**

Not used.

**G203002 CURBS & GUTTERS**

Not used.

**G203003 PAVED SURFACES**

Not used.

**G203004 GUARDRAILS & BARRIERS**

Not used.

**G203005 RESURFACING**

Not used.

**G203006 OTHER WALKS, STEPS & TERRACES**

Not used.

**G2040 SITE DEVELOPMENT**

**G204001 FENCING & GATES**

Provide a passive barrier system at the restricted delivery entrance.

**G204002 RETAINING AND FREESTANDING WALLS**

Not used.

**G204003 EXTERIOR FURNISHINGS**

All site furnishings shall conform to the Base Exterior Architectural Plan (BEAP) and the Installation and Appearance Guide.

**G204004 SECURITY STRUCTURES**

Provide a passive barrier system at the restricted delivery entrance.

**G204005 SIGNAGE**

Provide signage in accordance with the Activity's BEAP and the Installation and Appearance Guide.

**G204006 FOUNTAINS & POOLS**

Not used.

**G204007 PLAYING FIELDS**

Not used.

**G204008 TERRACE AND PERIMETER WALLS**

Not used.

**G204009 FLAGPOLES**

Install a flag pole on the front lawn of the building.

**G204090 OTHER SITE IMPROVEMENTS**

Provide dumpster pad and enclosure. Relocate the trademark monument from in front of the existing 3006 building to the new site.

## **G2050 LANDSCAPING**

Provide complete landscaping consisting of lawn, groundcover, trees, shrubs as required to provide a quality, cost-effective, functional and visually appealing landscape program that will enhance the development, while complying with all applicable anti-terrorism, force protection and physical security requirements. The final approval of plants selected shall rest with NAVFAC Atlantic Landscape Architect, John L. Blackburn. Guarantee all landscaping for a period of one year after final acceptance of the project.

Provide complete landscaping maintenance, including watering as needed, mulching, restaking and routine mowing, for one full year during the guarantee period. Provide shrubs and/or small growing trees for screening of mechanical equipment/wall, dumpster enclosures (on three sides), and other obstructions that do not present an aesthetic view from the street. Provide a turfed area that will accommodate 150 people for ceremonial reviews.

### **G205001 FINE GRADING AND SOIL PREPARATION**

Provide fine grading and soil preparation to provide proper drainage away from buildings and ready for seeding.

### **G205002 EROSION CONTROL MEASURES**

Prevent erosion from occurring by providing erosion control measures as required by city, state and federal requirements.

### **G205003 TOPSOIL AND PLANTING BEDS**

See G205005 Plantings.

### **G205004 SEEDING SPRIGGING AND SODDING**

Areas indicated to be turfed in another part of this RFP shall be seeded or sodded.

### **G205005 PLANTINGS**

Preserve existing trees to the greatest extent possible. Provide small trees, shrubs and/or ground cover plantings at building entrances to accentuate the entrances. Provide tree plantings throughout the site to frame the new building and lessen the visual impact of the parking area. Plant shrubs, ground covers, and trees as part of the Bioretention Cells provided for stormwater Low Impact Development. Provide triple shredded hardwood mulch at all bioretention swales. Provide trees and shrubs at the rate of 5 trees and 15 shrubs per 1000 s.f. of bioretention swale. If filter fabric is used in bioretention swales, it shall be used along the sides of the swales only. Final design of these swales, including soil mixes shall be as recommended by John L. Blackburn. Plant Street Trees that encompass the entire project site with an average spacing of 40 ft. on center. Street trees shall be all of one species. Plant trees in parking lot islands. Trees in parking lot islands shall be of one species. Provide 3 to 5 inch diameter river stone mulch over weed control fabric at all planting beds adjacent to the building. G205006 PLANTERS

### **G205007 IRRIGATION SYSTEMS**

Not used.

### **G205090 OTHER LANDSCAPING**

Not used.

--End of Section--

## **6. ENGINEERING SYSTEMS REQUIREMENTS**

### **G30 SITE CIVIL/MECHANICAL UTILITIES**

#### **SYSTEM DESCRIPTION**

The site civil/mechanical utility systems include water supply systems, sanitary sewer systems, storm drainage systems, heating distribution systems, cooling distribution systems, fuel distribution systems and associated appurtenances which are more than 1.5 meters (5 feet) outside the building.

The site mechanical utility system consists of all piping and appurtenances for natural gas including all accessories and devices as necessary and required for a complete and usable system up to 5 feet (1.5 meters) outside buildings.

#### **GENERAL SYSTEM REQUIREMENTS**

Develop the site to provide water, fire protection, sanitary sewer, storm drainage, heating, cooling and fuel distribution services that meet the requirements of each applicable regulatory agency that governs and issues permits for the construction and operation of these systems.

Provide each system complete and ready for operation.

Physically verify the location of existing above and below ground utilities prior to starting work.

Identify and obtain all permits to comply with all federal, state, and local regulatory requirements associated with this work. The contractor shall complete the "Permits Record of Decision" (PROD) form with the first design submittal package. A blank PROD form can be obtained at the Download Tab of Part 6 of the NAVFAC Design-Build website at the following link:

<http://www.wbdg.org/ndbm/Download/Download.html?Tab=Download>. The Contractor shall determine the correct permit fees and pay said fees. Copies of all permits, permit applications, and the completed PROD form shall be forwarded to the Government's Civil/Mechanical Reviewer.

Minimize the impact of construction activity on facility operations and neighboring facilities.

Utility connection points are indicated on the drawings in another part of this RFP. Obtain final approvals from the Government's Civil/Mechanical Reviewer and the Contracting Officer for all utility connection points associated with this work.

Coordinate with the local utility providers and pay any fees or charges required to connect to their utility.

Refer to Site Analysis and Building Requirements Sections for additional site civil/mechanical utilities information.

Provide all required fittings, connections and accessories required for a complete and usable system. All equipment shall be installed per the criteria of PTS Section G30 and the manufacturer's recommendations. Where the word "should" is used in the manufacturer's recommendations, substitute the word "shall".

After installation of the equipment and systems, provide individual training courses for two Government personnel for each of the items listed below, covering items contained in the Operations and Maintenance manuals. Provide one copy of the Operations and Maintenance manuals for each two course attendees. Provide one DVD disc of the training courses to be used as refresher courses and to train additional

personnel. Training shall be conducted by the same factory trained engineer that supervised the installation of the system. Training shall 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. Submit training plan 30 calendar days prior to training sessions. Training plan shall include scheduling, content, outline, and training material handouts.

## **G3010 WATER SUPPLY**

The new water system is an extension of the existing water system. The existing water system serving the project site is owned, operated and maintained by the federal government). Provide the new water system and connections to the existing water system in accordance with UFC 3-200-10N, *Civil Engineering*; the utility provider's requirements; and the state waterworks' regulations; whichever is more stringent.

Notify the utility provider of the additional demand generated by the proposed facility. Provide a copy of all correspondence with the utility provider to the Government's Civil/Mechanical Reviewer.

Provide connection to the existing water distribution system at the point indicated on the drawings in another part of this RFP.

The new water system shall be designed so water consumption for each facility is monitored from one meter. The meter shall be easily accessible, but not obvious.

### **G301001 WELL SYSTEMS**

Not used.

### **G301002 POTABLE WATER DISTRIBUTION**

Connect the new potable water distribution system to the distribution system at the point indicated on the drawings in another part of this RFP.

A water meter on each proposed service line is required. Provide type of meter and remote reading as required by the utility provider. This meter will be Government furnished and Contractor installed.

Provide meter box.

Fire hydrants shall match the existing color scheme for fire hydrants in the adjacent areas.

Backflow preventers are required on all service entrance lines. If not specified in ESR D20 and D40, backflow preventers will not be allowed outside the building.

### **G301003 POTABLE WATER STORAGE**

Not used.

### **G301004 FIRE PROTECTION WATER DISTRIBUTION**

Provide fire suppression water supply as required by the building population and fire protection requirements.

### **G301005 FIRE PROTECTION WATER STORAGE**

Not used.

### **G301006 NON-POTABLE WATER DISTRIBUTION**

Not used.

**G301007 PUMPING STATIONS**

A package booster pump station will not be required.

**G301008 PACKAGED WATER TREATMENT PLANTS**

Not used.

**G301090 OTHER WATER SUPPLY**

**G3020 SANITARY SEWER**

The new sanitary sewer system is an extension of the existing sanitary sewer collection system. The existing sanitary sewer collection system serving the project site is owned by the federal government. Provide the new sanitary sewer system and connections to the existing sanitary sewer collection system in accordance with UFC 3-200-10N, *Civil Engineering*; the utility provider's requirements; and the state sewerage regulations; whichever is more stringent.

Notify the utility provider of the additional wastewater flow generated by the proposed facility. Provide a copy of all correspondence with the utility provider to the Government Civil Reviewer.

Provide connection to the existing sanitary sewer collection system at the point indicated on the drawings in another part of this RFP. In identifying a suitable point of connection, provide consideration of the capacity of the existing collection system

**G302001 SANITARY SEWER PIPING**

Provide sanitary sewer piping meeting the loading and clearance requirements. Provide AWWA ductile iron pressure pipe tested in place without leakage where separation between sanitary and water line cannot be met. Conform to Virginia Health Department Regulations. Provide exterior corrosion protection on metallic pipe lines.

**G302002 SANITARY SEWER MANHOLES & CLEANOUTS**

Provide precast concrete manholes only. Provide sanitary sewer cleanout with cast iron frame and cover, where necessary.

**G302003 LIFT STATIONS AND PUMPING STATIONS**

A wastewater pump station will not be required

**G302004 PACKAGED SANITARY SEWER TREATMENT PLANTS**

Not used.

**G302005 SEPTIC TANKS**

Not used.

**G302006 DRAIN FIELDS**

Not used.

**G302090 OTHER SANITARY SEWER**

Not used.

## **G3030 STORM SEWER**

The new storm sewer system is an extension of the existing storm sewer system. The existing storm sewer system serving the project site is owned by the federal government. Provide the new storm sewer system and connections to the existing storm sewer system in accordance with UFC 3-200-10N, *Civil Engineering*; the utility provider's requirements; and the state stormwater management laws and regulations; whichever is more stringent.

Provide connection to the existing storm sewer collection system at the point indicated on the drawings in another part of this RFP. Confirm that the existing outfall has adequate capacity to receive the additional stormwater flow generated by the project.

Vehicle wash areas are not to be provided.

### **G303001 STORM SEWER PIPING**

As required in other sections of this RFP, if subsurface rain leader collection is required, provide PVC, corrugated HDPE or reinforced concrete storm sewer pipe with a minimum pipe size of 6-inches.

For all other drainage systems, provide reinforced concrete storm sewer piping with a minimum pipe size of 15-inches.

### **G303002 STORM SEWER STRUCTURES**

Provide pre-cast or cast-in-place concrete storm sewer structures. Do not use masonry or brick storm sewer manholes or catch basins.

### **G303003 LIFT STATIONS**

Not used.

### **G303004 CULVERTS**

Provide reinforced concrete storm sewer piping with a minimum pipe size of 15-inches.

### **G303005 HEADWALLS**

Not used.

### **G303006 EROSION & SEDIMENT CONTROL MEASURES**

Provide and maintain permanent and temporary erosion and sediment control measures in accordance with Commonwealth of Virginia regulations and laws, Virginia Soil and Water Conservation Commission's current Virginia Erosion and Sediment Control Handbook. Provide erosion and sediment control in accordance with G10 of this RFP.

### **G303007 STORMWATER MANAGEMENT**

A stormwater management facility will be required for this project.

The use of Low Impact Development (LID) is required for the project to achieve no net increase in storm water volume. The following LID features are acceptable for this project: bioretention, dry wells, filter/buffer strips, grassed swales, bio swales, rain barrels, cisterns, infiltration trenches, rain gardens, permeable pavement / pavers and tree box filters.

The Designer of Record (DOR) shall refer to Low Impact Development Navy Guidance Document Precision Draft, August 2009 and UFC 3-210-10 Low Impact Development as the first source for design

criteria. In addition to achieving a no net increase in storm water volume, this new criterion also requires compliance with Federal, State and Local regulations. The DOR shall evaluate the drainage conditions and submit calculations to the government for civil and environmental review.

**G303090 OTHER STORM SEWER**

Not used.

**G3040 HEATING DISTRIBUTION**

**G304001 OVERHEAD HOT WATER SYSTEMS**

Not used.

**G304002 OVERHEAD STEAM SYSTEMS**

Not used.

**G304003 UNDERGROUND HOT WATER SYSTEMS**

Not used.

**G304004 UNDERGROUND STEAM SYSTEMS**

Not used.

**G304005 REINFORCED CONCRETE MANHOLES & VALVE BOXES**

Not used

**G304090 OTHER HEATING DISTRIBUTION**

Not used.

**G3050 COOLING DISTRIBUTION**

**G305001 OVERHEAD COOLING SYSTEMS**

Not used.

**G305002 UNDERGROUND COOLING SYSTEMS**

Not used.

**G305090 OTHER COOLING DISTRIBUTION**

Not used.

**G3060 FUEL DISTRIBUTION**

**G306001 LIQUID FUEL DISTRIBUTION PIPING**

Not used.

**G306003 LIQUID FUEL STORAGE TANKS**

Not used.

**G306004 LIQUID FUEL DISPENSING EQUIPMENT**

Not used.

**G306006 GAS DISTRIBUTION PIPING NATURAL GAS**

Provide polyethylene (PE) natural gas piping system.

**G306007 GAS STORAGE TANKS**

Not used.

**G306009 OTHER GAS DISTRIBUTION**

Not used.

**G306090 OTHER FUEL DISTRIBUTION**

Provide warning and identification tape for underground utilities.

**G3090 OTHER SITE MECHANICAL UTILITIES**

- Not used.

- End of Section --



## 6. ENGINEERING SYSTEMS REQUIREMENTS

### G40 SITE ELECTRICAL UTILITIES

#### SYSTEM DESCRIPTION

Demolish the existing systems at Building No. 3006 back to source as required to suit project requirements.

The site electrical utility system consists of all power and telecommunications and fiber optic cabling from the new distribution system point of connection including all connections, accessories and devices as necessary and required for a complete and usable system. This section covers installations up to within 5 feet (1.5 meters) of new building location.

#### GENERAL SYSTEM REQUIREMENTS

Provide an Electrical System complete in place, tested and approved, as specified throughout this RFP, as needed for a complete, usable and proper installation. All equipment shall be installed per the criteria of PTS Section G40 and the manufacturer's recommendations. Where the word "should" is used in the manufacturer's recommendations, substitute the word "shall".

#### G4010 ELECTRICAL DISTRIBUTION

The available fault current at the point of connection is 7007 amps symmetrical at 13.2 KV as provided by NAVFAC MIDLANT Utilities and is to be confirmed with NAVFAC MIDLANT Utilities. Coordinate all work associated with primary electrical distribution system with NAVFAC MIDLANT Utilities point of contact (POC). The NAVFAC MIDLANT Utilities POC is Donielle Alexander – Blake, (757-650-7628) or Richard Bartley, (757-887-4580)

G401001 SUBSTATIONS

Not used.

#### G401002 TRANSFORMERS

Provide a three phase pad mounted transformer to feed the facility. Secondary of transformer shall be 480Y/277 volts.

Provide the following features:

1. Dead-Front Design
2. Loop feed switch
3. Feed-thru inserts
4. [Three surge arresters for loop feed circuits.
5. Less-flammable liquid-insulated
6. Two sets of primary bushings and internal "A" , "B" and "TX" switches to support true loop feed and sectionalizing
7. Enclosures and bases shall be suitable for coastal and high humidity areas (stainless steel).
8. Transformer submittals will be reviewed and approved by NAVFAC MIDLANT Code OPHRCI4.

#### G401003 SWITCHES, CONTROLS AND DEVICES

Not used.

#### **G401004 OVERHEAD ELECTRIC CONDUCTORS**

The existing overhead circuit along 7<sup>th</sup> st is 336 AL.

#### **G401005 TOWERS, POLES, CROSSARMS AND INSULATORS**

Poles for overhead power distribution shall be wood. Provide two new poles FK40A and FK40B. Provide new pole FK40B in between existing pole FK3K-1 and FK40 and new pole FK40A to feed new transformer to site.

Install new load-break solid blade cut-outs on new pole FK40A and provide new 600 amp, gang-operated, tie switch.

#### **G401006 UNDERGROUND ELECTRIC CONDUCTORS**

Provide a medium voltage and a 600 volt secondary underground electrical power distribution systems to meet the connection requirements as indicated in paragraph G4010 "Electrical Distribution". Provide fused cut-outs on connections to overhead distribution system. Provide 15KV, EPR, 133% insulation, 1/C cable for primary distribution conductor from new pole FL40A and FL40B as required.

#### **G401007 DUCTBANKS, MANHOLES, HANDHOLES AND RACEWAYS**

Provide a system of concrete encased ductbanks, handholes and manholes for all underground power wiring. Provide a direct buried underground power distribution system (cable in conduit) for all secondary wiring systems not associated with service, i.e. site lighting. Direct buried conduit systems shall be concrete encased below paved areas.

#### **G401008 GROUNDING SYSTEMS**

Provide a complete grounding system for the electrical power distribution system.

#### **G401009 METERING**

The Navy will provide an electric meter of the form and class required by the substation to be metered. Typically the meters will be Class 20 Form 9S for three phase four wire systems and Class 200 Form 2S for single phase. The contractor shall be responsible for providing and installing the CT's (and VT's if above 480V), meter base and wiring. The contractor shall contact the NAVFAC MIDLANT Utilities point of contact 15 days (minimum) before needing the meter, pick up the meter at Little Creek Naval Base and install the meter. POC is Keith Clinchot, NAVFAC, PRL C321 Utilities, (757-636-4095). Provide a separate Kilowatt Demand Meter for the new Pad Mounted Transformer

#### **G401010 CATHODIC PROTECTION SYSTEMS**

Not used.

#### **G401011 EQUIPMENT REQUIREMENTS FOR COASTAL AND HIGH HUMIDITY AREAS**

Provide exterior equipment designed for coastal and high humidity areas.

#### **G4020 SITE LIGHTING**

Provide site lighting for exterior, special security, building/facility, including but not necessarily limited to, parking areas, access doors, including underground distribution, handholes, grounding, poles, fixtures and controls as required for a complete and usable system.

### **G402001 EXTERIOR LIGHTING FIXTURES AND CONTROLS**

Provide high pressure sodium type lighting fixtures, complete with lamps for site lighting, special, parking areas including underground distribution, handholes, grounding, poles, fixtures and controls as required for a complete and usable system. To comply with LEED requirements, provide cut-off fixtures and shield cut-off fixtures if closer than 2.5 times mounting height to the property lines.

Provide an automatic lighting control system for exterior lighting fixtures utilizing lighting contactors, time switches, astronomic time clocks and photocell switches such that lighting will automatically turn "ON" at and turn "OFF" at various times, applicable to individual buildings.

### **G402002 SPECIAL SECURITY LIGHTING SYSTEMS**

Provide special security lighting as required for SCIF perimeter monitoring and CCTV surveillance of emergency exist doors. .

### **G402003 OTHER AREA LIGHTING**

Provide other area lighting as required.

### **G402004 LIGHTING POLES**

Provide poles (aluminum) complete with foundations for site lighting.

### **G402005 UNDERGROUND ELECTRIC CONDUCTORS**

Provide a complete underground distribution system for all site lighting systems.

### **G402006 DUCTBANKS, MANHOLES AND HANDHOLES**

Provide a direct buried underground system including conduits and handholes to meet the connection requirements indicated in paragraph G4020 "Site Lighting".

### **G402007 GROUNDING SYSTEMS**

Provide a complete grounding system for all site lighting systems.

## **G4030 SITE COMMUNICATION AND SECURITY**

Provide a site communication and security system including, but not necessarily limited to, Voice and Data Telecommunications Systems, Closed Circuit Television(CCTV), including all conduit and wiring, boxes, underground structures, termination equipment, poles and structures, and grounding systems as required for a complete and usable system.

### **G403001 TELECOMMUNICATIONS SYSTEMS**

The connection point for the site telecommunications systems shall be at building 3150 and extended to the project site underground in a system of manholes and ductbanks to the new telecommunications equipment room. Coordinate telecommunication cable points of connection requirements with Mr. William Barron at NCTAMSLANT, phone (757) 443-9081.

Coordinate NMCI data systems fiber cable points of connection with Navy Marine Corps Internet (NMCI) with Mr. Bruce Thompson, phone (757) 460-1858.

Provide 400 pair copper and 12 strand single mode fiber optic cable between the connection point and building entrance facilities. Provide two empty four inch (103 mm) conduits with pull strings. Provide both conduits with one inch innerduct.

### **G403002 CABLE TV SYSTEMS (CATV)**

Provide two empty two inch (50 mm) conduit with pull strings from telecommunications room to a hand hole located 5 foot from exterior of building.

### **G403003 CABLES AND WIRING**

Cables and wiring for site telecommunications and security systems shall be as indicated in their respective categories.

### **G403004 DUCTBANKS, MANHOLES AND HANDHOLES**

Provide a system of ductbanks (minimum 103mm/4 inch ducts only) innerducts, manholes, and handholes for site telecommunications and security. Manholes shall be lockable. Provide as a minimum 50 % spare ductway and pull strings. All ducts allocated for fiber optic shall be maximized with innerducts. A minimum of spare duct shall be provided with at least four (4) 27 mm innerducts.

### **G403005 TOWERS, POLES AND STANDS**

Not used..

### **G403006 TV CAMERAS AND MONITORS**

Provide a system of cable supporting structures, including empty conduits with pull strings, junction boxes, outlet boxes, outlet connectors, and cover plates for exterior TV and security camera system.

### **G403007 ELECTRONIC SECURITY SYSTEMS (ESS)**

Provide exterior ESS system consisting of all conduit and wiring, underground structures, termination equipment, as required for a complete and usable system. Requirement is to interface with and report to the watch area and regional security office. The system shall be compatible with the existing LENEL system at the base security office.

### **G403008 OTHER COMMUNICATION AND ALARM**

Not used

### **G403009 GROUNDING SYSTEMS**

Provide a complete grounding system for all site communications and security systems.

### **G4090 OTHER SITE ELECTRICAL UTILITIES**

Not used.

-- End of Section --



# **Performance and Technical Specifications**

First Naval Construction Division Operations  
Control Facility

P-851

FY 2010

Category Code 143.65

NAVPHIBASE Little Creek  
Norfolk, Virginia

**Date (Final) February 8, 2010**

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**SECTION A10**

**FOUNDATIONS**

**8/08**

**A10 GENERAL**

**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 Criteria (UFC)

UFC 3-100-10N, *Architecture*

UFC 3-220-01N, *Geotechnical Engineering*

UFC 3-300-09N, *Design Procedures*

UFC 3-300-10N, *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 utilize the following UFGS Specifications for the project specification:

Section 31 23 00.00 20 *Excavation and Fill*

**A10 1.2.2 Geotechnical Report**

**A10 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. Geotechnical investigations and reports shall be in accordance with UFC 1-300-09N, Chapter 9.

**A10 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 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.

**A10 1.2.2.3 Contractor-Provided Geotechnical Report**

The Contractor's Geotechnical Report (as defined/required within ESR A10) shall include the following:

- a. Engineering analysis, discussion and recommendations addressing foundation type.
- b. Foundation selection and construction considerations (shallow, deep, special); dimensions, and installation procedures.
- c. Design Bearing Capacity for recommended foundation type. For pile foundations provide anticipated compression, uplift and lateral load capacities along with the associated pile tip elevation and driving equipment. Include the recommended field static and dynamic testing procedures to validate pile design capacities and establish pile driving criteria.
- d. An analysis showing anticipated total and differential settlement of foundations and recommendations for control of settlement.
- e. Recommendations for slab on grade vapor retarder/barrier system and subgrade materials, thicknesses and configuration.
- f. Provide pavement design parameters with a recommended design for asphalt cement concrete pavement.
- g. Calculations to support conclusions and recommendations.
- h. Sheeting and shoring considerations, as applicable.
- i. Site preparation (earthwork procedures and equipment), compaction requirements, building slab preparation (as applicable), soil sensitivity to weather and equipment, and groundwater influence on construction.
- j. Recommendations shall be presented on a structure-by-structure basis.

The Geotechnical Report shall be signed by the Contractor-provided Geotechnical Engineer.

The submitted report shall 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.
- 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 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, as detailed in this section of the RFP.

**A10 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.

**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, and shall be provided on a unit-price basis. Provide separate unit prices for compression pile load tests and tension pile load tests. Test pile installation procedures shall be as directed by the Contractor's geotechnical/structural 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.

**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*, UFC 1-300-09N, *Design Procedures* and UFC 3-220-01N, *Geotechnical Engineering Procedures for Foundation Design of Buildings and Structures*.

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**

Contractor shall submit to the Designer of Record (DOR) product submittals on all materials or systems installed in the building, in addition to the following reports and tests, if required for the project:

Contractor-provided geotechnical report

Controlled fill or backfill material tests

Test pile and production pile installation records

Pile load testing reports

Include a statement on the As-Built 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/Structural 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, including pre-augering and spudding, as test piles.

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 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**

4/08

**A20 GENERAL**

**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 3-100-10N, *Architecture*

UFC 3-220-01N, *Geotechnical Engineering Procedures for Foundation Design of Buildings and Structures*

UFC 3-300-10N, *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 shall 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. Sheet piling 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.

**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*, UFC 1-300-09N, *Design Procedures*, UFC 3-300-10N, *Structural Engineering*, and UFC 3-220-01N, *Geotechnical Engineering...Structures*.

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

**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:

<u>Felt or Fabric Material</u>	<u>Saturant or Impregnant</u>	<u>Specification</u>
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**  
**4/08**

**B10 GENERAL**

**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 3-100-10N, *Architecture*

UFC 3-300-10N, *Structural Engineering*

**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*, UFC 1-300-09N, *Design Procedures*, UFC 3-100-10N, *Architecture*, and UFC 3-300-10N, *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**

4/08

**B20 GENERAL**

**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 3-100-10N, *Architecture*

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS 08 34 16.10, *Steel Sliding Hangar Door*

UFGS 08 34 16.20, *Vertical Lift Fabric Door*

**B20 1.2 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING**

Verification of satisfactory exterior enclosure system performance 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*. The Contractor shall 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 shall 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 4 feet (1.2 meters) high showing the workmanship, 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, vapor barrier, 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 shall be protected from damage and shall remain at the site until masonry work is complete and approved, at which time the panel shall 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 shall be installed in the masonry field panel, with all accessories, finishes, and trim (see B20 1.2.4 and 1.2.5). Masonry work shall match the approved sample.

**B20 1.2.2 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 1.2.3 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 1.2.3.1 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 shall have an average compressive strength less than the specified ultimate compressive strength.

**B20 1.2.3.2 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 1.2.4 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/m<sup>2</sup>) for water resistance, which shall not exceed .667 % of the products capable water based on AAMA 101/I.S. 2. Allowable rates of air leakage for field testing shall 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 1.2.5 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/m<sup>2</sup>) for water resistance, which shall not exceed the derived water expectation of 0 infiltration at the calculated Design Pressure. Allowable rates of air leakage for field testing shall be .30 CFM/Ft<sup>2</sup> of wall area test specimen. Performance test at 6.24 PSF (30.3 Kg/m<sup>2</sup>) allows .30 cfm/ft<sup>2</sup>. 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 shall be protected from damage and shall remain at the site until curtain wall construction work is complete and approved, at which time the panel shall be removed from the site. On projects where the curtain wall interfaces with masonry walls, a cut-away sample curtain wall shall be installed with the masonry sample panel. Curtain wall installations shall match the approved sample.

Water Penetration: No water penetration shall 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/m<sup>2</sup>). 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 shall be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal Procedures*, UFC 1-300-09N, *Design Procedures*, UFC 3-100-10N, *Architecture* and UFC 3-300-10N, *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 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 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) shall approve the following submittals as a minimum;

Shop drawings for reinforcing steel in masonry walls, doors, door hardware, windows, storefront, curtainwall, glazing, paint, 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 shall 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 shall visually inspect all welds and identify all defective welds.

b. The DOR shall 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 shall be removed and re-welded or repaired as required by the DOR.

**B2010 EXTERIOR WALLS**

Exterior wall construction shall consist of exterior skin system of non-structural outside face elements with rain-screen back-up wall systems including; flashing (embedded, exposed, and thru-wall), vapor barriers, air barriers, 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 direct water that would leak through faulty caulk joints to the outside of wall. Provide flashing, window subsill, caulking, and water barriers around wall openings to direct any water that gets behind the outside surface of the exterior door, window or louver to the exterior of the wall.

All work shall be designed to comply with UFC 3-100-10N, *Architecture*, and UFC 3-300-10N, *Structural Engineering*, and the following requirements:

- a. Vapor Transmission Analysis - Perform a job specific vapor transmission analysis in accordance with UFC 3-100-10N, *Architecture*. The conclusion of the analysis shall indicate the appropriate locations of needed vapor retarders, air barriers, and anticipated dew-point locations in the exterior enclosure during different critical times of the year.
- b. Maximum Air Infiltration - The maximum allowable air leakage for any material used as part of the air barrier system for the opaque enclosure shall be 0.004 cfm / sf at 1.57 psf (0.02 L/s/M<sup>2</sup> [liters/second per square meter] at 75 Pa pressure), as tested according to ASTM E 2178 test protocol.
- c. Wind Loads - Provide wind load calculations for exterior cladding in accordance with UFC 1-200-01 and UFC 3-310-01 with comparative analysis of the cladding system to be provided.
- d. Water Penetration - No water penetration shall occur at a pressure of 8 psf (39 Kg/m<sup>2</sup>) of fixed area when tested in accordance with ASTM E 331.
- e. Insulating Value - The complete wall system shall have a minimum insulating value as required by the building code and as required to meet ASHRAE Standard 90.1 as modified by the Energy Policy Act of 2005.

**B201001 EXTERIOR CLOSURE**

**B201001 1.1 MASONRY VENEER EXTERIOR WALL CLOSURE COMPONENTS**

**B201001 1.1.1 General Requirements**

- a. Masonry veneer shall include load bearing and non-load bearing exterior walls of the structure, and shall 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 shall 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 shall

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 shall 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 shall be ASTM C216, Grade SW, type FBX. ASTM C67 test rating shall 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 shall be the product of a manufacturer regularly engaged in the manufacture of architectural cast stone (precast concrete building unit) products. Cast Stone shall meet or exceed the requirements of ASTM C 1364.

b. Trim units of cast stone shall 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 3-100-10N and BIA Technical Notes 21A, 21B, 21C, 28B.

**B201001 1.1.6** Through-Wall Flashing Components

a. Through-wall flashing with weep holes shall be incorporated in cavity wall construction as required by UFC 3-100-10N 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 shall be as required by UFC 3-100-10N and the following: Flashing shall be 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.

**B201001 1.1.7** Reinforcing in Veneer Layer

Reinforcing in the veneer layer shall 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 - Panels shall have factory applied, baked coating to the exterior and interior of metal wall panels and metal accessories. Exterior finish topcoat shall be of 70 percent polyvinylidene fluoride (PVDF) resin with not less than 0.8 mil dry film thickness (DFT). Exterior primer shall be standard with panel manufacturer with not less than 0.8 mil dry film thickness (DFT). Panels shall have 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 shall be the same coating and DFT as the exterior coating. Interior finish shall be protected from sun or rain exposure.

b. Wall system and attachments shall 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 shall be 1/60. Maximum deflection due to wind on steel wall panels and girts behind aluminum or steel wall panels shall be limited to 1/120 of their respective spans, except that when interior finishes are used the

maximum allowable deflection shall be limited to 1/180 of their respective spans. The structural performance test methods and requirements of the wall system and attachments shall be in accordance with ASTM E 1592.

c. Conformations - Non-insulated steel or aluminum wall panels shall have configurations for overlapping adjacent sheets or interlocking ribs for securing adjacent sheets and shall be fastened to framework using exposed or concealed fasteners, as specified. Length of sheets shall be sufficient to cover the entire height of any unbroken wall surface when the length of run is 30 feet (9 meters) or less. Design provisions shall be made 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 shall 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 shall be steel or aluminum factory-fabricated units with insulating core between metal face sheets securely fastened together and uniformly separated with rigid spacers. Panels shall have a factory color finish. Insulation shall 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 shall 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 shall be not less than 8 inches (200 mm) wide and shall be in one piece for unbroken wall heights.

Wall panels shall have edge configurations with interlocking ribs for securing adjacent panels. System shall utilize factory fabricated corners and trim pieces at intersections with other materials. Wall panels shall be fastened to framework using concealed fasteners. Installation shall 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 shall 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 shall conform to ASTM C206, Type S. System shall utilize stainless steel or zinc corner beads, J-beads and other accessories.

a. Unless specifically deleted, the system shall utilize an acrylic admixture or coating to give additional moisture suppression to control fungus growth.

b. Sand for Portland Cement Stucco ASTM C 144, except gradation of sand shall conform to the following requirements:

c. Sand Gradation for Basecoats:

Percentage Retained by weight (plus or minus 2 percent) on each sieve

Sieve Size	Min.	Max.
No. 4	0	0
No. 8	0	10
No. 16	10	40
No. 30	30	65
No. 50	70	90
No. 100	95	100

d. Sand for Finish Coats: Natural color and graded within the limits shown above for basecoats, except that the sand shall pass the No. 8 sieve, and for smooth finish the sand shall pass the No. 30 sieve.

e. 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.

f. Portland Cement Stucco Finish Coat 3 to 5 parts sand (volume of sand per sum of cement and lime).

g. Portland cement plaster application shall be in accordance with ASTM C 926. Furring and lath application shall be in accordance with ASTM C 1063.

h. Bonding Agents: ASTM C 932. Provide for exterior applications to masonry or concrete substrates.

**B201001 1.4 EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)**

EIMA TM 101 and 01 EIMA TM 101.86. Designate in the project program that EIFS shall be used as the non-primary or the primary exterior finish material for the project. The exterior insulation and finish system (EIFS) shall be a job-fabricated exterior wall covering consisting of sheathing, moisture drainable insulation board system, reinforcing fabric, base coat, finish coat, adhesive, primer, accessories, flashing, sealant, and mechanical fasteners. The system components shall be compatible with each other and with the substrate as recommended or approved by, and the products of, a single manufacturer regularly engaged in furnishing Exterior Insulation and Finish Systems. All materials shall be installed by an applicator trained and approved by the system manufacturer in accordance with DOR-approved shop drawings and manufacturer's recommendations. EIFS shall be Class PB or Class PM. Class PB EIFS shall not be used in first floor, high traffic areas, or in areas where pedestrians congregate without at least one layer of 20 ounce (567 grams) reinforcing fabric mesh. Use 1/8 inch (4 mm) minimum thickness for PB finish system. Color of the EIFS finish shall be consistent, with no variation noticeable to the DOR. Seal all joints in EIFS in accordance with ASTM C 1481 and as recommended by the manufacturer. Furnish manufacturer's standard warranty for the EIFS. Warranty shall run directly to Government and cover a period of not less than 5 years from date Government accepted the work.

**B201001 1.4.1 EIFS System Components**

a. Glass Mat Gypsum Sheathing Board - Conform to ASTM C 1177/C 1177M. Nail Pull Resistance: No less than 120 lb (54.4 Kg) when tested in accordance with ASTM C 473.

b. Mechanical Fasteners - Corrosion resistant and as approved by EIFS manufacturer. Select fastener type and pattern based on applicable wind loads and substrate into which fastener will be attached, to provide the necessary pull-out, tensile, and shear strengths.

c. Thermal Insulation - Drainable type. No portion of any layer of insulation shall be less than 3/4 in (19 mm) thick. The maximum

thickness of all layers shall not exceed 4 in (101 mm). Insulation Board shall be certified as aged, in block form, prior to cutting and shipping, a minimum of 6 weeks by air-drying, or equivalent. Insulating material shall conform to ASTM C 578, Type I or IV, as recommended by the EIFS manufacturer and treated to be compatible with other EIFS components.

d. Reinforcing Fabric - Reinforcing fabric mesh shall be alkali-resistant, balanced, open weave, glass fiber fabric made from twisted multi-end strands specifically treated for compatibility with the other system materials, and comply with EIMA TM 105.01 and as recommended by EIFS manufacturer.

**B201001 1.5 CONCRETE EXTERIOR WALL CLOSURE**

**B201001 1.5.1 Precast Concrete Wall Panels:**

ACI 211.1 and ACI 301. PCI MNL-116 or PCI MNL-117. Concrete shall have a minimum 28-day compressive strength of 4000 psi (281 Kg/cm<sup>2</sup>). Air content of plastic concrete shall 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. Design for watertight joints, or weeping joints having back-up water penetration protection in precast elements. Cracking potential of precast concrete elements shall be minimized by implementing expansion and control joints in the precast assembly.

Joints shall include properly sized and placed backing material and fully loaded and tooled sealant joint of no less than 1/4 inch sealant material thickness.

a. Exposed Aggregates - In addition to the above aggregate, facing mixture aggregate, and aggregate for homogeneous panels with exposed aggregate finish, shall 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 shall have toothed lip section to anchor upturned edge of metal snap-lock

counter flashing when inserted. . Sheet metal shall be stainless steel, 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 1.6 CONCRETE WALL PANEL RESTORATION**

Materials, physical and chemical properties, and composition of new concrete shall match that of existing concrete to be repaired, unless samples and testing determine that existing mixtures and materials are faulty or non-performing.

##### **B201001 1.6.1 Existing Concrete Testing**

Representative samples of existing concrete shall be taken from areas of the structure to be repaired at indicated locations. The samples shall 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 shall be evaluated in accordance with ASTM C 136 and ASTM C 295. The air content of the existing concrete shall be determined in accordance with ASTM C 457 and ASTM C 642.

##### **B201001 1.6.2 Admixtures**

Air entraining admixtures shall conform to ASTM C 260, water-reducing or -retarding admixtures shall conform to ASTM C 494, and pigments for integrally colored concrete shall conform to ASTM C 979 and ASTM C 1017. Admixtures shall not contain added chlorides.

##### **B201001 1.6.3 Aggregates**

Aggregates shall conform to ASTM C 33.

##### **B201001 1.6.4 Cement**

Cement composition shall match that of cement used in existing concrete to be repaired as determined by samples and testing and shall conform to the basic requirements of ASTM C 150, Type I or II. Cement shall have non-shrink (shrinkage compensating) properties and shall conform to ASTM C 1107, Class B or C, expansive cement type.

**B201001 1.6.5 Pozzolan**

Pozzolan shall 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 1.6.6 Epoxy Anchor Adhesives**

An epoxy-resin grout shall be used to bond steel anchors to concrete, and shall be a 100 percent solids, moisture insensitive, low creep, structural adhesive. The epoxy shall conform to ASTM C 881, type IV; grade and class selected to conform to the manufacturer's recommendations for the application. The epoxy adhesive shall be conditioned, proportioned, mixed, and applied in accordance with the manufacturer's recommendations, except as otherwise specified herein.

a. Epoxy-resin grout - Shall 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 shall be used when materials or atmospheric temperatures are 70 degrees F (21 degrees C) or above. Type II material shall be used when materials or atmospheric temperatures are below 70 degrees F (21 degrees C). Epoxy-resin grout shall have the ability to structurally rebond cracks, delaminations, and hollow plane conditions in concrete; shall be insensitive to the presence of water; and shall have the capability to penetrate cracks down to 5 mils in width. Materials shall have been used in similar conditions for a period of at least five years.

b. Epoxy Injection Ports - Injection ports for epoxy-resin grout shall be designed for the intended use as detailed in this section and shall be made according to the recommendation of the epoxy manufacturer.

**B201001 1.7 WOOD SIDING SYSTEM**

**B201001 1.7.1 Horizontal Wood Siding**

Horizontal Wood Siding: DOC PS 20, exterior, lap type, 6 inches wide, maximum practicable lengths, 7/16 inch (11 mm) thick, smooth face. All surfaces of wood siding and trim shall be shop coated with an alkyd primer.

a. Species and Grades

Utilize species and grades listed:

1) Grade 1 Common spruce-pine-fir; NELMA, NLGA, WCLIB, or WWPA.

- 2) Grade Prime or D finish, pressure-preservative-treated hem-fir; NLGA, WCLIB, or WWPA.
- 3) Grade D Select (Quality) eastern white pine, eastern hemlock-balsam fir-tamarack, eastern spruce, or white woods; NELMA, NLGA, WCLIB, or WWPA.
- 4) Grade D Select northern white cedar; NELMA or NLGA.
- 5) Grade B & B, pressure-preservative-treated southern pine; SPIB.

**B201001 1.8 VINYL SIDING SYSTEM**

Integrally colored, vinyl siding complying with ASTM D 3679. Horizontal or vertical pattern with exposure and shape to be compatible with overall design concept. Install in accordance with manufacturer's recommendations.

**B201001 1.8.1 Texture, Thickness, Finish and Color**

Wood grain texture. Minimum Nominal Thickness: 0.044 inch (1.1 mm). Minimum Profile Depth (Butt Thickness): 5/8 inch (16 mm) or 3/4 inch (19 mm). Nailing Hem: Double thickness. Nailing process and fasteners shall be approved by the manufacturer.

**B201001 1.8.2 Accessories**

Provide integrally colored, premanufactured accessories to match siding. Use accessories at terminations with other materials.

**B201001 1.9 MANUFACTURED FACED PANELS SYSTEMS EXTERIOR WALL SIDING**

**B201001 1.9.1 Glass Fiber Reinforced Cementitious Panels System**

Siding made from fiber-cement board that does not contain asbestos fibers; complies with ASTM C 1186, Type A, Grade II; is classified as noncombustible when tested according to ASTM E 136; and has a flame-spread index of 25 or less when tested according to ASTM E 84. Install in accordance with manufacturers recommendations. Panel system shall be a horizontal siding pattern in plain or beaded-edge style, unless vertical sheet panels are allowed by the RFP Part 3. Texture: Rough sawn or smooth, factory primed.

**B201001 1.10 OTHER EXTERIOR WALL CLOSURE**

**B201001 1.10.1 Glass Block**

a. Glass block units shall be made of clear colorless glass. Units to have polyvinyl butyral edge coating. Units to have 75 percent light transmission allowance. System shall 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 shall be DECORA, VUE, or ARGUS pattern. Units designated as "reflective glass block" shall have a highly reflective oxide surface coating of a gray color.

**B201001 1.10.2 Concrete Unit Masonry**

Masonry walls shall 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 shall 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 shall 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**

Dampproofing - Dampproof the cavity-facing wythe of the backup masonry using asphaltic primer according to ASTM D 41, if dampproofing is not provided by a sprayed on foam or other DOR-approved membrane insulation system. Coordinate dampproofing materials and methods to provide vapor transmission control for the lifetime of the structure. Repair any dampproofing 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 shall be computed on the basis that studs withstand all lateral forces independent of any composite action from sheathing materials. Stud abutting windows or louvers shall 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 shall be stamped with manufacturer's name, initials, or logo, an ICBO number, material thickness and yield strength. Size and gage shall 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 shall 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 shall 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.

### **B201002 1.3 WOOD FRAMING SYSTEM**

All materials shall be kiln-dried lumber complying with DOC PS 20. Installation shall be in accordance with AF&PA T11. System shall use preservative pressure treated lumber at sill plates and other members in contact with concrete and masonry surfaces.

a. Species and Grades - Provide species and grades listed:

- 1) Grade 2 Common spruce-pine-fir; NELMA, NLGA, WCLIB, or WWPA.
  - 2) Grade 2 Common, hem-fir; Douglas-fir; NLGA, WCLIB, or WWPA.
  - 3) Grade 2 Common, southern pine; SPIB.
- b. Sheathing - Sheathing shall 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 shall 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 D 3273 for mold resistance, ASTM C 1177/C1177M, 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 shall be faced with material capable of resisting six months of weathering exposure without degradation or the covering or the gypsum. Seal all joints as recommended by the manufacturer.

**B201002 1.4 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 shall be minimized by implementing expansion and control joints in the precast assembly.
- f. Joints shall include properly sized and placed backing material and fully loaded and tooled sealant joint of no less than 1/4 inch sealant material thickness.

**B201003 INSULATION & VAPOR RETARDER**

Insulation, Vapor Retarders, and Air Barrier Systems in or on Exterior Enclosure shall include: insulation, liquid, sheet or continuous film materials installed separately in or on wall assemblies to provide resistance to heat loss/gain, and vapor penetration.

**B201003 1.1 VAPOR RETARDER**

Comply with ASTM C755. Incorporate in the exterior wall system where required by vapor transmission calculations or dew point analysis indicates the need or in conditions of high moisture exposure.

**B201003 1.1.1 Bituminous Dampproofing**

Bituminous Dampproofing shall be ASTM D449, Type I or Type II bituminous dampproofing on the exterior surface of the interior wythe of masonry in a cavity wall (back-up wall for masonry veneer).

**B201003 1.1.2 Building Paper**

FS UU-B-790, Type I, Grade D, Style 1. Where required, provide over sheathing on wood or metal framed wall construction to eliminate water penetration.

**B201003 1.1.3 Polyethylene sheeting**

ASTM 4397, minimum 6 mil thickness. Provide typically on the interior face of insulated, wood or metal stud wall construction, unless a moisture vapor analysis indicates otherwise. (Poly sheeting on the interior surface of the studs is not recommended for cold, mixed-humid, mixed-dry, hot-humid or hot-dry climates.)

**B201003 1.2 AIR BARRIER**

Provide continuous air barrier. Seal all holes and seams in the air barrier. If the air barrier is combined with water drainage barrier on portions of the building, seal the seam between the two systems.

Residential construction air barriers shall consist of sheeting complying with ASTM E 1677, Type 1, not less than 3 mils thick with a permeance of not less than 10 perms (575 ng/Pa x s x sq.m.). Building wrap shall have a flame spread index of less than 25 in accordance with ASTM E 84. Provide building wrap over sheathing of wood or metal framed construction to reduce air penetration and airborne vapor penetration. Provide building wrap tape as recommended by the manufacturer for sealing all joints in the building wrap. Installation shall be in accordance with manufacturer's instructions. Air barrier installation at windows shall be in accordance with ASTM E 2112.

Provide minimum 40 mil DFT elastomeric spray or 36 mil elastomeric sheet barrier when air barriers are used as water barriers.

**B201003 1.3 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 shall be provided. Wall insulating product shall have a minimum R-value to meet the code and the energy design of the facility. Seal the joints in rigid insulation within cavity/veneer walls for additional moisture and air infiltration protection.

**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 shall 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 shall 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 shall 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 shall be made to withstand a wind load of not less than 30 psf (146 Kg/m<sup>2</sup>), .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 shall 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 shall drain water to the outside of the building. Louvers shall 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 shall 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 shall have factory finished 0.050 inch (1.27 mm), 6063-T5/T6 aluminum slats with continuous over-head housing, frame and tracks. Roll shutter shall be capable of being locked in a closed position by a non-key device.

###### **B201005 1.3.2 Accordion Shutters**

Accordion shutters shall have factory-finished aluminum alloy 6063-T5/T6 slats and tracks. Accordion shutter shall 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 shall 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 shall 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 shall 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 shall have steel-framed insect screens secured to room side and readily removable. Louvers shall 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 shall 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 shall be in accordance with section B201001 EXTERIOR CLOSURE, paragraph titled, "Face Brick."

**B201006 1.2.2 Concrete Masonry Units**

Concrete masonry balcony walls shall 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 shall be in accordance with section B201001 EXTERIOR CLOSURE, paragraph titled, "Load Bearing Metal Framing System."

**B201006 1.4 WOOD FRAMED ASSEMBLY BALCONY**

Wood framed assembly balcony walls shall be in accordance with section B201001 EXTERIOR CLOSURE, paragraph titled, "Wood Framing System."

**B201006 1.5 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 1.5.1 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 shall be provided. Steel railings shall be of 1 1/2 inches (38 mm) nominal size. Railings shall be hot-dip galvanized, shop primed shop painted for exterior applications.

**B201006 1.5.2 Aluminum Handrails**

Aluminum railing shall 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 shall be coated with a high performance coating or anodized in accordance with AAMA 611, Class I. All fasteners shall be Series 300 stainless steel.

**B201006 1.5.3 Wood Handrails**

Wood handrails shall be of pre-finished natural hardwood in oak, walnut, or ash. Wood shall be coated with hard acrylic finish to withstand indentations.

**B201007 EXTERIOR SOFFITS**

Exterior soffit system assemblies shall include trim and necessary accessories including high performance coatings, if required. Installation shall be crisp, fit and trim with tight joinery to back-up framing. Soffits shall 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 shall be factory-formed and factory-finished. Use factory-applied sealant in side laps

**B201007 1.2 VINYL SOFFIT SYSTEM**

If required, provide integrally colored vinyl soffit complying with ASTM D 4477.

**B201007 1.3 EXTERIOR GYPSUM BOARD SYSTEM**

Exterior gypsum wall board soffit system shall be tapered edge 5/8 inch (16 mm) thick, 48 inch (1.2 meter) wide exterior gypsum board panels conforming to ASTM C 931 and ASTM C 840, mechanically attached to galvanized non-load bearing framing conforming to ASTM A 653, G60 and ASTM C 754. Tape and finish gypsum board joints in accordance with ASTM C840. Soffit design shall assure that the gypsum soffit material does not have direct water contact.

**B201008 WALL FLASHING**

Flashing shall be aluminum or stainless steel or copper. Aluminum shall conform to ASTM B 209/B 209M, 0.040 inches (1.27 mm) thick and shall be coated to match the item flashed. Stainless steel shall conform to ASTM A 167, type 302 or 304, 2D finish, fully annealed, dead soft temper. Thickness shall be a minimum of 0.018 inches (0.4572 mm). Copper shall conform to ASTM B 370, cold rolled temper. Thickness of copper shall be 20 ounces per square foot (6.125 Kg/m<sup>2</sup>).

**B201009 EXTERIOR PAINTING AND SPECIAL COATINGS**

**B201009 1.1 GENERAL REQUIREMENTS**

Painting practices shall 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 shall 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.

MPI paint systems identified in the RFP take precedence over other MPI systems listed in the MPI literature. If the RFP does not identify a paint system applicable to all painting of the facility, utilize MPI tested systems listed in the MPI *Architectural Painting, Exterior System* manual to identify appropriate paint coatings. Utilize the "Detailed Performance Premium Grade" systems and comply with all limitations stated in the MPI "Approved Products List" for each system.

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.

#### **B201009 1.1.1 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 manufacturers' description of the product.

The MPI gloss Levels are indicated by the notation G1, G2, G3, G4, G5, G6, or G7. Use G2 "Velvet-like" flat for vertical surfaces and undersides of balconies and soffits. Use G3 "Eggshell-like" in high traffic areas for ceilings and walls, when a surface can be touched and a slightly more durable finish is desired, and for dark accent colors. Use G5 Semigloss for ceilings, walls, doors and trim for high durability and cleanability. Use G6 Gloss only in special situations such as for exterior wood and metal, piping identification, or special effects. The MPI gloss and sheen standard values are per ASTM D523, method D and are as follows:

<u>Gloss Level Number</u>	<u>Gloss@ 60 Degrees Sheen@85 Degrees</u>	
Gloss Level 1( <b>G1</b> ) - Matte or Flat	Max.5 units	Max.10 units
Gloss Level 2( <b>G2</b> )-"Velvet-like"Flat	Max. 10 units	10-35 units
Gloss Level 3( <b>G3</b> ) - "Eggshell-like"	Max. 10-25 units	10-35 units
Gloss Level 4( <b>G4</b> ) - "Satin-like"	Max. 20-35 units	Min. 35 units
Gloss Level 5( <b>G5</b> ) - Semi-Gloss	35-70 units	
Gloss Level 6( <b>G6</b> ) - 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 "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.

**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

**B201010 EXTERIOR JOINT SEALANT**

Sealant joint design, priming, tooling, masking, cleaning and application shall be in accordance with the general requirements of *Sealants: A Professionals' Guide* from the Sealant, Waterproofing & Restoration Institute (SWRI). All sealant shall conform to ASTM C 920.

Joints shall 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 shall be tooled. Tooling shall 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 shall be manufactured devices to provide sun control on exterior windows and storefronts. Sun control devices shall be designed and installed to withstand the wind loads prevailing at the project site.

**B201011 1.1 EXTERIOR SUN SCREENS**

Exterior sun screens shall be of aluminum with 6063-T5/T6 aluminum demountable frame attachment. Screen material shall be formed factory finished metal from aluminum sheet per ASTM B 209. Screen material shall be factory finished coating in accordance with AAMA 2605 with a minimum coating thickness of 1.2 mils. Sunscreen shall 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 shall conform to the applicable portions of Section B201001 EXTERIOR CLOSURE.

**B201090 OTHER EXTERIOR WALLS**

**B2020 EXTERIOR WINDOWS**

Standard windows shall 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 shall utilize windows that comply with AAMA LC-25 designation unless the wind pressure on the building exceeds 38 psf (185 Kg/m<sup>2</sup>). Commercial (non-residential) construction shall utilize windows that comply with AAMA designation HC-40 (60 psf - 293 Kg/m<sup>2</sup>) for windows that do not have to meet anti-terrorism requirements, and HC-60 (90 psf - 439 Kg/m<sup>2</sup>) 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<sup>2</sup>) or the commercial (non-residential) window wind pressure exceeds 60 psf (293 Kg/m<sup>2</sup>) or exceeds 90 psf (439 Kg/m<sup>2</sup>), utilize a higher AAMA designated window complying with the calculated wind pressure. Anti- Terrorism window systems (including connections) shall 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 shall be provided with sills on the exterior and stools on the interior of the opening. Sills shall 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 shall be slate or solid polymer for commercial construction and painted wood for residential construction.

## **B202001 WINDOWS**

Exterior windows shall 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 shall have thermally broken frames and sash.

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 shall 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 shall comply with ANSI/SMA 1004.

Exposed aluminum surfaces shall 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 shall 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" shall conform to the requirements of AAMA 1302.

**B202001 1.1.4 Plastic Windows, Factory Finish**

Provide integral colored or co-extruded color PVC, welded and reinforced corners, reinforcing members, fasteners, hardware, weatherstripping, welded sill, and anchors conforming to ANSI/AAMA/WDMA 101 or ASTM D 4099. The exterior grade polyvinyl chloride extrusion shall comply with AAMA 303 and ASTM 4726.

**B202001 1.1.4 Wood Windows**

Wood windows shall consist of complete units including sash, glass, frame, weatherstripping, insect screen, and hardware. Window units shall meet the requirements of AAMA 101, except maximum air infiltration shall not exceed 0.30 CFM per linear foot of sash crack when tested under uniform static air pressure difference of 1.57 psf (7.66 Kg/m<sup>2</sup>). Glass and glazing materials shall conform to section B202004, EXTERIOR GLAZING. Insect screen shall meet ASTM D 3656, Class 2, 18 by 14 mesh, color charcoal. Aluminum screen frames shall meet SMA 1004.

**a. Finish**

Vinyl (PVC) Cladding: Preservative treat all basic wood frame and sash members in accordance with WDMA I.S.4, except do not use pentachlorophenol. Clad all exterior surfaces with rigid polyvinyl sheathing, complying with ASTM D 1784, class 14344-C, not less than 35 mil average thickness.

2) Aluminum Cladding: Preservative treat all basic wood frame and sash members in accordance with WDMA I.S.4, except do not use pentachlorophenol. Clad all exterior surfaces with roll formed aluminum with joints sealed during assembly. Aluminum clad frames and sash shall meet performance requirements of AAMA 101. Aluminum finish shall be an organic coating of an AAMA 2604 coating for residential construction and AAMA 2605 for non-residential (commercial) construction with a minimum dry film thickness of 1.2 mils.

**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 shall meet or exceed 25 psf (122 Kg/m<sup>2</sup>) acting inward and 25 psf (122 Kg/m<sup>2</sup>) 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" shall be limited to 1/175 of its clear span and for spans greater than 13'-6" deflection shall be limited to 1/240 + 1/4" of its clear span, except that maximum deflection of members supporting plaster surfaces shall not exceed 1/360 of its span.

c. Air Infiltration - Air leakage through fixed light areas of storefront shall 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/m<sup>2</sup>).

d. Water Penetration - When tested in accordance with ASTM E 331, there shall be no water penetration at a pressure of 15 psf (73 Kg/m<sup>2</sup>) of fixed area.

e. Water infiltration No uncontrolled leakage when tested in accordance with ASTM E331 at test pressure of 10 psf (48 Kg/m<sup>2</sup>) for system standard and capable of performing within the Design Pressure requirements derived from the ASCE 7-05 requirements.

**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 shall be stainless steel. Weatherstripping shall 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 shall be medium or wide stile. Doors shall 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 shall 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.

**B202003 CURTAIN WALLS**

**B202003 1.1 GLAZED CURTAIN WALL SYSTEM REQUIREMENTS**

Provide system complete with framing, mullions, trim, panels, windows, glass, glazing, sealants, insulation, fasteners, anchors, accessories, concealed auxiliary members, and attachment devices for securing the wall to the structure as specified.

Fully coordinate system accessories directly incorporated and adjacent to related work and insure materials compatibility, deflection limitations, thermal movements, and clearances and tolerances as specified. Design and test in accordance with *AAMA Curtain Wall Manual*.

**B202003 1.1.1 Source**

Curtain wall system components shall be furnished by one manufacturer or fabricator; however, all components need not be products of the same manufacturer.

**B202003 1.1.2 Cleaning Provisions**

For curtain wall systems over two stories in height reinforce curtain wall members and provide support for cleaning rigs. The support for cleaning rigs may be provided by other elements of the facility.

**B202003 1.1.3 Warranty**

a. System Warranty - Manufacturer of the curtain wall system shall be warrant that the design, construction, and materials installed in the system shall be free of manufacturer's defects for the life of the installation. The manufacturer shall provide a similar warranty for the individual components of the system that are provided by other, outside manufacturers. Execute the warranty for the system directly to the Government.

b. Additional Glass Warranty -Insulating glass units shall be guaranteed not to develop material obstruction of vision as a result of dust or film formation on the inner glass surface caused by failure of the seal, other than through glass breakage, within a period of 5 years from date of acceptance of work by the Government. Units failing to comply with the terms of this guarantee shall be replaced with new units without additional cost to the Government. The Contractor shall require the manufacturer to execute their warranties in writing directly to the Government.

**B202003 1.1.4 Design**

a. Structural Requirements, as measured in accordance with ANSI/ASTM E330:

1) Wind loads for exterior assemblies: Provide systems capable of performing at a minimum C acting inward and 25 psf (122 Kg/m<sup>2</sup>) 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.

2) 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" shall be limited to 1/175 of its clear span and for spans greater than 13'-6" deflection shall be limited to 1/240 + 1/4" of its clear span, except that maximum deflection of members supporting plaster surfaces shall not exceed 1/360 of its span.

3) Water Penetration/Water infiltration - No uncontrolled leakage when tested in accordance with ASTM E331 at test pressure of 10 psf (48.6 Kg/m<sup>2</sup>) for system standard and capable of performing within the Design Pressure requirements derived from the ASCE 7-05 requirements.

4) Air Infiltration - Air leakage through fixed light areas of storefront shall not exceed 0.06 cfm per square foot of surface area when tested in accordance with ASTM E283 at differential static pressure of 26.24 psf (30.32 Kg/m<sup>2</sup>).

b. Delamination: Adhesively bonded metal-faced or glass faced panels shall show no evidence of delamination, warpage or other deterioration or damage when subjected to the six "Accelerated Aging Cycles" specified in ASTM D 1037.

c. Thermal Conductance: The thermal transmittance of opaque panels shall not exceed the specified U-value, when tested in accordance with ASTM C 236. The average calculated thermal transmittance of the complete wall assembly including panels, windows, and all other components shall not exceed a U-value necessary to meet the energy budget of the facility. Determine U-values of components in accordance with ASTM C 236.

d. Window Tests: Windows shall meet the requirements specified herein. Windows shall meet the same requirements for deflection and structural adequacy as specified for framing members when tested in accordance with ASTM E 330 except permanent deformation shall not exceed 0.4 percent; there shall be no glass breakage, and no permanent damage to fasteners, anchors, hardware, or operating devices. Windows shall have no water penetration when tested in accordance with ASTM E 331.

e. Fire Resistance Tests: Insulation provided in the curtain wall system or field applied in conjunction with the curtain wall system shall have a flame spread rating not exceeding 75 and a smoke developed rating not exceeding 150 when tested in accordance with ASTM E 84, except as specified otherwise herein.

1) Insulation: Insulation contained entirely within panel assemblies which meet the flame spread and smoke developed ratings of 75 and 150 respectively. Insulation isolated from the building interior by masonry walls, masonry cavity walls, or encased in masonry cores is not required to comply with the flame spread and smoke developed ratings specified.

2) Curtain Wall Systems: Material for firestopping the opening between the edge of the floor slab and back of the curtain wall system, shall have not less than the flame spread and smoke developed ratings specified for insulation which is neither isolated from the building interior nor encased in masonry cores.

3) Curtain Wall Panels: Panels for fire resistive curtain walls shall have the required fire resistive rating when tested in accordance with ASTM E 119.

4) Firestopping Materials and Devices: Firestopping material and attachment devices shall be an effective barrier against the spread of fire, smoke, and gases for the required period of when exposed to the conditions of the standard ASTM E 119 time-temperature curve for a period equivalent to the fire rating of the floor system and shall also be rated noncombustible when tested in accordance with ASTM E 136.

#### **B202003 1.1.5 Tolerances**

Design and erect wall system to accommodate tolerances in building frame and other contiguous work. Provide with the following tolerances:

- a. Maximum variation from plane or location shown on DOR-approved shop drawings: 1/8 inch (3 mm) per 12 feet (3.7 meters) of length up to not more than 1/2 inch (13 mm) in any total length.
- b. Maximum offset from true alignment between two identical members abutting end to end in line: 1/16 inch (1.6 mm).

**B202003 1.1.6 Structural Requirements**

Deflection and Structural Tests: No curtain wall framing member shall deflect, in a direction normal to the plane of the wall, more than 1/175 of its clear span or 3/4 inch (20 mm), whichever is less, when tested in accordance with ASTM E 330, except that when a plastered or gypsum board surface will be affected the deflection shall not exceed 1/360 of the span. No framing member shall have a permanent deformation in excess of 0.2 percent of its clear span when tested in accordance with ASTM E 330 for a minimum test period of 10 seconds at 1.5 times the design wind pressures specified.

**B202003 1.1.7 Thermal Movement**

Fabricate, assemble, and erect system with adequate allowances for expansion and contraction of components and fastenings to prevent buckling damage, joint seal failure, glass breakage, undue stress on fastenings or other detrimental effects.

**B202003 1.1.8 Curtain Wall Components**

The curtain wall and the components listed below shall be designed to meet the performance requirements below.

- a. Framing Members in Curtain Wall Main Frames and Sash or Ventilator Members: extrusion strength shall meet or exceed the physical properties required for minimum ultimate tensile yield strength of 16,000 psi (110 MPa) when tested under AA ASDI, ASTM E34, and ASTM B221M (or ASTM B221).
- b. Joint and Glazing Sealants: Perform tests as required by ASTM C 920.
- c. Preformed Compression Gaskets and Seals: ASTM C 864.
- d. Preformed Lock-strip Gaskets: ASTM C 542, modified as follows: Heat age specimens seven days at 158 degrees F (70 degrees C), in zipped or locked position under full design compression. Unzip, cool for one hour, re-zip, and test lip seal pressure, which shall be minimum 2.5 pounds per linear inch on any extruded or corner specimen.
- e. Spandrel Glass: Fallout resistance test, ASTM C 1048.
- f. Porcelain Enamel: Acid resistance, color retention, and spall resistance tests, PEI 1001.

g. Anodized Finishes: Aluminum used for framing shall have a color anodized NAAMM MFM finish designation AA-MIO-C22-A34 and AA-MIO-C22-A44, meeting the requirements of AAMA 611.

h. Glass and Glazing:

1) Conform to paragraph B202004, GLAZING.

2) Insulating Glass shall meet ASTM E 546 or ASTM E 576 at minus 20 degrees F (minus 29 degrees C), no frost or dew point.

i. Firestopping Material - Mineral fiber manufactured from asbestos-free materials, and conforming to ASTM C 612 or ASTM C 665, meeting fire resistance requirements specified.

j. Screens - ASTM D 3656, Class 2, 18 by 14 mesh, color charcoal.

k. Panels - Unless otherwise indicated, design for installation from outside the building. Provide vapor retarder on interior face of insulation. Seal edges of panels with cores of absorptive material to prevent entrance of water and allow venting of the core space to outside air.

1) Metal Facing Panels, Single Thickness - Metal facing panels shall be single thickness. Panel facing shall be flat sheet or textured type, made of porcelain enamel, aluminum, bronze, stainless steel and, with backside stiffeners or edge flanges spaced as required to meet flatness specified.

2) Adhesively Bonded Panels - Adhesively bonded panels shall be sandwich type, metal faced both sides, and bonded to form stable and composite unit. Nonexposed face shall be galvanized steel. Exposed face shall be porcelain enamel, aluminum, bronze, or stainless steel, with continuous laminated backing or internal stiffening ribs or breaks spaced as required to meet flatness specified.

3) Nonmetallic Panels

a) Panels shall be glass-faced on the side that will be exposed to view. Glass shall be spandrel glass with ceramic coating on its non-weathering surface and smooth finish on the exposed surface; backing shall be adhesively bonded to non-weathering surface.

b) Adhesively bonded insulated panels shall be nonmetallic faced, sandwich type, tempered hardboard on exposed face and on non-exposed face. Apply coating of epoxy or polyester followed by application of inert aggregate to exposed face in the factory. Inert aggregate shall be natural stone chips.

l. Metal Windows - Conform to ANSI/AAMA/WDMA 101. Provide inside glazing with removable metal glazing beads except for windows with structural glazing. Factory finish aluminum windows and provide

with aluminum frame screens with aluminum mesh at operable sash, hardware and locks, and tinted glazing. Aluminum screens shall comply with ANSISMA 1004.

Exposed aluminum surfaces shall 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 shall have a total dry film thickness of 1.23 mils.

m. Metal Accessories - Provide gravel stops and fascias, flashings, metal sills, metal stools, louvers, venetian blind pockets, and closures. Fabricate accessories of sizes and shapes indicated from similar materials and finish as specified for the wall system.

#### **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 shall 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 shall be UL listed and shall 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 shall 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**

Insulating glass units shall have 1/2 inch (13 mm) airspace. Provide low emissivity coating. The inner light shall be one of the following:

- a. Typically ASTM C 1036, Type I, Class 1, Quality q4, minimum 1/4 inch (6 mm) thick;
- b. 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 16 CFR 1201 or possible glazing impact is anticipated;
- c. ASTM C 1172, laminated glass as specified above, when required by antiterrorism requirements.

The outer light shall be one of the following:

- a. Typically ASTM C 1036, Type I, Class 2 (tinted heat absorbing or reflective), Quality q4, minimum 1/4 inch (6 mm) thick;
- b. 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 16 CFR 1201 or possible glazing impact is anticipated.

**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 shall 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 shall 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 shall 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 shall have fragment retention film if they require antiterrorism protection. The film shall be polyester, polyethylene terephthalate, or a composite. Fragment retention film shall 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 shall only occur at the factory of the fragment retention film manufacturer. The film shall include an abrasion resistant coating on the surface that does not receive the film adhesive. Fragment retention film shall 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 shall be supplied with an optically clear weatherable pressure sensitive adhesive. The adhesive shall contain ultraviolet

inhibitors to protect the film for its required life and shall limit ultraviolet transmission to not more than 8 percent of the radiation between 300 and 380 nanometers. The adhesive shall not be water activated. A water-soluble detackifier or release liner may be incorporated over the adhesive to facilitate film application. The adhesive shall be 90 percent cured within 30 days of installation. Adhesives on film thicknesses of 0.010 inch (0.254 mm) and greater shall 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 shall be of heavy type 6063-TS aluminum extrusions with reinforcing as required. Include bullet-resistant glazing and heavy-duty operable pass tray. Unit shall have a minimum of architectural Class I anodized coating or a high-performance organic coating conforming to AAMA 2605. AAMA coatings shall have a total dry film thickness of 1.2 mils.

**B2030 EXTERIOR DOORS**

Exterior doors shall be heavy duty insulated steel doors and frames for service access. Door frames shall 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 shall be in accordance with ANSI A250.6. Doors shall be hung in accordance with ANSI A115.16.

**B203001 1.1.1 Steel Doors**

Steel doors shall 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 shall 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 shall 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 shall be a minimum 16 gage thick (1.5 mm) respectively; with magnetic weatherstripping; nonremovable-pin hinges; thermal-break aluminum threshold. Doors and frames shall receive phosphate treatment, rust-inhibitive primer, and baked acrylic enamel finish. Doors shall have been tested in accordance with ANSI A250.4 and shall have met the requirements for Level C. Prepare doors to receive specified hardware. Doors shall be 1-3/4 inch (44.5 mm) thick.

**B203001 1.1.3 Insulation Cores**

Insulated cores shall be of type specified, and provide an apparent U-factor of .48 in accordance with SDI 113 and shall 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 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.
- 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 shall interlock at intersections and shall 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 shall 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 shall 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 shall be compatible with finish system in the paragraph "EXTERIOR PAINTING AND SPECIAL COATINGS".

b) Exterior Doors Galvanized Finish -- Shall 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.

**B203001 1.2 WOOD DOORS**

Solid wood or particleboard core with solid wood edge bands and reinforced at all hardware attachments to door with sound grade hardwood. Exterior wood doors are only allowed in residential construction where facility design, overhangs and porches eliminate direct rain/moisture contact from wind driven rain.

**B203001 1.2.1 Stile and Rail Doors**

Stile and rail doors shall be premium or custom grade Ponderosa pine stile and rail doors conforming to WDMA I.S.6A-01, heavy duty.

**B203001 1.2.2 Flush Doors**

Flush doors shall conform to WDMA I.S.1-A.

Exterior Flush Doors - Solid wood core, Type I conforming to WDMA I.S. 1-A.

**B203001 1.2.3 Wood Door Louvers**

Door louvers shall be of the manufacturer's standard design and shall transmit a minimum of 35 percent free air. Louver shall be a galvanized coated louvers with insect screens and comply with SDI 111-C, shall be

stationary, sight-proof type. Use lightproof louvers if function of room requires darkness.

