WORK ORDER NO. 1345987

# REQUEST FOR PROPOSAL
## (Final Submission)

## ENERGY REPAIR BUILDINGS 11, 13, 14

At the

NAVSUPPACT BETHESDA MD
BETHESDA, MARYLAND
Project # P-611

PREPARED BY:

IPT Gold, NAVFAC Washington
1314 Harwood Street, SE
Building 212
Washington Navy Yard
Washington, DC 20374

REQUEST FOR PROPOSAL PREPARED BY:

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|---|---|
| Architectural: | Stephen White, RA |
| Electrical: | Angel DeJesus, PE |
| Mechanical: | Robert Sloan, PE |
| Fire Protection: | Kyle Lehman, PE / Kevin Darmody, PE |

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| Submitted By:<br>James Heisler, PE | Signature | Date: 07 May 2015 |
| RFP Approved By CI Team Lead/PMEB<br>Jay Blumenkrantz, P.E. | Signature | Date: 07 May 2015 |
| Design Manager:<br>Stephen L. White, RA | Signature | Date: 07 May 2015 |

# Part 2 General Requirements

PART 2

GENERAL REQUIREMENTS
4/14

## 1.0 DEFINITIONS

As used throughout the contract, the following terms shall have the meaning set forth below:

Contracting Officer (KO): The individual designated to administer the contract. Throughout this contract this individual will be responsible and possess the authority to act on behalf of the Government with respect to the specific contract.

Contracting Officer Representative (COR): The individual designated by the Contracting Officer as the authorized representative of the Contracting Officer. The COR is responsible for monitoring performance and technical management of the effort required and should be contacted regarding questions or problems of a technical nature.

Contractor: The term Contractor refers to both the prime Contractor and subcontractors, including the Designer of Record.

Designer of Record (DOR): Licensed architect/engineer working as subcontractor to or partner with prime Contractor who provides design for this contract.

Quality Control (QC): Contractor's system to control the quality of design, material, equipment and construction.

Quality Assurance (QA) Program: Government's program to evaluate the effectiveness of the Contractor's quality control. The Government's QA Program is not a substitute for the Contractor's QC Program.

Federal Holidays: New Year's Day, Martin Luther King Jr. Day, President's Day, Memorial Day, Independence Day; Labor Day, Columbus Day, Veterans Day, Thanksgiving Day, and Christmas Day.

Contract: Contract or task order.

## 2.0 ORDER OF PRECEDENCE

NFAS Clause 5252.236-9312. In the event of conflict or inconsistency between any of the below described portions of the confirmed 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 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 - Statement of Work/Project Program Requirements.

5) Part 6 - Attachments (excluding Concept Drawings).

6) Part 5 - Prescriptive Specifications, exclusive of performance specifications.

7) Part 4 - Minimum Materials, Engineering and Construction Requirements, exclusive of prescriptive specifications.

8) Part 6 - Attachments (including Concept Drawings).

## 3.0 POST AWARD KICKOFF MEETING (PAK)

Prior to commencement of design, and within 21 calendar days of award, meet with representatives of the Contracting Officer, installation and client to present the concept design for discussion and acceptance. The project team will develop a mutual understanding relative to the approved proposal, safety program, environmental permits and requirements, quality control procedures, and design and construction schedule. During the meeting, Contractor shall propose and gain acceptance for any critical path work activities requiring advance submittal and approval. If the contract includes work on any fire protection system, including fire alarm and mass notification systems, the Contractor and the appropriate DOR shall meet with the NAVFAC Fire Protection Engineer (FPE) to establish clear expectations of fire protection requirements of the project.

The Contractor's key personnel shall attend at the expense of the Contractor. Key personnel are defined as the Project Manager, Superintendent, CQC representative(s), DOR, major subcontractors and specialized supplementary personnel.

The PAK includes partnering, held during normal work hours with the non-labor -related costs shared by both parties. Partnering is a structured process, as well as philosophy of doing business with Contractors and clients that recognizes common goals through communication and teamwork. It helps create an environment where trust and teamwork prevent disputes, foster good working relationships to everyone's benefit, and facilitate the completion of a successful contract. If included in Attachment A, a Performance Assessment Plan that provides monthly performance feedback to the Contractor, will be discussed during the partnering session.

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 utilizing the NAVFAC Red Zone (NRZ) Checklist and convene the Facility Turnover Meetings once the project has reached approximately 75% completion or 3 to 6 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 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. The Contracting Officer's Representative shall develop a Plan of Action and Milestones (POAM) for the completion of all Contractor, Client, and NAVFAC Checklist items.

# 4.0 DESIGN

Design is the work necessary to ensure functionality, quality, and safety for critical facets of the project. Special coordination requirements, such as for phone, LAN and cable, are included in Attachment A.

a. Provide work in compliance with the following design standards and codes, as a minimum. Government standards listed in this RFP take precedence over industry standards.

b. This RFP references published standards, the titles of which can be found in the *Unified Master Reference List (UMRL)*on the Whole Building Design Guide at the Unified Facilities Guide Specification (UFGS) Website. The publications referenced form a part of this specification to the extent referenced.

The advisory provisions of all codes, requirements, and standards shall be mandatory; substitute words such as "must" or "required" for words such as "shall", "should", "may", or "recommended," wherever they appear. The results of these wording substitutions incorporate these code and standard statements as requirements. Reference to the "authority having jurisdiction" shall be interpreted to mean Contracting Officer or Contracting Officer Representative. Comply with the required and advisory portions of the current edition of the standard at the time of contract solicitation.

The following list of codes and standards is not comprehensive and is augmented by other codes and standards referenced and cross-referenced in the RFP. Refer to Parts 3 and 4 for specific requirements within other UFC's.

1) UFC 1-200-01, *General Building Requirements*

2) UFC 1-300-08, *Criteria for Transfer and Acceptance of Military Real Property*

3) UFC 1-300-09N, *Design Procedures*

4) UFC 3-560-01, *Electrical Safety, O&M*

5) UFC 3-600-01, *Fire Protection Engineering for Facilities*

6) UFC 3-600-10N, *Fire Protection Engineering*

7) UFC 3-800-10N, *Environmental Engineering for Facility Construction*

8) UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*

9) UFC 4-020-01, *Security Engineering: Facilities Planning Manual*

c. 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.

d. Provide professional registration and design signing and stamping requirements per requirements of UFC 1-300-09N, *Design Procedures*.

e. See Attachment A for project-specific submittal requirements.

f. Meet sustainability requirements per UFC 1-200-02 High Performance and Sustainable Building requirements and UFGS section 01 33 29.05 20 *Sustainability Requirements for Design Build*.

## 5.0 FIRE PROTECTION AND LIFE SAFETY REQUIREMENTS

Work shall comply with applicable criteria identified herein and Attachment A. Any project including work on means of egress, fire rated elements, Fire Suppression, Mass Notification, or Fire Alarm Systems shall require the services of a Registered Fire Protection Engineer per Attachment A.

a. Final Life Safety/Fire Protection Certification Documentation: Unless otherwise specified in Attachment A, provide certification that all life safety and fire protection features and systems have been installed in accordance with applicable criteria, the contract documents, approved submittals, and manufacturer's requirements. This certification shall summarize all life safety and fire protection features.

## 6.0 QUALITY CONTROL

Maintain quality control for and inspect all work under the contract. The DOR, as a member of the Contractor QC organization, shall remain directly involved during the construction process. For certain projects, the Quality Control Manager, Superintendent, and Site Safety and Health Officer may be combined - see paragraphs 6 and 34 in Attachment A. Further QC requirements are identified in Attachment A.

a. Submit a QC Plan for Government review and acceptance. The QC plan shall include the following:

1) NAMES, QUALIFICATIONS and RESPONSIBILITIES: For each person in the QC organization (design and construction).

2) OUTSIDE ORGANIZATIONS: Outside organizations, including architectural and consulting engineering firms and a description of the services these firms will provide.

3) INITIAL SUBMITTAL REGISTER (DESIGN & CONSTRUCTION): Include submittal reviewer, estimated date of delivery, and identify which design submittals require Government approval prior to construction, and which construction submittals require DOR or Government approval prior to construction.

4) TESTING LABORATORIES: Accredited laboratories as applicable.

5) TESTING PLAN AND LOG: Tests required, referenced by specification paragraph number requiring the test, frequency, and person responsible for each test.

6) LIST OF DEFINABLE FEATURES: A Definable Feature of Work (DFOW) is a task, which is separate and distinct from other tasks, and has the same control requirements and work crews.

7) COMMUNICATION PLAN: Provide a plan for key decisions and possible problems the Contractor and Government may encounter during the design phase of the project. Communication Plan shall indicate the frequency of design meetings and what information is covered in those meetings, key design decision points tied to the Network Analysis Schedule and how the DOR plans to include the Government in those decisions, peer review procedures, interdisciplinary coordination, design review procedures, and comment resolution.

b. QC Manager Responsibilities:

1) Participate in the Post Award Kick-off, Partnering, Design Development and Coordination Meetings and Production Meetings.

2) Ensure that no construction begins before the DOR has signed and stamped the design for that segment of work, and design and construction submittals are approved as required in Attachment A and the QC Plan.

3) Immediately stop any work that does not comply with contract plans and specifications, and direct the removal and replacement of any defective work.

4) Prepare QC Reports.

5) Hold biweekly QC meetings with DOR, Superintendent and Government technical team; participation shall be suitable for the phase of work.

6) Ensure that safety inspections are performed. Attend weekly Toolbox meetings.

7) Maintain submittal log.

8) Maintain updated as-built drawings on site.

9) Maintain testing plan and log. Ensure that all testing is performed per contract.

10) Maintain deficiency log on site, noting dates deficiency identified, and date corrected.

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

12) Perform Punch-out and Pre-final inspections, and participate in Final Inspections. Establish list of deficiencies; correct prior to the Final inspection.

13) Ensure that all required keys, operation and maintenance manuals, warranty certificates, and the As-built drawings are submitted to the Contracting Officer.

14) If Commissioning is part of work, engage Commissioning Authority (CxA), coordinate their oversight of Contractor's work and verify CxA's performance in accordance with UFGS section 01 45 00.05 20.

c. Use the Three Phases of Control process for construction QC.

1) Preparatory Phase: Review all applicable documents for compliance with all applicable laws, codes, regulations, and the requirements of the contract, including contract drawings and specifications. Determine requirements for testing and certification. Review submittal approvals for materials, equipment, shop drawings, and applicable methods of construction and installation. Include all Preparatory Phase items in the QC Report.

2) Initial Phase: Observe and inspect the initial portion of the work performed under a DFOW to establish the quality of the workmanship, resolve conflicts in construction, ensure that testing is done and certified as required, and to check all work procedures to ascertain the work is in conformance with required safety requirements. Record and report nonconforming work and work not of acceptable quality and requiring correction or rework. Include all Initial Phase items, along with initial phase checklist and, in the QC Report.

3) Follow-Up Phase: Occurs at the completion of each DFOW. Ensure the work is in compliance with contract requirements, quality of workmanship for all work is maintained, and all work performed meets safety requirements. Include all Follow-Up Phase items, including date, in the QC Report.

d. The QC Manager must posses a current certificate showing successful completion of the NAVFAC Contractor Quality Management (CQM) Training.

## 7.0 SUBMITTAL PROCESS

Provide to the Government submittals as listed. See Paragraph 4, DESIGN, and Attachment A for specific design and construction submittal format and approval and surveillance requirements. 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.

a. QC Plan, prior to Design/Construction (may be phased).

b. Design and construction submittals, prior to construction, approved IAW QC Plan, the DOR or QC Specialist is the approving authority for submittals unless otherwise indicated in Attachment A.

c. Sustainability Action Plan in accordance with 01 33 29.05 20 Sustainability Requirements

d. DOR-approved design and construction submittals identified in Attachment A for Government surveillance (typically Fire Protection system and Life Safety submittals). Stamp the submittals "FOR SURVEILLANCE ONLY." Submit Surveillance submittals to the Government prior to starting work for that item. Submittals required for surveillance will be returned only if corrective actions are required.

e. Material Safety Data Sheets (MSDS) as applicable.

f. Schedule: Provide detailed design schedule and preliminary construction schedule, due prior to PAK.

g. Environmental Protection Plan, prior to start of the work.

h. Contractor Safety Self-Evaluation Checklist.

i. Accident Reports - submit if incidence occurs.

j. Safety Submittals: Per Paragraph 34 and Attachment A, prior to construction.

k. Schedule of Prices, initial due 21 calendar days after award and a detailed due prior to construction.

l. Budget Management Summary: Per Attachment A.

m. Record Drawings, due at Beneficial Occupancy

n. Operation and Maintenance Information: Per Paragraph 23, Part 2 Attachment A, and Part 4. Due prior to testing as applicable, no later than 30 calendar days before Beneficial Occupancy.

o. Licenses and Permits: Per Attachment A and Part 4.

p. DD Form 1354: For all new construction, demolition, and any construction on an existing facility that adds new parts, items, or systems that are not maintenance or repair; e.g. replacement of windows, replacement of roofs, replacement of an exterior utility, adding an AC system, adding exterior lighting, the DOR shall prepare 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 . Submit form for Government approval a minimum of 30 calendar days prior to final acceptance of work.

q. High Performance and Sustainable Building (HPSB) compliance checklists in accordance with UFC 1-200-02, *High Performance and Sustainable Building Requirements*.

## 8.0 SUPERVISION

The Contractor shall have a supervisor fluent in English on the job site during working hours. Additional requirements per Attachment A.

## 9.0 SCHEDULE

Provide Design and Construction Schedule adequate for Contractor to efficiently manage project

and for Government to efficiently manage QA and scheduling interfaces. Include construction phasing and any work restrictions (such as occupied spaces, special hours, potential work disruptions). Schedule shall contain DFOWs and dates for completion of each task including material procurement, and construction activities. Update the schedule at least monthly; use 3-week look-ahead for each QC meeting.

## 10.0 BUDGET MANAGEMENT

The Contractor shall be responsible for budget management throughout the entire project. It is the intent of the Government to partner with the Contractor to maximize project value while strictly controlling contract modifications and maintaining overall fiscal control. When required in Attachment A, develop a Budget Management System for each phase of the design.

## 11.0 PRECONSTRUCTION CONFERENCE

Prior to construction or demolition start, meet with representatives of the Contracting Officer to discuss and develop mutual understanding relative to administration of the safety programs, environmental issues, safety of building occupants and surrounding area, hazardous materials, waste disposal, construction QC procedures, construction schedule, labor provisions and other construction phase contract procedures. The Preconstruction Conference shall reinforce partnering philosophy initially established during the PAK.

## 12.0 ACCESSIBILITY

Provide barrier-free design in accordance with UFC 1-200-01, *General Building Requirements*.

## 13.0 CONTRACTOR'S PRODUCTION REPORTS

Submit Contractor Production Reports on forms furnished for this purpose. Complete the reports weekly unless otherwise requested by the Contracting Officer. Reports shall include:

a. Worker hours by classification, move-on and move-off of construction equipment furnished by the prime, subcontractor or the Government, and materials and equipment delivered to the site.

b. Safety meetings, checks and inspections.

c. Disposition of Construction Waste Material: Per Waste Management Plan and per Environmental Protection Plan.

d. Design and Construction Services: Including, but not necessarily limited to:

1) Check all Contract Documents for correctness and correlation. If the Contractor notes any discrepancy or ambiguity, immediately notify the COR.

2) Examine the work site as to conditions affecting the work. Field verify the site and scope of work, including but not limited to the measurement and location of all significant items required to perform the work. Failure by the Contractor to familiarize oneself with available information regarding these conditions shall not relieve the Contractor from the responsibility of successfully completing the work.

# 14.0 SCHEDULE OF PRICES

Submit on forms furnished by the Government. The initial schedule of prices may be preliminary for construction activities until the design is developed. Include a detailed breakdown of the contract price, with quantities for each kind of work. Include General Conditions, profit, and overhead in the unit prices. Break down into design and each construction category if stated in Attachment A. The Contractor may invoice for bonds once the Government has approved the bonds, however, no other requests for payment will be processed without an approved Schedule of Prices.

# 15.0 CONTRACTOR INVOICES

Contractor requests for payment shall conform and will be processed in accordance with the requirements of FAR 52.232-5 and FAR 52.232-27.

a. Content of Invoice: Requests for payment in accordance with the terms of the contract shall consist of the following: (If NFAS Clause 5252.232-9301 is present in the contract, documents shall be provided as attachments in Wide Area Workflow (WAWF). The maximum size limit per attachment is less than 2 megabytes, but you may have an unlimited number of attachments. If a document cannot be attached to WAWF due to system or size restrictions it shall be provided as instructed by the contracting officer). If NFAS Clause 5252.232.9301 is not present in the contract, follow the invoicing instructions provided in the contract.

1) Contractor's Invoice on NAVFAC Form 7300/30, which shall show, in summary form, the basis for arriving at the amount of the invoice.

2) Contractor's Monthly Estimate for Voucher (LANTNAVFACENGCOM Form 4-4330/110 (New 7/84)), with subcontractor and supplier payment certification.

3) Affidavit to accompany invoice (LANTDIV NORVA Form 4-4235/4 (Rev. 5/81)).

4) Updated copy of submittal register.

5) Updated copy of progress schedule. Furnish as specified in "FAR 52.236-15, Schedules for Construction Contracts."

6) Network mathematical analysis.

7) Contractor Safety Self Evaluation Checklist (original)

8) Final release (for final payment only)

b. Payment:

1) Payment will be made on Contractor's submission of itemized requests and will be subject to reduction for overpayments or increased for underpayments from previous payments. The Government may withhold payment or reduce payments for the following:

a) Defects in material or workmanship.

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

c) Contractor's failure to submit an updated schedule.

d) Payroll violations.

e) Unless otherwise adjusted, repayment to the Government upon demand for overpayments made to the Contractor.

2) Payments may be made for materials, stored off construction sites, under the following conditions:

a) Conditions described in Attachment A.

b) Materials adequately insured and protected from theft and exposure.

c) Materials not susceptible to deterioration or physical damage in storage or in transit to the job site are acceptable for progress payments. Items such as steel, machinery, pipe and fittings and electrical cable are acceptable, but items such as gypsum board; glass, insulation and wall covering are not.

d) Materials in transit to the job or storage site are not acceptable for payment.

e) Conditions specified in FAR 52.232-5(b) Payments Under Fixed Price Construction Contracts.

## 16.0 PROTECTION OF GOVERNMENT PROPERTY

Take special care to protect Government property. Return areas damaged as a result of construction under this contract to their original condition. In addition to FAR 52.236-9, *Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements*, perform the following:

a. Remove or alter existing work or facilities in such a manner as to prevent injury or damage to any portion of the existing work or facilities that remain.

b. Repair or replace portions of existing work altered during construction operations to match existing or adjoining work, as approved by the Contracting Officer. At the completion of operations, existing work shall be in a condition equal to or better than that which existed before new work started.

c. Preserve the natural resources in accordance with the approved environmental protection plan.

## 17.0 EXISTING UNDERGROUND UTILITIES

Verify on-site utilities and have them marked out by a utility locator service prior to the start of construction. Where existing piping, utilities, oil and gas lines, and underground obstructions of

any type that are to remain are indicated in locations to be traversed by new piping, ducts, and other work provided herein, and such are not indicated or specified to be removed, the elevations of the existing utilities and obstructions shall be determined before the new work is laid closer than the nearest manhole or other structure at which an adjustment in grade could be made. Obtain required dig permits and notify the Contracting Officer 21 calendar days prior to any excavation. Refer to Attachment A for specific station requirements.

## 18.0 LICENSES / PERMITS

Obtain all appointments, licenses, and permits required to perform work under this contract at no additional expense to the Government. See "Permits Record of Decision" (PROD) form for list of permits. Comply with all applicable federal, state, and local laws, and base regulations and procedures. Provide evidence of such permits and licenses to the Contracting Officer before work commences and at other times as requested by the Contracting Officer (see FAR 52.236-7, *Permits and Responsibilities*). Coordinate permit applications with Navy or local environmental office.

The contractor shall submit a complete 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://ndbm.wbdg.org/system/html/6/453 . 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.

Contractor is exclusively responsible for his full compliance with patent laws and shall affirm that the company is licensed to use equipment and processes the company shall employ in this project.

## 19.0 CONTRACTOR WORK SITE

Limit use of the premises for work and for storage of material and equipment associated with the contract. Unless otherwise specified or separately agreed to, Government owned material handling equipment, transportation equipment or general tools will not be available for Contractor's use. Clean work area daily and after completion of the work, removing all loose debris and disposing of all non-permanent materials IAW the contractor's Waste Management Plan.

a. **Temporary Facilities**: The Contractor may provide his own office facilities; coordinate and obtain advance approval from the Contracting Officer. Provide and maintain suitable sanitary facilities within the construction limits of the contract. Dispose of sanitary waste in accordance with the applicable laws, and local regulation.

b. **Contractor-Furnished Equipment**: Equipment is subject to the inspection and approval of the Contracting Officer, prior to and during the life of the contract. All equipment and vehicles shall display readily visible Contractor identification markings. Relocate stored Contractor equipment which may interfere with operations of the Government or with others on-site.

c. **Contractor-furnished Material**: Protect and secure products stored at this site.

1) All replacement units, parts, components, and materials to be used in the maintenance, repair and alteration of facilities and equipment shall be new and compatible with the existing equipment on which it is to be used, and shall comply with applicable Government, commercial, or industrial standards such as Underwriter's

Laboratories, Inc., and National Electrical Manufacturers Association.

2) In addition, submit a current certificate recognized by the State or local authority that states the Contractor has completed at least 10 hours of training in backflow preventer installations.

## 20.0 TEMPORARY UTILITIES

a. The Government will provide water and power in reasonable quantities at the prevailing rates.

b. All labor, material, and equipment necessary to affect temporary utility tie-ins, including transformers if necessary, shall be at the expense of the Contractor and under the surveillance of the Contracting Officer.

c. The Contractor shall be responsible for any damages to Government, private or public facilities and property that may result from the installation and removal of these temporary utility tie-ins. Corrections and repairs shall be made at the Contractor's expense.

d. The actual location and installation of the temporary tie-in, together with any interruptions of utilities systems, shall be identified and approved by the Contracting Officer prior to execution. Notify the COR and Station Utilities 15 calendar days prior to any tie-ins.

e. Permanent utility systems, when indicated, will be available for tie-in.

f. Telephone and Data Service: Make arrangements with local telephone company, NMCI and other pertinent base communication departments.

g. Maintain utility services to existing facilities surrounding the site at all times during construction.

h. Contractor shall install and certify back flow preventers on all connections to the potable water supply system.

## 21.0 ENVIRONMENTAL CONTROLS AND PROTECTION

Unforeseen Hazardous Conditions: Do not disturb hazardous materials and report condition immediately to the Contracting Officer potentially hazardous conditions that are uncovered or the Contractor becomes aware of that have not been identified in the RFP. This includes hazardous components and materials and contamination (see UFC 3-800-10N, *Environmental Engineering for Facility Construction*, for more information). This includes conditions that are not only hazardous to humans but wildlife, marine life and the environment. Stop work in the area of the questionable material or condition until identification and direction is provided.

## 22.0 WASTE MANAGEMENT

Develop a Waste Management Plan that identifies all recyclable material and disposal methods for all material. Contractor shall reduce, recycle or salvage as much waste material as possible with a goal of diverting at least 50% of construction waste from landfill. Address waste reduction, recycling and salvage as part of the waste management plan. Report volume or weight of disposed and recycled materials. Report destination of debris diverted from disposal. The Contractor is responsible for removing and disposing of all waste materials generated. Consider all material recyclable or reusable, unless clearly demonstrated the material requiring disposal is waste material.

## 23.0 RECORD DRAWINGS AND OPERATION & MAINTENANCE (O&M) DATA

Furnish hard copy and electronic format for all as-built and O&M information. Record drawings shall incorporate all changes to the approved final design. Provide O&M data for as-built products, materials, and equipment, including data sheets, test reports, warranties, certificates, list of spare parts suppliers for all pieces of equipment, and approved construction submittals. Refer to Attachment A.

## 24.0 WARRANTY

Warrant all materials and work for not less than one year after final acceptance of the work, except as otherwise indicated in this RFP. If required to provide remedial repair of previously installed work due to latent defect or unacceptable work performance, warrant the repaired work for one year after the completion and acceptance of the repair. For warranted items, furnish the manufacturers' original written warranty accompanied by a copy of the supplier's receipt showing place of purchase, telephone number of supplier, address, delivery order number if applicable, and ticket number.

## 25.0 PERFORMANCE EVALUATIONS

The evaluation will take into account all aspects of the Contractor's performance, including evaluations from Performance Assessment Plans when included in Attachment A. Performance evaluations may be completed any time during the contract. The Government will provide a copy of the performance evaluation and an opportunity to discuss the evaluation. The performance evaluations will have an impact on the award of future contracts.

## 26.0 WORK HOURS, ACCESS AND PASSES

All Contractor employees, including subcontractors, and subcontractors' employees, suppliers, and suppliers' employees shall be required to comply with the Installation Security Requirements regarding personnel, vehicle, and equipment security passes and access the jobsite. Nothing in the contract shall be construed in any way to limit the authority of the Commanding Officer to prescribe new, or to enforce existing security regulations governing the admission or exclusion of persons and the conduct of persons while aboard the station, including but not limited to, the rights of search of all persons or vehicles aboard the station.

Coordinate with the Contracting Officer for specific security and access requirements.

a. Access to Buildings/ Occupied Buildings: The Contractor may work in or around existing

occupied buildings. The Contractor is responsible, via the Contracting Officer, to obtain access to building and facilities and arrange for them to be opened and closed. Do not enter the building(s) without prior approval of the Contracting Officer. Keep the existing buildings and their contents secure at all times. Provide temporary closures as required to maintain security. Contract personnel will not be permitted in security-regulated buildings or areas unless cleared by the Security Officer.

b. Passes and Badges: Contractor employees and representatives performing work under this contract are required to be either United States citizens or documented legal residents (status verified by prime contractor). All Contractor employees shall obtain the required employee and vehicle passes. Follow guidance per Attachment A for bases that participate in the Navy Commercial Access Control System (NCACS). Each employee shall wear the Government issued badge over the front of the outer clothing. Failure to obtain security and base access passes shall not be a cause for contract performance time extension. The Contractor shall immediately turn in all terminated employee's badges to the issuing office.

1) Personnel will be issued appropriate identification badges when the Contractor submits, in writing on company letterhead, a list indicating that all individuals are bona fide employees. Employees shall complete questionnaires and other forms as required for security. Allow 14 calendar days for background checks and processing. The list shall contain the following information:

a) Name of employee

b) Social Security Number

c) Date of Birth

d) Place of Birth

e) Citizenship, Statement of (U.S.) or proof of documented legal residency

f) Employment Eligibility Verification Form (DHS FORM I-9). This form is available at http://uscis.gov/graphics/formsfee/forms/files/I-9.pdf

c. Contractor Vehicles: All vehicles shall display a valid state license plate and safety inspection sticker, if applicable, and shall be maintained in good repair. The company name shall be displayed in a clearly visible manner and size on each Contractor vehicle used in the course of work. Registration, proof of insurance and driver's licenses are required to obtain a station vehicle pass.

d. Work Hours: Unless otherwise indicated, work will be located on a Government compound, military installation, or station. Contractor work hours shall be between 0630 and 1700 Monday through Friday, or as indicated in Attachment A. Obtain advance approval from the Contracting Officer for Contractor personnel to remain on site beyond normal working hours. Notify the Contracting Officer at least 48 hours in advance to obtain approval for access to the jobsite or work outside of normal working hours or on Saturday, Sunday, and Federal Holidays.

e. Contractor Personnel: Provide the Contracting Officer the name(s) of the supervisory person(s) authorized to act for the Contractor. Provide, and update as required, a list of the key personnel for the Contractor and subcontractors including addresses and

telephone numbers for use in the event of an emergency.

f. Contractor employees shall conduct themselves in a proper, efficient, courteous and businesslike manner. Remove from the site any individual whose continued employment is deemed by the Contracting Officer to be contrary to the public interest or inconsistent with the best interests of National Security.

## 27.0 SECURITY REQUIREMENTS

All security requirements apply to all subcontractors and suppliers associated with this contract. Special or extraordinary security requirements are identified in Attachment A. In addition to special or extraordinary security requirements, comply with the following:

a. Do not publicly disclose any information concerning any aspect of the materials or services relating to this contract, without prior written approval of the Contracting Officer.

b. Do not disclose or cause to be disseminated any information concerning the operations of the activity's security or interrupt the continuity of its operations.

c. Do not disclose any information to any person not entitled to receive it. Failure to safeguard any classified information that may come to the Contractor or any person under his control, may subject the Contractor, his agents or employees to criminal liability under 18 U.S.C., Sections 793 and 798.

d. Direct to the Contracting Officer and or Installation Security Officer for resolution all inquiries, comments or complaints arising from any matter observed, experienced, or learned as a result of or in connection with the performance of this contract, the resolution of which may require the dissemination of official information.

e. Coordinate photography requirements with the Contracting Office. Some areas restrict or prohibit photographing Government property.

Deviations from or violations of any of the provisions of this paragraph, will, in addition to all other criminal and civil remedies provided by law, subject the Contractor to immediate termination for default and withdrawal of the Government's acceptance and approval of employment of the individuals involved.

## 28.0 REQUIRED INSURANCE

Within 15 calendar days after award, furnish the Contracting Officer a Certificate of Insurance as evidence of the following insurance coverage amounts not less than the amount specified below in accordance with FAR Clause 52.228-5, *Insurance Work On A Government Installation*:

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. Worker's Compensation: As required by Federal and State Worker's compensation and occupational disease and other laws.

d. Employer's Liability Coverage: $100,000, except in states where worker's compensation may not be written by private carriers.

e. Others as required by state law.

f. Above insurance coverages are to extend to Contractor personnel operating Government owned equipment and vehicles.

g. The Certificate of Insurance shall provide for 30 calendar days written notice to the Contracting Officer by the insurance company prior to cancellation or material change in policy coverage. Other requirements and information are contained in Attachment A.

For projects which require removal of asbestos containing materials the Asbestos Contractor or Subcontractor, as the case may be shall provide occurrence-based liability insurance with asbestos coverages in an amount not less than $1,000,000 and shall name the Government and PQP as additional insureds.

## 29.0 PROPRIETARY RIGHTS

All field notes, design drawings, specifications, and other documents collected and produced as part of this contract shall be considered property of the Government. These data shall not be used, in whole or part, published or unpublished, as a part of any technical or non-technical presentation without written pre-approval of the Contracting Officer.

## 30.0 GOVERNMENT FURNISHED MATERIAL AND EQUIPMENT

If applicable, the Government will furnish the materials and equipment for installation by the Contractor pursuant to contract clause FAR 52.245-2, *Government Property (Fixed Price Contracts)*. Notify the Contracting Officer in writing at least 15 calendar days before the materials and equipment are required. Pick up materials and equipment no later than 30 calendar days after such date. When materials and equipment are not picked up by the 30th day, the Contractor will be charged for storage at the prevailing rate. The Contracting Officer will specify the location of materials and equipment and the delivery location.

## 31.0 ORAL MODIFICATION

No oral statement by any person other than the Contracting Officer, as provided in the contract clause entitled, "CHANGES AND CHANGED CONDITIONS," will in any manner or degree modify or otherwise affect the terms of this contract.

## 32.0 NO WAIVER BY THE GOVERNMENT

The failure of the Government in any one or more instances to insist upon strict performance to any of the terms of this contract or to exercise any option herein conferred shall not be construed as a wavier or relinquishment to any extent of the right to assert or rely upon such terms or options on any future occasion.

## 33.0 EQUITABLE ADJUSTMENTS - WAIVER AND RELEASE OF CLAIMS

a. Whenever the Contractor submits a claim for equitable adjustment under a clause which provides for equitable adjustment of the contract, such claim shall include all types of adjustments in the total amounts to which the clause entitles the Contractor, including, but not limited to, adjustment arising out of delays or disruptions.

b. Except as the parties may otherwise expressly agree, the Contractor shall be deemed to have waived: (1) any adjustments to which he otherwise might be entitled under the clause where such claim fails to request such adjustments; and (2) any increase in the amount of equitable adjustments additional to those requested in its claim.

c. The Contractor agrees that, if required by the Contracting Officer, it shall execute a release, in form and substance satisfactory to the Contracting Officer, as part of the supplemental agreement setting forth the aforesaid equitable adjustment. The Contractor further agrees that such release shall discharge the Government, including its officers, agents, and employees, from any further claims, including, but not limited to, further claims arising out of delays or disruptions caused by the aforesaid change.

## 34.0 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

a. References: The publications listed below form a part of this specification to the extent referenced. Use current version of referenced requirements at the time of contract solicitation. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
ANSI Z359.1, *Safety Requirements for Personal Fall Arrest System, Subsystems and Components*
ANSI A10.32, *Fall Protection systems for Construction and Demolition Operations*
ANSI A10.6, *Demolition Operations*
ANSI Z9.2, *Fundamentals Governing the Design and Operation of Local Exhaust Systems*
ANSI Z88.2, *Respiratory Protection*
ANSI Z358.1, *Emergency Eyewash and Shower Equipment*

ASME INTERNATIONAL (ASME)
ASME B30.22, *Articulating Boom Cranes*
ASME B30.3, *Construction Tower Cranes*
ASME B30.5, *Mobile and Locomotive Cranes*
ASME B30.8, *Floating Cranes and Floating Derricks*

AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)
ASTM Standards on Lead-Based Paint Abatement in Buildings

ASTM E 1368, *Visual Inspection of Asbestos Abatement Projects*

DEPARTMENT OF DEFENSE (DoD)
MIL-STD-1472F, Military Standard, *Human Engineering Design Criteria for Military Systems, Equipment and Facilities*
DoD-HDBK 743A, *Anthropometry of US Military Personnel*

DEFENSE LOGISTICS AGENCY (DLA)
DLA 4145.25, *Storage and Handling of Compressed Gases and Liquids in Cylinders*

EPA Standards and Documents - General
15 U.S.C. 2601 - *Toxic Substances Control Act*
EPA Title X - *The Residential Lead Based Paint Hazard Reduction Act*
EPA & HUD - *Lead Safe Work Practices*
HUD Guidelines, *Guidelines for the Evaluation and Control of Lead Based Paint Hazards in Housing*

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
NFPA 241, *Safeguarding Construction, Alteration, and Demolition Operations*
NFPA 51B, *Fire Prevention During Welding, Cutting, and Other Hot Work*
NFPA 70, *National Electrical Code*
NFPA 70E, *Electrical Safety in the Workplace*

U.S. ARMY CORPS OF ENGINEERS (USACE)
EM 385-1-1 Safety -- *Safety and Health Requirements*

UNITED FACILITIES CRITERIA (UFC)
UFC 3-560-01, *Electrical Safety, O&M*

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 *Occupational Safety and Health Standards for Shipyard Employment*
29 CFR 1926 *Safety and Health Regulations for Construction*

b. Submittals: A "G" following a submittal indicates that Government approval action is required.

1) Contractor Accident Prevention Plan (APP), comply with EM 385-1-1, Appendix A; G

2) Contractor Safety Self-Evaluation Checklist; G

3) Monthly Work-Hour Reports

4) Crane Critical Lift Plan; G

5) Accident Reports – submit if incidence occurs.

6) Activity Hazard Analyses, as applicable.

c. 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; or collision, including unplanned contact between the load, crane, or other

objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, roll over).

d. Contractor Safety Self-Evaluation Checklist: Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor. Complete the checklist monthly and submit with each request for payment. A 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.

e. Regulatory Requirements: In addition to the detailed requirements included in this contract, work performed shall comply with USACE EM 385-1-1, and the laws, ordinances, criteria, rules and regulations included in Attachment A. 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. UFC 3-560-01 takes precedence over all other guidance for electrical safety.

f. Site Safety and Health Officer (SSHO) Qualifications & Duties: SSHO shall perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The assignment of the SSHO does not relieve the Contractor from the regulatory requirements governing safety responsibility. The SSHO on this project can be the site superintendent unless otherwise indicated in Attachment A.

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

1) Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Attach safety inspection logs to the daily production report.

2) Attend pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic progress meetings.

Failure to actively apply an acceptable safety program will result in dismissal and a project work stoppage that will remain in effect pending approval of a suitable replacement.

g. Accident Notification and Reports

1) 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, fill out the Contractor Incident Report (CIR) electronically and submit via the NAVFAC Enterprise Safety Applications Management System (ESAMS) within 5 calendar days. The Contracting Officer will provide copies of any required or special forms.

2) 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.

3) 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. 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 ( e.g., type of construction equipment used, PPE used). Preserve the conditions and evidence on accident site until the Government investigation team arrives and Government investigation is conducted.

4) 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.

h. Hot Work: Prior to performing "Hot Work" (e.g., welding, cutting) or operating other flame-producing/ spark-producing devices, request a written permit 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 as required after completion of the task or as specified on the hot work permit.

i. 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.

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocynates, or lead-based paint are prohibited. The Contracting Officer, upon written request may consider exceptions to the use of any of the above excluded materials.

The Request for Proposal should have identified materials such as PCB, lead paint, and friable and non-friable asbestos. If 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*.

j. Pre-outage Coordination Meeting: Apply for utility outages at least 15 days in advance. As a minimum, include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Once approved, and prior to beginning work on the utility system requiring shut down, 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.

k. Fall Hazard Protection and Prevention Program: Establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. 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.

1) Fall Protection for Roofing Work: Implement all protection controls based on the type of roof being constructed and work being performed. Evaluate the roof area to be accessed for its structural integrity including weight-bearing capabilities for the projected loading.

a) A safety monitoring system is not adequate fall protection for low sloped roofs and is not authorized.

b) Work on steep-sloped roofs, including residential or housing type construction, requires a personal fall arrest system, guardrails with toe-boards, or safety nets.