**B203001 1.2.4 Door Light Openings**

Where glazed openings are required, use 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.

**B203001 1.2.5 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 bond for exterior doors. Adhesive for doors to receive a natural finish shall be non-staining.

**B203002 GLAZED DOORS**

**B203002 1.1 ALUMINUM GLAZED DOORS**

See B202002 STOREFRONTS, paragraph titled, "Doors and Frames."

**B203004 OVERHEAD AND ROLL-UP DOORS**

Large exterior overhead and roll-up doors system shall 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 ROLLING SERVICE DOORS AND GRILLES**

Coiling overhead doors shall have minimum 22 gage thermal insulated slats. Electric operators shall have 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. Doors shall be capable of withstanding the design wind loading of ASCE 7 and still operate normally. Finish of the door shall be hot-dipped galvanized with a painted finish.

**B203004 1.2 SECTIONAL OVERHEAD DOORS**

Sectional overhead doors shall conform to NAGDM 102, Residential or Commercial or Industrial door standards. Metal doors shall be horizontal sections hinged together which operate in a system of tracks to 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. Doors shall be of the standard lift type designed to slide up and back into a horizontal overhead position and requiring a maximum of 16 inches (400 mm) of headroom for 2 inch (50 mm) tracks and 21 inches (525 mm) of headroom for 3 inch (75 mm) tracks, unless a low headroom type is required due to limited headroom, or a high lift type or vertical lift type is required to allow additional working clearance in the area immediately inside the door. If doors are electrically operated, pushbuttons shall be full-guarded to prevent accidental operation, and include limit switches to

automatically stop doors at the fully open and closed positions. Limit switch positions shall be readily adjustable.

Doors shall be capable of withstanding the design wind loading of ASCE 7. Doors shall 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 shall 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.

**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.

**B203008 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 shall sign and seal the door hardware construction submittal. Provide, as far as possible, door hardware of one manufacturer's make. All hardware shall be clearly and permanently marked by the manufacturer where it will be visible after installation.

**B203008 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.

**B203008 1.2 PIVOTS**

BHMA A156.4.

**B203008 1.3 LOCKS AND LATCHES**

Commercial (all construction except family housing) buildings locks and latches shall 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.

**B203008 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.

**B203008 1.3.1 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.

**B203008 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 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 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 shall be provided within 3 hours from request within the first 12 months of occupancy. Provide a 5-year parts and labor warranty.

**B203008 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 shall be provided in lieu of conventional crossbars and arms. Use manufacturer's integral touch bars in aluminum storefront doors.

**B203008 1.6 EXIT LOCKS WITH ALARM**

BHMA A 156.5.

**B203008 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 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.

**B203008 1.8 KEYING SYSTEM**

Keying system shall be a master key system for the facility, unless more than one tenant/tenant command shall 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 shall be an extension of the existing keying system for additions to existing facilities. The keying system shall allow for construction interchangeable cores when subcontractors require keys during construction. If required, provide a key cabinet.

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.

**B203008 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.

**B203008 1.10 LOCK TRIM**

Cast, forged or heavy wrought construction and commercial plain in design.

**B203008 1.10.1 Knobs and Roses**

Knobs and roses shall meet test requirements of BHMA A 156.2 and BHMA A 156.13.

**B203008 1.10.2 Lever Handles**

Provide lever handles in lieu of knobs as required by UFAS and ADAAG. Lever handles shall meet the test requirements of BHMA A 156.13 for mortise locks. All lever handles (mortise or cylinder) shall be the freewheeling type.

**B203008 1.11 DOOR BOLTS**

BHMA A 156.16, Grade 1. Provide two flush bolts for each inactive leaf of a pair of doors.

**B203008 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.

**B203008 1.13 OVERHEAD HOLDERS**

BHMA A 156.8, Grade 1. Provide for exterior doors for non-residential (commercial) construction.

**B203008 1.14 DOOR PROTECTION PLATES**

Kick plates shall 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.

**B203008 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.

**B203008 1.16 THRESHOLDS**

BHMA A 156.21. Provide thresholds with offset to stop water infiltration, while maintaining accessibility requirements.

**B203008 1.17 WEATHERSTRIPPING**

BHMA A 156.22. Air leakage of weatherstripped doors shall 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).

**B203008 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.

**B203008 1.19 FINISHES**

One of the following hardware finish systems shall be provided, and match the interior door hardware:

- 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. 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).

**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 shall be glazed aluminum doors and frames as specified in this section. Controller shall 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 shall be capable of sensing an individual moving as slow as 2.2 inches (55.8 mm) per foot. The infrared sensors shall employ both diffused presence sensors that see through the plane of the door, and distance measuring sensors. The infrared sensors shall constantly remain in operation. The safety device shall 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;

**SECTION C10**

**INTERIOR CONSTRUCTION  
4/08**

**C10 GENERAL**

**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*

UFC 3-100-10N, *Architecture*

UFC 3-120-10, *Interior Design*

**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*, UFC 1-300-09N, *Design Procedures*, UFC 3-100-10N, *Architecture*, and UFC 3-300-10N, *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

**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 Glazed Structural Clay Tile**

Provide glazed tile of Grade S, Type I, conforming to ASTM C 126. Tile for fire-rated walls shall have the percent of solid required for that rating.

**C101001 1.2.2.3 Pre-Faced Concrete Masonry Units**

Provide pre-faced concrete masonry units conforming to ASTM C 744, load-bearing or non-load-bearing, lightweight, Grade N, Type I.

**C101001 1.2.2.4 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**

Load-Bearing Cold-Formed Metal Framing shall 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 all demountable partitions and associated work, including tracks and anchoring systems.

**C101002 1.1 PERFORMANCE REQUIREMENTS**

**C101002 1.1.1 Burning Characteristics**

The system shall have a Class 'A' (under 25) flame spread rating in conformance with ASTM E 84.

**C101002 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.

**C101002 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.

**C101002 1.1.4 Structural Performance**

Panel deflection shall not exceed 1/120<sup>th</sup> of the vertical span when tested in accordance with ASTM E 72.

**C101002 1.1.5 Electrical Requirements**

Electrically powered demountable partitions shall accommodate electrical switches and outlets, and be tied to the building electrical power system through over-head or end-mount base feeds.

**C101002 1.1.6 Field Test**

Perform field tests as required in Paragraph C30 1.2 PERFORMANCE VERIFICATION AND FIELD 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 C30 1.2 PERFORMANCE VERIFICATION AND FIELD 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. Wood Windows

Wood windows shall consist of complete units, including sash, glass, frame and hardware. Window units shall meet the Grade 40 requirements of AAMA 101. Wood members that will receive a transparent finish shall be in one piece, not finger-jointed.

b. Plastic Windows

Provide PVC windows, reinforcing members, welded corners, fasteners, hardware and anchors conforming to AAMA 101 or ASTM D 4099.

- 1) Windows shall be fixed or operable, as stated in the project program.
- 2) Material and Color - Window (PVC) color shall be a consistent color all the way through the material.

c. 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.

**C101007 1.2 PLASTIC GLAZING**

**C101007 1.2.1 Bullet-Resistant Plastic Sheet**

Bullet resistant rating in accordance with UL 752, Class I, clear in color. Only use bullet-resistant plastic sheet on existing interior windows that cannot be removed and replaced.

**C101007 1.2.2 Polycarbonate Sheet**

ANSI Z97.1, Mar-resistant, Clear and smooth both sides when used for vision glazing; Translucent, textured both sides when used for obscure glazing. Mar-resistant sheet shall have a change in haze of between 5 and 8 percent under silica carbide test, 1600 grams, ASTM D 673.

Provide warranty for polycarbonate sheet glazing for a period of 5-years that includes the following:

- a. Warranty Type I, Class A (UV Stabilized) sheets against breakage;
- b. Warranty Type III (coated and mar-resistant) sheets against breakage and coating delamination.
- c. Warranty Type IV (coated sheet) against breakage and yellowing

**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*.

c. Plastic Laminate Finish - Factory applied, NEMA LD 3, 0.050 inch (1.27 mm) minimum thickness.

**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 and 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 UFAS and ADAAG. 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, 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 UFAS & ADAAG.

**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**

FS A-A-2524. Provide units, Type I, II, or III, of stainless steel. Provide one double-roll dispenser per toilet compartment, unless otherwise indicated.

**C103002 1.1.2 Paper Towel Dispensers**

FS A-A-2380. Provide one per pair of sinks in toilet rooms without electric hand dryers, and one per room with electric hand dryers, unless otherwise indicated.

**C103002 1.1.3 Combination Paper Towel Dispenser / Waste Receptacle**

Provide a recessed or semi-recessed type and be constructed of 22-gage stainless steel. Provide one per pair of sinks, unless otherwise indicated.

**C103002 1.1.5 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.

**C103002 1.1.6 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 1.1.7 Towel Bars**

Provide stainless steel towel bars with a minimum thickness of 0.015 inch (0.4 mm).

**C103002 1.1.8 Grab Bars**

Provide stainless steel grab bars per UFAS and ADAAG.

**C103002 1.1.9 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 1.1.10 Mirrors**

Class 2, Style E, Grade 1, electro-copper plated, conforming to FS DD-M-411. Provide one manufactured framed mirror per sink, or one full-size mirror for all sinks, unless otherwise indicated.

**C103002 1.1.11 Soap Dispensers**

Provide one soap dispenser per two sinks, with mechanical action dispensing valve. Do not mount soap dispenser on mirror.

**C103002 1.1.12 Electric Hand Dryer**

FS W-H-50. 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

**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 UFAS and ADAAG. 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
<b>Uprights (all)</b>	
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
<b>Bridge Channels</b>	
Channel (halves)	14 ga. (.075") CQCR Steel
<b>Utility Rails</b>	
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
<b>Top Stretchers</b>	
Channel	14 ga. (.075") CQCR Steel
End Brackets	18 ga. (.047") CQCR Steel
<b>Vertical Utility Chase</b>	
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
<b>Chase Cover</b>	
Panel	18 ga. (.047") CQCR Steel
<b>Bridge Cover Extension</b>	
Panel	18 ga. (.047") CQCR Steel
<b>Chase Cabinet Filler</b>	
Panel	18 ga. (.047") CQCR Steel
<b>Cantilever</b>	
Cantilever	11 ga. (.118") HRPO Steel
<b>End Panel</b>	
Outer Cover	11 ga. (.118") HRPO Steel
Inner Cover	20 ga. (.036") CQCR Steel
Angle Bracket	16 ga. (.059") CQCR Steel
<b>Shelves</b>	

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
<b>Laminate Overhead Storage Cabinets</b>	
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
<b>Steel Overhead Storage Cabinets</b>	
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
<b>Laminate Storage and Sink Cabinets</b>	
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
<b>Steel Storage and Sink Cabinets</b>	
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
<b>Cord Reel</b>	
Cord Reel	11 ga. (.118") HRPO Steel
<b>Cable Storage Tray</b>	
Tray	24 ga. (.024") CQCR Steel
<b>Phenolic Drying Rack</b>	
Mounting brackets, in-line	14 ga. (.075") CQCR Steel
Mounting brackets, end-of-bench	14 ga. (.075") CQCR Steel
<b>Modular Power Block with GFCI Receptacle</b>	

Housing and back bracket	16 ga. (.059") CQCR Steel
<b>Modular Connector Faceplates</b>	
Faceplate	16 ga. (.059") CQCR Steel

<b>Non-Metals</b>	<b>Thickness and Material</b>
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**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
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**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
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**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
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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
<b>Steel Storage and Sink Cabinets</b>	
Drawer/Door stop	Rubber
<b>Power Block</b>	
Housing	Ultramid Nylon
<b>Harness-to-Harness Connector</b>	
Housing	Ultramid Nylon
<b>Duplex Receptacles</b>	
Housing	Ultramid Nylon
<b>Modular Harnesses and Multipurpose Power Infeeds</b>	
Connector housing	Ultramid Nylon
<b>Wire Manager</b>	
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 asbestos-free firestopping material capable of maintaining an effective barrier against flame, gases and temperature. Provide non-combustible firestopping that is non-toxic to human beings during installation or during fire conditions. Devices and equipment for firestopping service shall be UL FRD listed or FM P7825 approved for use with applicable construction, and penetrating items.

##### **C103012 1.1.1 Fire Hazard Classification**

Material shall have a flame-spread of 25 or less, a smoke developed rating of 50 or less when tested in accordance with UL 723 or UL listed and accepted.

##### **C103012 1.1.2 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.

**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-resistive 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. 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 the mat adjoins other floor materials. Mat system shall meet ASTM D-2047 coefficient of friction requirements for dry and wet surfaces. All portions of mat system shall comply with ASTM E 648, Class I for flammability and ASTM E 662 for smoke development of  $\leq 450$ . 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<sup>2</sup>.
- 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<sup>2</sup>. 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

**SECTION C20**

**STAIRS**  
**4/08**

**C20 GENERAL**

**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 03-100-10N, *Architecture*

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

**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*, UFC 1-300-09N, *Design Procedures* and UFC 3-100-10N, *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. Fire 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.

**C201001 1.5 WOOD STAIRS**

Wood stairs may be used only for residential construction. Provide wood treads of minimum 1-1/4 inches thickness, of clear red or white oak. Risers shall be nominal one-inch finish lumber. Provide natural finish equivalent to one coat of sealer and two coats of varnish on all exposed surfaces.

**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**

4/08

**C30 GENERAL**

**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)

**C30 1.1.2 Government Standards-**

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-200-01, *General Building Requirements*

UFC 3-100-10, *Architecture*

UFC 3-120-10, *Interior Design*

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS 09 62 50.10, *Thin Film Flooring System for Aircraft Maintenance Facilities*

**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 Flooring Installer Qualifications**

The Designer of Record shall utilize UFGS Specification Section 09 62 50.10, *Thin Film Flooring System for Aircraft Maintenance Facilities*, 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 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, *Design Procedures* and UFC 3-100-10N, *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*.

UFGS 09 62 50.10, *Thin Film Flooring Systems for Aircraft Maintenance Facilities*

**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 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 GYPSUM PLASTER**

Provide gypsum neat 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.

**C301002 1.1.1** High strength gypsum gaging plaster finish coat shall have a compressive strength of not less than 4,500 psi when tested dry in accordance with ASTM C472.

**C301002 1.1.2** Provide gypsum molding plaster for ornamental plaster in accordance with ASTM C59.

**C301002 1.1.3** Provide Keene's cement finish coat conforming to ASTM C61.

**C301002 1.1.4** Provide acoustical gypsum plaster finish coat conforming to ASTM E1042 Type I or II Class A, noncombustible.

**C301002 1.2 CEMENT PLASTER**

**C301002 1.2.1** 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 1.2.2** 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 1.2.3** 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.

**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 CEMENTITIOUS BACKING UNITS**

ANSI A108.11 and ANSI A118.9, 5/8 inch (15.9 mm) thick; 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 1.4 IMPACT RESISTANT GYPSUM BOARD**

Reinforced gypsum panel with imbedded fiber mesh or lexan 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 1.5 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 1.6 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 1.7 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 1.8 LEVEL OF FINISH**

**C301003 1.8.1** 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 1.8.2** 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 1.8.3** 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 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 VINYL WALL COVERING**

**C301005 1.1.1** - Vinyl wallcovering shall be a vinyl coated woven or nonwoven fabric with germicidal additives and shall conform to ASTM F793, Category V Type II, 13.1 to 22 ounces (371 g to 624 g) total weight per square yard and width of 54 inches (1370 mm). Provide ASTM F793, Category VI, Type III, 22 ounces (624 g) and above to cover rough textured walls such as masonry.

**C301005 1.1.2** Provide a polyvinyl fluoride film, 0.0005 inch (0.012 mm) thick or thicker shall be factory applied to the wall covering where additional resistance to staining and soiling from exposure to staining

reagents or chemicals and resistance from abuse is required. The film shall be transparent (clear), medium gloss.

**C301005 1.2 FABRIC WALL COVERING**

**C301005 1.2.1** 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 1.2.2** 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 1.3 WALLCOVERING BORDER**

Vinyl wallcovering border shall be a vinyl coated woven or nonwoven fabric with germicidal additives and shall conform to ASTM F793, Type I, 7 to 13 ounces (198 g to 368 g) or Type II, 13.1 to 22 ounces (371 g to 624 g) total weight per square yard.

**C301005 1.4 SURFACE PREPARATION FOR UNEVEN WALLS**

**C301005 1.4.1** Wall liner shall be a non-woven polyester cellulose blend having a minimum weight of 3.7 ounces (105 g) per square yard and a total minimum thickness of 0.013 inches (0.33 mm). Wall liner 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. Use for masonry walls or walls with uneven surfaces.

**C301005 1.4.2** 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 PLASTIC LAMINATE WALL FINISHES**

Plastic laminate used for wall applications shall be commercial grade, high-pressure laminate with a #60 finish, approved for vertical applications. NEMA LD 3.

**C301090 1.2.1** The kitchen wall area between the counter top backsplash and the bottom of the wall cabinet shall be plastic laminate. Laminate wall finish shall include factory recommended fasteners/adhesives/caulk to complete the installation.

**C301090 1.3 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 1.4 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 1.5 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 1.5.1 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 1.6 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.

**C302001 TILE FLOOR FINISHES**

Provide ceramic tile floor systems as defined in the Tile Council of America (TCA) 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 one grade 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 Coefficient of Friction (wet and dry) of 0.6, ASTM C1028. 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, toilets, and in industrial and maintenance facilities.

**C302001 1.1 CERAMIC GLAZED FLOOR TILES**

Ceramic glazed floor tiles shall be a minimum of 5/16 inch (8 mm) thick with a minimum of 1/8 inch (3 mm) grout width with cushioned edge. Tile shall have a 0.5 to 3.0 percent water absorption rate, ASTM C373. Do not use in areas where there is excessive water or grease and oils such as kitchens, dining facilities, toilets, showers, shower drying rooms, building entrance areas, and in industrial and maintenance facilities.

**C302001 1.2 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 1.3 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 1.4 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.

**C302002 1.2 RESINOUS TERRAZZO**

Resinous terrazzo flooring shall be an epoxy terrazzo system that conforms to the requirements specified in the NTMA resinous epoxy specification.

**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 1.1.2** 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 1.1.3** 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 1.1.4** 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 1.1.5** 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 shall meet or exceed applicable ADA horizontal requirements. Each type of flooring shall be installed with recommended adhesive in accordance with the manufacturers' written instructions. Installers shall be approved by the manufacturer in writing and shall have a minimum of 3 yrs experience for each type of flooring to be installed. A minimum of 2% total quantity for each type flooring, color and pattern shall be provided and stored 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 Federal Specification SS-T-312B (1), Type IV, 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 vinyl tile shall be 0.1 inch (2.5 mm) thick, with a vinyl wear layer of 0.035 inches (.9 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 tile that are easily cleaned with off-the-shelf products. Surface finishes requiring manufacturer supplied or special order cleaning solutions are not acceptable. Vinyl tile flooring shall have a marble, granite, stone, terrazzo or wood pattern. A manufacturer's 10-year warranty is required.

**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 CONSTRUCTION**

Provide carpet types based on Table I, "Carpet Construction Type by Facility."

TABLE I - CARPET CONSTRUCTION TYPE BY FACILITY							
Facility Type	Tufted Cut Pile	Tufted Loop Pile	Tufted Cut and Loop	Tufted Tip Shear	Tufted Frieze	Woven Loop or Cut & Loop	Carpet tile
Administrative	-	X	X	X	X	X	X
Open Plan Offices	-	X	X	X	-	X	X
Private Offices	X	X	X	X	X	X	X
Corridors	-	X	X	X	-	X	X
Conference Rooms	X	X	X	X	X	X	X
Child Care Centers	-	X	-	-	-	-	X
Family Housing	X	X	-	-	-	-	-
Bachelor Officer's Quarters	X	X	X	-	-	X	-
Bachelor Enlisted Quarters	-	X	-	-	-	X	X
Lodging Facilities	X	X	X	X	X	X	X
Training/Educational	-	X	X	-	-	X	X
Borders and insets	X	X	X	X	X	X	X

**C302005 1.3 CARPET SEVERE WEAR SPECIFICATIONS**

Provide carpet that complies with Table II, "Carpet Specifications for Severe Wear Classification."

TABLE II - CARPET SPECIFICATIONS FOR SEVERE WEAR CLASSIFICATION					
Carpet Construction	Pile Fiber	Weight oz/SY (kg/m2) min. x.037	Pile Height in.(mm) min.	Gauge min.	Pile Density oz/cuyd (kg/m3) min.

Tufted Cut Pile	CF NYLON	32(1.18)	.175(4.45)	1/10	6600 (270)
Tufted Loop Pile	CF NYLON	26(0.82)	.120(3.05)	1/10	6600 (270)
Tufted Cut and Loop	CF NYLON	28(1.04)	.135(3.43)	1/10	7400 (303)
Tufted Tip Shear	CF NYLON	28(1.04)	.135(3.43)	1/10	7400 (303)
Tufted Frieze	CF NYLON	32(1.18)	.175(4.45)	1/10	6600 (270)
Woven Loop	CF NYLON	26(1.04)	.135(3.43)	1/8	7400 (303)
Woven Cut & Loop	CF NYLON	28(1.04)	.135(3.43)	1/8	7400 (303)

**C302005 1.4 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 died and solution-dyed, Type 6 or Type 6.6 continuous hollow filament nylon

**C302005 1.5 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 1.6 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.
- 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. Provide carpets with recycled fiber content, and renewable material content in the attached cushion or backing materials certified by an independent testing agency.
- h. Written Warranty: Lifetime commercial warranty for texture retention and edge raveling, zippering, delamination is required. Seam preparation and adhesives shall be recommended by the carpet manufacturer in accordance with the warranty.
- i. Appearance Retention: Provide carpet with a multi-color pattern for excellent appearance retention and soil hiding characteristics.
- j. Indoor Air Quality: Provide carpets that meet the criteria of the CRI "Green Label" Indoor Air Quality Testing Program.

**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. Preapplied releasable "dry" adhesive system installation.
- e. Stretch-In Carpet Installation with tack strips and pad
- f. Stretch-In Installation with hook and loop system.

**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 CARPET WALL BASE FINISHES**

Carpet wall base finishes shall consist of a strip of carpet matching or contrasting adjacent carpet, 4 inch (100 mm) high, with the top edge finished with an aluminum or vinyl edge profile; or an edge binding material matching the carpet.

**C302007 1.3 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 1.4 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 1.5 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 62 50.10, *Thin Film Flooring System for Aircraft Maintenance Facilities*, 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 carpet tile over prefinished panels for office areas, 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.
- 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 finish. Wood and other combustible products are prohibited.
- c. Cementitious or Concrete 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.

**C302011 1.2.1 Gravity held 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 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 ATBCB ADA Title III.

**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 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 1.4 IMPACT RESISTANT GYPSUM BOARD**

Reinforced gypsum panel with imbedded fiber mesh or lexan 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 1.5 TEXTURED CEILING FINISH SYSTEM**

Applied textured ceiling finish shall be plaster based. Refer to paragraph "C301002 - 1.1 GYPSUM PLASTER" for finish requirements.

**C303002 1.6 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.

**C303002 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.

**C303002 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. Install as recommended by GA 214, GA 216 and GA 224.

**C303002 1.9 LEVEL OF FINISH**

**C303002 1.9.1** 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 1.9.2** 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**

The following coatings are applied directly to all surfaces of interior construction.

**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.

MPI PAINT SYSTEMS IDENTIFIED IN THE RFP TAKE PRECEDENCE OVER OTHER MPI SYSTEMS. IF THE RFP DOES NOT IDENTIFY A PAINT SYSTEM APPLICABLE TO ALL PAINTING OF THE FACILITY, UTILIZE THE MPI *ARCHITECTURAL PAINTING, INTERIOR SYSTEM* MANUAL TO IDENTIFY APPROPRIATE PAINT SYSTEMS. UTILIZE THE "PREMIUM GRADE" SYSTEMS AND COMPLY WITH ALL LIMITATIONS STATED IN THE MPI "APPROVED PRODUCTS LIST" FOR EACH SYSTEM. PRODUCTS HAVING AN MPI EPR 3 RATING SHALL BE GIVEN PREFERENTIAL CONSIDERATION OVER LOWER EPR RATINGS. THE HIGHER PERFORMING SYSTEMS SHALL BE USED UNLESS THE LOWER PERFORMING SYSTEMS CAN BE JUSTIFIED BASED ON LIFE CYCLE COSTS TO INCLUDE SURFACE PREPARATION, APPLICATION, DISPOSAL, ENVIRONMENTAL IMPACT, AND RECOATING CYCLES BASED ON EXPOSURE REQUIREMENTS. ONLY USE PAINT PRODUCTS THAT HAVE BEEN TESTED FOR THE MPI'S "DETAILED PERFORMANCE". DO NOT USE PRODUCTS THAT HAVE BEEN TESTED ONLY FOR "INTENDED USE". **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. Use G2 "Velvet-like" Flat for ceilings, residential walls away from human contact and low traffic areas. 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. Use G5 Semigloss for ceilings, walls, doors and trim for high durability and clean ability when a surface is expected to have human contact and is routinely touched.. Use G6 Gloss only in special situations such as for piping identification or special effects. The MPI Gloss and Sheen Standard values are measured per ASTM D523, method D and are as follows:

<u>Gloss Level Number</u>	<u>Gloss@ 60 Degrees</u>	<u>Sheen@85 Degrees</u>
Gloss Level 1( <b>G1</b> ) - Matte or Flat	Max.5 units	Max.10 units
Gloss Level 2( <b>G2</b> ) - "Velvet-like" Flat	Max. 10 units	10-35 units
Gloss Level 3( <b>G3</b> ) - "Eggshell-like"	Max. 10-25 units	10-35 units
Gloss Level 4( <b>G4</b> ) - "Satin-like"	Max. 20-35 units	Min. 35 units
Gloss Level 5( <b>G5</b> ) - Semi-Gloss	35-70 units	
Gloss Level 6( <b>G6</b> ) - Gloss	70-85 units	
Gloss Level 7( <b>G7</b> ) - 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.

**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 INT 5.1R-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 INT 9.2G; 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)

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. 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 representative.

-- End of Section --

## SECTION D10

### CONVEYING 4/08

#### D10 GENERAL

##### 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.

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*

##### D10 1.1.2 Government Standards

NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)

*ITG NAVFAC Elevator Design Guide* (2001) - (This guide can be found at the following web address:  
[http://www.wbdg.org/ccb/NAVFAC/INTCRIT/fy01\\_01.pdf](http://www.wbdg.org/ccb/NAVFAC/INTCRIT/fy01_01.pdf))

##### 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 or Monorail with Hoist/Trolley Installation and Certification**

Erect and install the crane or monorail system, complete in accordance with the approved submittals and in condition to perform the operational and acceptance tests.

a. Certification

1) Load Chain or Wire Rope - Submit factory certification of rated capacity. Submit certification of minimum wire rope breaking strength for each hoist.

2) Overload Test Certificate - Submit a statement that the crane or monorail with hoist/trolley system can be periodically load tested to 125 percent (plus 5 minus 0) of rated load.

b. Inspection and Testing

After erection, the Contractor and the Contracting Officer shall jointly inspect the crane or monorail with hoist/trolley systems and components to determine compliance with specifications and approved submittals. The Contractor shall notify the Contracting Officer 10 days before the inspection. 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 with hoist/trolley as specified herein. Test the systems in service to determine that each component of the system operates as specified, is properly installed and adjusted, and is free from defects in material, manufacturer, installation, and workmanship. Rectify all deficiencies disclosed by testing and retest the system or component to prove the system is operational. The Contractor shall 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 with hoist/trolley system. Record operating and startup current measurements for electrical equipment (motors and coils) using appropriate instrumentation (i.e., clamp-on ammeters). Compare recorded values with design specifications or manufacturer's recommended values; abnormal differences (i.e., greater than 10 percent from manufacturer's or design values) shall be justified or appropriate adjustments performed. In addition, high temperatures or abnormal operation of any equipment or machinery shall be noted, investigated, and corrected. Record crane or monorail with hoist/trolley speeds during each test cycle.

3) Hook Test - 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 (plus or minus 1/64-inch (0.4 mm)). Record this base dimension. Measure the distance between tram points before and after load test. An increase in the throat opening by more than 5 percent from the base measurement shall be cause for rejection.

4) Load Hook Inspection - Magnetic particle inspect the hook and nut over the entire area in accordance with ASTM A 275/A 275M. Acceptance standard shall be no defects. A defect is defined as a linear indication that is greater than 1/8-inch (3.2 mm) long whose length is equal to or greater than three times it width.

5) No-Load Test

a) Hoist: Raise the load hook the full operating lift distance and verify satisfactory operation of hoist, upper limit switch, lower limit switch, and the hoisting and lowering speeds. Operate the hoist at all available speeds in both directions.

b) Hoist/Trolley: Operate hoist/trolley assembly the full length of the monorail or crane bridge in both directions. Operate hoist/trolley at all available speeds in each direction. Verify satisfactory operation and verify trolley speed. Operate all monorail and crane bridge end switches.

c) Crane: Operate crane assembly the full length of the crane runway in both directions. Operate crane at low and high speed in each direction. Verify satisfactory operation and verify crane bridge speeds are provided as specified. Operate all crane bridge end switches.

6) Load Test - Test at 125 Percent (plus 5 percent minus 0) of rated capacity

a) Hoist Static Test: Raise test load approximately 12 inches (300 mm) above the floor and hold for 10 minutes. Observe load lowering that may occur which will indicate malfunction of hoisting component or brake. Lower the test load to the floor until the hoist line is slack.

b) Hoist Dynamic Test: Raise the test load to approximately 5 feet (1.5 meters) above the floor using all available speed points in the process. Lower the load back to the floor using all speed points. Stop the test load at least once while lowering at highest speed and observe proper brake operation. Wait 5 minutes, then repeat the above cycle.

7) Load Brake Test: Raise test load approximately 5 feet (1.5 meters). With the hoist controller in the neutral position, release the holding brake. The load brake should hold the test load. Again with the holding brake in the released position, start the test load down at lowest speed and return the controller to off position as the test load lowers. The load brake should prevent the test load from accelerating. It is not necessary for the load brake to halt the downward motion of the test load.

8) Loss of Power Test: Raise the test load approximately 3 feet (900 mm) and while lowering test load, cut main power to hoist. Load should stop.

9) Hoist/Trolley Test: With test load hoisted to a height of 12 inches (300 mm) above the floor, operate trolley the full distance of the monorail in both directions using both speed points in the process. Observe for any malfunctioning of the trolley assembly

or crane or monorail. Operate all crane bridge or monorail end rail switches.

10) Crane: With test load hoisted to a height of 12 inches (300 mm) operate crane assembly the full length of the crane runway in both directions. Operate crane at low and high speed in each direction. Verify satisfactory operation and verify crane bridge speeds are provided as specified. Operate all crane bridge end switches.

11) Rated Load Speed Test - With the hoist/trolley loaded to rated capacity, raise and lower the load verifying that the hoisting and lowering speeds are provided as specified.

With the hoist loaded to rated capacity, operate hoist/trolley along the crane bridge, verifying that the hoist/trolley speed is provided as specified. Further, verify that the hoist/trolley stops in each direction within a distance (in feet) equal to 10 percent of rated capacity high speed (in feet per minute) when initially traveling at high speed and carrying the rated capacity load. Record voltage, amperage, hoisting and lowering speeds, hoist/trolley travel speed, and motor speed for each motor.

With the hoist loaded to rated capacity, operate crane along the crane bridge runway verifying that the crane speed is provided as specified. Further verify that the crane stops in each direction within a distance (in feet) equal to 10 percent of rated capacity high speed (in feet per minute) when initially traveling at high speed and carrying the rated capacity load. Record voltage, amperage, crane travel speed, and motor speed for each motor.

#### D10 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*, UFC 1-300-09N, *Design Procedures*, UFC 3-100-10N, *Architecture* and UFC 3-300-10N, *Structural Engineering*.

#### D10 1.3 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. Shop Drawings 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, 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 OMSI:

Submit final submittals for OMSI Manual. After approval by the DOR and sign-offs by the elevator inspector, assimilate construction submittals into the OMSI manuals required under Section 01 78 24.05 20, *Facility Operation and Maintenance Support Information*.

b. Shop Drawings for Weight Handling Equipment:

Submit to DOR drawings showing the general arrangement of the track beam system, including curves and switches, clearances, principal dimensions, details of structural connections, and all component details. Manufacturer's catalog data will suffice for items of standard manufacturer.

C. Field Tests

**D1010 ELEVATORS AND LIFTS**

The design and construction of elevators shall comply with the *ITG Elevator Design Guide*.

**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.

Only in the State of Hawaii, use this paragraph: Perform work involving the installation or repair of elevator equipment under the supervision of a person who is licensed in elevator repair in the State of Hawaii or who possesses the equivalent experience. Furnish data to the Contracting Officer for verification that the person exercising direct supervision of the work possesses such experience.

**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 manufacture's instructions, ASME A17.1, UFAS AND ADAAG, 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. 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 User 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 shall span distance between guides. On completion of guide rail and buffer installation, both pit channels shall be fully grouted.

**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 1.5 ELEVATOR CONTROLLER**

**D101002 1.5.1 Non-proprietary Controller**

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 shall 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 shall not require recharging to maintain their memory or authorization for use. Software shall not require periodic reprogramming, or reauthorization. Programs shall be stored in non-volatile memory.

**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.

**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*.

**D101090 OTHER VERTICAL TRANSPORTATION EQUIPMENT**

This section includes elevators not described in the categories above, including people lifts.

**D1020 WEIGHT HANDLING EQUIPMENT**

**D102001 1.1 BASIC REQUIREMENTS FOR CRANES OR MONORAILS WITH HOISTS/TROLLEYS**

**D102001 1.1.1 Safety**

Comply with the mandatory and advisory safety requirements of ASME B30.11 and ASME B30.16.

**D102001 1.1.2 Hoist Load Chain or Wire Rope**

High strength steel links, flexible; minimum safety factor of 5 to 1 based on ratio of minimum chain or wire rope breaking load 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 or wire rope's breaking strength shall be submitted to Contracting Officer and approved prior to final acceptance of hoist. Do not paint or coat the load chain or wire rope.

**D102001 1.1.3 Load Block And Hook**

Construct load blocks of steel. Provide forged steel, swivel type hook, with hook nut keyed to hook shank by means of a setscrew installed in a plane parallel to the longitudinal axis of the hook shank, or other similar easily removable securing device. Hook throat opening shall be sized for users needs. Provide hook with spring loaded steel safety latch for closing the hook throat opening. The hook and hook nut shall not be unpainted or coated. Permanently mark hook and hook nut with an identification number.

**D102001 1.1.4 Bearings**

All bearings except those subject to a small rocker motion shall be anti-friction type. Bearings not considered lifetime lubricated by the manufacturer shall be provided with a means for lubrication.

**D102001 1.1.5 Painting of System**

Provide manufacturer's standard painting or shop painting of components specified in this section; Do not paint, coat, or galvanize load chain, load, hook nut, or load chain sheave.

**D102002 OVERHEAD CRANES**

**D102002 1.1 TOPRUNNING MULTIPLE GIRDER CRANE**

Provide an electric powered toprunning multiple girder crane system with electric powered hoist and trolley complete, tested and ready for operation. Crane, hoist, trolley, equipment, materials, installation, examination, inspection, and workmanship shall be in accordance with the applicable requirements of NFPA 70 and CMAA 70, as modified and supplemented by this specification. Reference in these publications to the "authority having jurisdiction" shall be interpreted to mean the "Contracting Officer."

- a. Runway Track System - Provide runway track system on the structural supports indicated on the drawings. The track system shall be the sole responsibility of the runway track supplier. However, design shall be subject to the requirements specified herein.
- b. Cataloged Products - If possible, provide runway track manufacturer's standard cataloged devices for connection of the track to the indicated supporting structures. If runway track manufacturer's cataloged devices are not provided for this suspension system, complete shop drawings and calculations for any custom connection device shall be submitted for review and approval by the Contracting Officer.
- c. Design - The runway system shall be designed and constructed to ensure no impairment of the strength of track or the structural support. A connection device shall be located at each track splice joint. Provide bracing to hold track sections in rigid alignment at all joints.
- d. Hoist and Trolley - Provide hoist and trolley in compliance with CMAA 70 requirements as modified and supplemented by this RFP.
- e. Crane Basic Requirements - Provide the crane basic components, crane installation, and field testing specified in the requirements below.
- f. Electrification - Runway track beam electrification for crane shall be of the flat festooned type or enclosed safety bar type (see project program) with four continuous copper conductors. Provide electrical work in accordance with Section D50, *Electrical*.
- g. Power Supply - Power supply emergency shut-off devices for monorail hoist and trolley, shall be readily accessible from the floor, and located within proximity to the crane runway track system.
- h. Identification Plates - Provide identification plates of noncorrosive metal. Information and data on the plates shall include,

in clearly legible permanent lettering, the manufacturer's name, model number, capacity rating, and other essential information. In addition, the crane system shall be furnished with identification plates showing the capacity of the system, which shall be legible from the floor and from either side of the crane.

**D102002 1.2 UNDERRUNNING SINGLE GIRDER CRANE**

Provide an electric powered underrunning crane system with electric powered hoist and trolley complete, tested and ready for operation. Crane, hoist, trolley, equipment, materials, installation, examination, inspection, and workmanship shall be in accordance with the applicable requirements of NFPA 70, and MH27.1, as modified and supplemented by this specification. Crane girder and runway tracks shall be patented track. Reference in these publications to the "authority having jurisdiction" shall be interpreted to mean the "Contracting Officer."

a. Patented Track - Provide specially designed trackage, e.g., patented track beam, curves, and switches constructed from welded steel components. The lower flange of the track section shall have flat wheel treads; minimum lower flange width of 3.25 inches (82 mm); chemical composition of 0.45 to 0.60 percent carbon content, 0.60 to 1.1 percent manganese content; and wheel treads shall be hardened to a minimum Brinell Hardness Number of 225. Upper flange and web of the track section shall be steel, continuously welded together or provided as one monolithic piece.

b. Track Suspension - Provide means of suspending the monorail track system, including curves and switches from the structural supports indicated on the drawings. The suspension system shall be the sole responsibility of the track supplier; however, design shall be subject to the requirements specified herein.

c. 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, complete shop drawings and calculations for each custom suspension device shall be submitted for review and approval by the DOR.

d. Design - The suspension system shall be designed and constructed to ensure no impairment of the strength of track or the structural support. A hanger or suspension shall be located at each track splice joint. Provide bracing to hold track sections in rigid alignment at all joints.

e. Sway Bracing - Track shall be braced laterally and longitudinally to prevent sway.

f. Lock Nuts - Where the track is suspended from hanger rods, lock nuts or other means shall be provided to prevent the nuts from backing off the rods.

g. Hoist and Trolley - Provide electric, air-powered, or manual hoist and trolley in compliance with requirements specified below by this RFP.

h. Crane Basic Requirements - Provide the crane basic components, crane installation, and field testing specified in the requirements below.

i. Electrification - Runway track beam electrification for crane shall be of the flat festooned type or enclosed safety bar type with four

copper conductors. Provide electrical work in accordance with Section D50, *Electrical*.

j. Power Supply - Power supply emergency shut-offs devices for monorail hoist and trolley shall be readily accessible from the floor, and located within proximity to the monorail runway track system.

k. Identification Plates - Provide identification plates of noncorrosive metal. Information and data on the plates shall include, in clearly legible permanent lettering, the manufacturer's name, model number, capacity rating, and other essential information. In addition, the crane system shall be furnished with identification plates showing the capacity of the system, which shall be legible from the floor and from either side of the crane.

### **D102003 MONORAILS**

#### **D102003 1.1 MONORAIL TRACK BEAM SYSTEM**

##### **D102003 1.1.1 Drawings and Design Data**

a. Drawings: Monorail System - Show the general arrangement of all components, clearances and principal dimensions, assemblies of track, track suspension system, and electrical schematic drawings.

b. Design Data: Load and Sizing Calculations - Submit calculations verifying the sizing of any track, track suspension device and additional supports, which are not the monorail system manufacturer's standard cataloged product.

Provide a patented track beam to comply with MMA MH27.1 except as modified and supplemented by this specification.

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.

c. Patented Track - See D102002 1.2.a

d. Track Suspension - See D102002 1.2.b

e. Cataloged Products - See D102002 1.2.c

f. Design - See D102002 1.2.d

g. Suspension of Curves and Switches - Provide steel framing (structural supports), in addition to that indicated, as required by monorail curve and switch manufacturer to support curves and switches. The additional steel framing shall be the sole responsibility of the monorail supplier. Submit shop drawings and framing design calculations to the Contracting Officer for approval.

h. Sway Bracing - See D102002 1.2.e

- i. Lock Nuts - See D102002 1.2.f
- j. Electrification - See D102002 1.2.i
- k. Power Supply - See D102002 1.2.j
- l. Identification Plates - See D102002 1.2.k

**D102003 1.2 ELECTRIC POWERED HOISTS WITH TROLLEY**

**D102003 1.2.1 Capacity**

The monorail system shall have a minimum rated capacity to be established by the project program. Mark the hoist capacity in pounds on both sides of the hoist or load block.

**D102003 1.2.2 Speeds**

The hoist shall have one or two operating speeds and shall be capable of hoisting and lowering the rated load at a high speed of as required by the project program. The trolley shall have one or two operating speeds and shall be capable of moving the rated load at a high speed as called for in the project program. Actual speed(s) shall be within plus or minus 15 percent of those specified.

**D102003 1.2.3 Electric Wire Rope Hoist**

ASME HST-4M, Class H3, except as modified herein as modified and supplemented by this RFP. Hoist shall be double reeved.

Rope lengths shall be sufficient to 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.

**D102003 1.2.4 Electric Chain Hoist**

ASME HST-1M, Class H3, except as modified herein and supplemented by this RFP. Provide load chain proof test.

Chain hoists of 10 foot (3 meters) lift or more shall be equipped with a load chain bucket

**D102003 1.2.5 Motors**

NEMA MG 1. Hoist and trolley motors shall be single or two speed AC squirrel cage induction type. Motor insulation shall be Class B minimum. Provide totally enclosed non-ventilated (TENV) motor enclosures. Maximum motor speed shall not exceed 1800 RPM.

**D102003 1.2.6 Controls**

Provide single or two speed magnetic control for the hoist and trolley. Provide reduced voltage starting, acceleration and deceleration for the trolley drive, if required by the project program. Provide upper and lower limit switches, which de-energize the hoist motor.

**D102003 1.2.7 Brakes**

Provide hoist with an electro-mechanical holding brake and a mechanical load brake, each capable of holding 130 percent of the rated hoist capacity. Hoist holding brake shall be capable of being released to test the load brake.

Provide trolley with an electro-mechanical brake. Provide trolley brake with a minimum torque rating as required by the project program. Trolley brake torque shall be adjustable down to 85 percent of its torque rating.

**D102003 1.2.8 Pendant Pushbutton Station**

Hoist and trolley shall be controlled from a pendant pushbutton station. Arrange pushbuttons in accordance with ASME B30.11 recommendations. Locate station 4 feet (1.2 meters) above the finished floor.

**D102003 1.2.9 Identification Plates**

Provide identification plates of noncorrosive metal with clearly legible permanent lettering giving the manufacturer's name, model number, capacity in pounds, and other essential information or identification.

**D102003 1.3 MANUAL HOIST WITH TROLLEY**

**D102003 1.3.1 Fabrication And Construction**

Provide manual hoist and trolley, ASME HST-2M, ASME HST-3M, trolley suspension. Trolley and wheels shall be suitable for operation on the steel monorail track beam provided, and shall have not less than four wheels.

**D102003 1.3.2 Capacity**

The hoist shall have a minimum rated capacity of as required by the project program. The monorail system shall have a minimum rated capacity as required by the project program.

**D102003 1.3.3 Hook Operating Lift Range**

Shall be the manufacturer's standard. The hoist lift highest and lowest points shall be as required by the project program.

**D102003 1.3.4 Trolley**

Shall be designed to operate from the track beam section provided. Where two or more hoists are located on the same monorail beam, the trolleys shall be equipped with rubber bumper devices designed to prevent contact of any part or parts of the hoists.

**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.

**D1090 OTHER CONVEYING SYSTEMS**

**D109002 CONVEYORS**

Comply with ASME B20.1, *Safety Standards for Conveyors and Related Equipment*.

**D109090 OTHER MATERIAL HANDLING SYSTEMS**

-- End of Section --

**SECTION D20**

**PLUMBING  
4/08**

**D20 GENERAL**

**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 3-400-10N, *Mechanical Engineering*

UFC 3-420-01, *Design: Plumbing Systems*

**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*, UFC 1-300-09N, *Design Procedures* and UFC 3-400-10N, *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.

**D201001 WATER CLOSETS**

ASME A112.19.2M, white vitreous china, siphon jet. Provide ASME A112.19.5 trim. Provide self-closing metering type flush valve, unless electronic control is specified in the ESR Section D20. Handicapped fixture mounting height and appurtenances shall be in accordance with UFAS and ADAAG.

**D201002 URINALS**

**D201002 1.1 FLUSH VALVE TYPE URINALS**

ASME A112.19.2M, white vitreous china, wall-mounted, wall outlet, siphon jet, integral trap, extended side shields. 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. Provide ASME A112.19.5 trim and ASME 112.6.1M concealed chair carriers. Provide self-closing metering type flush valve, unless electronic control is specified in the ESR Section D20. Handicapped fixture mounting height and appurtenances shall be in accordance with UFAS and ADAAG.

**D201002 1.2 NON WATER USE TYPE URINALS**

Not used.

**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. 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**

Not used.

**D201003 1.3 HANDICAPPED LAVATORIES**

Same as Paragraphs 1.1 or 1.2, except height and appurtenances shall be in accordance with UFAS and ADAAG.

**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**

Not used.

**D201004 1.4 LAUNDRY SINKS**

Not used.

**D201005 SHOWERS/TUBS**

**D201005 1.1 ONE PIECE BATH AND SHOWER MODULES**

Not used.

**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**

Not used.

**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. Anchor the mixing valves and the pipe to each showerhead in wall to prevent movement.

**D201005 1.5 HANDHELD SHOWER HEAD**

Not used.

**D201006 DRINKING FOUNTAINS AND COOLERS**

**D201006 1.1 DRINKING FOUNTAINS**

Not used.

**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 UFAS and ADAAG.

**D201090 EMERGENCY FIXTURES**

Not used.

**D201090 1.1 EMERGENCY SHOWER**

Not used.

**D201090 1.2 EMERGENCY EYE & FACE WASH**

Not used.

**D201090 1.3 COMBINATION EMERGENCY SHOWER & EYEWASH**

Not used.

**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**

Not used.

**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**

Not used.

**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**

Not used.

**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) or polyisocyanurate insulation (ASTM C 591, type I).

**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**

Not used 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**

Not used.

**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 and IPC, 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, plumbing chase areas, and any other areas required to receive condensate from air handling equipment that is not located in the mechanical room. Provide floor sinks in kitchens.

**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**

Not used.

**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 and IPC, 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 A112.21.2M, 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.

**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**

Not used.

**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**

Not used.

**D209005 COMPRESSED AIR SYSTEM (NON-BREATHING)**

**D209005 1.1 AIR COMPRESSOR**

Not used.

**D209005 1.2 REFRIGERATED AIR DRYER**

Not used.

**D209005 1.3 COMPRESSED AIR PIPING SYSTEM**

Not used.

-- End of Section --

**SECTION D30**

**HVAC  
8/08**

**D30 GENERAL**

**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 3-400-10N, *Mechanical Engineering*

UFC 3-420-01, *Plumbing Systems*

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS 01 78 24.05 20, *Facility Operation and Maintenance Support Information*

UFGS 23 08 00.00 20, *HVAC Testing/Adjusting/Balancing*

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 08 00.00 20, *HVAC Testing/Adjusting/Balancing* and 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*, UFC 1-300-09N, *Design Procedures*, UFC 3-400-10N, *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 24.05 20, *Facility Operation and Maintenance Support Information*

UFGS 23 09 23.13 20, *BACnet Direct Digital Control Systems for HVAC*

UFGS 23 08 00.00 20, *HVAC Testing/Adjusting/Balancing*

**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:

OMSI manual 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. 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*

**D3020 HEAT GENERATING SYSTEMS**

**D302001 1.1 BOILERS**

If required, provide Boiler(s) type for the load capacity of the building as indicated in ESR Section D30.

**D302001 1.2 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.

**D302001 1.3 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 1.4 BOILER TRIM AND CONTROL EQUIPMENT**

**D302001 1.4.1 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.

**D302001 1.4.2 Boiler Trim**

Comply with ASME BPVC SEC IV, ASME CSD-1, and additional appurtenances as specified herein.

**D302001 1.4.3 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 1.4.4 Thermometers**

Provide thermometers with a scale equivalent to 1.5 times the outlet water temperature on supply water piping and return water piping.

**D302001 1.4.5 Drain Trapping**

Provide drain valve and piping to a floor drain.

**D302001 1.4.6 Air Vent Valve**

Provide with screwed connection, stainless steel disk, and stainless steel seats to vent entrapped air.

**D302001 1.5 STEAM BOILERS**

Steam boilers shall meet the requirements of hot water boilers, except as follows.

**D302001 1.5.1 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 1.5.2 Thermometers**

Provide thermometers with a scale equivalent to 1.5 times the outlet water temperature on boiler feedwater piping and return water piping.

**D302001 1.6 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 1.7 BOILER STARTUP AND OPERATIONAL TESTS**

**D302001 1.7.1 Boiler Cleaning**

Prior to startup, clean boiler(s) in accordance with ASME *Boiler and Pressure Vessel Code* and manufacturer's recommendations.

**D302001 1.7.2 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.

**D302003 FUEL-FIRED UNIT HEATERS**

**D302003 1.1 GAS-FIRED UNIT HEATERS**

ANSI Z83.8 and AGA label. Equip each heater with individually adjustable package discharge louver. Provide with thermostat.

**D302003 1.2 INFRARED HEATERS**

ANSI Z83.8 and AGA label.

**D302004 AUXILIARY EQUIPMENT**

**D302004 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.

**D302004 1.2 CONDENSATE RETURN UNITS**

Floor-mounted receiver and duplex pump unit.

**D302005 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 ARI 550/590-98. 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.

**D303001 1.1.1 Stages**

Provide minimum of four stages of unloading at 25% per stage minimum for reciprocating 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, aluminum fins 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 ARI 550/590-98. 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.

**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 ARI 210/240 or ARI 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 ARI 210/240 or ARI 340/360.

**D303002 1.1.3 Ground-Coupled**

Factory assembled, designed, tested, and rated in accordance with ARI 330. 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 IGSHA 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 ARI 210/240 or ARI 340/360. Provide manufacturer's minimum recommended clearance around condensing units. Refrigerant piping size shall be per the manufacturer's recommendations.

**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.

**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 DCS with a minimum R value of 4. Maximum length of flexible ductwork shall be 6 feet (2 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 DCS 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 500 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 ARI 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 ARI 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 A106 or A53 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 or ASTM A 53, 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 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.

**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 3-400-10N.

**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. 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**

ANSI B16.18 cast bronze solder joint type or ASME/ANSI 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. 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 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.

**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) or polyisocyanurate insulation (ASTM C 591, type I). 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 ARI 430 certified fans and ARI 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 $\mu$ W/cm<sup>2</sup> 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 CHILLED WATER AND HOT WATER 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 3-400-10N.

**D304090 1.6 MAKE-UP WATER STATION**

Station shall consist of a water pressure-reducing valve, filter and 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, ARI 440 and ARI 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 ARI 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 UFGS Section 23 09 23.13 20, *BACNET Direct Digital Control Systems for HVAC*. The Designer of Record shall utilize UFGS Specification Section 23 09 23.13 20, *BACNET Direct Digital Control Systems for HVAC*, for the project

specification, and shall submit the edited specification section as a part of the design submittal for the project.

b. Provide a partial direct digital control (DDC) system that will communicate with the existing DDC system. 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. The system shall have stand alone digital controllers, a communication network, and a workstation computer with control software. Pneumatic controllers and components are not acceptable. All 120-volt wiring shall comply with NFPA 70. All 24-volt wiring shall comply with the IMC and terminal device manufacturer's recommendations.

**D306001 1.2 INSTRUMENT PANELS**

**D306001 1.2.1 Equipment Controllers**

DDC hardware shall be UL-916 rated. Use controllers in a distributed control manner. Controllers shall be stand alone with an internal clock and modem. The total number of I/O hardware points shall not exceed 48 in any controller. Provide sufficient memory for each controller to support required control, communication, trends, alarms, and messages. Provide communications ports for controller to controller, on-site interface, remote workstation interface, and telecommunications interface.

**D306002 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**

The Designer of Record shall utilize UFGS Specification Section 23 08 00.00 20, *HVAC Testing/Adjusting/Balancing*, for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

**D307001 WATER SIDE TESTING & BALANCING - HEATING & COOLING**

Refer to paragraph D3070.

**D307002 AIR SIDE TESTING & BALANCING - HEATING, COOLING & EXHAUST**

Refer to paragraph D3070.

**D3090 OTHER HVAC SYSTEMS AND EQUIPMENT**

**D309001 GENERAL CONSTRUCTION ITEMS**

**D309001 1.1 SEISMIC DESIGN**

**SECTION D40**

**FIRE PROTECTION  
4/08**

**D40 GENERAL**

**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 1.2 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**

Use qualified workers who are certified as a minimum Level III Technician by National Institute for Certification in Engineering Technologies (NICET), thoroughly trained and experienced, and completely familiar with the specified requirements and the methods needed for proper performance of the work in this section. Installers of systems in D4090 shall be certified at a minimum Level IV NICET.

**D40 1.2.2 Fire Protection Designer of Record**

The FPDOR shall review and approve all fire protection engineering submittals.

**D40 1.2.3 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 1.2.4 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 1.2.4.1 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 1.2.4.2 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 1.2.4.3 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 1.2.4.4 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 1.2.4.5 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*, UFC 1-300-09N, *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

**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**

**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. The detection system shall be cross zoned type consisting of photoelectric smoke detectors and ionization smoke detectors.

--End Of Section--



**SECTION D50**

**ELECTRICAL**  
**8/08**

**D50 GENERAL**

**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 3-500-10N, *Electrical Engineering*

UFC 3-580-10, *Navy and Marine Corps Intranet (NMCI) Standard Construction Practices*

UNITED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS 26 23 00, *Switchboards and Switchgear*

UFGS 26 29 23, *Variable Frequency Drive Systems Under 600 Volts*

UFGS 26 32 13.00 20, *Single Operation Generator Sets*

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 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 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. Transient voltage surge suppressors(TVSS) -
  - 1) Inspect for physical damage and compare nameplate data with the drawings and specifications, if applicable. Verify from the nameplate data that the TVSS equipment is appropriate for the system voltage.
  - 2) Verify lead length between the TVSS equipment and the circuit connection is less than one foot.
  - 3) Verify wiring between the TVSS equipment and the circuit connection does not include high-inductance coils or sharp bends.
  - 4) Confirm circuit breaker used for TVSS circuit connection is sized in accordance with TVSS manufacturer's requirements.
  - 5) Ensure TVSS equipment is grounded in accordance with TVSS 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 TVSS 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. Intercommunications systems shall be through telephone system
- j. 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.
- k. Electronic security systems (ESS) - Test ESS in accordance with UFGS requirements.
- l. Grounding systems - Test the grounding system in accordance with NETA ATS.
- m. Lightning protection - Upon completion of the installation, Contractor shall furnish the UL Lightning Protection Inspection Certificate certified to UL 96A for the system.
- n. 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.

#### **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*, UFC 1-300-09N, *Design Procedures*, and UFC 3-500-10N, *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 23 00, *Switchboards and Switchgear*

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 28 20 00.00 20, *Electronic Security System (ESS), Commercial*

#### **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.

#### **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 or 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.

**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, hinged - in - hinged 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.

a..Provide all panelboard schedule

b..Number and identify each circuit in the panelboard.

c..Number circuits by pole number on single pole breakers and by first pole number on two and three pole breakers.

d..Indicate connected load in amperes.

e..Provide two dedicated circuits for double duplex outlets with separate circuit for each outlet at test bench area in N6 - Information Tech Dept.

f..Provide three dedicated circuits for plasma screens for the Command Center with three Video Tele-conferencing System

**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 TRANSIENT VOLTAGE SURGE SUPPRESSORS (TVSS)**

**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**

NOT USED.

**D503003 INTERCOMMUNICATIONS SYSTEMS**

SHALL THROUGH TELEPHONE SYSTEM.

**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 SECURITY 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)**

Not used. The entire building shall be Controlled Access Area (CAA) in accordance with DCID 6/9, section 4.

**D5030005 1.3 SENSITIVE COMPARTMENTED INFORMATION FACILITIES (SCIF)**

Electrical systems installed within SCIF spaces or facilities shall be in accordance with the Director of Central Intelligence Directive (DCID) 6/9.

SCIF Area: N2 -Intel Dept, second floor, classification: Joint-Worldwide Intelligence Communication Systems (J-WICS) Top Secret

The entire second floor will be Open Storage Secret

**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**

**D509005 ELECTRIC HEATING**

**D509006 ENERGY MANAGEMENT CONTROL SYSTEM**

**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 F20**

**SELECTIVE BUILDING DEMOLITION  
4/08**

**F20 GENERAL**

**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 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 83 19.00 10, *Lead Based Paint Hazard Abatement, Target Housing and Child Occupied Facilities*

**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*, UFC 1-300-09N, *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 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 83 19.00 10, *Lead Based Paint Hazard Abatement, Target Housing and Child Occupied Facilities*

**F2010 BUILDING ELEMENTS DEMOLITION**

All demolition materials and appurtenances shall be properly disposed of 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. 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.

**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**

Not allowed.

**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..

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.

**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.

**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**

**8/08**

**G10 GENERAL**

**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*.

**G10 1.1.1 Industry Standards and Codes**

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 3-200-10N, *Civil Engineering*

UFC 3-220-01N, *Geotechnical Engineering*

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.

Verification of satisfactory earthwork performance shall be 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 shall be in accordance with UFGS section 01 33 10.05 20, *Design Submittal Procedures*, UFC 1-300-09N, *Design Procedures*, UFC 3-200-10N, *Civil Engineering*, and UFC 3-220-01N.

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*

**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 19.05 20 (01577N), *Temporary Environmental Controls for Design-Build*.

Submittals in UFGS Specification Section 31 23 00.00 20 (02315N), *Excavation and Fill*.

Demolition plan in accordance with Section 01 74 19, *Construction and Demolition Waste Management*.

**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 is 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.

**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.

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. Provide the Contractor's Geotechnical Report (an Adobe Acrobat PDF version on CD and two printed copies), a minimum of two weeks prior to the Foundation Work Design submittal, 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 driving results and analysis to the Contracting Officer (an 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 shall 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) Sheet piling and shoring considerations, as applicable.
  - 6) Pavement design calculations with parameters defined, actual or assumed, and recommended thicknesses and materials.
  - 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 shall be signed by a registered Geotechnical Engineer.

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. 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.

**G1010 SITE CLEARING**

**G1010 1.1 GENERAL**

Clear and grub project site as required for project construction.

**G1010 1.2 BURNING**

Not allowed.

**G101001 CLEARING**

**G101001 1.1 CLEARING**

The Contractor shall clear all trees, shrubs, brush and vegetation necessary for construction of the project. Clearing includes the felling, trimming, and cutting of trees into sections.

**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*.

**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. Fill 2 inches (50 mm) above adjacent surface to allow for settling when not part of a subbase.

**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. 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**

Not used..

**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, use traffic barricades with flashing lights. Provide temporary traffic control in accordance with UFC 3-200-10N, *Civil Engineering*.

**G102002 1.2.2 Foreign Object Damage (FOD)**

The Contractor shall take all measures necessary to prevent the deposition of FOD potential debris on or adjacent to operational airfield pavements. The Contractor shall install jersey barriers with lights and remove them as required. The Contractor shall immediately remove all such debris that appears on airfield pavements due to his construction activity.

**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 saw cuts at limits of pavement removal; protect saw cuts so that new pavement will butt against the existing pavement 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 3-200-10N, *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.

**G103001 GRADING**

**G103001 1.1 ELEVATIONS**

Establish finish floor elevations as required by UFC 3-200-10N, *Civil Engineering*.

**G103001 1.2 SITE GRADING**

The Contractor shall 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 3-200-10N, *Civil Engineering*.

**G103001 1.3 FINISHED SURFACES**

Finish grading shall provide drainage towards new and existing drainage features. Finish grading shall not result in low spots that hold water or that direct runoff towards new or existing facilities or site amenities. Finish grading shall be in accordance with the requirements of the UFC 3-200-10N, *Civil Engineering*.

**G103002 COMMON EXCAVATION**

The Contractor shall preserve natural topographic features to minimize cut and fill requirements. All unsuitable material and surplus excavation shall become the property of the Contractor and shall be disposed of as indicated in the Project Program.

**G103003 ROCK EXCAVATION**

Blasting is not permitted.

**G103004 FILL & BORROW**

**G103004 1.1 SOURCES**

Where sufficient topsoil and satisfactory materials are not available on the project site, provide suitable borrow materials.

**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".

**G103008 1.2 RODENT AND VEGETATION CONTROL**

Prevent and eliminate standing water.

**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 3-220-01N, *Geotechnical*

*Engineering, UFC 3-300-10N, 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 and 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**  
**4/08**

**G20 GENERAL**

**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*.

**G20 1.1.1 Industry Standards and Codes**

AMERICAN SOD PRODUCERS ASSOCIATION (ASPA)

NATIONAL FEDERATION OF STATE HIGH SCHOOL ASSOCIATIONS (NF)

U.S CONSUMER PRODUCT SAFETY COMMISSION, PUBLICATION NO. 325

**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)*

CORPS OF ENGINEERS (COE)

TM 5-822-5, *Pavement Design for Roads, Streets, Walks, and Open Storage Areas*

NAVAL FACILITIES ENGINEERING COMMAND (NAVFACENGCOM)

Military Handbook, MIL-HDBK-1013/14, *Selection and Application of Vehicle Barriers*

UNIFIED FACILITIES CRITERIA (UFC)

UFC 1-300-09N, *Design Procedures*

UFC 3-200-10N, *Civil Engineering*

UFC 3-201-02, *Landscape Architecture*

UFC 3-210-04, *Children's Outdoor Play Areas*

UFC 3-220-01N, *Geotechnical Engineering*

UFC 3-270-01, *O&M: Asphalt Maintenance and Repair*

UFC 3-270-02, *O&M: Asphalt Crack Repair*

UFC 3-270-03, *O&M: Concrete Crack and Partial Depth Spall Repair*

UFC 3-270-04, *O&M: Concrete Repair*

UFC 3-800-10N, *Environmental Engineering for Facility Construction*

UNITED FACILITIES GUIDE SPECIFICATIONS (UFGS)

32 11 26.16, *Bituminous Concrete Base Course*

32 11 36.13, *Lean Concrete Base Course*

32 11 33, *Cement Stabilized [Base] [Subbase] Course at Airfields and Roads*

32 11 30, *Lime Treated Subgrade [Lime Modified Soils]*

32 11 16.16, *[Base Course for Rigid] [and Subbase Course for Flexible] Paving*

32 11 24, *Graded Crushed Aggregate Base Course for Flexible Pavement*

32 11 16.13, *Sand-Clay [Base] [Subbase] Course*

32 12 17, *Hot Mix Bituminous Pavement*

32 13 13.03, *Airfields and Heavy-Duty Concrete Pavement Less Than 10,000 Cubic Yards*

32 13 13.06, *Portland Cement Concrete Pavement for Roads and Site Facilities*

**G20 1.2 QUALITY ASSURANCE**

**G20 1.2.1 Qualifications of Tree Location Contractor**

Contractor shall 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.

**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 D 1556 or ASTM D 2922 and ASTM D 3017. One field test for every 1000 square yards (836 square meters); minimum 2 tests. ASTM D 1557, Method D; 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 10 foot (3 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 C 39. 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. Each strength test result shall be 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, then take a minimum of three ASTM C 42/C 42M core samples from the in-place work represented by the low test cylinder results and test. Concrete represented by core test shall be considered 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  $f'c$ . Locations represented by erratic core strengths shall be retested.
  - 2) Flexural Strength: ASTM C 78. 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**

All transplanted trees, newly planted trees, shrubs, ground covers, turf, and irrigation systems shall be guaranteed 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, shall begin the Establishment Period. 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 shall be replaced with healthy plants of the same species or variety during the appropriate planting season. The Landscape Architect-of-Record shall, along with the Contracting Officer, attend, approve and document the start of the Establishment Period and document quarterly and final inspections. During this period, the Contractor shall perform tasks which shall include, but not be limited to: watering, mowing, overseeding, fertilizing, mulching, pruning, weeding, eradicating pests (rodents, rabbits, insects, mammals and fungus), restaking, adjusting guy wires, adjusting irrigation systems, and replenishing mulch to assure all plant material is in a healthy and thriving condition or the Contractor shall replace plant material at his own expense. Broadcast seeded or hydro-seeded areas that do not achieve the 95-percent coverage by the end of the Establishment Period shall be reseeded by the same method and be maintained an additional 120 days to ensure coverage requirements are met. Turf shall be maintained 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 shall be in accordance with UFGS section 01 33 10.05 20, *Design Submittal Procedures*, UFC 1-300-09N, *Design Procedures*, and UFC 3-200-10N, *Civil 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*.

32 11 26.16, *Bituminous Concrete Base Course*

32 11 36.13, *Lean Concrete Base Course*

32 11 33, *Cement Stabilized [Base] [Subbase] Course at Airfields and Roads*

32 11 30, *Lime Treated Subgrade [Lime Modified Soils]*

32 11 16.16, *[Base Course for Rigid] [and Subbase Course for Flexible] Paving*

32 11 24, *Graded Crushed Aggregate Base Course for Flexible Pavement*

32 11 16.13, *Sand-Clay [Base] [Subbase] Course*

32 12 17, *Hot Mix Bituminous Pavement*

32 13 13.16, *Portland Cement Concrete Pavement for Roads and Site Facilities*

## **G20 1.5 CONSTRUCTION SUBMITTALS**

Provide product data for all exterior furnishings.

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:

Provide product data for all exterior furnishings, field test reports. transporting plan, and irrigation plan.

### **G20 1.5.1 Transplanting Plan**

A transplanting plan shall be submitted for all projects which include transplanting trees. The plan shall be submitted showing existing and proposed locations of transplanted trees. The plan shall delineate methods and times for root pruning, digging, balling, removing, storing, transporting, planting, watering and maintenance to ensure survivability. The plan shall also include equipment, anti-desiccant and pesticides to be used. A listing of the plant material to be transplanted shall be provided 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 bibs), 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, the Contractor shall determine the exact limit-of-work line for the project periphery, considering items such as, but not limited to, utility work, landscape revegetation of disturbed areas, and laydown areas. The Designer of Record shall determine limit-of-work lines.

**G2010 ROADWAYS**

**G2010 1.1 PAVEMENT DESIGN**

Provide geometric and pavement design, including minimum pavement sections, in accordance with UFC 3-200-10N, *Civil Engineering*, and the State Department of Transportation. Provide pavement calculations in accordance with UFC 1-300-09N, *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 the 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 LANDSCAPING**

Designs for streets and roads shall include adequate space for trees and other landscape material.

**G2010 1.4 TRAFFIC CONTROL DEVICES**

New traffic control devices (i.e., signs and markings) shall be provided and installed 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". New traffic control devices shall also be provided along/in the existing streets adjacent to the project site as necessary to provide complete traffic control to the new facilities.

**G2010 1.5 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 the 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 standards or as specified in UFC 3-200-10N, *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 the 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, the welded wire fabric shall conform to ASTM A 185. Bar reinforcement shall conform to ASTM A 615/A 615M, Grade 400 (Grade 60).

Provide concrete in accordance with the applicable standard mix of the SHS for the design strength plus any allowable deviations.

**G201003 1.2 JOINTS FOR PORTLAND CEMENT CONCRETE PAVEMENT**

Joints shall be in accordance with SHS and the applicable portions of TM 5-822-5, *Pavement Design for Roads, Streets, Walks, and Open Storage Areas*. Joints shall be installed in a manner and at such time to prevent random or uncontrolled cracking. Joints shall 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**

Joint lines shall be sawed within specified tolerances, straight and extend the width of transverse joint and the 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 D 5893; Provide a single component cold-applied silicone. Silicone sealant shall be self-leveling and non-acid curing.

**G201003 1.2.6 Preformed Compression Seals**

Use performed 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. Saw cut 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, *O&M: Concrete Crack and Partial Depth Spall Repair*, and UFC 3-270-04, *O&M: Concrete Repair*. Spall repair materials shall 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. A manufacturer's data sheet and certificate supporting the satisfactory use shall be provided to the Contracting Officer with the design. A product manufacturer's representative shall be present during the initial two days of product application to verify that manufacturer's instructions for use are adhered

to. The Contracting Officer shall be given 7 days 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**

Bollards shall be 4" diameter minimum steel pipe filled with concrete and embedded in a portland cement concrete foundation. Bollards associated with passive barrier systems 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**

Use 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 additional 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 3-200-10N, *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**

Fiber reinforced crack sealer shall be used for sealing cracks in asphalt pavement after milling and prior to resurfacing. Crack sealing shall conform to the following requirements in UFC 3-270-01, *O&M: Asphalt Maintenance and Repair*, and UFC 3-270-02, *O&M: Asphalt Crack Repair*.

**G2020 PARKING LOTS**

**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 3-200-10N, *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**

Sidewalks shall be portland cement concrete pavement, 4 inches (100 mm) thick minimum. 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. Sidewalks shall be at least 5 feet (1.5 meters) wide, except that sidewalks connecting entry points of housing units to the

housing unit's parking shall be at least 36 inches (900 mm) wide. Use the maximum percentage of fly ash allowed in the applicable standard mix of the SHS. 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.

Provide a broomed finish. 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).

**G203003 1.1.1 Joints**

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**

Not used.

**G203003 1.3 HANDICAPPED RAMPS**

Provide handicapped ramps of portland cement concrete pavement with a minimum compressive strength at 28 days of 3500 psi (25 MPa) and 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**

Aluminum fabric, posts or accessories shall not be used.

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). Install fence in accordance with ASTM F 567 and the manufacturer's written installation instructions.

**G204001 1.1.1 Tension 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 3-200-10N, *Civil Engineering*, and this RFP.

**G204001 1.3.1 Chain Link Security Fence**

Provide chain link fence in accordance with paragraph G204001 - 1.1, except 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.

**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 fence line.

**G204001 1.5 FENCE GROUNDING**

Ground the fencing on either side of every gate and at other locations when the fencing is near and parallel to high tension power lines. Grounding shall also be 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**

Not used.

**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**

The bench shall be a minimum 6 feet (1.8 meter) in length. Match trash and recycling receptacle material and color, installed a minimum of 18 inches (450 mm) above finish grade, permanently installed with anchor bolts or in-ground.

**G204003    1.4    RECYCLING RECEPTACLES**

A single canister with separate slots for recycling cans, bottles and newspaper. Height, material and style shall match trash receptacle.

**G204003    1.5    BARBEQUE**

Not used.

**G204003    1.6    HOT ASH RECEPTACLE**

Not used.

**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 MIL-HDBK-1013/14, *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.

**G204007 PLAYING FIELDS**

**G204007 1.1 PLAYGROUNDS**

Not used.

**G204007 1.1.1 Tot Lots**

Not used.

**G204007 1.1.2 Play Lots**

Not used.

**G204007 1.1.3 Equipment**

Not used.

**G204007 1.1.4 CCA-Treated Lumber**

Not used.

**G204007 1.1.5 Playground Safety Surface**

Not used.

**G204007 1.2 PLAYING FIELDS**

Not used.

**G204090 OTHER SITE IMPROVEMENTS**

Other site improvements shall conform to the BEAP 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 non-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.

**G2050 LANDSCAPING**

**G2050 1.1 DESIGN**

The design of landscaped areas shall 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. All non-paved site areas inside the project limits or outside the project limits disturbed by construction operations, after meeting plant quantity requirements, shall be covered with plant material or inorganic mulch. Stabilized soil or organic mulch is not acceptable as a ground cover. Provide landscape architectural work in accordance with UFC 3-201-02, *Landscape Architecture*.

All projects with planting and or irrigation areas shall utilize the design services of a Landscape Architect licensed in the state of the project. The Landscape Architect of Record shall 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.

**G205001 FINE GRADING AND SOIL PREPARATION**

See Section G10, *Site Preparation*.

**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**

Areas that are to be seeded that are larger than 1,000 square feet (92.90 square meters) shall be hydroseeded. Hydroseed mix composition shall 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 shall 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. The Contractor shall tag trees to be saved with plastic or vinyl tape tied to the tree caliper. The Contractor shall 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. The Contractor shall not allow debris from tree or stump removal operations to fall on or otherwise damage plants that are not scheduled for removal. Plastic tape and barrier fencing shall not be removed until planting operations are ready to begin and or instructed by the Contracting Officer. 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 shall be replaced with healthy plants of the same species or variety during the appropriate planting season. During the landscape establishment period, trees, turf, shrubs and ground cover that are damaged or destroyed during construction operations shall be replaced by the Contractor at no additional cost to the Government. The Contractor, at the direction of the Contracting Officer, shall 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 shall 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.

#### **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 for building periphery, parking lot and perimeter site planting, not covered by buildings or paving, with a minimum of one (1) tree per 900 square feet (83.6 square meter) of landscape area. 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.

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 shall comply with ANSI Z60.1 and ANSI Z133.1, current editions. All plants shall be in a healthy, disease and pest free condition. All seed, sod, and sprigs shall 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, shall comply with local established practices and agricultural extension service recommendations. Stake or guy new or transplanted trees with three stakes {2 - 2 ½ inch(63.5 mm) x 8 feet (2.4 m) hardwood}, or three guy cables {five-strand, 3/16 inch (5 mm) diameter galvanized steel cable}.

**G205005 1.4.5 Edging Materials and Mulching Materials**

Provide 3/16 inch (5 mm) thick by 4 inch (100 mm) deep galvanized steel or 6 inch (150 mm) by 6 inch (150 mm) concrete edging dividing all turf and shrub areas and dividing all planted and non-planted inorganic mulch areas. Plastic edging is not allowed. Mulch planted areas not mulched with inorganic mulch or stabilized decomposed granite with a 3-inch (75 mm) depth of organic shredded hardwood mulch during the Establishment Period while plants are growing to form a mass.

**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. Fabric shall be treated for protection against deterioration due to ultraviolet radiation. Fabric shall 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 shall 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 3:1 and greater in slope.

**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.

**G205007 IRRIGATION SYSTEMS**

**G205007 1.1 IRRIGATION**

**SECTION G30**

**SITE CIVIL/MECHANICAL UTILITIES  
4/08**

**G30 GENERAL**

**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*.

**G30 1.1.1 Industry Standards and Codes**

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

**G30 1.1.2 Government Standards**

UNIFIED FACILITY CRITERIA (UFC)

UFC 1-300-09N, *Design Procedures*

UFC 3-200-10N, *Civil Engineering*

UFC 3-400-10N, *Mechanical Engineering*

UFC 3-800-10N, *Environmental Engineering for Facility Construction*

**G30 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. The Contractor shall perform field tests and provide labor, equipment and incidentals required for testing.

**G30 1.2.1 Materials**

All materials shall be new, and shall bear the label of standardizing agency 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.

**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 shall be certified by the state and shall 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 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.

**G30 1.2.5 Qualifications of Oil/Water Separator Manufacturers**

Manufacturers shall have produced packaged oil/water separator units of similar size required for over five years.

**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.

Verification of satisfactory utility system performance shall be via Performance Verification Testing, 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.

**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 and water quality testing in accordance with AWWA A100 and its appendices and the state waterworks' 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.

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 Water Booster Pump Station Verification Testing**

Test the water booster pump station in accordance with the state waterworks' 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 1.3.4 Sanitary Sewer Distribution System Verification Testing**

Provide testing on sewer mains and laterals in accordance with the state sewerage regulations.

**G30 1.3.4.1 Visual Test**

Check each straight run of pipeline for gross deficiencies by holding a light in a manhole; it shall show a practically full circle of light through the pipeline when viewed from the adjoining end of line.

**G30 1.3.4.2 Leakage Tests**

**G30 1.3.5 Sanitary Sewer Manholes Verification Testing**

Provide testing on sanitary sewer manholes in accordance with the state sewerage regulations. At minimum, perform hydraulic testing in accordance with ASTM C 969M (ASTM C 969).

**G30 1.3.6 Wastewater Pump Station Verification Testing**

Test the wastewater pump station in accordance with the state sewerage 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 1.3.7 Storm Sewer System Verification Testing**

**G30 1.3.7.1 Visual Test**

Check each straight run of pipeline for deficiencies by holding a light in a manhole; it shall show a full circle of light through the pipeline when viewed from the adjoining end of line.

**G30 1.3.7.2 Leakage Tests for Storm Sewer Under Pavements**

Test lines for leakage by either infiltration tests or exfiltration tests, or by low-pressure air tests in accordance with the following:

a. Exfiltration Tests:

ASTM C 969M (ASTM C 969) and perform calculations in accordance with its Appendix.

b. Low-pressure Air Tests:

1) Pipelines: ASTM C 924M (ASTM C 924) and perform calculations in accordance with its Appendix.

2) PVC plastic pipelines: UBPPA UNI-B-6 and perform calculations in accordance with its Appendix.

**G30 1.4 DESIGN SUBMITTALS**

Design Submittals shall be in accordance with UFGS section 01 33 10.05 20, *Design Submittal Procedures*, UFC 1-300-09N, *Design Procedures*, UFC 3-200-10N, *Civil Engineering*, and UFC 3-400-10N, *Mechanical Engineering*.

\*\*\*\*\*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.

### G30 1.6 COORDINATION

To the extent that site work is indicated on the RFP drawings, the Contractor shall verify that the locations and inverts of all site utility lines are coordinated with building utility lines. If necessary, the Contractor shall 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

The Contractor shall submit backflow prevention training certificates and backflow preventer devices certification in accordance with Section 01 50 00.05 20 (01501N), *Temporary Facilities and Controls for Design-Build*.

### G30 1.9 WATER STORAGE TANK

The Contractor shall submit a certificate signed by a registered professional engineer providing (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 prior to site welding. Certifications shall not be more than one year old. Submit documentation of NACE certification.

### 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 the site for damage. Unload and store with minimum handling. Store the materials on site, in enclosures or under protective covering. Store the plastic piping, jointing materials and rubber gaskets under protective cover and 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**

The Contractor shall 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 shall be in accordance with UFC 3-200-10N, *Civil Engineering*, 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, the Contractor shall obtain all necessary static pressure, residual pressure and flow characteristics of the existing distribution system by actual field tests. The Contractor shall conduct flow and pressure tests and provide design calculations that show the existing lines are capable of handling the additional flows. The new water system shall connect to the nearest existing fitting or water line.

The Contractor shall 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, valve boxes and all other utility access structures shall be located out of paved areas.

**G301001 WELL SYSTEMS**

The potable water well system shall 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 3-200-10N, *Civil Engineering*; the utility provider's requirements; and the state waterworks' regulations; whichever is more stringent.

Available flow at the residual pressure at each point of connection shall be determined by conducting flow tests in accordance with AWWA M17 and NFPA 291.

Water main piping, service lines, fittings, valves, accessories and all other materials shall 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 shall 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 shall 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. HDPE Pressure Pipe: AWWA C906.
- d. 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.
- c. HDPE: applicable requirements of ASTM D 2774.

Provide a continuous length of tracer wire for the full length of each run of nonmetallic pipe.

**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 shall be copper tubing, PVC, or polyethylene (PEX) tubing. Water service lines 4 inches (100 mm) and 6 inches (150 mm) in diameter shall 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 88M (ASTM B 88), 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.

c. Polyethylene Tubing: AWWA C901.

**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 below the frostline.

- a. Ductile-iron water mains: AWWA C600.
- b. PVC water mains: UBPPA UNI-B-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: applicable requirements of ASTM D 2774 and ASTM D 2855.
- c. Polyethylene: applicable requirements of ASTM D 2774 and ASTM F 645.

**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 shall 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**

Valves shall be the same diameter and have the same joint ends as the mains to which they are installed. Each type of valve shall be of one manufacturer.

**G301002 1.5.1 Gate Valves**

**G301002 1.5.1.1 Location**

Valves shall be installed at all new points of connection. At a minimum, valves shall be located 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. Valves shall be located 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 C500 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. Valves shall have 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. Valve boxes shall be 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**

Valves sized 2-inches (50 mm) to 24-inches (600 mm) shall be swing-check type (AWWA C508) and have 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 shall 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 shall all be of one manufacturer. Provide protection for fire hydrants located in areas subject to vehicle damage. Fire hydrants shall 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. 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.

- a. Concrete Thrust Blocks: AWWA C600.
- b. Restrained Joints: Pipe manufacturer's recommendations and required length of pipe to be restrained calculated in accordance with UFC 3-200-10N, *Civil Engineering*.

**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 3-200-10N, *Civil Engineering*, and the state waterworks' regulations.

An elevated, steel water storage tank shall be in accordance with AWWA D100. A ground, steel water storage tank shall be in accordance with AWWA D100 for welded tanks and AWWA D103 for bolted tanks.

**G301003 1.2 TANK ACCESSORIES**

Piping and valves shall be in accordance with G301002. An altitude valve shall be installed in a valve vault with appropriate shut off valves and check valve.

**G301003 1.3 TANK COATINGS**

**G301003 1.3.1 Interior Coating System**

Provide interior coating system complying with NSF 61 and the state waterworks' regulations.

**G301003 1.3.2 Exterior Coating System**

Primer coat shall be epoxy polyamide, MIL-DTL-24441/19 (Formula 159, Type III). Intermediate coat shall be epoxy polyamide, MIL-DTL-24441/31 (Formula 152, Type IV, White (Tinted)). Tint to approximately FED-STD-595 color number 27778 parchment using pigment dispersions prepared for epoxy paint tinting. Manufacturer shall tint material and appropriately label. All other requirements of this Military Specification apply.

Provide polyurethane coating topcoat of MIL-PRF-85285, Type II, Beige FED-STD-595 color number 27769 in gloss. The color of the final coat shall be approved in writing by the Contracting Officer before application begins.

**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 shall 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 shall include 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**

UL789.

**G301005 FIRE PROTECTION WATER STORAGE**

Refer to G301003.

**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 3-200-10N, *Civil Engineering*, and the state waterworks' regulations.

The packaged booster pump station shall have an Underwriter's Laboratories (UL) label indicating compliance of the equipment under the packaged pumping systems UL listing category. This label shall 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 shall 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 3-200-10N, *Civil Engineering*, 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 shall be designed and constructed in accordance with UFC 3-200-10N, *Civil Engineering*, and the state sewer collection and treatment regulations. The new sanitary sewage collection system shall connect to the nearest existing sanitary manholes and/or sanitary lines adjacent to the project site. The Contractor shall 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), it is recommended that the floor drains be eliminated or provisions made 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, manholes and all other utility access structures shall be located 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 distribution and services to the buildings.

**G302001    1.2    GRAVITY SEWER PIPING**

Gravity sewer mains and laterals shall be PVC sewer pipe and fittings, except under roadways or at depths greater than 10 feet (3.0 m) where ductile iron pipe shall be provided.

**G302001    1.2.1    Materials**

a.    PVC Gravity Sewer Pipe

- 1)    Piping and Fittings:    ASTM D 3034, SDR 35.
- 2)    Joints:    ASTM D 3212 and ASTM F 477.

b.    Ductile Iron Gravity Sewer Pipe

- 1)    Piping:    ASTM A 746. Provide required Thickness Class based on design information and methods in ASTM A 746.

- 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.

**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: ASTM D 2321. Do not use ASTM D 2321 Class IV or V materials for bedding, haunching or initial backfill materials.
- b. Ductile Iron: AWWA C600.

**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. Manhole rim elevations shall be set 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 shall conform to ASTM C 923M (ASTM C 923).
- 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 478M (ASTM C 478); base and first riser shall be monolithic.

Precast manhole sections shall have:

- a. ASTM C 990M (ASTM C 990) butyl gaskets;
- b. ASTM C 443M (ASTM C 443) rubber O-ring joints; or
- c. AASHTO M 198, Type B preformed plastic gaskets.

**G302002 1.3 CAST-IN-PLACE CONCRETE MANHOLES**

Use reinforced concrete; designed according to ASTM C 890 for A-16 (AASHTO HS20-44), heavy-traffic, structural loading. Concrete work shall be in accordance with ACI 301M (ACI 301) and ACI 350-01; provide a minimum compressive strength of 4000 psi (28 MPa).

**G302002 1.4 MANHOLE FRAMES AND COVERS**

FS A-A-60005; cast iron or ductile iron; designed to accommodate the traffic loadings. The word "Sewer" shall be stamped or cast 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 443M (ASTM C 443), 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 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**

Pipe connections to existing manholes shall be centered on the manhole. Holes for the new pipe shall 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. Cutting the manhole shall be done 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 3-200-10N, *Civil Engineering*; the state sewerage regulations; and the utility provider's requirements.

**G302003 1.2 SUBMERSIBLE PUMPS**

Pumps handling raw wastewater shall be capable of passing spheres of at least 3 inches (75 mm) in diameter. The pump's suction and discharge openings shall be at least 4 inches (100 mm) in diameter.

Provide submersible type sewage pumps, with guide rail system. Include ASTM A48M (ASTM A48), Class 25, nonclog, cast-iron impeller; and hermetically sealed motor with moisture-sensing probe, mechanical seals, and waterproof power cable. Guide rail system shall be constructed 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. Guide rail system shall be constructed of stainless steel. Provide a stainless steel lifting chain for raising and lowering the pump in the basin.

**G302003 1.4 SUCTION LIFT PUMPS**

Pumps handling raw wastewater shall be capable of passing spheres of at least 3 inches (75 mm) in diameter. The pump's suction and discharge openings shall 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 A48M (ASTM A48), Class 25, nonclog, cast iron impeller; mechanical or stuffing box seals; pedestal mounted motor; and suction piping extending to bottom of wet pit.

Suction-lift pumps shall be capable of automatic rapid self priming and re-priming at the "lead pump on" elevation. Suction piping shall not exceed 25 feet (7.6 meters) in total length. Priming lift at the "lead pump on" elevation shall 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 shall 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 shall be at least 4 inches (100 mm) in diameter and shall 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.
- 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 shall 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**

Suitable shutoff and check valves shall be provided 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 shall 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. Valves shall be 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.

- a. Concrete Thrust Blocks: AWWA C600.
- b. Restrained Joints: Pipe manufacturer's recommendations and required length of pipe to be restrained calculated in accordance with UFC 3-200-10N, *Civil Engineering*.

**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**

Covered wet wells shall have provisions for air displacement venting to the outside. 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 3-200-10N, *Civil Engineering*, 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 shall be designed and constructed in accordance with UFC 3-200-10N, *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 less than 12 inches (300 mm) in diameter shall be PVC or ductile iron. Storm sewer piping 12 inches (300 mm) and larger in diameter shall be reinforced concrete.

Subsurface drainage piping shall be perforated PVC or HDPE.

**G303001 1.1.1 Materials**

a. PVC Pipe

- 1) Piping and Fittings: ASTM D 3034, SDR 35.
- 2) Joints: ASTM D 3212 and ASTM F 477.

b. Ductile Iron Pipe

- 1) Piping: ASTM A 746. Provide required Thickness Class based on design information and methods in ASTM A 746.

- 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 C 76M (ASTM C 76). Provide required Class based on design information and methods in ASTM C 76M (ASTM C 76). Class III minimum.
  - 2) Elliptical Pipe: ASTM C 507M (ASTM C 507). Provide required Class based on design information and methods in ASTM C 76M (ASTM C 76).
  - 3) Joints:
    - a) ASTM C 990M (ASTM C 990) butyl gaskets;
    - b) ASTM C 443M (ASTM C 443) rubber O-ring joints; or
    - c) AASHTO M 198, Type B preformed plastic gaskets.
- g. Perforated PVC Pipe: ASTM D 2729.
- h. Perforated HDPE Pipe
- 1) Piping and Fittings: AASHTO M 252, Type S, corrugated.
  - 2) Joints: Soiltight.

**G303001 1.1.2 Installation**

Install piping in accordance with manufacturer's recommendations.

- a. PVC: ASTM D 2321. Do not use ASTM D 2321 Class IV or V materials for bedding, haunching or initial backfill materials.
  - b. Ductile Iron: AWWA C600.
  - c. Reinforced Concrete: ACPA 01-102 and 01-103.
  - d. Corrugated Aluminum: ASTM B 788.
  - e. Corrugated Steel: ASTM A 798.
  - f. HDPE: CPPA 100.
  - g. Perforated PVC and Perforated HDPE: ASTM D 2321. Do not use ASTM D 2321 Class IV or V materials for bedding, haunching or initial backfill materials.
- G303001 1.2 PIPING FOR CLEANOUTS**

**G302001 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.

**G302001 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. Structure rim elevations shall be set 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 shall conform to ASTM C 923M (ASTM C 923).
- 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**

FS A-A-60005; cast iron or ductile iron; designed to accommodate the traffic loadings. The word "Storm" shall be stamped or cast 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. Covers shall be of rolled steel floor plate having an approved anti-slip surface. Steel frames and covers shall 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 shall be of the same material as the frames (i.e. ductile iron frame with ductile iron cover, galvanized steel frame with galvanized steel cover). Proof loading shall be performed in accordance with FS A-A-60005 and ASTM A 48/A 48M. Proof loads shall be physically stamped 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. The top of the structure shall be modified to accept the ductile iron structure in lieu of the steel structure indicated. The finished structure shall 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 443M (ASTM C 443), 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**

Pipe connections to existing structures shall be centered on the structure. Holes for the new pipe shall 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. Cutting the structure shall be done 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 15 inches (300 mm) and larger in diameter shall be reinforced concrete.

Flared end sections shall the same material as pipe material.

Provide erosion control riprap in accordance with the State Highway Specifications (SHS) and standards where the project is located.

See G303001, paragraphs 1.1.1 and 1.1.2 for material and installation requirements.

**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 system and other drainage features to regulate stormwater runoff and to prevent damage to the site and off-site. Integrate permanent stormwater management features into the total site design to provide an aesthetically pleasing and harmonious landscape. Develop and construct drainage features in accordance with UFC 3-200-10N, *Civil Engineering*, and the state stormwater management Laws and Regulations.

**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.

The oil/water separator shall utilize coalescing media and conform 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 Diameter inches (mm)	Mineral Fiber inches (mm)	Calcium Silicate inches (mm)	Cellular Glass inches (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)	1.5 (38)	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 Diameter inches (mm)	Fibrous Glass inches (mm)	Calcium Silicate inches (mm)	Cellular Glass inches (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 Diameter inches (mm)	Mineral Fiber inches (mm)	Fibrous Glass inches (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 Diameter inches (mm)	Paroc inches (mm)	Epitherm inches (mm)	Kaylo-10 Thermo-12_Super Caltemp inches (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 Diameter inches (mm)	Calcium Silicate inches (mm)	Polyurethane inches (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 Diameter inches (mm)	Paroc inches (mm)	Epitherm inches (mm)	Kaylo-10 Thermo-12_Super Caltemp inches (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 Diameter inches (mm)	Calcium Silicate inches (mm)	Polyurethane inches (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 Diameter inches (mm)	Paroc inches (mm)	Epitherm inches (mm)	Kaylo-10 Thermo-12 Super Caltemp inches (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.

**G303004 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 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.

**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 Diameter inches (mm)	Mineral Fiber inches (mm)	Urethane inches (mm)	Cellular Glass inches (mm)	Faced Phenolic Foam inches (mm)	Flexible Cellular inches (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.

**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.

**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.

-- End of Section --

**SECTION G40**

**SITE ELECTRICAL UTILITIES**

8/08

**G40 GENERAL**

**G40 1.1 NARRATIVE**

This section covers installations exterior to the facility up to the five foot line. See PTS Section D50, *Electrical*, for continuation of systems into 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 additional verbiage. One example of this is G401008, GROUNDING SYSTEMS.

**G40 1.2.1 Government Standards**

UNITED FACILITIES CRITERIA (UFC)

UFC 3-500-10N, *Electrical Engineering*

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 Insulated Pad-Mounted Switchgear*

UFGS 26 23 00, *Switchboards and Switchgear*

UFGS 33 71 01.00 20, *Overhead Transmission and Distribution*

**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)**

Certification shall include the training, and experience of the individual on the specific type and classification of medium voltage cable to be provided under this contract.

In order to establish the cable splicer's competency, the Contractor shall be required to submit the following 30 calendar days prior to commencement of the splice/termination:

- a. Documentation to verify that the individual has completed a splice and or termination of the type to be installed under this contract.
- b. Documentation that said splice/termination has been tested and passed in accordance with NETA ATS requirements. Test results shall be included.
- c. A statement of the number of years in which the individual has been splicing/terminating medium voltage cable.

**G40 1.3.5 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 1.3.6 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 1.3.7 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 1.3.8 Material Standards**

Ensure service support and provide manufacturer's nameplate in accordance with PTS Section Z10, *General Performance Technical Specification*.

**G40 1.3.8.1 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 1.3.9 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 1.3.10 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 1.3.10.1 Factory Trained Engineer**

Provide a factory trained engineer to supervise start-up and testing as required in referenced specifications.

**G40 1.3.10.2 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 1.3.10.3 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*, UFC 1-300-09N, *Design Procedures*, and UFC 3-500-10N, *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 19.20, *Single-Phase Pad-Mounted Transformers*

UFGS 26 13 00.00 20, *SF6 Insulated Pad-Mounted Switch Gear*

UFGS 26 23 00, *Switchboards and Switchgear*

UFGS 33 71 01.00 20, *Overhead Transmission and Distribution*

#### **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.

**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 01.00 20, *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 Insulated Pad Mounted Switchgear*, or UFGS Section 33 71 01.00 20, *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 treated 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**

**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**

Maintained mean area lighting levels shall be 6 lux (0.5 fc). Lighting uniformity shall be maintained with the following average to minimum (avg/min) uniformity ratios:

- a. Highway Lighting, 3:1
- b. Secondary Street Lighting, 6:1
- c. Residential Streets, 6:1
- d. Area And Parking Lighting, 6:1

**G402002 SPECIAL SECURITY LIGHTING SYSTEM**

**G402003 OTHER AREA LIGHTING**

**G402004 LIGHTING POLES**

Poles shall meet Uniform 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**

**G4090 OTHER ELECTRICAL UTILITIES**

--End of Section--



## **Prescriptive Specifications** (not included)

First Naval Construction Division Operations  
Control Facility

P-851

FY 2010

Category Code 143.65

NAVPHIBASE Little Creek  
Norfolk, Virginia

**Date (Final) February 8, 2010**

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## **Attachments**

First Naval Construction Division Operations  
Control Facility

P-851

FY 2010

Category Code 143.65

NAVPHIBASE Little Creek  
Norfolk, Virginia

**Date (Final) February 8, 2010**

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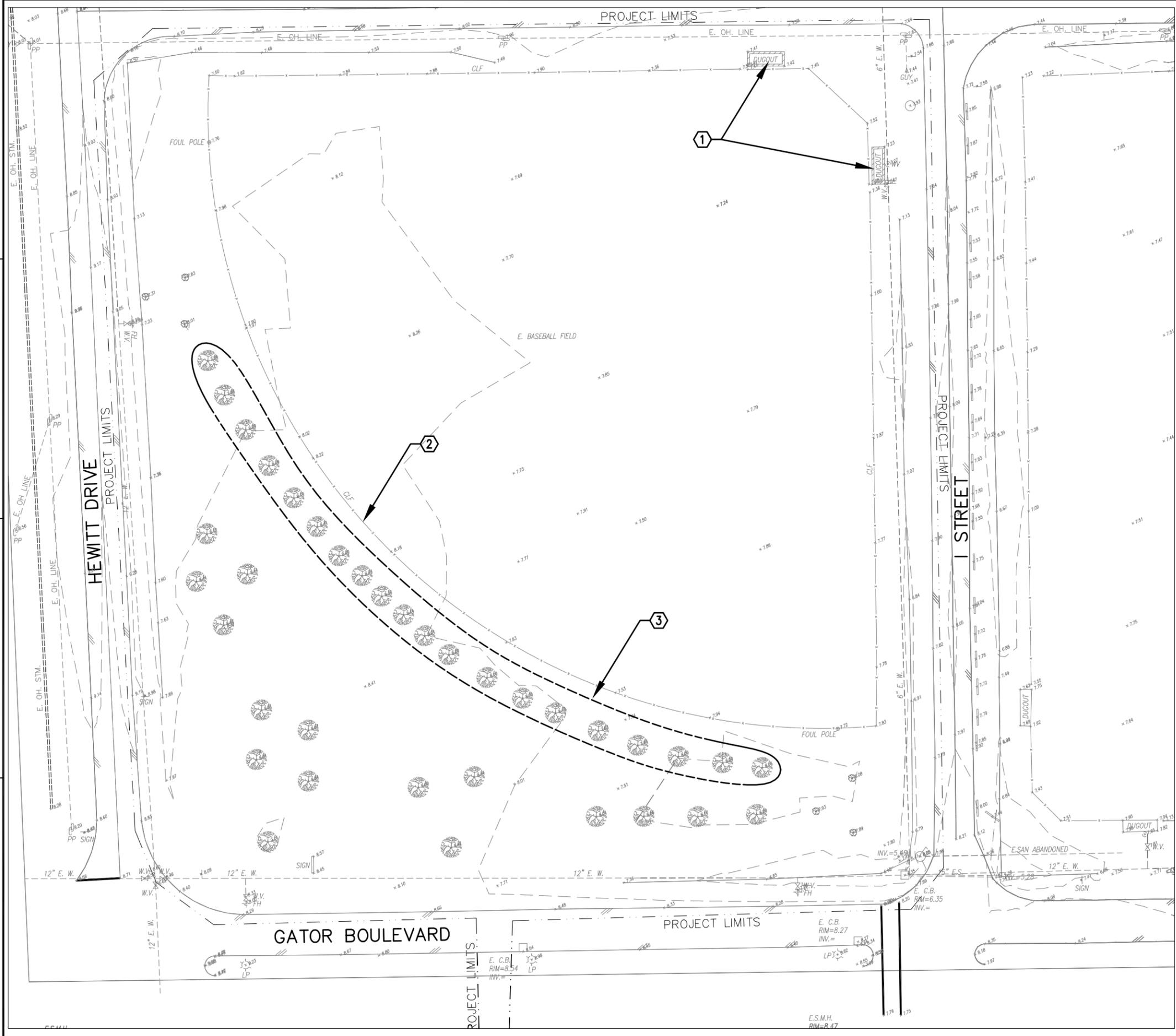
Basic Facility Requirements ..... .



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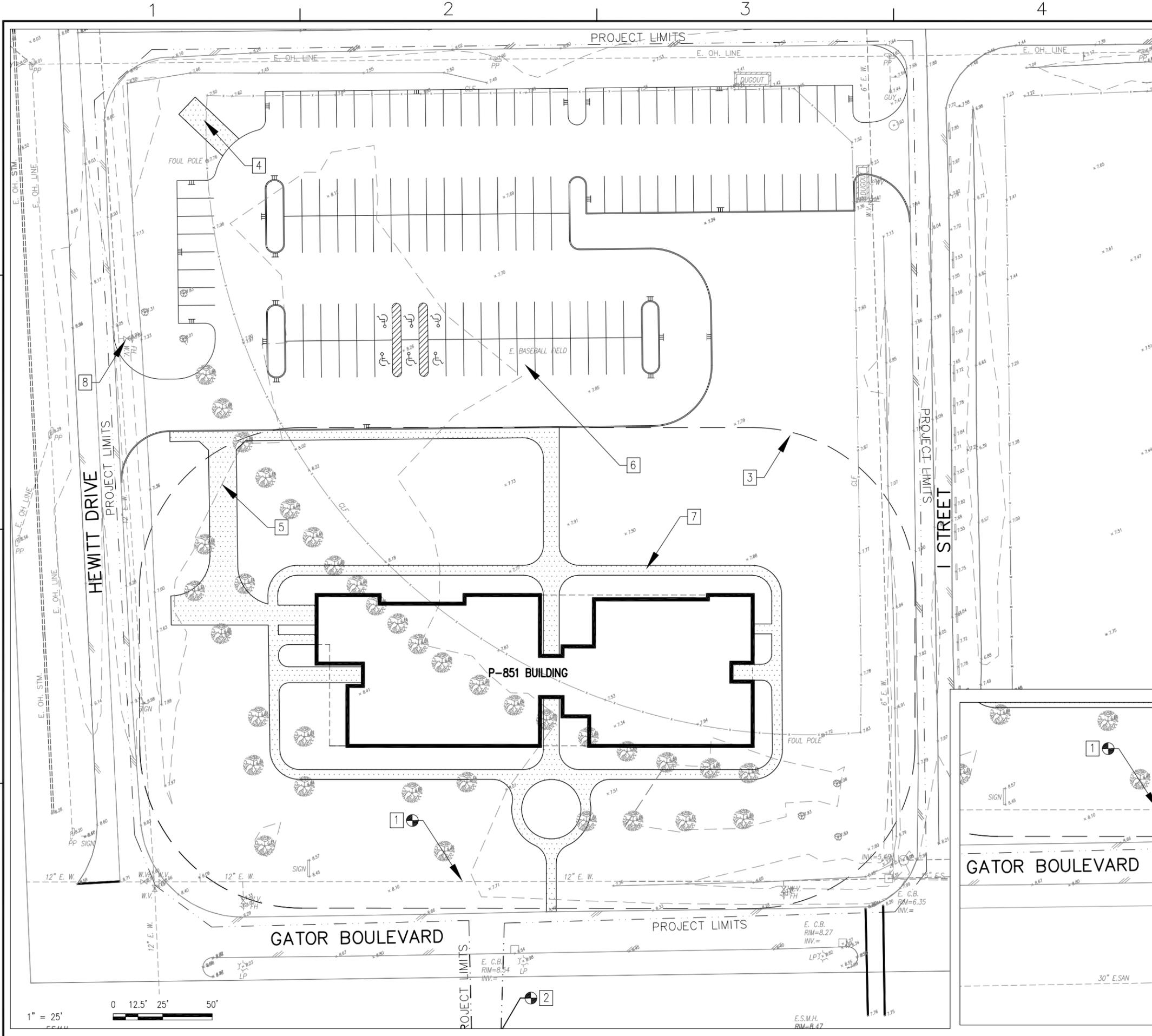


- ### DEMOLITION KEYNOTES
1. DEMOLISH EXISTING DUGOUTS
  2. REMOVE EXISTING CHAIN LINK FIELD FENCING AND FOUL POLES
  3. MEMORIAL TREES AND MONUMENTS WILL BE RELOCATED BY OTHERS.

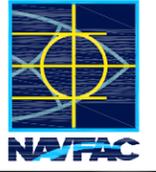
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FOR COMMANDER NAVFAC	DATE	
ACTIVITY - SATISFACTORY TO	DATE DD/MM/YY	
DES	DRW	CHK
BRANCH MANAGER		
CHIEF ENG/ARCH	XXX	
DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING COMMAND	
NAVAL FACILITIES ENGINEERING COMMAND - MIDLANT	NAVAL STATION - NORFOLK, VIRGINIA	
NAVAL AMPHIBIOUS BASE LITTLE CREEK	NORFOLK, VA	
<b>NAVAL CONSTRUCTION DIVISION</b>		
SITE DEMO PLAN		
CODE ID. NO. 80091	SIZE	D
SCALE:	1:25	
MAXIMUM NO.		
JOB ORDER NO.	P-851	
WORK ORDER NO.		
CONSTR. CONTR. NO.		
NAVFAC DRAWING NO.		
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<b>C-102</b>		
DRAWING REVISION: 6 AUG 2007		



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- NEW WORK KEYNOTES**
1. WATER CONNECTION POINT
  2. SANITARY SEWER CONNECTION POINT
  3. AT/FP SETBACK (82 FT.)
  4. DUMPSTER PAD
  5. SERVICE ACCESS (RESTRICTED)
  6. POV PARKING LOT
  7. CONCRETE SIDEWALKS
  8. RELOCATE EXISTING FIRE HYDRANT IF NEEDED TO CONSTRUCT ENTRANCE.

	DATE
	APPR
	DESCRIPTION
	SYM
	
<b>NAVAL CONSTRUCTION DIVISION</b> CONCEPT PLAN / UTILITY CONNECTIONS	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND - MIDLANT NAVAL STATION - NORFOLK, VIRGINIA NORFOLK, VA	
<b>NAVAL CONSTRUCTION DIVISION</b> CONCEPT PLAN / UTILITY CONNECTIONS	
CODE ID. NO. 80091    SIZE D	
SCALE: 1:25	
MAXIMO NO.	
JOB ORDER NO. P-851	
WORK ORDER NO.	
CONSTR. CONTR. NO.	
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**WATER & SANITARY SEWER**

Commander Navy Region  
Mid-Atlantic GeoReadiness  
Center

**Legend**

- <all other values>
- - - ABANDONED
- FM
- MAIN
- OVERFLOW
- SERVICE
- SLUDGE
- TBD
- > Distribution Box
- = Junction Box
- ⊕ Manhole

**Water Line**

- <all other values>

**SUBTYPEID**

- - - Abandoned
- Fire Protection
- Main
- Raw Water
- Service
- Siphon
- Sprinkler
- R Water Meter

Print Date:

**GeoReadiness Center**

AM-GIS Mid-Atlantic  
Norfolk, VA 23511  
(757) 444-3013  
PWCNORVA\_GIS\_WEB@nmci-istf.com

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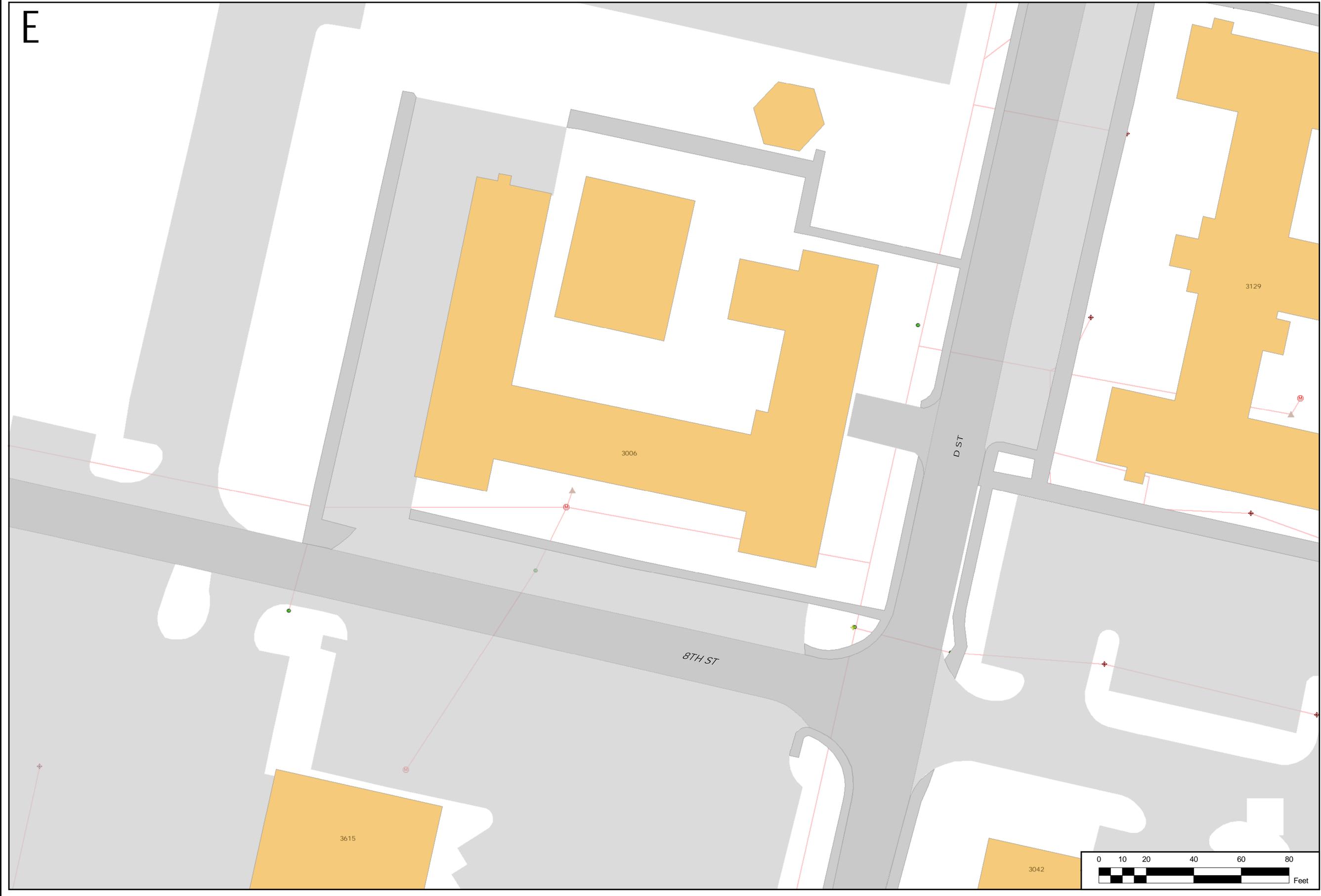
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E



SITE ELECTRICAL

Commander Navy Region  
Mid-Atlantic GeoReadiness  
Center

- Legend**
- R Electric Meter
  - Electric Light**
  - SubType identifier**
  - UNKNOWN
  - RECREATION
  - PARKING\_LOT
  - OTHER
  - POLE\_MOUNT
  - SECURITY\_LIGHT
  - STREET\_LIGHT
  - WALK\_LIGHT
  - Electric Power Pole**
  - SubType identifier**
  - ( OTHER
  - ( POLE
  - ( RISER\_POLE
  - ( TBD
  - Electric Junction (point)**
  - SUBTYPEID**
  - i HANDHOLE
  - ⊕ JUNCTION\_BOX
  - ( MANHOLE
  - f TBD
  - X VAULT
  - Electric Cable**
  - <all other values>
  - SubType identifier, instl\_ty\_d**
  - ABANDONED, overhead
  - GUY\_SPAN, <Null>
  - GUY\_SPAN, overhead
  - LIGHTING, overhead
  - - LIGHTING, underground
  - PRIMARY, overhead
  - - PRIMARY, underground
  - SECONDARY, overhead
  - - SECONDARY, underground
  - Legend - SERVICE, overhead**
  - TBD, overhead
  - - TBD, underground
- Print Date:

GeoReadiness Center

AM-GIS Mid-Atlantic  
Norfolk, VA 23511  
(757) 444-3013  
PWCNORVA\_GIS\_WEB@nmcisf.com



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E



STEAM & NATURAL GAS

Commander Navy Region  
Mid-Atlantic GeoReadiness  
Center

- Legend**
- UNKNOWN
  - PWC Abandoned Line
  - PWC Main Line
  - PWC Service Line
  - PWC Vent Line
  - VNG Abandoned Line
  - VNG Main Line
  - VNG Service Line
  - VNG Vent Line
- Steam Junction**
- all other values-
- SUBTYPEID**
- Manhole
  - TBD
  - Valve Pit
  - Vault
- Steam Line**
- Unknown
- SUBTYPEID**
- Abandoned
  - Chilled Water Main
  - Chilled Water Service
  - Drain
  - DTW\_M
  - DTW\_S
  - HDRIP
  - Hot Water Main
  - Hot Water Service
  - LTW\_M
  - LTW\_S
  - Return
  - Chilled Water Main Return Line
  - Chilled Water Service Return Line
  - RET\_DTW\_M
  - RET\_DTW\_S
  - Hot Water Main Return Line
  - Hot Water Service Return Line
  - RET\_LTW\_M
  - RET\_LTW\_S
  - Steam Main Return Line
  - Steam Service Return Line
  - Steam Main
  - Steam Service
- Steam Support Structure**
- all other values-
- SUBTYPEID**
- Cable Bridge
  - Column
  - Pipe Hanger
  - Support Bridge
  - Wall Bracket

GeoReadiness Center

AM-GIS Mid-Atlantic  
Norfolk, VA 23511  
(757) 444-3013  
PWCNORVA\_GIS\_WEB@nmci-ist.com



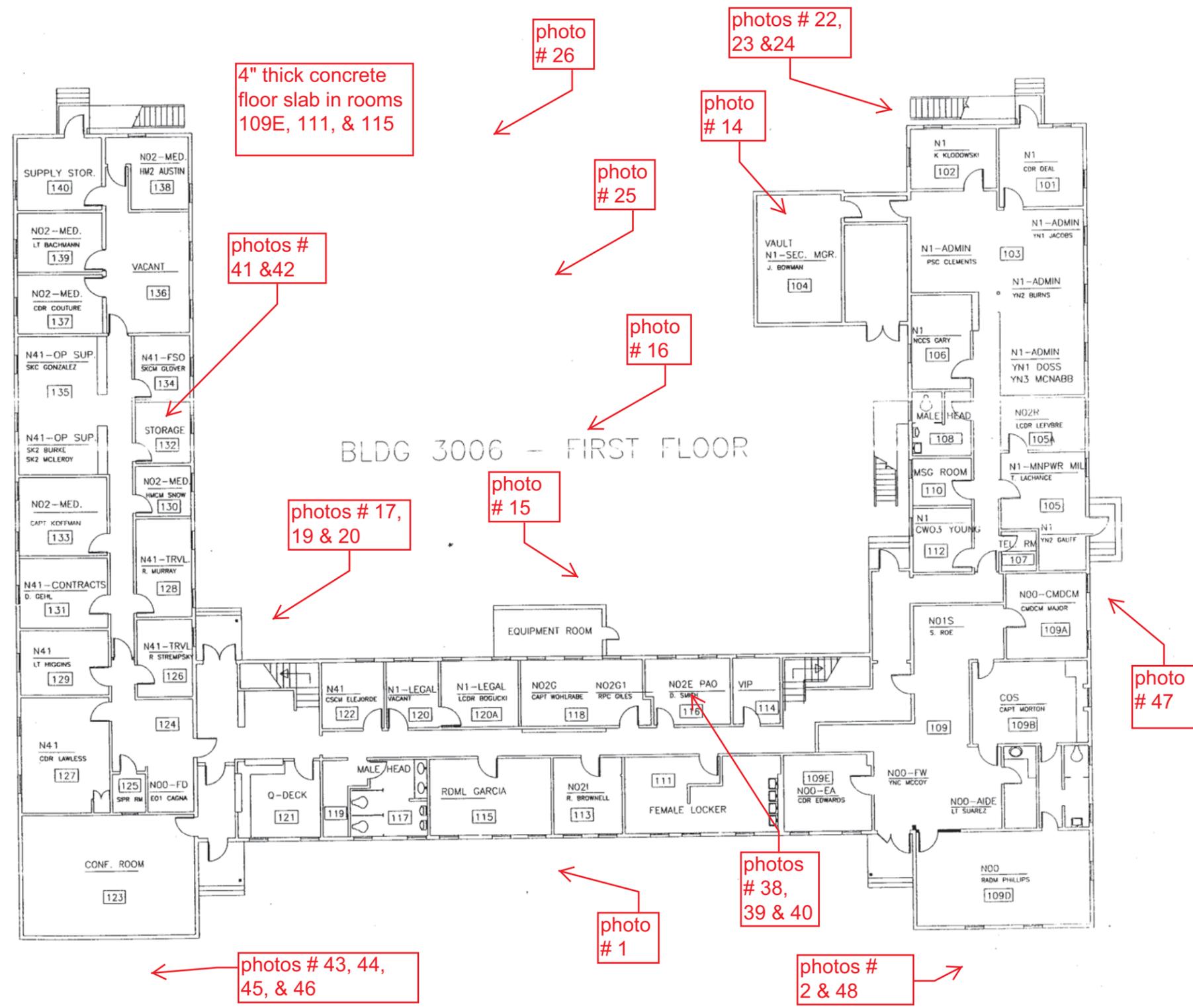
This map is generated from data contained in the CNRMA GeoReadiness Center (GRC). The information contained in CNRMA GRC is not to be construed or used as a "legal description" nor is it survey grade. Plans and maps from this database are believed to be accurate but accuracy is not guaranteed and the burden for determining accuracy, completeness, and appropriateness for use rests solely on the user accessing this information. The user acknowledges and accepts all inherent limitations of the maps and data, including the fact that they are dynamic and in a constant state of maintenance, correction and revision. Data owners should be consulted if field verification or additional information is needed.

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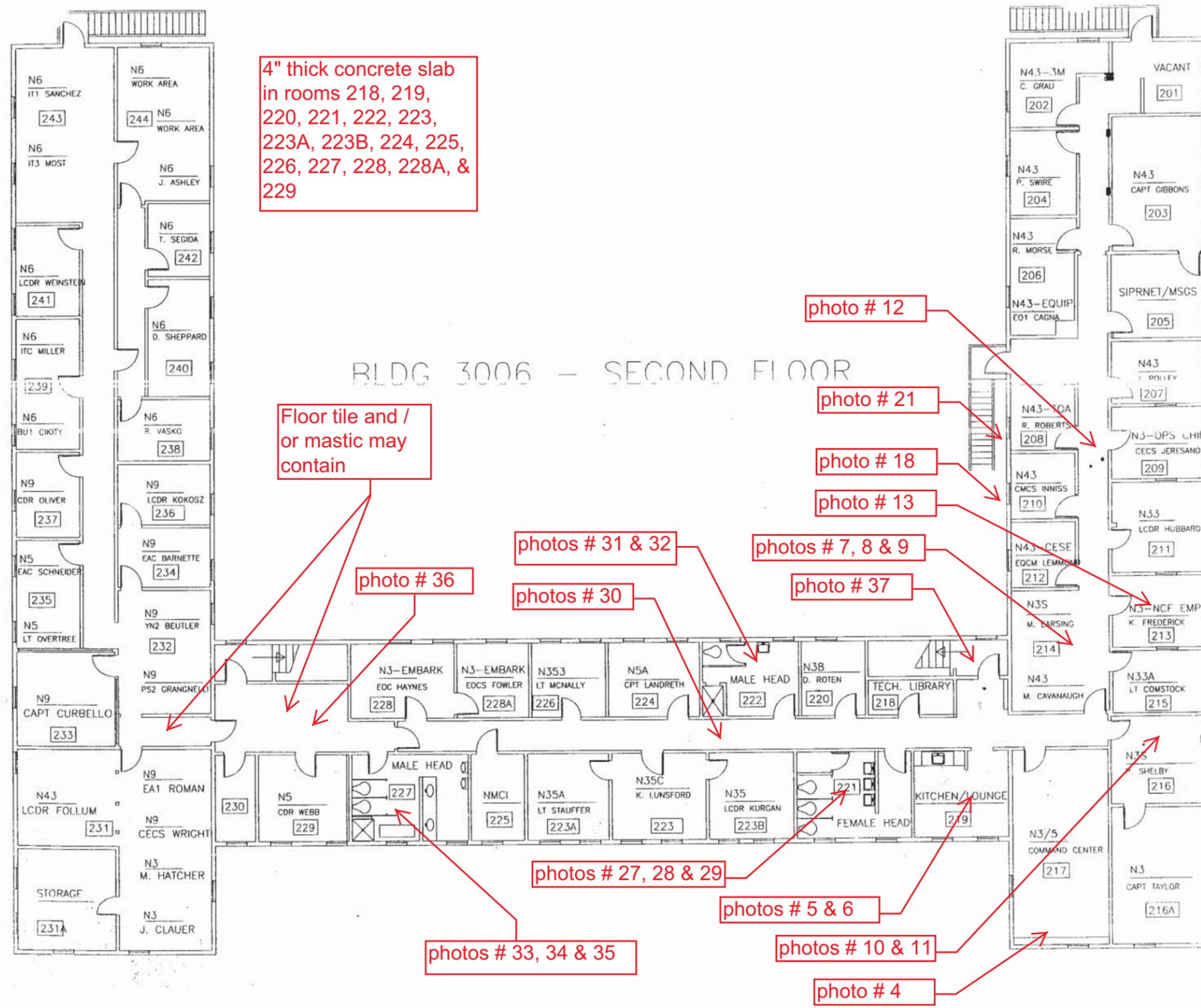
For a list of data owners or to access the GRC, please visit our website on the NAVFAC portal.

Risk Path

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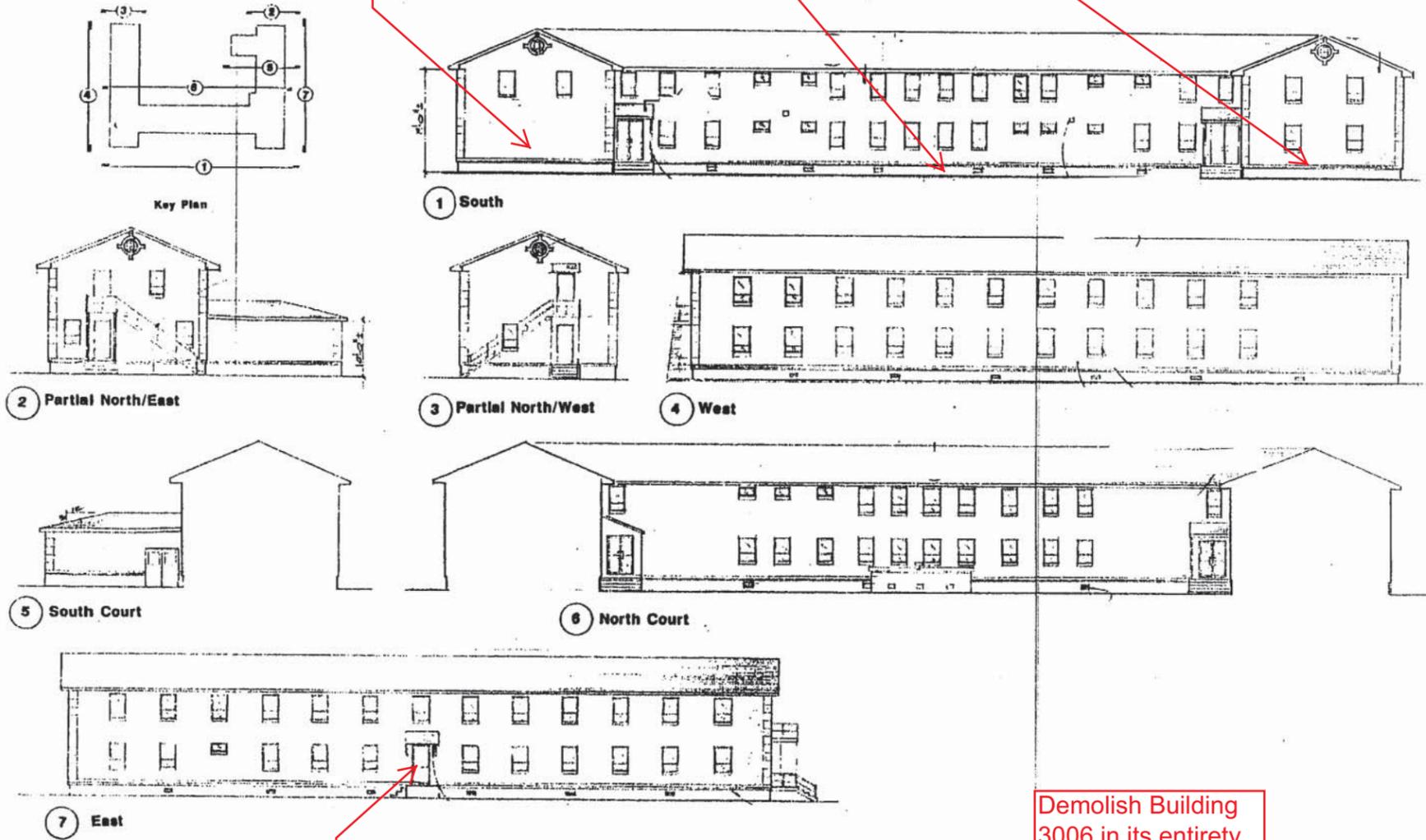


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Relocate Seabee monument to new parade ground location. Refer to Civil drawings and photos # 43, 44, 45 & 46

remove transformer refer to photo #1

refer to photos # 2 & 48



refer to photo #47

Demolish Building 3006 in its entirety. Refer to Photos #1 thru 48.

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# Building 3006 Photographs



**Photo #1**



**Photo #2**



**Photo #3**



**Photo #4**



**Photo #5**



**Photo #6**



**Photo #7**



**Photo #8**

# Building 3006 Photographs



**Photo #9**



**Photo #10**



**Photo #11**



**Photo #12**



**Photo #13**



**Photo #14**



**Photo #15**



**Photo #16**

# Building 3006 Photographs



**Photo #17**



**Photo #18**



**Photo #19**



**Photo #20**



**Photo #21**



**Photo #22**



**Photo #23**



**Photo #24**

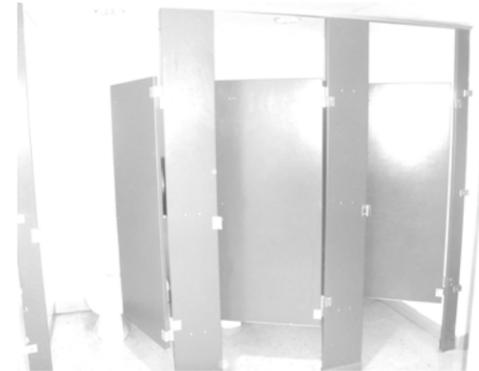
# Building 3006 Photographs



**Photo #25**



**Photo #26**



**Photo #27**



**Photo #28**



**Photo #29**



**Photo #30**



**Photo #31**



**Photo #32**

# Building 3006 Photographs



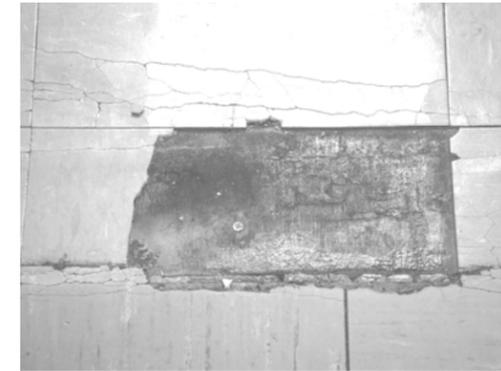
**Photo #33**



**Photo #34**



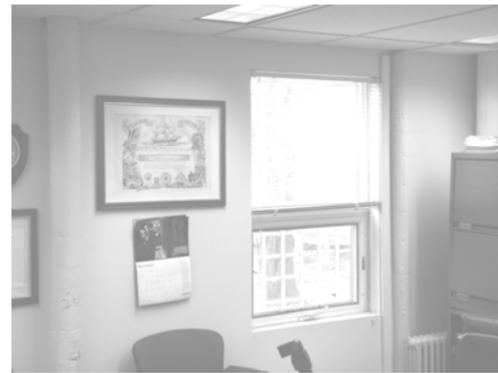
**Photo #35**



**Photo #36**



**Photo #37**



**Photo #38**



**Photo #39**



**Photo #40**

# Building 3006 Photographs



**Photo #41**



**Photo #42**



**Photo #43**



**Photo #44**



**Photo #45**



**Photo #46**

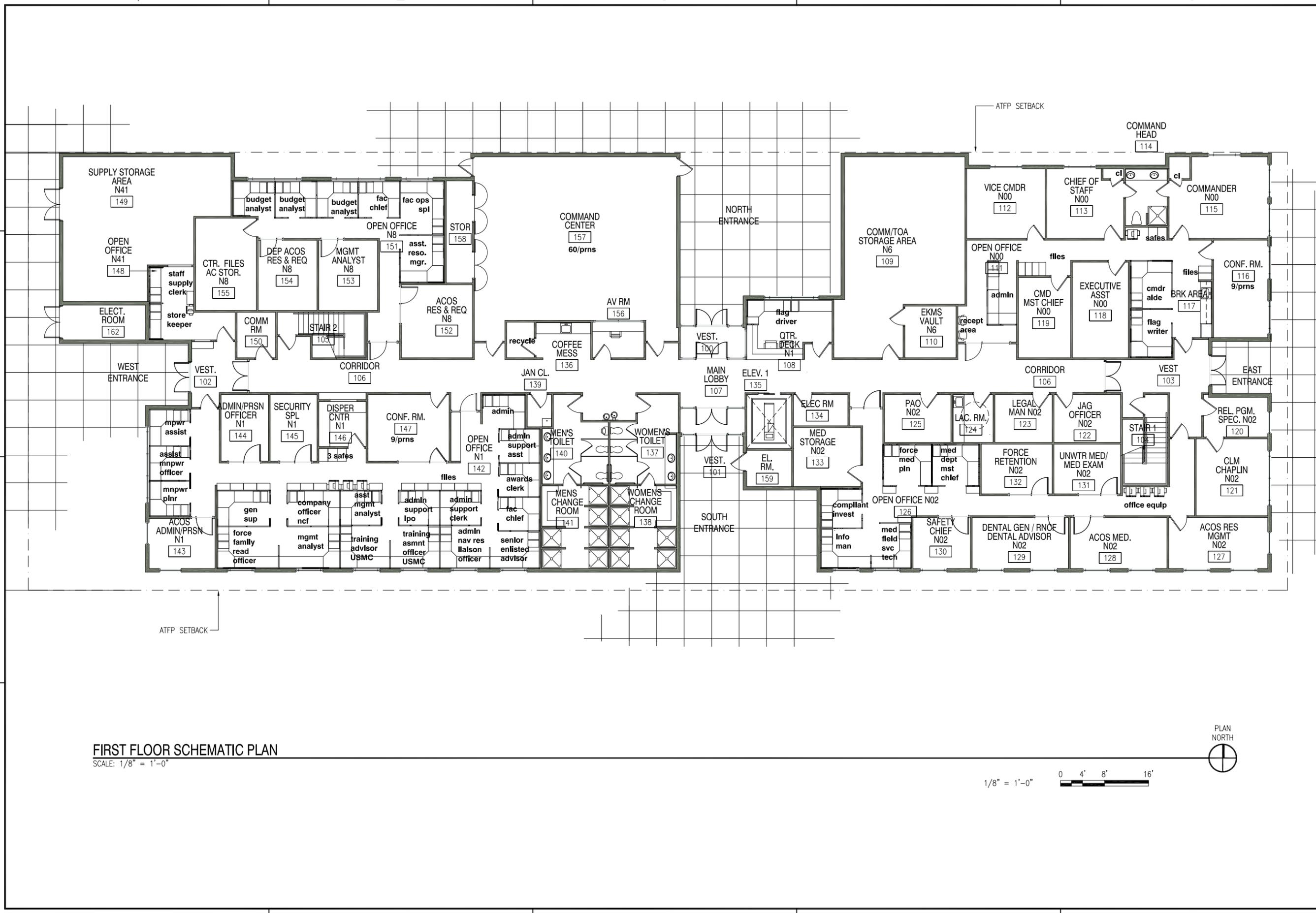


**Photo #47**



**Photo #48**

FILE NAME: P:\Little Creek\NAVFAC\Phase A - Pre Design\RFI\Drawings\Acad\851\_582220\_A-101\_Final\_revised\_100126.dwg LAYOUT NAME: A-101 PLOTTED: Thursday, January 28, 2010 - 2:01pm USER: robert.l.jones3



**PRELIMINARY**  
FOR CONSTRUCTION

<p>APPROVED: _____ FOR COMMANDER'S SIGNATURE</p> <p>APPROVED: _____ DATE: 10/01/26</p> <p>DESIGNER: STEVE WILLIAMS BRANCH MANAGER: T. DINWIDDIE CHIEF ENG/ARCH: P. WANG</p>	<p>DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND SEBELLS POINT - NORFOLK, VIRGINIA</p> <p>LITTLE CREEK, VIRGINIA BEACH, VA</p> <p><b>P-851 NAVAL CONSTRUCTION DIVISION OPERATIONS CONTROL FACILITY</b></p> <p style="text-align: center;">SCHEMATIC FLOOR PLAN</p>
---	--

CODE ID. NO. 80091	SIZE D	SCALE: AS NOTED	DRAWING NO. 582220
NAVING NO.	WORK ORDER NO. 639861	CONSTR. CONTR. NO.	NAVFAC DRAWING NO. #####
SHEET 1 OF 3			<b>A-101</b>

DRAWING REVISION: 6 AUG 2007

**FIRST FLOOR SCHEMATIC PLAN**  
SCALE: 1/8" = 1'-0"



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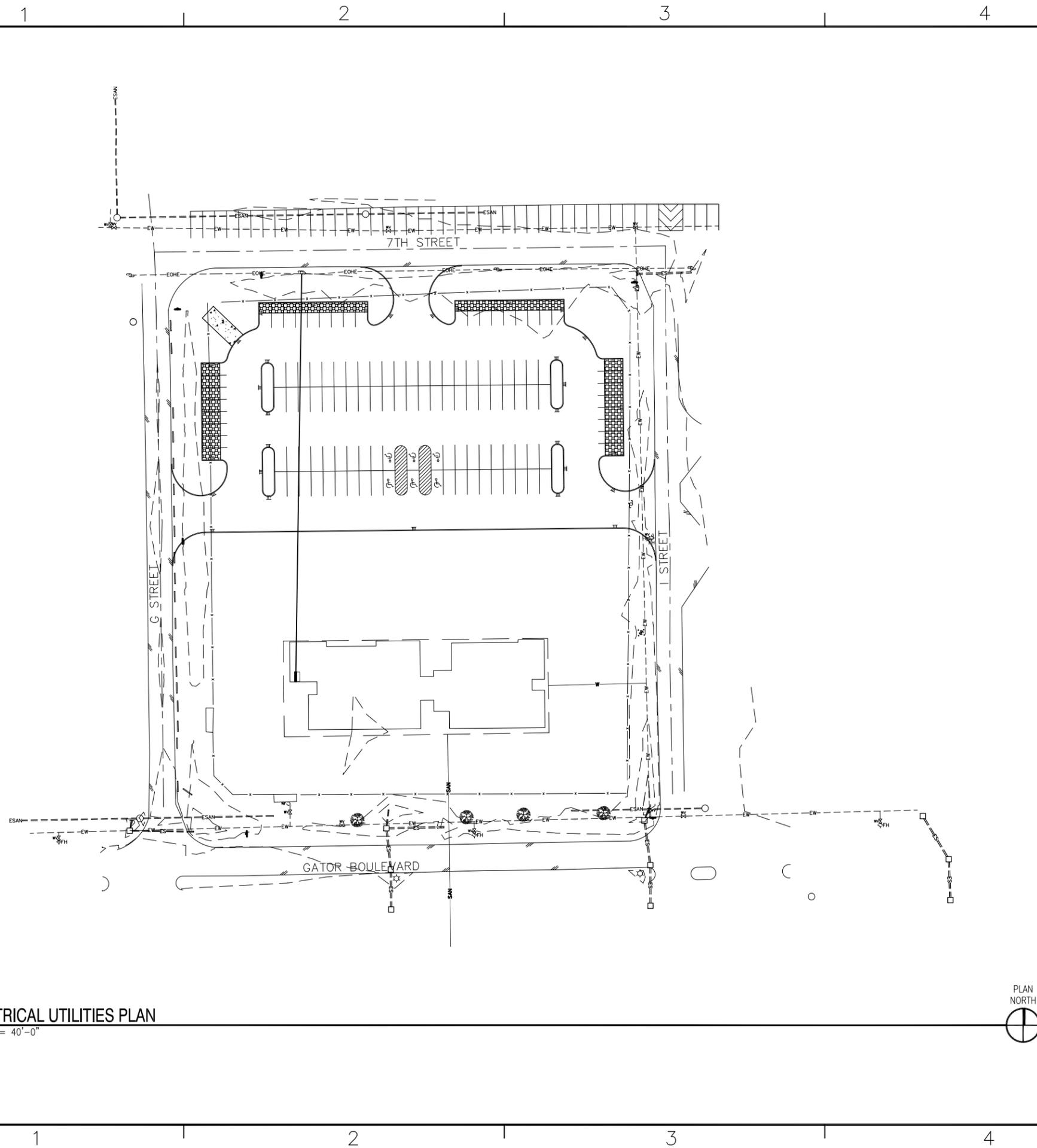


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FILE NAME: P:\Little Creek\NAVFAC\SB2220 P-851 Naval Construction Division Operations Fac. Little Creek\Phase A - Pre Design RFP\Drawings\Oper\SB2220\_E-101.dwg PLOTTED: Wednesday, January 13, 2010 - 1:42pm USER: robertljones3



**LEGEND**

EXISTING		NEW
	BITUMINOUS CONCRETE	
	CONCRETE	
	CONCRETE CURB	
	CHAINLINK FENCE	
	BUILDING	
	DEMOLITION	
	SPOT ELEVATION (12.00)	
	CONTOUR (12)	
	MATCH GRADE	
	TREE LINE	
	SHRUB	
	TREE	
	CATCH BASIN	
	CURB DROP INLET	
	STORM SEWER	
	MANHOLE	
	CLEANOUT	
	SANITARY SEWER	
	WATER	
	FIRE HYDRANT	
	WATER VALVE	
	POST INDICATOR VALVE	
	WATER METER	
	TEMPORARY BENCH MARK	
	STEAM	
	SOIL BORINGS	
	OVERHEAD ELECTRIC	
	UNDERGROUND ELECTRIC	
	POWER POLE	
	LIGHT POLE	
	GUY WIRE	
	TELEPHONE	
	POINT OF CONNECTION	
	MONITORING WELL	
	INLET PROTECTION	
	TEMP. SILT FENCE	
	CULVERT INLET PROTECTION	
	OUTLET PROTECTION	

DATE	APPR
DESCRIPTION	
<b>PRELIMINARY</b> <b>NOT FOR CONSTRUCTION</b>	
APPROVED	
FOR COMMANDER'S REVIEW	
DATE	11/01/10
PM/OM	R. JONES
DES	JAS
DRW	JAS
CHK	JAS
FIRE PROTECTION	STEVE WILLIAMS
BRANCH MANAGER	K. LIEBRICH
CHEF ENG/ARCH	P. WANG
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NAVFAC NAVFAC ENGINEERING COMMAND SEBELLS POINT - NORFOLK, VIRGINIA LITTLE CREEK, VIRGINIA BEACH, VA <b>P-851 NAVAL CONSTRUCTION DIVISION</b> <b>OPERATIONS CONTROL FACILITY</b> ELECTRICAL UTILITIES PLAN	
CODE ID. NO.	80091
SCALE:	AS NOTED
NAVMO NO.	
JOB ORDER NO.	582220
WORK ORDER NO.	639861
CONSTR. CONTR. NO.	
NAVAC DRAWING NO.	
SHEET	1 OF 1
<b>E-101</b>	
<small>DRAWING REVISION: 6 AUG 2007</small>	

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**BASE:**

**PROJECT:**

**ITEM:**

**ITEM CODE:**

**EXP: DATE:**

**GSA #:**

**BPA #:**

**MANUFACTURER:**

**ORDERING ADDRESS:**

**LOCAL REP:**

**PHONE NUMBER:**

ANY VARIANCE OR MODIFICATION OF THIS SPECIFICATION WILL BE COORDINATED THROUGH NAVFAC MID-ATLANTIC

**NAVFAC ID CONTACT:**

**PROJECT ID CONTACT:**

DESCRIPTION:	QTY:	UNIT COST:	TOTAL COST:
<b>ROOM LOCATION/FOB/REMARKS:</b>			
<b>TOTAL:</b>			

BASE:

PROJECT:

ITEM:

ITEM CODE:

FINISH

<b>BPA</b>	<b>Packaged Furniture Vendor</b>	<b>Point of Contact</b>	<b>Phone Number</b>	<b>Email</b>	<b>Business Size</b>
N00189-07-A-0001	Krug Inc.	Primary: Mike boehmer	800-265-2796 ext 203	mboehmer@krug.ca	Large
N00189-07-A-0005	DCI Inc.	Primary: Patrick Bays	800-552-8286	pbays@dcufurn.com	Small
N00189-07-A-0011	R T London Company	Primary: Gerald Barry	877-613-2012	gbarry@rtlondon.com	Small
N00189-07-A-0012	Capitol Supply Inc.	Primary: Phil Harris Alternate: David Ostan	954-485-5000	Pharris@capitolsupply1.com sales@gogsa.com	Small
N00189-07-A-0027	Unicor Federal Prison Industries Inc.	Primary: Diane Stabinski Alternate: Cory Wheeland	757-812-2673 757-410-8408	diane.stabinski@oei-inc.com	Large
N00189-07-A-0030	Homeland Office Products and Equipment	Primary: Tom Pratt Alternate: Christine Sherman	781-829-0397	tp Pratt@homelandoffice.com	Small
N00189-07-A-0032	Stonehill Sales	Primary: Carol Hill Alternate: Scott Hill	845-386-1234	stonehill@hvc.rr.com	Small
N00189-07-A-0033	Office Design Group Inc.	Primary: Russel Smith	949-305-4880	russell@officedesigngroup.com	Small
N00189-07-A-0034	Facilities Solutions Group LLC	Primary: Eric zetterberg	703-234-6057	eric.zetterberg@fsg-llc.com	Small
N00189-07-A-0035	Steelcase Inc.	Primary: Greg Engelsma Primary: Michelle Williams Alternate: Doug Herber	616-246-9007 210-542-3490 210-227-4741	amitch3@steelcase.com michelle@kln.com doug@kln.com	Large Small
N00189-07-A-0037	New Day Office Products & Furnishings	Primary: Matt Brady	755-398-0718	<a href="mailto:matt@newdayoffice.com">matt@newdayoffice.com</a>	Small

N00189-07-A-0038	Office Environments International Inc.	Primary: Dale Buch Alternate: Bill Malone	703-578-1600	dale@oeii.com	Small
N00189-07-A-0041	Trade Products Corp.	Primary: Allyn Richert Alternate: David Richardson	703-502-9000	arichert@tradeproductscorp.com drichardson@tradeproductscorp.com	Small
N00189-07-A-0042	Trade Products Corp.	Primary: Allyn Richert Alternate: David Richardson	703-502-9001	arichert@tradeproductscorp.com drichardson@tradeproductscorp.com	Small
N00189-07-A-0043	Nova International Inc.	Primary: Ken Cho Alternate: Melfi Penn	202-338-4009	kcho@novainternational.com	Small
N00189-07-A-0045	Dehler Manufacturing Co Inc.	Primary: Neicey Holloman Alternate: Bob Cantarrago	757-753-0880	neiceyholloman@yahoo.com	Small
N00189-07-A-0046	Lakewood Manufacturing Co. Inc.	Primary: Doug Widlake	800-344-1616	lakmfg@aol.com	Small
N00189-07-A-0058	Furniture by Thurston	Primary: Lee Thurston	530-272-4331	lee@furniturebythurston.com	Small
N00189-07-A-0059	Commercial Marketing Associates Inc.	Primary: Matt Yanson	240-215-9700	matt.yanson@cma-gsa.com	Small
N00189-07-A-0064	Knoll Inc. dba The Knoll Group	Primary: Peter Dallesandro	202-973-0431	pdalles@knoll.com	Large
N00189-07-A-0065	GOVSOLUTIONS Inc.	Primary: Donna Long Alternate: Deb White	757-430-7890	donna@govsolutionsinc.com orders@govsolutionsinc.com	Small
N00189-07-A-0066	Perry & Wilson Inc.	Primary: Malcolm Wilson	301-564-1112	malcolmw@mjpw.com	Small

**Enclosure (1)**

**BEST VALUE DETERMINATION GUIDELINES  
\$3,000 - \$100,000**

(Schedule Purchases are subject to FAR 8.4, DFARS 208.4, and DFARS PGI Supplement 208.405-70)

- FAR 8.4 required that you make a best value determination before placing Multiple Award Schedule (MAS) orders above the micro-purchase limit (currently \$3,000).
- The Navy Furniture BPAs shall be the primary source for FF&E. Refer to Specification Section E20.
- For orders between \$3,000 and \$100,000, review pricing from at least three sources and UNICOR. (FAR 8.405-1(c))
- Seek additional price discounts from the contractor offering the best value. (FAR 8.405-1(d))

1. Brief Description of Item, System or Component to be Procured:

2. Did you review the required number of sources under the BPA and/or Federal Supply Schedule? YES  NO

3. Identify the Navy Furniture BPA or other Federal Supply Schedule utilized or indicate not applicable.

4. Was UNICOR included in the review? YES  NO

5. List the name(s) and contract number(s) of contractor(s) who were considered:

List three or more contractors' names, contract numbers and business size reviewed.