2) Fall Prevention and Design: During design, consider and eliminate fall hazards encountered at the facility 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, include control measures 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, incorporate the requirements of 29 CFR 1910 Standards in the design (29 CFR 1915 applies for work in Shipyards).

l. Weight Handling Equipment: All handling equipment must meet the requirements of NAVFAC P-307 Section 1.7.2.

1) 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. Submit the plan 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.C.18. as well as the following:

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

b) 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.

2) 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. The Certificate of Compliance shall state that the crane operator(s) is qualified and trained in the operation of the crane to be used. 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). Post these certifications on the crane.

3) 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.

4) Comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Perform erection under the supervision of a designated person (as defined in ASME B30.5). Perform all testing in accordance with the manufacturer's recommended procedures.

5) 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.

6) Under no circumstance make a lift at or above 90% of the crane’s rated capacity in any configuration.

7) 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.

8) Use cribbing when performing lifts on outriggers.

9) Position the crane hook/block directly over the load. Side loading of the crane is prohibited.

10) 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 be available for review by Contracting Officer personnel.

11) 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.

12) Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

13) Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. Prior to conducting lifting operations, set a maximum wind speed at which a crane can be safely operated based on the equipment being used, the load being lifted, experience of operators and riggers, and hazards on the work site. Include this maximum wind speed determination in the activity hazard analysis plan for that operation.

m. Utility Locations and Verification Prior to Excavation: Obtain appropriate digging permit from Base personnel through Contracting Officer prior to digging. 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. Maintain all markings during utility investigation throughout the contract. Locate utilities in accordance with Paragraph 17 and Attachment A.

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. Use hand digging within 0.61 m (2 feet) of a known utility. If

construction is parallel to an existing utility, expose the utility by hand digging every 30.5 m (100 feet) if parallel within 1.5 m (5 feet) of the excavation.

n. Utilities Within Concrete Slabs: Utilities located within concrete slabs are extremely difficult to identify due to the reinforcing steel used in the construction of these structures. Whenever 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.

o. Conduct of Electrical Work: Follow electrical safety criteria specified in UFC 3-560-01, USACE EM 385-1-1, and NFPA 70E during the conduct of all work.

p. 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), comply with the following paragraphs. Any potential for a hazard in the confined space requires a permit system to be used.

1) Confined Space Signage: Provide permanent signs integral to or securely attached to access covers for permit-required confined spaces provided by this contract. Signs wording: "DANGER--PERMIT-REQUIRED CONFINED SPACE - DO NOT ENTER -" in bold letters a minimum of 25 mm (one inch) in height and constructed to be clearly legible with all paint removed. The signal word "DANGER" shall be red and readable from 1.52 m (5 feet).

2) 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 all potential hazards are controlled or eliminated and documented. (See Section 06.I.06 of USACE EM 385-1-1 for entry procedures.) Review all hazards pertaining to the space with each employee during AHA process.

3) Forced air ventilation is required for all confined space entry operations. Maintain minimum air exchange requirements to ensure exposure to any hazardous atmosphere is kept below its' action level.

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

q. Ergonomics Considerations During Design: Design facilities, processes, job tasks, tools and materials to reduce or eliminate work-related musculoskeletal (WMSD) injuries and risk factors in the workplace. Design maintenance access to reduce WMSD risk factors to the lowest level possible. In addition to requirements included in this contract, design shall incorporate the requirements of MIL-STD-1472F.

-- End of Section --

# Part 2 Attachment A Project-Specific General Requirements

The following requirements are project specific and may either supplement and/or modify those requirements contained in the body of Part 2, General Requirements, for Small Projects. Paragraph numbers in Part 2 correspond to paragraph numbers used in Part 2, Attachment A.

## Paragraph 3 POST AWARD KICKOFF MEETING (PAK)

## Paragraph 4 DESIGN

Submit design drawings, specifications, and calculations in accordance with UFC 1-300-09N. Deliverable requirements are identified in the Table below. A 50%, 100%, and final design submission are required. The design and construction schedule shall allow for a 2 week government review period for each submittal. The review will be managed through DRChecks which can be located at projnet.org.

| Deliverable | | FEAD copies |
|---|---|---|
| 50% Design Development | | |
| | Half-size Drawings (Full size) | 5(2) |
| | Specifications and Manufacturer's Cut Sheets | 7 |
| | Design/Construction Schedule | 7 |
| | Basis of Design & Calculations | 7 |
| | CD with files of all deliverables | 2 |
| 100% Pre-final Design | | |
| | Half-size Drawings (Full size) | 5(2) |
| | Specifications and Manufacturer's Cut Sheets | 7 |
| | Design/Construction Schedule | 7 |
| | Basis of Design & Calculations | 7 |
| | CD with files of all deliverables | 2 |
| Final Design | | |
| | Half-size Drawings (Full size) | 5(2) |
| | Specifications and Manufacturer's Cut Sheets | 7 |
| | Design/Construction Schedule | 7 |
| | Basis of Design & Calculations | 7 |
| | CD with files of all deliverables | 2 |

1. The final design submittal must be professionally signed and sealed by the DOR and forwarded to the Contracting Officer prior to the start of construction. Separated final design packages will only be considered for Government review and approval during the Post Award Kick-off Meeting. The final design submittals must be approved by the Contracting Officer prior to the start of construction:

2. Construction submittals are to be Contractor-approved, except those listed below:

   a. DOR Approval required for the following submittals. Submit these submittals to the

Government for surveillance:

1) Fire Protection related submittals

2) Storefronts, doors, and door hardware

2) Insulation Systems

3) Plumbing Fixtures

4) Lighting Fixtures

b. Government Approval required for:

1) Fire protection related systems

## Paragraph 5 FIRE PROTECTION AND LIFE SAFETY REQUIREMENTS

The Contractor shall retain the services of a Registered Fire Protection Engineer (FPE). This FPE shall be an integral part of the Prime Contractor's Design and Quality Control Organization, and 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. Unless otherwise specified, all work performed on means of egress, fire rated elements, Fire Suppression, Mass Notification, and Fire Alarm Systems shall be designed, reviewed, inspected and approved by the FPE.

1. Qualifications/Experience:
   a. Qualifications of the Designer: The FPE DOR shall have obtained professional registration by successfully completing the Fire Protection Engineering discipline examination.
   b. Qualifications of the Installer: Prior to installation, submit data showing the Contractor has successfully installed systems of the same type and design as specified herein, or that Contractor has a contractual agreement with a subcontractor having such experience. Include names and locations of at least two installations where the Contractor, or subcontractor, has installed such systems. Indicate type and design of each system and certify that each has performed satisfactorily as intended for not less than 18 months.
   c. Qualifications of the System Technician: Installation drawings, shop drawing and as-built drawings shall be prepared, by or under the supervision of, an individual who is experienced with the types of works specified herein, and is currently certified by the National Institute for Certification in Engineering Technologies (NICET) as an engineering technician with minimum Level-III certification in the fire protection certification program applicable to the work being performed. Submit data for approval showing the name and certification of all involved individuals with such qualifications at or prior to submittal of drawings.

2. Area of Responsibility: The FPE is responsible for assuring the proper design, construction and installation of life safety, fire protection, and mass notification features across all disciplines and trades. Services include preparing the Design Analysis, preparing or reviewing and approving the design documents (drawings), preparing or reviewing all fire protection related specification sections (including fireproofing, firestopping, fire suppression systems, and mass notification and fire alarm systems), certifying in writing that the completed design incorporates all required features, and

certifying in writing that the facility was constructed in accordance with the approved design documents and applicable criteria. The FPE shall be responsible for assuring that the construction and installation are in accordance with the approved design documents by reviewing and approving all fire protection construction submittals, providing construction surveillance and preliminary and final inspections and testing services. 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, mass notification, fire alarm and detection systems, fire suppression and standpipe systems, means of egress components, and emergency and exit lighting fixtures. A copy of each approved submittal, with a copy of the Contractor's FPE review comments, shall be forwarded to the Government FPE prior to starting work for that item. This design review effort shall be a part of the Contractor's design quality control program, included in the design quality control plan, and shall be documented and submitted with each design development submittal.

3. 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, preliminary inspections of mass notification, fire alarm/detection and suppression systems, and final acceptance testing of mass notification, fire alarm/detection and suppression systems.
   a. Preliminary and Final Inspections and Acceptance Testing: FPE shall personally witness all preliminary inspections and testing of mass notification, fire alarm/detection and suppression systems. Once preliminary inspections and testing have been successfully completed, the FPE shall submit a signed certificate to the QC Manager that systems are fully compliant and ready for final inspection and acceptance testing. The QC Manager shall provide 14 days advance notice to the Contracting Officer to schedule the final inspection and acceptance testing with the activity Fire Inspection Office and the NAVFAC Fire Protection Engineer.
   b. Final Life Safety/Fire Protection Certification Documentation: The FPE shall provide certification that all life safety and fire protection features and systems have been installed in accordance with applicable criteria, 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.

## Paragraph 6 QUALITY CONTROL

The Superintendent may not serve also as the Quality Control Manager on this project.

Special inspection, testing, approvals, certifications, observations and quality assurance plans as prescribed in Chapter 17 of the IBC are required.

## Paragraph 7 SUBMITTAL PROCESSING

The following example of an acceptable Design and Construction Submittal Format:

| | SUBMITTAL/BENCHMARK | DURATION | BENCHMARK | RECEIVED | STATUS |
|---|---|---|---|---|---|
| 1 | Quality Control Plan | | | | |
| 2 | Material Safety Data | | | | |
| 3 | Design/Construction | | | | |
| 4 | Waste Management | | | | |
| 5 | Safety and Health Plan | | | | |
| 6 | Schedule of Prices | | | | |
| 7 | Budget Management | | | | |
| 8 | Record Drawings | | | | |
| 9 | Operation and | | | | |
| 10 | Licenses and Permits | | | | |
| 11 | Badge Requests | | | | |
| 12 | Statement of | | | | |
| 13 | Demolition and Work | | | | |
| 14 | Design Development | | | | |
| 15 | Final Design Docs | | | | |
| 16 | Submittal Register | | | | |
| 17 | Performance/Payment | | | | |
| 18 | Environmental | | | | |
| 19 | Certificates of Insurance | | | | |
| 20 | DD Form 1354 | | | | |

A 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. Transmit submittals with transmittal form prescribed by the Contracting Officer and standard for this project.

Allow a 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 each submittal is the same as the initial submittal.

## Paragraph 8 SUPERVISION

Not used.

## Paragraph 10 BUDGET MANAGEMENT

Not used.

## Paragraph 14 SCHEDULE OF PRICES

Not used.

## Paragraph 15 INVOICES

Not used.

## Paragraph 17 EXISTING UNDERGROUND UTILITIES

Not used.

## Paragraph 19 CONTRACTOR WORK SITE

Not used.

## Paragraph 20 TEMPORARY UTILITIES

Not used.

## Paragraph 21 ENVIRONMENTAL CONTROLS AND PROTECTION

The DOR must ensure state and local regulations are met within the edited UFGS section.

## Paragraph 22 WASTE MANAGEMENT

Not used.

## Paragraph 23 RECORD DRAWINGS AND OPERATION & MAINTENANCE (O&M) DATA

Provide the Contracting Officer with two copies of half size as-built drawings, one copy of full-size as-built drawings, and two CDs containing drawings (in both pdf and Autocad formats), and all construction submittals.

## Paragraph 24 WARRANTY

Not used.

## Paragraph 25 PERFORMANCE EVALUATIONS

Not used.

## Paragraph 26 WORK HOURS, ACCESS AND PASSES

Working hours in building 11 and 14 shall be limited to 1800-0500 Monday through Friday.

Working hours in building 13 shall be 0600-1700 Monday through Friday. Any deviation from this schedule shall require written approval from the Contracting Officer.

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

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

2. One-Day Passes: Participation in the NCACS is not mandatory, and if the Contractor chooses not to participate, the Contractor's personnel will have to obtain daily passes, be subject to daily mandatory vehicle inspection, and will have limited access to the installation. The Government will not be responsible for any cost or lost time associated with obtaining daily passes or added vehicle inspections incurred by non-participants in the NCACS.

Parking at NSA Bethesda is restricted. All parking is reserved for base staff between the hours of 0600-1600 Monday through Friday. Special parking provisions or temporary parking passes will not be given to the contractor.

## Paragraph 27 SECURITY REQUIREMENTS

Not used.

## Paragraph 28 REQUIRED INSURANCE

Not used.

## Paragraph 30 GOVERNMENT FURNISHED MATERIAL AND EQUIPMENT

Not used.

## Paragraph 34 SAFETY AND OCCUPATIONAL HEALTH

The DOR is required to edit and submit UFGS 01 35 26, Governmental Safety Requirements.

**Sub-Paragraph f., Safety and Health Officer (SSHO)**
The Site Safety and Health Officer may serve also as the Superintendent.

**End of PART 2 Attachment A**

# Part 3 Statement of Work / Project Program

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## 1.0 PROJECT DESCRIPTION

This project will make energy repairs to Buildings 11, 13, & 14. All three buildings are located within the National Naval Medical Center's Historic District, and all three are considered contributing resources to the District and eligible for listing on the National Register of Historic Places. All work performed on these buildings shall meet the National Historic Preservation Act (16 USC 470) and Secretary of Interior Standards for the Treatment of Historic Properties (36 CFR Part 68)

### Building 11 repairs will include:

Plumbing: Upgrade existing lavatory faucet aerators that are currently rated at 2.2 GPM to new aerators rated at 0.5 GPM.

Building Envelope: Install R40 minimum insulation above the suspended ceiling on the second deck to reduce heat loss/heat gain through the roof.

**Building 13 repairs will include:**

Building Envelope: Install R40 minimum insulation to the exposed underside of the concrete roof deck. Replaces existing lighting with LED.

**Building 14 repairs will include:**

Plumbing: Replace three existing toilets with new High Efficiency Toilets (HET) of 1.28 GPF. Replace two existing urinals with new High Efficiency Urinals (HEU) rated at 0.125 GPF. Replace one existing 2.5 GPM showerhead with new High Efficiency showerheads rate at 1.5 GPM. Replace 4 existing lavatories with new lavatories equipped with 0.5 gpm aeratprs. Building Envelope: Construct an interior vestibule at the main building entries to help reduce heat loss/gain as pedestrian traffic enters and exits the building. Install R40 minimum insulation to the underside of the concrete roof deck on the second floor. Replace the existing lighting with LED.

# 2.0 PROJECT OBJECTIVES

## 2.1 APPLICABLE CODES AND STANDARDS

Not used.

## 2.2 SUSTAINABLE DESIGN

Design and construct project per sustainability requirements identified in Section 01 33 29.05 20, *Sustainability Requirements For Design-Build*. Additional specific sustainability requirements are found in this document.

## 2.3 STORMWATER MANAGMENT - LOW IMPACT DEVELOPMENT (LID)

Not used

# 3.0 SITE ANALYSIS

Not used

# 4.0 BUILDING REQUIREMENTS

Not used

# 5.0 ROOM REQUIREMENTS

Not used.

# 6.0 ENGINEERING SYSTEMS REQUIREMENTS (ESR)

A10 Foundations
A20 Basement Construction
B10 Superstructure
B20 Exterior Closure
B30 Roofing
C10 Interior Construction
C20 Stairs
C30 Interior Finishes
D10 Conveying Systems
D20 Plumbing
D30 HVAC
D40 Fire Protection Systems
D50 Electrical Power and Lighting
E10 Equipment
E20 Furnishings
F10 Special Construction
F20 Selective Building Demo
G10 Site Preparations
G20 Site Improvements
G30 Site Civil/Mechanical Utilities
G40 Site Electrical Utilities

## A10 FOUNDATION

Not applicable

## A20 BASEMENT CONSTRUCTION

Not applicable

## B10 SUPERSTRUCTURE

Not applicable

## B20 EXTERIOR ENCLOSURE

### B2010 EXTERIOR WALLS

Not applicable

### B2020 EXTERIOR WINDOWS

**Storefronts**

Storefronts shall be steel.

## B2030 EXTERIOR DOORS

Glazing color shall match existing adjacent buildings. Glazing shall be clear tempered glass.

# B30 ROOFING

Building 11: Provide R40 insulation above the existing suspended ceiling on the second floor.

Building 13: Provide R40 insulation at the exposed underside of the concrete roof deck.

Building 14: Provide R40 insulation at the underside of the concrete roof deck. There is an existing suspended acoustical tile ceiling at the second floor. The contractor will be required to remove sections of the existing ceiling to access the roof deck and install the new insulation.

Provide a dewpoint calculation for the new roof assembly in these buildings. Include this analysis in the design calculations.

## B3010 ROOF COVERINGS

Not applicable

## B3020 PERFORMANCE REQUIREMENTS

Not applicable

## B3030 WIND UPLIFT AND FIRE RESISTANCE REQUIREMENTS

Not applicable

## B3040 ROOF WARRANTY

Not applicable

## B3050 ROOF SPECIFICATION AND DETAILING

Not applicable

## B3060 ROOF DESIGNER REQUIREMENTS

Not applicable

## B3070 QUALITY CONTROL PROGRAM

Not applicable

# C10 INTERIOR CONSTRUCTION

## C1010 PARTITIONS

Not applicable

## C1020 INTERIOR DOORS

## C1030 SPECIALTIES

Not applicable

# C30 INTERIOR FINISHES

Not applicable

## C3010 WALL FINISHES

Not applicable

## C3020 FLOOR FINISHES

Not applicable

## C3030 CEILING FINISHES

Not applicable

## C3040 INTERIOR COATINGS AND SPECIAL FINISHES

Not applicable

# D10 CONVEYING SYSTEMS

Not applicable

# D20 PLUMBING

# D2010 PLUMBING FIXTURES

**Water Closets**

Building 14: Demolish existing wall mounted water closets and provide new wall mounted water closets. Exact quantity and location of new fixtures is identified in Part 6 of this RFP. The new water closets shall be flush valve type, ADA compliant, and rated at 1.28 gallon per flush. New fixtures shall utilize existing sanitary and water connections.

**Urinals**

Building 14: Demolish existing urinals and provide new urinals. Exact quantity and location of new fixtures is identified in Part 6 of this RFP. The new urinals shall be flush valve type, ADA compliant, and rated at 0.125 gallon per flush. New fixtures shall utilize existing sanitary and water connections.

**Lavatories**

Building 11: Replace existing aerators with new 0.5 gpm aerators at all lavatories in the building. There are approximately 53 lavatories in building 11.

Building 14: Demolish wall mounted lavatories and provide solid-surface countertop lavatories. Provide 0.5 gpm aerators at the new lavatories. Exact quantity and location of new fixtures is identified in Part 6 of this RFP.

**Sinks**
Not used.

**Showers**

Building 14: Replace existing showerhead with new 1.5 gpm showerhead. Exact quantity and location of fixtures is identified in Part 6 of this RFP.

**Water Coolers**
Not used.

# D2020 DOMESTIC WATER EQUIPMENT

Not used.

# 2030 SANITARY WASTE

Not used.

# D2040 RAIN WATER DRAINAGE

Not used.

# D2090 OTHER PLUMBING SYSTEMS

Not used.

## D30 HVAC

Not used.

# D40 FIRE PROTECTION SYSTEMS

## D4010 FIRE ALARM AND DETECTION SYSTEMS

Not applicable

## D4020 FIRE SUPPRESSION WATER SUPPLY AND EQUIPMENT

Not applicable

## D4040 SPRINKLERS

1. Provide sprinkler protection above the ceiling throughout the second floor. Sprinkler protection shall be designed and installed in accordance with UFC 3-600-01.

1.a. If non-combustible materials are used to provide the insulation required elsewhere in this RFP, then the sprinkler protection required in this section may be omitted.

1.b. If the materials used to provide the insulation required elsewhere in this RFP meet the requirements of NFPA 13, Section 8.15.1.2.12, then the sprinkler protection required in this section may be omitted.

## D4090 OTHER FIRE PROTECTION SYSTEMS

Not applicable

## D50 ELECTRICAL

The electrical design shall comply with the design criteria specified in UFC 3-501-01, *Electrical*

*Engineering*, and its referenced documents.

## D5010 ELECTRICAL SERVICE & DISTRIBUTION

Not Applicable.

## D5020 LIGHTING & BRANCH WIRING

Provide a complete lighting system for Buildings #13 and #14, including the new vestibules, consisting of exit and emergency lighting and area lighting consisting of LED lighting including switches and automatic controls.

All branch and control wiring shall be insulated conductors in conduit.

## D5030 COMMUNICATIONS & SECURITY

Not Applicable.

## D5090 OTHER ELECTRICAL SERVICES

Emergency lighting in finished spaces shall use battery supported emergency ballast in conjunction with normal lighting fixtures. Emergency lighting in non-finished spaces shall use stand-alone emergency lighting units. Emergency lighting units shall include self-testing and diagnostic controls.

# E10 EQUIPMENT

## E1010 COMMERCIAL EQUIPMENT

Not Applicable.

## E1020 INSTITUTIONAL EQUIPMENT

Not Applicable.

## E1030 VEHICULAR EQUIPMENT

Not Applicable.

## E1040 GOVERNMENT FURNISHED EQUIPMENT

Not Applicable.

## E1090 OTHER EQUIPMENT

Not Applicable.

## E20 FURNISHINGS

Not Applicable.

## E2010 FIXED FURNISHINGS

Not Applicable.

## E2020 MOVABLE FURNISHINGS

Not Applicable.

# F10 SPECIAL CONSTRUCTION

## F1010 SPECIAL STRUCTURES: PRE-ENGINEERED METAL BUILDINGS

Not Applicable.

# F20 SELECTIVE BUILDING DEMOLITION

Remove the complete interior lighting system in Buildings #13 and #14 consisting of exit and emergency lighting and area lighting including switches and automatic controls. Remove the existing interior lighting system wiring (power and controls) and raceways in Buildings #13 and #14 that are not been used by the lighting systems been provided by this project; refer to section D5020 for more information. Buildings #13 and #14 exterior lighting systems shall remain in place and operational. Remove existing plumbing fixtures as described in section D20.

## F2020 HAZARDOUS COMPONENT ABATEMENT

A report for the following: lead, mercury and low level radioactive components and PCBs is not provided to support this project.

Prior to the start of the work the ECATTS trained contractor is required to inspect the work area with the designer of record, and government representative to address existing potentially hazardous components as part of the work. The contractor is required to provide a list of hazardous components, locations and quantities that must be addressed as part of the work.

Remove and dispose of the following hazardous materials: lead, mercury and low level radioactive components and PCBs.

Perform hazardous component work as identified in accordance with: federal, state and local regulations.

**Private Qualified Person (PQP)**

The Contractor is required to hire a PQP to ensure compliance with the approved work plans and perform independent inspections, testing and verification of the hazardous components work including: lead, mercury & LLR components and PCBs.

**Mercury & LLR Components**

Remove all of the existing: fluorescent light tubes, and switches, exit signs as mercury vapor containing or LLR components.

**PCB's**

Remove all of the existing: light ballasts without markings regarding PCB content (e.g., "NO PCB", "NON PCB") as PCB containing.

**Disposal**

All waste materials shall become the property of the Contractor and shall be transported, disposed of or recycled in accordance with: federal, state and local regulations.

# G10 SITE PREPARATION

Not Applicable.

## G1010 SITE CLEARING

Not Applicable.

## G1020 SITE DEMOLITION & RELOCATIONS

Not Applicable.

## G1030 SITE EARTHWORK

Not Applicable.

## G1040 HAZARDOUS WASTE REMEDIATION

# G20 SITE IMPROVEMENTS

Not Applicable.

## G2010 ROADWAYS

Not Applicable.

## G2020 PARKING LOTS

Not Applicable.

### G2030 PEDESTRIAN PAVING

Not Applicable.

### G2040 SITE DEVELOPMENT

Not Applicable.

### G2050 LANDSCAPING

## G30 SITE CIVIL/MECHANICAL UTILITIES

### G3010 WATER SUPPLY

Not Applicable.

### G3020 SANITARY SEWER

Not Applicable.

### G3030 STORM SEWER

Not Applicable.

## G40 SITE ELECTRICAL UTILITIES

### G4010 ELECTRICAL DISTRIBUTION

Not Applicable.

### G4030 SITE COMMUNICATION & SECURITY

Not Applicable.

# Part 4 Minimum Materials, Engineering and Construction Requirements

## 1.0 GENERAL REQUIREMENTS

The requirements indicated here are minimum performance requirements. More specific project functional and performance requirements, scope items and expected quality levels over and above the standards in Part 4 are identified in Part 3 of the Request for Proposal or Basic Ordering Agreement. The Contractor is encouraged to exceed the minimum requirements. The Contractor's performance evaluation will be based in part on enhancements to materials, engineering, design and construction provided for the contract that exceed minimum requirements.

Part 4 is a general section. Not all items in Part 4 will be required for this project. See Part 3 for project-specific requirements. See "Order of Precedence" paragraph in Part 2 for relationships between all parts of the RFP.

In general, unless otherwise indicated, Contractor shall provide all labor, equipment and materials necessary to complete the work required for the contract. All work shall be in conformance with all applicable referenced criteria, construction standards, laws and regulations, including applicable building and fire, life safety codes.

**Recycled Materials Considerations:**

An Affirmative Procurement Program has been established within the Federal government to promote the purchase of products containing recovered materials. This program promotes the purchase of products containing materials recovered from the solid waste stream. The intent is to conserve resources and reduce solid waste by developing markets for recycled products and encouraging manufacturers to produce quality recycled content products. The contractors shall use products that meet or exceed the EPA guideline standards for recovered content as required by the Federal Acquisition Regulations (FAR). Availability lists of manufacturers and EPA research on product usage are on the Construction Criteria Base (CCB) at http://www.ccb.org under Documents Library, NAVFAC Criteria. A partial list of products containing recycled materials for possible use is as follows:

- Rock Wool Insulation
- Fiberglass Insulation
- Cellulose Insulation
- Structural Fiberboard and Laminated Paperboard
- Cement and Concrete - Coal Fly Ash
- Carpet including backings and cushions
- Floor Tiles
- Reprocessed and Consolidated Latex Paint

- Crushed Concrete Aggregate for new asphalt, concrete or subgrade
- Recycled glass for terrazzo aggregate
- Acoustical Ceiling Tile
- Gypsum Wallboard
- Steel wall studs
- Cellulose spray applied fireproofing
- HDPE Toilet Partitions

## 1.1 MATERIALS AND METHODS OF CONSTRUCTION

Only new materials and equipment shall be installed in the work. All materials, equipment and appliances shall be of the current manufacturers' products. No obsolete or discontinued materials, equipment and appliances shall be used, except that construction materials containing recycled content as described in Paragraph 1 of this Part that completely comply with all materials specifications found elsewhere in this Part may be used.

## 1.2 APPLICABLE CODES AND STANDARDS

The design and construction shall be in accordance with established construction practices, and the latest revision/edition of the following referenced codes and standards. The term "Latest Revision/Edition" is defined as the version as of the project award date. References are available at www.wbdg.org/ndbm/ . The advisory provisions of all codes and standards shall be mandatory, as though the word "shall" had been substituted for "should" wherever it appears. Reference to the "authority having jurisdiction" shall be construed to mean "Contracting Officer". Comply with the required and advisory portions of the current edition of the standard at the time of contract award. All work to comply with UFC 1-200-01, *General Building Requirements*, and IBC 2009 or later edition as modified by applicable NFPA Standard as well as codes and standards listed in RFP Part 2 Attachment A.

## 1.3 LOCATION-SPECIFIC CODES AND STANDARDS

See Part 3.

## 1.4 DISCREPANCIES

When discrepancies in the referenced standards and the contract requirements occur, the more stringent requirements shall govern. The word "should" in all NFPA publications shall be interpreted as a requirement. The Authority Having Jurisdiction in the interpretation of the codes and standards, and approving the exceptions allowed in the referenced standards, shall be the Contracting Officer, and the parties designated by the Contracting Officer.

## 2.0 PERFORMANCE TECHNICAL SPECIFICATIONS

Note: The paragraph numbers used correspond with the numbers used in UNIFORMAT II/Work

Breakdown Structures (WBS) as listed in the Whole Building Design Guide, Navy Design Build Master, accessible at this website: www.wbdg.org/ndbm .

# SECTION A. SUBSTRUCTURE

## A10 FOUNDATION

Foundations shall be reinforced concrete slabs-on-grade with continuous strip footings or isolated spread footings. Concrete slabs shall not be less than 4 inches in thickness and footings shall not be less than 18 inches below the lowest adjacent grade. Foundations shall be designed and constructed of reinforced concrete. All design and construction shall comply with IBC and with applicable requirements in Section B Shell. For the purposes of interpreting IBC Chapter 18, the "Owner" and "Building Official" shall mean the "Government", and the "Applicant" shall mean the "Contractor/Designer of Record".

1. **Contractor-Foundation Design**: The Designer of Record shall evaluate the RFP data, and obtain and evaluate all additional data as required to support the design and construction.

2. **Geotechnical Site Data required in Design Drawings**: The Contractor's final design drawings shall include:
   a. Notes identifying the soil allowable bearing capacity used in design.
   b. Subsurface soil information, be it Government provided or Contractor obtained, that represents subsurface conditions existing on the project site (such as boring logs, test pits, laboratory test results and groundwater observations). The locations of all borings shall be indicated on the drawings.

3. **Performance Verification and Acceptance Testing**: Verification of satisfactory construction and system performance shall be via Performance Verification Testing, as detailed in this part of the RFP.
   a. **Earthwork:** Perform quality assurance for earthwork in accordance with IBC Chapter 17. See Section G1030.

# SECTION B. SHELL

Building shell may be of any materials and design allowed by applicable codes and standards, subject to specific requirements that may be applicable to a particular activity, such as the base exterior architecture plan (BEAP) and UFC 4-010-01.

## B10 SUPERSTRUCTURES

Superstructure work includes structural frames, bearing walls, floors, roofs, roof canopies, and balcony construction. Unless otherwise specified in Part 3, superstructures may be designed and constructed using any materials or combination of different materials allowed by applicable codes and standards. All design and construction shall comply with IBC. Special inspection, testing, approvals, certifications, observations and quality assurance plans as prescribed in Chapter 17 of the IBC are required.

1. **Concrete**: All concrete shall be constructed in accordance with ACI 301. Concrete shall have a 28-day minimum compressive strength of 3,000 psi. Slump shall be between 2

and 4 inches in accordance with ASTM C143. Provide joints as required to minimize cracking. All concrete shall be reinforced. Provide joints as required by applicable ACI standards. Unless otherwise specified in Part 3 or as indicated by the contracting officer, provide steel trowel finish for all exposed floor surfaces.

2. **Masonry**:
   a. All concrete masonry shall be constructed in accordance with ACI 530.1. Concrete masonry shall have a minimum 28-day compressive strength of 1500 psi. Concrete masonry units shall conform to ASTM C90, grade A1. Broken blocks are not allowed. Use only standard size and shape blocks. Block may be cut when necessary. Mortar shall be Type S.
   b. When used, brick shall conform to ASTM C216. In exposed construction, broken brick shall not be allowed. Standard size brick may be cut to fit job condition. Use Type S mortar.
   c. Provide metal anchors for masonry and brick, including veneer construction as required by IBC.

6. **Structural Steel**: Structural steel exposed to weathering shall be adequately protected to prevent corrosion.

7. **Steel deck**: Steel form deck shall have a G90 galvanized finish, and must have a minimum 26-gage thickness. All other steel deck shall have a G90 galvanized finish, and must have a minimum 20-gage thickness.

8. **Cold-formed metal framing**: Cold-formed steel studs, joists and track shall be galvanized with a minimum thickness of 20-gage.

9. **Wood framing**: Wood framing members shall be new lumber, unless otherwise allowed by Part 3. Timber can be Douglas Fir, Douglas Fir-Larch, Hem-Fir, Southern Pine or other structurally competent species allowed by applicable codes and standards. Wood framing shall meet the following minimum grading requirements:
   a. Studs - #3
   b. Joists and rafters- #2
   c. Beams, 4x and larger - #1
   d. Posts, 4x and larger - #1
   e. Blocking - #3
   f. Fascia, trim - #1
   g. Wood Structural Panel Sheathing (Exterior Glue)
   h. Roof - APA rated with span index of 24/0 - minimum thickness 1/2 inch
   i. Walls - APA rated with span index of 32/16 - minimum thickness 1/2 inch
   j. Flooring- APA rated with span index of 48/24 - minimum thickness 3/4 inch

# B20 EXTERIOR ENCLOSURE

## B2010 EXTERIOR WALLS

1. **Exterior Wall Performance**:
   a. **Vapor Transmission Analysis:** Perform a job specific vapor transmission

analysis in accordance with ASHRAE 90.1 or WUFI. 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 air leak flow rate must not exceed 0.25 CFM at 75 Pa per square foot (0.076 cm 75 Pa per square meter) of building envelope area including roof or ceiling, walls and floor as provided by the DOR.

Where required in RFP Part 3, provide air barrier testing. Perform testing as described in "U.S. Army Corps of Engineers Air Leakage Test Protocol for Building Envelopes Version 3, May 11, 2012". Repair leaks and repeat testing until prescribed maximum air leak flow rate is achieved. Provide intermediate and final reports.

c. **Wind Loads:** Provide wind load calculations for exterior cladding in accordance with ASCE-7 with comparative analysis of the cladding system to be provided.

d. **Water Penetration:** No water penetration shall occur at a pressure of 39 Kg/m2 (8 psf) of fixed area when tested in accordance with ASTM E 331.

e. **Insulating Value:** Provide complete thermal envelope in accordance with ASHRAE 90.1, Chapter 5 with improvements required to meet project energy goals.

Where required in RFP Part 3, provide infrared thermal envelope performance testing. Test the building envelope using Infrared Thermography in accordance with the requirements of ASTM C1060 (latest edition) and ISO 6781. The Contracting Officer will witness the testing. Provide thermography test report including thermographs in color and a color temperature scale to define the temperature indicated by the various colors. The report shall identify the high temperature reading, the outdoor air temperature, the building indoor air temperature, and the wind speed and direction. Report to note any areas of compromise in the building envelope, and note all actions required and taken to correct those areas. Repair and repeat testing until discrepancies are demonstrated to be resolved.

2. **Masonry Veneer Exterior Wall Closure Components**: 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. Utilize BIA Technical Notes to design, detail, and construct brick masonry walls. Substitute directive language in the place of BIA suggestive language. The results of these wording substitutions change this document to required procedures. 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.

a. **Masonry Veneer Installation:** Conform to ACI 530.1 for masonry veneer installation, including cold weather construction. Antifreeze admixtures are not to be used.

b. **Mortar:** Provide factory-tinted colored mortar conforming to ASTM C270, unless DOR directs otherwise.

c. **Expansion/Control Joints:** 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 3-100-10 and BIA Technotes 18, 18A.

d. **Brick:** shall be ASTM C216, Grade SW, type FBS, or type FBX for detail work. ASTM C67 test rating shall be "Not effloresced". Use FBA brick only for special

architectural effects requiring a non-uniform size.

e. **Split Faced or Ground Faced Masonry:** ASTM C 90

f. **Cast Stone Trim Units:** Cast Stone shall meet or exceed the requirements of ASTM C 1364.

g. **Wall Cavity:** shall Comply with the and BIA Technical Notes 21A, 21B, 21C, 28B

8. **Through-Wall Flashing Components:** Through-wall flashing with weep holes shall be incorporated in cavity wall construction. 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; 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.

i. **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.

j. **Masonry Cleaning:** Clean the masonry in accordance with manufacturer's instructions and BIA Technote 20.

3. **Metal Wall Panel Exterior Closure**

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).

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.
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 concealed fasteners, or choose the option for exposed fasteners when exposed fasteners are acceptable at the installation. Length of sheets shall be sufficient to cover the entire height of any unbroken wall surface.

a. **Steel Wall Panels**:

1) 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.

2) Gage: Minimum 22 U.S. Standard Gage for wall panels, but in no case lighter than required to meet maximum deflection requirements specified.

b. **Aluminum Wall Panels**:

1) Material and Coating - Form sheets of Alloy 3004 or Alclad 3004 conforming to ASTM B 209 having proper temper to suit respective forming operations.

2) Thickness - Minimum 0.81 mm (0.032 inch) nominal, but in no case thinner than that required to meet maximum deflection requirements specified.

c. **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. 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. Insulated wall panels shall be fastened to framework using concealed fasteners.

1) 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 0.61 mm (0.024 inch) thick minimum.

2) Insulated Aluminum Panels - Alloy conforming to ASTM B209, temper as required for the forming operation, minimum 0.81 mm (0.032 inch) thick.

4. **Stucco Exterior Wall Closure**

a. **Portland Cement Plaster:** ASTM C150, gray Portland cement Type II with 13 mm (1/2 inch) maximum chopped alkali resistant fiberglass strands, minimum 1.5 percent by weight to cement; .68 kg (1 1/2 pounds) 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. Unless specifically deleted, the system shall utilize an acrylic admixture or coating to give additional moisture suppression to control fungus growth.

b. **Exterior Insulation and Finish System (EIFS):** EIMA TM 101 and 01 EIMA TM 101.86. EIFS shall be used as the non-primary or the primary exterior finish material only for projects where it is necessary to match existing EIFS.

5. **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 281 Kg/cm2 (4000 psi). 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.

6. **Other Wall Finish Systems**

a. **Horizontal Wood Siding:** Horizontal Wood Siding: DOC PS 20, exterior, lap type, 6 inches wide, maximum practicable lengths, 11 mm (7/16 inch) thick, smooth face. All surfaces of wood siding and trim shall be shop coated with an alkyd primer.

Species and Grades 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.

b. **Vinyl Siding System:** Integrally colored, vinyl siding complying with ASTM D 3679.

c. **Manufactured Faced Panels Systems Exterior Wall Siding:** 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; horizontal or vertical pattern in plain or beaded-edge style. Texture: Rough sawn or smooth, factory primed.

7. **Exterior Wall Backup Construction**
   a. **Concrete Unit Masonry:** Provide concrete unit masonry to 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
   b. **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.