6. Identify the contractor recommended as the best value.

7. When you sought additional price reductions, were they received? YES  NO

8. Identify price with discounts for the recommended best value contractor.

9. Is installation, site preparation, design or ancillary services included in this project? YES  NO  If yes, be sure that the installation, site preparation, design or ancillary services are included as separate line items in each quote.

10. Are you selecting the lowest priced item? YES  NO  If no, indicate in addition to price, those factors listed below, considered in your decision.

- Price
- Special features required in effective program performance:
- Trade-in considerations
- Probable life of the item selected as compared with that of a comparable item: .
- Warranty considerations:
- Maintenance availability
- Past performance
- Environmental and energy efficiency considerations
- Comfort/suitability of the item:
- Delivery terms
- Your administrative costs
- Training needed or provided
- Technical qualifications
- Compatibility with existing furniture / Products / Technology (circle appropriate category)
- Other (*specify*):

11.

Best Value Determination:

**A narrative justification for each box checked above for other than low price selection must be attached.** Describe the evaluation factor, how the recommended best value contractor's offer met or exceeded the standard for each factor, and why the offeror represents the best value to the Government compared to the other offerors.

**SUBMITTING OFFICIAL (PRIME CONTRACTOR'S INTERIOR DESIGNER)**

In accordance with FAR 8.404(b), all agency specific regulations and statutes applicable to this purchase are attached. I have reviewed the findings and documentation attached and I have affirmatively determined them to be complete and accurate.

Name: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

Telephone: \_\_\_\_\_ Email: \_\_\_\_\_

Signature: \_\_\_\_\_

Mar 09

**Enclosure (2)**

**BEST VALUE DETERMINATION GUIDELINES  
Greater than \$100,000**

**(Schedule Purchases are subject to FAR 8.4, DFARS 208.4, and DFARS PGI Supplement 208.405-70)**

- FAR 8.4 required that you make a best value determination before placing Multiple Award Schedule (MAS) orders above the micro-purchase limit (currently \$3,000).
- The Navy Furniture BPAs shall be the primary source for FF&E. Refer to Specification Section E20.
- For orders greater than \$100,000, all BPA holders for the applicable schedule shall be given an opportunity to compete for the requirement. In addition, UNICOR shall also be solicited. (DFARS PGI 208.405-70)
- Seek additional price discounts from the contractor offering the best value. (FAR 8.405-1(d))

1. Brief Description of Item, System or Component to be Procured:
  
2. Were all BPA holders and/or Federal Supply Schedule holders given the opportunity to propose on the requirement?  
YES  NO
  
3. Identify the Navy Furniture BPA or other Federal Supply Schedule utilized or indicate not applicable.
  
4. Was UNICOR included in the review? YES  NO
  
5. Provide evidence of affording all BPA holder and/or Federal Supply Schedule holders the opportunity to compete. Also, provide evidence that UNICOR was solicited.
  
6. List the name(s) and contract number(s) of contractor(s) who responded to the request for proposal for this requirement:  
List contractors' names, contract numbers and business size for those who responded.


7. Provide copies of all quotes received and reviewed.
  
8. Identify the contractor recommended as the best value.
  
9. When you sought additional price reductions, were they received? YES  NO
  
10. Identify price with discounts for the recommended best value contractor.

11. Is installation, site preparation, design or ancillary services included in this project? YES  NO   
If yes, be sure that the installation, site preparation, design or ancillary services are included as separate line items in each quote.

12. Are you selecting the lowest priced item? YES  NO   
If no, indicate in addition to price, those factors listed below, considered in your decision.

- Price
- Special features required in effective program performance:
- Trade-in considerations
- Probable life of the item selected as compared with that of a comparable item: .
- Warranty considerations:
- Maintenance availability
- Past performance
- Environmental and energy efficiency considerations
- Comfort/suitability of the item:
- Delivery terms
- Your administrative costs
- Training needed or provided
- Technical qualifications
- Compatibility with existing furniture / Products / Technology (circle appropriate category)
- Other (*specify*):

13.  
Best Value Determination:  
**A narrative justification for each box checked above for other than low price selection must be attached.** Describe the evaluation factor, how the recommended best value contractor's offer met or exceeded the standard for each factor, and why the offeror represents the best value to the Government compared to the other offerors.

**SUBMITTING OFFICIAL (PRIME CONTRACTOR'S INTERIOR DESIGNER)**

In accordance with FAR 8.404(b), all agency specific regulations and statutes applicable to this purchase are attached. I have reviewed the findings and documentation attached and I have affirmatively determined them to be complete and accurate.

Name: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

Telephone: \_\_\_\_\_ Email: \_\_\_\_\_

Signature: \_\_\_\_\_



FAR 8.405-1 States the designer shall review at least three schedule contractors through GSA (NAVSUP BPAs). In addition to price, when determining best value, the designer may consider the factors such as special features, trade in considerations, life cycle analysis, warranty, maintenance, past performance, sustainability, comfort, delivery, training needed, technical qualifications, compatibility, and administrative costs as part of the Best Value Determination (BVD) (Enclosures 1 and 2)

If other than price is the deciding factor for selection, the designer must document the decision in a narrative paragraph as part of the BVD.

The designer must sign the BVD forms under Submitting Official

### **BVD REQUIREMENTS**

**\$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 \$100,000 or less:** for any procurement in the FF&E package with a value greater than \$3,000 and \$100,000 or less, the contractor's interior designer shall always review pricing from at least three BPA holders/manufacturers as well as UNICOR. UNICOR must always be solicited which is done by sending an email with the requirements and evaluation criteria. In addition to the review of published list prices, the contractor's interior designer must confirm the pricing with the vendor. The BVD form (Enclosure 1) must be completed and submitted for all FF&E procurements greater than \$3,000 and \$100,000 or less.

**Greater than \$100,000:** The contractor's interior designer shall solicit proposals from all BPA holders under the applicable group for FF&E procurements greater than \$100,000. 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 (Enclosure 2) must be completed and submitted for all FF&E procurements greater than \$100,000 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. UNICOR contact information to obtain pricing or send solicitations is enclosed. (Enclosure 3)

This policy is in effect immediately for any projects awarded after 1 Mar 09. Any questions can be directed to Peggy Noland, CID, Supervisory Interior Designer, NAVFAC MIDLANT at 757-445-3187 or [margaret.noland@navy.mil](mailto:margaret.noland@navy.mil).



## UTILITY CONNECTION PERMIT INSTRUCTIONS

All questions must be answered. DO NOT LEAVE BLANKS. If a question is not applicable, indicate it on the application. The following are instructions for the questions on the permit application.

### SECTION A - GENERAL INFORMATION

1. Enter the name of the activity having financial responsibility for the facility being serviced by the proposed utility work.
2. Enter the name and phone number of an activity point of contact responsible for the proposed utility work.
3. Enter the building number and name that is serviced by the proposed utility work.
4. Check the categories that correspond to the majority of the work. Abandonment of utilities should be considered demolition. Check all that apply.
5. Check each utility being altered, added, or upgraded. For each utility checked, complete the appropriate section in the application.
6. Indicate the activity performing the construction or responsible for the administration of the construction contract.
7. Indicate the project title. Enter the construction contract number or job order number that identifies the construction project. Enter COMNAVFACENCOM, NAVFAC XXXXXX, and/or design activity drawing number. Indicate the type of drawing. Attach all existing design drawings or sketches showing proposed work to the utility systems. Indicate if specifications are included.
8. Enter the name of the organization, a point of contact, and a phone number for the party responsible for the design of the proposed work.
9. Enter the name, job title, application submission date, phone number, and signature of the Engineer in Charge (EIC) or Architect in Charge (AIC) completing the application.
10. Provide all design analyses performed along with drawings and specifications.

### SECTION B - WATER

#### **PART A - DOMESTIC WATER SERVICE CONNECTIONS**

1. Enter the number of:

a. Existing domestic water service connections/laterals disconnected from the Utilities and Energy Management Product Line-owned water distribution system involved in the proposed work.

b. New domestic water service connections/laterals connected to the Utilities and Energy Management Product Line-owned water distribution system involved in the proposed work.

2. Indicate the:

a. Size(s) of the water pipe to be tied into the domestic water distribution system.

b. Type(s) of water pipe material to be tied into the domestic water distribution system (e.g. ductile iron, PVC, copper).

c. Class of water pipe that is to be tied into the domestic water distribution system (e.g. Class 150, Class 250, Schedule 40, and Schedule 80).

d. Design capacity for all new domestic water service connections tying into Utilities and Energy Management Product Line-owned water lines.

e. The design pressure for all new domestic water service connections tying into Utilities and Energy Management Product Line-owned water lines.

f. Size(s) of the water meter to be installed.

g. Type(s) of water meter to be installed (e.g. positive displacement, turbine, dual flow).

h. Indicate whether or not a backflow prevention device is to be installed.

**PART B - FIRE PROTECTION (HIGH PRESSURE/NON-POTABLE) WATER SERVICE CONNECTIONS**

1. Enter the number of:

a. Existing fire protection (high pressure/non-potable) water service connections disconnected from the Utilities and Energy Management Product Line-owned fire protection water distribution system involved in the proposed work.

b. New fire protection (high pressure/non-potable) water service connections connected to the Utilities and

Energy Management Product Line-owned fire protection water distribution system involved in the proposed work.

2. Indicate the:

- a. Size(s) of the water pipe to be tied into the fire protection (high pressure/non-potable) water distribution system.
- b. The type(s) of water pipe material to be tied into the fire protection (high pressure/non-potable) water distribution system (e.g. ductile iron, PVC, copper).
- c. The class of water pipe that is to be tied into the fire protection (high pressure/non-potable) water distribution system (e.g. Class 150, Class 250, Schedule 40, and Schedule 80).
- d. The design capacity for all new fire protection (high pressure/non-potable) water service connections tying into the Utilities and Energy Management Product Line-owned fire protection water lines.
- e. The design pressure for all new fire protection (high pressure/non-potable) water service connections tying into the Utilities and Energy Management Product Line-owned fire protection water lines.
- f. Whether or not a backflow prevention device is to be installed.

**SECTION C - SANITARY SEWER**

Note: If a permanent sewer connection is required and construction is involved, a Certificate to Construct (CTC)/ Certificate to Operate (CTC) from Virginia Department of Environmental Quality (VDEQ) may be necessary. Please contact the NAVFAC XXXXXX Environmental Business Line (Code EV) to ensure compliance with this regulation.

**PART A - SANITARY SEWER LATERAL CONNECTIONS**

1. Enter the number of:

- a. Existing sanitary sewer laterals disconnected from the Utilities and Energy Management Product Line-owned sanitary sewer collection system involved in the proposed work.
- b. New sanitary sewer laterals connected to the Utilities and Energy Management Product Line-owned sanitary sewer collection system involved in the proposed work.

2. Indicate the:

- a. Size(s) of the sanitary sewer pipe to be tied into the sanitary sewer collection system.
  - b. Type(s) of sanitary sewer pipe material to be tied into the sanitary sewer collection system (e.g. ductile iron, PVC).
  - c. Class or schedule of sewer pipe that is to be tied into the sanitary sewer collection system (e.g. DR 35, DR 18, SDR 32.5, SDR 17).
  - d. Design capacity for all new sewer laterals connected to Utilities and Energy Management Product Line-owned sanitary sewer collection system.
3. Check all that apply:
- a. Building types that will be served by the proposed sanitary sewer connections. If there is a building type that applies and is not listed, check "Other" and indicate type of building.
  - b. Choices that may discharge to the sanitary sewer through the proposed connections. If none of these apply, check "N/A".

**PART B - SANITARY SEWER MAINS**

1. Enter the number and/or quantity of:
  - a. Sanitary sewer manholes abandoned in the proposed work.
  - b. Sanitary sewer manholes installed in the proposed work.
  - c. In linear feet, of sanitary sewer main abandoned in the proposed work.
  - d. In linear feet, of sanitary sewer main abandoned in the proposed work.
  - e. In linear feet, of sanitary sewer main installed in the proposed work.
2. Indicate the:
  - a. Size(s) of the sanitary sewer pipe to be used for the new sanitary sewer main.
  - b. Type(s) of the sanitary sewer pipe material to be used for the new sanitary sewer main (e.g. ductile iron, PVC).
  - c. Class of pipe that is to be used for the new sanitary sewer

main (e.g. DR 35, DR 18, SDR 32.5, SDR 17).

#### PART C - SANITARY SEWER PUMP STATIONS

1. Enter the number of:
  - a. Sanitary sewer pump stations abandoned in the proposed work.
  - b. Sanitary sewer pump stations installed in the proposed work.
2. Indicate the:
  - a. The number of pumps for each pump station installed in the proposed work.
  - b. The size, including horsepower (hp) and rated flow, of each pump for each pump station in the proposed work. Include a manufacturer's cut sheet and pump/system curve for each pump.
3. Provide details for:
  - a. The visible and audible alarms and channels.
  - b. The bypass pump connections.
  - c. The valve and check valve specifications.
  - d. The wet well level monitoring system.

#### SECTION D - ELECTRIC

##### PART A - PRIMARY ELECTRICAL SYSTEM

Complete this section when any additions, modifications, or deletions are being made to the electrical distribution system.

1. Indicate the voltage rating of the system being modified.
2. Indicate the type of work to be performed (e.g. New transformer installation, switch removal, cable splicing, etc.)
3. Indicate the type of equipment being installed or removed.
4. If new equipment is being installed, indicate the equipment Basic Impulse Levels (BIL) rating (primary and secondary for transformers).
5. Indicate the transformer rating in Kilovolt Amperes (KVA).

Indicate other equipment ratings as applicable (e.g. KVA for transformers, amperage for switches and cables).

6. If installing a new transformer, indicate the type of transformer primary termination being made.
7. Indicate if primary connection is overhead or underground.
8. Indicate the size of the conductors to be installed.
9. Indicate the type of conductors (e.g. ERP, XLP).
10. Indicate the cable insulation level.
11. Indicate if the connection to the utility is to be a termination on an existing distribution switch, a primary cable splice in a manhole, a tap to an existing overhead circuit, or a new distribution switch. If the connection to the utility is by some means other than those listed, check other and indicate the proposed method. Indicate primary circuit to be tapped, if known. Use the Utility and Energy Management Product Line circuit designations.

#### **PART B - SECONDARY ELECTRICAL SYSTEM**

1. Indicate if work is to install a new transformer and secondary load, or if work is to upgrade or repair an existing transformer due to a secondary load addition.
2. Indicate if a load study has been performed on the transformer that is having the secondary load increased. If yes, provide a copy of the study. If no, indicate when the study will be completed.
3. Indicate the watt-hour meter form and type to be provided.

#### **SECTION E - STEAM**

1. Check all services to be supplied by the proposed connection and indicate the:
  - a. Size of the new steam line.
  - b. Size of the existing steam line to which service is to be connected.
  - c. Design capacity for the system to be supplied by the new connection.
  - d. Design pressure of the system to be supplied by the new connection.
  - e. Model and size of meter being installed.

**SECTION F - NATURAL GAS**

1. Indicate the:
  - a. Pipe size of the new gas line.
  - b. Pipe size of the existing gas line to which service is to be connected.
  - c. Pipe material of the new gas line to which service is to be connected.
  - d. Design capacity for the system to be supplied by the new connection.
  - e. Required service pressure for the system to be supplied by the new connection.
  - f. Meter manufacturer, model, and size to be installed.



UTILITY CONNECTION PERMIT APPLICATION

Tracking #: \_\_\_\_\_

SECTION A - GENERAL INFORMATION

1. Requesting Activity: \_\_\_\_\_
  2. Point of Contact: \_\_\_\_\_ Phone Number: \_\_\_\_\_
  3. Project Location: \_\_\_\_\_
  4. Type of Work: (Check all that apply.)  
 New Construction                       Building Addition                       Renovation  
 Demolition/Utility Disconnection       Repair                                       Utility Upgrade
  5. Work will involve the following utilities: (Check all that apply.)  
 Water                       Sewer                       Electric                       Steam                       Gas  
a. If Sewer is checked, will the connection be permanent or temporary?  
 Permanent       Temporary (Proceed to question 6)  
b. If a permanent connection is required and this project involves construction, contact the NAVFAC XXXXXX Environmental Business Line (Code EV) to determine if CTC/CTO is required before proceeding.
  6. Work to be performed by:  
 ROICC Contract                                       NAVFAC XXXXXX Maintenance Department  
 Contract     NAVFAC XXXXXX Utilities and Energy Management Product Line  
 Other: \_\_\_\_\_
  7. Contract Title: \_\_\_\_\_  
Contract/J.O./MAXIMO Number: \_\_\_\_\_ Drawing Number: \_\_\_\_\_  
 NAVFAC       NAVFAC XXXXXX       Design Activity       Other: \_\_\_\_\_
- NOTE: Submit a complete set of drawings with the application. Include specifications if available.
- SPECIFICATIONS INCLUDED:       YES                       NO  
DESIGN CALCULATIONS INCLUDED:       YES                       NO
8. Designed by Firm/Activity: \_\_\_\_\_  
Point of Contact: \_\_\_\_\_ Phone: \_\_\_\_\_
  9. Submitted by: (This is usually the Engineer in Charge (EIC) or AIC.):  
Name: \_\_\_\_\_ Signature: \_\_\_\_\_  
Title: \_\_\_\_\_ Request Date: \_\_\_\_\_ Phone: \_\_\_\_\_
  10. Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Approved       Disapproved



SECTION B - WATER

PART A - DOMESTIC WATER SERVICE CONNECTIONS

Complete the following for all domestic water service connections to water distribution system lines.

1. Number of Domestic Water Service Connections

(a) Existing service connections disconnected from water line \_\_\_\_\_

(b) New service connections connected to water line \_\_\_\_\_

2. List the following for all new domestic water service connections to water distribution system lines. See Instructions for clarification.

(a) Pipe Size(s) \_\_\_\_\_

(b) Pipe Material(s) \_\_\_\_\_

(c) Pipe Class or Schedule \_\_\_\_\_

(d) Required Capacity (in gpm) \_\_\_\_\_

(e) Required Pressure (in psi) \_\_\_\_\_

(f) Meter Size(s) \_\_\_\_\_

(g) Meter Type(s) \_\_\_\_\_

(h) Backflow Preventer (Yes/No) \_\_\_\_\_



PART B - FIRE PROTECTION (HIGH PRESSURE/NON-POTABLE) WATER SERVICE  
CONNECTIONS

Complete the following for all fire protection (high pressure/non-potable)  
water service connections to fire protection system lines.

1. Number of Fire Protection (High Pressure/Non-Potable) Water Service  
Connections

(a) Number of existing service connections disconnected from fire  
protection line \_\_\_\_\_

(b) Number of new service connections connected to fire protection line  
\_\_\_\_\_

2. List the following for all new fire protection (high pressure/non-  
potable) water service connections to fire protection system lines. See  
Instructions for clarification.

(a) Pipe Size(s) \_\_\_\_\_

(b) Pipe Material(s) \_\_\_\_\_

(c) Pipe Class or Schedule \_\_\_\_\_

(d) Required Capacity (in gpm) \_\_\_\_\_

(e) Required Pressure (in psi) \_\_\_\_\_

(f) Backflow Preventer (Yes/No) \_\_\_\_\_



SECTION C - SANITARY SEWER

PART A - SANITARY SEWER LATERAL CONNECTIONS

Complete the following information for work involving all sanitary sewer lateral connections to sanitary sewer mains.

1. Number of Sanitary Sewer Laterals

(a) Existing laterals disconnected from sanitary sewer main \_\_\_\_\_

(b) New laterals connected to sanitary sewer main \_\_\_\_\_

2. List the following for all new sanitary sewer lateral connections. See Instructions for clarification.

(a) Pipe Size(s) \_\_\_\_\_

(b) Pipe Material(s) \_\_\_\_\_

(c) Pipe Class or Schedule \_\_\_\_\_

(d) Total Added Design Capacity (gpm) \_\_\_\_\_

3. Type of Discharge from New Sanitary Sewer Laterals

(a) Building Type: (Check all that apply)

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Office                | <input type="checkbox"/> Residential Housing | <input type="checkbox"/> Recreational    |
| <input type="checkbox"/> Warehouse             | <input type="checkbox"/> Food Service        | <input type="checkbox"/> Fuel Depot      |
| <input type="checkbox"/> Commercial            | <input type="checkbox"/> Barracks            | <input type="checkbox"/> Trng. Facility  |
| <input type="checkbox"/> Medical               | <input type="checkbox"/> Industrial          | <input type="checkbox"/> Aircraft Hangar |
| <input type="checkbox"/> Other (Specify) _____ |  |  |

(b) Indicate below any of the operations occurring in the above buildings: (Please check all that apply. If none of these apply, check N/A.)

- N/A
- Food Preparation Operations
- Photo Processing or X-Ray Operations
- Laboratory or Clinics
- Industrial Laundry or Dry Cleaning
- Printing Operations (other than copy machines for office use)
- Handling or Collecting Used Oils, Solvents, Degreasers, or HW
- Grease Traps



PART B - SANITARY SEWER MAINS

Complete the following information for work involving all sanitary sewer mains.

1. Number of sanitary sewer manholes abandoned \_\_\_\_\_
2. Number of sanitary sewer manholes installed \_\_\_\_\_
3. Linear feet of sanitary sewer main abandoned \_\_\_\_\_
4. Linear feet of sanitary sewer main installed \_\_\_\_\_
5. List the following for all new sanitary sewer mains:
  - (a) Pipe Size(s) \_\_\_\_\_
  - (b) Pipe Material(s) \_\_\_\_\_
  - (c) Pipe Class or Schedule \_\_\_\_\_

PART C - SANITARY SEWER PUMP STATIONS

Complete the following information for work involving all sanitary sewer pump stations.

1. Number of sanitary sewer pump stations abandoned \_\_\_\_\_
2. Number of sanitary sewer pump stations installed \_\_\_\_\_
3. Number of pumps installed at each pump station \_\_\_\_\_
4. Size of each pump installed \_\_\_\_\_
5. Attach details for pump station cut sheets, pump/ system curves, visible and audible alarms/ channels, bypass pump connections, valve and check valve connections, and wet well level monitoring systems.



SECTION D - ELECTRIC

PART A - PRIMARY

If the work involves the primary, complete the following:

1. System Voltage:     34.5 KV     19.9KV     13.2 KV     11.5 KV  
                           4.16 KV     2.4 KV     2.3 KV

TRANSFORMER:

2. Installation:     New     Upgrade Existing     Repair
3. Type:     Pad mount     Unit Substation     Pole mount     Station
4. Primary BIL:     200 KV     150 KV     95 KV     60 KV  
Secondary BIL:     150 KV     95 KV     60 KV     30 KV
5. Rating: \_\_\_\_\_KVA
6. Primary Connection:     Live Front     Dead Front

PRIMARY CONNECTION:

7.  Overhead     Underground
8. Conductor Size: \_\_\_\_\_  Copper     Aluminum
9. Type: \_\_\_\_\_
10. Insulation Level:     133%     100%
11. Point of Connection to Utility: (Check all that apply)
- Existing Distrib. Switch     Splice in Manhole     Overhead Line Tap
- New Distribution Switch     Other. (Specify.) \_\_\_\_\_
- Primary Circuit to be connected to (if known): \_\_\_\_\_

PART B - SECONDARY

If the work involves the secondary, complete the following:

12. Installation:  New     Upgrade (Load study required)     Repair
13. Transformer Load Study Performed:  Yes (Provide)     No - Date expected:
14. Watt-hour meter: Form \_\_\_\_\_
- Type:  Transformer rated     Self-contained



SECTION E - STEAM

1. Purpose of new line/service: (Please check all that apply.)

- Building Heating                       Water Heating                       AC/Humidity Control  
 Other (Specify)\_\_\_\_\_

2. Size of New Line\_\_\_\_\_

3. Size of Existing Line at Connection Point\_\_\_\_\_

4. Required Capacity (lbs./hr.)\_\_\_\_\_

5. Required Pressure (psi)\_\_\_\_\_

6. Meter model/size: \_\_\_\_\_

SECTION F - NATURAL GAS

1. Size of New Line\_\_\_\_\_

2. Size of Existing Line at Connection Point\_\_\_\_\_

3. Pipe Material\_\_\_\_\_

4. Required Capacity \_\_\_\_\_

5. Required Service Pressure\_\_\_\_\_

6. Meter model/size:\_\_\_\_\_





# PURCHASED UTILITY INVOICE INFORMATION SHEET

## 1. INSTALLATION INFORMATION

**Official Installation Name :** \_\_\_\_\_

*Installation receiving the service. example: NAS North Island San Diego CA (Use Official CNI Installation UIC and Site List*

**Site/complex:** \_\_\_\_\_

*Example: SILVER STRAND*

**Site/Complex Co** \_\_\_\_\_

*Example: 01*

*The Site/Complex Code is required by DWAS. It is a two character alphanumeric code. All the installation sites/complexes within a FEC should have a unique two-character identifier. An installation can have multiple sites/complexes, thus multiple site/complex codes. Other installations may have only one site/complex, thus only one site/complex code.*

**Installation UIC:** \_\_\_\_\_

**Installation City:** \_\_\_\_\_

**Installation State:** \_\_\_\_\_

**Installation Zip Code:** \_\_\_\_\_

**Installation Country:** \_\_\_\_\_

<b>FEC ID: (mark one)</b>	MIDWEST	<input type="checkbox"/>	MIDLANT	<input type="checkbox"/>	SOUTHWEST	<input type="checkbox"/>	WASHINGTON	<input type="checkbox"/>
	NORTHWEST	<input type="checkbox"/>	SOUTHEAST	<input type="checkbox"/>	EUROPE	<input type="checkbox"/>	HAWAII	<input type="checkbox"/>
			MARIANAS	<input type="checkbox"/>	FAR EAST	<input type="checkbox"/>		

## 2. TECHNICAL INFORMATION

**Service Location:** \_\_\_\_\_ *(Address)*

\_\_\_\_\_ *(Address)*

\_\_\_\_\_ *(City, State, Zip Code)*

**Type of Service (mark one):**

Natural Gas  Propane  Electricity  Steam  Water  Sewage  Trash

Other (Describe): \_\_\_\_\_

*If an invoice covers two contracts, provide a purchased utility invoice information sheet for each contract and attach a copy of the invoice to both. Keep them together so that it is evident that they are the same invoice. An example is an electrical invoice that has transmission & distribution from one contract and commodity from a separate direct access contract.*

**Description of Service:** \_\_\_\_\_

*The "Description of Service" is to be supplied by the technical person. Provide information that will help identify, sort or quantify the service.*

**Rate:** \_\_\_\_\_

*Billing Rate Schedule Example: MS - 1E*

*The Billing Rate Schedule is found in the utility service contract and is often noted on the invoice. If there is no identifier of the rate in either of these two locations, then indicate N/A.*

**Account Number:** \_\_\_\_\_

*Utility Provider Account Number with all punctuation removed (remove all dashes, spacing, etc.)*





## PURCHASED UTILITY INVOICE INFORMATION SHEET

Utility Contract Number: \_\_\_\_\_  
*Example: NXXXXX-XX-X-XXXX*

Billed (Mark One): Monthly:  Bi-Monthly:   
 Other (Describe): \_\_\_\_\_

Comment: \_\_\_\_\_  
*Example: Bill is for multiple activities; some are not paid by the Navy and are indicated as such.*

### 3. FINANCIAL INFORMATION

Certifying for Payment Activity Name: \_\_\_\_\_  
*Name the FEC/Installation/Region who will be the certifying activity.*

Certifying for Payment Activity: DODAAC \_\_\_\_\_ UIC \_\_\_\_\_

Administrative Office DODAAC: \_\_\_\_\_ UIC \_\_\_\_\_

Obligation ID: \_\_\_\_\_

*The Obligation ID is the government number internally assigned by each activity. It is used by the activity to record Obligations, Accruals and Payments. The navy-wide standard for the Obligation ID is shown below. For summary invoices which cover several accounts, the same Obligation ID should be assigned to each account under the summary invoice. If a MIPR is issued to an activity for purchase of utilities, use the assigned MIPR Document Number:*

*Example of Obligation ID: N4008507UTGA001 or N4008507MPG1234*

Position	Description	Sample Value for UT	Sample Value for MP
1	Agency Type ( <i>N for Navy</i> )	N	N
2-6	Site UIC	40085	40085
7-8	Current Fiscal Year (changes each Fiscal Year)	07	07
9-10	Standard <i>Procurement</i> Type Code	UT	MP
11	Standard Type Service Codes "G" = Gas "E" = Electricity "S" = Sewage "M" = Steam "W" = Water "X" = Combo Type Services	G	G (use Standard TS code if possible, otherwise, internally assigned alphanumeric code)
12-15	<i>Serialization (4 digit alphanumeric sequence unique number assigned by Navy)</i>	A001	1234





## PURCHASED UTILITY INVOICE INFORMATION SHEET

CAGE Code: \_\_\_\_\_ or STARS VENDOR ID: \_\_\_\_\_

*The Commercial and Government Entity (CAGE) Code is a 5-character ID number. This number is contractor address specific. If a utility company has several locations, each one will have its own CAGE Code. The Central Contractor Registration (CCR) is an authorized source for the assignment of CAGE Codes. Check the CCR website (<http://www.ccr.gov>) to determine if the respective utility company has an assigned CAGE code.*

*If a utility company will not have an assigned CAGE Code, use the STARS Vendor ID. Contact the Comptroller Department to obtain the correct STARS Vendor ID for the utility company.*

Financial System (mark one) DWAS  STARSFL  Other

For DWAS accounts, indicate the DWAS site (ex. PROD, GLK, etc.) \_\_\_\_\_

Is this account paid through a Military Interdepartmental Purchase Request (MIPR)?  Yes  No

### 4. SERVICE PROVIDER INFORMATION

Service Provider Name: \_\_\_\_\_

Service Provider Point of Contact: \_\_\_\_\_

Service Provider E-mail: \_\_\_\_\_

Service Provider Phone Number: \_\_\_\_\_

Service Provider Address: \_\_\_\_\_

### 5. PREPARER'S INFORMATION

Technical information prepared by: \_\_\_\_\_ Date: \_\_\_\_\_

Phone Numbers (DSN): \_\_\_\_\_ Commercial: \_\_\_\_\_

Email: \_\_\_\_\_

Financial information prepared by: \_\_\_\_\_ Date: \_\_\_\_\_

Phone Numbers (DSN): \_\_\_\_\_ Commercial: \_\_\_\_\_

Email: \_\_\_\_\_

#### OFFICIAL USE ONLY

Service Point Identification Number:





# REQUEST for ELECTRICAL SERVICE

**1**

\_\_\_\_\_

Date Activity UIC

**Requestor Information**

Requestor \_\_\_\_\_ Code \_\_\_\_\_

Telephone/DSN \_\_\_\_\_ Email address \_\_\_\_\_

Point of Contact \_\_\_\_\_ Telephone \_\_\_\_\_

**2**

Billing Address: \_\_\_\_\_

Command

Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Paying Address: \_\_\_\_\_

Command

Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

**Billing Information**

**3**

Project Name/Number \_\_\_\_\_  Govt. Owned  Govt. Leased \_\_\_\_\_ Required Date \_\_\_\_\_

Service Address / Bldg #: \_\_\_\_\_

Street

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Scope Of Utility Work:

Utility Provider/ Address: \_\_\_\_\_

Provider

Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Funding Available:  Yes  No \_\_\_\_\_ Funding Source \_\_\_\_\_ Point of Contact \_\_\_\_\_

Telephone \_\_\_\_\_ Email address \_\_\_\_\_

**Project Information**





## REQUEST for ELECTRICAL SERVICE

4

Type of Service:

Overhead     Underground

Service Information

Service : New     Upgrade     Change/Altered     Service Voltage: \_\_\_\_\_

Phasing: Single     Three     Other

Connection: Delta     Wye     Grounded

Service Meter Location: \_\_\_\_\_

Metering: Primary     Secondary

- SPECIAL REQUIREMENTS: Yes     No  . If YES provide specific details in the remarks below.**
- PROVIDE CONNECTION POINT DRAWING/EQUIPMENT SCHEDULE & SITE UTILITY DRAWINGS**

5

TYPE

	LOAD (KW)		LIST OF LARGE MOTORS = TO OR > 7.5 HP			
	Single	Three	Motor Size HP	Qty	Phase 1/3	Est KW
Lighting						
HVAC Cool						
HVAC Heating						
Water Heater						
Refrigeration						
Large Motors						
Receptacles						
Connected Load						KW
<b>Total Overall Connected Load</b>	KW					

**Max Demand Load** = Total Connected Load X Demand Factor = \_\_\_\_\_ KW

**Annual Consumption** = MAX Demand Load X Load Factor X Hrs/Yr = \_\_\_\_\_ KWHR

**Annual Estimated Cost** = Annual Consumption X \$/KWH(unit cost) = \_\_\_\_\_ Yrly Cost

6

Contract Info

Existing Contract Number (if applicable): \_\_\_\_\_

7

Remarks

- PROVIDE CONNECTION POINT DRAWING, EQUIPMENT SCHEDULE & SITE UTILITY DRAWINGS.**
- IDENTIFY THE DELINEATION POINTS BETWEEN GOVERNEMENT & CONTRACTOR OWNED FACILITIES.**





# REQUEST for GAS SERVICE

**1** \_\_\_\_\_  
Date Activity UIC

**Requestor Information**

Requestor \_\_\_\_\_ Code \_\_\_\_\_  
Telephone/DSN \_\_\_\_\_ Email address \_\_\_\_\_  
Point of Contact \_\_\_\_\_ Telephone \_\_\_\_\_

**2** \_\_\_\_\_

**Billing Information**

Billing Address: \_\_\_\_\_  
Command  
Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Paying Address: \_\_\_\_\_  
Command  
Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

**3** \_\_\_\_\_  
Project Name/Number  Govt. Owned  Govt. Leased Required Date \_\_\_\_\_

**Project Information**

Service Address / Bldg #: \_\_\_\_\_  
Street  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Scope Of Utility Work:  
[Empty Box]

Utility Provider/ Address: \_\_\_\_\_  
Provider  
Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Funding Available:  Yes  No Funding Source \_\_\_\_\_ Point of Contact \_\_\_\_\_  
Telephone \_\_\_\_\_ Email address \_\_\_\_\_









# REQUEST for SEWAGE SERVICE

**1** \_\_\_\_\_  
Date Activity UIC

**Requestor Information**

Requestor \_\_\_\_\_ Code \_\_\_\_\_  
Telephone/DSN \_\_\_\_\_ Email address \_\_\_\_\_  
Point of Contact \_\_\_\_\_ Telephone \_\_\_\_\_

**2** \_\_\_\_\_

**Billing Information**

Billing Address: \_\_\_\_\_  
Command \_\_\_\_\_  
Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Paying Address: \_\_\_\_\_  
Command \_\_\_\_\_  
Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

**3** \_\_\_\_\_

**Project Information**

Project Name/Number \_\_\_\_\_  Govt. Owned  Govt. Leased \_\_\_\_\_ Required Date \_\_\_\_\_  
Service Address / Bldg #: \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Scope Of Utility Work:  
\_\_\_\_\_  
Utility Provider/ Address: \_\_\_\_\_  
Provider \_\_\_\_\_  
Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Funding Available:  Yes  No \_\_\_\_\_ Funding Source \_\_\_\_\_ Point of Contact \_\_\_\_\_  
Telephone \_\_\_\_\_ Email address \_\_\_\_\_





## REQUEST for SEWAGE SERVICE

<b>4</b>	<b>Type of Service:</b> New Service Main or Extension <input type="checkbox"/> New Service Lateral or Extension <input type="checkbox"/> Line Relocation <input type="checkbox"/>						
	<b>Sewer Meter Required:</b> Yes <input type="checkbox"/> No <input type="checkbox"/>						
	<b>Point of Connection:</b> _____						
	<b>Service Information</b>	<b>Type of Service</b>	n/a	n/a	n/a	n/a	n/a
		<b>Average Daily Flow (GPD)</b>					
		<b>Peak Flow (GPM)</b>					
<b>Type of Service</b>		n/a	n/a	n/a	n/a	n/a	
<ul style="list-style-type: none"> <li>• <b>SPECIAL REQUIREMENTS:</b> Yes <input type="checkbox"/> No <input type="checkbox"/> . If YES provide specific details in the remarks below.</li> <li>• <b>PROVIDE CONNECTION POINT DRAWING/EQUIPMENT SCHEDULE &amp; SITE UTILITY DRAWINGS</b></li> </ul>							

<b>5</b>						
	<b>Existing Contract Number (if applicable):</b> _____					
<b>Contract Info</b>						

<b>6</b>						
<b>Remarks</b>						

- **PROVIDE CONNECTION POINT DRAWING, EQUIPMENT SCHEDULE & SITE UTILITY DRAWINGS.**
- **IDENTIFY THE DELINEATION POINTS BETWEEN GOVERNMENT & CONTRACTOR OWNED FACILITIES.**



DRAFT

COMNAVREG MIDLANT INSTRUCTION

Subj: POST CONSTRUCTION STORMWATER RUNOFF MANAGEMENT INSTRUCTION

Ref: (a) 4 VAC 50-60 - Virginia Stormwater Management Program (VSMP) Permit Regulations For Small Municipal Separate Storm Sewer Systems (Effective January 1, 2005)  
(b) Virginia Stormwater Management Handbook  
(c) CNRMA Erosion and Sediment Control Instruction  
(d) Unified Facilities Criteria; Low Impact Development Manual

1. Purpose. To require minimum post-construction stormwater best management practices at installations and annexes under the purview of Commander, Navy Region, Mid-Atlantic (COMNAVREG MIDLANT) and located in the Hampton Roads area. This instruction applies to all development and redevelopment activities greater than or equal to one acre in size. The instruction also applies to land development activities that are smaller than one acre if the activities are part of a larger common plan of development. In cases where the Regional Environmental Water Program Manager determines that a project less than one acre in size will have a significant water quality impact, the instruction may also apply. This instruction seeks to maintain compliance with state and federal environmental regulations through the following objectives:

a. Require that the after-development runoff from land development and redevelopment activities is maintained as nearly as practicable to the pre-development runoff characteristics in order to reduce flooding, siltation, stream bank erosion, and property damage;

b. Establish minimum design criteria for the protection of properties and aquatic resources downstream from land development and redevelopment activities to prevent damages due to increases in volume, velocity, frequency, duration, and peak flow rate of stormwater runoff;

c. Establish minimum design criteria for measures to minimize nonpoint source pollution from stormwater runoff, which would otherwise degrade water quality;

d. Establish provisions for the long-term maintenance of stormwater management control devices and other techniques specified to manage the quality and quantity of runoff; and

e. Establish administrative procedures for the submission, review, approval, and disapproval of stormwater plans, and the inspection of approved projects.

2. Definitions.

a. **Average Land Cover Condition** a measure of the average amount of impervious surfaces within a facility.

<b>Facility</b>	<b>Average Land Cover</b>
Naval Station Norfolk (including NSA and SDA)	42.2%
Naval Amphibious Base Little Creek	34.1%
Saint Juliens Creek Annex	37.7%
Scott Center Annex	41.3%
Saint Helena Annex	78.7%
Southgate Annex	74.3%
Naval Weapons Station Yorktown	20.4%
Cheatham Annex	24%
Yorktown Fuels	16%
Craney Island	28.5%
Naval Air Station Oceana	28.8%
Dam Neck Annex	24.6%
Naval Auxiliary Landing Field Fentress	18.7%
Northwest Annex	16.6%
Lafayette River Annex	42%

b. **Best Management Practice (BMP)** the use of structural or non-structural practices that are designed to reduce stormwater runoff pollutant loads, discharge volumes, and/or peak flow discharge rates.

c. **Erosion and Sediment Control Plan** a document that is designed to minimize the erosion and sediment runoff at a site during land disturbing activities.

d. **Flooding** a volume of water that is too great to be confined within the banks or walls of the stream, water body or conveyance system, and that overflows onto adjacent lands, causing or threatening damage.

e. **Hotspot** an area where land use or activities generate highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater.

f. **Hydrologic Soil Group (HSG)** a Natural Resource Conservation Service classification system in which soils are categorized into four runoff potential groups. The groups range from A soils, with high permeability and little runoff production, to D soils, which have low permeability rates and produce higher runoff.

g. **Impervious Cover** a surface composed of any material that significantly impedes or prevents natural infiltration of water into soil. Impervious surfaces include, but are not limited to, roofs, buildings, streets, parking areas, and any concrete, asphalt, or compacted gravel surface.

h. **Infiltration** the process of stormwater percolating into the subsoil.

i. **Jurisdictional Wetland** an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation, these wetlands receive regulatory review by the Army Corps of Engineers, the Virginia Department of Environmental Quality, and local wetland boards.

j. **Larger Common Plan of Development** multiple separate and distinct construction activities that are planned to occur under one plan that can be linked together through documentation. For example, projects listed on the same 1391, NEPA documentation, design, contract, or Coastal Consistency Determination.

k. **Linear Development Project** a land development project that is linear in nature such as, but not limited to, (i) the construction of electric and telephone utility lines, and natural gas pipelines; (ii) construction of tracks, rights-of-way, bridges, communication facilities and other related structures of a railroad company; and (iii) highway construction projects.

l. **Nonpoint Source (NPS) Pollution** pollution from any source other than from any discernible, confined, and discrete conveyances, and shall include, but not be limited to, pollutants from agricultural, silvicultural, mining, construction, subsurface disposal and urban runoff sources.

m. **Nonpoint Source Pollutant Runoff Load or Pollutant Discharge** the average amount of a particular pollutant measured

in pounds per year, delivered in a diffuse manner by stormwater runoff.

m. **Percent Impervious** the impervious area within the site divided by the total area of the site multiplied by 100.

o. **Post-development** conditions that reasonably may be expected or anticipated to exist after completion of the land development activity on a specific site or tract of land.

p. **Pre-development** conditions that exist at the time that plans for the land development of a tract of land are approved by the plan approving authority. Where phased development or plan approval occurs (preliminary grading, roads and utilities, etc.), the existing conditions at the time *prior to* the first item being approved or permitted shall establish pre-development conditions.

q. **Redevelopment** the process of developing land that is or has been previously developed.

r. **Runoff** or **Stormwater Runoff** that portion of precipitation that is discharged across the land surface or through conveyances to one or more waterways.

s. **Site** the parcel of land being developed, or a designated planning area in which the land development project is located.

t. **State Waters** all waters on the surface and under the ground wholly or partially within or bordering the Commonwealth or within its jurisdiction.

u. **Stormwater Management Facility** a device that controls stormwater runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release, and the velocity of flow.

v. **Stormwater Management Plan** or **Plan** a document containing material for describing how existing runoff characteristics will be affected by a land development project and methods for complying with the requirements of the Stormwater Management Program.

w. **Water Quality Volume (WQV)** the volume equal to the first  $\frac{1}{2}$  inch of runoff multiplied by the impervious surface of the land development project.

x. **Watershed** a defined land area drained by a river, stream, drainage ways or system of connecting rivers, streams, or

drainage ways such that all surface water within the area flows through a single outlet.

3. Guidance. The criteria and information, including specifications and standards, of the Virginia Stormwater Handbook will be used for the proper implementation of this instruction. The Handbook includes a list of acceptable stormwater treatment practices, including the specific design criteria for each. All references to the Virginia Stormwater Management Handbook are presumed to be the "latest edition" as defined on the Virginia Department of Conservation and Recreation website ([www.dcr.state.va.us](http://www.dcr.state.va.us)). The Low Impact Development Techniques identified in the Unified Facilities Criteria; Low Impact Development Manual may also be used as a source of alternative BMPs to manage and treat stormwater runoff.

4. Policy. The following criteria must be addressed for stormwater management:

a. Land development and redevelopment projects greater than or equal to one acre in size or projects that are part of a larger common plan of development; must be evaluated in accordance with the water quality Performance-based or Technology-based criteria listed below. If a stormwater management best management practice (BMP) is required for a project then the appropriate Stormwater Management Plans must be prepared and submitted in accordance with Section 5.

(1) Performance-based criteria. For land development, the calculated post-development non-point source pollutant runoff load must be compared to the calculated pre-development load based upon the average land cover condition (see average land cover definition). A BMP must be designed, constructed and maintained to achieve the target pollutant removal efficiencies specified in Table 1 to effectively reduce the pollutant load to the required level based upon the following four applicable land development situations for which the performance criteria apply:

(a) Situation 1 consists of land development where the existing percent impervious cover is less than or equal to the average land cover condition (see definition 2.a) and the proposed improvements will create a total percent impervious cover which is less than the average land cover condition (see definition 2.a).

Requirement: No reduction in the after-development pollutant discharge is required.

(b) Situation 2 consists of land development where the existing percent impervious cover is less than or equal to the

average land cover condition (see definition 2.a) and the proposed improvements will create a total percent impervious cover which is greater than the average land cover condition (see definition 2.a).

**Requirement:** The pollutant discharge after development must not exceed the existing pollutant discharge based on the average land cover condition.

(c) Situation 3 consists of land development where the existing percent impervious cover is greater than the average land cover condition (see definition 2.a).

**Requirement:** The pollutant discharge after development must not exceed (i) the pollutant discharge based on existing conditions less 10% or (ii) the pollutant discharge based on the average land cover condition (see definition 2.a), whichever is greater.

(d) Situation 4 consists of land development where the existing percent impervious cover is served by an existing stormwater management BMP that addresses water quality.

**Requirement:** The pollutant discharge after development must not exceed the existing pollutant discharge based on the existing percent impervious cover while served by the existing BMP. The existing BMP must be shown to have been designed and constructed in accordance with proper design standards and specifications, and to be in proper functioning condition.

(2) Technology-based criteria. For land development, the post-development stormwater runoff from the impervious cover must be treated by an appropriate BMP as required by the post-developed condition percent impervious cover as specified in Table 1. The selected BMP must be designed, constructed and maintained to perform at the target pollutant removal efficiency specified in Table 1. Design standards and specifications for the BMPs in Table 1 which meet the required target pollutant removal efficiency must be consistent with those provided in the Virginia Stormwater Management Handbook.

Table 1\*

Water Quality BMP	Target Phosphorus Removal Efficiency	Percent Impervious Cover
Vegetated filter strip	10%	16-21%
Grassed swale	15%	
Constructed wetlands	30%	22-37%
Extended detention (2 x WQ vol)	35%	
Retention basin I (3 x WQ vol)	40%	
Bioretention basin	50%	38-66%

Bioretention filter	50%	
Extended detention-enhanced	50%	
Retention basin II (4 x WQ Vol)	50%	
Infiltration (1x WQ Vol)	50%	
Sand filter	65%	67-100%
Infiltration (2 x WQ vol)	65%	
Retention basin III (4 x WQ Vol with aquatic bench)	65%	

\*Innovative or alternative BMPs not included in this table may be allowed at the discretion of the Regional Environmental Water Program Manager. Innovative or alternate BMPs not included in this table which target appropriate nonpoint source pollution other than phosphorous (such as petroleum, hydrocarbons, sediment, etc.) may be allowed at the discretion of the Regional Environmental Water Program Manager. BMPs that have the potential to cause Bird Air Strike Hazards (BASH) will not be allowed in the vicinity of runways or taxiways. If a decision must be made between two BMPs, preference will be given to the BMP that is less costly and maintenance intensive.

b. General Requirements

(1) Stormwater runoff generated from regulated land development and redevelopment projects must not be discharged into a jurisdictional wetland or local water body without adequate treatment. Where such discharges are proposed, the impact of the proposal on wetland functions must be assessed using an acceptable method. In no case shall the impact on functions be any less than allowed by the Army Corps of Engineers (ACOE) or the Department of Environmental Quality.

(2) Stormwater discharges to critical areas with sensitive resources (i.e., shellfish beds, swimming beaches, water supply reservoirs) may be subject to additional criteria, or may need to utilize or restrict certain stormwater management practices.

(3) Stormwater discharges from land uses or activities with higher potential pollutant loadings, known as "hotspots," may require the use of specific structural BMPs and pollution prevention practices.

(4) All stormwater management practices must be designed for a 24-hour duration; a 2-year design storm is required for a discharge to a natural channel and a 10-year design storm is required for a discharge to a manmade channel. Pre-development and post-development runoff rates must be verified by calculations that are consistent with good engineering practices.

(5) For purposes of computing runoff, all pervious lands at the site must be assumed to be in good condition (if the lands are pastures, lawns, or parks) prior to development, with good cover (if the lands are woods), or with conservation treatment (if the lands are cultivated), regardless of conditions existing at the time of computation.

(6) Construction of stormwater management facilities or modifications to channels must comply with all applicable laws and regulations, including all necessary permits, such as US Army Corps of Engineers and Virginia Department of Environmental Quality Wetland Permits, Virginia Department of Conservation and Recreation Virginia Stormwater Management Program Permits, etc.

(7) Impounding structures that are not covered by the Impounding Structure Regulations (4VAC 50-20) must be engineered for structural integrity and designed according to the 100-year storm event.

(8) Pre-development and post-development runoff rates must be verified by calculations that are consistent with good engineering practices.

(9) Outflows from a stormwater management facility must be discharged to an adequate channel.

(10) Natural channel characteristics must be preserved to the maximum extent practicable.

(11) Use of Non-Structural BMPs are encouraged to reduce the amount of stormwater runoff that must be managed. This will help to minimize the reliance on structural practices, which require ongoing maintenance in order to be effective.

(12) Runoff from parking lots must be treated to remove oil, grease and sediment before it enters receiving waters.

(13) The use of natural drainage systems and vegetated buffer zones as open space and conservation areas shall be encouraged.

(14) Stormwater management best management practices for a site must be chosen based on the physical conditions of the site. Designers must consult the Virginia Stormwater Management Handbook for guidance on the factors that determine site design feasibility when selecting a stormwater management best management practice.

(15) All stormwater management practices must be designed to allow for the maximum removal of pollutants and reduction in flow velocities. The Virginia Stormwater Management Handbook provides detailed guidance on the requirements for conveyance for each of the approved stormwater management practices.

(16) Stormwater infiltration practices, or practices having an infiltration component, as specified in the Virginia

Stormwater Management Handbook, are prohibited, even with pretreatment, in the following circumstances:

(a) Where stormwater is generated from highly contaminated source areas known as "hotspots"

(b) Where stormwater is carried in a conveyance system that also carries contaminated, non-stormwater discharges.

(17) Prior to design, the Regional Environmental Group should be consulted to determine if the project will be subject to additional stormwater design requirements.

c. Stream Channel Erosion. To protect stream channels from degradation, specific channel protection criteria must be provided as prescribed in the Virginia Stormwater Management Handbook and Virginia Erosion and Sediment Control Handbook.

(1) Properties and receiving waterways downstream of any land development project must be protected from erosion and damage due to increases in volume, velocity and frequency of peak flow rate of stormwater runoff in accordance with standard 19 of the Erosion and Sediment Control Instruction.

d. Flooding. The calculations for determining peak flows as found in the Virginia Stormwater Management Handbook must be used for sizing all stormwater management practices.

(1) Downstream properties and waterways must be protected from damages from localized flooding due to increases in volume, velocity and peak flow rate of stormwater runoff in accordance with the minimum design standards set out in this subsection.

(2) The 10-year post-developed peak rate of runoff from the development site must not exceed the 10-year pre-developed peak rate of runoff.

(3) Linear development projects shall not be required to control post-developed stormwater runoff for flooding.

5. Stormwater Management Plans A stormwater management plan must be developed for each project to ensure adequate planning for the management of stormwater runoff. The plan must be written in accordance with the criteria established in this section.

Work cannot commence until the plan has been reviewed and approved by the appropriate Regional Environmental Group Water Program Manager.

a. Stormwater Management Plan. The stormwater management plan must be submitted for approval at or before the time of the 90% design submittal. For design-build projects, Regional Water Program Manager must approve the plan prior to construction. The stormwater management plan must include the following information:

(1) Contact Information. The name, address, and telephone number of the AROICC and Project Manager.

(2) A map (or maps) indicating the location of existing and proposed buildings, roads, parking areas, utilities, structural stormwater management and sediment control facilities. The map(s) will also clearly show pre-construction and post-construction land cover (pervious and impervious) with a tabulation of the percentage of surface area to be changed; drainage patterns; locations of utilities, roads and easements; the limits of clearing and grading; a written description of the site plan and justification of proposed changes in natural conditions may also be required.

(3) A written or graphic inventory of the natural resources environmentally sensitive features at the site and surrounding area that provide particular opportunities or constraints for development.

(4) A description of proposed, post-construction stormwater management measures including; sufficient engineering analysis to show that the proposed stormwater management measures control runoff from the site in compliance with this instruction and the specifications of the Virginia Stormwater Management Handbook.

(6) Calculations. Hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in this instruction (24-hour duration, 2-year or 10-year). Such calculations must include (i) description of the design storm frequency, intensity and duration, (ii) time of concentration, (iii) Soil Curve Numbers or runoff coefficients, (iv) peak runoff rates and total runoff volumes for each watershed area, (v) infiltration rates, where applicable, (vi) culvert capacities, (vii) flow velocities, (viii) data on the increase in rate and volume of runoff for the specified design storms, and (ix) documentation of sources for all computation methods and field test results.

(4) Maintenance Plan. The design and planning of all stormwater management facilities must include detailed maintenance procedures to ensure their continued function. These plans will identify the parts or components of a stormwater

management BMP that need to be maintained and the equipment and skills or training necessary to maintain them. Estimates for annual maintenance costs and frequency must also be included.

(5) Landscaping plan. The plan must include a detailed landscaping plan describing the woody and herbaceous vegetative stabilization and management techniques to be used within and adjacent to the stormwater BMP. The landscaping plan must also describe how vegetation should be maintained. This plan must be prepared by a qualified individual familiar with the selection of emergent and upland vegetation appropriate for the selected BMP.

6. Maintenance Inspection and Repair of Stormwater Facilities. All stormwater management facilities must undergo inspections to document maintenance and repair needs and ensure compliance with the requirements of this instruction and accomplishment of its purposes. These needs may include: removal of silt, litter and other debris from all catch basins, inlets and drainage pipes; grass cutting and vegetation removal; necessary replacement of landscape vegetation; and any repair or replacement of structural features.

At a minimum, a stormwater management facility must be inspected on an annual basis by the Regional Environmental Group Water Program Manager. In the event that the stormwater management facility has not been maintained and/or becomes a danger to public safety or public health, the Regional Environmental Group Water Program Manager shall notify the Public Works Office, Facilities Maintenance Specialist responsible for the site maintenance. The notice will specify the measures needed to comply with the plan and must specify the time within which such measures must be completed.

7. Waivers. Every applicant must provide for stormwater management as required by this instruction, unless a written request is filed to waive this requirement. Requests to waive the stormwater management requirements must be submitted to the Regional Environmental Group Water Program Manager for approval.

The minimum requirements for stormwater management may be waived in whole or in part, provided that at least one of the following conditions applies:

a. It can be demonstrated that the proposed development is not likely to impair attainment of the objectives of this instruction.

b. The Regional Environmental Group Water Program Manager agrees that meeting the minimum on-site management requirements is not feasible due to the natural or existing physical

characteristics of a site and no other feasible site location is available.

c. Non-structural practices will be used on the site that reduce:

- (1) The generation of stormwater from the site;
- (2) the size and cost of stormwater storage and;
- (3) the pollutants generated at the site.

In instances where one of the conditions above applies, the Regional Environmental Group may grant a waiver from strict compliance with the stormwater management provisions.

8. Enforcement. Any activity that violates this instruction may be subject to enforcement actions under the Clean Water Act and Virginia Stormwater Management Law; including Warning Letters, Notices of Violation, fines, and penalties from the Virginia Department of Conservation and Recreation. The party that causes the violation will be responsible for all required corrective actions and will have to provide a written description of why the violation occurred to the Regional Environmental Group.

9. Responsibilities.

a. Regional Environmental Group.

(1) Water Program Manager. The Water Program Managers are responsible for reviewing and approving Stormwater Management Plans; ensuring the required stormwater management best management practices are installed and maintained as required by all applicable environmental laws and regulations; and granting waivers where appropriate. The Water Program Managers will perform annual inspections of all BMPs in their AORs to determine maintenance requirements and costs for the next year. Inspections will be completed during the third quarter of the fiscal year.

(2) Natural Resources Manager. The Natural Resources Managers are responsible for reviewing the suitability of proposed best management practices; including landscaping plans, wetlands issues, as well as any other issues deemed appropriate by the Water Program Manager.

b. Public Works Office.

(1) Public Works Office (Facilities Maintenance). The Public Works Office, Facilities Maintenance Group will be responsible for funding and maintaining all installed stormwater management best management practices.

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c. Designers. Designers, both in-house and A&E firms, will be responsible for developing and submitting Stormwater Management Plans in accordance with this instruction.

10. Review Authority. The Regional Environmental Group Water Program Manager is responsible for reviewing and updating this instruction.



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## COMNAVREG MIDLANT INSTRUCTION

Subj: EROSION AND SEDIMENT CONTROL INSTRUCTION

- Ref: (a) 4 VAC 50-60 - Virginia Stormwater Management Program (VSMP) Permit Regulations For Small Municipal Separate Storm Sewer Systems (Effective January 1, 2005)
- (b) 4 VAC 50-30 - Virginia Erosion and Sediment Control Regulations
- (c) Virginia Erosion and Sediment Control Handbook
- (d) CNRMA Virginia Stormwater Management Program Construction Permit Instruction

Encl: (1) Minimum Criteria, Techniques and Methods

1. Purpose. To establish minimum standards for the effective control of soil erosion, sediment deposition and non-agricultural runoff from land disturbing activities at installations and annexes under the purview of Commander, Navy Region, Mid-Atlantic (COMNAVREG MIDLANT) and located in the Hampton Roads area, including the Norfolk Naval Shipyard. This instruction applies to all land disturbing activities greater than or equal to 10,000 square feet in size. This instruction seeks to maintain compliance with references (a) and (b) through the following objectives:

a. Establish the criteria, procedures, and responsibilities for preparing and complying with Erosion and Sediment Control Plans for land disturbing activities.

b. Establish a procedure for inspecting land disturbing activities and their associated erosion and sediment controls.

2. Definitions.

a. **Erosion and Sediment Control Plan** a document that describes the minimum measures required to minimize the erosion and sediment runoff at a site during land disturbing activities.

b. **Final Stabilization** is reached when all soil disturbing activities at the site have been completed and permanent vegetative cover has been established on denuded areas not otherwise permanently stabilized. Permanent vegetation is not be considered established until a ground cover is achieved that is uniform, mature enough to survive, and will inhibit erosion.

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c. **Land-disturbing Activity** a manmade change to the land surface that potentially changes its runoff characteristics including but not limited to clearing, grading, excavating, transporting and filling of land.

d. **Operator** any person associated with a construction project that meets either of the following two criteria: (1) the person who has direct operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or (ii) the person who has day-to-day operational control of those activities at a project which are necessary to ensure compliance with a Storm Water Pollution Prevention Plan for the site or other permit conditions.

3. Policy. References (a) and (b) require the establishment of an enforceable policy that requires erosion and sediment control for land-disturbing activities greater than or equal to 10,000 square feet. Reference (c) provides guidance and lists the 19 minimum control measures that must be considered when providing erosion and sediment control. Reference (d) describes the requirements for erosion and sediment control when a Virginia Stormwater Management Program (VSMP) General Permit for Stormwater Discharges from Construction Activities is required.

a. An Erosion and Sediment Control Plan must be prepared for all land disturbing activities covered by this instruction. The plan must contain sufficient information to ensure that problems of erosion and sedimentation have been adequately addressed. The length and complexity of the plan will correspond with the size of the project, the severity of site conditions, and the potential for off-site damage. Reference (c) will be used to the maximum extent practicable in the preparation of an Erosion and Sediment Control Plan. This will ensure for the effective control of soil erosion and sediment deposition to prevent the unreasonable degradation of properties, stream channels, waters and other natural resources.

b. The Erosion and Sediment Control Plan shall be consistent with the criteria, techniques and methods specified in enclosure (1) and include the following:

(1) A map identifying the natural resources, disturbed areas and erosion and sediment control measures at the site.

(2) A sequence of construction, including stripping and clearing; rough grading; construction of utilities,

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infrastructure, and buildings; and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, areas of clearing, installation of temporary erosion and sediment control measures, and establishment of permanent vegetation.

(3) All erosion and sediment control measures necessary to control soil movement to the point where there is only minimal loss throughout all phases of construction and after completion of construction and final stabilization

(4) The minimum inspection requirements for all erosion and sediment control measures.

(5) Seeding mixtures and rates, types of sod, method of seedbed preparation, expected seeding dates, type and rate of lime and fertilizer application, and kind and quantity of mulching for both temporary and permanent vegetative control measures.

c. Erosion and sediment controls may be included as part of the Stormwater Pollution Prevention Plan for projects with land-disturbing activity equal to or greater than 1 acre, as specified in reference (d).

d. All Erosion and Sediment Control Plans shall be submitted to the authority designated by Regional Environmental for review and approval at least 30 days prior to the start of any construction.

#### 4. Inspections.

a. The Operator shall conduct inspections of all erosion and sediment control measures to determine the overall effectiveness of the plan and the need for additional control measures. Inspections shall be conducted as specified in the contract, but at a minimum frequency of: immediately after the initial installation of erosion and sediment controls; at least once every 14 calendar days; within 48 hours following any runoff producing storm event, and at the completion of the project. All inspections shall be documented in writing and kept on-site.

b. Upon determination of a violation of the requirements of this instruction or non-compliance with the Erosion and Sediment Control Plan, the installation ROICC office may issue an order requiring that all or part of the land disturbing activities be stopped until appropriate corrective actions have been taken. This includes activities where non-compliance is

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causing, or is in imminent danger of causing, harmful erosion of lands or sediment deposition in waters within the watersheds of the installation, or where the land-disturbing activities have commenced without any required permits.

5. Enforcement. Any activity that violates this instruction may be subject to enforcement actions under the Clean Water Act; including Warning Letters, Notices of Violation, fines, and penalties from the Environmental Protection Agency, the Virginia Department of Conservation and Recreation, and the Virginia Department of Environmental Quality. The party that causes the violation will be responsible for all required corrective actions and will have to provide a written description of why the violation occurred to the Regional Environmental Group.

### 6. Responsibilities.

#### a. Regional Environmental Group Water Program Manager.

(1) The Regional Environmental Group Water Program Manager will oversee the Erosion and Sediment Control program to verify that Erosion and Sediment Control Plans are prepared, submitted and approved in accordance with this instruction.

(2) The Regional Environmental Group Water Program Manager will determine when erosion and sediment controls are required for projects that are less than 10,000 square feet.

(3) The Regional Environmental Group Water Program Manager will designate appropriate groups to review E&S Control Plans and conduct over site inspections.

#### b. Norfolk Naval Shipyard Code 106.

(1) Code 106 will oversee the Erosion and Sediment Control program to verify that Erosion and Sediment Control Plans are prepared, submitted and approved in accordance with this instruction, for Norfolk Naval Shipyard.

(2) Code 106 will determine when erosion and sediment controls are required for projects that are less than 10,000 square feet at Norfolk Naval Shipyard.

#### c. NAVFAC MIDLANT.

(1) NAVFAC MIDLANT will determine the amount of disturbed area for a project and ensure that the appropriate language is included in the contract to ensure that erosion and sediment controls are included and followed in accordance with this instruction.

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d. Operator. The Operator is responsible for preparing and complying with the Erosion and Sediment Control Plan, maintaining the control devices and conducting inspections.

7. Review Authority. The Regional Environmental Group Water Program Manager is responsible for reviewing and updating this instruction.



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## Enclosure (1)

### **Minimum Criteria, Techniques and Methods for Erosion and Sediment Control Plans**

All erosion and sediment control plans must be consistent with the following criteria, techniques and methods:

1. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 30 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

2. During construction of the project, soil stockpiles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.

3. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that, is uniform, mature enough to survive and will inhibit erosion.

4. Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.

5. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.

6. Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.

a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.

b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres

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shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a twenty-five year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.

7. Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

8. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.

9. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

10. All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

11. Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

12. When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Non-erodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by non-erodible cover materials.

13. When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of non-erodible material shall be provided.

14. All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met.

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15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

16. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

a. No more than 500 linear feet of trench may be opened at one time.

b. Excavated material shall be placed on the uphill side of trenches.

c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.

d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.

e. Restabilization shall be accomplished in accordance with these regulations.

f. Applicable safety regulations shall be complied with.

17. Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.

18. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

19. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of

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stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria:

a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.

b. Adequacy of all channels and pipes shall be verified in the following manner:

(1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question; or

(2) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks; and

(3) All previously constructed man-made channels shall be analyzed by the use of a ten-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and

(4) Pipes and storm sewer systems shall be analyzed by the use of a ten-year storm to verify that stormwater will be contained within the pipe or system.

c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:

(1) Improve the channel to a condition where a ten-year storm will not overtop the banks and a two-year storm will not cause erosion to the channel bed or banks; or

(2) Improve the pipe or pipe system to a condition where the ten-year storm is contained within the appurtenances; or

(3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel; or

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(4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the plan-approving authority to prevent downstream erosion.

d. The applicant shall provide evidence of permission to make the improvements.

e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development of the subject project.

f. If the applicant chooses an option that includes stormwater detention he shall obtain approval from the locality of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.

g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.

h. All on-site channels must be verified to be adequate.

i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.

j. In applying these stormwater runoff criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.

k. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.



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COMNAVREG MIDLANT INSTRUCTION

Subj: VIRGINIA STORMWATER MANAGEMENT PROGRAM CONSTRUCTION  
PERMIT INSTRUCTION

Ref: (a) 4 VAC 50-60 - Virginia Stormwater Management Program  
(VSMP) Permit Regulations For Small Municipal  
Separate Storm Sewer Systems (Effective January 1,  
2005)  
(b) 40 CFR 122.26 - Stormwater Discharges (NPDES)

Encl: (1) Registration Statement  
(2) Permit Application Fee Form  
(3) SWPPP Template  
(4) SWPPP Checklists  
(5) SWPPP Amendment Template  
(6) Inspection Report Template  
(7) Notice of Termination Form

1. Purpose. To establish a procedure for obtaining coverage under the Virginia Stormwater Management Program (VSMP) General Permit for Stormwater Discharges from Construction Activities at installations and annexes under the purview of Commander, Navy Region, Mid-Atlantic (COMNAVREG MIDLANT) and located in the Hampton Roads area including the Norfolk Naval Shipyard. The instruction applies to all construction activities that disturb greater than or equal to one acre of land, and construction activities that disturb less than one acre if the activities are part of a larger common plan of development. This instruction seeks to maintain compliance with state and federal environmental regulations (Refs (a) and (b)) through the following objectives:

a. Establish the criteria, procedures, and responsibilities for obtaining and terminating coverage under the VSMP General Permit from the Virginia Department of Conservation and Recreation (DCR).

b. Establish a procedure for inspecting construction projects to verify compliance with the requirements of the VSMP permit, including Stormwater Pollution Prevention Plans.

c. Establish a procedure for the receipt and consideration of comments and information submitted by the public regarding environmental concerns at construction projects.

2. Definitions.

a. **Best Management Practice (BMP)** schedules of activities, prohibitions of structural or non-structural practices, maintenance procedures, and other management practices to prevent or reduce the pollution of surface waters and groundwater systems from the impacts of land-disturbing activities.

b. **Final Stabilization** when all soil disturbing activities at the site have been completed and permanent vegetative cover has been established on denuded areas not otherwise permanently stabilized. Permanent vegetation is not be considered established until a ground cover is achieved that is uniform, mature enough to survive, and will inhibit erosion.

c. **Land Disturbance** means a manmade change to the land surface that potentially changes its runoff characteristics including but not limited to clearing, grading, excavating, transporting and filling of land.

d. **Larger Common Plan of Development** multiple separate and distinct construction activities that are planned to occur under one plan that can be linked together through documentation. For example, projects listed on the same 1391, NEPA documentation, design, contract, or Coastal Consistency Determination.

e. **Operator** any person associated with a construction project that meets either of the following two criteria: (1) the person who has direct operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or (ii) the person who has day-to-day operational control of those activities at a project which are necessary to ensure compliance with a Storm Water Pollution Prevention Plan for the site or other permit conditions.

f. **Runoff** or **stormwater runoff** that portion of precipitation that is discharged across the land surface or through conveyances to one or more waterways.

g. **Site** the parcel of land being developed, or a designated planning area in which the land development project is located.

h. **Stormwater Discharge from Construction Activity** a discharge of pollutants in storm water runoff from construction activities where land disturbing activities, construction

materials or equipment storage or maintenance, or other industrial storm water discharges directly related to the construction process are located.

3. Policy. All construction activities that disturb greater than or equal to one acre of land, or less than one acre if the activities are part of a larger common plan of development, are required to obtain coverage under the VSMP General Permit for Discharges of Stormwater from Construction Activities. This policy does not apply to routine maintenance activity that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility. For a construction activity that requires a permit, the following documents must be prepared and submitted for review and approval as follows.

a. Registration Statement and Fee. A Registration Statement must be completed by the prime construction contractor in accordance with reference (a), and submitted to the Virginia Department of Conservation and Recreation (DCR) prior to the commencement of construction activities. For storm water discharges where the prime construction contractor changes after a Registration Statement has been submitted, the new prime contractor must submit a Registration Statement prior to commencing work on-site or assuming operational control over site specifications. The Registration Statement and instructions are provided as enclosure (1).

(1) The Registration Statement must be signed by both the AROICC and the prime construction contractor.

(2) If the ROICC office is not providing project oversight, then the Registration Statement must be signed by a responsible official of the command and the prime construction contractor.

(3) A fee form and check must be submitted to DCR with the Registration Statement. The fee form is provided as Enclosure (2).

(4) A copy of the Registration Statement must be forwarded to the Regional Environmental Water Program Manager or to Code 106 for Norfolk Naval Shipyard projects. DCR will review the Registration Statement and send a copy of the general permit to those who qualify. As long as the Registration Statement and fee are submitted to DCR (postmarked) before construction begins, the project can commence before the general permit is received from DCR. An advance copy of the permit can be obtained from the following website  
<http://www.dcr.virginia.gov/sw/vsmp.htm#geninfo>

**NOTE:** Item No. 6 on the Registration Statement should be completed for all projects. "Norfolk Naval Shipyard" should be entered as the MS4 operator for Norfolk Naval Shipyard, and "Regional Environmental Group" entered for all other bases.

b. Stormwater Pollution Prevention Plan. The prime construction contractor is required to develop a site-specific Stormwater Pollution Prevention Plan (SWPPP). The SWPPP must be prepared in accordance with good engineering practices.

(1) The SWPPP must be reviewed and approved by the review authority designated by the Regional Environmental Group. SWPPP approval must take place before the Registration Statement can be submitted.

(2) The SWPPP must contain all information required by reference (a). A SWPPP template is provided as Enclosure (3), and SWPPP Implementation and Final Stabilization Checklists are provided in Enclosure (4). The SWPPP certification must be signed by the prime contractor's project manager and an approving official the review authority designated by the Regional Environmental Group. The contractor's certification must be signed by all contractors identified in the SWPPP. The signed SWPPP and permit must be kept at the construction site that generates the storm water discharge.

(3) The SWPPP must be amended whenever there is a change in design, construction, operation, or maintenance which has a significant effect on the potential for the discharge of pollutants to surface water bodies, or if the SWPPP proves to be ineffective in eliminating or minimizing pollutants. SWPPP amendment forms must be completed, signed and certified by the prime construction contractor, and added to the SWPPP. An amendment form template is provided as Enclosure (5)

c. Inspections. A representative of the prime construction contractor who is familiar with the construction activity, the best management practices (BMPs), and the SWPPP must inspect disturbed areas of the construction site that have not been finally stabilized. Inspections must include areas used for materials storage that are exposed to precipitation, erosion and sediment control measures, and locations where vehicles enter and exit the site. These inspections must be conducted at least once every 14 calendar days and within 48 hours of any runoff producing storm event. For areas that have been finally or temporarily stabilized, or where runoff is unlikely due to winter conditions, inspections must be conducted at least once a month until the project is completed.

(1) Following each site inspection, the site description and pollution prevention measures in the SWPPP must be amended within 7 calendar days, if necessary. If BMPs are found to be ineffective, or additional BMPs are needed, maintenance must be scheduled and performed before the next anticipated storm event.

(2) Reports must be prepared for each inspection and kept with the SWPPP. An inspection report template is provided as Enclosure (6). All incidences of non-compliance and corrective actions must be documented on the inspection report. If a site is found to be in compliance during an inspection, the report must be signed and certified by the prime construction contractor.

(3) The group designated by the Regional Environmental Group must conduct and document monthly oversight inspections for the duration of construction projects to ensure contractors are complying with the SWPPP.

d. Notice of Termination. The prime construction contractor must submit a Notice of Termination (NOT) when one or more of the following conditions exist:

(1) When a site has reached final stabilization and all stormwater discharges from construction activities that are authorized by the permit are eliminated.

(2) When the prime construction contractor of the site has changed.

(3) When coverage under another Virginia Pollutant Discharge Elimination System (VPDES) or VSMP permit is obtained.

The prime construction contractor must submit a NOT in accordance with reference (a) to DCR within 30 days of one of the above conditions being met. The NOT must be signed by both a prime contractor principal and the AROICC or other responsible official. The review authority designated by the Regional Environmental Group must forward a copy of the NOT to the Regional Environmental Water Program Manager or Code 106 for Norfolk Naval Shipyard projects. Coverage under the permit will be deemed terminated seven days after the contractor submits the Notice of Termination to DCR. The Notice of Termination form is provided as Enclosure (7).

Upon completion of a project, the AROICC or responsible official must submit the SWPPP, inspection reports, and all

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other storm water paperwork kept on site to NAVFAC MIDLANT EV or to Code 106 for Norfolk Naval Shipyard projects.

e. Public Comments. All comments and information submitted by the public regarding environmental concerns at construction projects must be directed to the AROICC. If no AROICC is involved in the project, comments must be directed to the responsible official. The AROICC or responsible official must document any comments, implement corrective actions if warranted, and forward this information to the Regional Environmental Water Program Manager, or Code 106 for Norfolk Naval Shipyard projects.

4. Enforcement. Any activity that violates this instruction may be subject to enforcement actions under the Clean Water Act and Virginia Stormwater Management Program Permit Regulations (4 VAC 50-60); including Warning Letters, Notices of Violation, fines, and penalties from the Environmental Protection Agency, the Virginia Department of Conservation and Recreation, and the Virginia Department of Environmental Quality. The party that causes the violation will be responsible for all required corrective actions and will have to provide a written description of why the violation occurred to the Regional Environmental Group.

5. Responsibilities.

a. Regional Environmental Group Water Program Manager. The Regional Environmental Group Water Program Manager has the authority to determine which construction projects require coverage under the VSMP General Permit. The Water Program Manager acts as liaison between the Navy and all regulatory agencies, and must be notified about and present at all regulatory inspections. The Water Program Manager is the main point of contact within the Navy for any issues involving water permits, and must be informed of any permit violations. Since the Water Program Manager must ensure compliance with the installations' VPDES permits, they reserve the right to implement stricter controls if water quality concerns at a particular construction project are not being adequately addressed.

The Regional Environmental Group will designate appropriate groups to review SWPPPS and conduct over site inspections.

b. Norfolk Naval Shipyard Code 106. Code 106 has the authority to determine which construction projects require coverage under the VSMP General Permit for projects at the Norfolk Naval Shipyard. Code 106 acts as the liaison between

the Navy and all regulatory agencies, and must be notified about and present at all regulatory inspections. Code 106 is the main point of contact for the Norfolk Naval Shipyard for any issues involving water permits, and must be informed of any permit violations. Since Code 106 must ensure compliance with the installation's VPDES permit, they reserve the right to implement stricter controls if water quality concerns at a particular construction project are not being adequately addressed.

c. NAVFAC MIDLANT

(1) MIDLANT Contracts Department or other contracting official. Contracts Department will ensure that appropriate language is included in the contract so that the Registration Statement, fee form and check, SWPPP, and Notice of Termination are prepared, submitted and approved in accordance with this instruction.

(1) AROICC or responsible official. The AROICC or Other responsible official must ensure that contractors obtain permits when required, and comply with all contract requirements, the SWPPP, and the permit. The AROICC or responsible official must sign the Registration Statement and Notice of Termination, and send copies to the Regional Environmental Group. Upon completion of a project, the AROICC or responsible official must submit the SWPPP, inspection reports, and all other storm water paperwork kept on site to Code 106 for NNSY projects, and the Regional Environmental Group for all other bases. The AROICC or responsible official must forward all information regarding public comments and follow-up actions to the Regional Environmental Water Program Manager or Code 106.

For Norfolk Naval Shipyard projects, the Portsmouth ROICC office is responsible for reviewing and approving SWPPPs, signing the SWPPP certification, conducting oversight inspections for permitted projects to ensure contractors are in compliance with their VSMP permits, and forwarding copies of Registration Statements and Notices of Termination to Code 106.

d. Prime Construction Contractor. The prime construction contractor is responsible for completing, signing, and submitting the Registration Statement, fee form and check, and Notice of Termination to DCR. The prime contractor must also prepare and sign the SWPPP. The prime contractor is responsible for conducting inspections, complying with the SWPPP, construction permit and the VSMP permit, and will be held accountable for any violations.

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6. Review Authority. The Regional Environmental Group Water Program Manager is responsible for reviewing and updating this instruction.

# VSMP General Permit Registration Statement - Construction Activity Stormwater Discharges (DCR01)

(Please Type or Print All Information)

1. **Construction Activity Operator** (NOTE: The permit will be issued to this operator, and the Certification in Item #13 must be signed by the appropriate person associated with this operator [see the instructions])

Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ Phone: \_\_\_\_\_

2. **Location of Construction Activity**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

If street address unavailable: Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

**Location of all Offsite Support Activities to be Covered Under the Permit**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

If street address unavailable: Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

3. **Status:** Federal  State  Public  Private  (Check one only)

4. **The Nature of the Construction Project** (e.g., commercial, industrial, residential, agricultural, oil and gas, etc.):

\_\_\_\_\_

5. **Name of the Receiving Water(s)** \_\_\_\_\_

6. **If the Discharge is Through a Municipal Separate Storm Sewer System (MS4), the Name of the Municipal Operator of the Storm Sewer:** \_\_\_\_\_

7. **Estimated Project Start Date:** \_\_\_\_\_ **Estimated Project Completion Date:** \_\_\_\_\_

8. **Total Land Area of Development** (to the nearest one-tenth acre): \_\_\_\_\_

**Estimated Area to be Disturbed** (to the nearest one-tenth acre): \_\_\_\_\_

9. **Is the area to be disturbed by the construction activity part of a larger common plan of development or sale?** Yes  No

10. **Map:** Attach a topographic map or other map which clearly shows the location of the construction activity, the area to be disturbed (including offsite support activities), and the receiving stream(s) for the stormwater discharge(s).

**NOTE: A stormwater pollution prevention plan (SWPPP) must be prepared in accordance with the requirements of the General VSMP Permit for Discharges of Stormwater from Construction Activities prior to submitting this Registration Statement. By signing this Registration Statement you are certifying that the SWPPP has been prepared.**

11. **Location Where the SWPPP May be Viewed, and the Name and Phone Number of a Contact Person:** (NOTE: The contact person should be a person knowledgeable in the principles and practice of erosion and sediment controls, such as a licensed professional engineer, Responsible Land Disturber (RLD), or other knowledgeable person who (i) holds a certificate of competence from the board in the area of project inspection; or (ii) is enrolled in the board's training program for project inspection or combined administrator and successfully completes such program within one year of enrollment)

Location of SWPPP: \_\_\_\_\_

Contact Person Name: \_\_\_\_\_ Phone Number: \_\_\_\_\_

12. **Permanent BMPs:** Attach a list of permanent BMPs (both structural and non-structural) that will be installed at the construction site. For each BMP, include the following information: (a) Type of BMP to be installed; (b) Geographic location (county - State Hydrologic Unit Code); (c) Waterbody the BMP will discharge into; and, (d) Number of acres that will be treated (to the nearest quarter acre).

13. **Certification:** "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Print Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**(Please sign in INK. The person signing this form must be associated with the operator identified in Item #1 above.)**

**For Department of Conservation and Recreation Use Only**

Accepted/Not Accepted by: \_\_\_\_\_ Date: \_\_\_\_\_

Basin \_\_\_\_\_ Stream Class \_\_\_\_\_ Section \_\_\_\_\_ Special Standards \_\_\_\_\_



## INSTRUCTIONS for FORM DCR 199-146

### VPDES General Permit Registration Statement - Construction Activity Stormwater Discharges

#### **General**

A Registration Statement must be submitted when an operator makes application to the Department of Conservation and Recreation for coverage under the General VSMP Permit for Stormwater Discharges From Construction Activities.

#### **Section 1 Activity Operator Information**

For the purposes of this general permit, "Operator" means any person, company, corporation, partnership, etc., associated with a construction project that meets either of the following two criteria: (1) has direct operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or (2) has day-to-day operational control of those activities at a project which are necessary to ensure compliance with a stormwater pollution prevention plan for the site or other permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the stormwater pollution prevention plan or comply with other permit conditions). The entities who are considered operators will commonly consist of the owner or developer of a project (the party with control of project specifications) and the general contractor (the party with day to day operational control of the activities at the project site which are necessary to ensure compliance with the permit). Contractors and subcontractors who are under the general supervision of the general contractor are not considered operators and would not need to submit a registration statement. Give the legal name of the operator, do not use a colloquial name. Enter the complete address and phone number of the operator. **The permit will be issued to this operator.**

#### **Section 2 Activity Location Information**

Enter the activity's official name and complete street address, including city, state and ZIP code. If the site lacks a street address, enter the latitude and longitude to the nearest 15 seconds of the approximate center of the site.

#### **Offsite Support Activities**

The general permit may be used to authorize stormwater discharges from activities that are located away from the construction site (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided that they meet the following criteria: (1) The support activity is directly related to a construction site that is required to have VSMP permit coverage for discharges of stormwater associated with construction activity; (2) The support activity is not a commercial operation serving multiple unrelated construction projects by different operators, and does not operate beyond the completion of the construction activity at the last construction project it supports; and (3) Appropriate controls and measures are identified in a stormwater pollution prevention plan covering the discharges from the support activity areas.

Provide the information required for each offsite support activity seeking coverage. Support activities located off site are not required to be covered under this general permit. Discharges of stormwater from offsite support activities may be authorized under another VSMP permit. Where stormwater discharges from offsite support activities are not authorized under this general permit, the land area of the offsite support activity need not be included in determining the total land disturbance acreage of the activity seeking general permit coverage.

#### **Section 3 Legal Status**

Indicate the appropriate legal status of the operator of the site.

#### **Section 4 Nature of the Construction Project**

Examples: commercial, residential, agricultural, oil and gas, etc.

#### **Section 5 Name of Receiving Water(s)**

Enter the name of the receiving water(s) for all stormwater discharge(s), including any stormwater discharges from offsite support activities to be covered under the permit.

#### **Section 6 Name of MS4 Operator**

If the stormwater is discharged through a municipal separate storm sewer system (MS4), enter the name of the operator of the MS4.

#### **Section 7 Estimated Project Start Date**

Enter the date project is projected to start.

#### **Estimated Project Completion Date**

Enter the estimated project completion date.

#### **Section 8 Total Land Area of the Development**

Enter the total area (to the nearest 1/4 acre) of the development (meaning the total acreage of the larger common plan of development or sale). Include the acreage of any offsite support activities to be covered under the permit.

#### **Estimated Acres to be Disturbed**

Enter an estimate of the total number of acres of the site (to the nearest 1/4 acre) on which soil will be disturbed.

#### **Section 9 Larger Common Plan of Development or Sale**

Indicate if the area to be disturbed by the construction activity is part of a larger common plan of development or sale.

#### **Section 10 Map**

Attach a topographic map or other map which clearly shows the location of the construction activity, the area to be disturbed, and the receiving stream(s) for the stormwater discharge(s), including any offsite support activities to be covered under the permit.

#### **Section 11 Location of Pollution Prevention Plan (SWPPP)**

A stormwater pollution prevention plan (SWPPP) must be prepared in accordance with the requirements of the General VSMP Permit for Discharges of Stormwater from Construction Activities prior to submitting this Registration Statement. Give the location where the stormwater pollution prevention plan for the site may be viewed, and the name and phone number of a contact person. The contact person should be a person knowledgeable in the principles and practice of erosion and sediment controls, such as a licensed professional engineer, Responsible Land Disturber (RLD), or other knowledgeable person who (i) holds a certificate of competence from the board in the area of project inspection; or (ii) is enrolled in the board's training program for project inspection or combined administrator and successfully completes such program within one year of enrollment.

#### **Section 12 Permanent BMPs That Will Be Installed**

Attach a list of the permanent BMPs (both structural and non-structural) that will be installed at the construction site. For each BMP, include the following information:

- Type of BMP to be installed
- Geographic location ( county - State Hydrologic Unit Code)
- Waterbody the BMP will discharge into
- Number of acres that will be treated (to the nearest quarter acre)

#### **Section 13 Certification**

**The operator identified in Section 1 of this Registration Statement is responsible for certifying and submitting this Registration Statement. Please sign the form in INK.** State statutes provide for severe penalties for submitting false information on this Registration Statement. State regulations require this Registration Statement to be signed as follows:

For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (1) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (2) the manager of one or more manufacturing, production, or operating facilities provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures; [**Note: if the title of the individual signing this form is "Plant Manager", submit a written verification that the authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures**];

For a partnership or sole proprietorship: by a general partner or the proprietor; or

For a municipality, state, Federal, or other public facility: by either a principal executive officer or ranking elected official.

**The Department of Conservation and Recreation reserves the right to request additional information not directly addressed by the Registration Statement if, in its discretion, a facility or operation poses a potential impact on water quality.**



DEPARTMENT OF CONSERVATION AND RECREATION PERMIT APPLICATION FEE  
 FORM  
 EFFECTIVE SEPTEMBER 2004

**INSTRUCTIONS**

Applicants for an individual Virginia Stormwater Management Program (VSMP) Permit is required to pay permit application fees. Fees are also required for registration for coverage under General Permits. Fees must be paid when applications for permit issuance, reissuance\* or modification are submitted. Applications will be considered incomplete if the proper fee is not paid and will not be processed until the fee is received. (\* - the reissuance fee does not apply to VSMP - see the fee schedule included with this form for details.)

The permit fee schedule is included with this form. Fees for permit issuance or reissuance and for permit modification are included. Once you have determined the fee for the type of application you are submitting, complete this form. The original copy of the form and your check or money order payable to "Treasurer of Virginia" should be mailed to:

Department of Conservation and Recreation  
 Division of Finance, Accounts Payable  
 203 Governor Street  
 Richmond, Virginia 23219

A copy of the form and a copy of your check or money order should accompany the permit application. You should retain a copy for your records. Please direct any questions regarding this form or fee payment to the Urban Programs Section of the Department of Conservation and Recreation at (804) 786-3998.

APPLICANT NAME: \_\_\_\_\_ SSN/FIN: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

DAYTIME PHONE: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

FACILITY/ACTIVITY NAME: \_\_\_\_\_

LOCATION: \_\_\_\_\_

**TYPE OF PERMIT APPLIED FOR**

(from Fee Schedule): \_\_\_\_\_

TYPE OF ACTION: \_\_\_\_\_ New Issuance \_\_\_\_\_ Reissuance \_\_\_\_\_ Modification

**AMOUNT OF FEE SUBMITTED**

(from Fee Schedule): \_\_\_\_\_

EXISTING PERMIT NUMBER (if applicable): \_\_\_\_\_

FOR DCR USE ONLY	
Date: _____	DC #: _____



## FEE SCHEDULES

**A. VSMP Permits.** Applications for issuance of new individual VSMP permits, and for permittee initiated major modifications that occur (and become effective) before the stated permit expiration date. [NOTE: VSMP permittees pay an Annual Permit Maintenance Fee instead of a reapplication fee. The permittee is billed separately by DCR for the Annual Permit Maintenance Fee.]

TYPE OF PERMIT	ISSUANCE	MODIFICATION
VSMP Municipal Stormwater / MS4 Individual (Large and Medium)	\$21,300	\$10,650
VSMP Municipal Stormwater / MS4 Individual (Small)	\$2,000	\$1,000

**B. Registration Statements for VSMP General Permit Coverage.** The fee for filing a permit application (registration statement) for coverage under a VSMP stormwater general permit issued by the permit issuing authority.

TYPE OF PERMIT	ISSUANCE
VSMP Municipal Stormwater / MS4 General Permit (Small)	\$600
VSMP General / Stormwater Management - Phase I Land Clearing ("Large" Construction Activity - Sites or common plans of development equal to or greater than 5 acres)	\$500
VSMP General / Stormwater Management - Phase II Land Clearing ("Small" Construction Activity - Sites or common plans of development equal to or greater than 1 acre and less than 5 Acres)	\$300

**C. Permit Maintenance Fees.** The annual permit maintenance fees apply to each VSMP permit identified below, including expired permits that have been administratively continued.

TYPE OF PERMIT	MAINTENANCE
VSMP Municipal Stormwater / MS4 (Large and Medium)	\$3,800
VSMP Municipal Stormwater / MS4 Individual (Small)	\$400
VSMP General / Stormwater Management - Phase I Land Clearing ("Large" Construction Activity - Sites or common plans of development equal to or greater than 5 acres)	\$0
VSMP General / Stormwater Management - Phase II Land Clearing ("Small" Construction Activity - Sites or common plans of development equal to or greater than 1 acre and less than 5 Acres)	\$0



# Template Storm Water Pollution Prevention Plan For Construction Activities

[This template has been prepared based upon information contained in EPA 832-R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices, and on information contained in Virginia Stormwater Management Program General Permit DCR01. An endorsement of this template by the Virginia Department of Conservation and Recreation is not to be implied.]

Enclosure (3)



SITE DESCRIPTION			
Project Title and Location: (Latitude and Longitude or Address)		Operator's Name and Address:	<i>("Operator" means any person associated with a construction project that meets either of the following two criteria: (i) the person has direct operational control over construction plans and specifications, including the ability to make modifications to them (e.g., the owner or developer of a project) or (ii) the person has day-to-day operation control of those activities at a project which are necessary to ensure compliance with a storm water pollution prevention plan for the site or other permit conditions(e.g., the general contractor))</i>
Description: (Purpose and Types of Soil Disturbing Activities)	<i>(Describe the nature of the construction activity, any existing data describing the soil or the quality of any discharge from the site, the existing vegetation at the site, and the location and description of any discharge associated with industrial activity other than construction)</i>		
Runoff Coefficient:	<i>(Estimate the runoff coefficient of the site prior to construction and after construction activities are completed)</i>		
Site Area:	<i>(Estimate the total area of the site and the total area of the site that is expected to be disturbed by excavation, grading, or other activities including off-site borrow and fill areas covered by the plan)</i>		
<b>Sequence of Major Activities:</b>			
<i>(Describe the intended sequence of major activities which disturb soils for major portions of the site, for example, grubbing, excavation, grading, utilities and infrastructure installation)</i>			
Name of Receiving Water(s):	<i>(Describe the name of the receiving waters and the ultimate receiving waters, and areal extent of wetland acreage at the site)</i>		



CONTROLS	
<i>(Describe for each major activity identified in the site plan appropriate control measures and the time during the construction process that the measures will be implemented) For example, perimeter controls for one portion of the site will be installed after the clearing and grubbing necessary for installation of the measure, but before the clearing and grubbing for the remaining portions of the site. Perimeter controls will be actively maintained until final stabilization of those portions of the site upward of the perimeter control. Temporary perimeter controls will be removed after final stabilization.</i>	
Erosion and Sediment Controls	
Stabilization Practices	<i>(Describe interim and permanent stabilization practices, including site-specific scheduling of the implementation of the practices)</i>
<b>Major Grading Activities</b>	
<i>(Record the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated)</i>	
Structural Practices	<i>(Describe structural practices to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable)</i>
Storm Water Management	
<i>(Describe measures that will be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed to include an explanation of the technical basis used to select the practices to control pollution where flows exceed predevelopment levels))</i>	
Other Controls	
Solid Waste Disposal:	
Offsite Vehicle Tracking:	
Sanitary Waste Disposal	
TIMING OF CONTROLS/MEASURES	
<i>(Describe for each control measure the time during the construction process that the measure will be implemented)</i>	
CERTIFICATION OF COMPLIANCE WITH STATE AND LOCAL REGULATIONS	
<i>(Ensure the plan is consistent with requirements specified in applicable sediment and erosion site plans or site permits, or storm water management site plans or site permits approved by state or local officials and update the plan as necessary)</i>	



MAINTENANCE/INSPECTION PROCEDURES	
Erosion and Sediment Control Inspection and Maintenance Practices	
<i>(Describe the schedule of procedures to maintain in good and effective operating conditions vegetation, erosion and sediment control measures, and other protective measures during construction identified in the site plan and describe the schedule of inspections)</i>	
Non-Storm Water Discharges	
It is expected that the following non-storm water discharges will occur from the site during the construction period:	
<input type="checkbox"/> Discharges from fire fighting activities  <input type="checkbox"/> Waters used to wash vehicles where detergents are not used  <input type="checkbox"/> Potable water sources including waterline flushings  <input type="checkbox"/> Routine external building wash down which does not use detergents  <input type="checkbox"/> Air conditioning condensate  <input type="checkbox"/> Foundation or footing drains where flows are not contaminated with process materials such as solvents	<input type="checkbox"/> Fire hydrant flushings  <input type="checkbox"/> Water used to control dust  <input type="checkbox"/> Water used for hydrostatic testing of new pipeline construction  <input type="checkbox"/> Pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used  <input type="checkbox"/> Uncontaminated ground water or spring water
INVENTORY FOR POLLUTION PREVENTION PLAN	
<i>(List materials or substances expected to be present onsite during construction)</i>	
SPILL PREVENTION	
<i>(Describe controls to reduce pollutants from the above list of materials or substances expected to be present onsite during construction to include storage practices to minimize exposure of the materials to storm water)</i>	
Material Management Practices	
Good Housekeeping:	
Hazardous Products:	
Product Specific Practices	
Petroleum Products:	
Fertilizers:	
Paints:	
Concrete Trucks:	
Spill Control Practices	
<i>(Describe spill prevention and response controls to reduce pollutants from the above list of materials or substances expected to be present onsite during construction)</i>	

Enclosure (3)



## SITE MAP

*(Indicate:*

- *Drainage patterns and approximate slopes or contours anticipated after major grading activities*
- *Areas of soil disturbance and areas of the site which will not be disturbed*
- *The location of major structural and nonstructural controls identified in the plan*
- *The location of areas where stabilization practices are expected to occur including the types of vegetative cover*
- *Surface waters (including wetlands)*
- *Locations where storm water is discharged to a surface water with an outline of the drainage area for each discharge point*
- *Existing and planned paved areas and buildings*
- *Locations of permanent storm water management practices to be used to control pollutants in storm water after construction activities have been completed, if any*
- *Locations of off-site material, waste, borrow or equipment storage areas covered by the plan*
- *Locations of other potential pollution sources such as vehicle fueling, storage of fertilizers or chemicals, and sanitary waste facilities)*

Enclosure (3)



**POLLUTION PREVENTION PLAN CERTIFICATION**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Date



**CONTRACTOR'S CERTIFICATION**

*(Identify for each measure identified in the plan, the contractors or subcontractors who will implement the measure)*

I certify under penalty of law that I understand the terms and conditions of this Virginia Stormwater Management Program (VSMP) general permit DCR01 that authorizes the storm water discharges from the construction activity identified as part of this certification.

Signature	Title	Date	Company Name, Address, and Telephone Number



PROJECT \_\_\_\_\_

STORM WATER POLLUTION PREVENTION PLAN

PREPARATION CHECKLIST

A Site Description, Including:	
<input type="checkbox"/>	The Nature Of The Activity
<input type="checkbox"/>	Intended Sequence Of Major Construction Activities
<input type="checkbox"/>	The Total Area Of The Site
<input type="checkbox"/>	The Area Of The Site That Is Expected To Undergo Excavation
<input type="checkbox"/>	The Runoff Coefficient Of The Site After Construction Is Complete
<input type="checkbox"/>	Existing Soil Or Storm Water Data
<input type="checkbox"/>	A Site Map With:
<input type="checkbox"/>	Drainage Patterns
<input type="checkbox"/>	Approximate Slopes After Major Grading
<input type="checkbox"/>	Area Of Soil Disturbances
<input type="checkbox"/>	Outline Of Areas Which Won't Be Disturbed
<input type="checkbox"/>	Location Of Major Structural And Non-Structural Controls
<input type="checkbox"/>	Areas Where Stabilization Practices Are Expected To Occur
<input type="checkbox"/>	Surface Waters
<input type="checkbox"/>	Storm Water Discharge Locations
<input type="checkbox"/>	The Name Of The Receiving Water(s)
A Description Of Controls:	
<input type="checkbox"/>	Erosion And Sediment Controls, Including:
<input type="checkbox"/>	Stabilization Practices For All Areas Disturbed By Construction
<input type="checkbox"/>	Structural Practices For All Drainage/Discharge Locations
<input type="checkbox"/>	Storm Water Management Controls, Including:
<input type="checkbox"/>	Measures Used To Control Pollutants Occurring In Storm Water Discharges After Construction Activities Are Complete
<input type="checkbox"/>	Velocity Dissipation Devices To Provide Nonerosive Flow Conditions From The Discharge Point Along The Length Of Any Outfall Channel
<input type="checkbox"/>	Other Controls Including:
<input type="checkbox"/>	Waste Disposal Practices Which Prevent Discharge Of Solid Materials To Waters Of The U.S.
<input type="checkbox"/>	Measures To Minimize Offsite Tracking Of Sediments By Construction Vehicles
<input type="checkbox"/>	Measures To Ensure Compliance With State Or Local Waste Disposal, Sanitary Sewer, Or Septic System Regulations
<input type="checkbox"/>	State Or Local Requirements
<input type="checkbox"/>	Inspection And Maintenance Procedures For Control Measures
<input type="checkbox"/>	Identification Of Allowable Non-Storm Water Discharges And Pollution Prevention Measures
<input type="checkbox"/>	Contractor Certification
<input type="checkbox"/>	Plan Certification

Enclosure (4)



PROJECT \_\_\_\_\_

STORM WATER POLLUTION PREVENTION PLAN

IMPLEMENTATION CHECKLIST

Maintain Records of Construction Activity, Including:	
<input type="checkbox"/>	Dates When Major Grading Activities Occur
<input type="checkbox"/>	Dates When Construction Activities Temporarily Cease On A Portion Of The Site
<input type="checkbox"/>	Dates When Construction Activities Permanently Cease On A Portion Of The Site
<input type="checkbox"/>	Dates When Stabilization Measures Are Initiated On The Site
Prepare Inspection Reports Summarizing:	
<input type="checkbox"/>	Name Of Inspector
<input type="checkbox"/>	Qualifications Of Inspector
<input type="checkbox"/>	Measures/Areas Inspected
<input type="checkbox"/>	Observed Conditions
<input type="checkbox"/>	Changes Necessary To The Storm Water Pollution Prevention Plan
Report Releases Of Reportable Quantities Of Oil Or Hazardous Materials (If They Occur)	
<input type="checkbox"/>	Call ECC and Notify The Storefront Immediately
<input type="checkbox"/>	Modify The Storm Water Pollution Prevention Plan To Include
<input type="checkbox"/>	The Date Of Release
<input type="checkbox"/>	Circumstances Leading To The Release
<input type="checkbox"/>	Steps Taken To Prevent Reoccurrence Of The Release
Modify The Storm Water Pollution Prevention Plan As Necessary To:	
<input type="checkbox"/>	Comply With Minimum Permit Requirements When Notified By The Virginia Department Of Conservation and Recreation That The Plan Does Not Comply
<input type="checkbox"/>	Address A Change In Design, Construction Operation Or Maintenance Which Has An Effect On The Potential For Discharge Of Pollutants
<input type="checkbox"/>	Prevent Reoccurrence Of Reportable Quantity Releases Of A Hazardous Material Or Oil

Enclosure (4)



PROJECT \_\_\_\_\_

STORM WATER POLLUTION PREVENTION PLAN

FINAL STABILIZATION/TERMINATION CHECKLIST

<input type="checkbox"/>	All Soil Disturbing Activities Are Complete
<input type="checkbox"/>	Temporary Erosion And Sediment Control Measures Have Been Removed
<input type="checkbox"/>	All Soil Disturbing Activities At The Site Have Been Completed And A Permanent Vegetative Cover (Ground Cover That Is Uniform, Mature Enough To Survive, And Will Inhibit Erosion) Has Been Established On Denuded Areas Not Otherwise Permanently Stabilized
<input type="checkbox"/>	A Notice Of Termination Has Been Submitted To The Virginia Department of Conservation and Recreation

Enclosure (4)



## EROSION AND SEDIMENT CONTROL SELECTION CHECKLIST

Stabilization Practices	
<input type="checkbox"/>	Stabilization will be initiated on all disturbed areas where construction activity will not occur for a period of more than 30 calendar days by the 7 <sup>th</sup> day after construction activity has permanently or temporarily ceased. Stabilization measures to be used include:
<input type="checkbox"/> Temporary Seeding <input type="checkbox"/> Permanent Seeding <input type="checkbox"/> Mulching <input type="checkbox"/> Vegetative Buffer Strips <input type="checkbox"/> Protection of Trees <input type="checkbox"/> Preservation of Mature Vegetation <input type="checkbox"/> Sod Stabilization	<input type="checkbox"/> Geotextiles <input type="checkbox"/> Riprap <input type="checkbox"/> Gabions <input type="checkbox"/> Facines <input type="checkbox"/> Biologs <input type="checkbox"/> Other _____
Structural Practices	
<input type="checkbox"/>	Flows from upstream areas will be diverted from exposed soils. Measures to be used include:
<input type="checkbox"/> Silt Fences <input type="checkbox"/> Earth Dike <input type="checkbox"/> Drainage Swale <input type="checkbox"/> Interceptor Dike and Swale <input type="checkbox"/> Sediment Straps <input type="checkbox"/> Gabions <input type="checkbox"/> Temporary Sediment Basins <input type="checkbox"/> Permanent Sediment Basins	<input type="checkbox"/> Check Dams <input type="checkbox"/> Subsurface Drains <input type="checkbox"/> Pipe Slope Drains <input type="checkbox"/> Level Spreaders <input type="checkbox"/> Storm Drain Inlet Protection <input type="checkbox"/> Rock Outlet Protection <input type="checkbox"/> Reinforced Soil Retaining Systems <input type="checkbox"/> Other _____
Drainage Locations Serving Less Than 3 Disturbed Acres	Drainage Locations Serving 3 or More Disturbed Acres
Where attainable, sediment controls to be installed include: <input type="checkbox"/> Sediment Basin <input type="checkbox"/> Sediment Trap <input type="checkbox"/> At a minimum, Silt Fence or equivalent control downslope boundaries and sideslopes if appropriate	<input type="checkbox"/> A Sediment Basin will be installed where attainable <input type="checkbox"/> A Sediment Basin is not attainable on the site: therefore, the following sediment controls will be installed: <input type="checkbox"/> Sediment Trap <input type="checkbox"/> At a minimum, Silt Fence or equivalent control along the downslope boundaries and sideslopes if appropriate
Sediment Basin Runoff Storage Calculation	
_____ acres area draining to the sediment basin X 3,618 cubic feet of storage/acre = _____ cubic feet of storage required for the basin	



PROJECT \_\_\_\_\_

STORM WATER POLLUTION PREVENTION PLAN

CHANGE(S) REQUIRED TO THE STORM WATER POLLUTION PREVENTION PLAN \_\_\_\_\_

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REASON(S) FOR THE CHANGE(S) \_\_\_\_\_

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**I certify under penalty of law that this attachment was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.**

SIGNED \_\_\_\_\_ DATE \_\_\_\_\_



PROJECT \_\_\_\_\_

STORM WATER POLLUTION PREVENTION PLAN

INSPECTION REPORT FORM

To Be Completed Every 14 Days and Within 48 Hours of a  
Rainfall Event of 0.5 Inches or More

INSPECTOR: \_\_\_\_\_ DATE: \_\_\_\_\_

INSPECTOR'S QUALIFICATIONS \_\_\_\_\_

DAYS SINCE LAST RAINFALL \_\_\_\_\_  
AMOUNT OF LAST RAINFALL \_\_\_\_\_ INCHES

AREA INSPECTED (areas not finally stabilized, material storage areas, and areas where  
vehicles enter/exit the site)

INCIDENCES OF NON-COMPLIANCE	CORRECTIVE ACTION TAKEN	BY WHOM	WHEN COMPLETE
LOCATION(S) OF DISCHARGES OF SEDIMENT OR OTHER POLLUTANTS FROM THE SITE			
LOCATION(S) OF BMP THAT NEED TO BE MAINTAINED			
LOCATION(S) OF BMP THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR LOCATION			
LOCATION(S) WHERE ADDITIONAL BMP IS NEEDED THAT DID NOT EXIST AT TIME OF INSPECTION			

**Incidences of noncompliance were not identified and the facility is in compliance with the storm water pollution prevention plan. I certify under penalty of law that this attachment was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.**

SIGNED \_\_\_\_\_ DATE \_\_\_\_\_

Enclosure (6)





### VSMP General Permit Notice Of Termination - Construction Activity Storm Water Discharges (DCR01)

(Please Type or Print All Information)

**1. Construction Activity Operator**

Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ Phone: \_\_\_\_\_

**2. Location of Construction Activity**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

If street address unavailable: Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

**3. VSMP Storm Water General Permit Number:** \_\_\_\_\_

**4. The Reason for Terminating Coverage Under the General Permit** (Note: The construction activity operator may only submit a Notice of Termination after one or more of the conditions below have been met):

- Final stabilization has been achieved on all portions of the site for which the operator is responsible;
- Another operator has assumed control over all areas of the site that have not been finally stabilized;
- Coverage under an alternative VPDES or VSMP permit has been obtained; or
- For residential construction only, temporary stabilization has been completed and the residence has been transferred to the homeowner.

**NOTE:** The Notice of Termination must be submitted within 30 days of one of the above conditions being met. Authorization to discharge terminates seven (7) days after the Notice of Termination is submitted. For the purposes of this permit, a Notice of Termination that is mailed is considered to be submitted once it is postmarked.

**5. Certification:**

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Print Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**(Please sign in INK. The person signing this form must be associated with the operator identified in Item #1 above.)**

**For Department of Conservation and Recreation Use Only**

Accepted/Not Accepted by: \_\_\_\_\_ Date: \_\_\_\_\_





## INSTRUCTIONS for FORM DCR 199-147

### VSMP General Permit Notice Of Termination - Construction Activity Storm Water Discharges

#### General

A VSMP General Permit Notice of Termination must be submitted when an operator no longer wishes to be covered under a VSMP General Permit for Storm Water Discharges From Construction Activities.

#### Section 1 Activity Operator Information

Give the legal name of the person, firm, public organization, or any other entity that was issued the general permit for the site described in this Notice of Termination. Do not use a colloquial name. Enter the complete address and phone number of the operator.

#### Section 2 Activity Location Information

Enter the activity's official name and complete street address, including city, state and ZIP code. If the activity or site lacks a street address, indicate the latitude and longitude to the nearest 15 seconds of the approximate center of the site.

#### Section 3 Permit Information

Enter the existing VSMP Storm Water General Permit number assigned to the activity or site identified in Section 1.

#### Section 4 Reason for Termination

Check the appropriate statement indicating the reason for submitting this Notice of Termination. The Notice of Termination may only be submitted after one or more of the following conditions have been met:

1. Final stabilization has been achieved on all portions of the site for which the operator is responsible;
2. Another operator has assumed control over all areas of the site that have not been finally stabilized;
3. Coverage under an alternative VPDES or VSMP permit has been obtained; or
4. For residential construction only, temporary stabilization has been completed and the residence has been transferred to the homeowner.

The Notice of Termination must be submitted within 30 days of one of the above conditions being met.

Authorization to discharge terminates seven (7) days after the Notice of Termination is submitted. For the purposes of this permit, a Notice of Termination that is mailed is considered to be submitted once it is postmarked.

#### Section 5 Certification

State statutes provide for severe penalties for submitting false information on this Notice of Termination.

State regulations require this Notice of Termination to be signed as follows:

For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (1) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (2) the manager of one or more manufacturing, production, or operating facilities provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures; **[Note: if the title of the individual signing this form is "Plant Manager", submit a written verification that the authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures];**

For a partnership or sole proprietorship: by a general partner or the proprietor; or

For a municipality, state, Federal, or other public facility: by either a principal executive officer or ranking elected official.

**The Department of Conservation and Recreation reserves the right to request additional information not directly addressed by the registration statement if, in its discretion, a facility or operation poses a potential impact on water quality.**





REPORT OF SUBSURFACE INVESTIGATION  
AND  
GEOTECHNICAL ENGINEERING SERVICES

**Military Construction Project 851**  
**Naval Construction Division Operations Control Facility**  
**Naval Air Station Oceana**  
Virginia Beach, Virginia

**G E T Project No: VB09-169G**  
**May 28, 2009**

Prepared for:

**Commander NAVFAC Atlantic**  
6506 Hampton Boulevard  
Building LRA A  
Norfolk, Virginia 23508-1278

204 Grayson Road, Virginia Beach, VA 23462  
Phone 757-518-1703 ♦ Fax 757-518-1704 ♦ [www.getsolutionsinc.com](http://www.getsolutionsinc.com)



May 28, 2009

TO: **Commander NAVFAC Atlantic**  
6506 Hampton Boulevard  
Building LRA A  
Norfolk, Virginia 23508-1278

Attn: Mr. Glenn Jackson

RE: Report of Subsurface Investigation and Geotechnical Engineering Services  
**Military Construction Project 851**  
**Naval Construction Division Operations Control Facility**  
**Naval Air Station Oceana**  
Virginia Beach, Virginia  
**G E T** Project No: VB09-169G

Dear Mr. Jackson:

In compliance with your instructions, we have completed our Subsurface Investigation and Geotechnical Engineering Services for the referenced project. The results of this study, together with our recommendations, are presented in this report.

Often, because of design and construction details that occur on a project, questions arise concerning subsurface conditions. **G E T Solutions, Inc.** would be pleased to continue its role as Geotechnical Engineer during the project implementation.

Thank you for the opportunity to work with you on this project. We trust that the information contained herein meets your immediate need, and should you have any questions or if we could be of further assistance, please do not hesitate to contact us.

Respectfully Submitted,  
**G E T Solutions, Inc.**

Chris M. Caton, EIT  
Project Engineer/Geologist

D. Mark Scholefield, P.E.  
Senior Geotechnical Engineer  
VA Lic. # 033932



Copies: (1) CD, Commander NAVFAC Atlantic (Attn: Mr. Glenn Jackson)  
(1) CD, Commander NAVFAC Atlantic (Attn: Mr. Scott Herold, E.I.T.)

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## EXECUTIVE SUMMARY

The proposed project site is located on Gator Boulevard within the Little Creek Amphibious Base in the City of Virginia Beach, Virginia. The proposed development at this site is planned to consist of constructing a 2-story Operations Control Facility. The structure is expected to be of steel frame design with steel joist girders, steel joists and precast concrete wall panels. The estimated maximum column loads are not expected to exceed 350 kips. The estimated maximum uniform floor slab live load is expected to be approximately 150 psf. Additionally, associated paved driveways and parking areas, a BMP facility, and other pertinent infrastructure will be implemented at this property.

Our field exploration program included four (4) 80 to 100-foot deep Standard Penetration Test (SPT) borings drilled within the footprint of the proposed structure and three (3) 10-foot deep SPT borings drilled within the proposed pavement area, along with CBR and infiltration testing. A brief description of the subsurface soil conditions is tabulated below:

AVERAGE DEPTH (Feet)	STRATUM	DESCRIPTION	RANGES OF SPT <sup>(1)</sup> N-VALUES
0 to 0.33 - 0.42	Surface	4 to 5 inches of topsoil material.	-
0.33 - 0.42 to 80 and 100	I	SAND (SM, SC, SC-SM, SP and SP-SM) with varying amounts of Silt, Clay and marine shell fragments.	WOH <sup>(2)</sup> - 42
0.33 - 0.42 to 2 and 4	IA	CLAY (CL and CL-ML) with varying amounts of Sand.	6 - 15
5 to 9	IB	CLAY (CL) with varying amounts of Sand. (All borings with the exception of B-03 and CBR-02)	2 - 9
18 to 43.5	IC	CLAY (CH) with varying amounts of Sand and marine shell fragments. (Borings B-03 and B-04 only)	WOH <sup>(2)</sup> - 4

Note (1) SPT = Standard Penetration Test, N-Values in Blows-per-foot

Note (2) WOH = Weight of Hammer

The groundwater level was recorded at the boring locations and as observed through the relative wetness of the recovered soil samples during the drilling operations. The groundwater table was determined to occur at depths ranging from 6 to 7 feet below current grades at the boring locations at the time of our site reconnaissance. A 24-hour groundwater reading was taken at boring location CBR-02. The 24-hour groundwater table was measured to occur at a depth of 5.8 feet below current grade at boring location CBR-02.

The following evaluations and recommendations were developed based on our field exploration and laboratory-testing program:

- A field testing program is recommended during construction. This testing program should include as a minimum, subgrade load testing (proofrolling), test pits, compaction testing and foundation inspections.
- The proposed construction area should be cleared by means of removing the topsoil, the existing structures (fencing, dugouts, etc.) and infrastructure associated with the recreation field, and any other unsuitable material. It is estimated that a cut of up to 5 inches in depth will be required to remove the topsoil materials. These cuts are expected to extend deeper in isolated areas to remove deeper deposits of unsuitable soils, which become evident during the clearing.
- Several test pits should be excavated within the construction areas to verify that the demolition debris has been removed (foundations, abandoned utilities, etc.). The project's budget should include an allowance for subgrade improvements (undercut and backfill with structural fill).
- Shallow foundations designed using a net allowable bearing capacity of 2,500 psf (24-inch embedment, 24-inch width).
- The first floor slab may be constructed as a slab-on-grade member.
- Estimated total and differential settlements up to 1-inch and ½-inch, respectively.
- The shallow subsurface CLAY (CL) and Silty SAND (SM) soils encountered at the boring locations do not appear to meet the criteria recommended in this report for reuse as structural fill, but may be used as fill within green areas. Any materials proposed for reuse as structural fill should be further evaluated (gradation analysis and Proctor testing) at the time of construction.
- Pavement sections to be designed using a CBR value of 8.4; typical pavement sections are provided in the body of the report.
- Based on the CPT test performed at the adjacent site (initial P-851 project site, approximately 500 feet from current site location) and the similarity of the subsurface soils, this site is indicative of a Site Class "D" classification in accordance with Table 1615.1.1 of the 2006 International Building Code.

This summary briefly discusses some of the major topics mentioned in the attached report. Accordingly, this report should be read in its entirety to thoroughly evaluate the contents.

## **1.0 PROJECT INFORMATION**

### **1.1 Project Authorization**

**G E T Solutions, Inc.** has completed our subsurface investigation and geotechnical engineering services for the proposed Military Construction Project 851 to be located in Virginia Beach, Virginia. The geotechnical engineering services were conducted in general accordance with the A&E Contract N62470-08-D-8001, T.O. 0028. Authorization to proceed with our services was received in the form of the executed A&E Contract.

### **1.2 Project Location and Site Description**

The proposed project site is located on Gator Boulevard within the Little Creek Amphibious Base in the City of Virginia Beach, Virginia. Specifically, the project site is bordered to the north by 7<sup>th</sup> Street, to the south by Gator Boulevard, to the east by I Street and to the west by Hewitt Drive. The proposed project site currently consists of an existing baseball/softball recreation field along with its associated structures (fencing, dugouts, etc.) and infrastructure.

### **1.3 Project Construction Description**

The proposed development at this site is planned to consist of constructing a 2-story Operations Control Facility. The structure is expect to be of steel frame design with steel joist girders, steel joists and precast concrete wall panels. The estimated maximum column loads are not expected to exceed 350 kips. The estimated maximum uniform floor slab live load is expected to be approximately 150 psf. The structure's first floor finished elevation is expected to coincide with the existing site grades, thus cuts and fills will be minimal (up to 1 foot). Additionally, associated paved driveways and parking areas, a BMP facility, and other pertinent infrastructure will be implemented at this property. The location of the BMP facility was not known at the time of this reporting.

If any of the noted information is incorrect or has changed, **G E T Solutions, Inc.** should be informed so that we may amend the recommendations presented in this report, if appropriate.

### **1.4 Purpose and Scope of Services**

The purpose of this study was to obtain information on the general subsurface conditions at the proposed project site. The subsurface conditions encountered were then evaluated with respect to the available project characteristics. In this regard, engineering assessments for the following items were formulated:

- 1) General assessment of the soils revealed by our borings performed at the proposed project site.

- 2) General location and description of potentially deleterious material encountered in the borings that may interfere with construction progress or structure performance, including existing fills or surficial/subsurface organics.
- 3) Soil subgrade preparation, including stripping, grading and compaction. Engineering criteria for placement and compaction of approved structural fill material.
- 4) Construction considerations for fill placement, subgrade preparation, and foundation excavations.
- 5) Evaluation of the on-site soils for re-use as structural fill.
- 6) Feasibility of utilizing a shallow foundation system for support of the proposed structure. Design parameters required for the foundation system, including foundation sizes, allowable bearing pressures, foundation levels and expected total and differential settlements.
- 7) Pavement design recommendations based on the field exploration activities (3 pavement borings along with 3 CBR tests) and our experience with similar soil conditions.
- 8) Seismic site class determination in accordance with the 2006 International Building Code.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous or toxic material in the soil, bedrock, surface water, groundwater or air, on or below or around this site.

## **2.0 FIELD AND LABORATORY PROCEDURES**

### **2.1 Field Exploration**

In order to explore the general subsurface soil types and to aid in developing associated foundation design parameters, three (3) 80-foot deep Standard Penetration Test (SPT) borings (designated as B-01, B-03 and B-04) and one (1) 100-foot SPT boring (designated as B-02) were drilled within the proposed structure's footprint.

In order to explore the general subsurface soil types and to aid in developing associated pavement/BMP design parameters, three (3) 10-foot deep SPT borings (designated as CBR-01, CBR-02 and CBR-03) were drilled within the proposed pavement area. Also, an in-situ soil permeability test was performed at boring location CBR-02.

Standard Penetration Tests (SPT) were performed in the field in general accordance with ASTM D 1586. The tests were performed continuously from the existing ground surface to depths of 10 and 12 feet, and at 5-foot intervals thereafter. The soil samples were obtained with a standard 1.4" I.D., 2" O.D., 30" long split-spoon sampler. The sampler was driven with blows of a 140 lb. hammer falling 30 inches. The number of blows required to drive the sampler each 6-inch increment of penetration was recorded and is shown on the boring logs. The sum of the second and third penetration increments is termed the SPT N-value. A representative portion of each disturbed split-spoon sample was collected with each SPT, placed in a glass jar, sealed, labeled, and returned to our laboratory for review.

Three (3) bulk soil samples, designated as CBR-01, CBR-02 and CBR-03 (corresponding to boring locations CBR-01, CBR-02 and CBR-03, respectively), were collected from the proposed pavement area. The bulk subgrade soil samples were collected from depths ranging from 1 to 2 feet below existing grades. The bulk soil samples were returned to our laboratory and subjected to CBR testing in accordance with ASTM standards.

The boring locations were established by the client and staked in the field by a representative of **G E T Solutions, Inc.** The approximate boring locations are shown on the attached "Boring Location Plan" (Appendix I), which was reproduced based on the site plan provided by the client.

## **2.2 Laboratory Testing**

Representative portions of all soil samples collected during drilling were sealed in glass jars, labeled and transferred to our laboratory for classification and analysis. A Project Geologist performed the soil classification in general accordance with ASTM Specification D 2487. A summary of the soil classification system is provided in Appendix II.

Sixteen (16) representative split spoon samples were selected and subjected to natural moisture, -#200 sieve wash, and Atterberg Limits testing and analysis in order to corroborate the visual classification of the soils. These test results are noted on the "Laboratory Test Results" table presented in Appendix III and are also presented on the "Boring Log" sheets (Appendix IV).

In addition to the classification testing, two (2) soil samples, designated as SS-B1 and SS-B4, were collected from soil borings B-01 and B-04, respectively. Sample SS-B1 was collected approximately 3 feet below the existing site grade and sample SS-B4 was collected approximately 7 feet below the existing site grade. The soil samples were analyzed for Total Petroleum Hydrocarbons - Gasoline Range Organics (TPH-GRO), Total Petroleum Hydrocarbons - Diesel Range Organics (TPH-DRO), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Methyl-tert-butyl ether (MTBE) and TPH 9071 using EPA-Approved Methods. Once the samples were collected, they were placed in a cooler, on ice, to 4 degrees Celsius and shipped under chain of custody to TestAmerica Laboratories, Inc. The analytical laboratory report is presented in Appendix VI.

Analytical results revealed no detectable concentrations, above laboratory reporting limits, in any of the analyzed constituents for soil samples SS-B1. Soil samples SS-B4 revealed detectable concentrations of TPH-GRO, TPH-DRO and Xylenes. Specifically, SS-B4 revealed a TPH-GRO concentration of 170 mg/kg, a TPH-DRO concentration of 1100 mg/kg and a Xylene concentration of 0.490 mg/kg. Based on the concentrations of contaminants in SS-B4, the analytical results should be reported to the DEQ.

The selected representative bulk subgrade soil samples (designated CBR-01, CBR-02 and CBR-03) were subjected to natural moisture content, -#200 sieve, Atterberg Limits, Standard Proctor, and CBR testing in accordance with ASTM standards. A summary of the CBR test results, the CBR curves, and the moisture density relationship curves (Proctor Curves) are presented in Appendix VII.

### **3.0 SUBSURFACE CONDITIONS**

#### **3.1 Site Geology**

The project site lies within a major physiographic province called the Atlantic Coastal Plain. Numerous transgressions and regressions of the Atlantic Ocean have deposited marine, lagoonal, and fluvial (stream lain) sediments. The regional geology is very complex, and generally consists of interbedded layers of varying mixtures of sands, silts and clays. Based on our review of existing geologic and soil boring data, the geologic stratigraphy encountered in our subsurface explorations generally consisted of marine deposited sands and clays.

#### **3.2 Subsurface Soil Conditions**

The results of our field exploration program indicated the presence of approximately 4 to 5 inches of topsoil material at the boring locations. The topsoil material thickness could vary between boring locations. Underlying the topsoil materials and extending to the boring termination depths of 10, 80 and 100 feet below existing grades, the natural subsurface soils generally consisted of SAND (SM, SC, SC-SM, SP and SP-SM) with varying amounts of Silt, Clay and marine shell fragments. The SPT results, N-values, recorded within these granular soils ranged from weight-of-hammer (WOH) to 42 blows-per-foot (BPF) indicating a very loose to dense relative density.

Shallow deposits of very soft to stiff CLAY (CL and CL-ML) with varying amounts of Sand were sampled within this stratum beneath the topsoil materials to depths ranging from 2 to 4 feet below the existing site grades at the boring locations and at depths ranging from 5 to 9 feet below the existing site grades at the boring locations with the exception of borings B-03 and CBR-02.

Deep deposits of very soft to soft CLAY (CH) with varying amounts of Sand and marine shell fragments were sampled within this stratum at depths ranging from 18 to 43.5 feet below the existing site grades at boring locations B-03 and B-04.

The subsurface description is of a generalized nature provided to highlight the major soil strata encountered. The records of the subsurface investigation are included in Appendix IV (Boring Logs) and in Appendix V (Generalized Soil Profile), which should be reviewed for specific information as to the individual borings. The stratifications shown on the records of the subsurface exploration represent the conditions only at the actual boring locations. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the transition may be gradual.

### **3.3 Groundwater Information**

The groundwater level was recorded at the boring locations and as observed through the wetness of the recovered soil samples during the drilling operations. The initial groundwater table was measured to occur at depths ranging from 6 to 7 feet below the existing site grades at the boring locations. The boreholes were backfilled upon completion for safety considerations. As such, the reported groundwater levels may not be indicative of the static groundwater level. As an exception, a 24-hour groundwater reading was taken at boring location CBR-02. The 24-hour groundwater table was measured to occur at 5.8 feet below the existing site grade at boring location CBR-02.

Groundwater conditions will vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences, such as existing swales, drainage ponds, underdrains and areas of covered soil (paved parking lots, sidewalks, etc.). Seasonal groundwater fluctuations of  $\pm 2$  feet are common in the project's area; however, greater fluctuations have been documented. We recommend that the contractor determine the actual groundwater levels at the time of the construction to determine groundwater impact on the construction procedures.

## **4.0 EVALUATION AND RECOMMENDATIONS**

Our recommendations are based on the previously discussed project information, our interpretation of the soil test borings and laboratory data, and our observations during our site reconnaissance. If the proposed construction should vary from what was described, **GET Solutions, Inc.** requests the opportunity to review our recommendations and make any necessary changes.

### **4.1 Clearing and Grading**

The proposed construction area should be cleared by means of removing the topsoil, the existing structures (fencing, dugouts, etc.) and infrastructure associated with the recreation field, and any other unsuitable material. It is estimated that a cut of up to 5 inches in depth will be required to remove the topsoil materials. This cut is expected to extend deeper in isolated areas to remove deeper deposits of unsuitable soils, which become evident during the clearing. It is recommended that the clearing operations extend laterally at least 5 feet beyond the perimeter of the proposed construction areas.

Additionally, it is recommended to remove all foundations and abandoned utilities from within the proposed construction area (associated with the demolition), which could result in a cut of 2 feet or more. The resulting excavations should be backfilled with structural fill, as described in Section 4.3 of this report.

The results of our field exploration program indicated that the subgrade soils encountered contained an appreciable amounts of fines (Silt and Clay). Accordingly, combinations of excess surface moisture from precipitation ponding on the site and the construction traffic, including heavy compaction equipment, may create pumping and general deterioration of the bearing capabilities of the surface soils. Therefore, undercutting to remove loose/soft soils in isolated areas should be expected. The extent of the undercut will be determined in the field during construction based on the outcome of the field testing procedures (subgrade proofroll). In this regard, and in order to reduce undercutting, care should be exercised during the grading and construction operations at the site.

To reduce the potential for subgrade improvements (undercutting due to saturated soils in conjunction with heavy construction traffic), it is recommended that the grading operations be performed during the drier months of the year (historically April through November). This should minimize these potential problems, although they may not be eliminated. If grading is attempted during the winter months, undercutting of wet soils should be anticipated. However, during the drier months of the year, wet soils could be dried by discing or implementing other drying procedures to achieve moisture contents necessary to achieve adequate degrees of compaction.

The site should be graded to enhance surface water runoff to reduce the ponding of water. Ponding of water often results in softening of the near-surface soils. In the event of heavy rainfall within areas to receive fill, we recommend that the grading operations cease until the site has had a chance to dry.

## **4.2 Subgrade Preparation**

Following the clearing and excavation operations, the newly exposed subgrade soils should be densified with a large static drum roller. After the subgrade soils have been densified, they should be evaluated by a qualified geotechnical inspector for stability. Accordingly, the subgrade soils should be proofrolled to check for pockets of loose material hidden beneath a crust of better soil. Several passes should be made by a large rubber-tired roller or loaded dump truck over the construction areas, with the successive passes aligned perpendicularly. The number of passes will be determined in the field by the Geotechnical Engineer depending on the soils conditions. Any pumping and unstable areas observed during proofrolling (beyond the initial cut) should be undercut and/or stabilized at the directions of the Geotechnical Engineer.

In addition to the proofroll, several 2-foot deep test pits should be excavated within the proposed construction areas. The test pits are considered necessary to verify that the demolition debris has been removed (foundations, abandoned utilities, etc.). The test pits should be performed under the observation of a qualified geotechnical inspector, who will evaluate the composition of the recovered soils. It is possible that some subgrade improvements will be required to provide suitable soils for foundation, slab and pavement support. Recommendations concerning the subgrade improvements (as necessary) will be provided in the field following the testing procedures. The project's budget should include an allowance for subgrade improvements (undercut and backfill with structural fill).

### **4.3 Structural Fill and Placement**

Following the approval of the natural subgrade soils by the Geotechnical Engineer, the placement of the fill required to establish the design grades may begin. Any material to be used for structural fill should be evaluated and tested by an independent testing laboratory prior to placement to determine if they are suitable for the intended use. Suitable structural fill material should consist of sand or gravel containing less than 25% by weight of fines (SP, SM, SW, GP, GW - with dimensions not to exceed 2 inches in diameter), having a liquid limit less than 20 and plastic limit less than 6, and should be free of rubble, organics, clay, debris and other unsuitable material.

All structural fill should be compacted to a dry density of at least 95% of the Modified Proctor maximum dry density, in accordance with ASTM Specification D 1557. The moisture content of the structural fill should be within +/- 2% of the optimum moisture content at the time of placement. In general, the compaction should be accomplished by placing the fill in maximum 8 to 10-inch loose lifts and mechanically compacting each lift to at least the specified minimum dry density. A qualified inspector should perform field density tests on each lift as necessary to assure that adequate compaction is achieved.

Backfill material in utility trenches within the construction areas should consist of structural fill (as previously described), and should be compacted to at least 95% of ASTM Specification D 1557. This fill should be placed in 4 to 6 inch loose lifts when hand compaction equipment is used.

If applicable, care should be used when operating the compactors near existing structures to avoid transmission of the vibrations that could cause settlement damage or disturb occupants. In this regard, it is recommended that the vibratory roller remain at least 25 feet away from existing structures; these areas should be compacted with small, hand-operated compaction equipment.

#### **4.4 Suitability of On-site Soils**

The shallow subsurface CLAY (CL and CL-ML) and Silty SAND (SM) soils encountered at the boring locations do not appear to meet the criteria recommended in this report for reuse as structural fill, but may be used as fill within green areas. Further classification testing (natural moisture content, gradation analysis, and Proctor testing) should be performed in the field during construction to evaluate the suitability of excavated soils for reuse as fill and backfill within building, pavement and utility areas.

#### **4.5 Foundation Design Recommendations**

Provided that the construction procedures are properly performed, the proposed structure can be supported by shallow foundations bearing upon firm natural soil or well compacted structural fill material. The footings can be designed using a net allowable soil pressure of 2,500 pounds per square foot (psf). In using net pressures, the weight of the footings and backfill over the footings, including the weight of the floor slab, need not be considered. Hence, only loads applied at or above the finished floor need to be used for dimensioning the footings.

In order to develop the recommended bearing capacity of 2,500 pounds per square foot (psf), the base of the footings should have an embedment of at least 24 inches beneath finished grades and wall footings should have a minimum width of 24 inches. In addition, isolated square column footings are recommended to be a minimum of 3 feet by 3 feet in area for bearing capacity consideration. The recommended 24-inch footing embedment is considered sufficient to provide adequate cover against frost penetration to the bearing soils.

#### **4.6 Settlements**

It is estimated that, with proper site preparation, the maximum resulting total post construction settlement of the foundations should not exceed 1 inch. The maximum differential settlement magnitude is expected to be less than ½-inch between adjacent footings (wall footings and column footings of widely varying loading conditions). The settlements were estimated on the basis of the results of the field penetration tests. Careful field control will contribute substantially towards minimizing the settlements.

#### **4.7 Foundation Excavations**

In preparation for shallow foundation support, the footing excavations should extend into firm natural soil or well compacted structural fill. All foundation excavations should be observed by a Geotechnical Engineer. At that time, the Geotechnical Engineer should also explore the extent of excessively loose, soft, or otherwise unsuitable material within the exposed excavations. Also, at the time of the footing observations, the Geotechnical Engineer will advance hand auger borings in the bases of the foundation excavations. The necessary depth of penetration will be established during the subgrade observations.

Based on the field testing procedures (SPT borings) the foundation bearing soils are expected to be stable when exposed. However, if pockets of unstable or unsuitable soils requiring undercut are encountered in the footing excavations, the proposed footing elevation should be re-established by means of backfilling with "flowable fill" or a suitable structural fill material compacted to a dry density of at least 95% of the Modified Proctor maximum dry density (ASTM Specification D 1557), as described in Section 4.3 of this report, prior to concrete placement. This construction procedure will provide for a net allowable bearing capacity of 2,500 psf.

Immediately prior to reinforcement placement, it is suggested that the bearing surfaces of all foundations be compacted using hand operated mechanical tampers. In this manner, any localized areas, which have been loosened by excavation operations, should be adequately recompacted. The compaction testing in the base of the foundation may be waived by the inspector, where firm bearing soils are observed during the foundation inspections.

Soils exposed in the bases of all satisfactory foundation excavations should be protected against any detrimental change in condition, such as physical disturbance, rain or frost. Surface run-off water should be drained away from the excavations and not be allowed to pond. If possible, all footing concrete should be placed the same day the excavation is made. If this is not possible, the footing excavations should be adequately protected.

#### **4.8 Slab-on-Grade Design**

The floor slab may be constructed as a slab-on-grade member provided the previously recommended earthwork activities and evaluations are carried out properly. It is recommended that all ground floor slabs be directly supported by at least a 4-inch layer of relatively clean, compacted, poorly graded sand (SP) or gravel (GP) with less than 5% passing the No. 200 Sieve (0.074 mm). The purpose of the 4-inch layer is to act as a capillary barrier and equalize moisture conditions beneath the slab.

It is recommended that all ground floor slabs be "floating". That is, generally ground supported and not rigidly connected to walls or foundations. This is to minimize the possibility of cracking and displacement of the floor slabs because of differential movements between the slab and the foundation.

It is also recommended that the floor slab bearing soils be covered by a vapor barrier or retarder in order to minimize the potential for floor dampness, which can affect the performance of glued tile and carpet. Generally, use a vapor retarder for minimal vapor resistance protection below the slab on grade. When floor finishes, site conditions or other considerations require greater vapor resistance protection; consideration should be given to using a vapor barrier. Selection of a vapor retarder or barrier should be made by the architect based on project requirements.

#### 4.9 Pavement Design

The California Bearing Ratio (CBR) test results indicated an average soaked CBR value of 12.6. The average soaked CBR value was multiplied by a factor of two-thirds to determine a pavement design CBR value. The two-thirds factor provides the necessary safety margins to compensate for some non-uniformity of the soil. Therefore, a CBR value of 8.4 should be used in designing the pavement sections.

**Table I - Typical Pavement Sections**

Section	Hot Mix Asphalt		Concrete*	Aggregate Base**	Subgrade***
	Surface (SM-12.5A)	Base (BM-25.0)			
Standard Duty Asphalt	2"	-	-	8"	Stable
Heavy Duty Asphalt	2"	3"	-	8"	Stable
Rigid (Standard Duty)	-	-	5"	4"	Stable
Rigid (Heavy Duty)	-	-	6"	4"	Stable

\* Concrete minimal flexural strength of 650 psi at 28 days.

\*\* VDOT Type 21-A or 21-B, compacted to a dry density of at least 98% of the Modified Proctor maximum dry density, in accordance with ASTM Specification D 1557.

\*\*\* Compacted to a dry density of at least 95% of the Modified Proctor maximum dry density, in accordance with ASTM Specification D 1557.

Actual pavement section thickness should be provided by the design civil engineer.

#### 4.10 Seismic Evaluation

The results of our shear wave velocity testing (CPT probe) performed at the adjacent site (initial P-851 project site, approximately 500 feet from current site location) indicated that the average shear wave velocity recorded in the upper 100 feet of the existing subgrade materials exceeded 600 ft/sec. Based on the previously performed CPT test and the similarity of the subsurface soils, this site is indicative of a Site Class "D" classification in accordance with Table 1615.1.1 of the 2006 International Building Code.

#### 4.11 Infiltration Testing

An infiltration test was performed at boring location CBR-02. The test was performed at a depth corresponding to an elevation of approximately 1 foot above the current groundwater level at the boring location. The borehole was prepared utilizing an auger to remove soil clippings from the base. Infiltration testing was then conducted within the vadose zone utilizing a Precision Permeameter and the following testing procedures.