8. **Load-Bearing Metal Framing System**
   If permitted, provide load-bearing metal framing including top and bottom tracks, bracing, fastenings, and other accessories necessary for complete installation. Framing members shall have the structural properties indicated. Where physical structural properties are not indicated, they shall be as necessary to withstand all imposed loads. Design framing in accordance with AISI SG-673. Installation shall be in accordance with DOR-approved shop drawings and manufacturer's installation instructions.

9. **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. Studs abutting windows or louvers shall also be designed not to exceed 1/4-inch maximum deflection and as required in UFC 4-010-01.1) 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 contact2) 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.3) 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: a) Plywood: C-D Grade, Exposure 1; b) Structural-Use and OSB Panels; c) Gypsum: ASTM C 79/C 79M and ASTM C 1177/C 1177M, 13 mm (1/2 inch) thick fire retardant (Type X) 15 mm (5/8 inch) thick; 1.2 meters (4 feet) wide with square edge for supports 400 mm (16 inches) 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.

10. **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 as for Metal Studs.

11. **Cast-in-place Concrete System**: Concrete construction must be in accordance with ACI 301.

12. **Insulation and 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.

a. **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.

b. **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).

c. **Building Paper:** FS UU-B-790, Type I, Grade D, Style 1.

d. **Air Barrier:** Building wrap consisting of air barrier sheeting complying with ASTM E 1677, Type 1, not less than 3 mils thick with a permeance of not less than 575 ng/Pa x s x sq.m. (10 perms). 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.

e. **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.

13. **Parapets**: Avoid parapets when possible, but when necessary, provide parapets with the same materials as the exterior wall construction. Provide scuppers and wall edge according to SMACNA.

14. **Exterior Louvers and Screens**: If required, provide louvers for Screened Equipment Enclosure or as louvers for exterior doors.

    Storm shutters shall comply with ASTM E 1996-03.

15. **Balcony Walls and Handrails**: Balcony walls to match exterior construction. Handrails to comply with the IBC and OSHA.

16. **Exterior Soffits**: Exterior soffit system.

17. **Exterior Painting and Special Finishes**; All painting and coating materials shall be low VOC. 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 Painters 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. Provide paint systems tested to "Detailed Performance Level" standard as defined by MPI.

18. **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.

19. **Sun Control Devices**: 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.

## B2020 EXTERIOR WINDOWS

All windows and doors in new or existing buildings, which are subject to Anti-terrorism Standards, must be blast-resistant as prescribed in UFC 4-010-01.

Unless otherwise allowed by Part 3, windows for new facilities shall be aluminum. In building additions or renovations windows shall match existing window materials. Exterior windows design, dimension, and construction shall meet or exceed the requirements for Anti Terrorism Force Protection requirements. In addition, exterior windows shall meet or exceed Energy Star requirements. The design and placement of exterior windows shall take into considerations view, natural light, privacy, and protection for the occupants of the facilities. Provide operable hardware and insect screen for exterior windows. Windows shall be fabricated by manufacturers normally involved in the manufacturing of windows and shall be of the current make and model. No obsolete or discontinued windows shall be used. Provide weather stripping, STC and IIC rating, commensurate with the intended use of the facility. Submit catalog information and manufacturer's specifications for approval by Contracting Officer prior to purchase of windows.

All window assemblies shall meet performance grade CW tested in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-08 or most current edition of this standard.

Where windows separate conditioned spaces from non-conditioned spaces, provide windows bearing NFRC energy label indicating window exceeds current EnergyStar criteria. For storefront or curtainwall systems, provide thermally broken framing and insulating glazing with whole-assembly U-value of 0.40 or less. Provide windows exceeding requirements of ASHRAE 90.1, Table 5.5 for project climate zone.

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.

1. **Metal Windows**: All windows shall conform to ANSI/AAMA/WDMA 101. Metal

windows with insulating glass shall have thermally broken frames and sash. 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.

2. **Wood Windows**: Clad wood and 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 7.66 Kg/m2 (1.57 psf).

3. **Storefronts**: Provide one-story storefront system fabricated from formed and extruded aluminum and glass components for exterior use. Utilize the specific section of the Standard Design-Build Performance Technical Specifications Section B202002 for the storefront to be provided. Storefront framing shall meet or exceed the structural requirements, as measured in accordance with ANSI/ASTM E330: 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.

4. **Glazing**: All exterior glazing shall be insulating glass.
   a. Clear Glass - Type I, Class 1 (clear), Quality q4 (A);
   b. Heat-Absorbing Glass - ASTM 1036, Type I, Class 2 Quality q3 (select) ray frames;
   c. Wire Glass - Type II, Class 1, Form 1, Quality q8 Mesh m1 or Form 2, Quality q7;
   d. Laminated Glass - ASTM 1172, total thickness shall be nominally 6 mm (1/4 inch);
   e. Insulating Glass Units - Typically ASTM C 1036, Type I, Class 1, Quality q4, minimum 6 mm;
   f. Tempered Glass - ASTM C 1048, Kind FT (fully tempered);
   g. Patterned Glass - ASTM 1036, Type II, Class 1 (translucent), Form 3 (patterned), Quality q7 (decorative), Finish f1 (patterned one side), Pattern p2 (geometric) 5.55 mm (7/32 inch) thick.

## B2030 EXTERIOR DOORS

Exterior doors shall be heavy duty insulated steel doors and frames for service access. Door frames shall have welded corners. Use heavy-duty overhead holder and closer to protect doors from wind damage. Steel shall have G60 galvanized coating in accordance with ASTM A 924/A 924M and ASTM A 653/A 653M when the job site is located within 300 feet from a body of salt water. Provide commercial quality, coating Class A zinc coating in accordance with ASTM A591 for other steel or steel skin hollow metal doors at other locations. 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 the hardware schedule for door hardware requirements.

Where doors separate conditioned spaces from non-conditioned spaces, provide doors exceeding current EnergyStar criteria. For storefront entrances, provide thermally broken door framing and insulating glazing with whole-assembly U-value of 0.67 or less. Provide doors exceeding requirements of ASHRAE 90.1, Table 5.5 for project climate zone.

1. **Steel Doors**: Exterior doors shall comply with ANSI A250.8-1998 (SDI-100). Hardware preparation shall be in accordance with ANSI A250.6. Doors shall be hung in accordance with ANSI A115.16.
   a. Doors Required:

      1) Standard Duty Doors - Level 1, MSG # 20 (IP 0.032", 0.8 mm), physical performance Level C, Model 1 or 2.

      2) Heavy Duty Doors - MSG # 18 (IP 0,042", 1 mm), physical performance Level B, Model 1 or 2.

      3) Extra Heavy Duty Doors - Level 3, MSG #16, (0.053", 1.3 mm) physical performance Level A, Model 1, 2, or 3.

      4) Maximum Duty Doors - Level 4 (IP 0.067", 1.6 mm), physical performance Level A, Model 1 or 2.
   b. Insulated steel doors and frames are required for entrances to dwelling units, and may also be specified as a Contractor's option to Level 1 standard hollow metal doors. Do not use wood doors for exterior doors, unless they are fully protected from the elements, an exterior grade species, and specially finished. If wood doors are used, provide in accordance with Standard Design-Build Performance Technical Specification Paragraph B203001 2.

2. **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. 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.

3. **Door and Frame 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; 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 91 meters (300 feet) from the ocean. When facility is located within 91 meters (300 feet) of the ocean, provide G60 galvanized coating in accordance with ASTM A 924/A 924M and ASTM A 653/A 653M.

4. **Upward Acting Doors**: Upward acting doors shall be capable of withstanding the design wind loading of ASCE 7. Provide galvanized steel tracks not lighter than 14 gage for 50 mm (2 inch) tracks and not lighter than 12 gage for 75 mm (3 inch) track. Provide a positive locking device and cylinder lock with two keys on manually operated doors.

5. **Overhead and Roll-up Doors**: Large exterior overhead and roll-up doors system shall consist of manual or automatic exterior doors and door assemblies.

6. **Rolling Service Doors and Grilles**: Coiling overhead doors shall have minimum 22 gage thermal insulated slats. Electric operators shall have three-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.

7. **Sectional Overhead Doors**: Sectional overhead doors shall conform to NAGDM 102, Residential or Commercial or Industrial door standards. 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.

8. **Hardware**: Provide the services of a Certified Door Hardware Consultant to prepare the door hardware schedule.

   Provide all new hardware with satin chrome finish throughout. Hardware shall be commercial grade, suitable for the operational requirements and in compliance with life safety code and handicapped accessibility requirements, similar in quality to the hardware shown in C1020 Interior Doors and Hardware below.

   Coordination: Provide a master keying system compatible with the existing base system. Provide an emergency access key box for exterior door fireman key access.Coordinate with the local authority and the Contracting Officer to determine the local requirements for hardware, keying and master keying.

## B30 ROOFING

For repair of existing roofing, the cutting of the existing roof shall be kept to a minimum and, where necessary, shall be made in a clean and orderly manner to prevent the appearance of a patch.

Repair all damage to existing and new roofing caused by the work of this Contract at no additional cost to the Government. The work shall be executed in such a manner as to maintain the integrity of the existing roofing manufacturer's warranty.

1. **Pre-Roofing Conference**: Prior to beginning roofing work, the Contractor shall hold a Pre-Roofing Conference with the personnel directly responsible for the roofing systems work, as well as the roofing manufacturer's technical representative.

2. **Roof Design Assurance**: If the roofing project is significant (Significant Roof - A single or group of buildings greater than 1,400 $m^2$ (15,000 sf)), or where extenuating circumstances of the roof project such as building use, content, safety, or visibility require a roofing consultant, the Contractor shall utilize the services of a Registered Roof Consultant (RRC) certified by the Roof Consultant Institute, or a Registered Professional architect or Engineer who specializes in roofing, to approve the roof design. The roof consultant must be engaged in roofing design and roofing construction as his primary endeavor. The roof consultant shall verify in writing that the design for the project is in accordance with the current edition of *NRCA Roofing and Waterproofing Manual*, UFC's, and RFP, and standard industry practices and building codes.

   If a Roof Design Assurance Consultant is needed, consider using a Registered Roof Observer as a QC specialist.

# B3010 ROOF COVERINGS

Roof coverings and procedures shall comply with the requirements of UFC 3-110-03, *Roofing*, and NRCA, *Roofing and Waterproofing Manual*found at http://www.nrca.net/rp/technical/manual/manual.aspx as the primary NAVFAC roofing criteria. Roof selection shall comply with UFC 3-330-02A, *Design: Commentary on Roof Systems*. Determine wind uplift using wind speed in accordance with ASCE-7.

1. **STEEP SLOPE ROOF SYSTEMS**: Steep slope systems shall be roofs with a pitch greater than 3 in 12. Steep Slope Systems are slate roofing, Asphalt Shingles, Roof Tiles, Foam Set Tiles, Metal Roof Panels (Architectural Standing Seam Metal Roofs on supported substrate), and Structural Standing Seam Metal Roof (SSSMR). Asphalt shingles can only be used for residential construction and light commercial construction.

2. **LOW SLOPE ROOF SYSTEMS**: Low slope systems shall be roofs with a pitch 3 in 12 or less. Low slope roofing systems shall be built-up asphalt roofing (aggregate surfaced, with modified bituminous components), modified bituminous membrane roofing of a minimum of 3 plies with aggregate surface or granular surface modified bitumen cap sheet, or structural standing seam metal roofing. Use epdm systems only to match existing construction.

3. **ROOF COMPONENTS**:
   a. **Insulation:** For existing structures, provide insulation in accordance with ASHRAE 90.1. For new construction, provide R-30 insulation in the ceilings, attic spaces and soffit areas for interior spaces. Injected polyurethane and Urea Formaldehyde Foam field applied shall not be used. Provide acoustical insulation above walls separating bathroom/restrooms and corridor and adjacent occupied spaces, and between offices and corridors. Insulation shall have a minimum sound attenuation rating of STC-55.

      Insulation shall be Polyisocyanurate Rigid Board Insulation , Mineral Fiber Blanket Insulation to conform to ASTM C 991, with Glass Mat Gypsum Roof Board for use above the deck or insulation conforming to ASTM C 1177/C 1177M, where necessary.

      Only on portions of the roof where the sloping of structure does not allow the minimum slopes, provide a factory tapered roof insulation system to provide positive drainage of roof system, and to include drainage around curbs, penetrations, and projections through the roof plane.

      Provide Glass Mat Protection Board meeting ASTM C 1177 for use as a thermal barrier (underlayment) or protection board for hot-mopped applications.
   b. **Vapor Retarder:**-Determine the need and location in the roof assembly for a vapor retarder. Where the mean January temperature is 40 degrees Fahrenheit or less, and the expected interior relative humidity is 45% or greater, use a vapor retarder. Otherwise, use ASHRAE 90.1 for the determination.

      1) Vapor Retarders as Integral Facing - Alloy conforming to ASTM B 209, or Vapor Retarders Separate from Insulation - Vapor retarder material shall be 10 mil polyethylene sheeting conforming to ASTM D 4397.

      2) A slip sheet is required to separate the roofing panels from the insulation facing where the facing would be in direct contact with the roofing panels. If a

slip sheet is necessary for use with a vapor retarder, use a 5 lb. per 100 square feet rosin-sized, unsaturated building paper.

c. **EPDM Rubber Boots:** Flashing devices around pipe penetrations shall be flexible, one-piece devices molded from weather-resistant EPDM rubber.

d. **Prefabricated Curbs and Equipment Support:** Provide Prefabricated curbs and equipment supports shall be of structural quality, hot-dipped galvanized or galvanized sheet steel, factory primed and prepared for painting with mitered and welded joints. Integral base plates and water diverter crickets shall be provided. Minimum height of curb shall be 8 inches above finish roof.

e. **Fasteners:** Shall meet all requirements of the NRCA and Factory Mutual

f. **Wood Nailers:** Wood nailers shall be pressure-preservative-treated in accordance with AWPA M2 Standards, permanently marked or branded, and installed flush with the top of the adjacent insulation board.

g. **Flashing and Sheet Metal:** Provide flashing and sheet metal work including scuppers, splash pans, and sheet metal roofing. Flashing and sheet metal shall be provided in accordance with roof manufacturer's printed installation instructions and in compliance with NRCA and SMACNA recommendations. Fabricate Flashing and sheet metal components from Copper, Lead-Coated Copper sheet, Steel Sheet, Zinc-Coated (Galvanized) - ASTM A 653/ A 653M, Stainless Steel - ASTM A 167, Type 302 or 304, 2D finish, or Pre-Finished Aluminum.

h. **Gutters and Downspouts:** Provide gutters and downspouts compatible with roofing material and finish. Concealed (interior) gutters and downspouts are prohibited. Provide splash guards at points of discharge.

i. **Roof Openings and Supports:** Provide flashings for roof openings and supports as recommended by the NRCA. Assure all penetration flashings extend minimum 200 mm (8 inches) above the finished roof surface.

j. **Roof Hatches:** Provide roof hatch where required by OSHA, and as access to roof when roof mounted equipment is used or other routine roof maintenance is required.

k. **Glazed Roof Openings:** Skylights and other glazed roof openings shall be used only to supplement interior lighting levels (generally in steep slope or vertical applications), and otherwise, are discouraged from use.

l. **Guards:** Provide rails or guards as required by the OSHA, the International Building Code or other applicable safety standards.

m. **Traffic Pads:** Provide on roof system to protect roof from foot traffic. Provide traffic pads around roof mounted mechanical equipment and underneath removable mechanical equipment access panels. Traffic pads shall be of compatible material to roof.

4. **OTHER ROOFING**

a. **Lightning Protection:** Lightning protection component penetrations and attachments shall be sealed and flashed and anchored in a permanent manner and in a manner to avoid the degradation of the watertight integrity of the roof system.

b. **Roof Drains (Existing):** Where existing roof drains are to be reused in roof replacement construction, the contractor shall provide new, compatible flashing materials, a new drain clamping ring and new bolts for anchorage. Reuse of existing clamping ring and bolts is unacceptable.

# SECTION C. INTERIORS

# C10 INTERIOR CONSTRUCTION

# C1010 PARTITIONS

1. **Fixed Partitions**: wood frame; light gage steel frame; concrete masonry complying with ACI 530.1/ASCE 6/TMS 602 and associated ASTM Standards; or cast-in-place concrete complying with UFC 1-200-01, ACI 117 and ACI 301/301M. In addition, interior partitions shall comply with tables for sound isolation and noise reduction in Chapter 1, "Architectural Graphic Standards". Include a statement of adherence to the applicable criteria.

   Gypsum board/stud partitions may be standard gypsum board, moisture resistant, or impact resistant. Use cement board in showers and other wet areas. Reinforce points where doorknobs can strike a wall and anchorage points for wall mounted equipment.

2. **Demountable or Removable Partitions**: shall be of materials allowed by code and shall be anchored firmly to the structure to carry their own weight as well as impact forces and seismic lateral forces. Sound Transmission Class (STC) rating and Impact Isolation Class (IIC) rating shall be in accordance with ASTM E 90 or ASTM E 413 for frequency data, and shall meet the requirements of the intended use in Part 3.

3. **Glazed Partitions and Interior Windows**: shall be of the materials allowed by code IBC, and shall comply with fire and smoke separation requirements. Provide safety glazing and fire resistant rating where they are required.

# C1020 INTERIOR DOORS

1. **Wood Doors**: Stile and rail wood doors shall be WDMA I.S.6A-01, premium or custom grade, heavy duty or extra heavy duty. Flush wood doors shall be WDMA I.S.1A-04, premium or custom grade, heavy duty or extra heavy duty; or WDMA I.S.-97 (PC-5 5-ply particleboard core or SCLC-5 5-ply structural composite lumber core). Doors adjacent to paneling or millwork shall comply with corresponding AWI millwork grade. Provide interior fire doors.

2. **Steel doors**: shall be 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 19 mm (3/4 inch).

3. **Sound Insulated Doors and Frames**: Utilize Sound Insulated Doors and Frames with sound control weatherstripping in 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.

4. **Aluminum Doors and Frames**: 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.

5. **Steel Door 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.

6. **Fire doors**: Provide in conformance with NFPA 80 an NFPA 105. Fire doors and frames shall bear the label of UL, FM or WHI attesting to the rating required. Door and frame assemblies shall be tested for conformance per NFPA 252 or UL 10B (for neutral pressure) or UL 10C (for positive pressure). Wood fire doors shall also comply with ASTM E 152.

   Provide stainless steel astragals complying with NFPA 80 for fire-rated assemblies and NFPA 105 for smoke control assemblies.

7. **Interior Door Hardware**: Provide the services of a certified door hardware consultant to prepare the door hardware schedule. Unless otherwise noted, interior doors shall include latch, hinges, door stops and door silencers. Provide closers and kick plates for fire-rated, corridor, stairway and high-use non-residential doors.
   a. **Hinges** - BHMA A156.1, Grade 1, 108 x 108 mm (4 1/2 x 4 1/2 inches) with non-removable pin or anti-friction bearing hinges.
   b. **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.
   c. **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.
   d. **Card Key Access** - Provide card key type access units for specialized entries. 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 25 mm (1 inch) throw deadbolt, 19 mm (3/4-inch) throw latch bolt, auxiliary dead-locking latch, and 68.75 mm (2-3/4 inch) backset.

      Provide hardware keying compatible with the existing base-wide keying system. Replacement interchangeable cores shall be compatible with the Best Lock system.
   e. **Key Cabinet**: Provide a Key Cabinet with 30% over capacity.

## C1030 SPECIALTIES

1. **Compartments, Cubicles, & 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. Urinal screens shall be 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. Steel and Plastic toilet partitions shall have a recovered materials content of 20 to 30 percent. 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.

2. **Toilet and Bath Accessories**: Provide toilet and bath accessories and install per ADAAG and manufacturers' requirements.

3. **Marker Boards and Tack Boards**: Provide porcelain enamel marker boards fused to a nominal 28 gauge steel sheet and tack boards of cork, with a tensile strength of at least 40 psi when tested according to ASTM F 152, with woven or vinyl covering.

4. **Identifying Devices**: All interior doors shall have an identifying device. All handicap accessible facilities shall utilize signage which meets current ADAAG requirements with regard to Braille, raised characters, finishes (contrast), size and mounting height. If room names are subject to frequent change, provide an interchangeable strip to be utilized to facilitate removal and replacement.

5. **Lockers**: Provide lockers to meet FS AA-L-00486 (Rev J), enameled steel with special bases.

6. **Shelving**: Provide steel shelving.

7. **Counters**: Provide solid plastic or plastic laminate counter tops and back splashes, AWI Custom grade.

8. **Cabinets**: Provide cabinetry and millwork items with associated accessories and hardware. Cabinetry shall be AWI premium or custom grade and have concealed hinges with adjustable standards for shelves.

9. **Casework**: Provide all built-in premanufactured metal cabinetry for specialized functions such as laboratories, libraries, medical and dental facilities. Casework shall comply with Mil Std 1691.

10. **Closets**: Provide premanufactured or millwork closets or prefabricated coat closets

11. **Fire Extinguisher Cabinets**: Provide fire extinguisher cabinets. Size and locate fire extinguisher cabinets to encase extinguisher as required by NFPA 10 & 101. Fire extinguishers will be provided by the Customer.

12. **Firestopping Penetrations**: Provide all sleeves, caulking, and flashing for firestopping penetrations.

13. **Entrance Floor Grilles and Mats**: Provide recessed pan or surface floor mats at main only or all building entrances.

14. **Ornamental Metal Work**: Provide ornamental metalwork

15. **Other Interior Specialties**: Motorized projection screen shall be wall or ceiling or above-ceiling mounting. Pull-down projection screens shall be provided in lieu of motorized projection screens as approved by the Activity.

# C20 STAIR CONSTRUCTION

Provide interior and exterior stair construction. Stair design, materials and construction shall comply with IBC, and applicable codes and standards, including NFPA 101. Provide refuge area at top of stair in accordance with applicable Americans with Disability Act Design Guide requirements.

# C30 INTERIOR FINISHES

## C3010 WALL FINISHES

Unless otherwise noted in the RFP, primary wall finishes shall be painted gypsum wall board. Provide fire resistive construction and finishes for fire separation between areas of the building in accordance with the latest adopted version of the IBC, and NFPA 101. Provide water resistant cementitious board at floors and walls of tubs and showers.

1. **Ceramic Tile**: Provide ceramic tile wall 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. Coordinate with ceramic bath accessories for modularity. Include all trim pieces, caps, stops, and returns to complete installation.

2. **Wallcovering**: Vinyl wallcovering shall conform to ASTM F793, Category V Type II, 371 g to 624 g (13.1 to 22 ounces) total weight per square yard and width of 1370 mm (54 inches). Provide ASTM F793, Category VI, Type III, 624 g (22 ounces) and above to cover rough textured walls such as masonry. High performance fabric wallcovering shall be woven or non-woven Class A, fire resistive material, a minimum of 1219 mm (48 inches) wide, with a soil repellent finish and a minimum of 340 g (12 ounces) per square yard exclusive of backing. "Tackable" wall covering shall be "self-healing" from tack penetration through the covering into the substrate. Acoustical wallcovering shall be textured, woven or non-woven, Class A fire resistive material with an acrylic backing, a minimum of 1219 mm (48 inches) wide and a minimum of 454 g (16 ounces) per square yard. The material shall have an NRC rating of .15 on gypsum board in accordance with ASTM C423. Do not install wall covering on interior face of exterior walls.

# C3020 FLOOR FINISHES

Provide new flooring materials as required. All flooring materials, adhesives, finish coats, sealers and mortar materials shall meet or exceed EPA requirements for toxic substance content restrictions and air quality requirements; and shall meet or exceed fire protection requirements, such as smoke and flame spread requirements. When laying broadloom carpets and resilient flooring, use the widest sheet materials available to avoid or minimize the number and extent of seams. When seams are required, locate seams at infrequent traffic areas. Contractor is required to submit seam layout to Contracting Officer for approval prior to installation.

1. **Ceramic Tile**: 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.

   Provide ceramic or porcelain tile with a minimum breaking strength of 202kg (300 pounds), ASTM C648, and a maximum absorption rate of 0.5%, ASTM C373. Tile shall have a minimum coefficient of friction (wet and dry) of 0.6, ASTM C1028.

2. **Resilient Flooring**: Shall meet or exceed applicable ADA horizontal requirements, and shall be installed per manufacturer's recommended methods and adhesives. Provide manufacturers full line of color and pattern selections, including multi-color patterns.

   Linoleum Sheet or Tile Flooring shall be 2.5 mm (0.10 inch) gage; minimum 250 psi static load limit, ASTM F970; and with multi-color pattern and color extending throughout thickness, ASTM F2034, Type I. Resilient homogeneous vinyl sheet flooring shall be commercial quality, 2.0 mm (0.080 inch) overall gage, with minimum 1.6 mm (.066 inch) thick wear layer, protective urethane finish, ASTM F1303, Type II, Grade 1, Class A. Resilient vinyl composition tile shall be commercial grade, 3 mm (.125 inch) gage, FS SS-T-312B (1), Type IV, Comp. 1, Class 2, through pattern.

3. **Carpet**: Carpet manufacturer and installer shall be experienced, established and in good standing with the industry. Carpet, broadloom or tile, shall be installed per the Carpet & Rug Institute’s recommendations. Carpet shall be tufted, textured loop, cut/loop or tip sheared, a minimum of 26 oz. face weight, minimum density of 6600, 100% premium branded yarn- or solution-dyed, Type 6 or 6.6 continuous hollow filament nylon. Carpet shall be multi-color and patterned for soil and wear hiding properties. Carpet shall have high performance backing warranted against zippering, edge raveling and delamination, be anti-static and anti-microbial. Carpet shall meet Flammability ratings; generate less than a 450 rating, ASTM E662; meet the Critical Radiant Flux Classification of not less than 0.45 W/sq. cm., ASTM E648. Where indicated in the room requirements, provide attached polyurethane cushion or separate polyurethane cushion for double stick pad installations, ASTM 1667 and ASTM 3676.

4. **Wall Base**: Provide porcelain or ceramic tile base for porcelain or ceramic tile floor. Provide solid, through color preformed rubber or vinyl base for carpeted/resilient flooring areas. Provide a sealant between base and floor finish in all wet areas.

# C3030 CEILING FINISHES

Unless otherwise noted in the room requirements, acoustical ceiling panels shall be 24 inch by 24 inch, with a minimum light reflectance of .75, Class A, flame spread 25 or less and smoke development of 50 or less, ASTM E84. Acoustical ceiling panels shall have minimum 60% recycled content and conform to ASTM E1264. Panels shall have a factory-applied standard washable painted finish or Type IV with factory-applied plastic membrane-faced vinyl, Form: 1, 2 or 3. Provide square edge except as noted.

Unless otherwise noted in the room requirements for entrance lobby, restrooms and showers, provide a painted, suspended gypsum board ceiling. Exposed structural systems shall be painted.

## C3040 PAINTING

All painting and coating materials shall be low VOC, comply with local air quality control laws and, regulations; and conform to the Master's Painters Institute's (MPI) *Architectural, Interior Systems Manual*and the MPI's *Maintenance and Repainting Manual*recommendations for paint systems, surface preparation and applications.

Provide minimum of one prime coat and two finish coats. The prime coat shall not be combined with texture or other coatings. Seal and prime all surfaces to cover underlying stains or discoloration that may affect finish paint. Finish coats shall provide full coverage of undercoats and substrates. All walls and ceilings in wet area shall have semi-gloss paint. All wood or metal cased openings, door trims and casings, window trims and casing, and other finish trim shall have semi-gloss paint. All interior walls and ceilings shall have satin or eggshell finish. For previously painted surfaces, prime all surfaces to ensure compatibility of finish coats. Do not paint prefinished surfaces except as noted.

Provide Institutional Low Odor/Low VOC Latex paint or High Performance Architectural Latex systems as defined and approved by the MPI Systems Manual for the various substrates required to be painted.

**Paint/Color Selection**: Provide paint systems tested to "Detailed Performance Level" standard as defined by MPI. Paints shall be readily available for purchase in standard colors.

# SECTION D. SERVICES

## D10 CONVEYING Elevators and Escalators - Not used

## D20 PLUMBING

Provide plumbing fixtures, appliances, and equipment complete and usable as required by Part 3. All plumbing fixtures, appliances and equipment, piping, valves, accessories, and appurtenances shall comply with International Plumbing Code (IPC) and all other applicable codes and standards, including energy, water conservation, and local activity regulations and standards. Provide all plumbing fixtures to meet current criteria of EPA Watersense program http://www.epa.gov/watersense

1. **Domestic Water**: Provide ASTM B 88 Type K or L copper tubing and fittings for pipe sizes 4 inches or smaller. Provide Type L tubing above ground with solder fittings. For buried piping, use Type K tubing with solder fittings, or Chlorinated polyvinyl chloride (CPVC) Plastic pipe, fittings, and solvent cement per ASTM D 2846/D 2846M for sizes 4

inches and smaller.

Provide mineral fiber insulation with vapor barrier on domestic water (hot and cold) supply and recirculation piping. Provide re-circulating pumps or instantaneous water heaters for hot water systems with fixtures greater than 100 ft from hot water source. Provide water hammer arrestors per PDI STD WH-210 as required for rapid water shut off scenarios. All water valves except for fixture shut off valves shall be ANSI B16.18 brass, full port ball type. All plumbing fixtures shall have separate shut off valves. All piping shall be concealed in walls, attic spaces, or in crawl spaces under floors. Provide access panels for valves behind walls. No under slab water piping is allowed. Fittings for annealed copper tubing shall conform to ANSI Bl6.22. Solder and flux shall be lead free. Exposed exterior piping is prohibited unless otherwise not practical. Provide identification for piping and equipment.

2. **Wall Penetrations**: Piping which penetrates fire rated walls shall be completely sealed to maintain fire resistance integrity as required by Code. Penetrations through walls that are not fire rated shall be adequately supported and sealed. Pipe penetrations through exterior walls shall be sleeved, caulked with weatherproof sealant and provided with finish trim.

## D2010 PLUMBING FIXTURES

Fixtures shall be provided complete with fittings, and chromium-plated, or nickel-plated brass (polished bright or satin surface) trim. All fixtures, fittings, and trim, shall be from the same manufacturer and shall have the same finish. Access panels shall be provided for all bathtubs and showers, except at exterior and party walls and where tub or showers are back to back. Provide cleanouts in accordance with the plumbing code. Rotate or extend cleanouts required to facilitate maintenance and clearing of blockage in waste piping.

1. **Faucets**: All faucets shall be brass construction, washerless type, with seals and seats combined in one replaceable ceramic disk valve cartridge designed to be interchangeable with all lavatories, bathtubs and kitchen sinks, or having replaceable seals and seats removable either as a seat insert or as a part of a replaceable valve unit. Faucets provided shall be of the same type and manufacturer throughout the facility, unless otherwise noted. Lavatory faucets shall be U.S. Environmental Protection Agency (EPA) WatersenseÂ® certified and labeled bathroom sink faucets.

2. **Water Closets**: Water closets shall be in accordance with ANSI A112.19.2, with trim conforming to A112.19.5. Water closets shall be vitreous china and have an elongated bowl with trip lever, unlined tank, close coupled siphon jet, floor outlet with wax gasket, flange and an anti-siphon float valve. Provide white closed front seat and cover for private toilets and open front seat cover for public facilities. Water consumption shall be no greater than 1.6 gallon maximum per complete flushing cycle. Provide self-closing metering type flush valve on flush valve type water closets, unless electronic control is specified in Part 3. Maximum flush volume shall not exceed 1.28 gallon per flush (GPF) (4.8 Liter per flush (LPF)) for single function flush valves. Dual function flush valves shall provide a flush of 0.8 to 1.6 GPF (3.0 to 6.0 LPF) or 1.28 GPF (4.8 LPF) average for 2 low volume flushes and one high volume flush. Tank type water closets shall be U.S. Environmental Protection Agency (EPA) WatersenseÂ® certified and labeled toilets.

3. **Urinals**: Provide U.S. Environmental Protection Agency (EPA) WatersenseÂ® certified

and labeled ceramic-type urinals.

Non Water Use Urinals: ASME A112.19.2, white vitreous china, wall-mounted, wall outlet, non-water using, integral drain line connection, with sealed replaceable cartridge or integral liquid seal trap insert. The urinal and trap assembly shall maintain a sufficient barrier of a biodegradable immiscible liquid to provide the trap seal and inhibit the backflow of sewer gases. For urinals that use a replaceable cartridge, provide four additional cartridges for each urinal installed. Provide an additional quart of biodegradable liquid for each urinal installed. Provide ASME A112.6.1M concealed chair carriers. Installation and testing shall be in accordance with the manufacturers' recommendations. Drain lines that connect to the urinal outlet shall not be made of copper tube or pipe. Urinal design and installation shall be ADA compliant. Slope the sanitary sewer branch line for non-water use urinals a minimum of 1/4-inch per foot. Manufacturer shall provide an operating manual and on-site training for the proper care and maintenance of the urinal.

4. **Lavatories**: Unless otherwise specified by Part 3, lavatories shall be integral to the vanity countertops. Each lavatory shall be provided with hot and cold water tempered by means of a mixing valve or combination faucet.

5. **Sinks**: ASME/ANSI A112.19.3M sink, 20 gage stainless steel with integral mounting rim, minimum dimensions of 840 mm (33 inches) wide for two compartment or 560 mm (21 inches) wide for one compartment by 560 mm (21 inches) front to rear, with ledge back and undersides coated with sound dampening material.

6. **Water Coolers**: ARI 1010, wall-mounted, bubbler style, air-cooled condensing unit, 4.20 mL per second (4.0 gph) minimum capacity, stainless steel splash receptor, double wall heat exchanger, and all stainless steel cabinet. Install in accordance with the manufacturers instructions.

7. **Showers**: Provide U.S. Environmental Protection Agency (EPA) WatersenseÂ® certified and labeled showerheads connected to concealed pipe connected to copper alloy single control type mixing valve with front access integral screwdriver stops. Anchor the mixing valves and the pipe to each showerhead in wall to prevent movement. Unless otherwise specified by Part 3, showers shall be supplied with water at a temperature no more than 110Â°F by means of a pressure balance, tempering or mixing valve.

8. **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 560 mm (22 inches) wide by 457 mm (18 inches) front to rear with 230 mm (9 inch) splashback, and stainless steel rim guard. Provide ASME A112.18.1M copper alloy back-mounted combination faucets with vacuum breaker and 20 mm (0.75 inch) external hose threads

9. **Mop Sinks**: Pre-cast terrazzo or ASME A112.19.2M white vitreous china floor-mounted mop sink, 914 mm x 914 mm x 305 mm (36 inches x 36 inches x 12 inches). Terrazzo shall be made of marble chips cast in white Portland cement to a compressive strength of not less than 25 mPa (3625 PSI) 7 days after casting. Provide brass body drains with nickel bronze strainers cast integral with mop sink. Provide stainless steel rim guard for mop sink. Provide chrome-plated exposed hot and cold water faucets ASME A112.15.M wall-mounted copper alloy faucets swing spout with 20 mm (3/4 inch) hose connection,

vacuum breaker, and pail hook. Provide mop hanger on wall above sink suitable for four mops.

10. **Laundry Sinks**: ANSI Z124.1, plastic, two compartment, minimum dimensions of 1016 mm wide by 533 mm (40 inches wide by 21 inches) front to rear, with floor-supported steel mounting frame secured to wall. Provide ASME A112.18.1M copper alloy centerset faucets, swing spout with aerator, and stainless steel drain outlets with cup strainers, and 40 mm (1.5 inch) adjustable P-trap with drain piping to vertical vent stack.

11. **Emergency Eyewash**: ANSI Z358.1, wall-mounted self-cleaning, non-clogging eye and face wash with quick opening, full-flow valves, stainless steel eye and face wash receptor. Provide copper alloy control valves. Pressure-compensated tempering valve is required for emergency fixtures, with leaving water temperature setpoint adjustable throughout the range 15.5 and 35 degrees C (60 to 95 degrees F) unless cold water supply meets temperature criteria.

## D2020 DOMESTIC WATER DISTRIBUTION

1. **Natural Gas or Propane Fired Storage Water Heaters**: Provide high efficiency storage type natural gas or propane fired water heaters per ANSI Z21.10.1 or ANSI Z21.10.3 meeting AGA requirements. Unit efficiency shall meet or exceed that listed in the Title-24 Standards. Water heaters shall be equipped with glass-lined steel tanks, minimum R-15 polyurethane foam insulation, replaceable anodes, and adjustable range thermostat to allow hot water settings between 43 and 71 degrees C (110 and 160 degrees F). Water heater warranty shall be a minimum of 10 years. Provide vent in accordance with NFPA 54. Provide low NOx burners that meet SCAQMD requirements. Install in accordance with manufacturer's instructions and the code. Where earthquake loads are applicable, water heater supports shall be designed and installed for seismic forces in accordance with the International Building Code.

2. **Electric Water Heaters**: Provide electric water heaters with double heating element per UL 174. Unit efficiency shall meet or exceed that listed for FEMP or ENERGYSTAR, or as listed in ASHRAE 90.1, whichever is greatest. 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 43 and 71 degrees C.

3. **Domestic Water Boilers**: Boilers 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, NFPA 85, ANSI Z83.3, and ASME CSD. Boilers must be certified by Naval Personnel or a contractor approved by the Contracting Officer.

## D2030 SANITARY WASTE & VENT

All new sewers below concrete slab shall be solid core, minimum schedule 40 (DWV Type), ABS in accordance with ASTM 2661. New waste and vent piping above floor shall be Schedule 40

PVC (DWV Type) ASTM 2665 or ABS ASTM 2661. Use of ABS plastic pipe shall conform to the IBC and IPC. Provide pipe sizing, configurations, and cleanouts as required by the IPC. Cellular core plastic pipe is not allowed. SOVENT systems are not allowed.