A support stand was assembled and placed adjacent to the borehole. This stand holds a calibrated reservoir (2000 ml) and a cable used to raise and lower the water control unit (WCU). The WCU establishes a constant water head within the borehole during testing by use of a precision valve and float assembly. The WCU was attached to the flow reservoir with a 2-meter (6.6 foot) braided PVC hose and then lowered by cable into the borehole to the test depth elevation. As required by the Glover solution, the WCU was suspended above the bottom of the borehole at an elevation of approximately 5 times the borehole diameter. The shut-off valve was then opened allowing water to pass through the WCU to fill the borehole to the constant water level elevation. The absorption rate slowed as the soil voids became filled and an equilibrium developed as a wetting bulb developed around the borehole. Water was continuously added until the flow rate stabilized. The reservoir was then re-filled in order to begin testing. During testing, as the water drained into the borehole and surrounding soils, the water level within the calibrated reservoir was recorded as well as the elapsed time during each interval. The test was continued until relatively consistent flow rates were documented. During testing the quick release connections and shutoff valve were monitored to ensure that no leakage occurred. The flow rate (Q), height of the constant water level (H), and borehole diameter (D) were used to calculate  $K_s$  utilizing the Glover Solution.

Based on the field testing and corroborated with laboratory testing results (published values compared to classification results), the hydraulic conductivity of the shallow soil is tabulated below (Table II) and is presented on the "Hydraulic Conductivity Worksheet" (Appendix VIII), included with this report.

**Table II - Infiltration Test Results**

Boring	Boring depth (ft)	Water depth (ft)	Ksat Value (cm/sec)	Ksat Class
CBR-02	4.8	5.8	$4.59 \times 10^{-4}$	Moderately High

## **5.0 CONSTRUCTION CONSIDERATIONS**

### **5.1 Drainage and Groundwater Concerns**

It is expected that dewatering may be required for excavations that extend near or below the existing groundwater table. Dewatering above the groundwater level could probably be accomplished by pumping from sumps. Dewatering at depths below the groundwater level may require well pointing.

If water collects in foundation excavations, it will be necessary to remove the water from the excavation, remove the saturated soils, and re-test the adequacy of the bearing surface soils to support the design bearing pressure prior to concrete placement.

Establishing a system of drainage ditches to carry surface and shallow groundwater away from the constructions areas should reduce grading costs. No permanent subsurface drainage systems are needed for this project.

### **5.2 Site Utility Installation**

The base of the utility trenches should be observed by a qualified geotechnical inspector prior to the pipe and structure placement to verify the suitability of the bearing soils. Based on the results of our field exploration program it is expected that the utilities and structures located at depths greater than roughly 6 feet below current grades may bear in wet granular and/or cohesive soils. In these instances the bearing soils may require some stabilization to provide suitable bedding. This stabilization is typically accomplished by providing additional bedding materials (VDOT No. 57 stone). In addition depending on the depth of the utility trench excavation, some means of dewatering may be required to facilitate the utility installation and associated backfilling.

The resulting excavations should be backfilled with structural fill, as described in Section 4.3 of this report. Based on the classification testing of the shallow subgrade soils it is expected that imported structural fill will be necessary to backfill the utility excavations.

### **5.3 Excavations**

In Federal Register, Volume 54, No. 209 (October, 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document was issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that all excavations, whether they be utility trenches, basement excavation or footing excavations, be constructed in accordance with the new (OSHA) guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

We are providing this information solely as a service to our client. **GET Solutions, Inc.** is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

## **6.0 REPORT LIMITATIONS**

The recommendations submitted are based on the available soil information obtained by **GET Solutions, Inc.** and the information supplied by the client and their consultants for the proposed project. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, **GET Solutions, Inc.** should be notified immediately to determine if changes in the foundation recommendations are required. If **GET Solutions, Inc.** is not retained to perform these functions, **GET Solutions, Inc.** can not be responsible for the impact of those conditions on the geotechnical recommendations for the project.

The Geotechnical Engineer warrants that the findings, recommendations, specifications or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are more complete the Geotechnical Engineer should be provided the opportunity to review the final design plans and specifications to assure our engineering recommendations have been properly incorporated into the design documents, in order that the earthwork and foundation recommendations may be properly interpreted and implemented. At that time, it may be necessary to submit supplementary recommendations. This report has been prepared for the exclusive use of Commander NAVFAC Atlantic and their consultants for the specific application to the proposed Military Construction Project 851 located in Virginia Beach, Virginia.

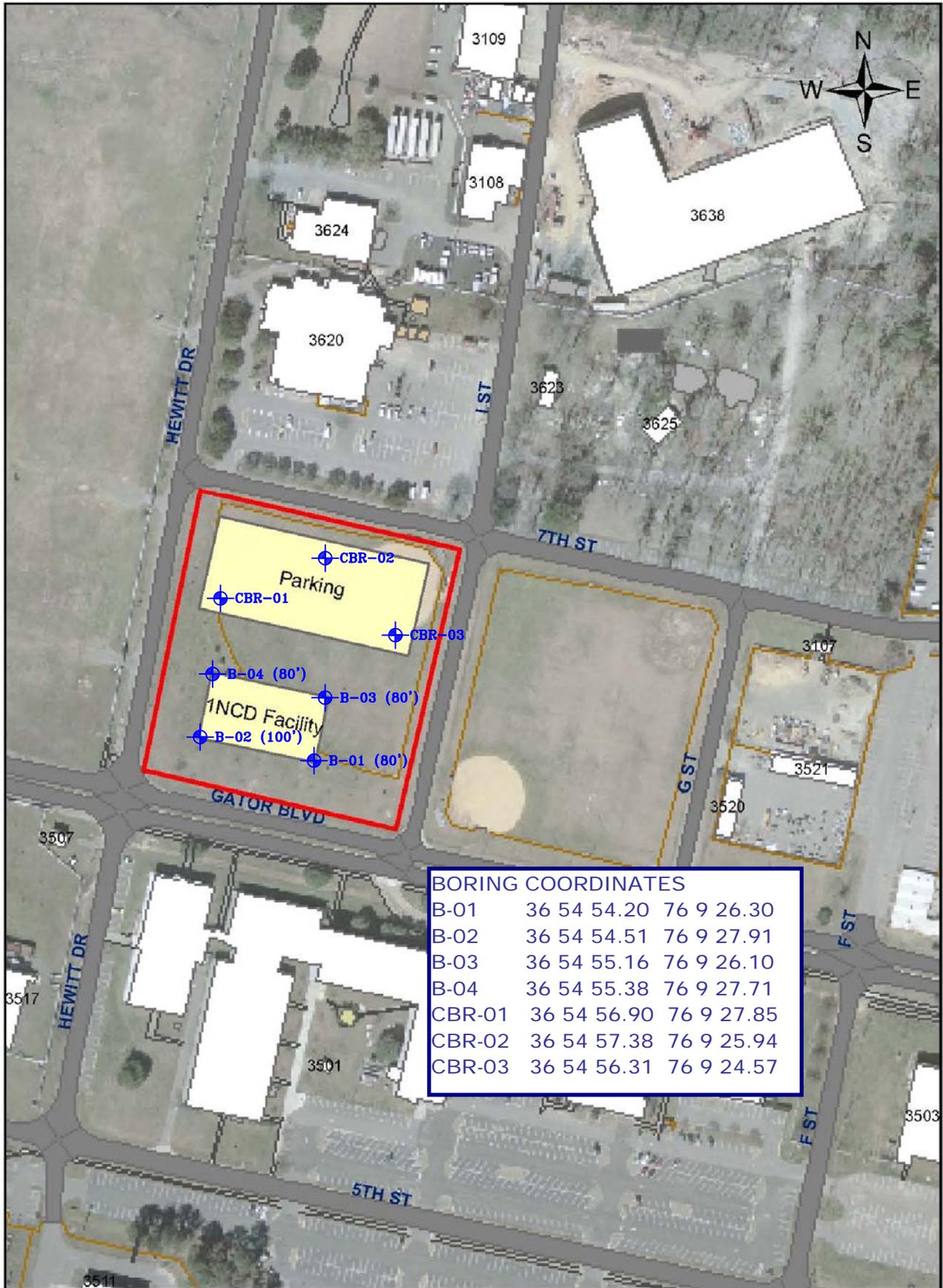
## **APPENDICES**

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- I** BORING LOCATION PLAN
- II** SUMMARY OF SOIL CLASSIFICATION
- III** LABORATORY TEST RESULTS
- IV** BORING LOGS
- V** GENERALIZED SOIL PROFILE
- VI** ANALYTICAL LABORATORY REPORT
- VII** CBR TEST RESULTS
- VIII** HYDRAULIC CONDUCTIVITY WORKSHEET

**APPENDIX I**  
**BORING LOCATION PLAN**

# Site Plan for COMFIRSTNCD OPCON Facility



BORING COORDINATES	
B-01	36 54 54.20 76 9 26.30
B-02	36 54 54.51 76 9 27.91
B-03	36 54 55.16 76 9 26.10
B-04	36 54 55.38 76 9 27.71
CBR-01	36 54 56.90 76 9 27.85
CBR-02	36 54 57.38 76 9 25.94
CBR-03	36 54 56.31 76 9 24.57



## **APPENDIX II**

### **SUMMARY OF SOIL CLASSIFICATION**

## CLASSIFICATION SYSTEM FOR SOIL EXPLORATION

### Standard Penetration Test (SPT), N-value

Standard Penetration Tests (SPT) were performed in the field in general accordance with ASTM D 1586. The soil samples were obtained with a standard 1.4" I.D., 2" O.D., 30" long split-spoon sampler. The sampler was driven with blows of a 140 lb. hammer falling 30 inches. The number of blows required to drive the sampler each 6-inch increment (4 increments for each soil sample) of penetration was recorded and is shown on the boring logs. The sum of the second and third penetration increments is termed the SPT N-value.

#### **NON COHESIVE SOILS**

(SILT, SAND, GRAVEL and Combinations)

##### Relative Density

Very Loose	4 blows/ft. or less
Loose	5 to 10 blows/ft.
Medium Dense	11 to 30 blows/ft.
Dense	31 to 50 blows/ft.
Very Dense	51 blows/ft. or more

##### Particle Size Identification

<b>Boulders</b>	8 inch diameter or more
<b>Cobbles</b>	3 to 8 inch diameter
<b>Gravel</b>	Coarse 1 to 3 inch diameter
	Medium 1/2 to 1 inch diameter
	Fine 1/4 to 1/2 inch diameter
<b>Sand</b>	Coarse 2.00 mm to 1/4 inch (diameter of pencil lead)
	Medium 0.42 to 2.00 mm (diameter of broom straw)
	Fine 0.074 to 0.42 mm (diameter of human hair)
<b>Silt</b>	0.002 to 0.074 mm (cannot see particles)

### CLASSIFICATION SYMBOLS (ASTM D 2487 and D 2488)

#### Coarse Grained Soils

More than 50% retained on No. 200 sieve

- GW** - Well-graded Gravel
- GP** - Poorly graded Gravel
- GW-GM** - Well-graded Gravel w/Silt
- GW-GC** - Well-graded Gravel w/Clay
- GP-GM** - Poorly graded Gravel w/Silt
- GP-GC** - Poorly graded Gravel w/Clay
- GM** - Silty Gravel
- GC** - Clayey Gravel
- GC-GM** - Silty, Clayey Gravel
- SW** - Well-graded Sand
- SP** - Poorly graded Sand
- SW-SM** - Well-graded Sand w/Silt
- SW-SC** - Well-graded Sand w/Clay
- SP-SM** - Poorly graded Sand w/Silt
- SP-SC** - Poorly graded Sand w/Clay
- SM** - Silty Sand
- SC** - Clayey Sand
- SC-SM** - Silty, Clayey Sand

#### Fine-Grained Soils

50% or more passes the No. 200 sieve

- CL** - Lean Clay
- CL-ML** - Silty Clay
- ML** - Silt
- OL** - Organic Clay/Silt  
Liquid Limit 50% or greater
- CH** - Fat Clay
- MH** - Elastic Silt
- OH** - Organic Clay/Silt

#### Highly Organic Soils

- PT** - Peat

#### **COHESIVE SOILS**

(CLAY, SILT and Combinations)

##### Consistency

Very Soft	2 blows/ft. or less
Soft	3 to 4 blows/ft.
Medium Stiff	5 to 8 blows/ft.
Stiff	9 to 15 blows/ft.
Very Stiff	16 to 30 blows/ft.
Hard	31 blows/ft. or more

##### Relative Proportions

<u>Descriptive Term</u>	<u>Percent</u>
Trace	0-5
Few	5-10
Little	15-25
Some	30-45
Mostly	50-100

##### Strata Changes

In the column "Description" on the boring log, the horizontal lines represent approximate strata changes.

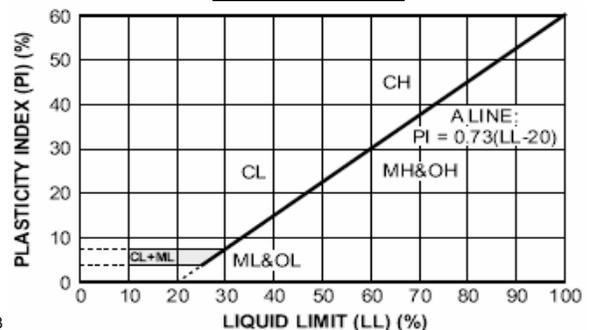
##### Groundwater Readings

Groundwater conditions will vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as tidal influences and man-made influences, such as existing swales, drainage ponds, underdrains and areas of covered soil (paved parking lots, side walks, etc.).

Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent	GW, GP, SW, SP
More than 12 percent	GM, GC, SM, SC
5 to 12 percent	Borderline cases requiring dual symbols

##### Plasticity Chart



**APPENDIX III**

**LABORATORY TEST RESULTS**

## LABORATORY TEST RESULTS

Boring No.	Depth (Ft)	Natural Moisture Content (%)	-#200 Sieve (%)	Atterberg Limits LL/PL/PI	USCS Classification
B-01	2-4	20	38	Non-Plastic	SAND (SM)
B-01	8-10	17	37	Non-Plastic	SAND (SM)
B-01	18-20	26	32	19/16/3	SAND (SM)
B-01	33-35	24	6	Non-Plastic	SAND (SP-SM)
B-01	63-65	35	23	Non-Plastic	SAND (SM)
B-02	18-20	21	13	Non-Plastic	SAND (SP-SM)
B-02	23-25	25	41	Non-Plastic	SAND (SM)
B-02	33-35	28	25	27/23/4	SAND (SC-SM)
B-02	43-45	38	44	39/16/23	SAND (SC)
B-02	93-95	30	21	Non-Plastic	SAND (SM)
B-03	6-8	22	44	Non-Plastic	SAND (SM)
B-03	18-20	60	86	76/25/51	CLAY (CH)
B-04	4-6	26	28	Non-Plastic	SAND (SM)
B-04	13-15	21	5	Non-Plastic	SAND (SP)
B-04	38-40	19	43	Not Tested	SAND (SC)
CBR-02	4.8	17	13	Non-Plastic	SAND (SM)

**Military Construction Project 851**  
**Naval Construction Division Operations Control Facility**  
 Virginia Beach, Virginia  
**GET Project No: VB09-169G**

**APPENDIX IV**  
**BORING LOGS**



# BORING LOG B-01

PROJECT: P-851 Naval Construction Division Operations Control Facility

CLIENT: Commander NAVFAC Atlantic

PROJECT LOCATION: NAB Little Creek, Virginia Beach, Virginia

PROJECT NO.: VB09-169G

BORING LOCATION: See attached boring location plan

SURFACE ELEVATION: \_\_\_\_\_

DRILLER: GET Solutions, Inc.

LOGGED BY: C. Caton

DRILLING METHOD: Rotary wash "mud"

DATE: 5/5/2009

DEPTH TO WATER - INITIAL\*:  $\nabla$  7' AFTER 24 HOURS:  $\nabla$  \_\_\_\_\_

CAVING> C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows per 6"	N-Value	% < #200	TEST RESULTS	
											Plastic Limit	Liquid Limit
0	0		4" Topsoil									
		0.33	Brown, moist, Silty lean CLAY (CL-ML) with some fine Sand, stiff		1	20	ss	3 7 5 5	12			
		2	Brown, moist, Silty fine SAND (SM) with trace to little Clay, medium dense		2	21	ss	4 5 6 10	11	38		
	5	5	Brown, moist, lean CLAY (CL) with some fine Sand, stiff		3	24	ss	8 10 5 4	15			
	2	6	Brown, moist, poorly graded fine SAND (SP), loose		4	24	ss	3 5 5 7	10			
		8	Brown to Gray, wet, Silty fine SAND (SM) with trace to little Clay, very loose to medium dense		5	15	ss	3 6 8 9	14	37		
	10				6	18	ss	2 4 7 7	11			
	4				7	18	ss	4 5 7 7	12			
		6			8	24	ss	WOH WOH WOH WOH	0	32	H	
		8			9	24	ss	1 2 3 2	5			
		28	Brown, wet, poorly graded fine SAND (SP-SM) with Silt, medium dense		10	20	ss	6 12 12 12	24			
	10	30			11	20	ss	7 14 15 13	29	6		
		38	Gray, wet, Silty fine SAND (SM) with little Clay, loose		12	24	ss	1 2 3 3	5			

**Notes:**

\*The initial groundwater reading may not be indicative of the static groundwater level.

SS = Split Spoon Sample  
ST = Shelby Tube Sample  
HA = Hand Auger Sample  
BS = Bulk Sample  
WOH = Weight of Hammer



# BORING LOG B-01

PROJECT: P-851 Naval Construction Division Operations Control Facility

CLIENT: Commander NAVFAC Atlantic

PROJECT LOCATION: NAB Little Creek, Virginia Beach, Virginia

PROJECT NO.: VB09-169G

BORING LOCATION: See attached boring location plan

SURFACE ELEVATION: \_\_\_\_\_

DRILLER: GET Solutions, Inc.

LOGGED BY: C. Caton

DRILLING METHOD: Rotary wash "mud"

DATE: 5/5/2009

DEPTH TO WATER - INITIAL\*:  $\nabla$  7' AFTER 24 HOURS:  $\nabla$  \_\_\_\_\_

CAVING> C \_\_\_\_\_

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows per 6"	N-Value	% < #200	TEST RESULTS	
											Plastic Limit	Liquid Limit
											Moisture Content - ●	N-Value -
											10 20 30 40 50 60 70	
	14	45	Brown, wet, poorly graded fine SAND (SP-SM) with Silt, medium dense		13	24	ss	2 7 8 13	15			
	16	50	Gray, wet, poorly graded fine SAND (SP), medium dense to dense		14	18	ss	4 16 26 30	42			
	18	55			15	15	ss	5 9 9 12	18			
	20	60	Gray, wet, Silty fine SAND (SM) with varying amounts of marine shell fragments, medium dense		16	24	ss	4 7 10 12	17	23	●	
	22	65			17	24	ss	3 7 10 12	17			
	24	70			18	24	ss	4 5 9 14	14			
	24	75			19	24	ss	5 6 11 15	17			
	24	80	Boring terminated at 80 ft.		20	24	ss	6 9 12 16	21			

**Notes:**

- SS = Split Spoon Sample
- ST = Shelby Tube Sample
- HA = Hand Auger Sample
- BS = Bulk Sample
- WOH = Weight of Hammer

\*The initial groundwater reading may not be indicative of the static groundwater level.



# BORING LOG B-02

**PROJECT:** P-851 Naval Construction Division Operations Control Facility

**CLIENT:** Commander NAVFAC Atlantic

**PROJECT LOCATION:** NAB Little Creek, Virginia Beach, Virginia

**PROJECT NO.:** VB09-169G

**BORING LOCATION:** See attached boring location plan

**SURFACE ELEVATION:**

**DRILLER:** GET Solutions, Inc.

**LOGGED BY:** C. Caton

**DRILLING METHOD:** Rotary wash "mud"

**DATE:** 5/5/2009

**DEPTH TO WATER - INITIAL\*:** 6.5' **AFTER 24 HOURS:**

**CAVING** > C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows per 6"	N-Value	% < #200	TEST RESULTS	
											Plastic Limit	Liquid Limit
0	0		4" Topsoil									
		0.33	Brown, moist, lean CLAY (CL) with some fine Sand, stiff		1	24	ss	2 8 7 6	15			
		2	Brown, moist, Clayey fine SAND (SC), loose		2	22	ss	3 4 4 6	8			
	5	4	Brown, moist, Silty fine SAND (SM) with trace Clay, medium dense		3	24	ss	7 10 10 7	20			
	2	6	Brown, moist, lean CLAY (CL) with some fine Sand, medium stiff		4	20	ss	4 4 3 3	7			
		8	Brown, wet, poorly graded fine SAND (SP- SM) with Silt, loose to medium dense		5	20	ss	3 7 8 12	15			
	10				6	18	ss	4 5 6 6	11			
	4				7	15	ss	4 6 7 7	13			
	15				8	24	ss	2 4 4 3	8	13		
	6	20			9	24	ss	2 3 1 3	4	41		
	8	25	Gray, wet, Silty fine SAND (SM) with little Clay, very loose to medium dense		10	20	ss	7 8 7 7	15			
	30				11	24	ss	1 2 2 2	4	25		
	10	35	Grayish Brown, wet, Silty Clayey fine SAND (SC-SM), very loose		12	24	ss	1 1 1 4	2			
	12	40										

**Notes:**

\*The initial groundwater reading may not be indicative of the static groundwater level.

SS = Split Spoon Sample  
ST = Shelby Tube Sample  
HA = Hand Auger Sample  
BS = Bulk Sample  
WOH = Weight of Hammer



# BORING LOG B-02

PROJECT: P-851 Naval Construction Division Operations Control Facility

CLIENT: Commander NAVFAC Atlantic

PROJECT LOCATION: NAB Little Creek, Virginia Beach, Virginia

PROJECT NO.: VB09-169G

BORING LOCATION: See attached boring location plan

SURFACE ELEVATION: \_\_\_\_\_

DRILLER: GET Solutions, Inc.

LOGGED BY: C. Caton

DRILLING METHOD: Rotary wash "mud"

DATE: 5/5/2009

DEPTH TO WATER - INITIAL\*:  $\nabla$  6.5' AFTER 24 HOURS:  $\nabla$  \_\_\_\_\_

CAVING>  \_\_\_\_\_

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows per 6"	N-Value	% < #200	TEST RESULTS						
											Plastic Limit	Liquid Limit					
											Moisture Content - ●	N-Value -					
											10	20	30	40	50	60	70
	43		Gray, wet, Clayey fine SAND (SC) with marine shell fragments, very loose to loose		13	24	ss	1 1 2 2	3	44							
14	45																
		50			14	24	ss	1 3 2 3	5								
16																	
		55			15	24	ss	1 2 3 3	5								
18																	
		60			16	24	ss	2 3 2 4	5								
			Gray, wet, Silty fine SAND (SM) with varying amounts of marine shell fragments, loose to medium dense		17	24	ss	2 3 3 5	6								
20	65																
		70			18	24	ss	3 8 9 10	17								
22																	
		75			19	24	ss	3 7 9 9	16								
24																	
		80			20	24	ss	4 6 10 13	16								

**Notes:**

\*The initial groundwater reading may not be indicative of the static groundwater level.

SS = Split Spoon Sample  
ST = Shelby Tube Sample  
HA = Hand Auger Sample  
BS = Bulk Sample  
WOH = Weight of Hammer



# BORING LOG B-02

**PROJECT:** P-851 Naval Construction Division Operations Control Facility  
**CLIENT:** Commander NAVFAC Atlantic  
**PROJECT LOCATION:** NAB Little Creek, Virginia Beach, Virginia **PROJECT NO.:** VB09-169G  
**BORING LOCATION:** See attached boring location plan **SURFACE ELEVATION:** \_\_\_\_\_  
**DRILLER:** GET Solutions, Inc. **LOGGED BY:** C. Caton  
**DRILLING METHOD:** Rotary wash "mud" **DATE:** 5/5/2009  
**DEPTH TO WATER - INITIAL\*:**  $\nabla$  6.5' **AFTER 24 HOURS:**  $\nabla$  \_\_\_\_\_ **CAVING** > C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows per 6"	N-Value	% < #200	TEST RESULTS	
											Plastic Limit	Liquid Limit
26	85				21	24	ss	5 7 10 12	17			
28	90				22	24	ss	5 8 12 20	20			
30	95				23	24	ss	6 12 14 16	26	21		
32	100		Boring terminated at 100 ft.		24	24	ss	5 10 13 16	23			

**Notes:**

\*The initial groundwater reading may not be indicative of the static groundwater level.

SS = Split Spoon Sample  
 ST = Shelby Tube Sample  
 HA = Hand Auger Sample  
 BS = Bulk Sample  
 WOH = Weight of Hammer



# BORING LOG B-03

PROJECT: P-851 Naval Construction Division Operations Control Facility

CLIENT: Commander NAVFAC Atlantic

PROJECT LOCATION: NAB Little Creek, Virginia Beach, Virginia

PROJECT NO.: VB09-169G

BORING LOCATION: See attached boring location plan

SURFACE ELEVATION: \_\_\_\_\_

DRILLER: GET Solutions, Inc.

LOGGED BY: C. Caton

DRILLING METHOD: Rotary wash "mud"

DATE: 5/5/2009

DEPTH TO WATER - INITIAL\*:  $\nabla$  6.5' AFTER 24 HOURS:  $\nabla$

CAVING> C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows per 6"	N-Value	TEST RESULTS	
										Plastic Limit	Liquid Limit
0	0	0	4" Topsoil								
		0.33	Brown, moist, Silty lean CLAY (CL-ML) with some fine Sand, medium stiff		1	20	ss	2 3 3 5	6		
		2	Brown, moist to wet, Silty fine SAND (SM) with trace to little Clay, loose to medium dense		2	23	ss	3 4 7 6	11		
	5				3	24	ss	8 10 8 6	18		
	2	$\nabla$			4	24	ss	2 3 3 3	6	44	●
		8	Brown, wet, poorly graded fine SAND (SP), loose to medium dense		5	20	ss	2 3 3 6	6		
	10				6	18	ss	3 4 4 5	8		
	4				7	18	ss	7 11 11 12	22		
	15				8	20	ss	2 1 1 2	2	86	●
	6	20	Gray, wet, fat CLAY (CH) with trace to little fine Sand, very soft to soft		9	24	ss	1 2 1 1	3		
	8	25			10	24	ss	1 2 2 2	4		
	10	30			11	24	ss	1 1 1 2	2		
	12	35			12	24	ss	3 1 2 4	3		
		40	Gray, wet, Silty fine SAND (SM) with little Clay, very loose								

**Notes:**

\*The initial groundwater reading may not be indicative of the static groundwater level.

SS = Split Spoon Sample  
ST = Shelby Tube Sample  
HA = Hand Auger Sample  
BS = Bulk Sample  
WOH = Weight of Hammer



# BORING LOG B-03

PROJECT: P-851 Naval Construction Division Operations Control Facility

CLIENT: Commander NAVFAC Atlantic

PROJECT LOCATION: NAB Little Creek, Virginia Beach, Virginia

PROJECT NO.: VB09-169G

BORING LOCATION: See attached boring location plan

SURFACE ELEVATION: \_\_\_\_\_

DRILLER: GET Solutions, Inc.

LOGGED BY: C. Caton

DRILLING METHOD: Rotary wash "mud"

DATE: 5/5/2009

DEPTH TO WATER - INITIAL\*:  $\nabla$  6.5' AFTER 24 HOURS:  $\nabla$  \_\_\_\_\_

CAVING> C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows per 6"	N-Value	% < #200	TEST RESULTS	
											Plastic Limit	Liquid Limit
			Gray, wet, fat CLAY (CH) with trace fine Sand, soft									
	45	43.5	Gray, wet, Silty fine SAND (SM) with trace Clay, medium dense		13	24	ss	1 9 9 7	18			
	50	48	Gray, wet, Clayey fine SAND (SC), very loose		14	24	ss	1 2 1 2	3			
	55	53	Brown, wet, poorly graded fine SAND (SP), dense		15	20	ss	7 15 19 17	34			
	60	58	Gray, wet, Silty fine SAND (SM) with varying amounts of marine shell fragments, medium dense		16	24	ss	3 5 7 10	12			
	65				17	24	ss	3 7 9 11	16			
	70				18	24	ss	4 6 8 13	14			
	75				19	24	ss	4 5 7 8	12			
	80				20	24	ss	5 10 10 14	20			
			Boring terminated at 80 ft.									

**Notes:**

- SS = Split Spoon Sample
- ST = Shelby Tube Sample
- HA = Hand Auger Sample
- BS = Bulk Sample
- WOH = Weight of Hammer

\*The initial groundwater reading may not be indicative of the static groundwater level.



# BORING LOG B-04

PROJECT: P-851 Naval Construction Division Operations Control Facility

CLIENT: Commander NAVFAC Atlantic

PROJECT LOCATION: NAB Little Creek, Virginia Beach, Virginia

PROJECT NO.: VB09-169G

BORING LOCATION: See attached boring location plan

SURFACE ELEVATION: \_\_\_\_\_

DRILLER: GET Solutions, Inc.

LOGGED BY: C. Caton

DRILLING METHOD: Rotary wash "mud"

DATE: 5/6/2009

DEPTH TO WATER - INITIAL\*:  $\nabla$  6' AFTER 24 HOURS:  $\nabla$  \_\_\_\_\_

CAVING> C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows per 6"	N-Value	% < #200	TEST RESULTS	
											Plastic Limit	Liquid Limit
0	0	0	5" Topsoil									
		0.42	Brown, moist, Silty lean CLAY (CL-ML) with some fine Sand, stiff		1	24	ss	3 4 5 5	9			
		2	Brown, moist to wet, Silty fine SAND (SM) with trace to little Clay, loose to medium dense		2	20	ss	2 4 5 7	9			
	5				3	24	ss	4 5 7 8	12	28		
	2				4	24	ss	6 5 2 1	7			
		7	Brown/Gray, wet, lean CLAY (CL) with little fine Sand, very soft to soft		5	24	ss	1 3 7 8	10			
	10		Brown, wet, poorly graded fine SAND (SP), loose to medium dense		6	15	ss	2 5 5 7	10			
	4				7	18	ss	6 9 11 10	20	5		
	15				8	24	ss	1 1 1 1	2			
	6	20	Gray, wet, Silty fine SAND (SM) with lenses of CLAY (CH), very loose		9	24	ss	WOH WOH WOH WOH	0			
	8	25	Gray, wet, fat CLAY (CH) with trace to little fine Sand, very soft to soft		10	24	ss	1 1 2 1	3			
		30	Marine shell fragments at 28 feet.		11	24	ss	1 1 1 2	2			
	10	35			12	22	ss	2 2 3 3	5	43		
	12	40	Gray, wet, Clayey fine SAND (SC) with marine shell fragments, very loose to loose									

**Notes:**

\*The initial groundwater reading may not be indicative of the static groundwater level.

SS = Split Spoon Sample  
ST = Shelby Tube Sample  
HA = Hand Auger Sample  
BS = Bulk Sample  
WOH = Weight of Hammer



# BORING LOG B-04

**PROJECT:** P-851 Naval Construction Division Operations Control Facility  
**CLIENT:** Commander NAVFAC Atlantic  
**PROJECT LOCATION:** NAB Little Creek, Virginia Beach, Virginia **PROJECT NO.:** VB09-169G  
**BORING LOCATION:** See attached boring location plan **SURFACE ELEVATION:** \_\_\_\_\_  
**DRILLER:** GET Solutions, Inc. **LOGGED BY:** C. Caton  
**DRILLING METHOD:** Rotary wash "mud" **DATE:** 5/6/2009  
**DEPTH TO WATER - INITIAL\*:**  $\nabla$  6' **AFTER 24 HOURS:**  $\nabla$  \_\_\_\_\_ **CAVING** > C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows per 6"	N-Value	% < #200	TEST RESULTS	
											Plastic Limit	Liquid Limit
14	45				13	24	ss	2 3 3	5			
16	50				14	24	ss	1 1 1	2			
16	55		Gray, wet, poorly graded fine SAND (SP), medium dense		15	24	ss	7 6 5 7	11			
18	60		Gray, wet, Silty fine SAND (SM) with varying amounts of marine shell fragments, loose to medium dense		16	24	ss	3 3 4 6	7			
20	65				17	24	ss	4 5 8 10	13			
22	70				18	24	ss	4 9 11 13	20			
24	75				19	24	ss	7 6 11 16	17			
	80		Boring terminated at 80 ft.		20	24	ss	6 9 14 16	23			

**Notes:**

SS = Split Spoon Sample  
 ST = Shelby Tube Sample  
 HA = Hand Auger Sample  
 BS = Bulk Sample  
 WOH = Weight of Hammer

\*The initial groundwater reading may not be indicative of the static groundwater level.



# BORING LOG CBR-01

**PROJECT:** P-851 Naval Construction Division Operations Control Facility  
**CLIENT:** Commander NAVFAC Atlantic  
**PROJECT LOCATION:** NAB Little Creek, Virginia Beach, Virginia **PROJECT NO.:** VB09-169G  
**BORING LOCATION:** See attached boring location plan **SURFACE ELEVATION:**  
**DRILLER:** GET Solutions, Inc. **LOGGED BY:** C. Caton  
**DRILLING METHOD:** Rotary wash "mud" **DATE:** 5/6/2009  
**DEPTH TO WATER - INITIAL\*:**  $\nabla$  6.5' **AFTER 24 HOURS:**  $\nabla$  **CAVING** > C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows per 6"	N-Value	% < #200	TEST RESULTS	
											Plastic Limit	Liquid Limit
0	0		4" Topsoil									
		0.33	Brown, moist, Silty lean CLAY (CL-ML) with some fine Sand, stiff		1	24	ss	2 5 7 7	12	70	●	—
		2	Brown, moist, Silty fine SAND (SM) with trace to little Clay, medium dense		2	22	ss	5 6 7 7	13			
	5				3	24	ss	5 7 8 8	15			
	2	6	Brown mottled Gray, moist to wet, lean CLAY (CL) with little fine Sand, medium stiff		4	24	ss	4 4 2 2	6			
		8	Brown, wet, poorly graded fine SAND (SP-SM) with Silt, medium dense		5	24	ss	1 6 12 12	18			
	10		Boring terminated at 10 ft.									
	4											
		15										
	6	20										
		25										
	8											
		30										
	10											
		35										
	12	40										

**Notes:**

\*The initial groundwater reading may not be indicative of the static groundwater level.

SS = Split Spoon Sample  
 ST = Shelby Tube Sample  
 HA = Hand Auger Sample  
 BS = Bulk Sample  
 WOH = Weight of Hammer



# BORING LOG CBR-02

PROJECT: P-851 Naval Construction Division Operations Control Facility

CLIENT: Commander NAVFAC Atlantic

PROJECT LOCATION: NAB Little Creek, Virginia Beach, Virginia

PROJECT NO.: VB09-169G

BORING LOCATION: See attached boring location plan

SURFACE ELEVATION:

DRILLER: GET Solutions, Inc.

LOGGED BY: C. Caton

DRILLING METHOD: Rotary wash "mud"

DATE: 5/6/2009

DEPTH TO WATER - INITIAL\*: 6.5' AFTER 24 HOURS: 5.8'

CAVING: C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows per 6"	N-Value	TEST RESULTS	
										% < #200	
0	0	0	4" Topsoil								
			Brown, moist to wet, lean CLAY (CL) with some fine Sand, medium stiff to stiff		1	24	ss	3 4 4 6	8	69	●
					2	24	ss	4 6 5 6	11		
	5	5	Brown, moist, Silty fine SAND (SM) with trace to little Clay, loose to medium dense		3	24	ss	5 7 6 7	13	13	●
	2	2			4	24	ss	4 4 3 3	7		
			Brown, wet, poorly graded fine SAND (SP-SM) with Silt, loose		5	24	ss	4 3 3 1	6		
	10	10	Boring terminated at 10 ft.								
	4										
		15									
	6	20									
		25									
	8										
		30									
	10										
		35									
	12	40									

Notes:

- SS = Split Spoon Sample
- ST = Shelby Tube Sample
- HA = Hand Auger Sample
- BS = Bulk Sample
- WOH = Weight of Hammer

\*The initial groundwater reading may not be indicative of the static groundwater level.



# BORING LOG CBR-03

**PROJECT:** P-851 Naval Construction Division Operations Control Facility  
**CLIENT:** Commander NAVFAC Atlantic  
**PROJECT LOCATION:** NAB Little Creek, Virginia Beach, Virginia **PROJECT NO.:** VB09-169G  
**BORING LOCATION:** See attached boring location plan **SURFACE ELEVATION:**  
**DRILLER:** GET Solutions, Inc. **LOGGED BY:** C. Caton  
**DRILLING METHOD:** Rotary wash "mud" **DATE:** 5/6/2009  
**DEPTH TO WATER - INITIAL\*:**  $\nabla$  6.5' **AFTER 24 HOURS:**  $\nabla$  **CAVING** > C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Elevation (MSL) (ft)	Depth (meters)	Depth (feet)	Description	Graphic	Sample No.	Sample Recovery	Sample Type	Blows per 6"	N-Value	% < #200	TEST RESULTS	
											Plastic Limit	Liquid Limit
0	0		4" Topsoil									
			Brown, moist, fine Sandy Silty lean CLAY (CL-ML), stiff	0.33	1	24	ss	3 4 6 6	10	62	●	
			Brown, moist, Silty fine SAND (SM) with trace to little Clay, medium dense		2	24	ss	5 6 6 6	12			
	5				3	24	ss	4 6 8 7	14			
			Brown, moist to wet, lean CLAY (CL) with little fine Sand, medium stiff		4	24	ss	3 4 3 3	7			
	2				5	24	ss	3 3 2 2	5			
			Brown, wet, poorly graded fine SAND (SP-SM) with Silt, loose									
	10		Boring terminated at 10 ft.									
	4											
		15										
	6	20										
		25										
	8											
		30										
	10											
		35										
	12	40										

**Notes:**

\*The initial groundwater reading may not be indicative of the static groundwater level.

SS = Split Spoon Sample  
 ST = Shelby Tube Sample  
 HA = Hand Auger Sample  
 BS = Bulk Sample  
 WOH = Weight of Hammer

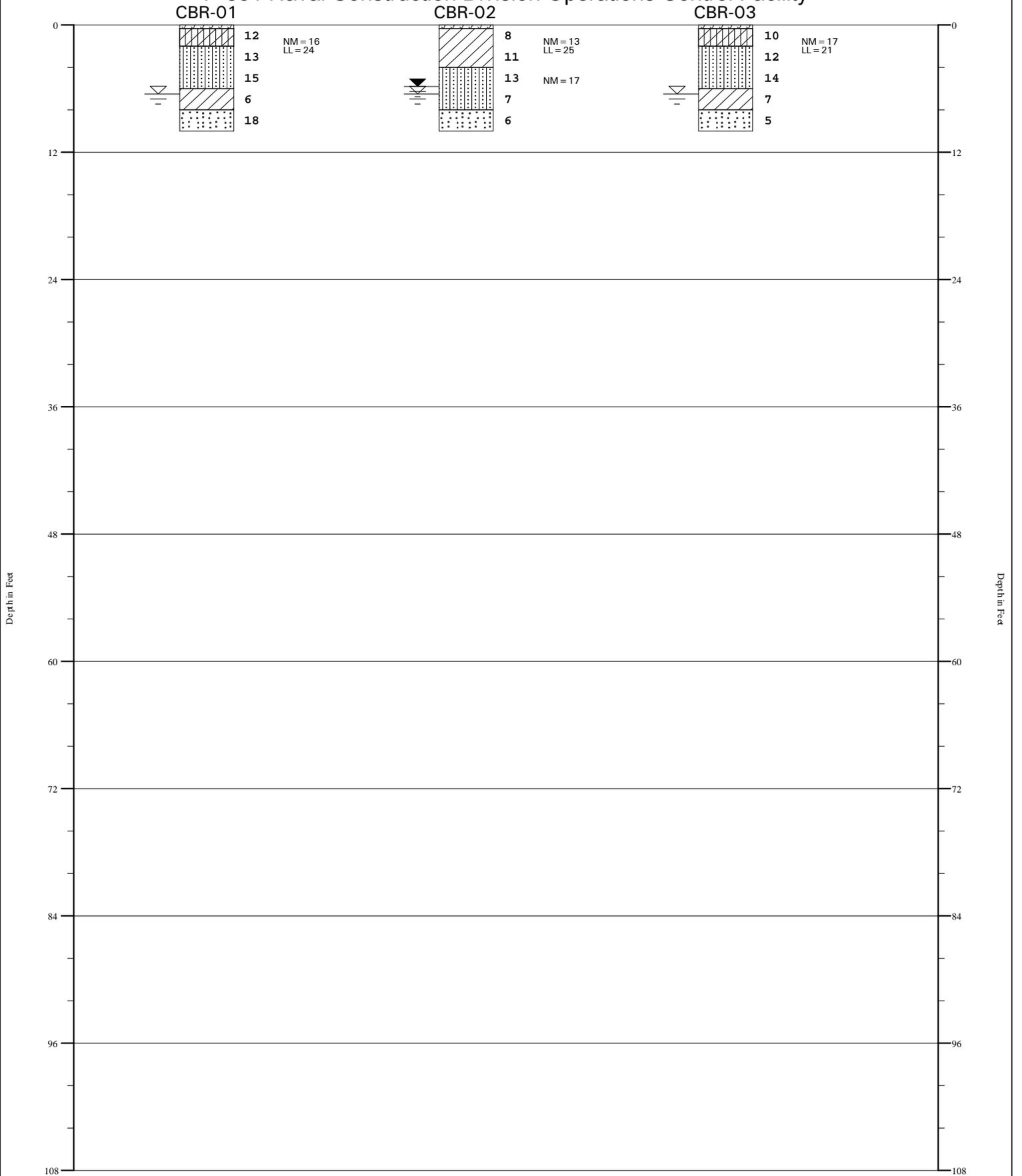
**APPENDIX V**

GENERALIZED SOIL PROFILE



# GENERALIZED SOIL PROFILE

P-851 Naval Construction Division Operations Control Facility



-  Topsoil
-  Silty Sand
-  Poorly graded Sand
-  Clayey Sand
-  Fat Clay
-  Silty Clay
-  Lean Clay
-  Poorly graded Sand with Silt
-  Silty Clayey Sand

**APPENDIX VI**

ANALYTICAL LABORATORY REPORT

## ANALYTICAL REPORT

P-851 LITTLE CREEK, NORFOLK VA

Lot #: A9E090180

Jessica Wilson

Miller-Stephenson & Associates  
5033 Rouse Drive  
Virginia Beach, VA 23462-3708

TESTAMERICA LABORATORIES, INC.



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Patrick J. O'Meara  
Project Manager  
patrick.omeara@testamericainc.com

Approved for release.  
Patrick O'Meara  
Project Manager  
5/18/2009 4:25 PM

May 18, 2009

TestAmerica Laboratories, Inc.

TestAmerica North Canton 4101 Shuffel Street NW, North Canton, OH 44720

Tel (330)497-9396 Fax (330)497-0772 [www.testamericainc.com](http://www.testamericainc.com)



## CASE NARRATIVE

A9E090180

The following report contains the analytical results for two solid samples submitted to TestAmerica North Canton by Miller-Stephenson & Associates, P.C. from the P-851 Little Creek, Norfolk VA Site. The samples were received May 09, 2009, according to documented sample acceptance procedures.

TestAmerica utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. Preliminary results were provided to Jessica Wilson on May 15, 2009. A summary of QC data for these analyses is included at the back of the report.

TestAmerica North Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by a dry weight adjustment footnote at the bottom of the analytical report page. The list of parameters which are never reported on a dry weight basis is included on the Sample Summary.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Please refer to the Quality Control Elements Narrative following this case narrative for additional quality control information.

If you have any questions, please call the Project Manager, Patrick J. O'Meara, at 330-497-9396.

This report is sequentially paginated. The final page of the report is labeled as "END OF REPORT."

## **CASE NARRATIVE (continued)**

### **SUPPLEMENTAL QC INFORMATION**

#### **SAMPLE RECEIVING**

The temperature of the cooler upon sample receipt was 4.4°C.

#### **GC VOLATILES**

The analytical results met the requirements of the laboratory's QA/QC program.

#### **PURGEABLE PETROLEUM HYDROCARBONS-8015**

There were no client requested Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples in batch(es) 9133437. Therefore, the laboratory has included a Laboratory Control Sample Duplicate (LCSD) in the QC batch. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system.

#### **EXTRACTABLE PETROLEUM HYDROCARBONS-8015**

The sample(s) that contain results between the MDL and the RL were flagged with "J". There is a possibility of false positive or mis-identification at these quantitation levels. In analytical methods requiring confirmation of the analyte reported, confirmation was performed only down to the standard reporting limit (SRL). The acceptance criteria for QC samples may not be met at these quantitation levels.

#### **GENERAL CHEMISTRY**

The sample(s) that contain results between the MDL and the RL were flagged with "B". There is the possibility of false positive or mis-identification at these quantitation levels. The acceptance criteria for the ICB, CCB, and Method Blank are +/- the standard reporting limit (SRL).

## QUALITY CONTROL ELEMENTS NARRATIVE

TestAmerica conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program, which is described in detail in QA Policy, QA-003. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data. Program or agency specific requirements take precedence over the requirements listed in this narrative.

### **QC BATCH**

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. TestAmerica North Canton requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples.

For SW846/RCRA methods, QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

For 600 series/CWA methods, QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE (MS). An MS is prepared and analyzed at a 10% frequency for GC Methods and at a 5% frequency for GC/MS methods.

### **LABORATORY CONTROL SAMPLE**

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. Multi peak responders may not be included in the target spike list due to co-elution. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. All control analytes indicated by a bold type in the LCS must meet acceptance criteria. Failure to meet the established recovery guidelines requires the reparation and reanalysis of all samples in the QC batch. Comparison of only the failed parameters from the first batch are evaluated. The only exception to the rework requirement is that if the LCS recoveries are biased high and the associated sample is ND (non-detected) for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). If the RPD fails for an LCS/LCSD and yet the recoveries are within acceptance criteria, the batch is still acceptable.

### **METHOD BLANK**

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except under the following circumstances:

- Common organic contaminants may be present at concentrations up to 5 times the reporting limits. Common metals contaminants may be present at concentrations up to 2 times the reporting limit, or the reported blank concentration must be twenty fold less than the concentration reported in the associated environmental samples. (See common laboratory contaminants listed in the table.)

<b><u>Volatile (GC or GC/MS)</u></b>	<b><u>Semivolatile (GC/MS)</u></b>	<b><u>Metals ICP-MS</u></b>	<b><u>Metals ICP Trace</u></b>
Methylene Chloride, Acetone, 2-Butanone	Phthalate Esters	Copper, Iron, Zinc, Lead, Calcium, Magnesium, Potassium, Sodium, Barium, Chromium, Manganese	Copper, Iron, Zinc, Lead

## QUALITY CONTROL ELEMENTS NARRATIVE (continued)

- Organic blanks will be accepted if compounds detected in the blank are present in the associated samples at levels 10 times the blank level. Inorganic blanks will be accepted if elements detected in the blank are present in the associated samples at 20 times the blank level.
- Blanks will be accepted if the compounds/elements detected are not present in any of the associated environmental samples.

Failure to meet these Method Blank criteria requires the reparation and reanalysis of all samples in the QC batch.

### **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. Due to the potential variability of the matrix of each sample, the MS/MSD results may not have an immediate bearing on any samples except the one spiked; therefore, the associated batch MS/MSD may not reflect the same compounds as the samples contained in the analytical report. When these MS/MSD results fail to meet acceptance criteria, the data is evaluated. If the LCS is within acceptance criteria, the batch is considered acceptable.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch. However, a Sample Duplicate is less likely to provide usable precision statistics depending on the likelihood of finding concentrations below the standard reporting limit. When the Sample Duplicate result fails to meet acceptance criteria, the data is evaluated.

For certain methods (600 series methods/CWA), a Matrix Spike is required in place of a Matrix Spike/Matrix Spike Duplicate (MS/MSD) or Matrix Spike/Sample Duplicate (MS/DU).

The acceptance criteria do not apply to samples that are diluted.

### **SURROGATE COMPOUNDS**

In addition to these batch-related QC indicators, each organic environmental and QC sample is spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

If surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank, and the associated sample(s) are ND, the batch is acceptable. Otherwise, if the LCS, LCSD, or Method Blank surrogate(s) fail to meet recovery criteria, the entire sample batch is reprepared and reanalyzed. If the surrogate recoveries are outside criteria for environmental samples, the samples will be reprepared and reanalyzed unless there is objective evidence of matrix interference or if the sample dilution is greater than the threshold outlined in the associated method SOP.

The acceptance criteria do not apply to samples that are diluted. All other surrogate recoveries will be reported.

For the GC/MS BNA methods, the surrogate criterion is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide and PCB methods, the surrogate criterion is that one of two surrogate compounds must meet acceptance criteria. The second surrogate must have a recovery of 10% or greater.



### **TestAmerica Certifications and Approvals:**

*The laboratory is certified for the analytes listed on the documents below. These are available upon request.*  
California (#01144CA), Connecticut (#PH-0590), Florida (#E87225),  
Illinois (#200004), Kansas (#E10336), Minnesota (#39-999-348), New Jersey (#OH001), New York (#10975), Nevada  
(#OH-000482008A), OhioVAP (#CL0024), Pennsylvania (#008), West Virginia (#210), Wisconsin (#999518190), NAVY,  
ARMY, USDA Soil Permit

N:\QAQC\Customer Service\Narrative - Combined RCRA\_CWA 032609.doc

# EXECUTIVE SUMMARY - Detection Highlights

A9E090180

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
<b>SS-B1 05/06/09 14:00 001</b>				
TPH (as Diesel)	3.6 J	12	mg/kg	SW846 8015B
n-Hexane Extractable Material	105 B	399	mg/kg	SW846 9071B
Percent Solids	82.7	10.0	%	MCAWW 160.3 MOD
<b>SS-B4 05/06/09 14:00 002</b>				
TPH (as Diesel)	1100	640	mg/kg	SW846 8015B
TPH (as Gasoline)	170000	13000	ug/kg	SW846 8015B
Xylenes (total)	490	38	ug/kg	SW846 8021B
Percent Solids	78.3	10.0	%	MCAWW 160.3 MOD

# ANALYTICAL METHODS SUMMARY

A9E090180

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>
n-Hexane Ext. Material	SW846 9071B
Extractable Petroleum Hydrocarbons	SW846 8015B
Total Residue as Percent Solids	MCAWW 160.3 MOD
Volatile Petroleum Hydrocarbons	SW846 8015B
Volatiles by GC	SW846 8021B

## References:

- MCAWW "Methods for Chemical Analysis of Water and Wastes",  
EPA-600/4-79-020, March 1983 and subsequent revisions.
- SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical  
Methods", Third Edition, November 1986 and its updates.

# SAMPLE SUMMARY

A9E090180

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
LCPFN	001	SS-B1	05/06/09	14:00
LCPFR	002	SS-B4	05/06/09	14:00

**NOTE(S) :**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Miller-Stephenson & Associates, P.C.

Client Sample ID: SS-B1

GC Volatiles

Lot-Sample #...: A9E090180-001    Work Order #...: LCPFN1AD    Matrix.....: SO  
Date Sampled...: 05/06/09 14:00    Date Received..: 05/09/09  
Prep Date.....: 05/11/09    Analysis Date..: 05/11/09  
Prep Batch #...: 9132396  
Dilution Factor: 1  
% Moisture.....: 17    Method.....: SW846 8015B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
TPH (as Gasoline)	ND	120	ug/kg
	PERCENT	RECOVERY	
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>	
Trifluorotoluene	93	(10 - 150)	

**NOTE(S):**

Results and reporting limits have been adjusted for dry weight.

Miller-Stephenson & Associates, P.C.

Client Sample ID: SS-B1

GC Volatiles

Lot-Sample #...: A9E090180-001    Work Order #...: LCPFN1AF    Matrix.....: SO  
Date Sampled...: 05/06/09 14:00    Date Received..: 05/09/09  
Prep Date.....: 05/11/09    Analysis Date..: 05/11/09  
Prep Batch #...: 9132398  
Dilution Factor: 1  
% Moisture.....: 17    Method.....: SW846 8021B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Benzene	ND	1.2	ug/kg
Ethylbenzene	ND	1.2	ug/kg
Methyl tert-butyl ether (MTBE)	ND	1.2	ug/kg
Toluene	ND	1.2	ug/kg
Xylenes (total)	ND	3.6	ug/kg
	<u>PERCENT</u>	<u>RECOVERY</u>	
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>	
Trifluorotoluene	105	(64 - 148)	

**NOTE(S):**

Results and reporting limits have been adjusted for dry weight.

Miller-Stephenson & Associates, P.C.

Client Sample ID: SS-B1

GC Semivolatiles

Lot-Sample #...: A9E090180-001    Work Order #...: LCPFN1AC    Matrix.....: SO  
Date Sampled...: 05/06/09 14:00    Date Received..: 05/09/09  
Prep Date.....: 05/11/09    Analysis Date..: 05/14/09  
Prep Batch #...: 9131029  
Dilution Factor: 1  
% Moisture.....: 17    Method.....: SW846 8015B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>
TPH (as Diesel)	3.6 J	12	mg/kg

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
C9 (nonane)	35	(10 - 110)

**NOTE(S):**

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Miller-Stephenson & Associates, P.C.

Client Sample ID: SS-B1

General Chemistry

Lot-Sample #...: A9E090180-001    Work Order #...: LCPFN    Matrix.....: SO  
Date Sampled...: 05/06/09 14:00    Date Received..: 05/09/09  
% Moisture.....: 17

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
n-Hexane Extractable Material	105 B	399	mg/kg	SW846 9071B	05/15/09	9135349

Dilution Factor: 1

Percent Solids	82.7	10.0	%	MCAWW 160.3 MOD	05/13-05/14/09	9133541
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Dilution Factor: 1

**NOTE(S):**

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

Miller-Stephenson & Associates, P.C.

Client Sample ID: SS-B4

GC Volatiles

Lot-Sample #...: A9E090180-002    Work Order #...: LCPFR1AD    Matrix.....: SO  
Date Sampled...: 05/06/09 14:00    Date Received..: 05/09/09  
Prep Date.....: 05/12/09    Analysis Date..: 05/13/09  
Prep Batch #...: 9133437  
Dilution Factor: 2  
% Moisture.....: 22    Method.....: SW846 8015B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
TPH (as Gasoline)	170000	13000	ug/kg
	PERCENT	RECOVERY	
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>	
Trifluorotoluene	88	(10 - 150)	

**NOTE(S):**

Results and reporting limits have been adjusted for dry weight.

Miller-Stephenson & Associates, P.C.

Client Sample ID: SS-B4

GC Volatiles

Lot-Sample #...: A9E090180-002    Work Order #...: LCPFR1AF    Matrix.....: SO  
Date Sampled...: 05/06/09 14:00    Date Received..: 05/09/09  
Prep Date.....: 05/12/09    Analysis Date..: 05/12/09  
Prep Batch #...: 9132398  
Dilution Factor: 10  
% Moisture.....: 22    Method.....: SW846 8021B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Benzene	ND	13	ug/kg
Ethylbenzene	ND	13	ug/kg
Methyl tert-butyl ether (MTBE)	ND	13	ug/kg
Toluene	ND	13	ug/kg
<b>Xylenes (total)</b>	<b>490</b>	<b>38</b>	<b>ug/kg</b>
	<u>PERCENT</u>	<u>RECOVERY</u>	
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>	
Trifluorotoluene	101	(64 - 148)	

**NOTE(S):**

Results and reporting limits have been adjusted for dry weight.

Miller-Stephenson & Associates, P.C.

Client Sample ID: SS-B4

GC Semivolatiles

Lot-Sample #...: A9E090180-002    Work Order #...: LCPFR1AC    Matrix.....: SO  
Date Sampled...: 05/06/09 14:00    Date Received..: 05/09/09  
Prep Date.....: 05/11/09    Analysis Date..: 05/14/09  
Prep Batch #...: 9131029  
Dilution Factor: 50  
% Moisture.....: 22    Method.....: SW846 8015B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>
TPH (as Diesel)	1100	640	mg/kg
	PERCENT	RECOVERY	
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>	
C9 (nonane)	38 DIL	(10 - 110)	

**NOTE(S):**

---

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.  
Results and reporting limits have been adjusted for dry weight.

Miller-Stephenson & Associates, P.C.

Client Sample ID: SS-B4

General Chemistry

Lot-Sample #...: A9E090180-002    Work Order #...: LCPFR    Matrix.....: SO  
Date Sampled...: 05/06/09 14:00    Date Received..: 05/09/09  
% Moisture.....: 22

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
n-Hexane Extractable Material	ND	421	mg/kg	SW846 9071B	05/15/09	9135349
		Dilution Factor: 1				
Percent Solids	78.3	10.0	%	MCAWW 160.3 MOD	05/13-05/14/09	9133541
		Dilution Factor: 1				

**NOTE(S):**

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

# *QUALITY CONTROL SECTION*

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: A9E090180  
MB Lot-Sample #: A9E120000-396

Work Order #...: LCVDV1AA

Matrix.....: SOLID

Analysis Date...: 05/11/09  
Dilution Factor: 1

Prep Date.....: 05/11/09

Prep Batch #...: 9132396

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>
		<u>LIMIT</u>	<u>UNITS</u>	
TPH (as Gasoline)	ND	100	ug/kg	SW846 8015B

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
Trifluorotoluene	95	(10 - 150)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: A9E090180  
MB Lot-Sample #: A9E130000-437

Work Order #...: LCX8D1AA

Matrix.....: SOLID

Analysis Date...: 05/12/09  
Dilution Factor: 1

Prep Date.....: 05/12/09

Prep Batch #...: 9133437

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>
		<u>LIMIT</u>	<u>UNITS</u>	
TPH (as Gasoline)	ND	5000	ug/kg	SW846 8015B

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
Trifluorotoluene	103	(10 - 150)

**NOTE(S):**

---

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: A9E090180  
MB Lot-Sample #: A9E120000-398

Work Order #...: LCVDX1AA

Matrix.....: SOLID

Analysis Date...: 05/11/09  
Dilution Factor: 1

Prep Date.....: 05/11/09

Prep Batch #...: 9132398

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		
		<u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
Benzene	ND	1.0	ug/kg	SW846 8021B
Ethylbenzene	ND	1.0	ug/kg	SW846 8021B
Toluene	ND	1.0	ug/kg	SW846 8021B
Xylenes (total)	ND	3.0	ug/kg	SW846 8021B
Methyl tert-butyl ether (MTBE)	ND	1.0	ug/kg	SW846 8021B

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
Trifluorotoluene	103	(64 - 148)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: A9E090180  
MB Lot-Sample #: A9E110000-029

Work Order #...: LCP2R1AA

Matrix.....: SOLID

Analysis Date...: 05/12/09  
Dilution Factor: 1

Prep Date.....: 05/11/09

Prep Batch #...: 9131029

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>
		<u>LIMIT</u>	<u>UNITS</u>	
TPH (as Diesel)	ND	10	mg/kg	SW846 8015B

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
C9 (nonane)	36	(10 - 110)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: A9E090180

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>PREP</u> <u>BATCH #</u>
n-Hexane Extractable Material	ND	Work Order #: LC5XK1AA 330	mg/kg	MB Lot-Sample #: A9E150000-349 SW846 9071B	A9E150000-349 05/15/09	9135349
		Dilution Factor: 1				
Percent Solids	ND	Work Order #: LC1PD1AA 10.0	%	MB Lot-Sample #: A9E130000-541 MCAWW 160.3 MOD	A9E130000-541 05/13-05/14/09	9133541
		Dilution Factor: 1				

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: A9E090180      Work Order #...: LCVDV1AC      Matrix.....: SOLID  
 LCS Lot-Sample#: A9E120000-396  
 Prep Date.....: 05/11/09      Analysis Date...: 05/11/09  
 Prep Batch #...: 9132396  
 Dilution Factor: 1

<u>PARAMETER</u>	PERCENT <u>RECOVERY</u>	RECOVERY <u>LIMITS</u>	<u>METHOD</u>
TPH (as Gasoline)	98	(60 - 142)	SW846 8015B

<u>SURROGATE</u>	PERCENT <u>RECOVERY</u>	RECOVERY <u>LIMITS</u>
Trifluorotoluene	94	(10 - 150)

**NOTE(S):**

---

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: A9E090180      Work Order #...: LCX8D1AC-LCS      Matrix.....: SOLID  
 LCS Lot-Sample#: A9E130000-437      LCX8D1AD-LCSD  
 Prep Date.....: 05/12/09      Analysis Date..: 05/12/09  
 Prep Batch #...: 9133437  
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
<b>TPH (as Gasoline)</b>	<b>108</b>	<b>(60 - 142)</b>			<b>SW846 8015B</b>
	102	(60 - 142)	6.0	(0-27)	SW846 8015B

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Trifluorotoluene	100	(10 - 150)
	99	(10 - 150)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: A9E090180      Work Order #...: LCVDX1AC      Matrix.....: SOLID  
 LCS Lot-Sample#: A9E120000-398  
 Prep Date.....: 05/11/09      Analysis Date...: 05/11/09  
 Prep Batch #...: 9132398  
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>
Toluene	98	(74 - 121)	SW846 8021B
Benzene	99	(70 - 127)	SW846 8021B

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Trifluorotoluene	101	(64 - 148)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: A9E090180      Work Order #...: LCP2R1AC      Matrix.....: SOLID  
LCS Lot-Sample#: A9E110000-029  
Prep Date.....: 05/11/09      Analysis Date..: 05/12/09  
Prep Batch #...: 9131029  
Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>	<u>METHOD</u>
TPH (as Diesel)	91	(47 - 138)	SW846 8015B

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
C9 (nonane)	38	(10 - 110)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Lot-Sample #...: A9E090180

Matrix.....: SOLID

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
n-Hexane Extractable Material		WO#:LC5XK1AC-LCS/LC5XK1AD-LCSD			LCS	Lot-Sample#: A9E150000-349	
	110	(60 - 161)			SW846 9071B	05/15/09	9135349
	101	(60 - 161)	8.6	(0-74)	SW846 9071B	05/15/09	9135349
		Dilution Factor: 1					

**NOTE(S):**

---

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: A9E090180      Work Order #...: LCPFN1AJ-MS      Matrix.....: SO  
 MS Lot-Sample #: A9E090180-001      LCPFN1AK-MSD  
 Date Sampled...: 05/06/09 14:00      Date Received...: 05/09/09  
 Prep Date.....: 05/12/09      Analysis Date...: 05/12/09  
 Prep Batch #...: 9132396  
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
TPH (as Gasoline)	85	(10 - 142)			SW846 8015B
	86	(10 - 142)	0.46	(0-94)	SW846 8015B

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Trifluorotoluene	95	(10 - 150)
	94	(10 - 150)

**NOTE(S):**

---

Calculations are performed before rounding to avoid round-off errors in calculated results.  
 Bold print denotes control parameters  
 Results and reporting limits have been adjusted for dry weight.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: A9E090180      Work Order #...: LCPFN1AL-MS      Matrix.....: SO  
 MS Lot-Sample #: A9E090180-001      LCPFN1AM-MSD  
 Date Sampled...: 05/06/09 14:00      Date Received...: 05/09/09  
 Prep Date.....: 05/12/09      Analysis Date...: 05/12/09  
 Prep Batch #...: 9132398  
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
Toluene	95	(50 - 142)			SW846 8021B
	94	(50 - 142)	0.98	(0-40)	SW846 8021B
Benzene	97	(62 - 150)			SW846 8021B
	95	(62 - 150)	1.3	(0-33)	SW846 8021B

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Trifluorotoluene	102	(64 - 148)
	103	(64 - 148)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: A9E090180      Work Order #...: LCPFN1AG-MS      Matrix.....: SO  
 MS Lot-Sample #: A9E090180-001      LCPFN1AH-MSD  
 Date Sampled...: 05/06/09 14:00      Date Received...: 05/09/09  
 Prep Date.....: 05/11/09      Analysis Date...: 05/14/09  
 Prep Batch #...: 9131029  
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
TPH (as Diesel)	<b>104</b>	(10 - 199)			<b>SW846 8015B</b>
	<b>96</b>	(10 - 199)	<b>7.4</b>	<b>(0-30)</b>	<b>SW846 8015B</b>

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
C9 (nonane)	39	(10 - 110)
	36	(10 - 110)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.  
 Bold print denotes control parameters  
 Results and reporting limits have been adjusted for dry weight.

**SAMPLE DUPLICATE EVALUATION REPORT**

**General Chemistry**

Client Lot #...: A9E090180

Work Order #...: LA911-SMP  
LA911-DUP

Matrix.....: SOLID

Date Sampled...: 05/02/09 14:03 Date Received...: 05/04/09

% Moisture.....: 17

<u>PARAM</u>	<u>RESULT</u>	<u>DUPLICATE</u>	<u>UNITS</u>	<u>RPD</u>	<u>LIMIT</u>	<u>METHOD</u>	<u>PREPARATION-</u>	<u>PREP</u>
		<u>RESULT</u>					<u>ANALYSIS DATE</u>	<u>BATCH #</u>
Percent Solids	82.6	82.9	%	0.29	(0-20)	SD Lot-Sample #: A9E040128-002 MCAWW 160.3 MOD	05/13-05/14/09	9133541
Dilution Factor: 1								

**SAMPLE DUPLICATE EVALUATION REPORT**

**General Chemistry**

Client Lot #...: A9E090180

Work Order #...: LA913-SMP  
LA913-DUP

Matrix.....: SOLID

Date Sampled...: 05/02/09 14:18 Date Received...: 05/04/09

% Moisture.....: 16

<u>PARAM</u>	<u>RESULT</u>	<u>DUPLICATE</u>	<u>UNITS</u>	<u>RPD</u>	<u>LIMIT</u>	<u>METHOD</u>	<u>PREPARATION-</u>	<u>PREP</u>
		<u>RESULT</u>					<u>ANALYSIS DATE</u>	<u>BATCH #</u>
Percent Solids	84.0	83.9	%	0.19	(0-20)	SD Lot-Sample #: A9E040128-003 MCAWW 160.3 MOD	05/13-05/14/09	9133541
Dilution Factor: 1								

# Chain of Custody Record

Temperature on Receipt \_\_\_\_\_  
 Drinking Water? Yes  No

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Project Manager

*Teresa Wilson*

Date

5-8-09

Chain of Custody Number

093252

Address  
 5033 Rouse DR

Telephone Number (Area Code)/Fax Number  
 757-490-9264 / 490-0634

Lab Number

Page 1 of 1

City VA Beach State VA Zip Code 23462

Site Contact

*F. Wilson*

Lab Contact

*Teresa Wilson*

Analysis (Attach list if more space is needed)

Special Instructions/ Conditions of Receipt

Project Name and Location (State)  
 P-851 Little Creek, Norfolk, VA

Carrier/Waybill Number

Matrix

Containers & Preservatives

Analysis (Attach list if more space is needed)

TPH-6RO  
 TPH-DRO  
 BTEX  
 MTBE  
 TPH 9071

Special Instructions/ Conditions of Receipt

*SOPV*

Sample I.D. No. and Description  
 (Containers for each sample may be combined on one line)

Sample I.D. No. and Description	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt
SS-B1	5-6-09	2 pm				X	2						X X X X X	
SS-B4	5-6-09	2 pm				X	1						X X X X X	<i>Please note limited amount of soil * for SS-B4</i>

Possible Hazard Identification

- Non-Hazard
- Flammable
- Skin Irritant
- Poison B
- Unknown

Sample Disposal

- Return To Client
- Disposal By Lab
- Archive For \_\_\_\_\_ Months

OC Requirements (Specify)

(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required  
 24 Hours  48 Hours  7 Days  14 Days  21 Days

Other  *SOPV*

1. Received By  
*Candice A Bauer*

2. Received By  
*Candice A Bauer*

3. Received By  
*Candice A Bauer*

Date 5-8-09 Time 2:10

1. Relinquished By  
*Jenna M. Wells*

Date 5-8-09 Time 2:10 pm

2. Relinquished By  
*Candice A Bauer*

Date 5-8-09 Time 10:00

3. Relinquished By  
*Candice A Bauer*

Date 5/19/09 Time 10:15

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

**TestAmerica Cooler Receipt Form/Narrative**

Lot Number: AGE090180

**North Canton Facility**

Client MSA Project Little Creek By: Derry Burns

Cooler Received on 5/9/09 Opened on 5/9/09 (Signature)

FedEx  UPS  DHL  FAS  Stetson  Client Drop Off  TestAmerica Courier  Other \_\_\_\_\_

TestAmerica Cooler # \_\_\_\_\_ Multiple Coolers  Foam Box  Client Cooler  Other \_\_\_\_\_

1. Were custody seals on the outside of the cooler(s)? Yes  No  Intact? Yes  No  NA   
 If YES, Quantity 1 Quantity Unsalvageable \_\_\_\_\_

Were custody seals on the outside of cooler(s) signed and dated? Yes  No  NA

Were custody seals on the bottle(s)? Yes  No

If YES, are there any exceptions? \_\_\_\_\_

2. Shippers' packing slip attached to the cooler(s)? Yes  No

3. Did custody papers accompany the sample(s)? Yes  No  Relinquished by client? Yes  No

4. Were the custody papers signed in the appropriate place? Yes  No

5. Packing material used: Bubble Wrap  Foam  None  Other \_\_\_\_\_

6. Cooler temperature upon receipt 4.4 °C See back of form for multiple coolers/temps

METHOD: IR  Other

COOLANT: Wet Ice  Blue Ice  Dry Ice  Water  None

7. Did all bottles arrive in good condition (Unbroken)? Yes  No

8. Could all bottle labels be reconciled with the COC? Yes  No

9. Were sample(s) at the correct pH upon receipt? Yes  No  NA

10. Were correct bottle(s) used for the test(s) indicated? Yes  No

11. Were air bubbles >6 mm in any VOA vials? Yes  No  NA

12. Sufficient quantity received to perform indicated analyses? Yes  No

13. Was a trip blank present in the cooler(s)? Yes  No  Were VOAs on the COC? Yes  No

Contacted PM \_\_\_\_\_ Date \_\_\_\_\_ by \_\_\_\_\_ via Verbal  Voice Mail  Other

Concerning \_\_\_\_\_

**14. CHAIN OF CUSTODY**

The following discrepancies occurred:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**15. SAMPLE CONDITION**

Sample(s) \_\_\_\_\_ were received after the recommended holding time had expired.