## D2040 RAINWATER DRAINAGE

Below concrete slab shall be solid core, minimum schedule 40 (DWV Type), ABS in accordance with ASTM 2661. Above floor shall be cast iron hubless, or hub and spigot, or Schedule 40 PVC (DWV Type) ASTM 2665 or ABS ASTM 2661 as indicated in Part 3. Pipe materials shall conform to the IBC and IPC. Provide pipe sizing, configurations, and cleanouts as required by applicable codes and standards.

## D2090 OTHER PLUMBING SYSTEMS

**Natural Gas Piping Systems:** Exterior above grade natural gas piping shall be schedule 40 galvanized steel pipe with threaded fittings and joints. Underground exterior gas piping shall be polyethylene pipe that satisfies the requirements of NFPA 54, ASTM D2513-01, and ASME B31-8. Provide warning tape at 12 inches below grade directly above buried gas pipes. Below grade metal gas piping is prohibited. Interior gas piping shall be ASTM A 53, schedule 40 black steel with ASME B16.3 threaded fittings and joints. The use of semi-rigid tubing and flexible connectors for gas equipment and appliances is prohibited except for final connections to the equipment and appliances where they shall be provided. Provide flexible gas connections in accordance with ANSI Z21.45 and not more than 40 inches long. Provide accessible gas service with shutoff valve for all equipment. Gas piping shall conform to NFPA 54 and shall be pressure tested in accordance therewith. . Gas piping is considered a fragile utility in the content of UFC 4-010-01, *DOD Minimum Antiterrorism Standards for Buildings*.

## D30 HEATING, VENTILATION AND AIR CONDITIONING (HVAC) SYSTEMS

The HVAC systems shall comply with the latest edition of the International Mechanical Code, International Plumbing Code, ASHRAE Standards, National Electrical Code, National Fire Protection Association Publications, International Building Code, and California Title 24 or ASHRAE 90.1 energy efficiency standards (the more stringent of the two) unless otherwise specified in Part 3. All equipment, appliances, ductwork and accessories shall comply with applicable codes and standards. For projects located in California, also comply with California Energy Commission (CEC) efficiency rating requirements as stated in Ca. AB 970 Title 24. The Contractor shall certify that the installation is in conformance with the applicable codes and standards at the completion of the contract, prior to final invoice being processed and final acceptance. Provide Energy Star rated equipment where available. Provide equipment with performance in excess of Energy Star requirements where specified.

1. **Equipment Clearance**: 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 manufacturer's recommendations. Where the word "should" is used in manufacturer's instructions, substitute the word "shall".

2. **Material and Equipment Qualifications**: All materials and equipment shall have been in satisfactory commercial or industrial use for 2 years prior to the bid opening. The 2-year use shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been for sale on the

commercial market through advertisements, manufacturer's catalogs, or brochures during the 2-year period.

3. **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 0.75 kW (1 hp) 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.

4. **Equipment Support**: Provide housekeeping pads and vibration isolators under all floor-mounted equipment.

5. **Coatings**: When required in Part 3, provide chiller and air handler coils with copper tube/copper fin coil construction or immersion applied, baked phenolic or other approved coating. Field applied coatings are not acceptable. Mechanical equipment casings shall have painted finishes that pass a salt-spray test conducted per ASTM B117 for duration of at least 500 hours.

6. **Equipment Insulation**: Provide insulation on all chilled water equipment. Insulate hot and chilled 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. Provide vapor retarder for chilled water applications.

7. **Acoustical considerations**: Noise levels in all areas served (supply, return, and exhaust) by a mechanical system shall comply with ASHRAE Design Guidelines for HVAC related background sound in rooms as indicated in the lasted ASHRAE Fundamentals Handbook. The RC-rating method shall be utilized.

## D3020 HEAT GENERATING SYSTEMS

1. **Boilers**: Boilers 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, NFPA 85, ANSI Z83.3, and ASME CSD. Do not provide watertube boiler(s) for hydronic heating when size permits otherwise. Provide insulated boiler stack in accordance with manufacturer's recommendations and conform to NFPA 211 or provide pre-manufactured, multi-wall stacks complying with NFPA 54 or NFPA 58 and UL-listed. Low pressure boilers shall be equipped with one or more pressure relieving devices, adjusted and sealed to discharge at a pressure not to exceed the maximum allowable working pressure of the boiler. The combined capacity of these devices shall be such that with the fuel burning equipment installed and operating at maximum capacity, the pressure cannot rise more than 5 psi for steam boilers or 10% for water boilers above the maximum allowable working pressure of the boiler. Pressure

relieving devices shall be installed as required by the referenced code, be ASME stamped and rated, and shall be installed with the valve spindle in the vertical position. Provide with manual lifting device for periodic testing. Boilers shall comply with the local air quality regulations. Boilers shall be equipped with pressure and temperature gauges as required for proper maintenance and operation. Thermometers shall also be provided at the inlet and exit of the boiler, and shall be visible to the operator from the operating area.

2. **Furnaces**: UL-listed, factory assembled, self contained, forced circulation, furnace. Provide electronic ignition system. Unit shall be design certified by AGA, GAMA efficiency rating certified, for gas furnaces and NFPA 31 for oil furnaces. Provide with cooling coil as necessary. Furnaces shall comply with the local air quality regulations.

## D3030 COOLING GENERATING SYSTEMS

1. **Chillers**: Air-cooled chillers shall be type indicated in Part 3 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. Provide complete start-up and operational testing of chiller equipment.

2. **Direct expansion systems**: Provide units factory assembled, designed, tested, with ducted air distribution and rated in accordance with ARI 210/240 or ARI 340/360. Refrigerant piping size shall be per the manufacturer's recommendations. Insulate refrigerant piping suction lines and condensate drain.

3. **Refrigerants**: The use of Ozone Depleting Substances (ODS) as well as the qualifications and credentials of personnel servicing equipment that contains ODS is restricted. Refrigerants shall have an Ozone Depletion Factor (ODF) of 0.055 or less. The ODF shall be in accordance with the "Montreal Protocol on Substances That Deplete the Ozone Layer", September 1987, sponsored by the United Nations Environment Program.

4. **Coils**: If coatings are indicated in Part 3, 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 ASTM B117 procedure. Field applied coatings are not acceptable.

5. **Variable Refrigerant Flow (VRF) systems**: The system shall consist of VRF heat pump units, branch circuit controllers, VRF fan coil units, and associated controls. The system shall be designed to provide the facility with simultaneous heating and cooling utilizing hot gas refrigerant or sub-cooled liquid. Provide system with heat recovery. The heat pump units shall be inverter driven and shall utilize R410A refrigerant. Total capacity of the branch controllers shall be between 50% and 150% of the rated capacity. All refrigerant piping shall be sized and installed in strict compliance with the manufacturer’s requirements. Refrigerant piping shall be clean, dry, and leak free. Prior to installation all refrigerant pipes shall remain sealed. During installation and prior to filling, nitrogen shall be used to maintain cleanliness and prevent oxidation and scaling

while brazing.

# D3040 DISTRIBUTION SYSTEMS

1. **Ductwork**: All ductwork shall be provided in accordance with the latest SMACNA guidelines. Flexible duct lengths shall not exceed 6 feet. Provide galvanized sheet metal ducts except for special exhaust systems and the following:
   a. For fume hood exhaust, kitchen hood exhaust, and dishwasher exhaust, provide stainless steel ductwork.
   b. For shower area exhausts, provide aluminum or stainless steel ductwork and sloped to drain provisions. After the shower exhaust is mixed with a volume of general exhaust air equal to 200% of the shower exhaust rate, standard galvanized construction may be used.
   c. Internal insulation-lined ductwork is prohibited in all areas. For ductwork located exterior to the building, provide externally insulated systems with sheet metal cladding. 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.
   d. The ductwork shall be sealed with an approved duct sealer and in accordance with SMACNA standards. If leakage testing is indicated in part 3, the duct leakage shall not exceed 2%.
   e. Provide manual volume dampers in each branch take-off from the main duct to control air quantity. Dampers shall conform to SMACNA DCS. Dampers shall be installed in accessible locations.

2. **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.

3. **Piping**:
   a. Provide insulated, steel piping for sizes 4 inches and larger and insulated copper piping for sizes less than 4 inches for water supply and return piping to serve the HVAC equipment throughout the facility.
   b. Provide system flushing and start-up for water systems.
   c. Oil piping: 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.

4. **Exhaust Fans And Ducts**:
   a. **General:** Exhaust fans shall be sized to move the volume of air required to comply with International Mechanical Code for the areas requiring exhaust.
   b. **Bathroom, restrooms and Utility Room Exhaust Fans:** Exhaust fans shall be sized to give not less than 10 air changes per hour in the space to be ventilated. Fans shall have a maximum sound level of 3 sones and be separately switched from light.
   c. **Flues:** When required, provide new Type B, U.L. listed, double wall flues. Flue

installation shall be in accordance with the International Mechanical Code.

5. **Air handling units**: Modular construction, double wall air handling units with minimum of 25 mm (1 inch) 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.

## D3050 TERMINAL AND PACKAGE UNITS

1. **Unit ventilators**: Unit shall be factory assembled unit ventilator capable of up to 100% outdoor air ventilation and UL-listed.

2. **Unit heaters**: ANSI Z83.8 and AGA label. Equip each heater with individually adjustable package discharge louver. Provide with thermostat.

3. **Fan coil units**: UL-Listed, factory assembled and tested fan coils, ARI 440 and ARI certified.

4. **Packaged units**:

   Factory packaged rooftop units in accordance with ARI 430 and suitable for outdoor installation. Provide with manufacturer's roof curb.

   Packaged through wall units shall be factory assembled air conditioner or heat pump and rated in accordance with ARI 310 or ARI 380 and ARI certified. Unit shall include heat and operate under the standard unit controls. Units shall be designed to allow ease of maintenance by use of a wall sleeve. Units shall have internal condensate removal (condensate shall not be externally drained).

## D3060 CONTROLS AND INSTRUMENTATION

1. **General**: Provide stand-alone or distributed direct digital controls, as required in Part 3.

2. **Distributed Direct Digital Controls (DDC)**: 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. When providing a partial DDC system or connecting to an existing DDC system, provide a laptop computer with all necessary software for user interface.

## D3070 SYSTEMS TESTING AND BALANCING

All HVAC water and air systems, both new and retrofit, shall be TABed in accordance with NEBB

or AABC standards. As part of any TAB air balancing effort, acceptable air quantity variations shall be 0 to -10% for exhaust systems and 0 to +10% for supply air systems.

# D40 FIRE PROTECTION

Provide new or extend existing Automatic Fire Sprinkler systems, Smoke and Heat detection systems, Fire Alarm and Mass Notification systems as required. The work for fire sprinklers, fire alarm, smoke detection, and heat detection shall be provided by contractors licensed to perform such work.

**Project Requirements:** Prior to the start of design, the Designer of Record shall meet with the Government's Fire Protection Engineer to determine the extent and types of fire protection required**.**

## D4010 FIRE ALARM AND DETECTION

Fire alarm system shall include manual stations, system smoke detectors, duct smoke detectors, heat detectors, audio/visual alarms, connection to basewide fire alarm monitoring, electrical supervision of fire pump controllers, and electrical supervision of all sprinkler system alarm and supervisory devices as required.

## D4020 FIRE SUPPRESSION WATER SUPPLY AND EQUIPMENT

The water supply information is provided for bidding purposes. The design point of connection to existing water supply shall require the approval of the Contracting Officer. The FPE DOR shall conduct additional flow tests after contract award prior to any design submissions. Tests shall be coordinated through the Contracting Officer.

## D4040 SPRINKLERS

Areas subject to freezing shall be provided with a dry pipe system.

# D50 ELECTRICAL

## D5010 ELECTRICAL SERVICE & DISTRIBUTION

Provide interior electrical wiring, fixtures, switches, outlets, and apparatus in accordance with applicable codes and standards. The electrical system shall conform to NFPA 70. Power and lighting circuits shall be separate.

1. **Wiring**: All wiring shall be in electrical metal conduits and shall be concealed except in the industrial spaces and at locations indicated in Part 3. No conductors shall be smaller than No. 12 AWG, copper wires. Wiring below slab or underground shall be in Schedule 40 PVC with ground wire. Exposed conduits on the exterior of the building are prohibited. Provide a ground conductor for each circuit; conduits shall not be used for grounding. Use of cable assemblies Types AC, MC, or MI and flat conductors are prohibited. Circuit breakers shall be bolt-on type. Series rated circuit breakers and fusible panelboards shall not be used.

2. **Outlet Circuits**: Lighting and convenience outlets shall be on separate circuits. Install GFI protected receptacles at all wet or damp areas. Location of outlets shall be as required by applicable codes and standards. Provide extra outlets for maintenance and service staffs in spaces such as corridors, hallways and other public spaces as identified below. All exterior outlets shall be on separate circuits, shall be GFI protected, and equipped with a cover to prevent accidental water infiltration into the devices.
In addition to the location requirements specified by NFPA 70, locate general purpose and dedicated outlets in accordance with the following:
   a. Mechanical equipment: Provide receptacle within 7.6 m (25 ft) of mechanical equipment on the interior and exterior of buildings.
   b. Office, staff support spaces, and other workstation locations: One receptacle for each workstation with a minimum of one for every 3050 mm (10 ft) of wall space. When less than 3500 mm (10 ft) of wall at the floor line, provide a minimum of two receptacles spaced appropriately to anticipate furniture relocations. Limit loads to a maximum of four workstations per 20 amp circuit. See Appendix C, Table C1 for workstation load data.
   c. Conference rooms and training rooms: One for every 3.6 m (12 ft) of wall space at the floor line. Ensure one receptacle is located next to each voice/data outlet. Provide one receptacle above the ceiling to support video projection device. Extend circuit to wall location for connection to motorized screen. When it is expected that a conference room table will be specifically dedicated to floor space in a conference room, locate a floor-mounted receptacle under the table. This receptacle may be part of combination power/communications outlet.
   d. Provide power outlets throughout the building to serve all proposed equipment, including government furnished equipment, and allow for future reconfiguration of equipment layout. Provide power connections to all ancillary office equipment such as printers, faxes, plotters, and shredders. Provide dedicated circuits where warranted.
   e. In each telecommunications room provide a dedicated 20 amp circuit with a receptacle adjacent to each rack or backboard for each of the following:
      1) CCTV for training systems
      2) CCSTV for security systems
      3) CATV
      4) Voice systems
      5) Data systems.
   f. Provide dedicated receptacles as required throughout the facility for television monitors. These outlets will typically be located at the ceiling level for wall mounted television monitors.
   g. Provide dedicated receptacles as required throughout the facility for tape players and disc players.
   h. Corridors: One every 15 m (50 ft) with a minimum of one per corridor.
   i. Janitor's closet and toilet rooms: One GFI receptacle per closet. Provide GFI receptacles at counter height for each counter in toilets such that there is a minimum of one outlet for each two sinks.
   j. Space with counter tops: One for every 1.200 m (4 ft) of countertop, with a minimum of one outlet. Provide GFI protection of outlets when located within 1.8 m (6 ft) of plumbing fixtures.
   k. Building exterior: One for each wall, GFI protected and weatherproof.
   l. Kitchen non-residential: One for each 3.05 m (10 ft) of wall space at the floor line.

Provide GFI protection when located within 1.8 m (6 ft) of plumbing fixture.

m. Child occupied spaces (including toilets): One for every 3.6 m (12 ft) of wall space. Use child safety type such as those that require rotating an integral surface cover plate to access current. Removable caps and plugs are not acceptable.

n. All other rooms: One for every 7.6 m (25 ft) of wall space at the floor line. When 7.6 m (25 ft) or less of wall at the floor line exists in a room, provide a minimum of two receptacles spaced appropriately to anticipate furniture relocations.

o. Special purpose receptacles: Designer of Record must coordinate with the user to provide any special purpose outlets required. Provide outlets to allow connection of equipment in special use rooms.

3. **Service Entrance Equipment**: When a switchboard or switchgear is required, the Designer of Record shall utilize 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.

## D5020 LIGHTING & BRANCH WIRING

1. Lighting Fixtures: All lighting fixtures shall be energy conservation compact fluorescent except where indicated by Part 3.
   a. **Fluorescent Fixtures for Administrative and Commercial Spaces**: For offices, commercial and administrative spaces and facilities provide high efficiency ballast, and instant or rapid start recessed fluorescent fixtures.
   b. **Three-Way and Four-Way Switches**: Provide three-way or four-way switching of light fixtures as necessary to facilitate movement between adjacent spaces to allow efficient energy management.

2. **Exterior Lighting Fixtures for Large Open Areas**: Exterior lighting fixtures for large open areas such as parking lots, streets and playgrounds shall be energy efficient High-Intensity Discharge (HID) or compact fluorescent fixtures and shall comply with local regulations regarding low lighting levels to avoid light pollution.
   a. Photocell Overriding Switch: Provide photocell-overriding switch for all outdoor light fixtures.

## D5030 COMMUNICATIONS & SECURITY

1. **Telecommunications Systems**: Provide a horizontal distribution system including, but not necessarily limited to, all wiring, pathway systems, connector blocks, protectors for all copper service entrance pairs, terminators for all fiber optic cables, outlet boxes, telephone jacks, and data jacks cover plates in accordance with EIA/TIA standards. Provide Category 6 UTP telephone premise wiring where telephones are required.

2. **Public Address Systems**: Provide a Public Address system with speakers in all locations identified in Part 3.

3. **Intercommunications Systems**: Provide an Intercommunication System to allow

two-way communications between all locations identified in Part 3.

4. **Television Systems**: Provide television systems to the extent specified in Part 3. Coordinate with the local Cable Company, Local users and Local Authority at the Activity for other specific requirements. The interior cable outlets and wiring shall be complete and ready for use. Wiring shall not be run exposed on any surface of the building.

5. **Security Systems**: Provide an Intrusion Detection System (IDS) to sense all perimeter doors and windows and the interior volume in at least two locations. System shall have 90-minute battery back-up and annunciate both locally and at the Base Security Office via a telephone dialer. System shall have entry/exit timer. Provide wall mounted keypad control at two locations.

## D5090 OTHER ELECTRICAL SERVICES

1. **Surge Protective Device (SPD)**: Provide SPD in accordance with UFC 3-501-01.

2. **Variable Frequency Drives**: When variable frequency drives are required, the Designer of Record shall utilize UFGS Section 26 29 23 20 for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

3. **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.

4. **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.

5. **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.

6. **400 Hertz Systems**: The Designer of Record shall utilize UFGS Section 26 32 26 or 26 35 43 for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

7. **Lightning Protection**: When lightning protection is required, the Designer of Record shall utilize UFGS Section 26 41 00.00 20 for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

8. **Building Photovoltaic System**

Provide a grid tied photovoltaic system including roof mounted crystalline photovoltaic panels,

combiner boxes, inverters, and support structure.

Provide all labor, materials, equipment and supervision required to implement the design and to provide a fully operational system.

Provide PV modules with a 20-year limited manufacturer warranty that generates no less than 80% of the rated output under Standard Test Conditions (STC).

Provide start-up and testing utilizing certified technician. Submit startup and testing report.

The PV system hardware and services shall meet or exceed all applicable local, State and utility requirements, conform to the applicable codes and standards, and have passed the listing and qualification tests, listed below. (Comply with the most recent version of each document).

a. IEEE 1262 "Recommended Practice for Qualification of Photovoltaic Modules".

b. PowerMark certification for PV modules.

c. IEEE Standard 928-1986, Recommended Criteria for Terrestrial Photovoltaic Power Systems (PV system performance criteria).

d. IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems

e. Underwriters Laboratories 1741-2001 (UL Standard for Inverters and Charge Controllers).

f. Underwriters Laboratories 1703 (UL Standard for Listing Photovoltaic Modules).

g. Certification of PV Equipment: All PV modules, inverters, and electrical components shall be required to be listed or recognized by an appropriate and recognized United States Safety Laboratory (for example: UL or ETL).

Provide a comprehensive "Photovoltaic Application Analysis" with a detailed description of system, application, site shading conditions and expected kW output of the rooftop photovoltaic applications. The analysis shall utilize the Solmetric Suneye or the Solar Pathfinder shading analyzers to analyze the effects of the existing site shading conditions. Analysis shall include estimated PV output in kWh per year. Coordinate rooftop application analysis with other equipment that is required to be placed on the roof to determine space available and proper solar orientation for photovoltaic equipment.

The contractor work responsibilities include at a minimum: system design, equipment selection, and PV system installations. System shall be individually capable of providing peak power output of at least proposed PV system size, 208 or 480 volt, 3-phase, 4-wire power.

The final System configuration shall allow automatic operation without operator intervention. System design and equipment specifications shall minimize maintenance requirements. System shall include metering that must be incorporated with current AMI network (Advanced Metering Infrastructure) and planned energy metering projects.

The inverter(s) disconnects and associated electrical equipment must be located in an area that is accessible, weather-protected, and secure from vandalism and personal injury.

Disconnects and over current devices shall be mounted in approved boxes, enclosures, or panel boards. Disconnects and switches shall be DC rated when used in DC applications. Metal enclosures and boxes shall be bonded to the grounding conductor.

At a minimum, electrical meters shall capture the following data on individual system performance (minimum solar irradiance, DC power, AC real power, AC current, AC voltage, and power factor (recommend ION 8600 for AC); ambient air temperature, PV cell temperature, kW, and kWh). This data shall be captured at hourly intervals for a minimum one year. Units of temperature, power, and current shall be in Fahrenheit, Watts, and Amps respectively.

Transformers, if required, shall have a minimum efficiency based on factory test results of not less than the efficiency indicated in 10 CFR 431, Subpart K, paragraph 431.196(b). Transformers shall be housed in a NEMA 4X enclosures.

Mounting structures shall be corrosion resistant to marine environment.

Provide permanent plaque or directory at each building service and power source identifying all other building services and power sources.

Operators manuals for each system component shall include detailed instructions on how to operate the system, programming and installation instructions, emergency operating procedures, default program values and set points, listing of field programmed variables and set points, equipment wiring diagrams, product model number, with Name, Address and Telephone number of local representative, and starting, operating, and shut down procedures. Include normal and emergency shutdown procedures, schedule of maintenance work, if any, recommended cleaning agents and methods, replacement parts list, including internal fuses, and warranty information.

Provide a formal 2-hour on-site training session instructing operators in the operation and maintenance of the new system, including operation and maintenance of inverters, disconnects and other system components. Instruct personnel in removal and installation of panels, including wiring and all connections. At the time of training the Contractor shall furnish, for the equipment specified, operation and maintenance manuals, record drawings and recommended spare parts lists identifying components adequate for competitive supply procurement for operation and maintenance of system.

# SECTION E. EQUIPMENT AND FURNISHINGS

## E10 EQUIPMENT

**Equipment and Appliances:** Provide appliances and equipment to fulfill the work for Part 3. Whenever possible, all appliances and equipment provided for the facilities in the contract shall be by the same manufacturer and shall be the current model available at the time of proposals. Discontinued makes and models are prohibited. All appliances and equipment shall comply with applicable Energy Star efficiency rating requirements and shall be rated as high efficiency models. Appliances and equipment on California projects shall comply with California Title 24 and be rated as high efficiency. All appliances shall be of the same manufacturer and shall be the same, or similar in color. Submit catalog information for approval by the Contracting Officer prior to purchasing, delivery and installation of the appliances at the job site. Equipment and appliances such as dishwashers, ice machines with drains, garbage disposers, and ovens/ranges are not considered FF&E.

# E20 FURNISHINGS

## E2010 FIXED FURNISHINGS

**Window Treatments:** Unless otherwise specified in Part 3 window treatments shall be as follows: Horizontal blinds shall be aluminum, washable, cleanable, installed in all windows except for bathroom, kitchen, and utility windows. Horizontal blinds shall be installed at all sliding glass doors. All blinds shall be screwed or securely anchored to wood backing and shall be inside mounted except at sliding glass door. Submit catalog information for approval by the Contracting Officer. Blinds shall have 1-inch aluminum slats, mounted within window opening. Blinds shall have separate tilt and height controls, metal truck, head channels, wand, and valance. Solar shades shall be woven polyester/resin coated fiberglass or polyester fabric with fade resistance and dimensional stability; with clutch or motorized roller operation. Roller shades shall be screwed or securely anchored to wood backing and shall be inside mounted except at sliding glass door. Submit catalog information for approval by the Contracting Officer. Blinds shall have prefinished steel or aluminum roller housing and valance. Window treatments are not considered FF&E.

## E2020 MOVABLE FURNISHINGS

1. Furnishings, Fixtures and Equipment (FF&E): FF&E shall include furniture, shop equipment, audiovisual equipment (excluding motorized screens), and specialty equipment. Weapon racks, drying cages, motorized projection screens and lockers are not considered FF&E. FF&E shall be fully integrated with the building system.

   Design and provide FF&E for all areas as developed during client programming. Design an FF&E package and prepare supporting plans and procurement data in accordance with the General Interior Design Requirements UFC 3-120-10.

   The contractor shall have an NCIDQ certified Interior designer not affiliated with any furniture dealership prepare both the SID and FF&E package and participate in design charettes to develop the building floorplan. The designer must have previous experience in project types similar to this contract. As required, the contractor shall obtain services of equipment specialists to specify the audiovisual, shop, or specialty equipment. Equipment specialists shall not have any affiliation with the product specified.

   The contractor's Interior Designer shall be responsible for specifying product and installation for all FF&E for the designated facilities built under this contract, using NAVSUP Blanket Purchase Agreements, GSA federal supply schedules or other government supply sources and complying with priorities found in FAR Part 8.404.

   All fixed and movable furnishings selections shall be coordinated with Sections C10, "Interior Construction" and C30, "Interior Finishes." The FF&E shall be fully integrated with the building systems as well as the design and construction schedule.
   As an option to the contract/task order, the contractor shall be authorized to procure all FF&E with separate funding.

   a. **FF&E Package:** Provide the FF&E loose furnishings package from Government supply sources schedules according to Federal Acquisition Regulations, to include but not limited to, systems and modular furniture, training and conference

furniture, seating, tables, artwork, window covering, specialty furniture and equipment, and accessories. NAVSUP Blanket Purchase Agreements (BPA) must be used whenever possible.

The Government will provide separate funding for procurement of the FF&E package. Upon receipt of required funding, the Contractor shall be authorized by the Contracting Officer as an option to contract/task order to procure all FF&E using predominately negotiated price schedules from GSA or other Federal contracts. The amount of the modification will be the actual cost of these items from the Federal price schedules or NAVSUP BPAs, including any freight and installation charges from the furniture supplier as well as the contractor's FF&E Handling and Administration Rate (HAR). The HAR includes all of the prime contractor's effort related to storage, coordination, handling, administration of subcontractors, and all other associated costs and profit for the procurement of FF&E. The prime contractor will propose in the contract/task order solicitation the FF&E HAR. The contractor's proposed HAR may not exceed 5% of the total FF&E costs, as noted on the bid schedule. No other charges, expenses, fees, or other markups will be authorized.

When the FF&E package is complete and accepted by the Government, the procurement option will be awarded based on the specific line items in the final package. The Government's Interior Designer will approve the final FF&E submittal. The FF&E package will be presented to the Project Manager and they will expect the Contractor to procure the FF&E exactly as specified and approved by the government Interior Designer.

Two copies of all ordering documentation shall be provided to the Contracting Officer including purchase orders and warranty information. The Contractor shall take maximum advantage of all exemptions from State and Local taxation authorities whether available to it directly or available to the contractor based on an exemption afforded the Government. The responsibility for paying applicable taxes rests with the contractor. Any state and local taxes applicable to the FF&E option will be included with the FF&E Dealer quote, if applicable.. Under regulation 1521, Construction Contractors performing work for the US Government are not required to charge the Government sales tax for the purchase of furniture. Any items purchased as building materials such as carpet are taxable. FF&E items are subject to the Buy American Act. The contractor shall not be required to secure any additional bond for the award of the FF&E option item. Any performance and payments bonds required for the FF&E option will be included in the prim contractor's FF&E HAR.

b. **Procurement and Installation:** Upon completion and Government acceptance of the design, using the Best Value Determination (BVD) method in association with the Government's Interior Design Representative, the Government will award the FF&E procurement option for the Contractor to purchase the FF&E package. The Government's Interior Designer shall provide a certification to the Contracting Officer that the process was completed. The Design-Build Contractor will receive a letter of authorization from the Contracting Officer citing the name of the furniture dealer and other information to use when accessing the Government supply sources. The FF&E package includes the installation of all furniture and furnishings as specified in the FF&E package. The installation dealer specified in the FF&E package will receive, store, if required, transport to the project site, off load, inside deliver, unpack, assemble, place/install, clean, if required, and dispose of all the trash for all furniture and furnishings. The Contractor's Interior Designer will be responsible for specifying installation services and warehousing, as required, for all collateral equipment. It is the

Contractor's responsibility to coordinate the building completion, occupancy, and furniture installation dates with the installation dealer specified in the FF&E package. Any costs associated with storing or delaying furniture shipments is the responsibility of the Construction Contractor. Davis Bacon wages do not apply to the FF&E installer accessed through Government supply sources. The Contractor should anticipate providing a deposit of between 30% and 50% of the furniture costs when placing their order.

All movable furnishings shall be installed in accordance with the manufacturer's instructions and warranty requirements. All movable furnishings shall be level and aligned and all doors, drawers and accessories shall be level and aligned to open, close and otherwise operate smoothly and securely. All systems furniture shall be installed by the systems furniture manufacturer's dealer of record and not by the General Contractor.

c. **Furnishings for Special Functions:** Contractor shall coordinate shop equipment, audiovisual equipment, and specialty equipment, with the building systems.

# SECTION F. SPECIAL CONSTRUCTION AND DEMOLITION

# F10 SPECIAL CONSTRUCTION AND DEMOLITION

## F1010 SPECIAL STRUCTURES

1. Pre-Engineered Buildings

Provide the design and installation in accordance with the UFC 3-100-10, *Architecture* and UFC 3-301-01, *Structural Engineering.*

a. **Design Requirements -** The metal building manufacturer must be accredited by the International Accreditation Services (IAS) AC472. The Metal Building System design shall be in accordance with the Metal Building Manufacturers Association (MBMA) *Metal Building SystemsManual*. All structural design shall comply with the provisions of Section B10, "Superstructures", above.

b. **Additional Roof Design Requirements -** Roof Decking - In addition to any other load requirements, roof decking shall be designed to support a 91 kg (200-pound) concentrated load at mid-span on a 300 mm (12-inch) wide section of deck.

c. **Deflection -** the maximum deflection for -

1) Structural Members - main framing members shall be L/240.

2) Purlins and Roof Panels: The deflection due to live, snow, or wind shall not exceed L/180.

3) For buildings with masonry infill, limit frame sway to L/600th of building eave height.

4) Wall Panels - Maximum deflection of wall panels due to wind loads shall be L/120th of their respective spans except that when interior finishes are used the maximum allowable deflection shall be limited to L/180th of their respective spans.

d. **Wall and Roof materials -**

1) Alum/Zinc-Coated Steel Sheet: ASTM A792/ A792M, AZ 55.

2) Aluminum Sheet: Alloy 3004 Alclad conforming to ASTM B209.

3) Framing and Structural Members - Steel - ASTM A992 / A992M, ASTM A529/ A529M, ASTM A572/ A572M, or ASTM A588/ A588M.

4) Framing and Structural Members, Aluminum: ASTM B221 or ASTM C308

e. **Structural Tube:** ASTM A500 or ASTM B221.

f. **Fasteners** - Shall be compatible with the materials they are fastening to, be gasketed when exposed to weather to prevent leaks, and shall provide both shear and tensile strengths not less than 3,336 N (750 pounds) per fastener. The main fastening system shall use concealed fasteners, however, when exposed fasteners are needed, color fasteners shall be color coated to match wall/roof panels.

g. **Light Transmitting Roof Panels (Non-Insulated):** ASTM D3841, Type II, Grade 1.

h. **Insulation:** Blanket-type fiberglass insulation with a factory applied facing on one side and having a permeance rating of 0.05 or less in accordance with ASTM E96. Flame Spread Rating 75 or less, and a Smoke Developed Rating of 150 or less when tested in accordance with ASTM E84.

i. **Panel Finish -** Factory Color Finish - Provide factory applied baked coatings to the exterior and interior of metal wall panels and metal accessories. Provide exterior primer standard with panel manufacturer but not less than 0.8 mil dry film thickness (DFT). Provide PVDF exterior finish top coat of 70 percent inorganic pigments with 0.8 mil DFT. Provide factory-applied clear finish over the color topcoat and edge coating for projects within 91 meters of a water shoreline or industrial environments. Field apply 70 percent PVDF clear coat to unfinished panel edges or field cut panels. Interior finish exposed to sun or rain shall be the same coating and DFT as the exterior coating. Interior finish protected from sun or rain exposure shall receive 1.0 mil DFT coating of siliconized polyester (SMP) resin coating with organic or blended pigments and manufacturer's standard primer.

# F20 SELECTIVE BUILDING DEMOLITION

In general terms, demolition work shall include the removal and effective management and disposition of existing construction and or structures. Contractor shall take care to prevent damage to existing utilities and construction that are not scheduled for demolition. If damage occurs, the Contractor shall make repairs to the satisfaction of the Contracting Officer and at no cost to the Government. Comply with local Activity and Installation local requirements regarding demolition and removal. Unless otherwise specified in Part 3, all demolished materials and equipment must be removed from government property in accordance with applicable laws and regulations, including local Activity or Installation regulations. Selling of demolished or salvaged materials and equipment on government properties is prohibited.

**Demolition Plan and Environmental Protection Plan**: No demolition work shall take place until a Demolition Plan, Environmental Protection Plan, Safety Plan (including Activity Hazard Analysis), Asbestos Abatement Plan, and a Lead Abatement Plan have been submitted to, and approved by, the Contracting Officer. The Plans shall take into consideration, and indicate method of removal, disposition, and abatement of environmentally hazardous materials. Demolition, disposition, and abatement of hazardous materials must comply with all applicable Local, State, and Federal regulations and laws. If destructive investigation is to occur, the

Contracting Officer shall approve a Destructive Investigation Plan.

When hazardous materials such as asbestos, lead paint, PCB and other hazardous materials are involved in the performance of the work, the contractor shall abate, remove and manage the hazardous materials in construction and finish materials such as insulation, flooring, wall materials, ceiling materials, roofing materials, heating, plumbing, ventilation, air conditioning equipment and installations in accordance with National as well as local Environmental Protection Laws and Regulations.

## F2020 HAZARDOUS COMPONENT ABATEMENT

1. **Asbestos in DoD Schools**: For projects that require removal or disturbance of asbestos containing materials within DoD schools, perform work in accordance with the edited UFGS 02 82 14.00 10, *Asbestos Hazard Control Activities*.

2. **Asbestos Materials**: Asbestos shall be removed, transported and managed in accordance with the following regulations: 29 CFR 1926.1101, and 40 CFR 61-Subpart M.

   Category I & II Nonfriable: Demolition of Category I & II nonfriable asbestos containing materials (approved to be left in place during building demolition) shall be performed in accordance with 40 CFR 61 - Subpart M.

3. **Lead Based Paint in Child Occupied Facilities**: For projects that require removal or disturbance of painted surfaces within a child occupied facility, perform work in accordance with the edited UFGS 02 83 19.00 10, *Lead Based Paint Hazard Abatement, Target Housing and Child Occupied Facilities.*

4. **Paint Containing Lead, Cadmium and Chromium**: Work which requires the disturbance of paint that have been determined to contain all or any of the following: lead, cadmium and chromium must be performed in accordance with: 29 CFR 1926.62, 29 CFR 1926.1126 and 29 CFR 1926.1127.

5. **Mercury & LLR Components**: Work which requires removal of mercury and LLR components shall be performed in accordance with: 29 CFR 1910.1000, 10 CFR 20, and 40 CFR 273.

6. **PCBs**: Work which requires removal of PCB containing components or materials shall be performed in accordance with 29 CFR 1910.1000, 40 CFR 761, and 40 CFR 273.

7. **Hazardous Materials Reporting**:
   a. **Daily Report**: Notify the Contracting Officer of work involving hazardous materials abatement and removal, including the quantities involved, on daily reports.
   b. **Hazardous Material Inventory Report:** The Contractor shall provide a list of all hazardous materials used on the site.

## SECTION G. BUILDING SITEWORK

# G10 SITE PREPARATIONS

1. **General Requirements**: Building site work includes site preparation, site improvements, site civil/mechanical utilities, site electrical utilities, exterior furnishings, landscaping, and irrigation. Provide site work in accordance with UFC 3-201-01, *Civil Engineering*.

2. **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 re-vegetation of disturbed areas, and lay down areas. The Civil Engineer and Landscape Architect of Record shall determine limit-of-work lines. Minimize the impact of construction activity on operations and neighboring facilities.

3. **Geotechnical Data**: A geotechnical engineer shall conduct the subsurface exploration, investigation/evaluation, testing, and analysis that the Designer of Record deems necessary for the design and construction of the proposed facilities, including building pad, structure, pavement sections, repairs, overlays, stormwater management facilities, utility structure foundations, septic systems, and other features requiring soil support.

## G1010 SITE CLEARING

1. **Existing Utilities**: When the Contractor is to work at a site that has existing utilities, the contractor is responsible for coordination with Contracting Officer and utility companies for staking out, capping, connection and relocation of any existing utility systems or traffic interruption. Notify utility locator service for area where Project is located before site clearing.

2. **Interruption**: All interruption to the existing utilities and traffic shall be coordinated with and approved by the Contracting Officer not less than 14 calendar days in advance of such interruption.

## G1020 SITE DEMOLITION & RELOCATIONS

Abandon utility systems in-place conforming to applicable codes and regulations, removing their presence from the ground surface and clearly indicating that they have been abandoned. Remove utilities underneath or within 3.0 m (10 feet) of any new facilities. Fill abandoned gravity systems with flowable fill. Fill abandoned utility system piping under pavements subject to potential vehicle loading with flowable fill.

Remove existing utility structures to 900 mm (3 feet) below existing or new adjacent grade, whichever is greater. Break up bases to permit drainage. Fill with clean sand.

Comply with the requirements of the utility provider concerning utility relocation.

# G1030 SITE EARTHWORK

The DOR shall utilize UFGS Section 31 23 00.00 20 for the project specification and shall submit the edited section as a part of the design submittal. Perform quality assurance for earthwork in accordance with UFGS Section 31 23 00.00 20. If sheeting/shoring or dewatering is required, the Contractor shall provide a registered Professional Engineer to provide excavation, sheeting, shoring, and dewatering plans and 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 seal) 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.

# G20 SITE IMPROVEMENTS

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.

1. **Pavements**: For work in and adjacent to existing pavements, the Contractor is required to match the existing adjacent finish elevation, materials, paving section and texture, unless otherwise indicated in Part 3 or directed by the Contracting Officer.

   Provide pavement design and pavement section materials in accordance with UFC 3-200-10N, *Civil Engineering*.

2. **Traffic Control**: If the site work involves interference with normal vehicular and or pedestrian traffic, the Contractor shall coordinate with the authority having jurisdiction, propose and obtain approval for traffic control measures that may be required in performance of the work required by the contract.

3. **Performance Verification And Acceptance Testing**:
   a. **Subgrade Preparation:** 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 by the Geotechnical Engineer.
   b. **Base Course Performance Verification**: At a minimum, Contractor must perform visual performance verification. Surface shall be smooth with no ruts, sloped or crowned to not pond water.
   c. **Bituminous Concrete Pavement Performance Verification**: At a minimum, Contractor must perform visual performance verification. Finished surface shall be uniform in texture and appearance, free of defects such as cracks and creases, and be sloped or crowned so as to not pond water.
   d. **Portland Cement Concrete Pavement Performance Verification**: At a minimum, Contractor must perform visual performance verification. Finished

surface shall be uniform in texture and appearance, free of defects such as cracks and spalls, and be sloped or crowned so as to not pond water.

e. **Concrete Joint Performance Verification**: 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, re-clean and reseal joints.

## G2040 EXTERIOR FURNISHINGS

All site furnishings shall be permanently attached to concrete pads. Site furnishings shall conform to the Base Exterior Architecture Plan (BEAP) or Installation Appearance Plan (IAP) 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 each entry and gathering/smoking area.

## G2050 LANDSCAPING

# G30 SITE CIVIL/MECHANICAL UTILITIES

Develop the site to provide water, fire protection, sanitary sewer, storm drainage, heating, cooling and fuel distribution services that meet the requirements of each utility provider and each applicable regulatory agency that governs and issues permits for the construction and operation of these systems. Site design shall also comply with Department of Defense requirements concerning Low Impact Development (LID) per UFC 3-210-10, as well as state or local stormwater management regulations, and applicable project sustainability goals. Submit sealed calculations with narrative to the Government for civil and environmental review documenting all assumptions and which criteria governs the design.

Coordinate with the local utility providers and pay any fees or charges required to connect to their utility. Identify and obtain all permits to comply with all federal, state, and local regulatory requirements associated with this work. Coordinate all reports, submittals, and permit applications through the Contracting Officer. The Contractor shall perform work in accordance with the obtained permits.

Provide all required fittings, connections and accessories required for a complete and usable system. All equipment shall be installed per the criteria indicated in this RFP and the manufacturer's recommendations. Where the word "should" is used in the manufacturer's recommendations, substitute the word "must".

## G3010 WATER SUPPLY

1. **Water System Design and Construction**: Provide the new water system and connections to the existing water system in accordance with UFC 3-230-01, *Water Supply: Storage, Distribution, and Transmission*; the utility provider's requirements; or the state waterworks' regulations; whichever is more stringent.

2. **Notifications**: 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.

3. **Performance Verification And Acceptance 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.
   whichever is more stringent. 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.

## G3020 SANITARY SEWER

1. Sanitary System Design and Construction: Provide the new sanitary sewer system and connections to the existing sanitary sewer collection system in accordance with UFC 3-240-01, *Wastewater Collection*; the utility provider’s requirements; or the state sewerage regulations; whichever is more stringent.

2. Notifications: 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.

3. Wastewater Pump Station: Where required, provide a duplex, grinder pump station in accordance with the utility provider's requirements. Provide pump station wet well of fiberglass construction. Provide adjacent valve vault of precast concrete construction.

   Provide automatic control to start and stop the pump system. Provide automatic level control by floats in accordance with the preferences of the system owner to fill and prevent overflow of the wet well. Provide an emergency pump connection.

   Provide a telephone dialer in the control panel capable of accepting up to 8 telephone numbers. At the control panel provide an alarm horn and light with battery backup. Alarms shall include high liquid wet well level; loss of main power; no flow as sensed by current sensor; and pump failure via overload or motor heat sensor trip. Provide seal failure indicator lights and elapsed time meters.

   Provide electrical connections for a portable emergency generator hook-up sized to start up and maintain the total rated running capacity of the station, including the pumps, controls, lighting, and other auxiliary equipment.

4. Performance Verification And Acceptance Testing:
   a. Sanitary Sewer Distribution System Performance Verification: Provide testing on sewer mains and laterals in accordance with the state sewerage regulations. At a minimum, perform the following:

      1) Visual Test: Remove manhole colvers and conducts a visual inspecation as follows:

a) Inspect for visible leaks in lines or manholes.

b) Inspect condition of grout in the interior joints of the manholes.

c) Inspect manhole frames and covers for proper type and installation.

d) Inspect to see if lines are free of debris.

e) Inspect manhole benches and inverts.

f) Check alignment and grade of gravity lines by laser or by introducing sufficient water into the line to verify the absence of sags, as directed by the Contracting Officer.

g) Mirror test: Check each straight run of pipeline for gross 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.

2) Leakage Tests: 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: Pipelines: ASTM C 924M (ASTM C 924) and perform calculations in accordance with its Appendix. PVC plastic pipelines: UBPPA UNI-B-6 and perform calculations in accordance with its Appendix.

3) Cross Connection Tests: Cross connection tests shall be observed by the Contracting Officer and the utility provider's inspector.

a) Perform a tracer study from the project sewer connection to the first manhole downstream on the active sewer system. Use a nontoxic, non-staining sewer tracing dye. Testing shall continue until the dye visually confirms the design connection is appropriate. During the test, the contractor shall monitor the storm drainage system (structures and outfalls) downstream from the project for any sign of cross connection.

b) Perform a smoke test on the project sewer to verify that project storm drainage inlets or drains have not been connected to the sanitary sewer.

f. 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).

g. 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.

## G3030 STORM SEWER

1. Storm System Design and Construction: Provide the new storm sewer system and connections to the existing storm sewer system in accordance with UFC 3-201-01, Civil Engineering; the utility provider's requirements; UFC 3-210-10, Low Impact Development; the state stormwater management laws and regulations; and applicable sustainability requirements; whichever is more stringent.The Contractor shall make necessary adjustments to the drainage design in order to avoid disruption to existing utilities and to protect existing trees to remain.Confirm that the existing receiving system has adequate capacity to receive the additional stormwater flow generated by the project.

2. Storm Sewer System Performance Verification: At a minimum, perform the following:
   a. Visual Test: Remove drainage structure covers and conduct a visual inspection as follows:

      1) Inspect for visible leaks in lines or structures.

      2) Inspect condition of grout in the interior joints of the structures.

      3) Inspect structure frames and covers for proper type and installation.

      4) Inspect to see if lines are free of debris.

      5) Inspect structure inverts.

      6) Check alignment and grade of gravity lines by laser or by introducing sufficient water into the line to verify the absence of sags, as directed by the Contracting Officer.

      7) Mirror test: Check each straight run of pipeline for gross deficiencies by holding a light in a structure; it shall show a full circle of light through the pipeline when viewed from the adjoining end of the line.

## G3060 FUEL DISTRIBUTION

**Gas Distribution System**: Refer to Section D20 for requirements.

# G40 SITE ELECTRICAL UTILITIES

## G4010 ELECTRICAL DISTRIBUTION

1. **Electrical Utilities Design and Construction**: Site electrical utilities include all exterior

electrical work, including the connection to the primary distribution system. This also includes telephone and cable television supplies.

Provide electrical overhead and underground, distribution systems in accordance with IEEE C2 (National Electrical Safety Code), NFPA 70, local utilities company requirements, and local Activity guidelines.

2. **Coordination With Local Utilities Company and Local Activity**: Service meters for electrical services shall be provided and installed in conformance with the local utilities company requirements and local activity guidelines.

3. **Substations**: When secondary unit substations are required, the Designer of Record shall utilize UFGS Section 26 11 13, *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.

4. **Transformers**: When transformers are required, the Designer of Record shall utilize UFGS Section 26 12 19.10, *Three-Phase Pad Mounted Transformers*, UFGS Section 26 12 19.20, *Single-Phase Pad Mounted Transformers*, or UFGS Section 33 71 01, *Overhead Transmission and Distribution*, for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

5. **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, *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.

## G4020 EXTERIOR LIGHTING FIXTURES AND CONTROLS

1. Utilize broad spectrum (white light) sources such as metal halide, induction, SSL, and fluorescent to provide good visibility at low light levels, unless lighting is required to match existing sources. The IESNA 10th Edition Handbook has developed a methodology to apply white light.

2. Comply with ANSI/ASHRAE/IES 90.1-2007 for all exterior lighting applications and controls.

3. Comply with EPACT 2005, the exterior lighting power density must be below ASHRAE by 30% if considered a building load and 20% if considered a non-building load.

4. Provide surge protective device (SPD) at panelboards that include circuits feeding exterior lighting systems.

5. Coordinate the design and luminaire selection with the landscape designer. Such coordination should include the location of poles which may conflict with tree locations.

6. When exterior lighting is required the designer of record shall utilize UFGS Section 26 51 00 for the project specification section as part of the design submittal for the project and shall submit the edited specification section as a part of the design submittal for the project. Provide “dark-sky” compliant exterior light fixtures and design to minimize light trespass and light pollution.

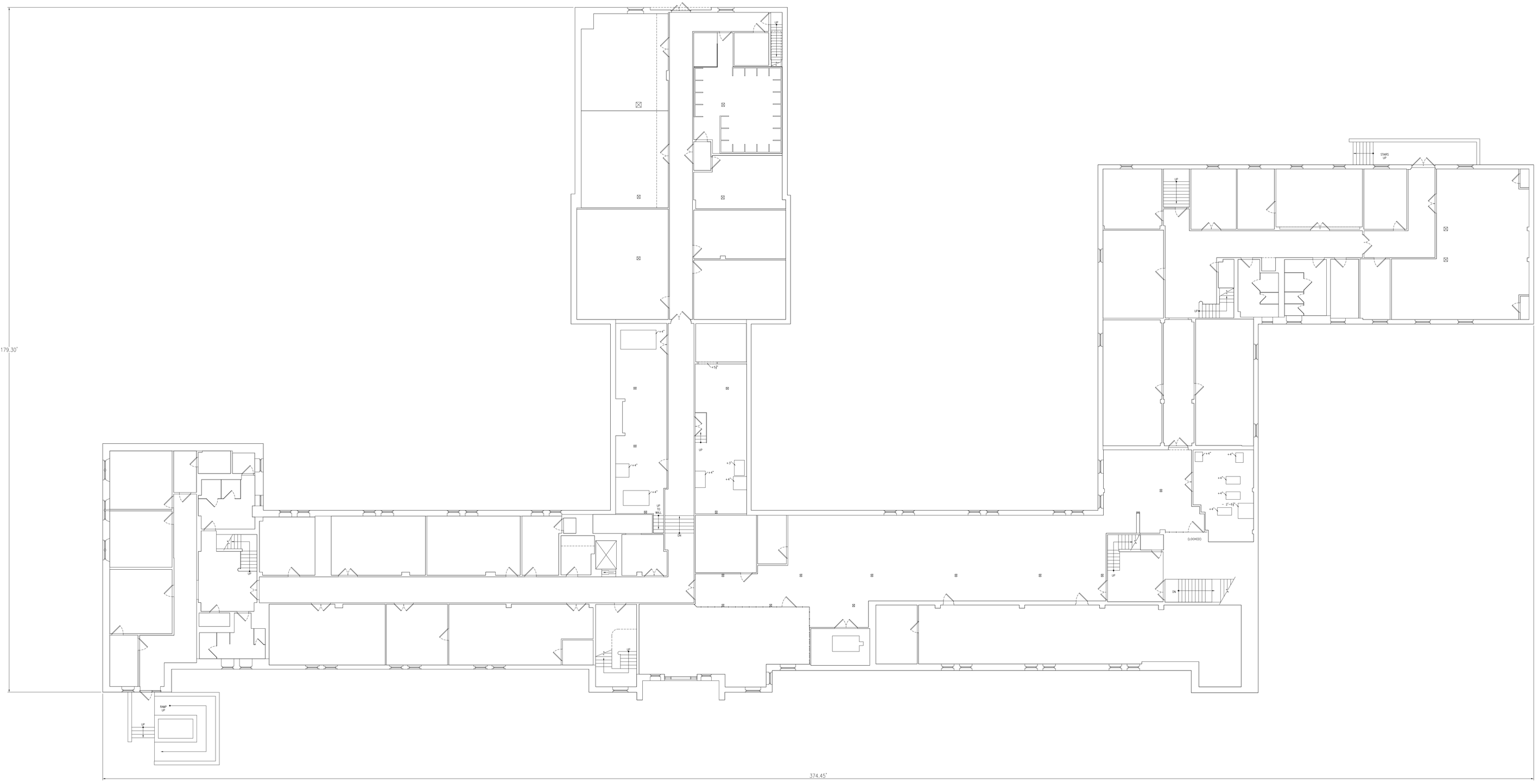
## G4030 SITE COMMUNICATION & SECURITY

1. **Telephone Distribution System**: Provide all telephone distribution systems in accordance with EIA/TIA Standards, NFPA 70, and the cognizant telephone company requirements.

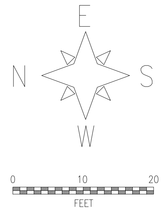
2. **Cable Television System**: Provide all cable television systems in accordance with NFPA 70, and the cognizant cable television company requirements and BICSI recommendations.

# Part 6 Attachments

1. Building 11 Floor Plan
2. Building 13 Floor Plan
3. Building 14 Plumbing Plan – New Work
4. Building 14 As-built Drawings (Upper Level Renovation)
5. Building 14 As-built Drawings (Partial Lower Level Renovation)
6. Proposed Floor Plan Lower Level Building 14




STILL NEED 3 ROOMS

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**Naval Support Activity Bethesda**
**Bethesda**

## Building 11
## Basement 1 Floor

**NFA100000563419**
**ADMINISTRATIVE OFFICE**

Naval District Washington

NAVFAC

Each Space Identified With:

Category Code
Space Description
Net Sq Feet
Room Number

SUBMISSIONS/REVISIONS

| NO. | DATE | ACTION/REMARKS |
|---|---|---|

Drawing Creation Date:
September 2012

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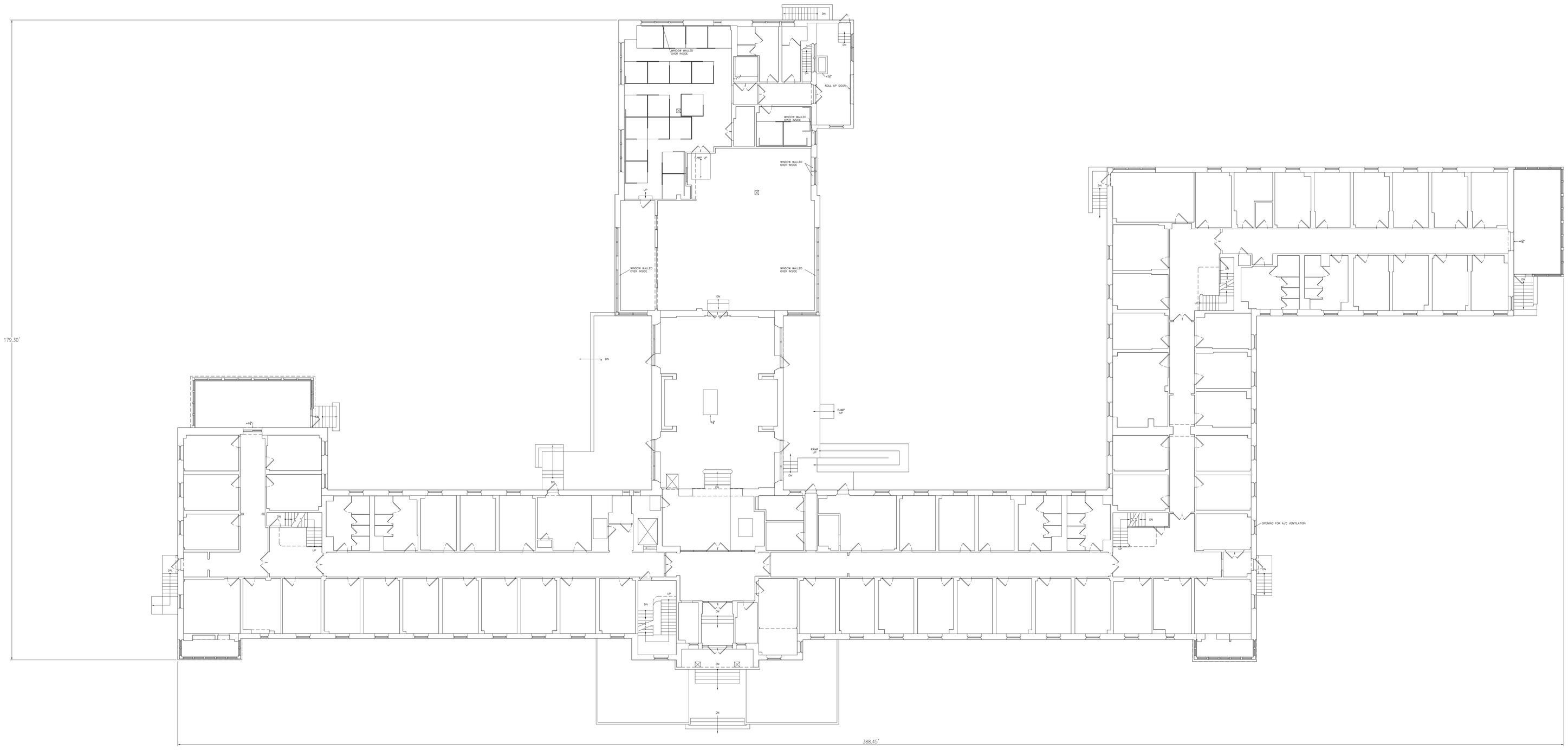


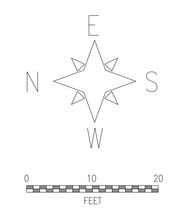


**Naval Support Activity**
**Bethesda**
**Bethesda**

## Building 11
## First Floor

**NFA100000563419**
**ADMINISTRATIVE OFFICE**

Naval District Washington

Each Space Identified With:

Room Number
Space Description
Net Sq Feet
Category Code

SUBMISSIONS/REVISIONS

| NO. | DATE | ACTION/REMARKS |
|---|---|---|

Drawing Creation Date:
September 2012

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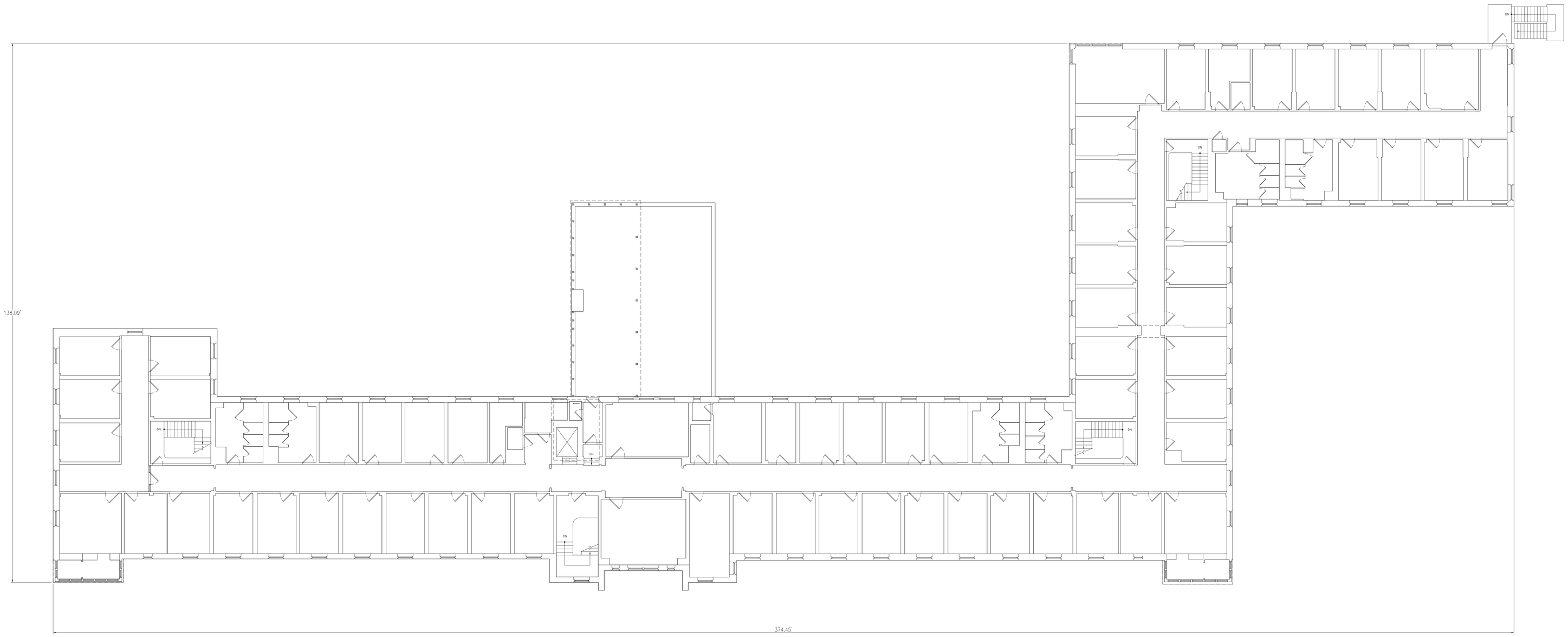


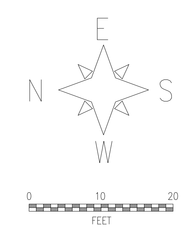


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**Naval Support Activity Bethesda**
**Bethesda**

## Building 11
## Second Floor

**NFA100000563419**
**ADMINISTRATIVE OFFICE**

Naval District Washington

NAVFAC

Each Space Identified With:

Room Number
Space Description
Net Sq Feet
Category Code

SUBMISSIONS/REVISIONS

| NO. | DATE | ACTION/REMARKS |
|---|---|---|

Drawing Creation Date:
September 2012

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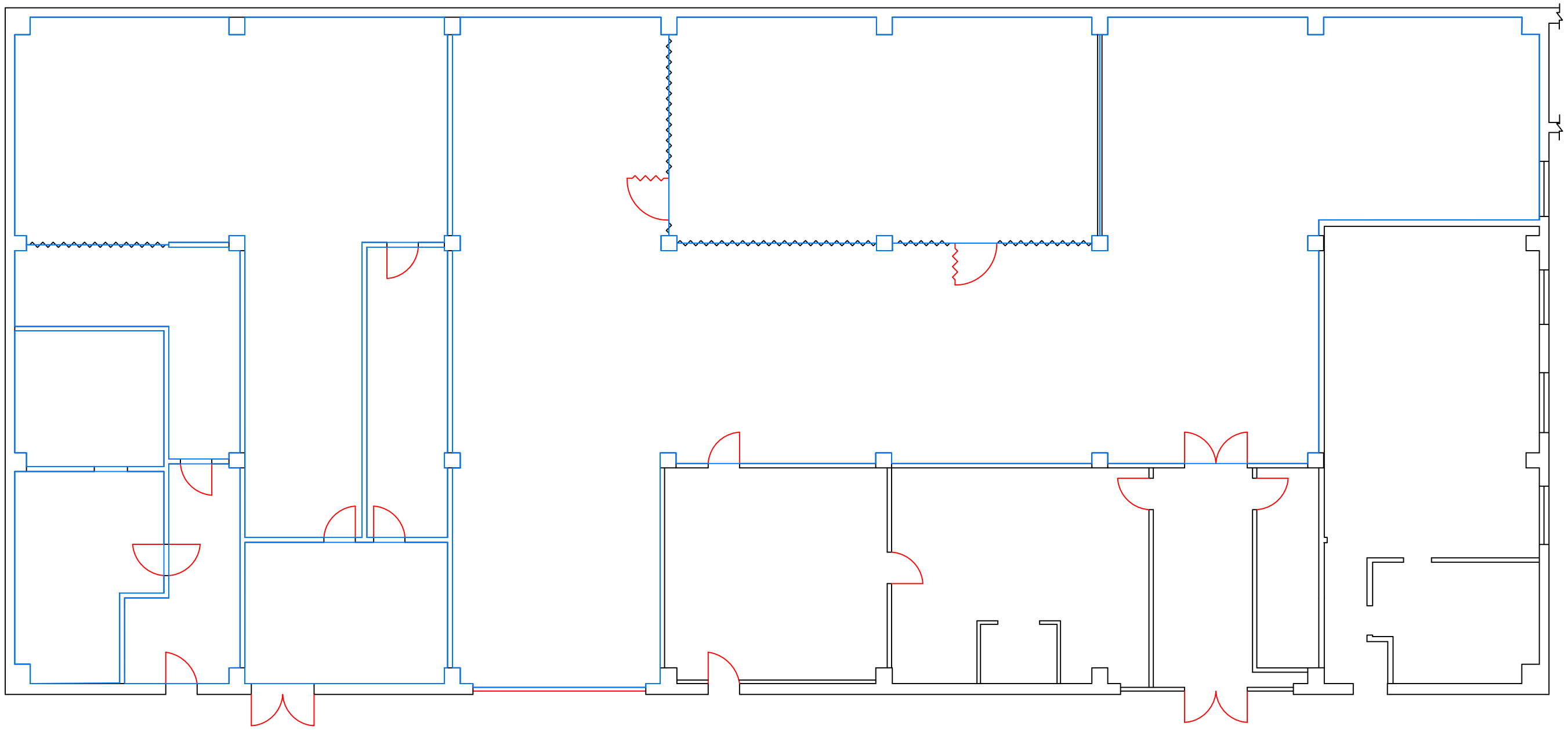
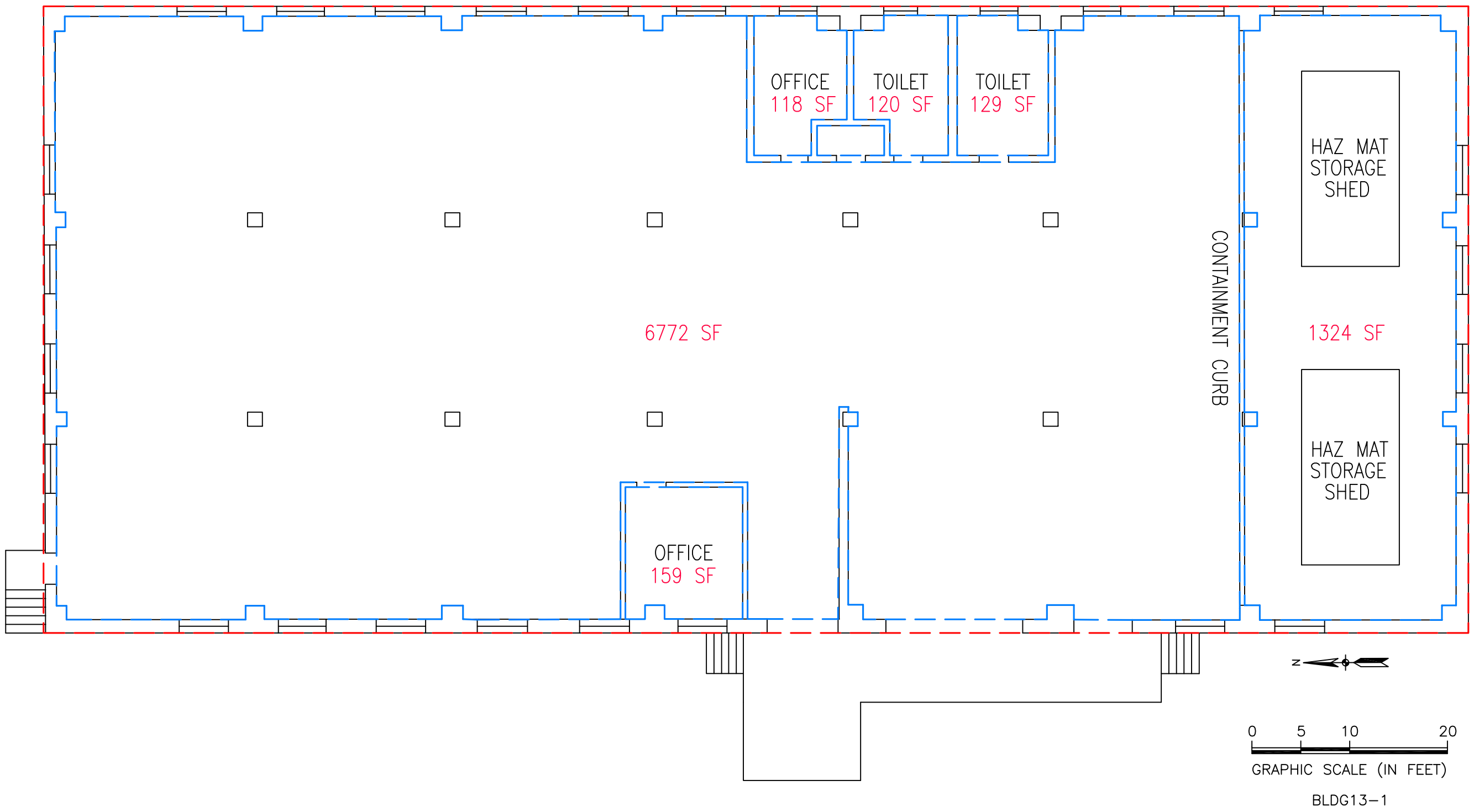


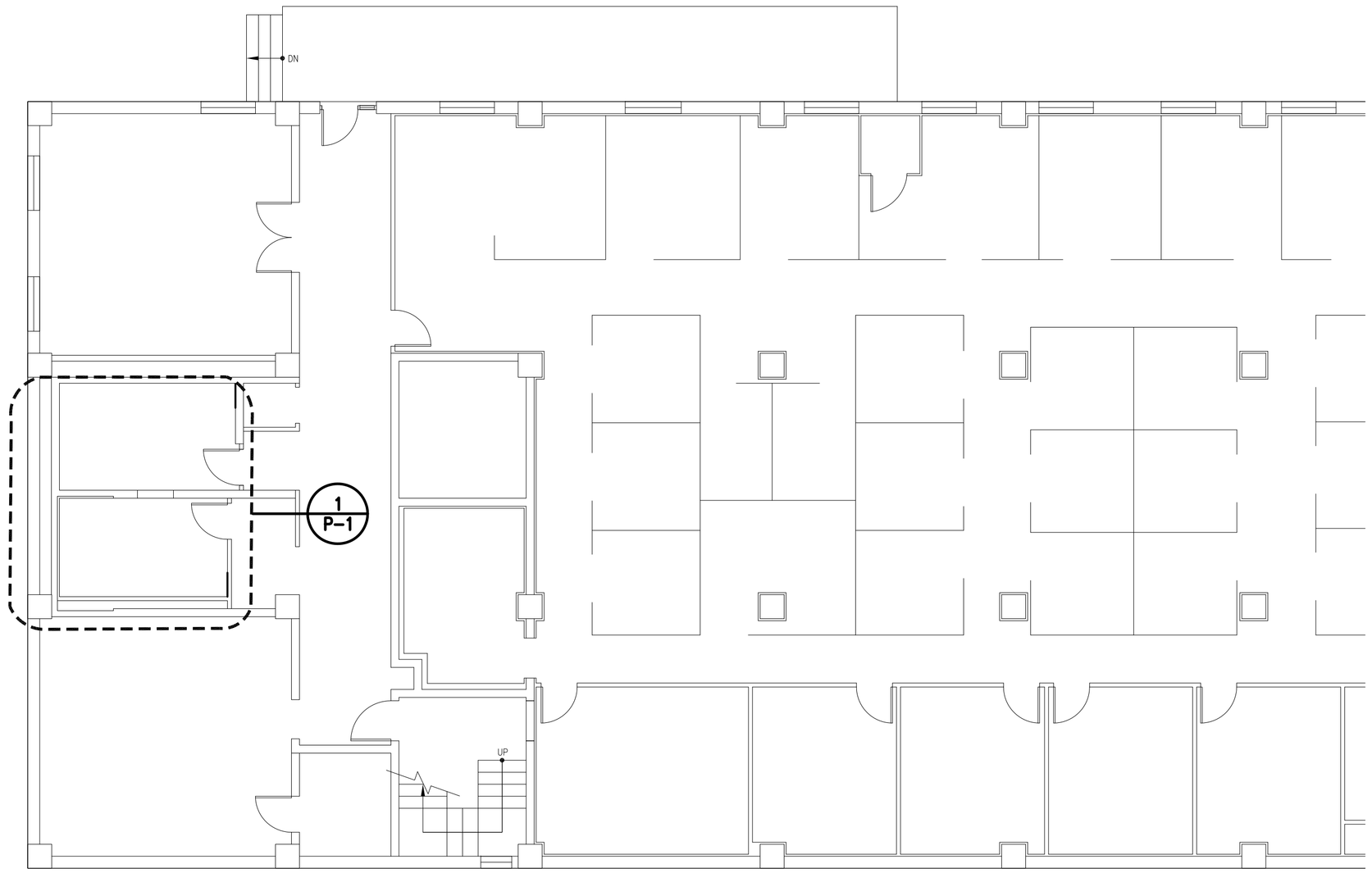
BUILDING 13 LOWER LEVEL FLOOR PLAN

0 5 10 20

GRAPHIC SCALE (IN FEET)



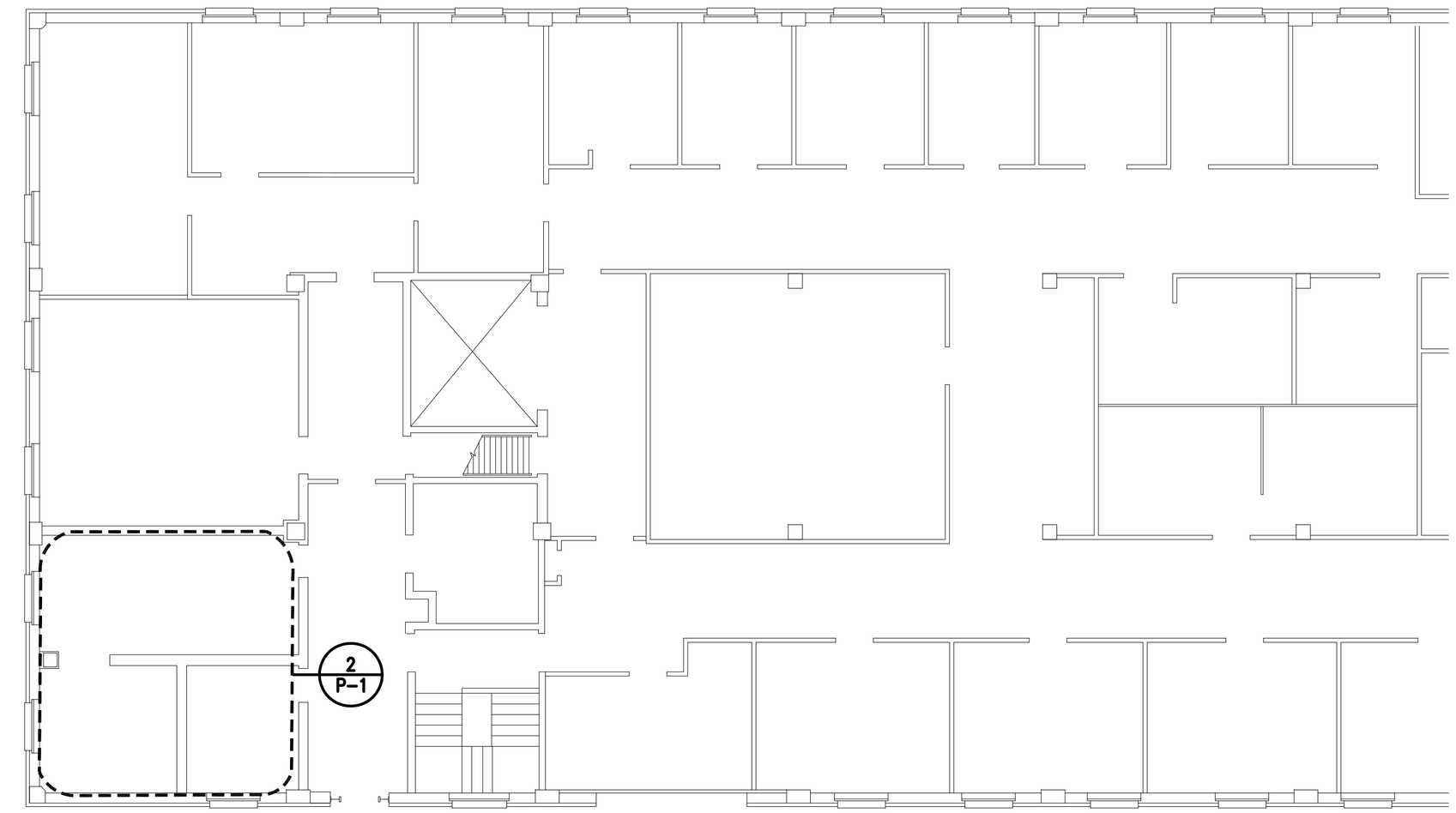

# BUILDING 13 UPPER LEVEL FLOOR PLAN




## BUILDING 14 LOWER LEVEL PLAN - NORTH

SCALE: 1/16" = 1'