Sample(s) \_\_\_\_\_ were received in a broken container.

Sample(s) \_\_\_\_\_ were received with bubble >6 mm in diameter. (Notify PM)

**16. SAMPLE PRESERVATION**

Sample(s) \_\_\_\_\_ were further preserved in Sample Receiving to meet recommended pH level(s). Nitric Acid Lot# 031909-HNO<sub>3</sub>; Sulfuric Acid Lot# 100108-H<sub>2</sub>SO<sub>4</sub>; Sodium Hydroxide Lot# 073007 -NaOH; Hydrochloric Acid Lot# 092006-HCl; Sodium Hydroxide and Zinc Acetate Lot# 050205-(CH<sub>3</sub>COO)<sub>2</sub>ZN/NaOH. What time was preservative added to sample(s)? \_\_\_\_\_

Client ID	pH	Date	Initials



***END OF REPORT***

**APPENDIX VII**

**CBR TEST RESULTS**

## SUMMARY OF CBR TEST RESULTS

**Project:** P-851 Naval Construction Division Operations Control Facility **Project Location:** Virginia Beach, Virginia

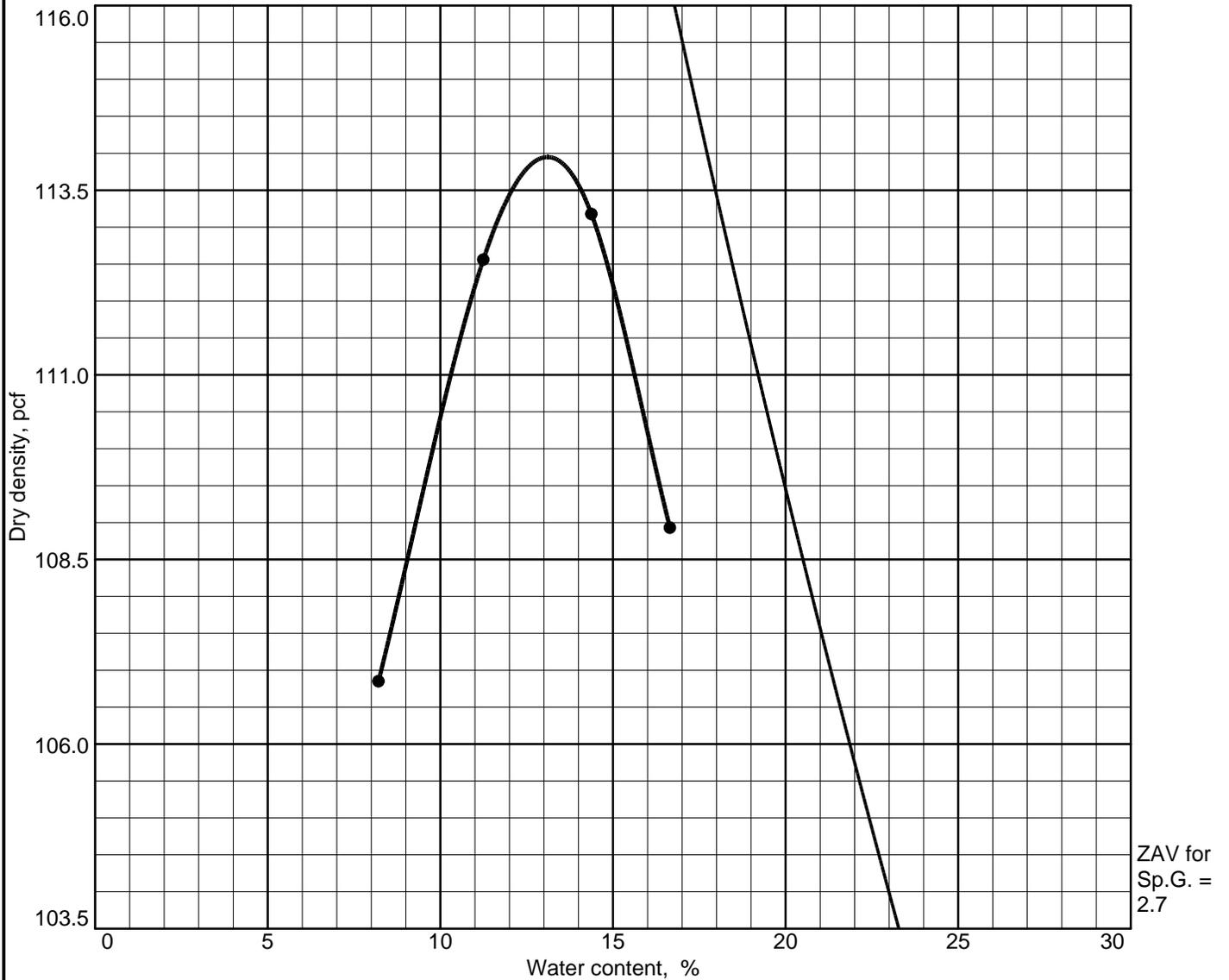
**Client:** Commander NAVFAC Atlantic **Project Number:** VB09-169G

Sample Number	Sample Location	Sample Depth (ft)	USCS Symbol	Natural Moisture Content (%)	Atterberg Limits (LL/PL/PI)	Passing #200 Sieve (%)	Maximum Dry Density (pcf)	Optimum Moisture (%)	Soaked CBR Value	Resiliency Factor	Swell (%)
CBR-01	CBR-01	1.0-2.0	CL-ML	16	24/17/7	70	113.9	13.1	15.5	2.0	0.6
CBR-02	CBR-02	1.0-2.0	CL	13	25/17/8	69	115.3	13.9	15.8	2.0	0.6
CBR-03	CBR-03	1.0-2.0	CL-ML	17	21/15/6	62	113.4	13.3	6.6	2.0	0.4



204 Grayson Road  
 Virginia Beach, Virginia 23462  
 Tel: 757-518-1703 Fax: 757-518-1704

# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)



Test specification: ASTM D 698-00a Method A Standard

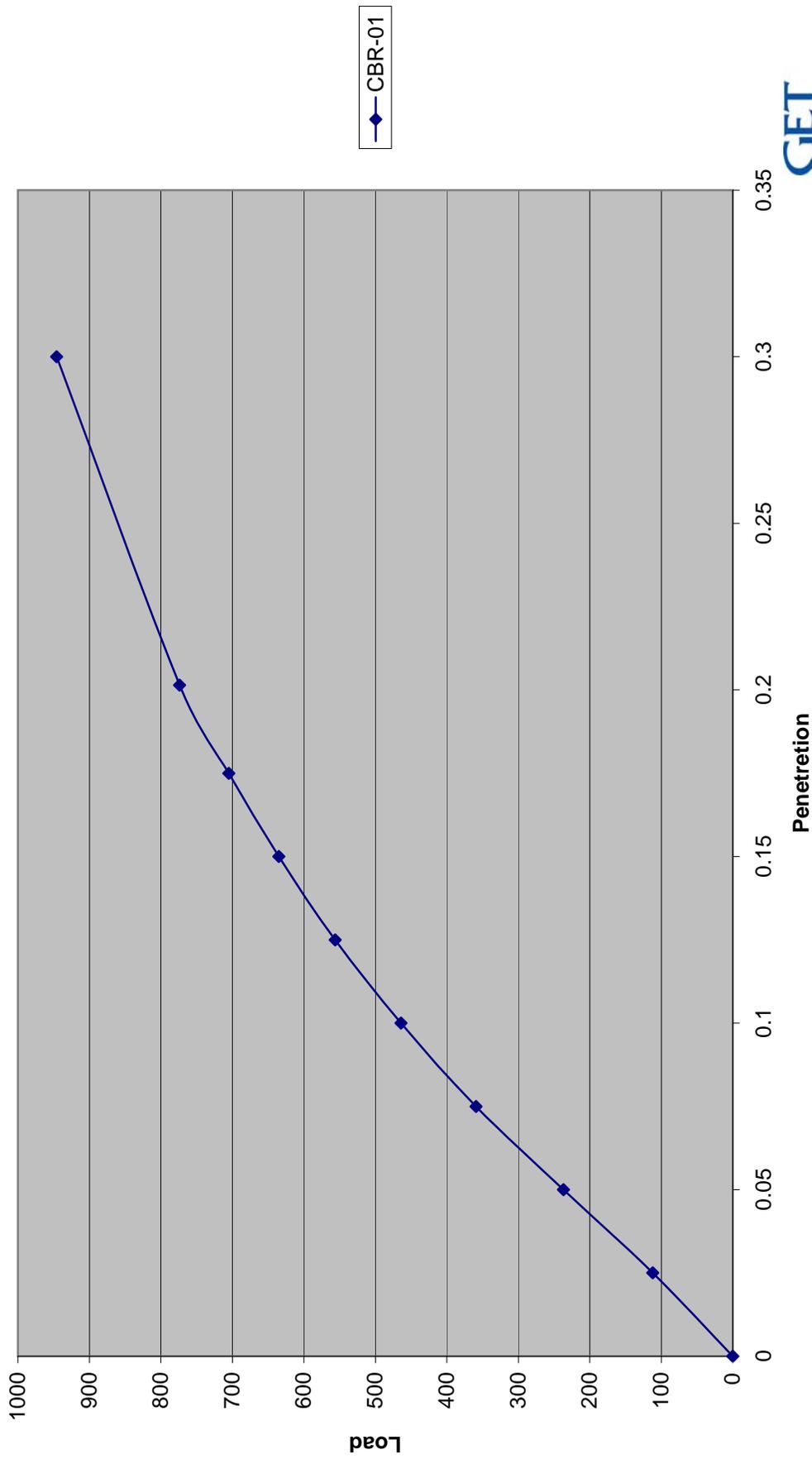
Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
1.0-2.0 ft.	CL-ML	A-4(0)	16		24	7	0.0	70

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 113.9 pcf Optimum moisture = 13.1 %	Brown, Silty Lean CLAY with some fine Sand

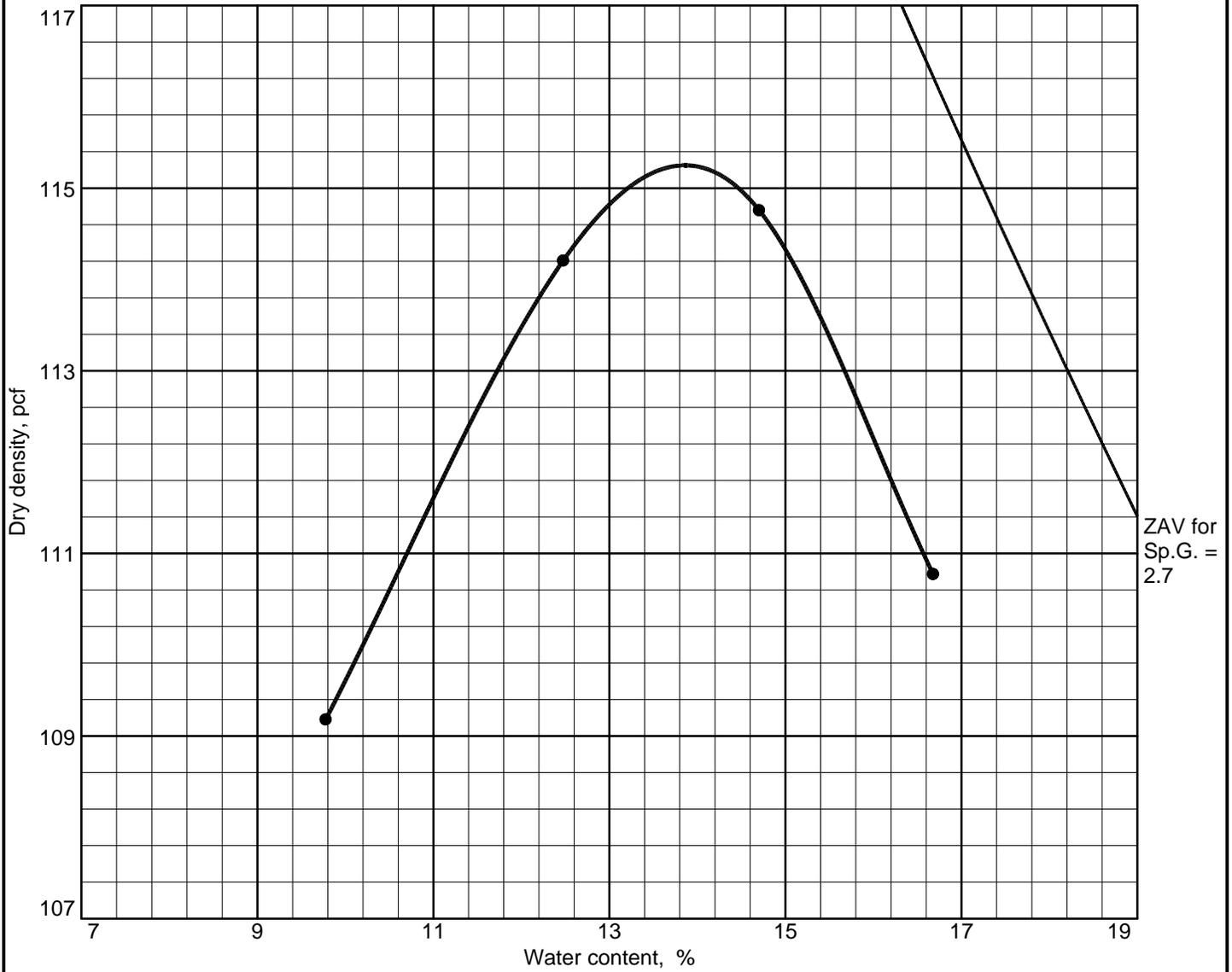
<b>Project No.</b> VB09-169G <b>Client:</b> Commander NAVFAC Atlantic <b>Project:</b> P-851 Naval Construction Division Operations Control Facility <b>Location:</b> CBR-01 (See Plans)	<b>Remarks:</b> CBR-01 Sample Obtained 5/4/09 Soaked CBR Value=15.5 Resiliency Factor=2.0
---	---

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE) <h2 style="margin: 0;">GET SOLUTIONS, INC.</h2>	<b>Figure 1</b>
--	-----------------

**CBR Curve**  
**P-851 Naval Construction Division Operations Control Facility**  
**GET Project # VB09-169G**



# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)



Test specification: ASTM D 698-00a Method A Standard

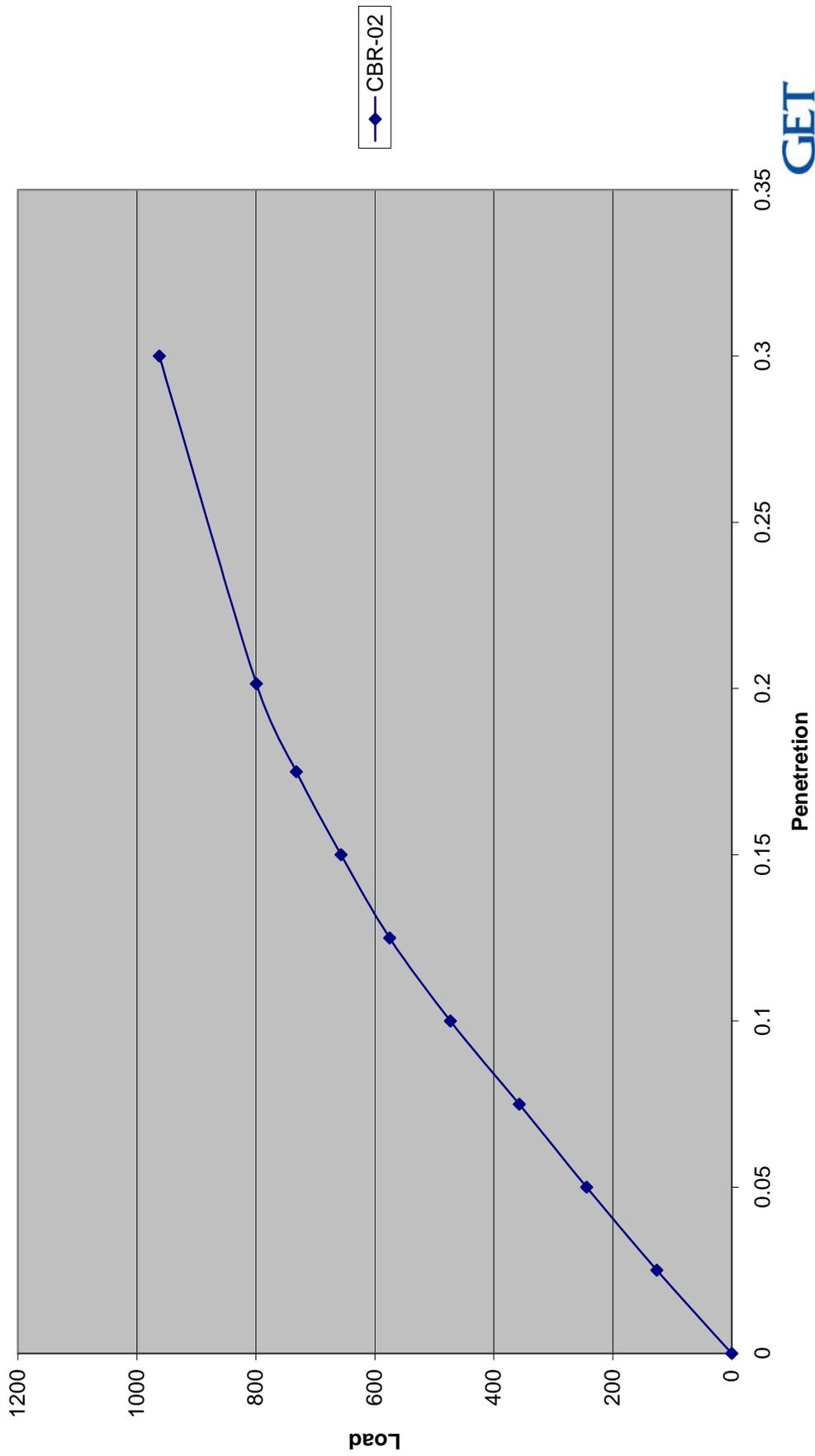
Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
1.0-2.0 ft.	CL	A-4(3)			25	8	0.0	69

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 115.3 pcf Optimum moisture = 13.9 %	Brown, Lean CLAY with some fine Sand

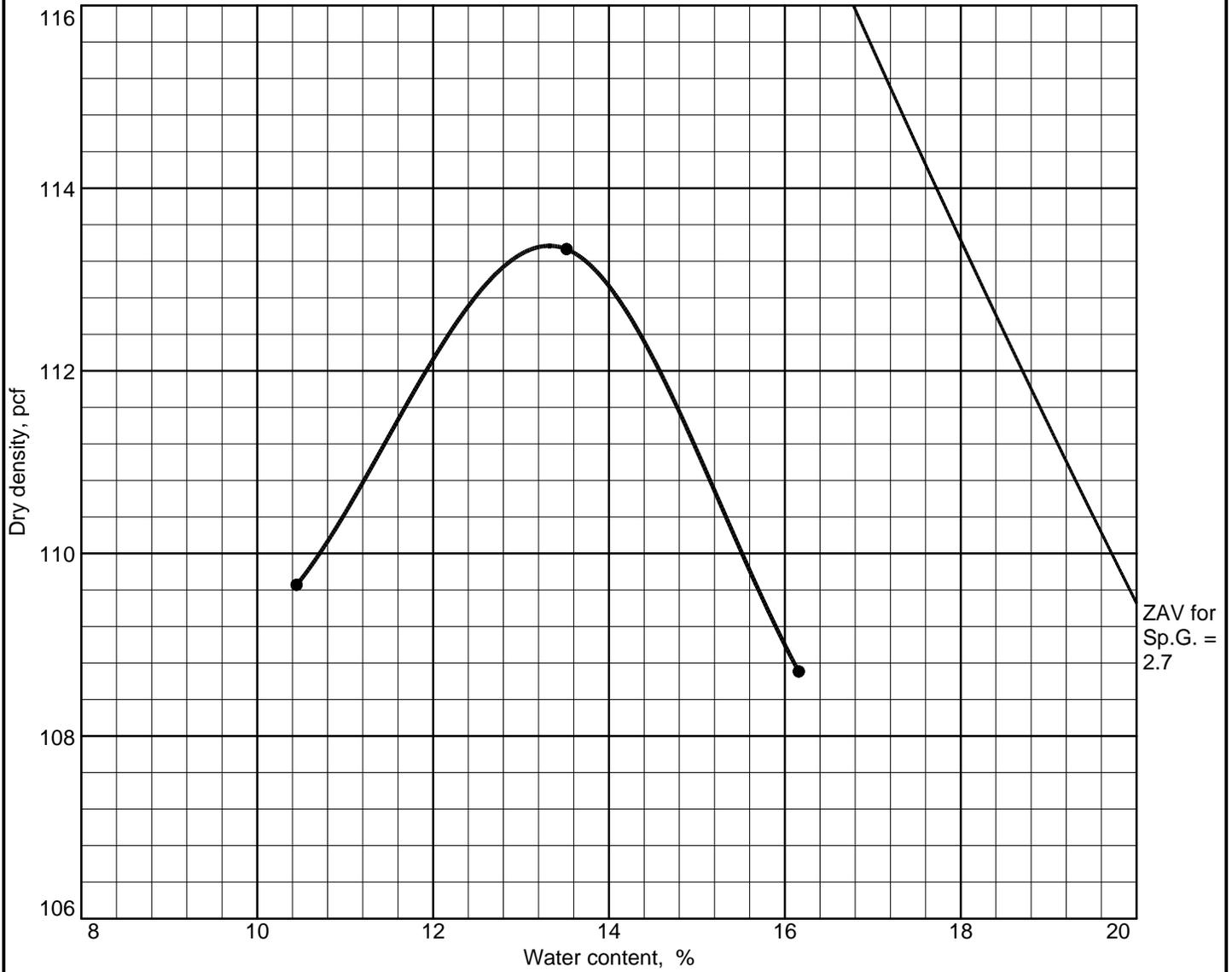
<b>Project No.</b> VB09-169G <b>Client:</b> Commander NAVFAC Atlantic <b>Project:</b> P-851 Naval Construction Division Operations Control Facility <b>Location:</b> CBR-02 (See Plans)	<b>Remarks:</b> CBR-02 Sample Obtained 5/4/09 Soaked CBR Value=15.8 Resiliency Factor=2.0
---	---

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE) <h2 style="margin: 0;">GET SOLUTIONS, INC.</h2>	<b>Figure 2</b>
--	-----------------

**CBR Curve**  
**P-851 Naval Construction Division Operations Control Facility**  
**GET Project # VB09-169G**



# MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)



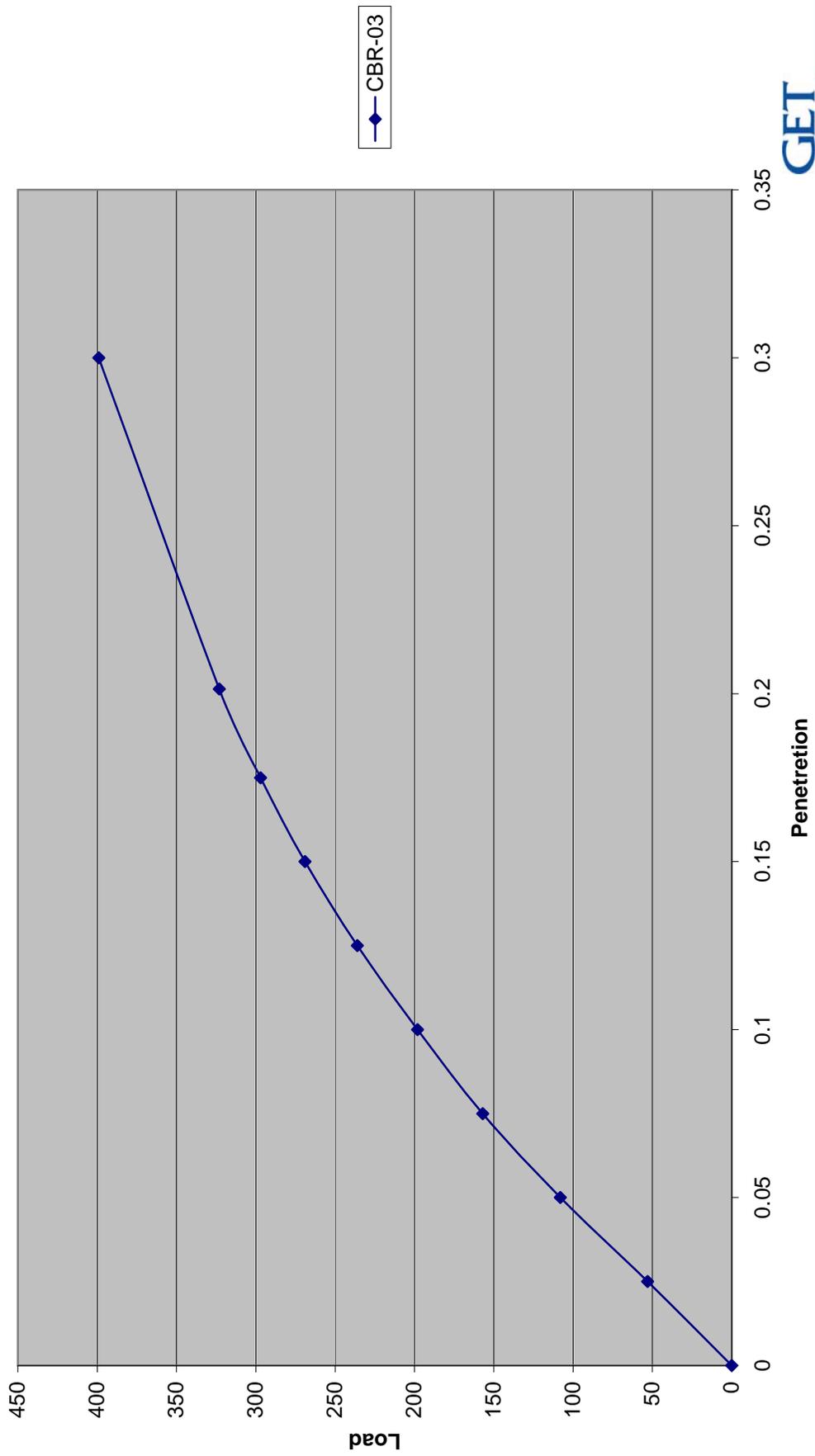
Test specification: ASTM D 698-00a Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
1.0-2.0 ft.	CL-ML	A-4(1)	17		21	6	0.0	62

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 113.4 pcf Optimum moisture = 13.3 %	Brown, fine Sandy Silty Lean CLAY
<b>Project No.</b> VB09-169G <b>Client:</b> Commander NAVFAC Atlantic <b>Project:</b> P-851 Naval Construction Division Operations Control Facility <b>Location:</b> CBR-03 (See Plans)	<b>Remarks:</b> CBR-03 Sample Obtained 5/4/09 Soaked CBR Value=6.6 Resiliency Factor=2.0
MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE) <h2 style="margin: 0;">GET SOLUTIONS, INC.</h2>	

Figure 3

**CBR Curve**  
**P-851 Naval Construction Division Operations Control Facility**  
**GET Project # VB09-169G**



**APPENDIX VIII**

**HYDRAULIC CONDUCTIVITY WORKSHEET**

G E T Solutions, Inc.				SATURATED HYDRAULIC CONDUCTIVITY WORKSHEET						Sheet No.: 1 of 1	
Project Name.: P-851		Location.....: Virginia Beach, Virginia		Terminology and Solution				Ksat : Saturated hydraulic conductivity			
Boring No.....: CBR-02		Date.....: 5/12/2009		File No.....: VB09-169G				Q: Steady-state rate of water flow into the soil			
Investigator(s): P. Scholefield		WCU Base. Ht. h: 4.8 ft		WCU Susp. Ht. S: 0.0 cm		H: Constant height of water in borehole				r: Radius of cylindrical borehole	
Boring Rad. (r): 4.10 cm		Const. Wtr. Ht. H: 15.0 cm		Flow Rate Q (ml/min) [a/b]				Ksat = $Q[\sinh^{-1}(H/r) - (r^2/H^2+1).5 + r/H] / (2pH_2)$ [Glover Solution]			
VOLUME (ml)	TIME (hr:min:sec a/p)	Volume Out (ml) [a]	Elapsed Time		Flow Rate Q (ml/min) [a/b]	Ksat Equivalent Values			(ft/day)		
			(hr:min:sec)	(min) [b]		(cm/min)	(cm/sec)	(cm/day)		(in/hr)	
120	1:00:00 PM										
115	1:00:09 PM	5	0:00:09	0.15	33.33	0.029	4.89E-04	42.3	0.693	1.39	
110	1:00:18 PM	5	0:00:09	0.15	33.33	0.029	4.89E-04	42.3	0.693	1.39	
105	1:00:25 PM	5	0:00:07	0.12	42.86	0.038	6.29E-04	54.4	0.892	1.78	
100	1:00:34 PM	5	0:00:09	0.15	33.33	0.029	4.89E-04	42.3	0.693	1.39	
95	1:00:44 PM	5	0:00:10	0.17	30.00	0.026	4.40E-04	38.0	0.624	1.25	
90	1:00:54 PM	5	0:00:10	0.17	30.00	0.026	4.40E-04	38.0	0.624	1.25	
85	1:01:02 PM	5	0:00:08	0.13	37.50	0.033	5.50E-04	47.6	0.780	1.56	
80	1:01:11 PM	5	0:00:09	0.15	33.33	0.029	4.89E-04	42.3	0.693	1.39	
75	1:01:19 PM	5	0:00:08	0.13	37.50	0.033	5.50E-04	47.6	0.780	1.56	
70	1:01:30 PM	5	0:00:11	0.18	27.27	0.024	4.00E-04	34.6	0.567	1.13	
65	1:01:40 PM	5	0:00:10	0.17	30.00	0.026	4.40E-04	38.0	0.624	1.25	
60	1:01:49 PM	5	0:00:09	0.15	33.33	0.029	4.89E-04	42.3	0.693	1.39	
55	1:01:58 PM	5	0:00:09	0.15	33.33	0.029	4.89E-04	42.3	0.693	1.39	
50	1:02:19 PM	5	0:00:21	0.35	14.29	0.013	2.10E-04	18.1	0.297	0.59	
45	1:02:27 PM	5	0:00:08	0.13	37.50	0.033	5.50E-04	47.6	0.780	1.56	
40	1:02:38 PM	5	0:00:11	0.18	27.27	0.024	4.00E-04	34.6	0.567	1.13	
35	1:02:48 PM	5	0:00:10	0.17	30.00	0.026	4.40E-04	38.0	0.624	1.25	
30	1:02:58 PM	5	0:00:10	0.17	30.00	0.026	4.40E-04	38.0	0.624	1.25	
25	1:03:08 PM	5	0:00:10	0.17	30.00	0.026	4.40E-04	38.0	0.624	1.25	
20	1:03:20 PM	5	0:00:12	0.20	25.00	0.022	3.67E-04	31.7	0.520	1.04	
15	1:03:30 PM	5	0:00:10	0.17	30.00	0.026	4.40E-04	38.0	0.624	1.25	
10	1:03:40 PM	5	0:00:10	0.17	30.00	0.026	4.40E-04	38.0	0.624	1.25	
5	1:03:50 PM	5	0:00:10	0.17	30.00	0.026	4.40E-04	38.0	0.624	1.25	
Natural Moisture:	17 % Passing #200 : 13	ESTIMATED FIELD KSAT:		0.028	4.59E-04	39.7	0.651	1.30			
USCS Class:	SM	Consistency:	Medium Dense	Depth to an Impermeable Layer:	NA	Notes:	Ksat Class = Moderately High				
Structure/Fabric:	NA	Slope/Landsc:	NA	Depth to Bedrock.....:	NA						



September 3, 2009

TO: **Commander NAVFAC Atlantic**  
6506 Hampton Boulevard  
Building LRA A  
Norfolk, Virginia 23508-1278

Attn: Mr. Glenn Jackson

RE: Report of Subsurface Environmental Investigation  
**Military Construction Project 851**  
**Naval Construction Division Operations Control Facility**  
**Naval Air Station Oceana**  
Virginia Beach, Virginia  
**G E T** Project No: VB09-240G

Dear Mr. Jackson:

**G E T Solutions, Inc.** has completed our study of the above referenced project site. The geotechnical engineering services were conducted in general accordance with the A&E Contract N62470-08-D-8001, T.O. 0033. Authorization to proceed with our services was received in the form of the executed A&E Contract. We provided initial geotechnical consultation at this site in the form of three (3) 80-foot deep Standard Penetration Test (SPT) borings (designated as B-01, B-03 and B-04) and one (1) 100-foot SPT boring (designated as B-02) drilled within the proposed structure's footprint (**GET** Project No. VB09-169G, dated May 28, 2009). The purpose of this study was to provide analytical testing of the shallow subsurface soils within a 15-foot diameter around boring location B-04.

A representative of **GET Solutions, Inc.** collected four shallow soil samples (designated as HA-1 through HA-4) from the project site. Per the client's request, the soil samples were collected from hand auger borings located approximately 15-feet in each direction (north, south, east and west) from boring location B-04 (as established during the initial geotechnical investigation, **GET** Project No. VB09-169G). Specifically, soil sample HA-1 was collected west, HA-2 was collected east, HA-3 was collected north and HA-4 was collected south of boring location B-04. The soil samples were collected in laboratory-provided glass jars and then placed on ice and shipped under chain of custody to TestAmerica Laboratory located in North Canton, Ohio. The soil samples were analyzed for Total Petroleum Hydrocarbons-Diesel Range Organics (TPH-DRO) and Total Petroleum Hydrocarbons (Oil and Grease) using EPA Methods 8015 and 9071, respectively. The laboratory report is included as an attachment.

Based on the analytical results, no significant petroleum impact was detected in any of the collected soil samples. Specifically, no detectable concentrations of TPH 9071 were identified in any of the analyzed samples. Minor TPH-DRO concentrations were detected in all of the collected soil samples. Specifically, soil sample HA-1 revealed a TPH-DRO concentration of 3.7 mg/kg, HA-2 revealed a TPH-DRO concentration of 4.3 mg/kg, HA-3 revealed a TPH-DRO concentration of 4.3 mg/kg and HA-4 revealed a TPH-DRO concentration of 3.5 mg/kg. However, all of the detected concentrations were below the laboratory detection levels and are therefore estimated concentrations. In addition, the concentrations detected are well below the Virginia Department of Environmental Quality (VDEQ) reporting level for TPH-DRO (100 mg/kg).

Based on the results of the soil investigation, significant petroleum constituent impact was not identified at the site; however, disposal samples should be collected to confirm proper disposal prior to transporting material off-site. Should impacted material be discovered during future construction activities, all material should be handled according to local, state and federal regulations.

Thank you for the opportunity to work with you on this project. We trust that the information contained herein meets your immediate need, and should you have any questions or if we could be of further assistance, please do not hesitate to contact us.

Respectfully Submitted,  
**GET Solutions, Inc.**



Chris M. Caton, E.I.T.  
Project Engineer/Geologist



D. Mark Scholefield, P.E.  
Senior Geotechnical Engineer  
VA Lic. # 33932



Copies: (1) Client

Attachment: Analytical Report

# ANALYTICAL REPORT

## ANALYTICAL REPORT

PROJECT NO. 07118E

LITTLE CREEK P-851, VA BCH, VA

Lot #: A9H210237

Jessica Wilson

Miller-Stephenson & Associates  
5033 Rouse Drive  
Virginia Beach, VA 23462-3708

TESTAMERICA LABORATORIES, INC.



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Patrick J. O'Meara  
Project Manager  
patrick.omeara@testamericainc.com

Approved for release.  
Patrick O'Meara  
Project Manager  
9/1/2009 8:27 AM

August 30, 2009

TestAmerica Laboratories, Inc.

TestAmerica North Canton 4101 Shuffel Street NW, North Canton, OH 44720

Tel (330)497-9396 Fax (330)497-0772 [www.testamericainc.com](http://www.testamericainc.com)



# CASE NARRATIVE

A9H210237

The following report contains the analytical results for four solid samples submitted to TestAmerica North Canton by Miller-Stephenson & Associates, P.C. from the Little Creek P-851, VA BCH, VA Site, project number 07118E. The samples were received August 21, 2009, according to documented sample acceptance procedures.

TestAmerica utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. Preliminary results were provided to Jessica Wilson on August 27, 2009. A summary of QC data for these analyses is included at the back of the report.

TestAmerica North Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by a dry weight adjustment footnote at the bottom of the analytical report page. The list of parameters which are never reported on a dry weight basis is included on the Sample Summary.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Please refer to the Quality Control Elements Narrative following this case narrative for additional quality control information.

If you have any questions, please call the Project Manager, Patrick J. O'Meara, at 330-497-9396.

This report is sequentially paginated. The final page of the report is labeled as "END OF REPORT."

## **CASE NARRATIVE (continued)**

### **SUPPLEMENTAL QC INFORMATION**

#### **SAMPLE RECEIVING**

The temperature of the cooler upon sample receipt was 4.1°C.

#### **EXTRACTABLE PETROLEUM HYDROCARBONS-8015**

The sample(s) that contain results between the MDL and the RL were flagged with "J". There is a possibility of false positive or mis-identification at these quantitation levels. In analytical methods requiring confirmation of the analyte reported, confirmation was performed only down to the standard reporting limit (SRL). The acceptance criteria for QC samples may not be met at these quantitation levels.

The matrix spike/matrix spike duplicate data for batch(es) 9236039 are not included in this report. The batch QC samples, which document the effect of a specific sample matrix on method performance, were not associated with a sample reported in this lot. The data, therefore, has no bearing on the samples reported herein. In order to document compliance with the QC requirement for an MS/MSD per 20 environmental samples, a summary of sample/QC associations has been provided following this case narrative.

#### **GENERAL CHEMISTRY**

The analytical results met the requirements of the laboratory's QA/QC program.

## QUALITY CONTROL ELEMENTS NARRATIVE

TestAmerica conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program, which is described in detail in QA Policy, QA-003. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data. Program or agency specific requirements take precedence over the requirements listed in this narrative.

### **QC BATCH**

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. TestAmerica North Canton requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples.

For SW846/RCRA methods, QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

For 600 series/CWA methods, QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE (MS). An MS is prepared and analyzed at a 10% frequency for GC Methods and at a 5% frequency for GC/MS methods.

### **LABORATORY CONTROL SAMPLE**

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. Multi peak responders may not be included in the target spike list due to co-elution. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. All control analytes indicated by a bold type in the LCS must meet acceptance criteria. Failure to meet the established recovery guidelines requires the reparation and reanalysis of all samples in the QC batch. Comparison of only the failed parameters from the first batch are evaluated. The only exception to the rework requirement is that if the LCS recoveries are biased high and the associated sample is ND (non-detected) for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). If the RPD fails for an LCS/LCSD and yet the recoveries are within acceptance criteria, the batch is still acceptable.

### **METHOD BLANK**

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except under the following circumstances:

- Common organic contaminants may be present at concentrations up to 5 times the reporting limits. Common metals contaminants may be present at concentrations up to 2 times the reporting limit, or the reported blank concentration must be twenty fold less than the concentration reported in the associated environmental samples. (See common laboratory contaminants listed in the table.)

<b><u>Volatile (GC or GC/MS)</u></b>	<b><u>Semivolatile (GC/MS)</u></b>	<b><u>Metals ICP-MS</u></b>	<b><u>Metals ICP Trace</u></b>
Methylene Chloride, Acetone, 2-Butanone	Phthalate Esters	Copper, Iron, Zinc, Lead, Calcium, Magnesium, Potassium, Sodium, Barium, Chromium, Manganese	Copper, Iron, Zinc, Lead

## QUALITY CONTROL ELEMENTS NARRATIVE (continued)

- Organic blanks will be accepted if compounds detected in the blank are present in the associated samples at levels 10 times the blank level. Inorganic blanks will be accepted if elements detected in the blank are present in the associated samples at 20 times the blank level.
- Blanks will be accepted if the compounds/elements detected are not present in any of the associated environmental samples.

Failure to meet these Method Blank criteria requires the reparation and reanalysis of all samples in the QC batch.

### **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. Due to the potential variability of the matrix of each sample, the MS/MSD results may not have an immediate bearing on any samples except the one spiked; therefore, the associated batch MS/MSD may not reflect the same compounds as the samples contained in the analytical report. When these MS/MSD results fail to meet acceptance criteria, the data is evaluated. If the LCS is within acceptance criteria, the batch is considered acceptable.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch. However, a Sample Duplicate is less likely to provide usable precision statistics depending on the likelihood of finding concentrations below the standard reporting limit. When the Sample Duplicate result fails to meet acceptance criteria, the data is evaluated.

For certain methods (600 series methods/CWA), a Matrix Spike is required in place of a Matrix Spike/Matrix Spike Duplicate (MS/MSD) or Matrix Spike/Sample Duplicate (MS/DU).

The acceptance criteria do not apply to samples that are diluted.

### **SURROGATE COMPOUNDS**

In addition to these batch-related QC indicators, each organic environmental and QC sample is spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

If surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank, and the associated sample(s) are ND, the batch is acceptable. Otherwise, if the LCS, LCSD, or Method Blank surrogate(s) fail to meet recovery criteria, the entire sample batch is reprepared and reanalyzed. If the surrogate recoveries are outside criteria for environmental samples, the samples will be reprepared and reanalyzed unless there is objective evidence of matrix interference or if the sample dilution is greater than the threshold outlined in the associated method SOP.

The acceptance criteria do not apply to samples that are diluted. All other surrogate recoveries will be reported.

For the GC/MS BNA methods, the surrogate criterion is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide and PCB methods, the surrogate criterion is that one of two surrogate compounds must meet acceptance criteria. The second surrogate must have a recovery of 10% or greater.



### **TestAmerica Certifications and Approvals:**

*The laboratory is certified for the analytes listed on the documents below. These are available upon request.*  
California (#01144CA), Connecticut (#PH-0590), Florida (#E87225),  
Illinois (#200004), Kansas (#E10336), Minnesota (#39-999-348), New Jersey (#OH001), New York (#10975), Nevada  
(#OH-000482008A), OhioVAP (#CL0024), Pennsylvania (#008), West Virginia (#210), Wisconsin (#999518190), NAVY,  
ARMY, USDA Soil Permit

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TESTAMERICA LABORATORIES, INC.

MS RUN NUMBER REVIEW

Lot ID	Smp#	Work Order	Batch	MS Run#	SDG	Prep Date	Method
A9H210135	001	LJN61AP	9236038	9236028		08/24/09	SW846 8015B
A9H210135	001	LJN61AU D	9236038	9236028		08/24/09	SW846 8015B
A9H210135	001	LJN61AT S	9236038	9236028		08/24/09	SW846 8015B
A9H210135	002	LJPF1AP	9236038	9236028		08/24/09	SW846 8015B
A9H210135	003	LJPH1AP	9236038	9236028		08/24/09	SW846 8015B
A9H210237	001	LJKLR1AC	9236039	9236028		08/24/09	SW846 8015B
A9H210237	002	LJKLW1AC	9236039	9236028		08/24/09	SW846 8015B
A9H210237	003	LJKLX1AC	9236039	9236028		08/24/09	SW846 8015B
A9H210237	004	LJKL01AC	9236039	9236028		08/24/09	SW846 8015B

# EXECUTIVE SUMMARY - Detection Highlights

A9H210237

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
<b>HA-1 08/20/09 09:40 001</b>				
TPH (as Diesel)	3.7 J	12	mg/kg	SW846 8015B
Percent Solids	80.9	10.0	%	MCAWW 160.3 MOD
<b>HA-2 08/20/09 10:15 002</b>				
TPH (as Diesel)	4.3 J	13	mg/kg	SW846 8015B
Percent Solids	74.8	10.0	%	MCAWW 160.3 MOD
<b>HA-3 08/20/09 10:45 003</b>				
TPH (as Diesel)	4.3 J	13	mg/kg	SW846 8015B
Percent Solids	79.3	10.0	%	MCAWW 160.3 MOD
<b>HA-4 08/20/09 11:15 004</b>				
TPH (as Diesel)	3.5 J	12	mg/kg	SW846 8015B
Percent Solids	83.1	10.0	%	MCAWW 160.3 MOD

# ANALYTICAL METHODS SUMMARY

A9H210237

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>
n-Hexane Ext. Material	SW846 9071B
Extractable Petroleum Hydrocarbons	SW846 8015B
Total Residue as Percent Solids	MCAWW 160.3 MOD

## References:

- MCAWW "Methods for Chemical Analysis of Water and Wastes",  
EPA-600/4-79-020, March 1983 and subsequent revisions.
- SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical  
Methods", Third Edition, November 1986 and its updates.

# SAMPLE SUMMARY

A9H210237

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
LJKLR	001	HA-1	08/20/09	09:40
LJKLW	002	HA-2	08/20/09	10:15
LJKLX	003	HA-3	08/20/09	10:45
LJKL0	004	HA-4	08/20/09	11:15

## NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Miller-Stephenson & Associates, P.C.

Client Sample ID: HA-1

GC Semivolatiles

Lot-Sample #...: A9H210237-001    Work Order #...: LJKLR1AC    Matrix.....: SO  
Date Sampled...: 08/20/09 09:40    Date Received..: 08/21/09  
Prep Date.....: 08/24/09    Analysis Date..: 08/25/09  
Prep Batch #...: 9236039  
Dilution Factor: 1  
% Moisture.....: 19    Method.....: SW846 8015B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
TPH (as Diesel)	3.7 J	12	mg/kg
<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>	
	<u>RECOVERY</u>	<u>LIMITS</u>	
C9 (nonane)	38	(10 - 110)	

**NOTE(S):**

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Miller-Stephenson & Associates, P.C.

Client Sample ID: HA-1

General Chemistry

Lot-Sample #...: A9H210237-001    Work Order #...: LJKLR    Matrix.....: SO  
Date Sampled...: 08/20/09 09:40    Date Received...: 08/21/09  
% Moisture.....: 19

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
n-Hexane Extractable Material	ND	408	mg/kg	SW846 9071B	08/24/09	9236386

Dilution Factor: 1

Percent Solids	80.9	10.0	%	MCAWW 160.3 MOD	08/26-08/27/09	9238321
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Dilution Factor: 1

**NOTE(S):**

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

Miller-Stephenson & Associates, P.C.

Client Sample ID: HA-2

GC Semivolatiles

Lot-Sample #...: A9H210237-002    Work Order #...: LJKLW1AC    Matrix.....: SO  
Date Sampled...: 08/20/09 10:15    Date Received...: 08/21/09  
Prep Date.....: 08/24/09    Analysis Date...: 08/25/09  
Prep Batch #...: 9236039  
Dilution Factor: 1  
% Moisture.....: 25    Method.....: SW846 8015B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>
TPH (as Diesel)	4.3 J	13	mg/kg

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
C9 (nonane)	38	(10 - 110)

**NOTE(S):**

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Miller-Stephenson & Associates, P.C.

Client Sample ID: HA-2

General Chemistry

Lot-Sample #...: A9H210237-002    Work Order #...: LJKLW    Matrix.....: SO  
Date Sampled...: 08/20/09 10:15    Date Received...: 08/21/09  
% Moisture.....: 25

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
n-Hexane Extractable Material	ND	441	mg/kg	SW846 9071B	08/24/09	9236386
		Dilution Factor: 1				
Percent Solids	74.8	10.0	%	MCAWW 160.3 MOD	08/26-08/27/09	9238321
		Dilution Factor: 1				

**NOTE(S):**

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

Miller-Stephenson & Associates, P.C.

Client Sample ID: HA-3

GC Semivolatiles

Lot-Sample #...: A9H210237-003    Work Order #...: LJKLX1AC    Matrix.....: SO  
Date Sampled...: 08/20/09 10:45    Date Received..: 08/21/09  
Prep Date.....: 08/24/09    Analysis Date..: 08/25/09  
Prep Batch #...: 9236039  
Dilution Factor: 1  
% Moisture.....: 21    Method.....: SW846 8015B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
TPH (as Diesel)	4.3 J	13	mg/kg
<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>	
	<u>RECOVERY</u>	<u>LIMITS</u>	
C9 (nonane)	41	(10 - 110)	

**NOTE(S):**

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Miller-Stephenson & Associates, P.C.

Client Sample ID: HA-3

General Chemistry

Lot-Sample #...: A9H210237-003    Work Order #...: LJKLX    Matrix.....: SO  
Date Sampled...: 08/20/09 10:45    Date Received...: 08/21/09  
% Moisture.....: 21

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
n-Hexane Extractable Material	ND	416	mg/kg	SW846 9071B	08/24/09	9236386
		Dilution Factor: 1				
Percent Solids	79.3	10.0	%	MCAWW 160.3 MOD	08/26-08/27/09	9238321
		Dilution Factor: 1				

**NOTE(S):**

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

Miller-Stephenson & Associates, P.C.

Client Sample ID: HA-4

GC Semivolatiles

Lot-Sample #...: A9H210237-004    Work Order #...: LJKL01AC    Matrix.....: SO  
Date Sampled...: 08/20/09 11:15    Date Received...: 08/21/09  
Prep Date.....: 08/24/09    Analysis Date...: 08/25/09  
Prep Batch #...: 9236039  
Dilution Factor: 1  
% Moisture.....: 17    Method.....: SW846 8015B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
TPH (as Diesel)	3.5 J	12	mg/kg
	PERCENT	RECOVERY	
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>	
C9 (nonane)	33	(10 - 110)	

**NOTE(S):**

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Miller-Stephenson & Associates, P.C.

Client Sample ID: HA-4

General Chemistry

Lot-Sample #...: A9H210237-004    Work Order #...: LJKL0    Matrix.....: SO  
Date Sampled...: 08/20/09 11:15    Date Received...: 08/21/09  
% Moisture.....: 17

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
n-Hexane Extractable Material	ND	397	mg/kg	SW846 9071B	08/24/09	9236386
		Dilution Factor: 1				
Percent Solids	83.1	10.0	%	MCAWW 160.3 MOD	08/26-08/27/09	9238321
		Dilution Factor: 1				

**NOTE(S):**

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

# *QUALITY CONTROL SECTION*

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: A9H210237  
MB Lot-Sample #: A9H240000-039

Work Order #...: LJMJ41AA

Matrix.....: SOLID

Analysis Date...: 08/25/09  
Dilution Factor: 1

Prep Date.....: 08/24/09

Prep Batch #...: 9236039

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>
		<u>LIMIT</u>	<u>UNITS</u>	
TPH (as Diesel)	ND	10	mg/kg	SW846 8015B

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
C9 (nonane)	38	(10 - 110)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: A9H210237

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>PREP</u> <u>BATCH #</u>
n-Hexane Extractable Material	ND	Work Order #: LJNC71AA 330	mg/kg	MB Lot-Sample #: A9H240000-386 SW846 9071B	08/24/09	9236386
		Dilution Factor: 1				
Percent Solids	ND	Work Order #: LJR1K1AA 10.0	%	MB Lot-Sample #: A9H260000-321 MCAWW 160.3 MOD	08/26-08/27/09	9238321
		Dilution Factor: 1				

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...: A9H210237      Work Order #...: LJMJ41AC      Matrix.....: SOLID  
 LCS Lot-Sample#: A9H240000-039  
 Prep Date.....: 08/24/09      Analysis Date..: 08/25/09  
 Prep Batch #...: 9236039  
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>	<u>METHOD</u>
TPH (as Diesel)	<b>94</b>	<b>(47 - 138)</b>	<b>SW846 8015B</b>

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
C9 (nonane)	39	(10 - 110)

**NOTE(S):**

---

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

**LABORATORY CONTROL SAMPLE EVALUATION REPORT**

**General Chemistry**

**Lot-Sample #...**: A9H210237

**Matrix.....**: SOLID

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
n-Hexane Extractable Material		WO#:LJNC71AC-LCS/LJNC71AD-LCSD			LCS Lot-Sample#:	A9H240000-386	
	96	(60 - 161)			SW846 9071B	08/24/09	9236386
	98	(60 - 161)	2.3	(0-74)	SW846 9071B	08/24/09	9236386
		Dilution Factor: 1					

**NOTE(S):**

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Calculations are performed before rounding to avoid round-off errors in calculated results.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H210237

Work Order #...: LJKL0-SMP  
LJKL0-DUP

Matrix.....: SO

Date Sampled...: 08/20/09 11:15 Date Received...: 08/21/09

% Moisture.....: 17

<u>PARAM</u>	<u>RESULT</u>	<u>DUPLICATE</u>	<u>UNITS</u>	<u>RPD</u>	<u>LIMIT</u>	<u>METHOD</u>	<u>PREPARATION-</u>	<u>PREP</u>
		<u>RESULT</u>					<u>ANALYSIS DATE</u>	<u>BATCH #</u>
Percent Solids	83.1	82.9	%	0.18	(0-20)	SD Lot-Sample #: A9H210237-004 MCAWW 160.3 MOD	08/26-08/27/09	9238321

Dilution Factor: 1

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: A9H210237

Work Order #...: LJQ62-SMP  
LJQ62-DUP

Matrix.....: SOLID

Date Sampled...: 08/24/09 12:45    Date Received...: 08/26/09

% Moisture.....: 13

<u>PARAM</u>	<u>RESULT</u>	<u>DUPLICATE</u>	<u>UNITS</u>	<u>RPD</u>	<u>LIMIT</u>	<u>METHOD</u>	<u>PREPARATION-</u>	<u>PREP</u>
		<u>RESULT</u>					<u>ANALYSIS DATE</u>	<u>BATCH #</u>
Percent Solids	86.5	86.5	%	0.035	(0-20)	MCAWW 160.3 MOD	08/26-08/27/09	9238321
Dilution Factor: 1								

# Chain of Custody Record

Temperature on Receipt \_\_\_\_\_

Drinking Water? Yes  No

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client: **MSA PC** Project Manager: **J. W. Dissan** Date: **8-20-09** Chain of Custody Number: **119562**

Address: **5033 Rouse DR** Telephone Number (Area Code)/Fax Number: **757 490 9204 / 490 0634** Lab Number: **8-20-09** Page **1** of **1**

City: **VA Beach** State: **VA** Zip Code: **23462** Site Contact: **J. W. Dissan** Lab Contact: \_\_\_\_\_

Project Name and Location (State): **Little Creek P-851, VA Beach, VA** Carrier/Waybill Number: \_\_\_\_\_

Contract/Purchase Order/Quote No.: **MSA # 07118E** Matrix: **TPH-DRG** Containers & Preservatives: **TPH-9071**

Sample I.D. No. and Description (Containers for each sample may be combined on one line)

Sample I.D. No. and Description	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed)	Special Instructions/Conditions of Receipt
HA-1	8-20-09	9:40				X	X							
HA-2		10:15				X	X							
HA-3		10:45				X	X							
HA-4		11:15				X	X							

Possible Hazard Identification	Sample Disposal	Received By	Archive For	Months	Retention
<input type="checkbox"/> Non-Hazard	<input type="checkbox"/> Flammable	<input checked="" type="checkbox"/> Unknown	<input type="checkbox"/> Return To Client	<input checked="" type="checkbox"/> Disposal By Lab	<input type="checkbox"/> Archive For _____ Months
<input type="checkbox"/> Skin Irritant	<input type="checkbox"/> Poison B	<input type="checkbox"/> Return To Client	<input type="checkbox"/> Archive For _____ Months	<input type="checkbox"/> Archive For _____ Months	<input type="checkbox"/> Archive For _____ Months
<input type="checkbox"/> Turn Around Time Required	<input type="checkbox"/> 24 Hours	<input type="checkbox"/> 48 Hours	<input type="checkbox"/> 7 Days	<input type="checkbox"/> 14 Days	<input type="checkbox"/> 21 Days
<input checked="" type="checkbox"/> Other	<b>10 DAY</b>				

1. Relinquished By: **Jessica M. White** Date: **8-20-09** Time: **7:15**

2. Relinquished By: **Geniviv A. Bauer** Date: **8-20-09** Time: **16:00**

3. Relinquished By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

1. Received By: **Geniviv A. Bauer** Date: **8-20-09** Time: **13:15**

2. Received By: **Geniviv A. Bauer** Date: **8-21-09** Time: **9:15**

3. Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Comments: \_\_\_\_\_

**TestAmerica Cooler Receipt Form/Narrative**  
**North Canton Facility**

Lot Number: ASH210237

Client MSA Project Little Creek By: Chris [Signature]  
 Cooler Received on 8-21-09 Opened on 8-21-09 (Signature)

FedEx  UPS  DHL  FAS  Stetson  Client Drop Off  TestAmerica Courier  Other \_\_\_\_\_  
 TestAmerica Cooler # \_\_\_\_\_ Multiple Coolers  Foam Box  Client Cooler  Other \_\_\_\_\_

1. Were custody seals on the outside of the cooler(s)? Yes  No  Intact? Yes  No  NA   
 If YES, Quantity 1 Quantity Unsalvageable \_\_\_\_\_  
 Were custody seals on the outside of cooler(s) signed and dated? Yes  No  NA   
 Were custody seals on the bottle(s)? Yes  No   
 If YES, are there any exceptions? \_\_\_\_\_
  2. Shippers' packing slip attached to the cooler(s)? Yes  No
  3. Did custody papers accompany the sample(s)? Yes  No  Relinquished by client? Yes  No
  4. Were the custody papers signed in the appropriate place? Yes  No
  5. Packing material used: Bubble Wrap  Foam  None  Other \_\_\_\_\_
  6. Cooler temperature upon receipt 41 °C See back of form for multiple coolers/temps   
 METHOD: IR  Other   
 COOLANT: Wet Ice  Blue Ice  Dry Ice  Water  None
  7. Did all bottles arrive in good condition (Unbroken)? Yes  No
  8. Could all bottle labels be reconciled with the COC? Yes  No
  9. Were sample(s) at the correct pH upon receipt? Yes  No  NA
  10. Were correct bottle(s) used for the test(s) indicated? Yes  No
  11. Were air bubbles >6 mm in any VOA vials? Yes  No  NA
  12. Sufficient quantity received to perform indicated analyses? Yes  No
  13. Was a trip blank present in the cooler(s)? Yes  No  Were VOAs on the COC? Yes  No
- Contacted PM \_\_\_\_\_ Date \_\_\_\_\_ by \_\_\_\_\_ via Verbal  Voice Mail  Other   
 Concerning \_\_\_\_\_

**14. CHAIN OF CUSTODY**

The following discrepancies occurred:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**15. SAMPLE CONDITION**

Sample(s) \_\_\_\_\_ were received after the recommended holding time had expired.  
 Sample(s) \_\_\_\_\_ were received in a broken container.  
 Sample(s) \_\_\_\_\_ were received with bubble >6 mm in diameter. (Notify PM)

**16. SAMPLE PRESERVATION**

Sample(s) \_\_\_\_\_ were further preserved in Sample Receiving to meet recommended pH level(s). Nitric Acid Lot# 031909-HNO<sub>3</sub>; Sulfuric Acid Lot# 100108-H<sub>2</sub>SO<sub>4</sub>; Sodium Hydroxide Lot# 100108 -NaOH; Hydrochloric Acid Lot# 092006-HCl; Sodium Hydroxide and Zinc Acetate Lot# 050205-(CH<sub>3</sub>COO)<sub>2</sub>ZN/NaOH. What time was preservative added to sample(s)? \_\_\_\_\_

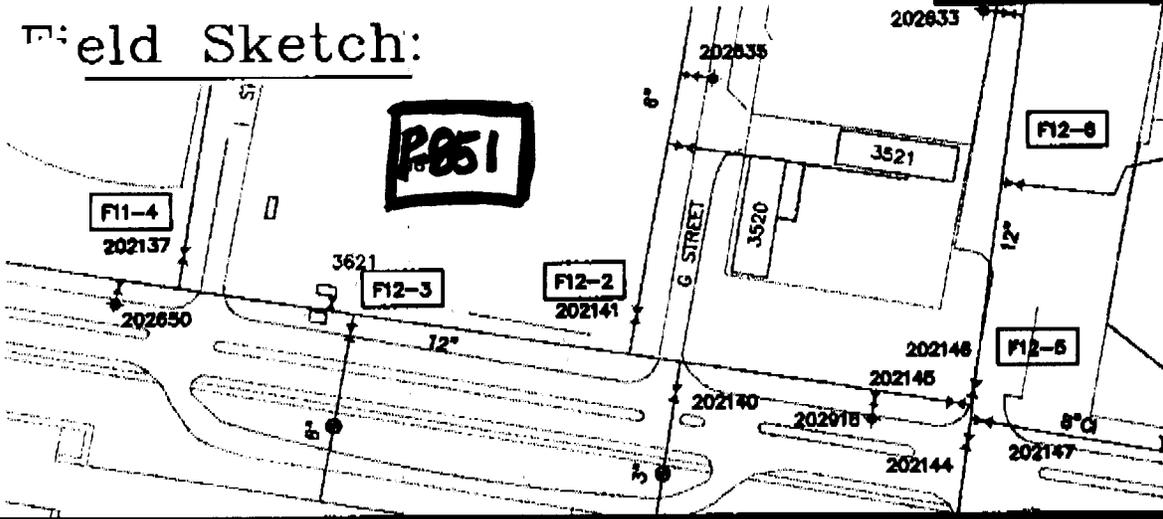
Client ID	pH	Date	Initials



Tested by: Thomas

# Flow Testing

## Field Sketch:



Area: Grator Blvd

Check One:  
 Domestic  
 HP

Date: 2/26/09

Time: 0900

## Field Measurements:

Pressure Hydrant's Static Pressure (FH# 202635):  $P_s = \underline{62 \text{ psi}}$

Flow Hydrant Information (FH# 202918):

Circle Nozzle Coefficient	Nozzle Diameter	} _____
0.9 Rounded	To nearest 1/16"	
0.8 Square	Horizontal=	
0.7 Projected	Vertical=	

Pitot Pressure = \_\_\_\_\_ : Flow (table) = \_\_\_\_\_

OR, If Rounded 2-1/2" nozzle, Flow (gage) = 1060 gpm

Pressure Hydrant's Residual Pressure :  $P_R = \underline{56 \text{ psi}}$

## Calculations:

$Q = \text{flow (table)} * \text{nozzle coeff.} (* 2 \text{ if both nozzles open})$   
 = \_\_\_\_\_

OR  $Q = \text{flow (gage)} (* 2 \text{ if both nozzles open})$   
 = \_\_\_\_\_

$$Q_{20} \text{ flow at } 20 \text{ psi} = Q * \left( \frac{P_s - 20}{P_s - P_R} \right)^{0.54} = 1060 \left( \frac{62 - 20}{62 - 56} \right)^{0.54} = 3032$$

**$Q_{20} = 3,032 \text{ gpm}$**

LD3



Officer In Charge  
 EPMU2 (08)  
 EN ANAL Lab Dept.  
 Naval Station, Bldg. X-336  
 Norfolk, VA 23511-6288

From: Naval Medical Clinic, Norfolk  
 Industrial Hygiene Division  
 Section 0211.

AIR MONITORING DATA

Side 2

90 4501

Activity Log Number		135-90					
EPMU2 Sample Log Number							
Field Number		#1					
Battery ok?							
Instrument							
Manufacturer							
Calibrator	SERIAL	Serial					
Calibrated by:	Date	Model					
		Pra					
		Post					
TYPE of SAMPLE		Bulk					
Work Task Description		Bldg. 3006- wallboard in mechanical room adjacent to vault					
MEDIA TYPE/LOT NUMBER							
Time Stopped							
Time Started							
Total Time (Minutes)							
Air Volume (Liters)							
Contaminant	Analytical						
	Unit	Method					
1. Asbestos		PLM CHRYSOTILE					
2.							
3.							
4.							
5.							
6.							

Date Received 4/26/90  
 Date Reported 4/26/90  
 Lab Report # 904501  
 Analysis performed by: Lick J. Felder

OSH OFFICE  
 NAVPHIBASE LITTLE CREEK  
 TEL # 464-7774  
 PLEASE CALL WHEN RESULTS  
 ARE KNOWN

Sent copy to  
 McNeil, Engineering

ACTIVITY NAVPHIBASE Little Creek LOCATION Bldg. 3006 OPERATION renovations

NAME OF EMPLOYEE SAMPLED: (last, first, initial) SSAN SHOP

JOB TITLE: SHOP SUPERVISOR: PHONE #:

How long has employee been working at operation? historically or this activity. frequency of operation

- (1) daily (2) 2-3 times/week (3) weekly (4) 2-3 times/month
- (5) monthly (6) 4-5 times/year (7) 1-3 times/year (8) yearly (9) other

Shift: (1) day (2) evening (3) night actual duration of operation: hours minutes

PERSONAL PROTECTIVE DEVICES

Ventilation:

Measuring instrument:

Respirator:

Face/eye protection:

Hearing protection:

Protective clothing:

Hand Protection:

Foot protection:

Other:

Were protection devices properly used? (YES) (NO) Were control devices properly used? (YES) (NO)

Enter comments concerning protective equipment/controls used:

MATERIALS

Time history/Activity during unsampled period

COMMENTS REGARDING SURVEY:

Asbestos bulk sample

EQUIPMENT

OSH OFFICE  
NAVPHIBASE LITTLE CREEK  
TEL # 464-7774  
PLEASE CALL WHEN RESULTS ARE KNOWN

Sound level measurements measuring instrument: during operation and level

Industrial Hygienist: (Signature) (Name)

Workplace Monitor/Technician: (Signature) (Name) Cynthia W. Pickett / Cynthia H. Pickett

4-24-90

ACTIVITY

LOCATION

OPERATION

NAVPHIBASE Little Creek Bldg. 3006 - renovations

NAME OF EMPLOYEE SAMPLED: (last, first, initial)

SSAN

SHOP

JOB TITLE:

SHOP SUPERVISOR:

PHONE #:

How long has employee been working at operation? historically frequency of operation

at this activity.

(1) daily

(2) 2-3 times/week

(3) weekly

(4) 2-3 times/month

(5) monthly

(6) 4-5 times/year

(7) 1-3 times/year

(8) yearly

(9) other

Shift: (1) day (2) evening (3) night

actual duration of operation: hours minutes

PERSONAL PROTECTIVE DEVICES

Ventilation:

Respirator:

Measuring instrument:

Face/eye protection:

Hearing protection:

Protective clothing:

Hand Protection:

Foot protection:

Other:

Were protection devices properly used? (YES) (NO)

Were control devices properly used? (YES) (NO)

Enter comments concerning protective equipment/controls used:

MATERIALS

EQUIPMENT

Time history/Activity during unsampled period

COMMENTS REGARDING SURVEY:

Asbestos bulk sample (for McNeil)

OSH OFFICE NAVPHIBASE LITTLE CREEK TEL # 464-7774 PLEASE CALL WHEN RESULTS ARE KNOWN

Sound level measurements measuring instrument:

during operation

ambient

Industrial Hygienist: (Name)

(Signature)

Workplace Monitor/Technician: (Name) (Signature)

Cynthia W. Pickett Cynthia H. Pickett

NPMU2 (08)  
 IH ANAL Lab Dept.  
 Naval Station, Bldg. X-336  
 Norfolk, VA 23511-6288

From: Naval Medical Clinic, Norfolk  
 Industrial Hygiene Division  
 Section 0211.

AIR MONITORING DATA Side 2

Activity Log Number			185-90		
NPMU2 Sample Log Number					
Field Number			#1		
Battery ok?					
Instrument					
Manufacturer					
Calibrator	SERIAL	Serial			
Calibrated by:	Date	Model			
		Pre			
		Post			
TYPE of SAMPLE			Bulk		
Work Task Description			Bldg, 3006-wallboard in mechanical room adjacent to vault		
MEDIA TYPE/LOT NUMBER					
Time Stopped					
Time Started					
Total Time (Minutes)					
Air Volume (Liters)					
Contaminant	Analytical				
	Unit	Method			
1. Asbestos		Chrysotile			
2.					
3.		4/26/90 Result rec'd by phone call from Rick Felder, I.H.			
4.					
5.					
6.					

185-90 Chrysotile  
 asbestos  
 (Dose took msg)

Date Received \_\_\_\_\_  
 Date Reported \_\_\_\_\_  
 Lab Report # \_\_\_\_\_  
 Analysis performed by: \_\_\_\_\_

OSH OFFICE  
 NAVPHIBASE LITTLE CREEK  
 TEL # 464-7774  
 PLEASE CALL WHEN RESULTS  
 ARE KNOWN

5100  
N05LC/19  
26 Sep 00

MEMORANDUM

From: NAB Little Creek Safety Office (N05LC)  
To: Commander, SECOND NCB

Subj: NOTIFICATON OF ASBESTOS MATERIAL

Encl: (1) Notice-Presence of Asbestos

1. As required by 29CFR 1910.1001, building occupants, visitors, employees, and contract personnel must be notified of the presence, location and quantity of Asbestos Containing Material (ACM) in their workplace.
2. Building 3006 was surveyed to identify ACM.
3. The attached "NOTICE-PRESENCE OF ASBESTOS" is provided for your information in complying with 29CFR 1910.1001. It should be posted in an area accessible to all personnel such as the official bulletin board or safety board.
4. Personnel who work around, but do not disturb ACM will require asbestos awareness training. Personnel who perform Class III custodial or maintenance activities where ACM is present, require asbestos custodial /maintenance training.
5. NAB Little Creek Safety Office has training material (15 min video tapes) available for asbestos training.
5. Questions may be addressed to Harry Pritchard, Asbestos Program Manager, at 462-7774.