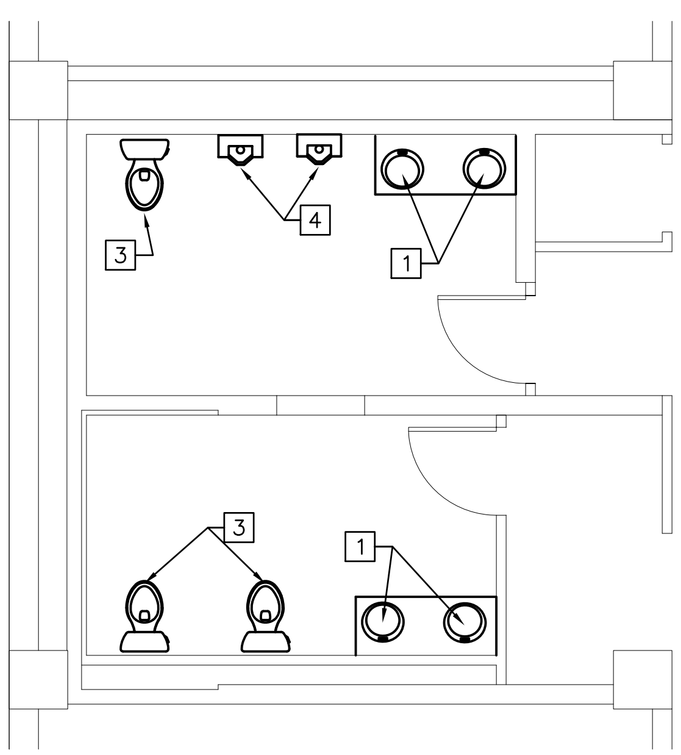
PLAN NORTH




## BUILDING 14 UPPER LEVEL PLAN - NORTH

SCALE: 1/16" = 1'

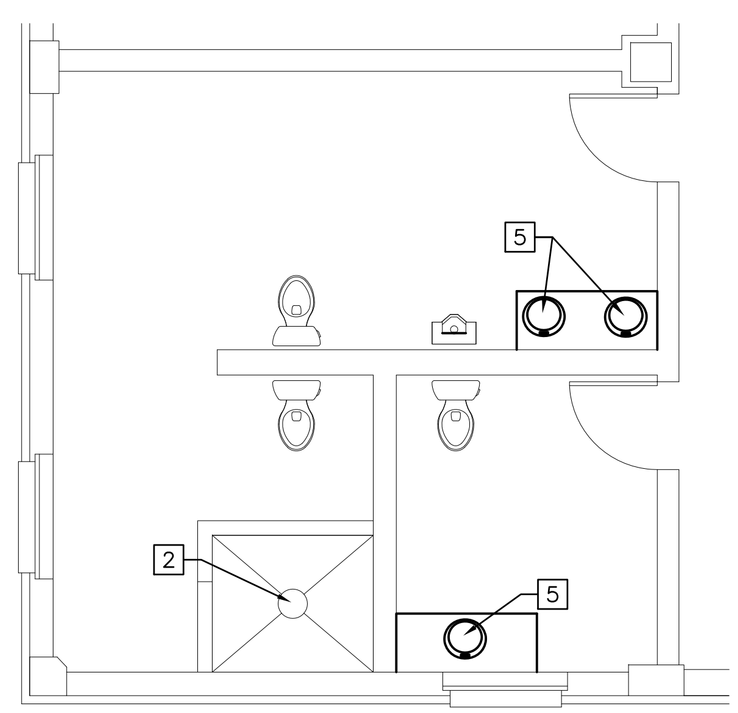
PLAN NORTH




## LOWER LEVEL DETAIL

SCALE: 1/4" = 1'

P-2 1




## UPPER LEVEL DETAIL

SCALE: 1/4" = 1'

P-1 2

## GENERAL NOTES:

1. PERFORM ALL PLUMBING WORK BETWEEN THE HOURS OF 1800 AND 0600.

## WORK NOTES #

1. DEMOLISH WALL HUNG LAVATORIES AND PROVIDE NEW SOLID SURFACE COUNTERTOP LAVATORIES WITH 0.5 GPM AERATORS.

2. REMOVE SHOWER HEAD AND PROVIDE NEW 1.5 GPM SHOWER HEAD.

3. DEMOLISH WATER CLOSET AND PROVIDE NEW 1.28 GPF WALL MOUNT, FLUSH VALVE TYPE WATER CLOSET.

4. DEMOLISH URINAL AND PROVIDE NEW 0.125 GPF HIGH EFFICIENCY URINAL.

5. REMOVE AERATOR AND PROVIDE NEW 0.5 GPM AERATOR AT EXISTING LAVATORIES.

## GRAPHICAL SCALES:

¼" = 1'-0" 5' 0 5' 10'

⅛" = 1'-0" 5' 0 5' 10' 15' 20' 25'

| SYM | DESCRIPTION | DATE | APPR. |
|---|---|---|---|
| | | | |

SEAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

PWD BETHESDA

SATISFACTORY TO DATE DD/MM/YY

DES RJS DRW RJS CHK RJS

<<PM/DM>> XXXX

BRANCH MANAGER XX

CHIEF ENG/ARCH XXX

<<XXX>> XX

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PWD BETHESDA

NAVAL FACILITIES ENGINEERING COMMAND WASHINGTON
BETHESDA, MD

NSA BETHESDA
BETHESDA, MD

Energy Repairs, Buildings 11, 13, 14

PLUMBING PLAN

SCALE: AS NOTED

EPROJECT NO.: 1345987

CONSTR. CONTR. NO.: ##### - H - I - ####

NAVFAC DRAWING NO.: ##########

SHEET 1 OF 1

P-1

DRAWFORM REVISION: 10 MARCH 2009

# LEGEND

NOTE: LIGHT LINEWEIGHT SYMBOLS INDICATE EXISTING DEVICES, EQUIPMENT, CONDUIT, ETC. TO REMAIN. HEAVY LINEWEIGHT SYMBOLS INDICATES NEW DEVICES, EQUIPMENT, TO BE SUPPLIED AND OR INSTALLED. HEAVY & DASHED LINEWEIGHT SYMBOLS INDICATE DEVICES, EQUIPMENT, CONDUIT, ETC. TO BE REMOVED.

A — LIGHTING FIXTURE TYPE SYMBOL. SEE "LIGHTING FIXTURE SCHEDULE" ON SHEET E-101 .

1 — CONSTRUCTION NOTE SYMBOL.

1 — DEMOLITION NOTE SYMBOL.

1 — LIGHTING FIXTURE AND/OR PANELBOARD, SWITCHBOARD SCHEDULE NOTE SYMBOL.

FLUORESCENT LIGHTING FIXTURE.

FLUORESCENT EMERGENCY LIGHTING FIXTURE.

H — FLUORESCENT LIGHTING FIXTURE.

H — EXIT LIGHTING FIXTURE. ARROW, WHEN USED INDICATES DIRECTION (SHADING INDICATES FACE OF SIGN ORIENTATION).

C — DUPLEX CONVENIENCE RECEPTACLE. INDUSTRIAL, EXTRA HEAVY DUTY SPECIFICATION GRADE. 20A, 125VAC, NEMA 5-20R, FLUSH MOUNT 18" AFF UON. SUBSCRIPT "C' INDICATES RECEPTACLE IS DEDICATED TO A COMPUTER LOAD. SUBSCRIPT "GFI" INDICATES INTERNAL GROUND FAULT PROTECTION.

C I — DUPLEX CONVENIENCE RECEPTACLE. INDUSTRIAL, EXTRA HEAVY DUTY SPECIFICATION GRADE. 20A, 125VAC, NEMA 5-20R, FLUSH MOUNT IN BASE OF SYSTEMS FURNITURE. SUBSCRIPT NUMBER INDICATES THE PANEL CIRCUIT NUMBER THAT SERVES THE OUTLET. SUBSCRIPT "C" INDICATES RECEPTACLE IS DEDICATED TO A COMPUTER LOAD.

SINGLE CONVENIENCE RECEPTACLE, INDUSTRIAL, EXTRA HEAVY DUTY SPECIFICATION GRADE. 20A, 125VAC, NEMA 5-20R, FLUSH MOUNT 18" AFF UON.

DOUBLE DUPLEX CONVENIENCE RECEPTACLE. INDUSTRIAL, EXTRA HEAVY DUTY SPECIFICATION GRADE. (2)20A, 125 VAC, NEMA 5-20R, FLUSH MOUNT 18" AFF UON.

SPECIAL RECEPTACLE, TO REMAIN. RELOCATE AS INDICATED ON DRAWINGS.

POWER/TELECOMMUNICATIONS POKE-THRU DEVICE, FLUSH MOUNT, SEE CONFERENCE ROOM FLOOR OUTLET, SHEET E-505.

S — SINGLE POLE SWITCH. 20A, 120/277V, FLUSH MOUNT 48" AFF UON.

$S_O$ — WALL SWITCH OCCUPANCY SENSOR, 20A, 120/277V, FLUSH MOUNT 48" AFF UON. SEE LIGHTING CONTROL PLATE "LC-2", SHEET E-502.

$S_T$ — WALL SWITCH WITH DIGITAL TIMER. 20A, 120/277A, FLUSH MOUNTED 48" AFF UON.

E — EQUIPMENT CONNECTION AS NOTED.

J — JUNCTION BOX (JB) SURFACE MOUNTED.

3P 60/40 — DISCONNECT SWITCH. 240V IN NEMA 1 ENCLOSURE UON. 3P = NO. OF POLES, 60 = SWITCH RATING, 40 = FUSE RATING (NF INDICATES NON-FUSIBLE).

ELECTRICAL PANELBOARD (208Y/120V).

BRANCH CIRCUIT OR FEEDER WIRING IN CONDUIT. NO TICK MARKS INDICATE 2 #12 CONDUCTORS AND 1 #12 GND IN 1/2"C UON. TICK MARKS, WHEN SHOWN, INDICATE NO. OF #12 CONDUCTORS IF OTHER THAN THREE; ( ) INDICATES GND, CONDUIT LARGER THAN 1/2" AND WIRE LARGER THAN #12 SHALL BE AS INDICATED.

LA-1,3 — HOMERUNS TO PANEL. PANEL AND CIRCUIT DESIGNATIONS AS INDICATED.

▲ — TELECOMMUNICATIONS OUTLET FOR WRNMMC NETWORK, FLUSH MOUNT 18" AFF UON. SEE OUTLET DETAIL ON SHEET E-504.

△ — TELECOMMUNICATIONS OUTLET FOR NMCI NETWORK, FLUSH MOUNT 18" AFF UON. SEE OUTLET DETAIL ON SHEET E-504.

1 — TELECOMMUNICATIONS OUTLET FOR WRNMMC NETWORK, SUBSCRIPT INDICATES THE TELECOMMUNICATIONS FLEX CONNECTION THAT SERVES THE OUTLET, MOUNT ON BASE OF SYSTEMS FURNITURE. SEE OUTLET DETAIL ON SHEET E-504.

F — FLEX CONNECTION TO SYSTEMS FURNITURE.

1 — TELECOMMUNICATIONS OUTLET FOR NMCI NETWORK, SUBSCRIPT INDICATES THE TELECOMMUNICATIONS FLEX CONNECTION THAT SERVES THE OUTLET, MOUNT ON BASE OF SYSTEMS FURNITURE. SEE OUTLET DETAIL ON SHEET E-504.

WALL TELEPHONE OUTLET. FLUSH MOUNT 54" AFF UON. SEE OUTLET DETAIL ON SHEET E-504.

J 1 — JUNCTION BOX (JB) FLUSH MOUNTED, FOR CONNECTION TO SYSTEMS FURNITURE. SUBSCRIPT INDICATES JB NUMBER, SEE "SYSTEM FURNITURE DETAILS", SHEET E-504.

$S_D$ — FLUORESCENT DIMMER SWITCH, 20A, 120/277V, FLUSH MOUNT 48" AFF.

$S_{L3}$ — 3-WAY LIGHTING SWITCH, 20A, 120/277V, FLUSH, MOUNT 48" AFF UON. SWITCH SHALL BE PROVIDED AS A PART OF THE LIGHTING CONTROL SYSTEM. SEE "LIGHTING CONTROL PANEL NOTES", SHEET E-503.

$S_{L4}$ — 4-WAY LIGHTING SWITCH, 20A, 12./277V, FLUSH, MOUNT 48" AFF UON. SWITCH SHALL BE PROVIDED AS A PART OF THE LIGHTING CONTROL SYSTEM. SEE "LIGHTING CONTROL PANEL NOTES", SHEET E-503.

TV — DUPLEX RECEPTACLE FOR TV MONITOR. 20A, 125VAC, NEMA 5-20R, FLUSH MOUNT 72" AFF UON.

HDMI SPECIAL OUTLET. PROVIDE WITH HDMI TO HDMI FEMALE TO FEMALE CONNECTOR. SUBSCRIPT "C" INDICATES TO FLUSH MOUNT 18" AFF ADJACENT TO TELECOMMUNICATIONS OUTLET. SUBSCRIPT "TV" INDICATES TO FLUSH MOUNT ADJACENT TO TV RECEPTACLE.

B — PUSHBUTTON FOR DOORBELL SYSTEM. 24VAC, MOMENTARY CONTACT, FLUSH MOUNT 48" AFF UON.

SD — SOUNDING DEVICE FOR DOORBELL SYSTEM. 24VAC, SURFACE MOUNT 7'-0" AFF UON.

CR — DUAL 2"x4" JUNCTION BOXES, FLUSH MOUNT 48" UON. ONE JUNCTION BOX SHALL BE DEDICATED TO THE CARD READER AND THE SECOND JUNCTION BOX SHALL BE DEDICATED TO A KEYPAD.

BS — JUNCTION BOX, FLUSH MOUNTED FOR BALANCED MAGNETIC SWITCH.

LC — LIGHTING CONTROL PANEL FOR CONFERENCE ROOM, FLUSH MOUNT 48" AFF UON.

OS — CEILING OCCUPANCY SENSOR, DUAL TECHNOLOGY TYPE. 24VDC, CEILING MOUNT. SENSOR SHALL BE PROVIDED AS A PART OF THE LIGHTING CONTROL SYSTEM. SEE "LIGHTING CONTROL PANEL NOTES", AND LIGHTING CONTROL PLATE "LC-7", SHEET E-503.

OS — WIDE VIEW SENSOR, DUAL TECHNOLOGY TYPE. 24VDC, WALL MOUNT 7'-6" AFF UON. SENSOR SHALL BE PROVIDED AS A PART OF THE LIGHTING CONTROL SYSTEM. SEE "LIGHTING CONTROL PANEL NOTES", AND LIGHTING CONTROL PLATE "LC-4", SHEET E-503.

OS — CEILING OCCUPANCY SENSOR, DUAL TECHNOLOGY TYPE. 20A, 120/277V, CEILING MOUNT. SEE LIGHTING CONTROL PLATE "LC-5", SHEET E-502.

▼ — EXISTING ISDN OUTLET, TO REMAIN.

# ABBREVIATIONS

| | | | |
|---|---|---|---|
| ø, PH | PHASE | NF | NONFUSIBLE |
| A, AMP | AMPERE | P | POLE |
| AFF | ABOVE FINISHED FLOOR | 1 PH | SINGLE PHASE |
| EWC | ELECTRIC WATER COOLER | 3 PH | THREE PHASE |
| EMT | ELECTRICAL METALLIC TUBING | PNL | PANELBOARD |
| GFI | GROUND FAULT INTERRUPTER | UON | UNLESS OTHERWISE NOTED |
| GND | GROUND | V | VOLT, VOLTAGE |
| JB | JUNCTION BOX | WP | WEATHERPROOF |

# SITE WORK REQUIREMENTS

1. PULL 24-STRAND SM FIBER FROM L1U-1 IN ROOM 131 OF BUILDING 14, DOWN TO CEILING SPACE OF GROUND FLOOR AND RUN TO WEST END OF BUILDING. LOCATE EXISTING SERVICE ENTRANCE CONDUIT THAT RUNS TO COMMUNICATIONS MANHOLE 5707 AND PULL FIBER THROUGH DUCT INTO CMH 5707 AND CONTINUING THROUGH EXISTING DUCT TO AN UNMARKED CMH ON THE SOUTH SIDE OF NORTH PALMER ROAD, LOCATED ON THE NORTH SIDE OF BUILDING 20 IN FRONT OF THE FIREHOUSE TRAILER. FROM THIS CMH, RUN FIBER IN EXISTING DUCT INTO BUILDING 27 AND TERMINATE IN ROOM 1132 AS DIRECTED BY THE GOVERNMENT.

2. PULL 24-STRAND SM FIBER FROM L1U-1 IN ROOM 131 OF BUILDING 14, DOWN TO CEILING SPACE OF GROUND FLOOR AND RUN TO WEST END OF BUILDING. LOCATE EXISTING SERVICE ENTRANCE CONDUIT THAT RUNS TO CMH 5707 AND PULL FIBER THROUGH DUCT INTO CMH 5707 AND CONTINUING THROUGH EXISTING DUCT TO AN UNMARKED CMH ON THE SOUTH SIDE OF NORTH PALMER ROAD, LOCATED ON THE NORTH SIDE OF BUILDING 20 IN FRONT OF THE FIREHOUSE TRAILER. CONTINUE PULLING FIBER THROUGH EXISTING DUCT TO AN UNMARKED CMH IN FRONT OF BUILDING 54 TO THE SECURITY STORAGE ROOM IN THE BASEMENT OF BUILDING 2 AND UP THROUGH THE MAIN SHAFT TO BUILDING 2, ROOM 2152 AND THEN EXTENDING TO ROOM 3256.

# GENERAL NOTES

1. ELECTRICAL DESIGN HAS BEN PERFORMED UTILIZING A DEDICATED (NON-SHARED) NEUTRAL CONDUCTOR FOR EACH 120V SINGLE PHASE CIRCUIT, AND HAVING NO MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A SINGLE RACEWAY. PROVIDE A DEDICATED NEUTRAL CONDUCTOR FOR EACH 120 CIRCUIT.
2. OUTLET BOXES SHALL NOT BE MOUNTED BACK TO BACK IN WALLS.
3. MECHANICAL EQUIPMENT IS SHOWN IN APPROXIMATE LOCATIONS. FOR EXACT LOCATIONS OF MECHANICAL EQUIPMENT AND PIPING, SEE MECHANICAL DRAWINGS.
4. PENETRATIONS THROUGH FIRE RATED FLOORS AND WALLS SHALL BE SEALED TO MAINTAIN THE FIRE RATING INTEGRITY OF THE FLOORS AND WALLS.
5. ELECTRICAL DISTRIBUTION FEEDERS, BRANCH CIRCUITS AND CABLE TRAY SHALL BE COORDINATED WITH THE LOCATION OF THE MAIN MECHANICAL DUCTS PRIOR TO INSTALLATION.
6. COORDINATE ALL CEILING MOUNTED ELECTRICAL ITEMS WITH ARCHITECTURAL REFLECTED CEILING PLAN.
7. ALL ELECTRICAL DEVICES, WIRING, EQUIPMENT, ETC LOCATED ABOVE THE FIRST FLOOR CEILING SHALL BE RATED FOR INSTALLATION IN A PLENUM CEILING.
8. SEE SHEET E-605 FOR IDENTIFICATION REQUIREMENTS FOR BOXES, DEVICE AND CONDUITS.
9. REFER TO "ENLARGED ROOM 001 FLOOR PLAN – NEW WORK", SHEET E-401, FOR WORK IN THIS ROOM ON THE GROUND FLOOR.

# PHASING NOTES

1. AT THE BEGINNING OF PHASE 1 CONSTRUCTION NEW ROOMS 131 AND 135 SHALL BE BUILT OUT AND MADE FULLY FUNCTIONAL. ALL ELECTRICAL DISTRIBUTION CIRCUITS SHALL BE INSTALLED AND TEMPORARY FEEDS SHALL BE IN PLACE TO EXISTING PANELS P2-1, P2-2 AND P2-3. ANY REQUIRED POWER OUTAGE SHALL BE PERFORMED AT NIGHT OR OVER WEEKENDS. EXISTING PANELS SHALL REMAIN IN PLACE UNTIL SUCH TIME THAT ALL BRANCH CIRCUITS TO A PANEL HAVE BEEN DEMOLISHED, AND THEN THE PANEL SHALL BE REMOVED COMPLETE. SEE 'POWER RISER NOTES", SHEET E-601, FOR SPECIFIC REQUIREMENTS.
2. NO DEMOLITION SHALL OCCUR IN EXISTING SERVER ROOM 143 UNTIL SUCH TIME THAT ALL EXISTING DATA CIRCUITS HAVE BEEN DEMOLISHED, REROUTED TO NEW ROOM 131, OR TEMPORARILY RELOCATED TO ABOVE THE CEILING. THERE SHALL BE A DUAL WRNMMC NETWORK SYSTEM (ONE SYSTEM IN EXISTING ROOM 143 AND ONE IN NEW ROOM 131) OPERATING CONCURRENTLY. ONCE ALL DATA CIRCUITS HAVE BEEN REMOVED FROM EXISTING ROOM 143, AND THE SIEMENS AND JOHNSON CONTROLS SERVERS HAVE BEEN RELOCATED, EXISTING ROOM 143 CAN BE COMPLETELY DEMOLISHED. SEE DEMOLITION AND CONSTRUCTION NOTES ON E-401 FOR SPECIFIC REQUIREMENTS.
3. THE CONTRACTOR SHALL HAVE THE OPTION TO RELOCATE THE EXISTING NMCI WALL CABINET TO ABOVE THE CEILING PRIOR TO INSTALLATION OF A NEW CABINET OR RELOCATION OF THIS CABINET TO NEW ROOM 131. THIS WOULD ALLOW THE DEMOLITION OF ROOM 143 TO TAKE PLACE IN PHASE 2. COORDINATE ALL WORK WITH NMCI REPRESENTATIVE AND THE CONTRACTING OFFICER.

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND — JOHN ALBERT SCHIFFBAUER — No. 23813 — 4-12-13 — REGISTERED PROFESSIONAL ENGINEER

12-022A


BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206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BRANCH MANAGER

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NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ WASHINGTON
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
BETHESDA NAVY MEDICAL CENTER
FMD RENOVATION, BUILDING 14
FIRST FLOOR
LEGEND AND ABBREVIATIONS

SCALE: AS NOTED

EPROJECT NO.: –

CONSTR. CONTR. NO. N40080-12-R-4422

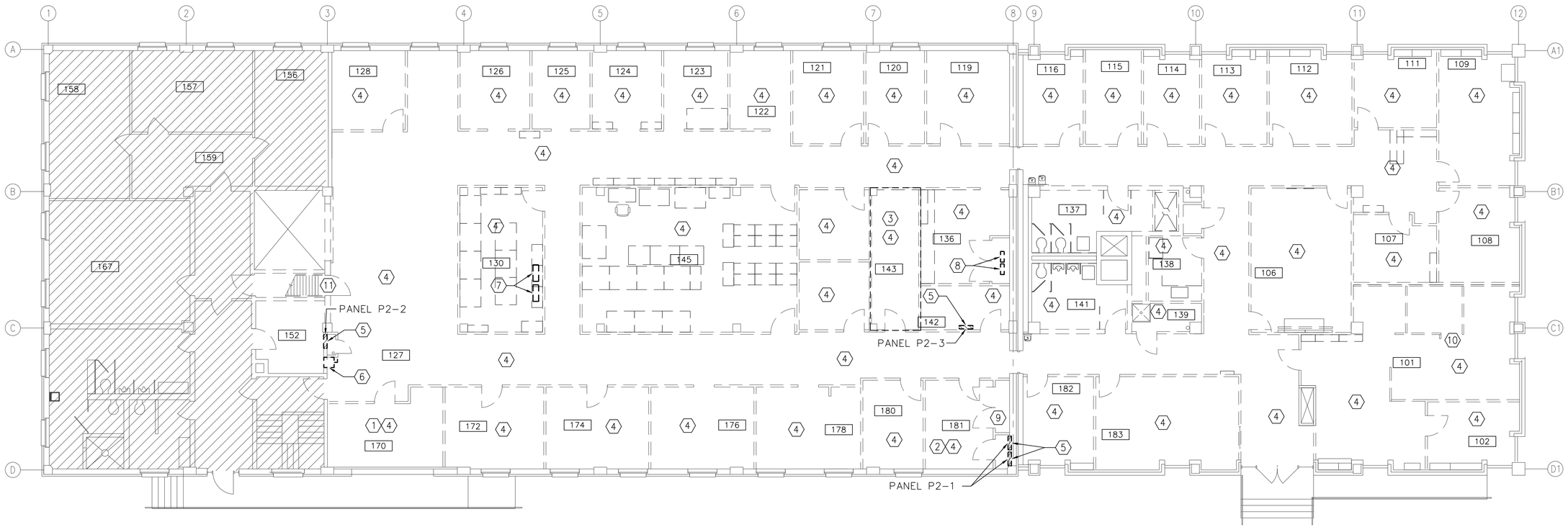
NAVFAC DRAWING NO. 13056438

SHEET 36 OF 53

E-001

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO, B-14\NAVIGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-001 LEGEND AND ABBREVATIONS.dwg LAYOUT NAME: E-001 LEGEND AND ABBREVATIONS PLOTTED: Friday, April 12, 2013 - 1:02pm USER: bfunderwhile

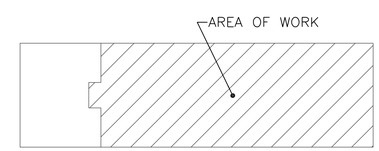



## FIRST FLOOR PLAN - DEMOLITION

SCALE: 1/8" = 1'-0"

## DEMOLITION NOTES (THIS SHEET ONLY)

1. BUILD OUT FOR NEW SERVER ROOM 131 SHALL BE THE FIRST WORK PERFORMED UNDER PHASE 1 DEMOLITION. SEE "ELECTRICAL PHASING NOTES", SHEET E-001.
2. BUILD OUT FOR THE NEW ELECTRICAL ROOM 144 SHALL OCCUR SIMULTANEOUSLY WITH THE BUILD OUT FOR THE NEW SERVER ROOM 131. SEE "ELECTRICAL PHASING NOTES", SHEET E-001.
3. DEMOLITION OF THE SERVER ROOM 143 SHALL TAKE PLACE IN THE LAST PHASE OF DEMOLITION. SEE "ENLARGED ROOM 143 FLOOR PLAN - DEMOLITION", SHEET E-401.
4. REMOVE LIGHTING FIXTURES, SWITCHES, RECEPTACLES, DATA OUTLETS AND ELECTRICAL DEVICES COMPLETE. REMOVE WIRING AND CONDUIT COMPLETE BACK TO SOURCE OF POWER.
5. REMOVE PANELBOARD COMPLETE. REFER TO "POWER RISER DIAGRAM", SHEET E-601, AND "ELECTRICAL PHASING NOTES", SHEET E-001.
6. REMOVE DISCONNECT SWITCH COMPLETE. REMOVE WIRING AND CONDUIT COMPLETE BACK TO PANEL P2-3.
7. DISCONNECT VFD, REMOVE AND RELOCATE TO PENTHOUSE. EXTEND EXISTING BRANCH CIRCUIT TO NEW LOCATION FOR VFD AND RECONNECT. JCI CONTROL PANELS WILL BE REMOVED AND RELOCATED BY MECHANICAL CONTRACTOR. FIRE ALARM CONTROL MODULES WILL BE REMOVED AND RELOCATED BY FIRE ALARM CONTRACTOR. SEE "ROOF POWER PLAN - NEW WORK", SHEET E-105.
8. DISCONNECT VFD, REMOVE AND RELOCATE TO ROOM 144. EXTEND EXISTING BRANCH CIRCUIT TO NEW LOCATION FOR VFD AND RECONNECT. JCI CONTROL PANELS WILL BE REMOVED AND RELOCATED BY MECHANICAL CONTRACTOR. FIRE ALARM CONTROL MODULES WILL BE REMOVED AND RELOCATED BY FIRE ALARM CONTRACTOR. SEE "ENLARGED ROOM 144 FLOOR PLAN - NEW WORK", SHEET E-401.
9. REMOVE ALL EXISTING AND ABANDONED TELECOMMUNICATIONS CIRCUITS IN CLOSET COMPLETE BACK TO ELECTRICAL ROOM 014 ON GROUND FLOOR. ROOM 014 IS LOCATED DIRECTLY BELOW ROOM 181.
10. DISCONNECT BAS WORKSTATION AND RELOCATE TO NEW WORKSTATION AREA 123. WORKSTATION SHALL BE RELOCATED ON A WEEKEND ONCE THE NEW POWER AND NETWORK SYSTEMS ARE RUNNING AND FULLY OPERATIONAL.
11. REMOVE SWITCHES, BOXES, CONDUIT AND ALL ELECTRICAL DEVICES THAT INTERFERE WITH NEW CONSTRUCTION FOR PENTHOUSE ACCESS.




## KEY PLAN

NO SCALE

NOTE: IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

GRAPHIC SCALE:

1/8"=1'-0" 0' 5' 10' 20' 30'

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND SEAL — 4-12-13 — REGISTERED PROFESSIONAL ENGINEER

12-022A

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

A/E INFO

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BRANCH MANAGER

CHIEF ENG/ARCH

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DEPARTMENT OF THE NAVY
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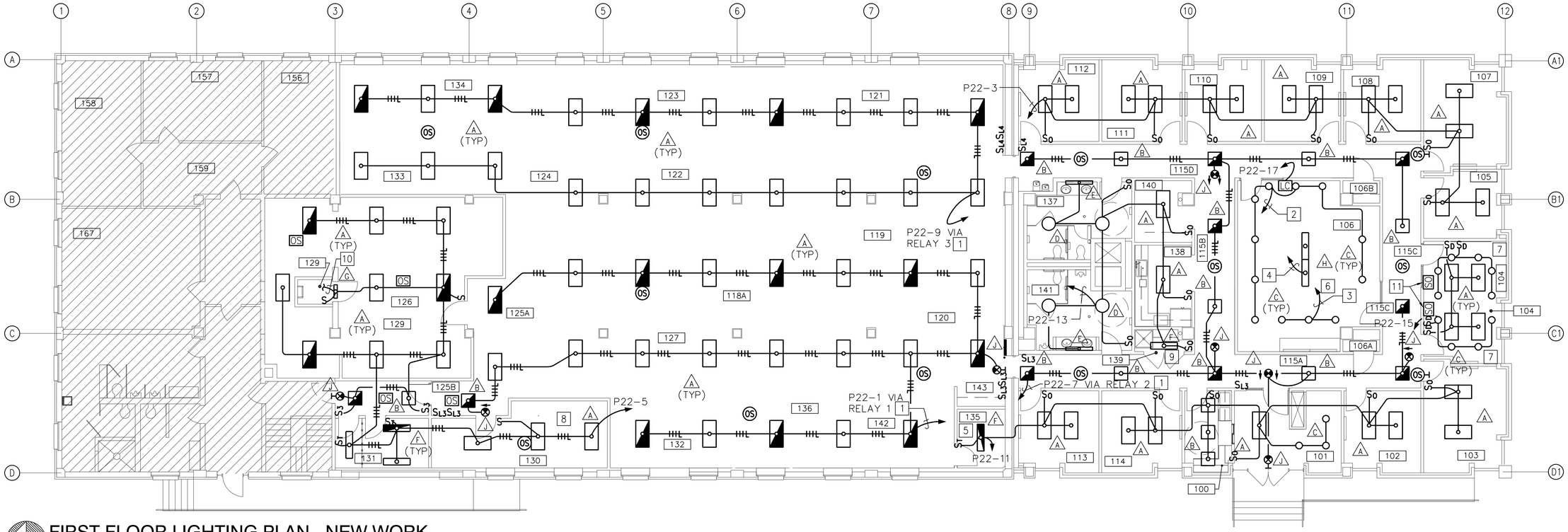
BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
FIRST FLOOR PLAN - DEMOLITION

SCALE: AS NOTED
EPROJECT NO.: -
CONSTR. CONTR. NO. N40080-12-R-4422
NAVFAC DRAWING NO. 13056694
SHEET 37 OF 53

ED101

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO, B-14\NAVGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\ED101 FIRST FLOOR PLAN - DEMOLITION.dwg LAYOUT NAME: ED101 FIRST FLOOR PLAN - DEMOLITION PLOTTED: Thursday, April 11, 2013 - 1:52pm USER: iperotta




## FIRST FLOOR LIGHTING PLAN - NEW WORK

SCALE: 1/8" = 1'-0"

## CONSTRUCTION NOTES (THIS SHEET ONLY)

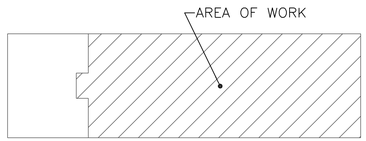
1. SEE "LIGHTING CONTROL DIAGRAM", SHEET E-503, FOR WIRING DIAGRAM OF THIS CIRCUIT.
2. LOAD 1 FOR CONFERENCE ROOM LIGHTING CONTROL.
3. LOAD 2 FOR CONFERENCE ROOM LIGHTING CONTROL.
4. LOAD 3 FOR CONFERENCE ROOM LIGHTING CONTROL.
5. SEE "ENLARGED ROOM 135 FLOOR PLAN – NEW WORK", SHEET E-401, FOR PANELBOARD LOCATIONS.
6. SEE "ROOM 106 LIGHTING DIAGRAM", SHEET E-502, FOR WIRING DIAGRAM OF THE LIGHTING CONTROLS IN THIS ROOM.
7. SEE "ROOM 104 LIGHTING DIAGRAM", SHEET E-502, FOR WIRING DIAGRAM OF THE LIGHTING CONTROLS IN THIS ROOM.
8. SEE LIGHTING CONTROL PLATE LC-7, SHEET E-503, FOR WIRING DIAGRAM FOR THE LIGHTING CIRCUIT IN THIS ROOM.
9. CEILING MOUNT TYPE F FIXTURE.
10. SEE "ROOF POWER PLAN – NEW WORK", SHEET E-105, FOR CONTINUATION.
11. EACH OCCUPANCY SENSOR SHALL OPERATE INDEPENDENTLY OF THE OTHER, SUCH THAT ONE SENSOR SHALL CONTROL THE LIGHTING FIXTURES EAST SIDE OF ROOM 104 AND THE OTHER SENSOR SHALL CONTROL THE LIGHTING FIXTURES ON THE WEST SIDE OF ROOM 104.

## LIGHTING FIXTURE SCHEDULE

| FIXTURE SYMBOL | SKETCH NO. & TYPE | NUMBER AND TYPE OF LAMPS | WATTAGE | VOLTAGE | MOUNTING | NOTES |
|---|---|---|---|---|---|---|
| A | MOD-8 | (2) F32T8/SPX41 | 50 | 120 | RECESS | 1 2 |
| B | MOD-9 | (2) F17T8/SPX41 | 25 | 120 | RECESS | 2 3 |
| C | NL-31, TYPE A | (1) F32TBX/841 | 35 | 120 | RECESS | 5 |
| D | NL-26 | (1) 22W CIRCLINE<br>(1) 32W CIRCLINE | 45 | 120 | CEILING | |
| E | MOD-5 | (2) F32T8/SPX41 | 50 | 120 | RECESS | 1 |
| F | NL-13 | (2) F32T8/SPX41 | 50 | 120 | PENDENT | 1 2 7 |
| G | NL-24, TYPE A | (2) F17T8/SPX4 | 25 | 120 | WALL | 3 4 |
| H | MOD-17 TYPE B | (3) F32T8/SPX41 | 75 | 120 | PENDENT | 1 6 |
| J | NL-63 | LED | 5 | 120 | SURFACE | |

NOTES:

1. PROVIDE FIXTURE WITH 3100 HIGH LUMEN LAMPS, AND LOW BALLAST FACTOR (0.78) BALLAST. PROVIDE FIXTURE IN CONFERENCE ROOM 104 WITH DIMMING BALLAST.
2. PROVIDE FIXTURE WITH EMERGENCY BALLAST WHERE INDICATED ON DRAWINGS.
3. PROVIDE FIXTURE WITH 1400 HIGH LUMEN LAMPS, AND LOW BALLAST FACTOR (0.71) BALLAST.
4. WALL MOUNT FIXTURE CENTERED 6" ABOVE TOP OF DOOR FRAME.
5. PROVIDE FIXTURE WITH DIMMING BALLAST IN CONFERENCE ROOMS 104 AND 106.
6. PENDENT MOUNT TOP OF FIXTURE 18" BELOW FINISHED CEILING.
7. PENDENT MOUNT FIXTURE 9'-0" AFF UON.




## KEY PLAN

NO SCALE

NOTE: IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

GRAPHIC SCALE:

1/8"=1'-0" 0' 5' 10' 20' 30'

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND — JAMES G. ROSSI — No. 22492 — REGISTERED PROFESSIONAL ENGINEER — 4-12-13

12-022A

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

A/E INFO

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CHIEF ENG/ARCH

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DEPARTMENT OF THE NAVY
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BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
FIRST FLOOR LIGHTING PLAN – NEW WORK

SCALE: AS NOTED

EPROJECT NO.: -

CONSTR. CONTR. NO. N40080-12-R-4422

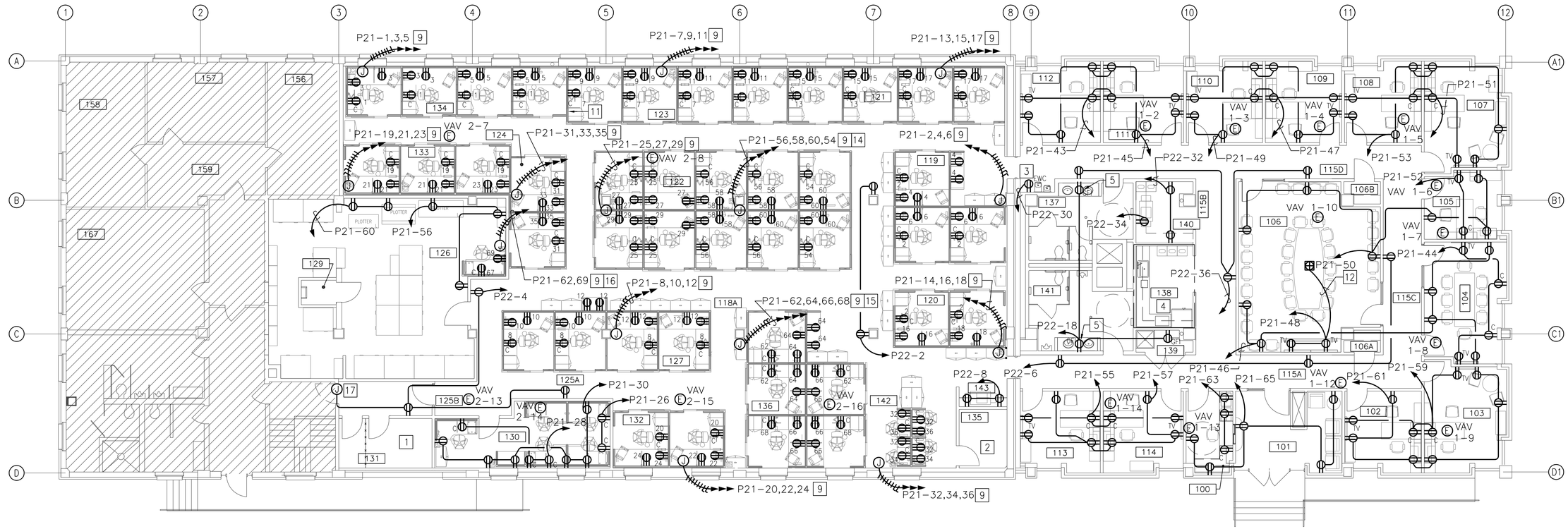
NAVFAC DRAWING NO. 13056695

SHEET 38 OF 53

E-101

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO. B-14\NAVIGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-101 FIRST FLOOR LIGHTING PLAN – NEW WORK.dwg LAYOUT NAME: E-101 FIRST FLOOR LIGHTING PLAN – NEW WORK PLOTTED: Thursday, April 11, 2013 – 1:52pm USER: jperalta

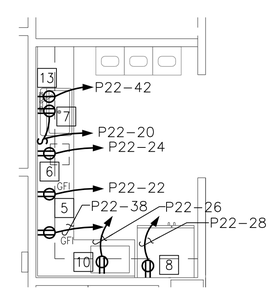



## FIRST FLOOR POWER PLAN - NEW WORK

SCALE: 1/8" = 1'-0"

## CONSTRUCTION NOTES (THIS SHEET ONLY)

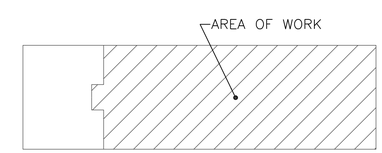
1. SEE "ENLARGED ROOM 131 FLOOR PLAN – NEW WORK", SHEET E-401, FOR WORK IN THIS AREA.
2. SEE "ENLARGED ROOM 144 FLOOR PLAN – NEW WORK", SHEET E-401, FOR WORK IN THIS AREA.
3. COORDINATE EXACT MOUNTING HEIGHT OF RECEPTACLE FOR EWC.
4. SEE "ENLARGED ROOM 138 FLOOR PLAN", THIS SHEET, FOR WORK IN THIS AREA.
5. MOUNT RECEPTACLE 6" ABOVE COUNTERTOP.
6. COORDINATE EXACT MOUNTING HEIGHT OF RECEPTACLE WITH EQUIPMENT SUPPLIER FOR THE WASTE COMPACTOR.
7. MOUNT RECEPTACLE 18" AFF UNDER SINK FOR CONNECTION OF GARBAGE DISPOSAL. RECEPTACLE SHALL BE CONTROLLED BY SWITCH LOCATED BY THE SINK. MOUNT SWITCH 6" ABOVE COUNTERTOP.
8. MOUNT RECEPTACLE 48" AFF FOR REFRIGERATOR.
9. FLUSH MOUNT JUNCTION BOX 18" AFF FOR CONNECTION TO FURNITURE SYSTEM. COORDINATE EXACT LOCATION WITH FURNITURE EQUIPMENT SUPPLIER.
10. MOUNT RECEPTACLE BEHIND SHELF MOUNTED MICROWAVE UNIT. SEE DETAIL "F", SHEET A-401 FOR EXACT LOCATION OF MICROWAVE.
11. NEW LOCATION FOR THE BAS MONITORING WORKSTATION. SEE DEMOLITION NOTE 10 ON SHEET ED101.
12. 1" CONDUIT SHALL BE RUN BELOW FIRST FLOOR SLAB IN GROUND FLOOR CEILING SPACE. SEE "FLUSH FLOOR POKE THROUGH DETAIL", SHEET E-503, FOR CONNECTION INTO POKE THROUGH BOX.
13. MOUNT SINGLE RECEPTACLE 18" AFF UNDER SINK FOR CONNECTION OF "INSTANT 180" WATER HEATER.
14. CIRCUIT P21-54 SHALL BE CONNECTED TO THE PINK, THE WHITE WITH PINK STRIPE, AND THE GROUND WITH YELLOW STRIPE CONDUCTORS IN THE SYSTEMS FURNITURE.
15. CIRCUIT P21-68 SHALL BE CONNECTED TO THE PINK, THE WHITE WITH PINK STRIPE, AND THE GROUND WITH YELLOW STRIPE CONDUCTORS IN THE SYSTEMS FURNITURE.
16. THE BLUE, WHITE WITH BLUE STRIPE, PINK, AND WHITE WITH PINK STRIPE CONDUCTORS WILL NOT BE USED IN THIS SECTION OF THE SYSTEMS FURNITURE.
17. JUNCTION BOX ABOVE CEILING FOR 120V POWER TO ELECTROMAGNETIC DOOR HOLDING DEVICE.




## ENLARGED ROOM 138 FLOOR PLAN

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

SEE VARIABLE AIR TERMINAL UNIT CONNECTION SCHEDULE, SHEET E-105, FOR VAV SIZES AND CIRCUIT DESIGNATIONS




## KEY PLAN

NO SCALE

NOTE: IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

GRAPHIC SCALE:

1/4"=1'-0" 1' 0' 1' 5' 10' 15'

1/8"=1'-0" 0' 5' 10' 20' 30'

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND — JOHN DAVID WEBSTER — REGISTERED PROFESSIONAL ENGINEER — 4-12-13

12-022A

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

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NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ WASHINGTON
BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
FIRST FLOOR POWER PLAN – NEW WORK

SCALE: AS NOTED

EPROJECT NO.: -

CONSTR. CONTR. NO. N40080-12-R-4422

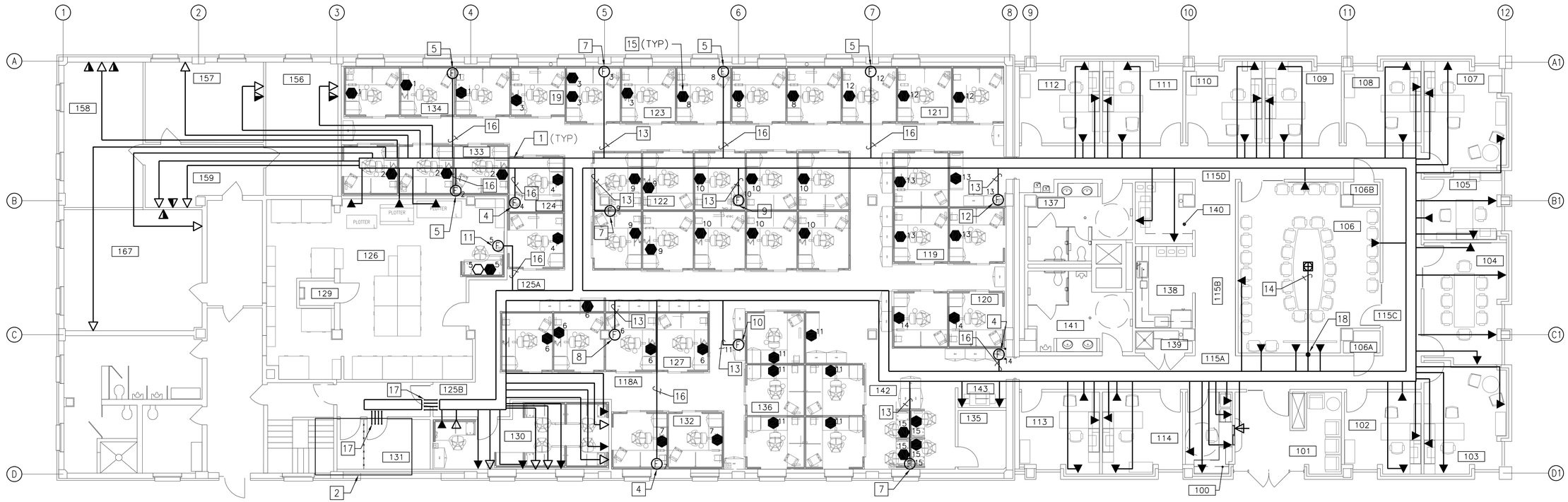
NAVFAC DRAWING NO. 13056696

SHEET 39 OF 53

E-102

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO, B-14\NAVIGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-102 FIRST FLOOR POWER PLAN – NEW WORK.dwg LAYOUT NAME: E-102 FIRST FLOOR POWER PLAN – NEW WORK PLOTTED: Friday, April 12, 2013 – 11:02am USER: blunderwhite

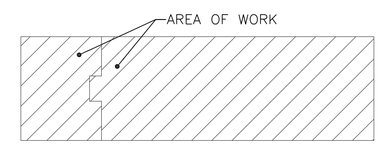



## FIRST FLOOR TELECOMMUNICATIONS PLAN - NEW WORK 3

SCALE: 1/8" = 1'-0"

## CONSTRUCTION NOTES (THIS SHEET ONLY)

1. 18" X 3" DEEP BASKET TYPE CABLE TRAY MOUNTED ABOVE THE CEILING. INSTALLATION AND SUPPORT OF THE TRAY SYSTEM SHALL BE PER MANUFACTURER'S RECOMMENDATIONS. COORDINATE EXACT ROUTING AND LOCATION WITH MECHANICAL DUCTS, LIGHTING FIXTURES, SPRINKLER PIPING AND OTHER DISCIPLINES WITH SYSTEMS ABOVE THE CEILING.
2. SEE "ENLARGED ROOM 131 FLOOR PLAN – NEW WORK", SHEET E-401, FOR ADDITIONAL WORK THIS AREA.
3. SEE "TELECOMMUNICATIONS RISER DIAGRAM", SHEET E-602, FOR WIRING DIAGRAMS AND CONFIGURATIONS.
4. TELECOMMUNICATIONS FLEX CONNECTION, COORDINATE WITH SYSTEMS FURNITURE SUPPLIER. PROVIDE A TOTAL OF EIGHT CATEGORY 6 CABLES (2-PURPLE, 2-BROWN, 2-YELLOW, 2-WHITE) TO FEED TWO WORK AREAS.
5. TELECOMMUNICATIONS FLEX CONNECTION, COORDINATE WITH SYSTEMS FURNITURE SUPPLIER. PROVIDE A TOTAL OF TWELVE CATEGORY 6 CABLES (3-PURPLE, 3-BROWN, 3-YELLOW, 3-WHITE) TO FEED THREE WORK AREAS.
6. FURNITURE SYSTEM DATA OUTLET FOR CONNECTION OF BAS MONITORING WORKSTATION. SEE DEMOLITION NOTE 10 ON SHEET ED101.
7. TELECOMMUNICATIONS FLEX CONNECTION, COORDINATE WITH SYSTEMS FURNITURE SUPPLIER. PROVIDE A TOTAL OF SIXTEEN CATEGORY 6 CABLES (4-PURPLE, 4-BROWN, 4-YELLOW, 4-WHITE) TO FEED FOUR WORK AREAS.
8. TELECOMMUNICATIONS FLEX CONNECTION, COORDINATE WITH SYSTEMS FURNITURE SUPPLIER. PROVIDE A TOTAL OF TWENTY CATEGORY 6 CABLES (5-PURPLE, 5-BROWN, 5-YELLOW, 5-WHITE) TO FEED FOUR WORK AREAS AND ONE PRINTER AREA.
9. TELECOMMUNICATIONS FLEX CONNECTION, COORDINATE WITH SYSTEMS FURNITURE SUPPLIER. PROVIDE A TOTAL OF TWENTY-FOUR CATEGORY 6 CABLES (6-PURPLE, 6-BROWN, 6-YELLOW, 6-WHITE) TO FEED SIX WORK AREAS.
10. TELECOMMUNICATIONS FLEX CONNECTION, COORDINATE WITH SYSTEMS FURNITURE SUPPLIER. PROVIDE A TOTAL OF TWENTY-FOUR CATEGORY 6 CABLES (6-PURPLE, 6-BROWN, 6-YELLOW, 6-WHITE) TO FEED FIVE WORK AREAS AND ONE PRINTER AREA.
11. TELECOMMUNICATIONS FLEX CONNECTION, COORDINATE WITH SYSTEMS FURNITURE SUPPLIER. PROVIDE A TOTAL OF SIX CATEGORY 6 CABLES (1-PURPLE, 1-BROWN, 1-YELLOW, 1-WHITE, 1-BLUE, 1-GREEN) TO FEED ONE WORK AREA.
12. TELECOMMUNICATIONS FLEX CONNECTION, COORDINATE WITH SYSTEMS FURNITURE SUPPLIER. PROVIDE A TOTAL OF SIXTEEN CATEGORY 6 CABLES (4-PURPLE, 4-BROWN, 4-YELLOW, 4-WHITE) TO FEED THREE WORK AREAS AND ONE PRINTER AREA.
13. RUN 2" EMT CONDUIT FROM THE CABLE TRAY TO TELECOMMUNICATIONS FLEX CONNECTION FOR DATA CABLES.
14. 1" CONDUIT SHALL BE RUN BELOW FIRST FLOOR SLAB IN GROUND FLOOR CEILING SPACE, SEE "FLUSH FLOOR POKE THROUGH DETAIL", SHEET E-505, FOR CONNECTION INTO POKE THROUGH BOX.
15. SEE "SYSTEMS FURNITURE DETAIL", SHEET E-504, FOR INSTALLATION OF DATA OUTLETS IN THE FURNITURE.
16. RUN 1-1/2" EMT CONDUIT FROM THE CABLE TRAY TO TELECOMMUNICATIONS FLEX CONNECTION FOR DATA CABLES.
17. FOUR 4" CONDUIT SLEEVES THROUGH WALL. SEAL WALL PENETRATIONS TO MAINTAIN FIRE RATING OF THE WALL.
18. 1" CONDUIT TURNS DOWN AND RUNS TO GROUND FLOOR CEILING SPACE.
19. FURNITURE SYSTEM DATA OUTLET FOR CONNECTION OF BAS SYSTEM MONITORING WORK STATION. SEE DEMOLITION NOTE 10 ON SHEET ED101. COORDINATE THE EXACT WORKSTATION AND LOCATION OF DATA OUTLET WITH CONTRACTING OFFICER PRIOR TO PULLING IN DATA CABLES.




## KEY PLAN

NO SCALE

NOTE: IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

GRAPHIC SCALE:

1/8"=1'-0" 0' 5' 10' 20' 30'

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND — REGISTERED PROFESSIONAL ENGINEER — 4-12-13

12-022A

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

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ACTIVITY

SATISFACTORY TO DATE

DES DGW DRW DJL CHK SGR

<<PM/DM>>

BRANCH MANAGER

CHIEF ENG/ARCH

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DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND – WASHINGTON
BETHESDA NAVY MEDICAL CENTER
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BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
FIRST FLOOR TELECOMMUNICATIONS PLAN – NEW WORK

SCALE: AS NOTED

EPROJECT NO.: –

CONSTR. CONTR. NO. N40080-12-R-4422

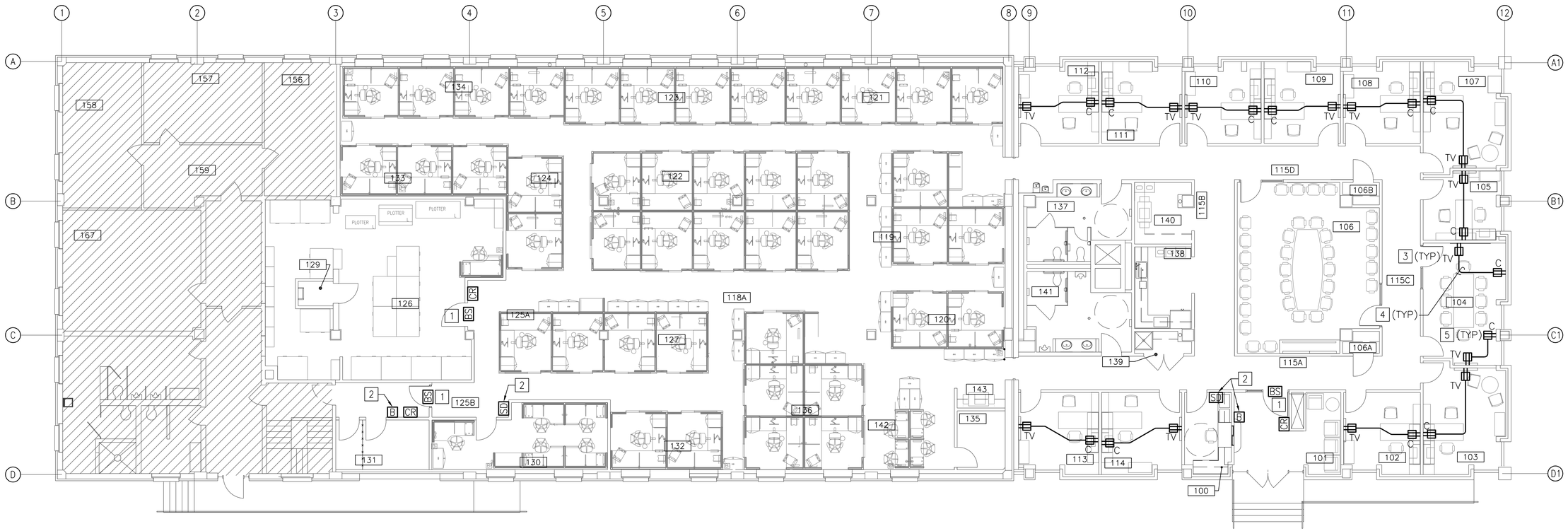
NAVFAC DRAWING NO. 13056696

SHEET 40 OF 53

E-103

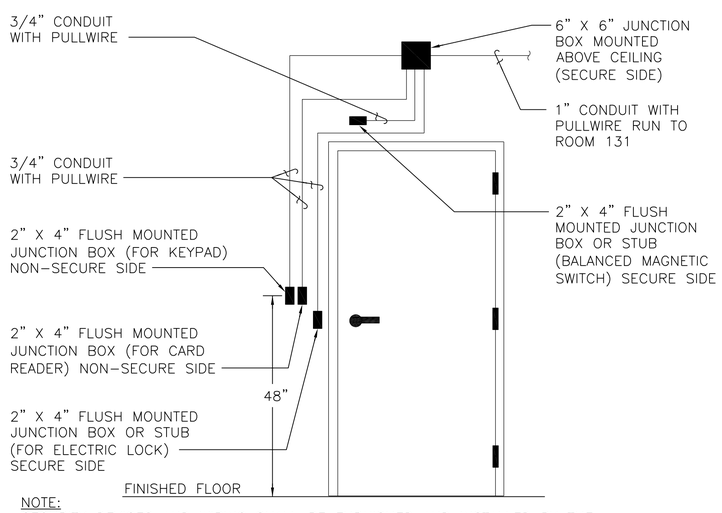
DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO, B-14\NAVIGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-103 FIRST FLOOR TELECOMMUNICATIONS PLAN - NEW WORK.dwg LAYOUT NAME: E-103 FIRST FLOOR TELECOMMUNICATIONS PLAN - NEW WORK PLOTTED: Friday, April 12, 2013 - 11:02am USER: blunderwhite




## FIRST FLOOR SPECIAL SYSTEMS PLAN - NEW WORK

SCALE: 1/8" = 1'-0"



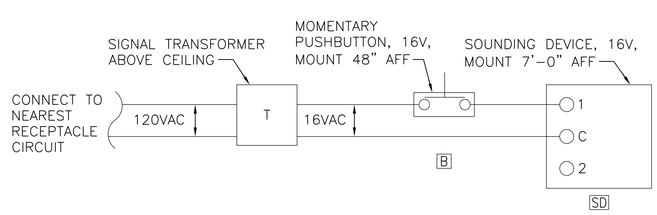

NOTE:
SECURITY DEVICES AND WIRING SHALL BE FURNISHED AND INSTALLED BY THE GOVERNMENT.

## SECURE SINGLE DOOR DETAIL

NO SCALE

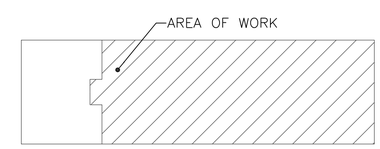
## CONSTRUCTION NOTES (THIS SHEET ONLY)

1. SEE "SECURE SINGLE DOOR DETAIL", THIS SHEET FOR JUNCTION BOX AND CONDUIT REQUIREMENTS.
2. SEE "DOORBELL WIRING DIAGRAM", THIS SHEET FOR WIRING DIAGRAM FOR DOORBELL SYSTEM.
3. PROVIDE SINGLE GANG JUNCTION BOX MOUNTED ADJACENT TO RECEPTACLE AT MONITOR LOCATION WITH HDMI TO HDMI FEMALE TO FEMALE CONNECTOR AND WALL PLATE. COVER PLATE COLOR SHALL MATCH DATA OUTLET COVER PLATE.
4. HDMI TO HDMI CABLE RUN IN 3/4" CONDUIT, LENGTH AS REQUIRED TO RUN FROM TV OUTLET TO COMPUTER OUTLET.
5. PROVIDE SINGLE GANG JUNCTION BOX MOUNTED ADJACENT TO DATA OUTLET AT WORK AREA WITH HDMI TO HDMI FEMALE TO FEMALE CONNECTOR AND WALL PLATE. COVER PLATE COLOR SHALL MATCH DATA OUTLET COVER PLATE.




## DOORBELL WIRING DIAGRAM

NO SCALE




## KEY PLAN

NO SCALE

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GRAPHIC SCALE:

1/8"=1'-0" 0' 5' 10' 20' 30'

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

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STATE OF MARYLAND — ANDREW G. RAMSEY — REGISTERED PROFESSIONAL ENGINEER — 4-12-13

12-022A

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

A/E INFO

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FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES DGW DRW DJL CHK SGR

<<PM/DM>>

BRANCH MANAGER

CHIEF ENG/ARCH

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DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ WASHINGTON
BETHESDA NAVY MEDICAL CENTER
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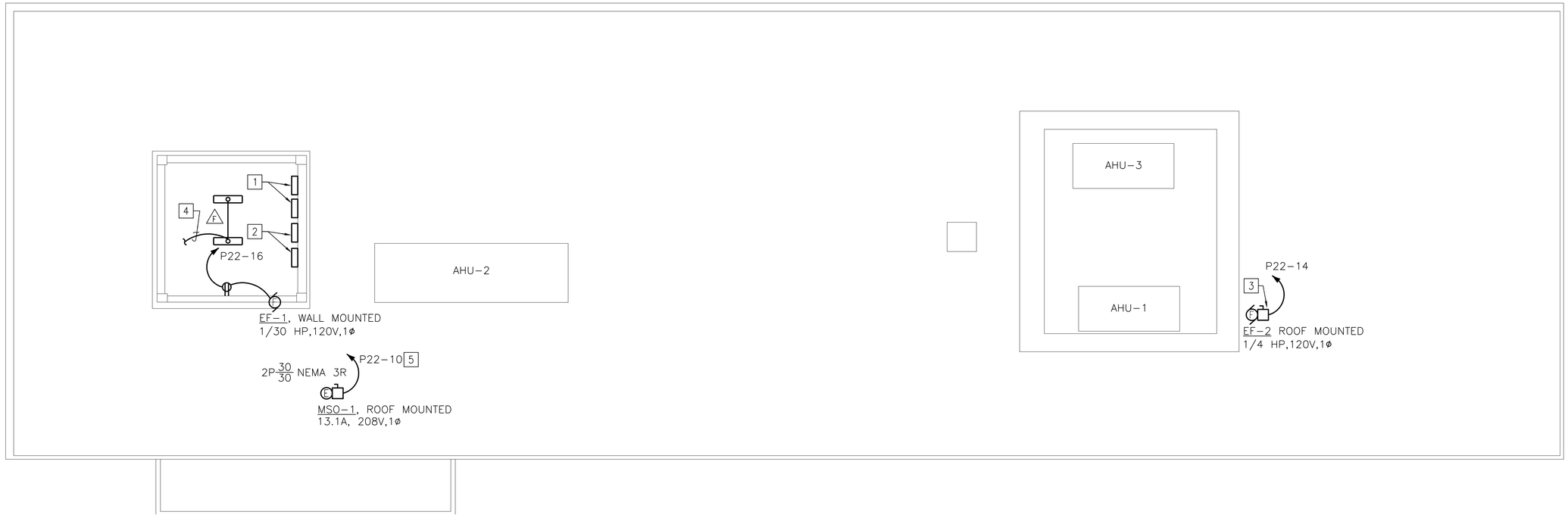
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
FIRST FLOOR SPECIAL SYSTEMS PLAN - NEW WORK

SCALE: AS NOTED
EPROJECT NO.: -
CONSTR. CONTR. NO. N40080-12-R-4422
NAVFAC DRAWING NO. 13056698
SHEET 41 OF 53

E-104

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO. B-14\NAVIGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-104 FIRST FLOOR SPECIAL SYSTEMS PLAN - NEW WORK.dwg LAYOUT NAME: E-104 FIRST FLOOR SPECIAL SYSTEMS PLAN - NEW WORK PLOTTED: Thursday, April 11, 2013 - 1:52pm USER: iperotta




## ROOF POWER PLAN - NEW WORK

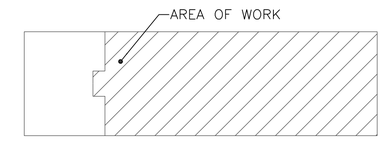
SCALE: 1/8" = 1'-0"

## CONSTRUCTION NOTES (THIS SHEET ONLY)

1. EXISTING VFD DRIVE SHALL BE INSTALLED IN THE PENTHOUSE. PULL BACK EXISTING BRANCH CIRCUIT TO THIS LOCATION AND RECONNECT. VERIFY CORRECT OPERATION OF ALL EQUIPMENT AFTER INSTALLATION.
2. HVAC CONTROLS CABINET WILL BE INSTALLED AT THIS LOCATION BY MECHANICAL CONTRACTOR. SEE DEMOTION NOTE 7, SHEET ED101.
3. DISCONNECT SWITCH FURNISHED WITH EXHAUST FAN.
4. SEE "FIRST FLOOR LIGHTING PLAN – NEW WORK", SHEET E-101, FOR CONTINUATION.
5. TWO #10 AND ONE #10 GROUND IN 3/4" CONDUIT.

## VARIABLE AIR TERMINAL UNIT CONNECTION SCHEDULE

| MARK | FAN SECTION ELECTRICAL | | | DISCONNECT SWITCH | | | CIRCUIT |
|---|---|---|---|---|---|---|---|
| | HP | VOLTS | PHASE | POLES | RATING | FUSE | |
| VAV 1-2 | 1/6 | 208 | 1 | 2 | 30 | 2 | P22-27 |
| VAV 1-3 | 1/10 | 208 | 1 | 2 | 30 | 2 | P22-27 |
| VAV 1-4 | 1/10 | 208 | 1 | 2 | 30 | 2 | P22-27 |
| VAV 1-5 | 1/6 | 208 | 1 | 2 | 30 | 2 | P22-27 |
| VAV 1-6 | 1/6 | 208 | 1 | 2 | 30 | 2 | P22-27 |
| VAV 1-7 | 1/10 | 208 | 1 | 2 | 30 | 2 | P22-27 |
| VAV 1-8 | 1/6 | 208 | 1 | 2 | 30 | 2 | P22-31 |
| VAV 1-9 | 1/10 | 208 | 1 | 2 | 30 | 2 | P22-31 |
| VAV 1-10 | 1/4 | 208 | 1 | 2 | 30 | 4 | P22-31 |
| VAV 1-12 | 1/6 | 208 | 1 | 2 | 30 | 2 | P22-31 |
| VAV 1-13 | 1/4 | 208 | 1 | 2 | 30 | 4 | P22-31 |
| VAV 1-14 | 1/6 | 208 | 1 | 2 | 30 | 2 | P22-31 |
| | | | | | | | |
| VAV 2-7 | 1/4 | 208 | 1 | 2 | 30 | 4 | P22-23 |
| VAV 2-8 | 1/4 | 208 | 1 | 2 | 30 | 4 | P22-23 |
| VAV 2-13 | 1/6 | 208 | 1 | 2 | 30 | 2 | P22-23 |
| VAV 2-14 | 1/6 | 208 | 1 | 2 | 30 | 2 | P22-23 |
| VAV 2-15 | 1/6 | 208 | 1 | 2 | 30 | 2 | P22-23 |
| VAV 2-16 | 1/6 | 208 | 1 | 2 | 30 | 2 | P22-23 |




## KEY PLAN

NO SCALE

NOTE: IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

GRAPHIC SCALE:

1/8"=1'-0" 0' 5' 10' 20' 30'

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER 4-12-13 12-022A

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

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ACTIVITY
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DES DGW DRW DJL CHK SGR
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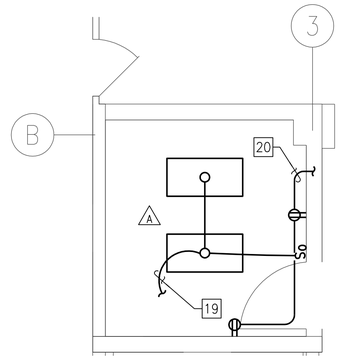
BRANCH MANAGER
CHIEF ENG/ARCH
<<XXX>>

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ WASHINGTON
BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
ROOF POWER PLAN – NEW WORK

SCALE: AS NOTED
EPROJECT NO.: –
CONSTR. CONTR. NO. N40080-12-R-4422
NAVFAC DRAWING NO. 13056699
SHEET 42 OF 53
E-105

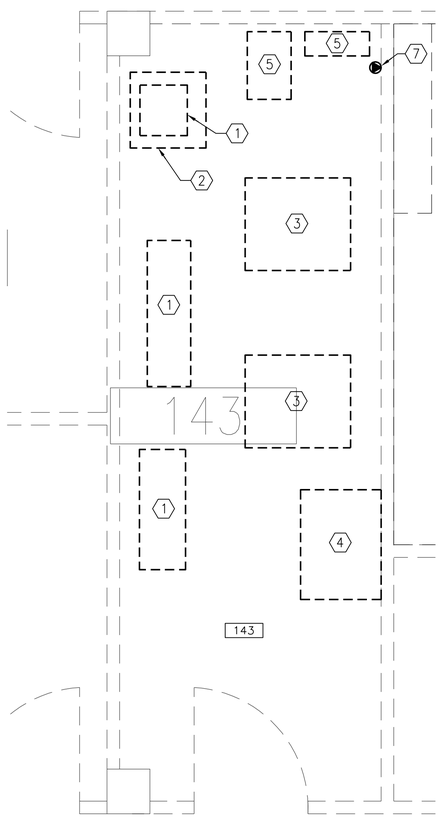
DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO, B-14\NAVGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-105 ROOF POWER PLAN - NEW WORK.dwg LAYOUT NAME: E-105 ROOF POWER PLAN - NEW WORK PLOTTED: Friday, April 12, 2013 - 11:04am USER: blunderwhite



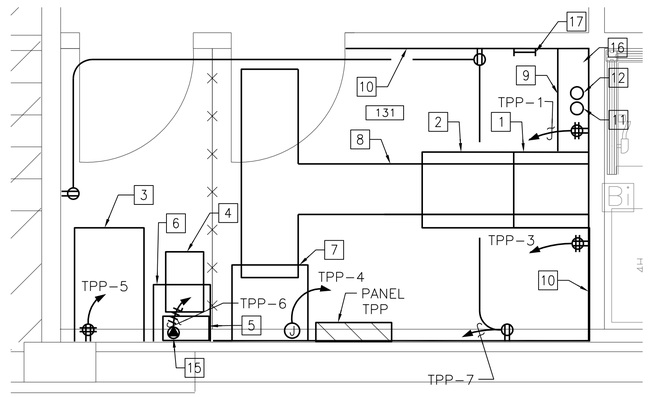

## ENLARGED GROUND FLOOR ROOM 001 PLAN - NEW WORK

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



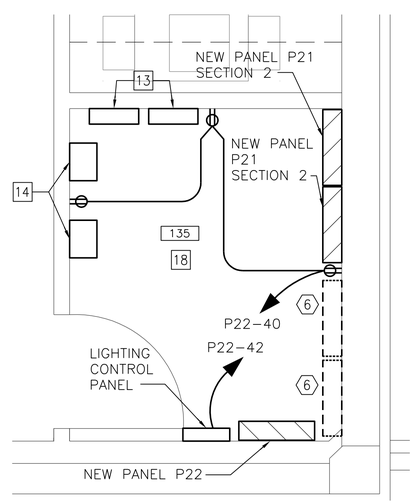

## ENLARGED ROOM 143 FLOOR PLAN - DEMOLITION

SCALE: 1/2" = 1'-0"




## ENLARGED ROOM 131 FLOOR PLAN - NEW WORK

SCALE: 1/2" = 1'-0"




## ENLARGED ROOM 135 FLOOR PLAN - NEW WORK

SCALE: 1/2" = 1'-0"

## CONSTRUCTION NOTES (CONTINUED)

19 CONNECT INTO NEAREST LIGHTING CIRCUIT.

20 CONNECT INTO NEAREST RECEPTACLE CIRUIT.

NOTE: IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

GRAPHIC SCALE:

1"=4' 0' 4' 8' 12' 16' 20'

1/2"=1'-0" 1' 0' 1' 2' 3' 4' 5'

## DEMOLITION NOTES (THIS SHEET ONLY)

1. ABANDONED EQUIPMENT SHALL BE DISCONNECTED FROM ALL SOURCES AND REMOVED COMPLETE. REMOVE ASSOCIATED WIRE AND CONDUIT COMPLETE BACK TO SOURCE OF POWER.

2. NMCI WALL MOUNTED CABINET SHALL REMAIN ENERGIZED AND OPERATIONAL AS REQUIRED THROUGHOUT DEMOLITION AND CONSTRUCTION. NMCI DATA CIRCUITS SCHEDULED FOR DEMOLITION SHALL HAVE WIRING AND CONDUIT REMOVED COMPLETE BACK TO CABINET. NMCI DATA CIRCUITS SCHEDULED TO REMAIN IN OFFICES WITH NO DEMOLITION SHALL HAVE WIRING REMOVED BACK TO THE OUTLET. REMOVE THE CATEGORY 5E JACK AND REPLACE WITH SIMILAR CATEGORY 6 JACK. RUN NEW CATEGORY 6 CABLE FROM OUTLET TO NEW NMCI CABINET IN ROOM 131. WHEN ALL DATA CIRCUITS HAVE BEEN REMOVED, REMOVE WALL MOUNTED CABINET AND ASSOCIATED WIRING AND CONDUIT COMPLETE.

3. EQUIPMENT CABINET SHALL REMAIN ENERGIZED AND OPERATIONAL AS REQUIRED THROUGHOUT DEMOLITION AND CONSTRUCTION. DATA CIRCUITS SCHEDULED FOR DEMOLITION SHALL HAVE WIRING AND CONDUIT REMOVED COMPLETE BACK TO CABINET. WHEN ALL DATA CIRCUITS HAVE BEEN REMOVED, REROUTE THE 24-STRAND FIBER FROM BUILDING 11 TO LIU-2 IN EQUIPMENT DATA RACK, AND REROUTE THE 24-STRAND FIBER FROM BUILDING 8 AND THE 24-STRAND FROM BUILDING 13 TO LIU-3 IN EQUIPMENT DATA RACK IN ROOM 131. WHEN ALL DATA CIRCUITS HAVE BEEN REMOVED, REMOVE EQUIPMENT CABINET AND ASSOCIATED WIRING AND CONDUIT COMPLETE.

4. ONCE A FIBER BACKBONE HAS BEEN INSTALLED AND THE NETWORK HAS BECOME OPERATIONAL IN ROOM 131, COORDINATE THE RELOCATION OF THE SIEMENS SERVER WITH THE GOVERNMENT. DISCONNECT THE SERVER AND RELOCATE TO ROOM 131, AND CONNECT INTO NETWORK AS DIRECTED BY THE GOVERNMENT. POWER SERVER UP, FULLY TEST AND MAKE EQUIPMENT FULLY OPERATIONAL. WORK SHALL BE PERFORMED OVER A WEEKEND.

5. THE RELOCATION OF THE JOHNSON CONTROLS SERVER SHALL TAKE PLACE CONCURRENTLY WITH THE SIEMENS SERVER. DISCONNECT THE UPS UNIT AND DISCONNECT SERVER FROM NETWORK AND RELOCATE BOTH UNITS TO ROOM 131, AND CONNECT INTO NETWORK AS DIRECTED BY THE GOVERNMENT. POWER SERVER UP, FULLY TEST AND MAKE EQUIPMENT FULLY OPERATIONAL. WORK SHALL BE PERFORMED OVER A WEEKEND.