  
GLENN A. J. MAYNARD

# NOTICE

## PRESENCE OF ASBESTOS

**Building No:** 3006

Asbestos-containing materials (ACM) have been identified in the building. The types of ACM and locations are listed below:

TYPE	LOCATION	CONDITION OF ACM
MASTIC ON SINK, Black	FIRST FLOOR - 222.	Potential Damage
12"x12" FLOOR TILE/MASTIC, Blue. Under carpet.	FIRST FLOOR - 101, 102, 103, 104, 105, 110.	Potential Damage
9"x9" FLOOR TILE/MASTIC, Black. Under carpet.	FIRST FLOOR - 109, 111.	Potential Damage
9"x9" FLOOR TILE/MASTIC, Brown. Under carpet.	FIRST FLOOR - 106, 119, 120, 121, 122, 123, 124, 126, 127, 130, 131, 132, 134, 135, 143, Toilet 3, Corridor4, SECOND FLOOR - 230, 232, 234, 236.	Potential Damage
9"x9" FLOOR TILE/MASTIC, Green. Under carpet.	FIRST FLOOR - Corridor, 112, 113, 114, 115, 116, 117, 117A, SECOND FLOOR - 215, 216, 218, 220, 222, 224, 226, 228.	Potential Damage

**HEALTH ASPECTS:** ACM only presents a health hazard when asbestos fibers are airborne and inhaled. Avoid disturbance which will release fibers. The presence of asbestos does not constitute a health hazard.

**CONDITIONS TO AVOID:** Do not disturb or cause damage to ACM. Do not sand, grind or abrade materials or cause damage with any type of equipment.

**REPORTS OF DAMAGE:** Report any damage, dust or debris that may come from ACM or suspect ACM, or any change in the condition of materials, or accidental disturbance to the Asbestos Program Manager.

**RESPONSE ACTION:** Corrective action initiated to minimize fiber release and protect personnel.

**INSPECTION:** ACM will be inspected periodically to evaluate any changes in condition.

**RECORDKEEPING:** A copy of the survey for the building is maintained by the Asbestos Program Manager.

**ASBESTOS PROGRAM MANAGER:** Harry Pritchard

**Phone** 757-4647774

ENCL (1)

#3493

To: Officer in Charge NAVENPVNTMEDU TWO 1007 Powhatan Street Norfolk, VA 23511-3394	From: NAVPHIBASE Little Creek Public Safety Office, OSH Division 1105 Hermitage Road Norfolk, VA 23521-3116
	POC: Harry Pritchard Phone: 462-1607

INDUSTRIAL HYGIENE BULK/WIPE SAMPLING FORM

Date: 15 AUG 2002

Building <b>3006</b>	Activity	UIC: 61414
Samples requested by: David Bailey	Location: NABLC	Shop:

Sample Class: ----- Bulk

Associated Program: Re-Paint Exterior Stairs

Sample #	<b>119</b>	<b>120</b>	<b>LAST ITEM</b>		
Source	Red Paint	Cream Paint			
Field I.D. #	<b>1</b>	<b>2</b>			
Laboratory#	<b>21955</b>	<b>21956</b>			
Suspected Stressor	LEAD	LEAD			
Analysis					
Results/Units	<b>&lt;0.0100</b>	<b>&lt;0.0100</b>			

0.05722

0.09111

Date Received: <b>AUG 15 2002</b> <i>Pf</i>	Date Reported:
Analytical Method Used:	Limit of Detection: >5um
Analysis Performed By: Chemist:	Date:

IHT/WPM: <i>Harry A. Pritchard</i> Harry A. Pritchard	Date: 15 AUGUST 2002	*IH: <b>"See Attached Report"</b>
---	-------------------------	-----------------------------------

\* BY MY SIGNATURE, I VERIFY THAT I HAVE REVIEWED THIS FORM FOR COMPLETENESS AND ACCURACY AND THAT THE WORK DOCUMENTED HEREON WAS CONDUCTED AND RECORDED IN ACCORDANCE WITH NAVY INSTRUCTIONS, FEDERAL REGULATIONS, AND/OR ACCEPTED INDUSTRIAL HYGIENE PROCEDURES.

**RUSH**

*Lindsay Lab Dir*  
**AA LINDSAY LAB DIR**  
BY direction

NEHC 5100/16 (REV 7/92)

Comments/Time History/Activity during unsampled period	Comments Regarding Survey/Diagram
--	-----------------------------------

PUBLIC SAFETY OFFICE, OSH DIVISION  
NAB LITTLE CREEK  
PHONE: 462-1607  
Fax: 462-8445

BLDG: 3006 Repaint exterior stairs

SAMPLE #1 Red paint - steps

Sample #2 Cream/rust paint hand rail area

Industrial Hygiene Technician/ Workplace Monitor:

Harry A. Pritchard

Chief in Charge  
 NAVENPVNTMEDU TWO  
 1007 Powhatan Street  
 Norfolk, VA 23511-3394

From: NAVYFIBASE Little Creek  
 SAFETY OFFICE (N05LC)  
 1335 10th St. Bldg: 3015  
 Norfolk, VA 23521-3116

POC: Harry Pritchard

Phone: 462-7774

INDUSTRIAL HYGIENE BULK/WIPE SAMPLING FORM

Date: 02 DEC 1999

Building — 3006 ←	Activity NAB	UIC: 61414
Samples requested by: Ed. LYNCH 8225 David Bailey PWC - 8859	Location: NABLC	Shop: RM 112

Sample Class: ----- Bulk  
 Associated Program

REPLACE FLOOR TILE

Sample #	019	020	021	022	LAST ITEM
Source	Fiber floor cover	Tile MASTIC	Floor tile	Floor Tile	
Field I.D. #	1	2	3	4	
Laboratory#	B993098	99	B993100	01	
Suspected Stressor	ASBESTOS	ASBESTOS	ASBESTOS	ASBESTOS	
Analysis					
Results/Units	NON ASB	NON-ASB	NON ASB	NON ASB	

FAXED TO PWC 4 JAN 2000

Date Received: DEC 02 1999	Date Reported: DEC 21 1999
Analytical Method Used: 9002	Limit of Detection >5um

Analysis Performed By:  
 RAY COLLINS - CHEMIST

IHT/WPM: *Harry A. Pritchard* Date: 02 Dec 99

Harry A. Pritchard

OPTIONAL FORM 99 (7-90)

**FAX TRANSMITTAL** # of pages ► 1

To G LINDSAY	From H. PRITCHARD
Dept./Agency 444-1556	Phone #
Fax #	Fax # 462-8445

\* BY MY SIGNATURE, I VERIFY THAT I HAVE REVIEWED THIS FORM FOR COMPL... WAS CONDUCTED AND RECORDED IN ACCORDANCE WITH NAVY INSTRUCTIONS, FEDERAL REGULATIONS, AND/OR ACCEPTED INDUSTRIAL HYGIENE PROCEDURES.

NEHC 5100/16 (REV 7/92)

*G.A. Lindsay*  
 G.A. LINDSAY LAB DIR  
 BY direction

444-1556

AWAITING RESULTS 3 JAN 2000

PUBLIC SAFETY OFFICE, OSH DIVISION  
NAB LITTLE CREEK  
PHONE: 462-7774

Fax: 462-8445

**Bldg: 3006** Room 112 – repair floor water damage. Replace floor tile

**SAMPLE #1** Fiber looking floor material. Room had all carpet & tile removed. First room in main hallway across from OSH office. No room #

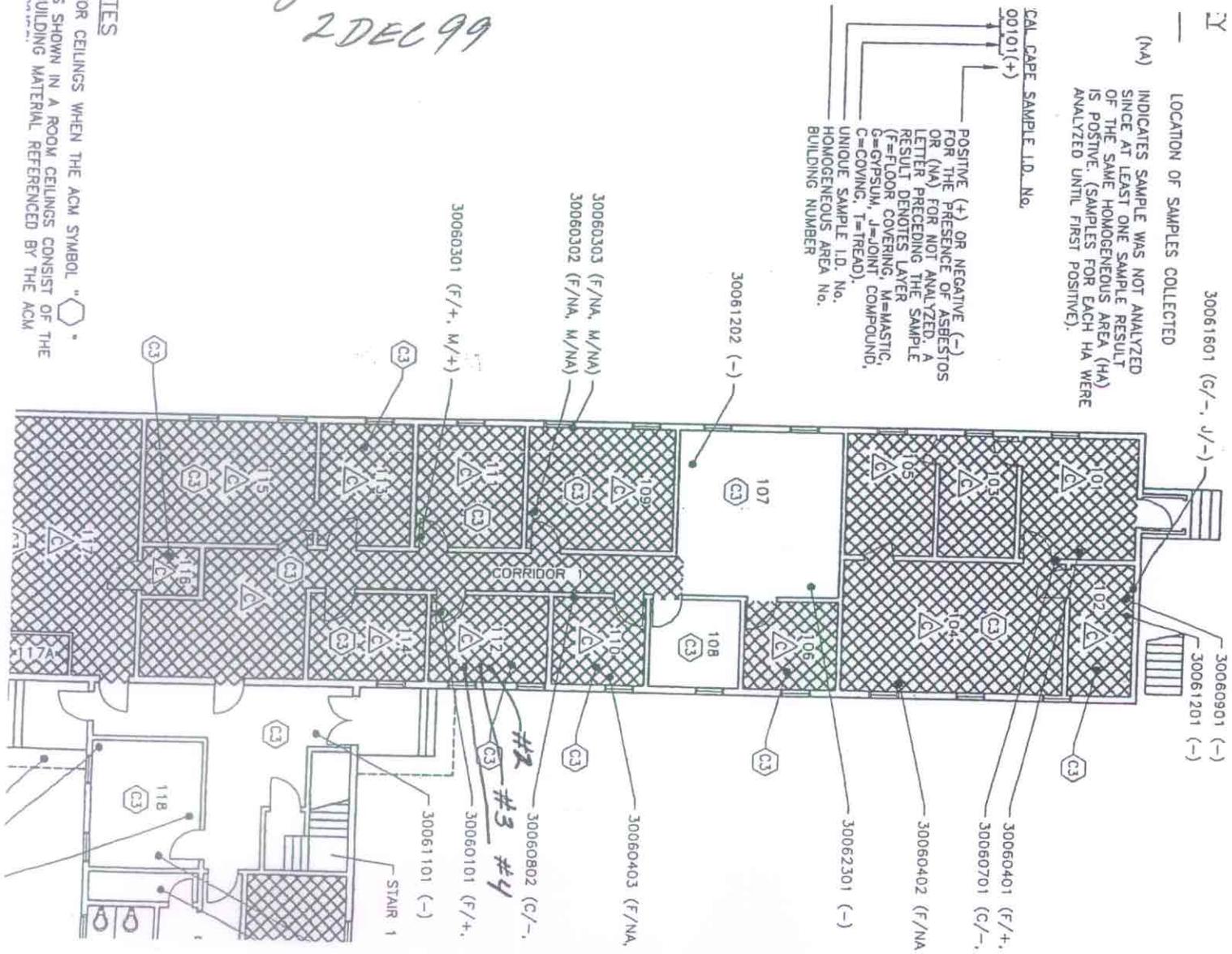
**SAMPLE #2** Room 112 brown floor tile **mastic**

**SAMPLE #3** Room 112 brown floor tile

**SAMPLE #4** Room 112 brown floor tile

*Harry A. Puchner*  
*2 DEC 99*

FOR CEILINGS WHEN THE ACM SYMBOL "C" IS SHOWN IN A ROOM CEILINGS CONSIST OF THE BUILDING MATERIAL REFERENCED BY THE ACM





# BULK ANALYTICAL REPORT

Consolidated Industrial Hygiene Laboratory  
Navy Environmental and Preventive Medicine Unit Two  
1887 Powhatan St  
Norfolk, VA 23511-3319

Telephone: (AV) 564-7671 COM (757) 444-7671  
Telefax: (AV) 564-1556 COM (757) 444-1556

Submitted by:

Public Safety Office OSH Division  
1105 Hermitage Road  
Norfolk, VA 23521-3116

Date Received: 8/15/02

Date Analyzed: 8/16/02

Date Reported:

AUG 16 2002

Analytical Report #: 3493

Method Reference: OSHA 206B - B

Lab ID #	Field ID #	Analyte	CAS #	LOQ	Bulk Weight	Results	
						Total micrograms	%W/W
21955	119	Lead	7439-92-1	0.01	91	3.9	< 0.0100
21956	120	Lead	7439-92-1	0.01	57	5.5	< 0.0100

COMMENTS:

*George a Lindsay*

Analyst Alice A. Espiritu, Chemist

Approved By: QA LINDSAY LAB DIR

*Jim Beckett*  
Supervisory Chemist

*Alice A. Espiritu*

Page 1 of 1

*James R. Buchanan*

To: Officer in Charge NAVENPVNTMEDU TWO 1007 Powhatan Street Norfolk, VA 23511-3394	From: NAVPHIBASE Little Creek Public Safety Office, OSH Division 1105 Hermitage Road Norfolk, VA 23521-3118
	POC: Harry Pritchard Phone: 462-7774

**INDUSTRIAL HYGIENE BULK/WIPE SAMPLING FORM**

Date: 6 AUGUST 1998

Building <b>3006</b>	Activity <b>COM SECOND NCB</b>	UIC: 61414
Samples requested by: David Bailey	Location: <b>NABLC</b>	Shop: Rm. 118

Sample Class: -----Bulk

Associated Program: Repair Floor - Rm 118

Sample #	504	505	506	LAST ITEM	
Source	FLOOR TILE	FLOOR TILE	TILE MASTIC		
Field I.D. #	1 A	2 A	3 A		
Laboratory#	988511	12	13		
Suspected Stressor	ASBESTOS	ASBESTOS	ASBESTOS		
Analysis					
Results/Units	CONTAINS CHRYSTOLE ASBESTOS	CONTAINS CHRYSTOLE ASBESTOS	NON ASBESTOS		

Date Received: AUG 10 1998 <i>DL</i>	Date Reported:
Analytical Method Used: 9002	Limit of Detection: >5um
Analysis Performed By: Ray Collins Chemist <i>RC</i>	Date: 12 Aug 98

IHT/WPM: <i>Harry A. Pritchard</i> Harry A. Pritchard	Date: 06 AUG 1998	*IH:	Date:
---	----------------------	------	-------

\* BY MY SIGNATURE, I VERIFY THAT I HAVE REVIEWED THIS FORM FOR COMPLETENESS AND ACCURACY AND THAT THE WORK DOCUMENTED HEREON WAS CONDUCTED AND RECORDED IN ACCORDANCE WITH NAVY INSTRUCTIONS, FEDERAL REGULATIONS, AND NON-ADOPTED INDUSTRIAL HYGIENE PROCEDURES.

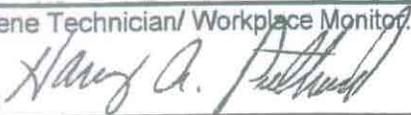
*Ray Collins*  
**QA LINDSAY LAB DIR**  
BY direction

PUBLIC SAFETY OFFICE, OSH DIVISION  
NAB LITTLE CREEK  
PHONE: 462-7774  
Fax: 462-8445

SAMPLES TAKEN OF ROOM 118 FLOOR – CORNER AREA BY ENTRANCE  
FLOOR IS COVERED WITH CARPET – ENTIRE AREA MAY NOT BE COVERED  
WITH FLOOR TILE

Industrial Hygiene Technician/ Workplace Monitor

Harry A. Pritchard



JAN 16 1992

To: Officer in Charge  
Navy Environmental And Preventive Medicine Unit Two (08)  
Industrial Hygiene Laboratory Department  
Naval Station, Building X-336  
Norfolk, Virginia 23511-6288

From: Naval Hospital Portsmouth UIC 00183  
Industrial Hygiene Department  
Section 11033  
Norfolk Naval Shipyard Bldg. 277  
Portsmouth, Virginia 23709-5000  
POC: Phone: 396-7705

SIDE 1 INDUSTRIAL HYGIENE SAMPLE SURVEY FORM SAMPLING DATE: 1/13/92

Activity: NAB, Little Creek Shop/Code: WC 01 Location: Bldg 3006 - Vault Room

Name: \_\_\_\_\_   Carpenters Sub-location \_\_\_\_\_ Area \_\_\_\_\_

Employee notified of \_\_\_\_\_ Last \_\_\_\_\_ M F SSN # N/A \_\_\_\_\_

Stressor Sampled: (Yes) (No) \_\_\_\_\_ Title: N/A Badge # \_\_\_\_\_

Shift: (1) Day 2. Evening 3. Night SHOP SUPERVISOR Mr. David Bailey PHONE: 464-7184

Frequency of Operation: 1. Daily 2. 2-3 Times/Week 3. Weekly 4. 2-3 Times/Month 5. Monthly 6. 2-3 Times/Year 7. Yearly 8. Special Occasion

Duration of Operation: 1. < 1 Hr. 2. 1-4 Hrs. 3. 4-8 Hrs. 4. > 8 Hrs.

Operation: \_\_\_\_\_ 100% of Operation sampled? Yes No Opcode: \_\_\_\_\_

Respirator: \_\_\_\_\_ Code: TC# \_\_\_\_\_ Foot Protection: \_\_\_\_\_ Head Protection: \_\_\_\_\_

Face/eye Protection: \_\_\_\_\_ Hearing Protection: \_\_\_\_\_ Protective Clothing: \_\_\_\_\_ Other: \_\_\_\_\_

STRESSOR SUMMARY

CALIBRATION DATA:

Calibrated by: N/A

Calibrator/SN # \_\_\_\_\_

Calibration Date: \_\_\_\_\_

Pre: N/A

Post: \_\_\_\_\_

Sample Number <b>NAB#</b>	<u>03-92</u>	—	—	—
Field Number	<u>(#1)</u>			
Media Type	<u>—</u>			
Type of Sample	<u>BULK</u>			
Pump Mfr/Model #	<u>—</u>			
Pump Serial #	<u>—</u>			
Calibration Values PRE / POST	<u>—</u>			
Comments:	<u>Sample taken of tan floor tile 12"x12" in vault room.</u>			
Time Stopped	<u>—</u>			
Time Started	<u>—</u>			
Duration (Minutes)	<u>—</u>			
Flow Rate (Liters/Minute)	<u>—</u>			
Volume (Liters)	<u>—</u>			

600 Form: \_\_\_\_\_

Data Entry: \_\_\_\_\_

Stressor	Cas Number	UNIT	Result	Result	Result	Result	8-HR TWA
<u>Asbestos</u>			<u>Asbestos in Matrix</u>				
			<u>No Asbestos Detected</u>				
			<u>In tile</u>				

Date Received: 1-14-92 Date Reported: 1-14-92 Lab Report #: 92 6811

Analysis Performed By: C. O. DAVIS Analytical Method: PLM Date: 1/14/92

92 6811

<p>Comments/Time History/Activity during unsampled period</p>	<p>Comments Regarding Survey/Diagram</p> <p>Bulk floor tile sample.</p> <p>OSH OFFICE  NAVPHIBASE LITTLE CREEK  TEL # 464-7774 :-9  PLEASE CALL WHEN RESULTS ARE KNOWN</p> <p><u>Notification:</u>  <u>Copy to:</u> David Bailey  on 1/16/92. <i>for J.</i></p>						
<p>Materials/Equipment:</p>	<p>Sound Level Measurements:</p> <table border="1"> <tr> <td>Ambient:</td> <td>During Operation:</td> </tr> <tr> <td colspan="2">Measuring Instrument:</td> </tr> <tr> <td colspan="2">Ventilation:</td> </tr> </table>	Ambient:	During Operation:	Measuring Instrument:		Ventilation:	
Ambient:	During Operation:						
Measuring Instrument:							
Ventilation:							
<p>Calculations:</p>	<p>Measuring Instrument:</p>						
<p>Industrial Hygienist: (Signature)</p>	<p>Industrial Hygiene Technician/  Workplace Monitor (Signature)  Matthew LeDoyen <i>[Signature]</i></p>						



Bulk Sample

OSW OFFICE  
NAVPHIBASE LITTLE CREEK  
TEL # 464-7774  
PLEASE CALL WHEN RESULTS  
ARE KNOWN

Notification : Copy to :  
Fred Hodges (supr.) WC 21  
for review by electricians,  
Mr. Stewart & Mr. Espada.  
Please file.



Materials/Equipment:

Sound Level Measurements:

Ambient:

During Operation:

Measuring Instrument:

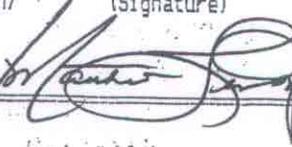
Ventilation:

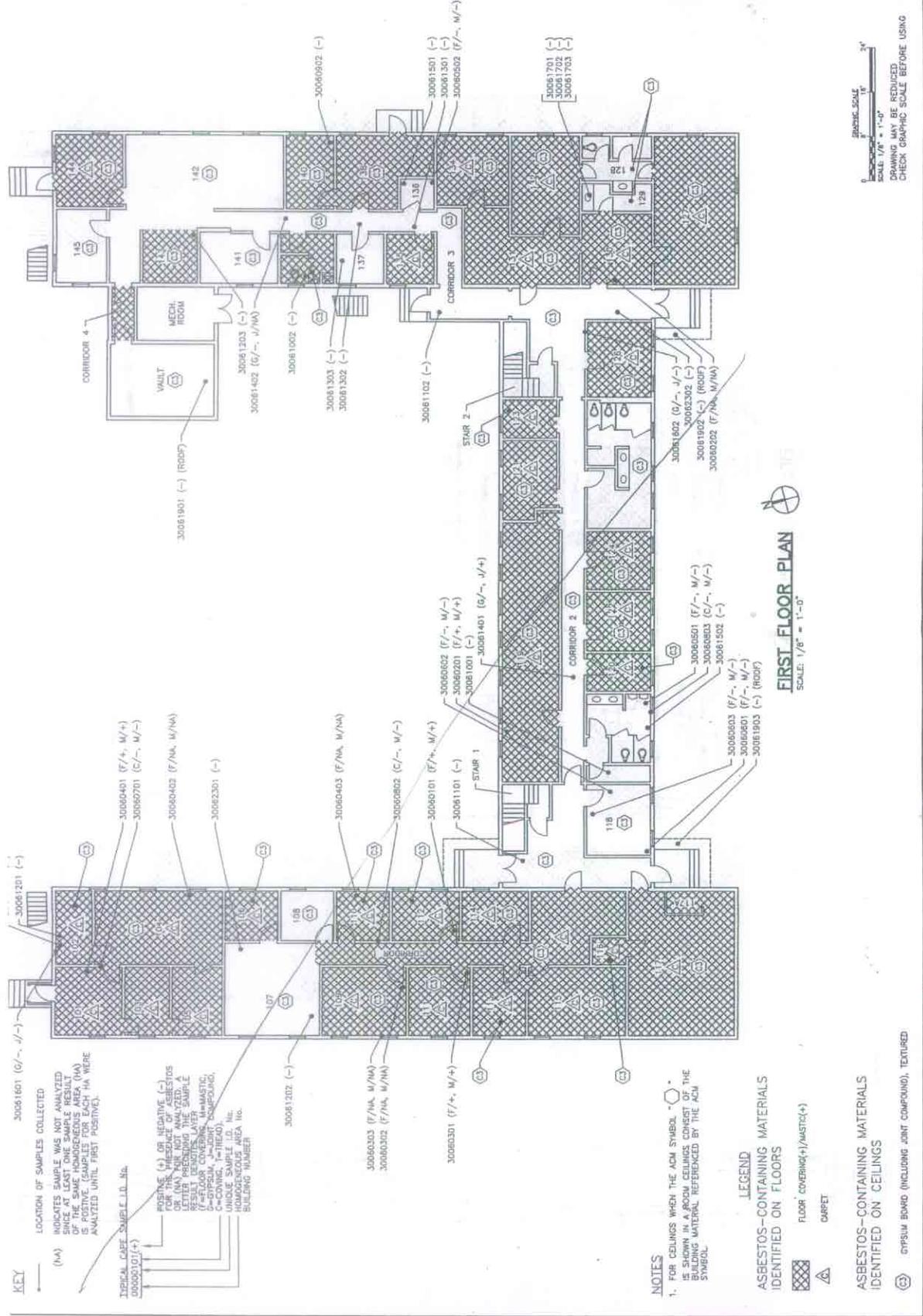
Calculations:

Measuring Instrument:

Industrial Hygienist: (Signature)

Industrial Hygiene Technician/  
Workplace Monitor (Signature)

Matthew LeDoyer 



**KEY**  
 LOCATION OF SAMPLES COLLECTED  
 INDICATES SAMPLE WAS NOT ANALYZED SINCE AT LEAST ONE SAMPLE RESULT OF POSITIVE FIBER COUNT VIA WETTED ANALYZED UNTIL FIRST POSITIVE.  
 (NA)  
 TYPICAL CASE SAMPLE I.D. No. 30060101(+)  
 POSITIVE (+), OR NEGATIVE (-) FOR THE PRESENCE OF ASBESTOS OR (NA) FOR NOT ANALYZED. A RESULT DENOTES LAZYER SAMPLE (F=FLOOR COVERING, M=MASTIC, C=CEILING, T=THEAD).  
 UNIQUE SAMPLE I.D. No. BUILDING NUMBER

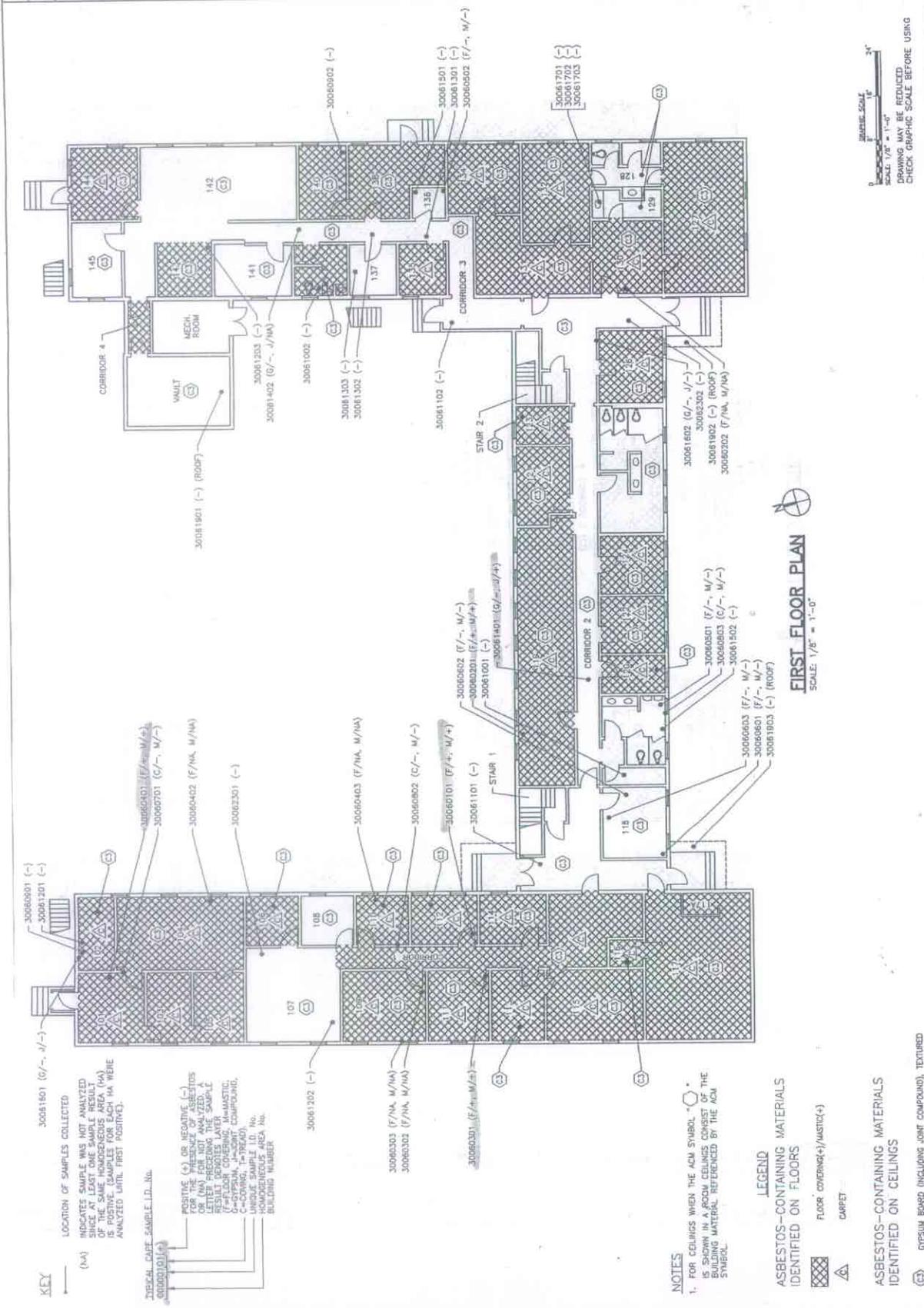
**NOTES**  
 1. FOR CEILING WHEN THE ACM SYMBOL IS SHOWN IN A ROOM CEILING CONSIST OF THE BUILDING MATERIAL REFERENCED BY THE ACM SYMBOL

**LEGEND**  
 ASBESTOS-CONTAINING MATERIALS IDENTIFIED ON FLOORS  
 FLOOR COVERING(+)/MASTIC(+)  
 CARPET  
 ASBESTOS-CONTAINING MATERIALS IDENTIFIED ON CEILING  
 GYPSUM BOARD (INCLUDING JOINT COMPOUND), TEXTURED

**FIRST FLOOR PLAN**  
 SCALE: 1/8" = 1'-0"

GRAPHIC SCALE  
 SCALE: 1/8" = 1'-0"  
 DRAWING MAY BE REDUCED  
 CHECK GRAPHIC SCALE BEFORE USING

REVISIONS		DATE: 04/11/2005		DRAWN BY: J. J. ...	
NO.	DESCRIPTION	DATE	BY	APP.	CHK.
1	ISSUED FOR CONSTRUCTION	04/11/2005	J. J. ...		



**KEY**

(NA) LOCATION OF SAMPLES COLLECTED SINCE AT LEAST ONE SAMPLE RESULT OF THE SAME HOMOGENEOUS AREA (NA) HAS BEEN ANALYZED UNTIL FIRST POSITIVE)

(+) POSITIVE (+) OR NEGATIVE (-) FOR THE PRESENCE OF ASBESTOS OR (NA) FOR NOT ANALYZED. A RESULT DENOTES A LATER SAMPLE (F-FLOOR COVERING, M-MASTIC, C-CROWN, T-TREAD)

(-) UNQUOTE SAMPLE I.D. No. HOMOGENEOUS AREA No. BUILDING NUMBER

**NOTES**

1. FOR CEILINGS WHEN THE ACM SYMBOL IS SHOWN IN A ROOM CEILINGS CONSIST OF THE BUILDING MATERIAL REFERENCED BY THE ACM SYMBOL

**LEGEND**

ASBESTOS-CONTAINING MATERIALS IDENTIFIED ON FLOORS

FLOOR COVERING(+)/MASTIC(+)

CARPET

ASBESTOS-CONTAINING MATERIALS IDENTIFIED ON CEILINGS

GYPSUM BOARD (INCLUDING JOINT COMPOUND), TEXTURED

**SCALE:** 1/8" = 1'-0"

**FIRST FLOOR PLAN**

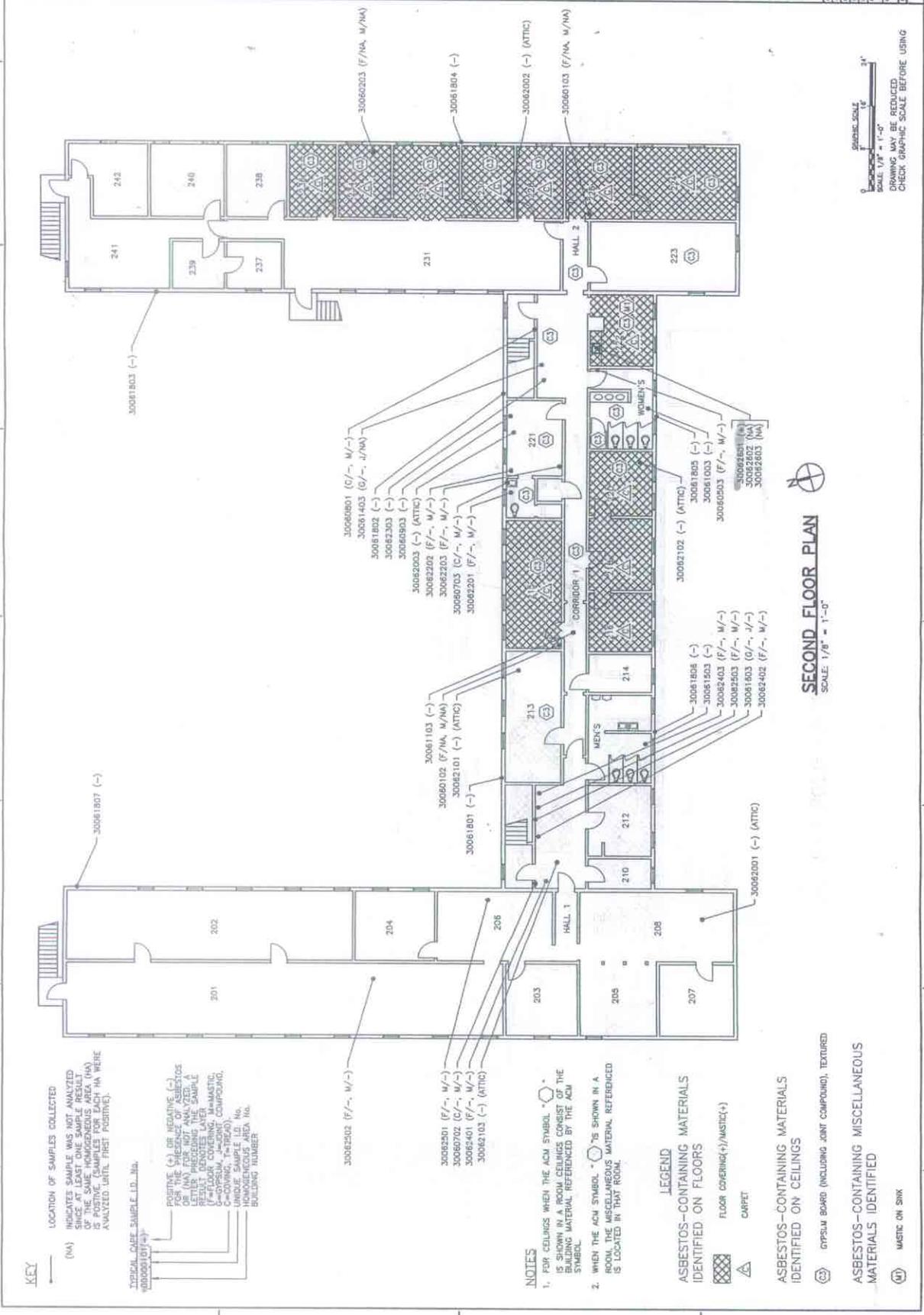
**30064650-1**

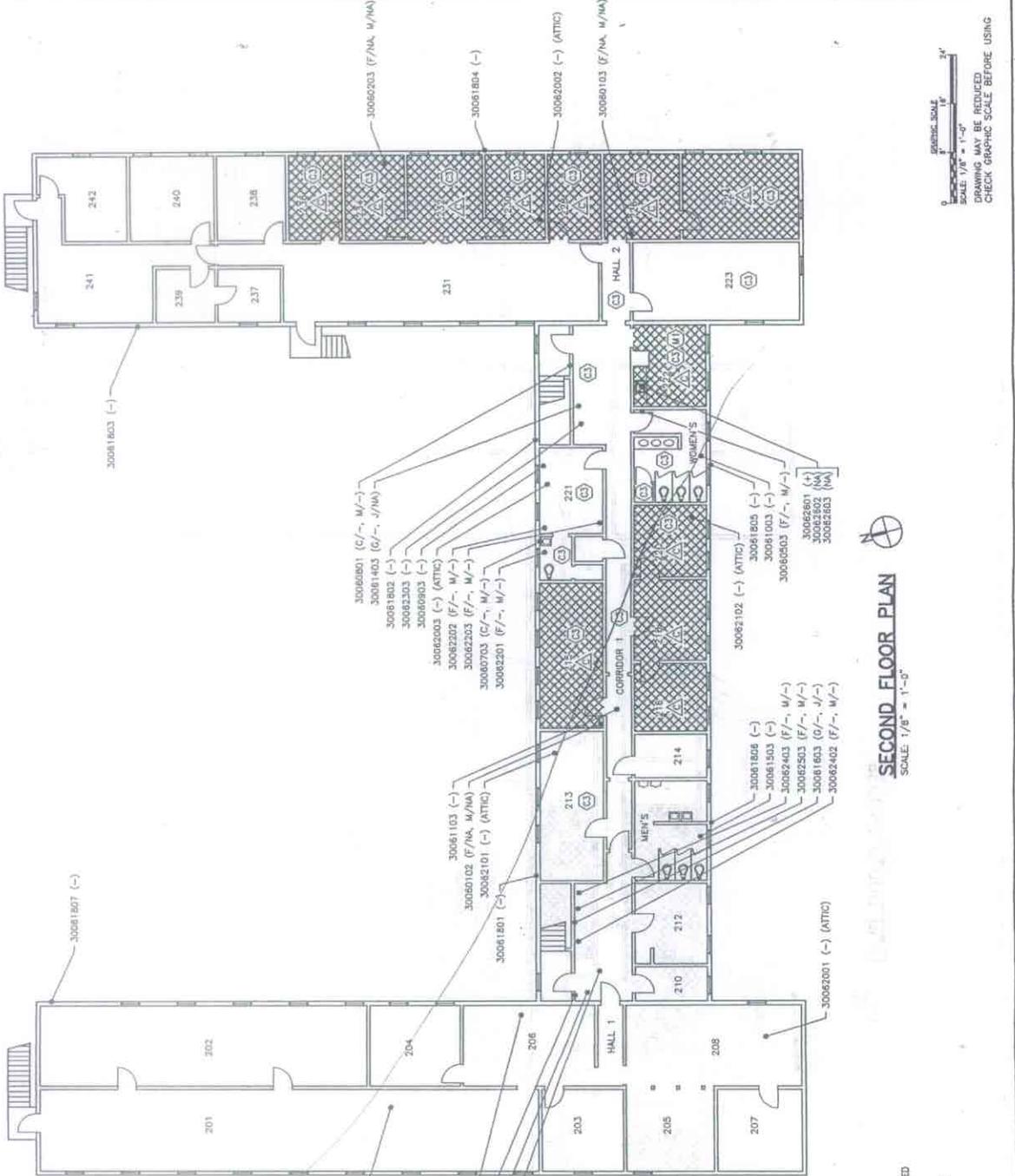
REPORT OF THE  
NAVY, AMPHIBIOUS BASE, LITTLE CREEK, VIRGINIA BEACH, VA

DATE: 04/11/2005

SCALE: 1/8" = 1'-0"

DRAWING MAY BE REDUCED  
CHECK GRAPHIC SCALE BEFORE USING





**SECOND FLOOR PLAN**  
 SCALE: 1/8" = 1'-0"

GRAPHIC SCALE  
 0 10 20 30  
 FEET  
 DRAWING MAY BE REDUCED  
 SCALE: 1/8" = 1'-0"  
 CHECK GRAPHIC SCALE BEFORE USING

**KEY**  
 LOCATION OF SAMPLES COLLECTED  
 (NA) INDICATES SAMPLE WAS NOT ANALYZED SINCE AT LEAST ONE SAMPLE RESULT OF THE SAME HOMOGENEOUS AREA (HA) WAS POSITIVE. (M) INDICATES WHERE ANALYZED UNTIL FIRST POSITIVE.

TUBERCLE GUSSET SAMPLE I.D. No. 30060101 (-)

POSITIVE (NA) OR NEGATIVE (-) FOR THE PRESENCE OF ASBESTOS OR (M) FOR NOT ANALYZED. A RESULT DENOTES DRYER SAMPLE (F)=FLOOR COVERING, M=MASTIC, G=GLASS, J=JOINT COMPOUND, C=CEILING, T=TREAD.

UNIQUE SAMPLE I.D. No. HOMOGENEOUS AREA No. BUILDING NUMBER

**NOTES**  
 1. FOR CEILING WHEN THE ACM SYMBOL \* (C) IS SHOWN IN A ROOM CEILING CONSIST OF THE SYMBOLIC MATERIAL REFERENCED BY THE ACM SYMBOL.  
 2. WHEN THE ACM SYMBOL \* (M) IS SHOWN IN A ROOM, THE MISCELLANEOUS MATERIAL REFERENCED IS LOCATED IN THAT ROOM.

**LEGEND**  
 ASBESTOS-CONTAINING MATERIALS IDENTIFIED ON FLOORS  
 FLOOR COVERING(+)/MASTIC(+)  
 CARPET  
 ASBESTOS-CONTAINING MATERIALS IDENTIFIED ON CEILING  
 GYPSUM BOARD (INCLUDING JOINT COMPOUND), TEXTURED  
 ASBESTOS-CONTAINING MISCELLANEOUS MATERIALS IDENTIFIED  
 MASTIC ON SHK



# MASTER PLAN

## JOINT EXPEDITIONARY BASE LITTLE CREEK

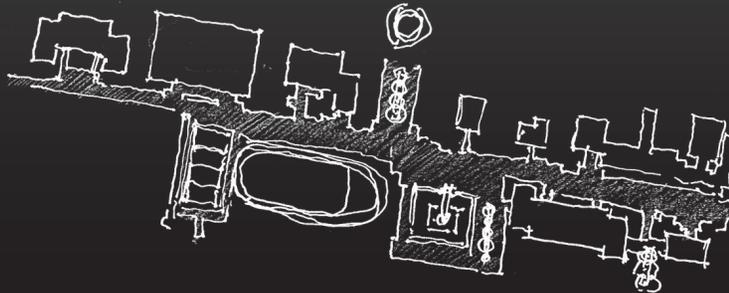
### NAVAL AMPHIBIOUS BASE LITTLE CREEK AND FORT STORY

MAY 2009 | NAVFAC MIDLANT PRELIMINARY REVIEW DRAFT | FOR OFFICIAL USE ONLY

DRAFT SUBMITTAL  
May 2009

PREPARED FOR  
Naval Facilities Command, Mid Atlantic

PREPARED BY  
**PARSONS**  
Richmond, Virginia





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# INTRODUCTION

Naval Amphibious Base (NAB) Little Creek and Fort Story is the Department of Defense's leading training and staging location for amphibious and expeditionary forces. Primary assets at NAB Little Creek include specialized port facilities, beachfront training areas, and personnel support facilities. Fort Story provides inland training area, and beachfront on the Atlantic Ocean and the Chesapeake Bay.

The 2005 Defense Base Realignment and Closure (BRAC) Law directed the establishment of Joint Expeditionary Base (JEB) Little Creek to consolidate and integrate support operations at the neighboring Navy and Army installations at the south shore of the Chesapeake Bay mouth. Management functions will be the responsibility of the Commander Naval Mid-Atlantic Region.

The organizations and units assigned to JEB Little Creek rapidly changing in response to overseas contingency operations. Existing units are expanding, and new units are organizing at a regular frequency. Many of the forces have developed emerging capabilities to meet current global military challenges. These developments have created urgent demands on the shore infrastructure and training assets. The demands for facilities are beyond the available assets, and beyond the traditional development pattern for the base.

The installation has traditionally adopted an aggressive program of renovation and reuse. When funding was available, construction followed a pattern of "most available site infill". The best available site was developed with general consideration of land use compatibility. These methods

have been effective means for minimizing military construction funding requirements, but are not sustainable. This master plan offers the means to direct new development patterns that can achieve synergy through increased density.

The significant growth at Little Creek has created an opportunity to implement recommended development methods. Likely funding increases provide the fiscal resources for significant capital improvements.

This master plan was developed with stakeholder involvement based on a planning horizon of 20 to 30 years. It provides the basis for land use decision making for funded construction projects with an understanding of future impacts. The intent is to provide decision makers with the tools to make informed infrastructure development decisions.

The master plan's objectives were established at the project's initiation. These objectives are:

- Promote orderly expansion;
- Provide cost-effective and sustainable growth;
- Identify constraints and potential development opportunities;
- Consider appropriate land use and future development; and
- Identify areas suitable for future development.



## JEB LITTLE CREEK

NAB Little Creek is the foremost operating station for the amphibious and expeditionary forces of the U.S. Atlantic Fleet. The installation's mission is to:

“Continue to the maximum military readiness by providing the best installation customer service possible.”

The installation that is today called NAB Little Creek was commissioned July of 1945 as four bases including Camp Bradford, Camp Shelton, U.S. Naval Frontier Base, and Amphibious Training Base.

Little Creek's harbor includes 61 piers that provide docking facilities for Landing Ship Docks (LSDs), Landing Platform Docks (LPDs), and Landing Ship Tank (LSTs), Landing Craft, Coastal Patrol Vessels, and a variety of construction battalion floating equipment. Training facilities include the beaches and the mudflats.

More than 100 resident commands and supported activities are present at NAB Little Creek. The larger and higher-echelon commands are listed on page 7. Most of these units are engaged in amphibious or expeditionary operations. The installation also has infrastructure for housing, child care, recreation, exchange and commissary shopping, emergency services, medical, personnel support, and installation leadership and support.

The map to the right illustrates key installation assets. Any existing significant constraints to development have been included as a basis for planning consideration.



**LEGEND**

-  ACCESS CONTROL POINT
-  ENDURING INFRASTRUCTURE
-  CONSTRAINED LAND / AREA
-  SPECIAL FLORA SPECIES
-  UNCONSTRAINED LAND / AREA





## FORT STORY

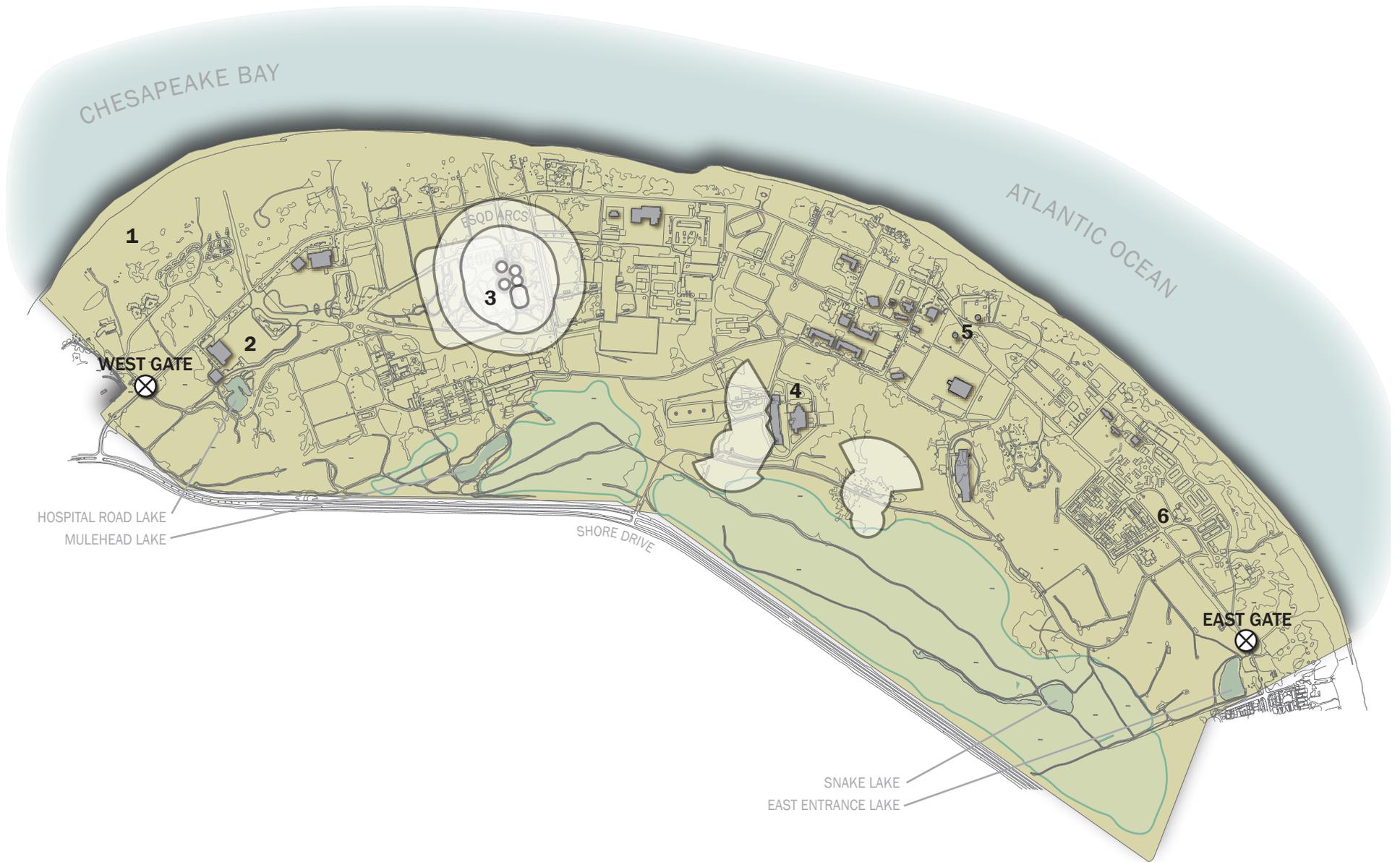
Fort Story has been a sub-installation of Fort Eustis, the traditional U.S. Army Transportation Training Center. Because of its unique location, Fort Story has been its joint over-the-shore training facility. BRAC 2005 realigned the Transportation School to Fort Lee, and established the Fort Story as a sub-installation to Joint Expeditionary Base (JEB) Little Creek.

The Army reduced its over the shore mission capability in the last two decades, and the Navy has increased training operations. Additionally, the Marines and the Coast Guard conduct training in Fort Story's training areas. The enduring installation mission statement is the joint range for expeditionary training.

Fort Story is bounded to the east by the Atlantic Ocean and to the north by the Chesapeake Bay. This orientation provides unique training facilities for logistics-over-the-shore operations.

The center of the installation includes two Lighthouses and other historic structures that are tourist destinations. The Armed Forces Recreation Center operates resort facilities on the northwest corner. Fort Story installation support assets include housing, recreation, and minimal other facilities and organizations sized for its population.

The map to the right illustrates key installation assets and significant constraints that influence planning decisions.



**LEGEND**

-  ACCESS CONTROL POINT
-  ENDURING INFRASTRUCTURE
-  CONSTRAINED LAND / AREA
-  WETLANDS
-  UNCONSTRAINED LAND / AREA

- 1** AFRC
- 2** 11TH BATTALION
- 3** SATEC
- 4** EODTUE2
- 5** HISTORIC DISTRICT
- 6** PPV





## JEB LITTLE CREEK OPERATIONAL COMMANDS

- Headquarters, Navy Expeditionary Combat Command (NECC)
- Explosive Ordnance Disposal Group Two (EODGRU-2)
- Explosive Ordnance Disposal Mobile Unit Two (EODMU-2)
- Mobile Diving and Salvage Unit Two (MDSU-2)
- Riverine Squadron One (RIVRON-1)
- Expeditionary Combat Readiness Center (ECRC)
- Maritime Civil Affairs Group (MCAG)
- Maritime Force Protection Command (MARFPCOM)
- First Naval Construction Division (1NCD)
- Underwater Construction Team One (UCT-1)
- Construction Battalion Maintenance Unit 202 (CBMU-202)
- Expeditionary Warfare Training Group Atlantic (EWTGLANT)
- Expeditionary Strike Group Two (ESG-2)
- Commander Naval Beach Group Two (CNBG-2)
- Assault Craft Unit Two (ACU-2)
- Assault Craft Unit Four (ACU-4)
- Beach Master Unit Two (BMU-2)
- Amphibious Construction Battalion Two (ACB-2)
- Commander Coastal Patrol Squadron (COMPCRON)
- Naval Special Warfare Group Two (NSWG-2)
- SEAL Teams 2, 4, 8, and 10
- Naval Special Warfare Group Four (NSWG-4)
- SEAL Delivery Vehicle Team Two (SDV Team 2)
- Special Boat Team Twenty (SBT-20)
- Combatant Craft Division Naval Surface Warfare Center Carderock (CCD)

- Naval Special Warfare Development Group (DEVGRU)
- Naval Special Warfare Advanced Training Center Detachment (NSWATC)
- Naval Special Warfare Operational Support Team Two (NSW OST-2)
- Naval Network Warfare Command (NETWARCOM)
- Naval Cyber Defense Operations Command (NCDOC)
- Naval Information Operations Command, Norfolk (NIOC Norfolk)
- Space and Naval Warfare Systems Center, Norfolk (SPAWAR)
- Surface War Development Group
- Tactical Air Control Squadrons Twenty One and Twenty Two (TACRON 21/22)
- Naval Inspection and Survey (INSURV)
- Naval Operational Support Center (NOSC)
- Center for Security Forces (CENSECFOR)
- School of Music (SOM)

## FORT STORY OPERATIONAL COMMANDS

- 11th Transportation Battalion (11th Trans Bn)
- US Army Coastal Water Purification Training Center
- Explosive Ordnance Disposal Training and Evaluation Unit Two (EOD TEU 2)
- Explosive Ordnance Disposal Mobile Unit Ten (EODMU-10)
- Marine Corps Tactical Advisory Group (MCTAG)
- US Army Reserve Center
- Shipboard Electronic Systems Evaluation Facilities (SESEF)
- DEVGRU Training Assets



## PLANNING CONSIDERATIONS

### Strategic Directives

This plan conform with Navy installation planning directives and previous related plans. These include:

- Navy Ashore Vision 2030
- Commander Naval Installations Command (CNIC) Strategic Plan, 2007
- CNIC Footprint Reduction Charter
- Navy Expeditionary Combat Enterprise (NECE) Global Shore Infrastructure Plan (GSIP)
- Surface Warfare Enterprise (SWE) GSIP
- Naval NetWAR/FORCENET Enterprise (NNFE) GSIP
- Manning Personnel and Training Enterprise (MPTE) GSIP
- Fleet Readiness Enterprise (FRE) GSIP
- Mid-Atlantic Regional Shore Infrastructure Plans (RSIP)
- Mid-Atlantic Regional Integration Plan (RIP)

Emerging concepts and opportunities from these planning efforts significantly influence the process and the proposals in this plan. The following summarize the most salient concepts incorporated in the JEB Little Creek master plan.

*Shore Capability Area Planning is a step beyond the traditional land use planning. Thirteen Navy Shore Capability Areas (SCAs) organize facility category codes for programming evaluation and asset management. Basic Facility Requirement (BFR) oriented method is mission focused. SCA planning aligns facilities within major groupings for evaluation, funding prioritization, and planning.*

*Asset Management. This is not a new concept, but there is a recent increased effort to identify and assess the capacity, condition, and configuration of real estate assets regard to sustainable costs and ability to support the mission. In this context, the installation can seek to reduce sustainment costs through recapitalization of facilities that are of the right size and in the right place. Facilities should be flexible in design and cost effective to operate.*

*Alternative Development is the recognition that military construction requires significant capital cost. The appropriation of required funds is an involved process that often takes years and is inflexible to mission changes. Some alternatives that have been successful include Private-public ventures (PPV) and Enhanced Use Lease (EUL). PPV have constructed efficient and quality family housing. Enhanced use lease initiatives have achieved some success for research or warehouse facilities, and other alternatives exist. These concepts shift the capital investment and the risk from the government to the private sector. More importantly, they generate funds for construction in the same way that the private real estate sector does.*

#### Stakeholder Guidance

The development of the plan included significant stakeholder involvement. Opportunities for input included an open forum kickoff, a detailed data collection, a leadership visioning session, and a community charrette. After the initial concepts were developed, the planning team met with stakeholders in a series of concept development workshops to discuss, update, and obtain concurrence on the key elements of the plan. master plan Vision and Guiding principles were established during the visioning session. These plan elements were reviewed, updated and approved during the community charrette.

The Master Plan's vision is:

**JEB Little Creek provides the optimal shore platform to support war fighters conducting global military operations.**

The guiding principles for the Master Plan are:

### **Adaptable**

*Support dynamic mission requirements*

### **Recapitalize**

*Demolish / Consolidate / Renovate / Adaptive Reuse*

### **Enhance Military Readiness**

*Align facility assets for best war fighter training and quality of life*

### **Sustainable**

*Make informed infrastructure investment decisions:*

*"Right Cost / Resource Use"*

### **Maximize Land Use**

*Plan integrated facilities for best use of limited real property*

### **Responsible Neighbor**

*Foster and maintain positive community relations*

## Planning Assumptions

The nine elements below are the basis of the development concepts in the JEB Little Creek master plan. Each is based on assumptions of future conditions.

### » Accommodate Growth

The resident commands assigned to Little Creek and Fort Story are dynamic resources that the Navy and the Department of Defense require to combat contemporary threats. NECC and subordinate Headquarters will continue to grow as the Naval expeditionary combat organizations mature and assume significant responsibilities in the joint battlefield. New units will be formed and expand as additional capabilities are defined in response to emerging threats. The master plan accounts for future requirements that may be currently unknown. Planning for NEB Little Creek should allow for un-programmed development that preserves the sustainability of the plan's concepts.

### » Design for Flexibility

Over the last decade, the commands that use NAB Little Creek as have established that few requirements are static. Military Construction projects require years to program and design, and they are constructed to last decades. Over its life, a building will have multiple users. To meet this challenge, buildings must be designed and constructed to accommodate change. Similarly, site designs should be sufficiently flexible to support future military missions.

### » Program by Shore Capability Areas (SCA)

The master plan guides future development through the implementation of the GSIP SCA. Structures and sites should be designed, constructed, and managed as shore capabilities. Infrastructure can be finished for specific unit use, but building and site core designs should be based on general mission profiles.

### » Cluster Land Use

Building on the previous elements, the master plan recommends the clustering of land uses. This includes restricting development around the waterfront for anything but waterfront support operations. It also includes integrating administration, headquarters, and command and control land uses in a central of core of the installation.

» Use Alternative Funding

The current demand for capital investment at NAB Little Creek is likely to exceed appropriated funding authorizations. PPVs have been proven effective means to recapitalize family housing at Little Creek and Fort Story. Across the Department of Defense numerous successful PPV and EUL projects illustrate that alternate methods of development can succeed on military installations. This plan assumes that investment beyond traditional appropriated funds will be obtained to meet future infrastructure development, and it suggests a number of possible opportunities to leverage alternative development initiatives.

» Encourage Fitness

Personnel fitness is a primary training requirement for the special operators, expeditionary warriors, and amphibious sailors who live, and train at NAB Little Creek and Fort Story. Modern fitness centers are necessary to adequately support individual and unit training. Additionally, the master plan assumes that outdoor fitness facilities are a necessary ingredient for installation success. These include safe pedestrian walks and running trails and team sport fields with convenient access. Further, the plan recommends all development decisions reduce the reliance on automobile use to encourage fitness.

» Plan for Littoral Combat Ship (LCS)

NAB Little Creek sailors are integrated with many classes of Naval Vessels. Dock Landing Ships (LSDs) are the largest vessel that homeports at NAB Little Creek. The 61 piers and other waterfront facilities support Coast Patrol Vessels (PC), Landing Craft Utility (LCU), Landing Craft Air Cushion (LCAC), Mark V Special Operations Craft, and a myriad of other vessels with unique requirements. Little Creek is programmed to homeport a number of LCS in the future. Initial estimates for infrastructure have been used in this master plan, but the full requirement is not yet available. The master plan protects waterfront capabilities for future use on the assumption that the known and future LCS will homeport at JEB Little Creek.

» Protect Training Areas

The primary mission for sailors and joint warriors stationed or visiting NAB Little Creek and Fort Story is training. Sailors, soldiers, and marines require land in the near-shore lands for development of individual and team competencies. The scarcity of training lands and facilities in the Hampton Roads region makes protection of these assets at NAB Little Creek and Fort Story imperative. Exclusive use has been a traditional means for ensuring their protection, but there likely are limits to this policy. This master plan assumes that Fort Story will be retained primarily as training lands. Other activities are to be clustered to increase the density of development and provide additional land for expeditionary warrior training. Additionally, the plan recognizes a need for centralized training land management to optimize use and minimize land use conflicts and associated dangers that are inherent in combat training.

» Enhance Quality of Life

NAB Little Creek and Fort Story have long histories of providing outstanding quality of life. This standard is to be retained and expanded through development of a community atmosphere and through the adoption of leadership in energy and environmental design (LEED) initiatives. The concepts communicated in the plan implement new urbanism as the means to enhance daily life of the sailors and families who call JEB Little Creek home.

## NAB LITTLE CREEK MASTER PLAN

The NAB Little Creek master plan includes comprehensive fence-line to fence-line development recommendations. It provides guidance for recapitalization of shore infrastructure assets that limit mission effectiveness because of their inadequate conditions and/or configuration that is limiting mission effectiveness. The plan incorporates increased capacity to support current and future mission demands. It is focused on specific development areas that are further addressed in the following pages.

The west side plan addresses development recommendations for the West Annex Waterfront Area, the district referred to as the South Central SEAL Complex, and the shallow pier area that is located between the two. The east side plan includes recommendations for Desert Cove and Little Creek Town Center future development district. The east and west plan areas are outlined in the following map. Details for each of the plans is provided in following pages.

Planning activities included assessing the possibility of altering the installation fence-line and access control points. They yellow hashed line illustrates a means to provide an interior security perimeter. This fence-line can be used to provide additional security augmentation to the existing protected boundary. Alternatively, it can be implemented as the primary security perimeter and shrink the security profile of installation to a fraction of the existing acreage. This could eliminate gate for access to the golf course, housing areas, commissary, exchange, and other activities that are open to families, retirees, and regional naval community. The outcome would be security focused on the operational infrastructure and increased traffic efficiency.



**LEGEND**

-  ACCESS CONTROL POINT
-  ENDURING INFRASTRUCTURE
-  NEW CONSTRUCTION
-  PROPOSED FENCE LINE

- 1** WEST SIDE DEVELOPMENT PLAN
- 2** EAST SIDE DEVELOPMENT PLAN



## WEST SIDE DEVELOPMENT PLAN

The west side plan addresses development recommendations for the area along the south boundary of the installation from the steam plant west. This includes the area to the immediate east and west of the industrial rail and ferry outparcel. This part of the plan is illustrated on the following page.

The area referred to as West Annex Waterfront is to be developed to support waterfront operations. The Master Plan relocates all administrative headquarters, and C5I from this area. Piers will be retained for LCS and other expeditionary warrior vessels. A more detail explanation of the development plan for this area is on pages 16-17.

The district label 1 on the map on the next page is located under the Norfolk International Airport Flight path. Significant construction limitations exist. MWR currently manages a great deal of assets in this area, and has programmed expansion plans for additional piers.

There is no significant current or future operational use for this area; subsequently, it provides an opportunity for consolidation of MWR activities that are scattered across other locations on the base. Relocation of outdoor recreation rentals and consolidation of boat, trailer, and recreation vehicle secure parking are compatible with the over flight restrictions. The eastern portion of the 2000 block of facilities is outside of the flight path and is too small for significant operational facilities, but it provides ample acreage for marina and MWR support facilities.

This parcel would have public access through the current gate number two. This gate is currently closed because of traffic queuing issues. When the access control point is removed, it provides direct access via the signaled

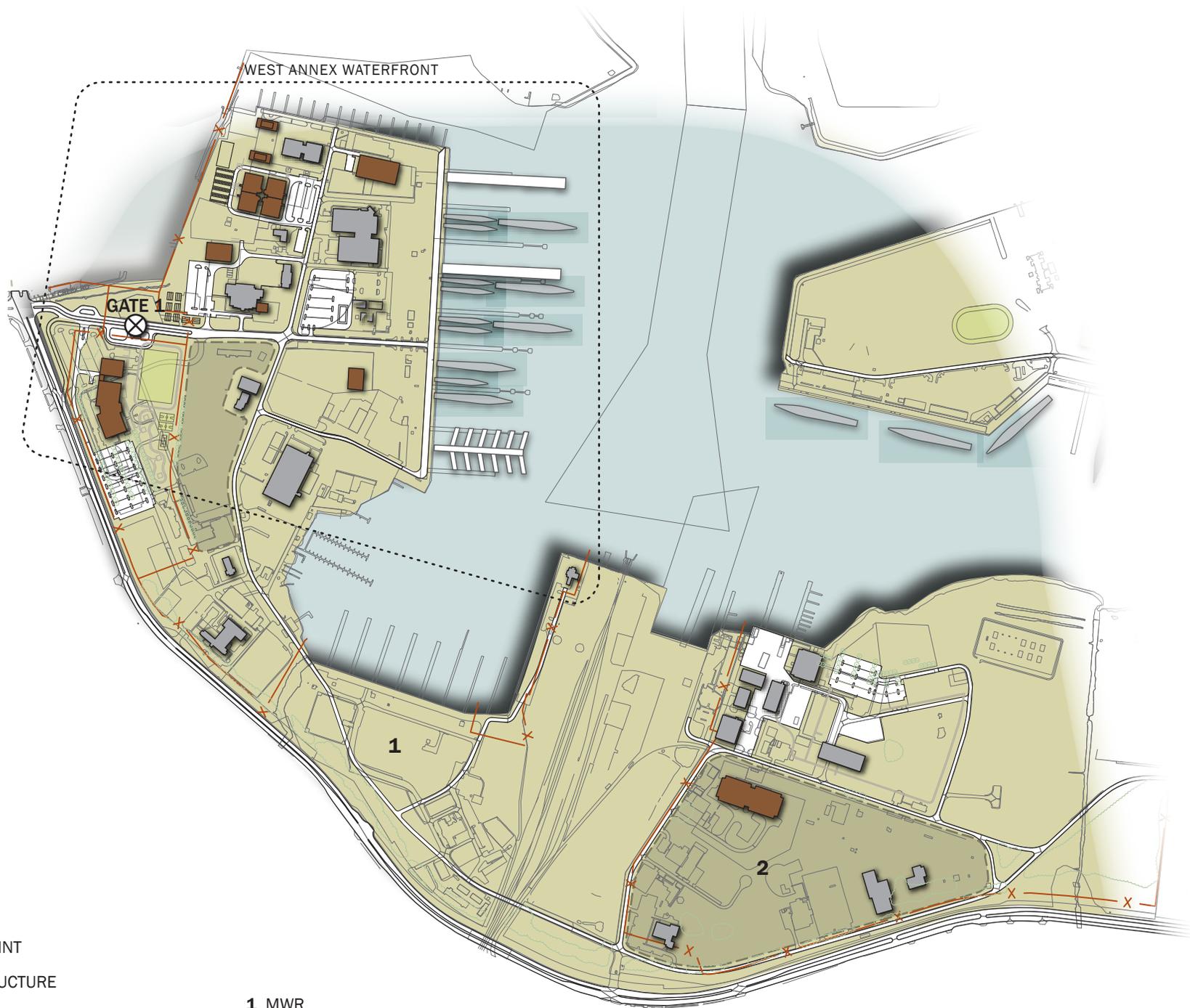
intersection of Shore Drive and Diamond Springs Road.

“2 - South Central SEAL Complex” is bounded by Shore Drive to the south, the ferry terminal outparcel to the west, and the municipal treatment plant to the east. This area is dominated by the steam generation plant. The plant is surrounded by a mixture of incompatible land uses including the recycled material collection point, the Fos’cle Recreation Center, building T111, and building 112. NSWG 4 has the largest presence.

This district is to be used for all future Naval Special Warfare Command (NSWC) development. Current administrative activities in building T111 and building 112 are to be relocated to the administrative complex in Little Creek Town Center, and the recycled material collection point should be moved to the base receiving support center near Gate 3.

The Fos’cle Recreation Center is not within walking distance of any of its users. Replacement recreation capabilities are to be integrated into the unaccompanied housing complex and the Lodge and Conference Center.

Significant development is not planned for the South Central SEAL Complex. This area is to be used to accommodate the continuously evolving mission requirements of the NSWC. NSWC is funded through the Special Operations Command and construction projects do not compete with other Navy initiatives. These contributing factors have created demand on land beyond the available assets in the Desert Cove district.



**LEGEND**

-  ACCESS CONTROL POINT
-  ENDURING INFRASTRUCTURE
-  NEW CONSTRUCTION
-  PROPOSED FENCE LINE

- 1** MWR
- 2** SOUTH CENTRAL SEAL COMPLEX  
P-341, P-359, P-363, P-775, P-797



## WEST ANNEX WATERFRONT

The West Annex Waterfront is to be developed to support waterfront operations, including deep-draft Navy vessels. All administrative, headquarters and C5I functions will be moved out of this area.

The LCS program has identified initial pier and waterfront improvements. These are represented on the figure on the next page as “1 – LCS Piers” and “2 – LCS Operations Complex,” respectively. As the LCS program matures, these requirements may increase, and it will be imperative to retain waterfront support area to support possible growth.

The buildings labeled “3 – EOD Expansions” and “4 – EOD Development” respectively represent current and future explosive ordnance disposal (EOD) development programs. The requirements for these buildings are established from EOD consolidation and growth resulting from overseas contingency operations. As EODGRU-2 expands, the entire northeast district of this quadrant will become the EOD compound.

Building 5 is the replacement structure for UCT-1 and MUDSU. Both organizations have diving missions that require waterfront access for individual and collective task training.

The piers labeled “6 – ACU-2 Piers” are proposed for relocation of ACU-2 landing craft. This action would separate landing craft operations from the civilian vessels that also use the channel. As civilian development of West Ocean View Avenue has increased residential and tourism density, the Little Creek and Bay Point Marina’s have grown. Continued economic development to the west is likely to increase civilian yacht traffic in the Little

Creek channel. A project to recapitalize the ACU-2 piers as represented in the following illustration at the site labeled 6 will separate the landing craft from civilian yacht traffic.

Naval Network Warfare Command (NNWC) Headquarters will be moved to the Little Creek Town Center and building 1265 will be returned to its original function as a small craft maintenance facility. The building labeled “7 - Building 1265” should retain sufficient administrative space to support ACU-2, Coastal Patrol Squadron (PCRON), and LCS organizations, and any other operational activities along the eastern piers of the West Annex.

The development labeled “8 – PPV Single Sailor Housing” is a representation of a single-sailor housing complex. This location is required to support the sailors who work on the West Annex Waterfront, including members of EODGRU-2, ACU-2, PCRON, UCT-1, and MUDSU. This site should be developed with integrated recreation, fitness, and dining capabilities. A PPV development may be the best alternative for recapitalization of this area.

The site labeled “9 – Future Expansion” is retained for future development. It is close to access control point 1, making it ideal for construction lay-down and swing space during pier and shore infrastructure construction. For the same reasons, it is a good location for an installation and/or organizational storage and maintenance area.