6. REMOVE PANEL P2-1, SECTIONS 1 AND 2 COMPLETE. SEE POWER RISER NOTE 18, SHEET E-601, FOR DESCRIPTION OF WORK.

7. DURING RELOCATION OF THE JOHNSON CONTROLS UPS UNIT, REMOVE THE APPLETON ADR6023 RECEPTACLE AND RELOCATE TO ROOM 131. REMOVE BRANCH CIRCUIT WIRING AND CABLE COMPLETE.

## CONSTRUCTION NOTES (THIS SHEET ONLY)

1. EQUIPMENT SWITCH RACK.
2. EQUIPMENT DATA RACK. SEE "EQUIPMENT RACK CONFIGURATION", SHEET E-505.
3. NEW LOCATION FOR SIEMENS SERVER.
4. NEW LOCATION FOR JOHNSON CONTROLS SERVER UPS UNIT.
5. NEW LOCATION FOR JOHNSON CONTROLS SERVER LOCATED ON FLOOR.
6. WALL MOUNTED SHELF FOR COMPUTER MONITOR AND KEYBOARD.
7. NMCI WALL MOUNTED CABINET.
8. 18" X 3" DEEP LADDER TYPE CABLE TRAY MOUNTED ABOVE EQUIPMENT RACKS AND CABINET. INSTALLATION AND SUPPORT OF THE TRAY SYSTEM SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.
9. 8" X 3" DEEP LADDER TYPE CABLE TRAY MOUNTED LEVEL WITH 18" X 3" DEEP TRAY SYSTEM. INSTALLATION AND SUPPORT OF THE TRAY SYSTEM SHALL BE PER MANUFACTURER'S RECOMMENDED DIRECTIONS.
10. WALL SHALL BE COVERED WITH INTERIOR GRADE, FIRE RATED 3/4" PLYWOOD. MOUNT PLYWOOD VERTICALLY WITH BOTTOM 4" AFF. PLYWOOD SHALL NOT BE PAINTED, FIRE RATING STAMP SHALL BE VISIBLE.
11. 4" SLEEVE FOR INCOMING FIBER CABLES FROM BUILDING 2 AND BUILDING 27.
12. 4" SLEEVE FOR INCOMING 50-PAIR COPPER CABLE FROM GROUND FLOOR ELECTRICAL ROOM.
13. EXISTING HVAC CONTROLS CABINET WILL BE INSTALLED AT THIS LOCATION BY THE MECHANICAL CONTRACTOR.
14. EXISTING VFD DRIVE SHALL BE INSTALLED AT THIS LOCATION. EXTEND EXISTING BRANCH CIRCUIT TO THIS LOCATION AND RECONNECT. VERIFY CORRECT OPERATION OF ALL EQUIPMENT AFTER INSTALLATION. SEE DEMOLITION NOTE 8, SHEET ED101.
15. NEW LOCATION FOR APPLETON RECEPTACLE. SEE DEMOLITION NOTE 7, THIS SHEET.
16. AREA ON BACKBOARD FOR INSTALLATION OF 110 BLOCKS FOR TERMINATION AND CROSS CONNECT OF INCOMING COPPER CABLES.
17. TELECOMMUNICATIONS MAIN GROUNDING BUSBAR. SEE DETAIL ON SHEET E-505.
18. COORDINATE EXACT LOCATION AND POWER REQUIREMENTS OF AOM MODULES WITH FIRE ALARM CONTRACTOR.

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND — STEVEN G. RAGAN — No. 22492 — 4-12-13 — REGISTERED PROFESSIONAL ENGINEER

12-022A


BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206


A/E INFO

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ACTIVITY

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BRANCH MANAGER

CHIEF ENG/ARCH

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DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ WASHINGTON
BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
ENLARGED FLOOR PLANS

SCALE: AS NOTED

EPROJECT NO.: –

CONSTR. CONTR. NO. N40080-12-R-4422

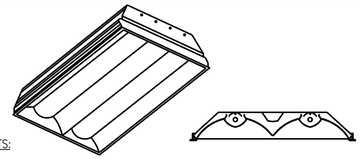
NAVFAC DRAWING NO. 13056700

SHEET 43 OF 53

E-401

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO, B-14\NAVIGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-401 ENLARGED FLOOR PLANS.dwg LAYOUT NAME: E-401 ENLARGED FLOOR PLANS PLOTTED: Thursday, April 11, 2013 - 1:53pm USER: jperalta



LUMINAIRE REQUIREMENTS:

1. HOUSING – DIE-FORMED, COLD-ROLLED STEEL, WITH REINFORCEMENT RIBS FOR RIGIDITY. ENDCAPS SECURED WITH TABS, SCREWS OR RIVETS. FIXTURE SHALL NOT PERMANENTLY DEFORM OUT OF "SQUARE" WHEN PICKED UP FROM ANY CORNER.
2. FINISH – MULTI-STAGE PHOSPHATE BONDING TREATMENT FINISHED WITH HIGH REFLECTANCE (MINIMUM 85%), BAKED WHITE ENAMEL FINISH.
3. REFLECTORS – TWO-PIECE CURVED STEEL WITH MATTE WHITE FINISH.
4. REFRACTORS – VIRGIN ACRYLIC
5. LAMPS – LINEAR FLUORESCENT HIGH LUMEN T8, TYPICALLY WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
6. BALLAST – CLASS P, THERMALLY-PROTECTED, HIGH POWER FACTOR (≥.95), ELECTRONIC TYPE WITH SOUND RATING A. SEE SPECIFICATION OR LIGHTING FIXTURE SCHEDULE FOR BALLAST OPTIONS AND SPECIFICS.
7. CERTIFICATION – UL LISTED AND LABELED.
8. PHOTOMETRICS – MINIMUM VALUE OF COEFFICIENT OF UTILIZATION (CU) AND EFFICIENCY, GIVEN INTERIOR CAVITY REFLECTANCES OF 80-50-20:

2 LAMP (F32/T8)
W/ PERFORATED LIGHT BASKET

| RCR | CU |
|---|---|
| 1 | 84 |
| 2 | 73 |
| 3 | 64 |
| 4 | 57 |

EFFICIENCY – 80%

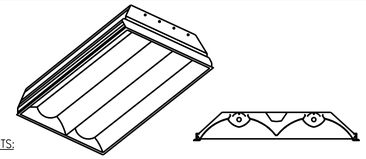
DIMENSION SPECIFICATIONS

LENGTH: 48
WIDTH: 24
DEPTH: 3 3/16

DIRECT/INDIRECT RECESSED 2' X 4' FLUORESCENT

REVISED: | LIGHTING PLATE: MOD-8

A



LUMINAIRE REQUIREMENTS:

1. HOUSING – DIE-FORMED, COLD-ROLLED STEEL, WITH REINFORCEMENT RIBS FOR RIGIDITY. ENDCAPS SECURED WITH TABS, SCREWS OR RIVETS. FIXTURE SHALL NOT PERMANENTLY DEFORM OUT OF "SQUARE" WHEN PICKED UP FROM ANY CORNER.
2. FINISH – MULTI-STAGE PHOSPHATE BONDING TREATMENT FINISHED WITH HIGH REFLECTANCE (MINIMUM 85%), BAKED WHITE ENAMEL FINISH.
3. REFLECTORS – TWO-PIECE CURVED STEEL WITH MATTE WHITE FINISH.
4. REFRACTORS – VIRGIN ACRYLIC.
5. LAMPS – LINEAR FLUORESCENT HIGH LUMEN T8, TYPICALLY WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
6. BALLAST – CLASS P, THERMALLY-PROTECTED, HIGH POWER FACTOR (≥.95), ELECTRONIC TYPE WITH SOUND RATING A. SEE SPECIFICATION OR LIGHTING FIXTURE SCHEDULE FOR BALLAST OPTIONS AND SPECIFICS.
7. CERTIFICATION – UL LISTED AND LABELED.
8. PHOTOMETRICS – MINIMUM VALUE OF COEFFICIENT OF UTILIZATION (CU) AND EFFICIENCY, GIVEN INTERIOR CAVITY REFLECTANCES OF 80-50-20:

2 LAMP (F17/T8)
W/ PERFORATED LIGHT BASKET

| RCR | CU |
|---|---|
| 1 | 84 |
| 2 | 73 |
| 3 | 64 |
| 4 | 57 |

EFFICIENCY – 80%

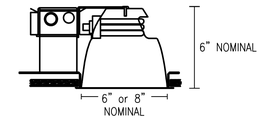
DIMENSION SPECIFICATIONS

LENGTH: 24
WIDTH: 24
DEPTH: 3 1/4

DIRECT/INDIRECT RECESSED 2' X 2' FLUORESCENT

REVISED: | LIGHTING PLATE: MOD-9

B



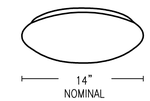

LUMINAIRE REQUIREMENTS:

1. HOUSING – ONE-PIECE, DIE-STAMPED, COLD ROLLED STEEL OR ACRYLIC-ENAMELED ALUMINUM. PROVIDE WITH PRE-WIRED JUNCTION BOX HAVING SNAP-ON ACCESS COVER. ACCESS TO JUNCTION BOX FROM BELOW CEILING SHALL BE PROVIDED THROUGH FIXTURE AFTER REMOVAL OF REFLECTOR.
2. REFLECTOR AND TRIM – ONE-PIECE, CLEAR, SPUN ALUMINUM, IRIDESCENCE-SUPRESSED, WITH PAINTED WHITE SELF TRIM. OTHER FINISHES AND TYPES AVAILABLE. SEE LIGHTING FIXTURE SCHEDULE.
3. BALLAST – CLASS P, MULTI-VOLT (120V-277V INPUT), HIGH POWER FACTOR (≥.95), PROGRAMMED RAPID START ELECTRONIC TYPE WITH ≤10% TOTAL HARMONIC DISTORTION. BALLAST SHALL BE CAPABLE OF UNIVERSALLY OPERATING 26W, 32W, OR 42 WATT LAMPS.
4. LAMPS – MULTI-TUBE, COMPACT FLUORESCENT WITH 4-PIN BASE. PROVIDE WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
5. CERTIFICATION – UL LISTED AND LABELED.
6. FIXTURE TYPES –
   TYPE A – 6" NOMINAL APERTURE
   TYPE B – 8" NOMINAL APERTURE
7. OPTIONS –
   REFLECTOR TYPE – DIRECT DOWNLIGHT OR WALL WASH; SEMI-SPECULAR OR SPECULAR.
   REFLECTOR COLOR – CLEAR, CHAMPAGNE, PEWTER, WHEAT, GOLD OR BRONZE.
   TRIM – OPEN REFLECTOR, STEPPED WHITE OR BLACK BAFFLE.

RECESSED COMPACT FLUORESCENT DOWNLIGHT

REVISED: | AUGUST 2004 | LIGHTING PLATE: NL-31

C



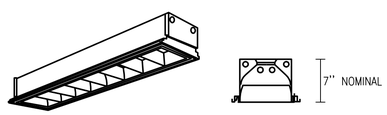

LUMINAIRE REQUIREMENTS:

1. HOUSING – DIE-FORMED ALUMINUM WITH KEYHOLE SLOTS FOR DIRECT MOUNTING TO 4" OCTAGONAL OUTLET BOX.
2. FINISH – MULTI-STAGE PHOSPHATE BONDING TREATMENT FINISHED WITH BAKED WHITE ENAMEL FINISH.
3. LENS – FORMED WHITE TRANSLUCENT OPAL ACRYLIC DIFFUSER.
4. LAMPS – MULTI-TUBE COMPACT FLUORESCENT WITH 4-PIN BASE. PROVIDE WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
5. BALLAST – CLASS P, THERMALLY-PROTECTED, HIGH POWER FACTOR (≥.95), PROGRAMMED RAPID START ELECTRONIC TYPE WITH ≤10% TOTAL HARMONIC DISTORTION. SEE SPECIFICATION OR LIGHTING FIXTURE SCHEDULE FOR OTHER BALLAST OPTIONS AND SPECIFICS.
6. CERTIFICATION – UL LISTED AND LABELED.

OPAL ACRYLIC CEILING-MOUNTED COMPACT FLUORESCENT

REVISED: | AUGUST 2004 | LIGHTING PLATE: NL-26

D




LUMINAIRE REQUIREMENTS:

1. HOUSING – DIE-FORMED, COLD-ROLLED STEEL, WITH REINFORCEMENT RIBS FOR RIGIDITY. ENDCAPS SECURED WITH TABS, SCREWS OR RIVETS. FIXTURE SHALL NOT PERMANENTLY DEFORM OUT OF "SQUARE" WHEN PICKED UP FROM ANY CORNER. INSIDE EDGE OF HOUSING SHALL HAVE FULL FLAT BLACK REVEAL FOR "FLOATING" EFFECT.
2. FINISH – MULTI-STAGE PHOSPHATE BONDING TREATMENT FINISHED WITH HIGH REFLECTANCE (MINIMUM 85%), BAKED WHITE ENAMEL FINISH.
3. LOUVERS – LOW-IRIDESCENT, SEMI-SPECULAR, SILVER ANODIZED ALUMINUM. 3" MINIMUM DEPTH UNLESS MANUFACTURED SPECIFICALLY FOR USE WITH T8 FLUORESCENT LAMPS.
4. LAMPS – LINEAR FLUORESCENT T8, TYPICALLY WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
5. BALLAST – CLASS P, THERMALLY-PROTECTED, HIGH POWER FACTOR (≥.95), ELECTRONIC TYPE WITH SOUND RATING A. SEE SPECIFICATION OR LIGHTING FIXTURE SCHEDULE FOR BALLAST OPTIONS AND SPECIFICS.
6. CERTIFICATION – UL LISTED AND LABELED.
7. PHOTOMETRICS – MINIMUM VALUE OF COEFFICIENT OF UTILIZATION (CU) AND EFFICIENCY, GIVEN INTERIOR CAVITY REFLECTANCES OF 80-50-20:

2 LAMP (F32/T8)

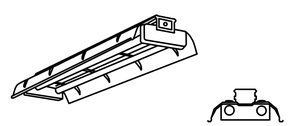
| RCR | CU |
|---|---|
| 1 | 71 |
| 2 | 64 |
| 3 | 58 |
| 4 | 52 |

EFFICIENCY – 72%

PARABOLIC RECESSED 6" X 4' FLUORESCENT TROFFER

REVISED: | AUGUST 2004 | LIGHTING PLATE: MOD-5

E



LUMINAIRE REQUIREMENTS:

1. HOUSING – DIE-FORMED, COLD-ROLLED STEEL, WITH REINFORCEMENT RIBS FOR RIGIDITY. ENDCAPS SECURED WITH TABS, SCREWS OR RIVETS. FIXTURE SHALL NOT PERMANENTLY DEFORM OUT OF "SQUARE" WHEN PICKED UP FROM ANY CORNER.
2. FINISH – MULTI-STAGE PHOSPHATE BONDING TREATMENT FINISHED WITH HIGH REFLECTANCE (MINIMUM 85%), BAKED WHITE ENAMEL FINISH.
3. LAMPHOLDERS– PRESSURE-LOCKED TYPE ENCLOSED IN TURRET HOUSING.
4. REFLECTOR – DIE-FORMED, COLD-ROLLED STEEL WITH TRANSVERSE RIBS FOR RIGIDITY. SOLID, 10% UPLIGHT APERATURE OR 20% UPLIGHT APERATURE AS INDICATED IN LIGHTING FIXTURE SCHEDULE.
5. LAMPS – LINEAR FLUORESCENT T8, TYPICALLY WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
6. BALLAST – CLASS P, THERMALLY-PROTECTED, HIGH POWER FACTOR (≥.95), ELECTRONIC TYPE WITH SOUND RATING A. SEE SPECIFICATION OR LIGHTING FIXTURE SCHEDULE FOR BALLAST OPTIONS AND SPECIFICS.
7. CERTIFICATION – UL LISTED AND LABELED.
8. OPTIONS – CHAIN HANGER AND PLATED STEEL WIRE GUARD.
9. PHOTOMETRICS – MINIMUM VALUE OF COEFFICIENT OF UTILIZATION (CU) AND EFFICIENCY, GIVEN INTERIOR CAVITY REFLECTANCES OF 80-50-20:

2 LAMP (F32/T8)

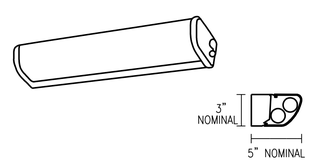
| RCR | CU |
|---|---|
| 1 | 90 |
| 2 | 79 |
| 3 | 69 |
| 4 | 61 |

EFFICIENCY – 90%

INDUSTRIAL FLUORESCENT

REVISED: | AUGUST 2004 | LIGHTING PLATE: NL-13

F



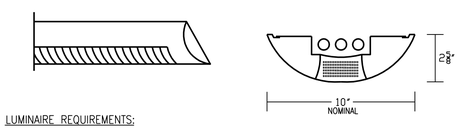

LUMINAIRE REQUIREMENTS:

1. HOUSING – DIE-FORMED, COLD-ROLLED STEEL. ENDCAPS WHEN USED SHALL BE MADE FROM SAME MATERIAL AS HOUSING EXCEPT WHEN OPTIONAL FINISH SUCH AS CHROME IS SPECIFIED.
2. FINISH – MULTI-STAGE PHOSPHATE BONDING TREATMENT FINISHED WITH HIGH REFLECTANCE (MINIMUM 85%), BAKED WHITE ENAMEL FINISH.
3. DIFFUSER – 100% ACRYLIC, CLEAR PRISMATIC, OR WHITE OPAL ACRYLIC. DECORATIVE TREATMENTS ON DIFFUSER ENDS OPTIONAL.
4. LAMPS – LINEAR FLUORESCENT T8 TYPICALLY, WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
5. BALLAST – CLASS P, THERMALLY-PROTECTED, HIGH POWER FACTOR (≥.95), ELECTRONIC TYPE WITH SOUND RATING A. SEE SPECIFICATION OR LIGHTING FIXTURE SCHEDULE FOR BALLAST OPTIONS AND SPECIFICS.
6. CERTIFICATION – UL LISTED AND LABELED.
7. FIXTURE TYPES –
   TYPE A – 2' LENGTH WITH 1 OR 2 T8 FLUORESCENT LAMPS.
   TYPE B – 3' LENGTH WITH 1 OR 2 T8 FLUORESCENT LAMPS.
   TYPE C – 4' LENGTH WITH 1 OR 2 T8 FLUORESCENT LAMPS.

FLUORESCENT VANITY LIGHT

REVISED: | AUGUST 2004 | LIGHTING PLATE: NL-24

G




LUMINAIRE REQUIREMENTS:

1. HOUSING–
   TYPE A (PREMIUM): BODY FORMED FROM ONE-PIECE EXTRUDED ALUMINUM WITH DIE-CAST ALUMINUM END CAPS MECHANICALLY ATTACHED WITHOUT VISIBLE FASTENERS. ENDCAPS SHALL PROVIDE ZERO TOLERANCE ALIGNMENT BETWEEN FIXTURE ENDS, RESULTING IN A CONSISTENT STRAIGHT ROW WITHOUT ANY VISIBLE "SNAKING".

   TYPE B (STANDARD): BODY FORMED FROM ONE-PIECE, DIE-FORMED, COLD-ROLLED STEEL WITH DIE-CAST ALUMINUM OR FLAT STEEL END CAPS MECHANICALLY ATTACHED WITHOUT VISIBLE FASTENERS. ENDCAPS SHALL PROVIDE ZERO TOLERANCE ALIGNMENT BETWEEN FIXTURE ENDS, RESULTING IN A CONSISTENT STRAIGHT ROW WITHOUT ANY VISIBLE "SNAKING".
2. FINISH – SATIN ANODIZED ALUMINUM FOR TYPE A OR MULTI-STAGE PHOSPHATE BONDING TREATMENT FINISH WITH MATTE WHITE, BAKED POWDER COAT FINISH FOR TYPE B FIXTURES. CABLE FASTENERS FOR BOTH TYPES SHALL BE CHROME.
3. REFLECTORS – BAKED WHITE ENAMEL WITH MINIMUM 85% REFLECTANCE OR DIE-FORMED SPECULAR ALUMINUM.
4. BAFFLES – CONSTRUCTED FROM SEMI-SPECULAR ANODIZED ALUMINUM. PROVIDE UP/DOWN LIGHTING RATIO OF APPROXIMATELY 40/60.
5. MOUNTING– TOTALLY ADJUSTABLE AIRCRAFT CABLE SYSTEM.
6. LAMPS– LINEAR FLUORESCENT HIGH LUMEN T8, TYPICALLY WITH WATTAGES AS INDICATED. SEE LIGHTING FIXTURE SCHEDULE.
7. BALLAST– CLASS P, THERMALLY PROTECTED, HIGH POWER FACTOR (≥.95), ELECTRONIC TYPE WITH SOUND RATING A. SEE SPECIFICATION OR LIGHTING FIXTURE SCHEDULE FOR BALLAST OPTIONS AND SPECIFICS.
8. CERTIFICATION– UL LISTED AND LABELED.
9. FIXTURE TYPES–
   TYPE A– EXTRUDED ALUMINUM HOUSING
   TYPE B– COLD-ROLLED STEEL HOUSING

PENDENT-MOUNTED DIRECT/INDIRECT LINEAR FLUORESCENT

REVISED: | LIGHTING PLATE: MOD-17

H

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND – ANDREW T. GRAHAM – No. 29492 – REGISTERED PROFESSIONAL ENGINEER – 4-12-13

12-022A


BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206


V.R. WARD

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES DGW | DRW DJL | CHK SGR

<<PM/DM>>

BRANCH MANAGER

CHIEF ENG/ARCH

<<XXX>>

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ WASHINGTON
BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
DETAILS

SCALE: AS NOTED

EPROJECT NO.: –

CONSTR. CONTR. NO.
N40080-12-R-4422

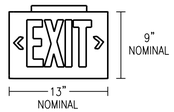
NAVFAC DRAWING NO.
13056701

SHEET 44 OF 53

E-501

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO, B-14\NAVGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-501 DETAILS.dwg LAYOUT NAME: E-501 DETAILS PLOTTED: Thursday, April 11, 2013 - 1:53pm USER: jperotta




LUMINAIRE REQUIREMENTS:

1. HOUSING – DIE-CAST ALUMINUM OR HIGH-IMPACT, UV-STABILIZED, INJECTION-MOLDED THERMOPLASTIC. SINGLE OR DOUBLE-FACED AS INDICATED.
2. FINISH (ON CAST ALUMINUM HOUSING ONLY) – TEXTURED POWDER COAT FINISH OPTIONS INCLUDE WHITE, WHITE WITH BRUSHED ALUMINUM FACE, BLACK, OR BLACK WITH BRUSHED ALUMINUM FACE.
3. LETTERS/CHEVRONS – MINIMUM 6" HIGH WITH 3/4" STROKE. RED OR GREEN LETTERS AS INDICATED. PROVIDE CHEVRONS AS INDICATED EITHER LEFT, RIGHT OR BOTH DIRECTIONS AS INDICATED. CHEVRONS PUNCHED OUT THROUGH HOUSING AS REQUIRED.
4. EMERGENCY PACK – SOLID-STATE, CONSTANT-CURRENT TYPE BATTERY CHARGER WITH MAINTENANCE-FREE, NICKEL-CADMIUM BATTERY, AC-ON INDICATOR LAMP AND TEST SWITCH.
5. MOUNTING – UNIVERSAL MOUNTING KIT FOR CEILING, WALL OR END-OF-FIXTURE MOUNTING.
6. ILLUMINATION – PROVIDED BY RED, GREEN OR WHITE HIGH-OUTPUT LEDS INSIDE OF FIXTURE HOUSING. PROVIDE POLYSTYRENE DIFFUSER IN COLOR INDICATED WITH FREQUENCY-MATCHED SILKSCREEN COATING FOR MAXIMUM LED LIGHT OUTPUT.
7. CERTIFICATION – UL LISTED AND CERTIFIED FOR DAMP LOCATIONS.

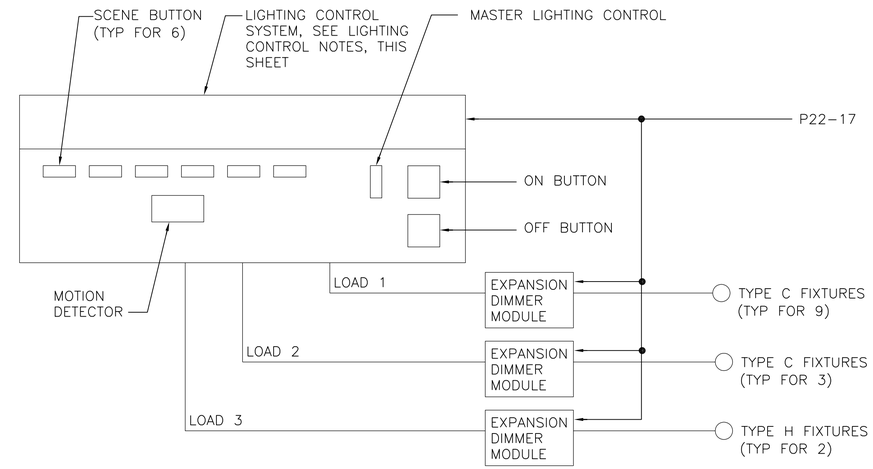
LED EXIT SIGN

REVISED: AUGUST 2004 | LIGHTING PLATE: NL-63

J

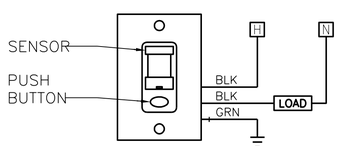
## LIGHTING CONTROL NOTES

1. THE LIGHTING CONTROL SYSTEM SHALL BE A COMPLETE, INTEGRATED SYSTEM DESIGNED FOR WALL MOUNTING IN THE LOCATION SHOWN.
2. THE SYSTEM SHALL HAVE SIX CHANNELS OF DIMMING, WITH EACH CHANNEL CAPABLE OF HANDLING UP TO 800 WATTS INDIVIDUALLY, WITH A TOTAL RATING OF 1920 WATTS FOR THE COMPLETE UNIT.
3. THE SYSTEM SHALL BE ABLE TO CONTROL ON/OFF SWITCHING OF NON-DIMMABLE LOADS, MOTORIZED WINDOW TREATMENTS, SCREEN AND LIFTS IN UP TO SIX SHADE GROUPS.
4. THE SIX SCENE BUTTONS CAN BE USED TO RECALL SCENE PRESETS, WITH A "ROCKER" ACTION FOR ADJUSTING THE LIGHTING LEVELS.
5. LARGE ON AND OFF BUTTONS PROVIDE ACCESS TO THE "ON" AND "ALL OFF" SCENES.
6. ADDITIONAL CONTROLS AND NUMERIC DISPLAY ARE HIDDEN BENEATH THE HINGED FRONT COVER PLATE.
7. PROVIDE LIGHTING CONTROL SYSTEM WITH BUILT IN INFRARED MOTION DETECTOR.
8. THE EXPANSION DIMMER MODULE SHALL ALLOW DIMMING OF BOTH FORWARD AND REVERSE PHASE TYPE LOADS, INCLUDING ELECTRONIC LOW VOLTAGE (ELV). THE UNIT SHALL BE SURFACE MOUNTED TO A VERTICAL SURFACE ABOVE CEILING.
9. CABLING AND CONDUIT FOR POWER AND DATA COMMUNICATIONS SHALL BE AS DIRECTED BY THE MANUFACTURER.
10. MANUFACTURER REPRESENTATIVE SHALL PROGRAM UP TO SIX SCENES AS DIRECTED BY THE GOVERNMENT DURING TRAINING OF THE SYSTEM.
11. LIGHTING CONTROL SYSTEM DESIGN IS BASED ON CRESTRON ILUX SERIES.




## ROOM 106 LIGHTING DIAGRAM

NO SCALE



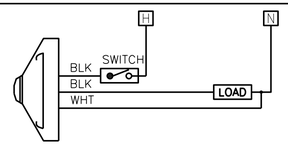

WALL SENSOR REQUIREMENTS:

1. SPECIFICATIONS – SENSOR MOUNTS IN SINGLE GANG SWITCH BOX, 30" TO 48" AFF. MAXIMUM SWITCH LOAD IS 800W @ 120 VAC (1200W @ 277 VAC) AT AN OPERATING TEMPERATURE OF 14°F TO 160°F IN 20% TO 90% NON-CONDENSING RELATIVE HUMIDITY.
2. FEATURES – SELF GROUNDING MOUNTING STRAP, NO MINIMUM LOAD, PROGRAMMABLE AND ADJUSTABLE TIME DELAY.
3. OPERATION – DUAL TECHNOLOGY SENSORS FIRST DETECT MOTION USING PASSIVE INFRARED AND THEN UTILIZE ULTRASONIC TO MONITOR CONTINUED OCCUPANCY. A SELF CONTAINED RELAY SWITCHES THE CONNECTED LIGHTING LOAD ON. A TIMER, PROGRAMMABLE FROM 30 SECONDS TO 20 MINUTES, KEEPS LIGHTS ON DURING BRIEF PERIODS OF INACTIVITY. TIMER RESETS EVERY TIME OCCUPANCY IS DETECTED. SENSORS REQUIRES NO FIELD CALIBRATION OR SENSITIVITY ADJUSTMENTS.
4. ON MODES – "AUTOMATIC ON" – LIGHTS COME ON WHEN OCCUPANCY DETECTED; "MANUAL ON" – PRESS PUSH BUTTON TO TURN LIGHTS ON; "REDUCED TURN ON" – SENSOR IS SET TO ONLY DETECT LARGE MOTIONS AND IGNORES MOVEMENT OUTSIDE OF THE ROOM THEREBY ELIMINATING FALSE ON.
5. SWITCH MODES – "PREDICTIVE MODE OFF" – ALLOWS LIGHTS TO BE TURNED OFF VIA THE PUSH BUTTON AND SENSOR GOES INTO AUTOMATIC ON OPERATION. IF OCCUPANCY IS STILL DETECTED AFTER 15 SECONDS, THE PUSH BUTTON MUST BE PRESSED TO TURN THE LIGHTS ON; "PERMANENT OFF" – PRESSING PUSH BUTTON TURNS THE LIGHTS AND SENSOR OFF, PUSH BUTTON MUST BE PRESSED AGAIN TO TURN ON LIGHTS; "SWITCH DISABLE" – PREVENTS USER FROM MANUALLY TURNING OFF THE LIGHTS VIA THE PUSH BUTTON.
6. OPTIONS – PROVIDE PHOTOCELL, LOW TEMP/HIGH HUMIDITY OPERATION, OR VANDAL RESISTANT LENS AS INDICATED ON THE DRAWINGS. VANDAL RESISTANT LENS SHALL NOT DECREASE DETECTION BY MORE THAN 50%.
7. CERTIFICATION – UL LISTED AND LABELED.

WALL SWITCH OCCUPANCY SENSOR – DUAL TECHNOLOGY (DT) TYPE

LIGHTING CONTROL PLATE: LC-2

K



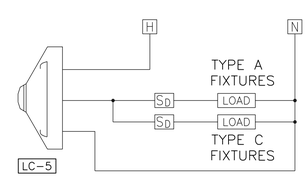

CEILING SENSOR REQUIREMENTS:

1. SPECIFICATIONS – SENSOR MOUNTS IN ROUND FIXTURE BOX OR MUD RING IN DOUBLE GANG BOX LOCATED ABOVE CEILING; MAXIMUM SWITCH LOAD IS 800W @ 120VAC (1200W @ 277V) AT AN OPERATING TEMPERATURE OF 14°F TO 160°F IN 20% TO 90% NON-CONDENSING RELATIVE HUMIDITY.
2. FEATURES – NO MINIMUM LOAD, PROGRAMMABLE AND ADJUSTABLE TIME DELAY.
3. OPERATION – SENSOR DETECTS CHANGES IN THE INFRARED ENERGY GIVEN OFF BY OCCUPANTS. A SELF CONTAINED RELAY SWITCHES THE CONNECTED LIGHTING LOAD ON. ONCE ON, THE SENSOR DETECTS NOISE LEVEL CHANGES IN THE SPACE TO KEEP THE LIGHTS ON. A TIMER, PROGRAMMABLE FROM 30 SECONDS TO 20 MINUTES, KEEPS LIGHTS ON DURING BRIEF PERIODS OF INACTIVITY. TIMER RESETS EVERY TIME OCCUPANCY IS DETECTED. ONCE THE TIMER EXPIRES, A 10 SECOND GRACE PERIOD ALLOWS THE OCCUPANT TO INITIATE VOICE OR MOTION TO REACTIVATE THE LIGHTS. IF THE GRACE PERIOD EXPIRES, THE SENSOR GOES INTO THE OFF STATE, AND THE SENSOR MUST DETECT CHANGES IN THE INFRARED ENERGY TO INITIATE THE SYSTEM TO THE ON STATE.
4. FIELD OF VIEW – THE SENSOR PROVIDES A MAXIMUM VIEWING ANGLE OF 56° IN A COMPLETE 360° CONICAL PATTERN. PLACE THE SENSOR ALONG THE ENTRANCE DOOR WALL TO PREVENT IT FROM VIEWING OUT OF THE SPACE. AVOID LOCATING THE SENSOR NEAR HVAC AIR DIFFUSERS BECAUSE THE "NOISE" FROM AIR FLOW WILL COMPLETE 360° CONICAL PATTERN. PLACE THE SENSOR ALONG THE ENTRANCE DOOR WALL TO PREVENT IT FROM VIEWING OUT OF THE SPACE. AVOID LOCATING THE SENSOR NEAR HVAC AIR DIFFUSERS BECAUSE THE "NOISE" FROM AIR FLOW WILL DECREASE THE SENSITIVITY OF THE SENSOR. HEAT PRODUCING SOURCES CONTROLLED BY THE SENSOR SHALL NOT BE IN THE VIEW PATTERN OF THE SENSOR.
5. OPTIONS – PROVIDE PHOTOCELL, LOW TEMP/HIGH HUMIDITY OPERATION AS INDICATED ON THE DRAWINGS.
6. CERTIFICATION – UL LISTED AND LABELED.

CEILING OCCUPANCY SENSOR – DUAL TECHNOLOGY (DT) TYPE

LIGHTING CONTROL PLATE: LC-5

L




## ROOM 104 LIGHTING DIAGRAM

NO SCALE

NOTE: WIRING DIAGRAM IS TYPICAL FOR EAST AND WEST SIDES OF ROOM 104.

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER 4-12-13 12-022A

BOWMAN, FOSTER & ASSOC. CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES DGW | DRW DJL | CHK SGR

<<PM/DM>>

BRANCH MANAGER

CHIEF ENG/ARCH

<<XXX>>

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ WASHINGTON
BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
DETAILS

SCALE: AS NOTED

EPROJECT NO.: –

CONSTR. CONTR. NO. N40080-12-R-4422

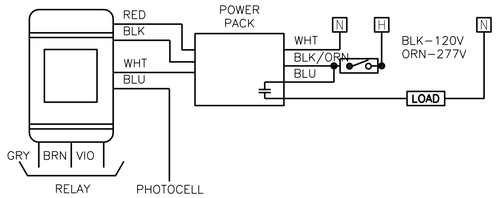
NAVFAC DRAWING NO. 13056702

SHEET 45 OF 53

E-502

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO, B-14\NAVGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-502 DETAILS.dwg LAYOUT NAME: E-502 DETAILS PLOTTED: Thursday, April 11, 2013 - 1:53pm USER: ipenotta

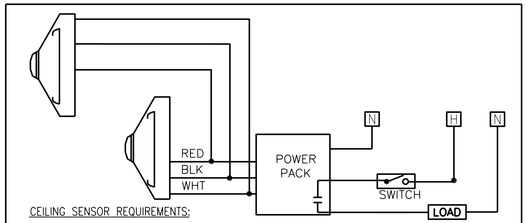



## WIDE VIEW SENSOR REQUIREMENTS

1. SPECIFICATIONS – LOW VOLTAGE SENSOR MOUNTS DIRECTILY TO CORNER OR WALL FROM 7' TO 10' AFF, OPERATING VOLTAGE IS 12–24 VAC OR DC, WITH A CURRENT DRAW OF 4 MILLI-AMPS, AT AN OPERATING TEMPERATURE OF 14°F TO 160°F IN 20% TO 90% NON-CONDENSING RELATIVE HUMIDITY. SENSOR REQUIRES A POWER PACK.
2. FEATURES – 120° BY 40' COVERAGE FOR SMALL MOTION, ADJUSTABLE TIME DELAY.
3. OPERATION – DUAL TECHNOLOGY SENSORS FIRST DETECT MOTION USING PASSIVE INFRARED AND THEN UTILIZE ULTRASONIC TO MONITOR CONTINUED OCCUPANCY A TIMER, PROGRAMMABLE FROM 30 SECONDS TO 20 MINUTES, KEEPS LIGHTS ON DURING BRIEF PERIODS OF INACTIVITY. TIMER RESETS EVERY TIME OCCUPANCY IS DETECTED. SENSOR REQUIRES NO FIELD CALIBRATION OR SENSITIVITY ADJUSTMENTS.
4. INSTALLATION – SENSOR HAS REAR ENCLOSURE WHICH IS BEVELED SO AS TO BE CORNER MOUNTED. MOUNT IN CORNER ABOVE ENTRANCE DOOR OR IN CORNER ALONG THE SAME WALL AS THE ENTRANCE. FOR MOUNTING HEIGHTS ABOVE 10', USE A CEILING MOUNT BRACKET AND MOUNT SENSOR TO ANGLED SIDE TO PROVIDE A 30° LOOK DOWN.
5. OPTIONS – PROVIDE LOW VOLTAGE RELAY, PHOTOCELL, OR LOW TEMP/HIGH HUMIDITY OPERATION.
7. CERTIFICATION – UL LISTED AND LABELED.

WIDE VIEW SENSOR – DUAL TECHNOGY (DT) TYPE

LIGHTING CONTROL PLATE: LC–4

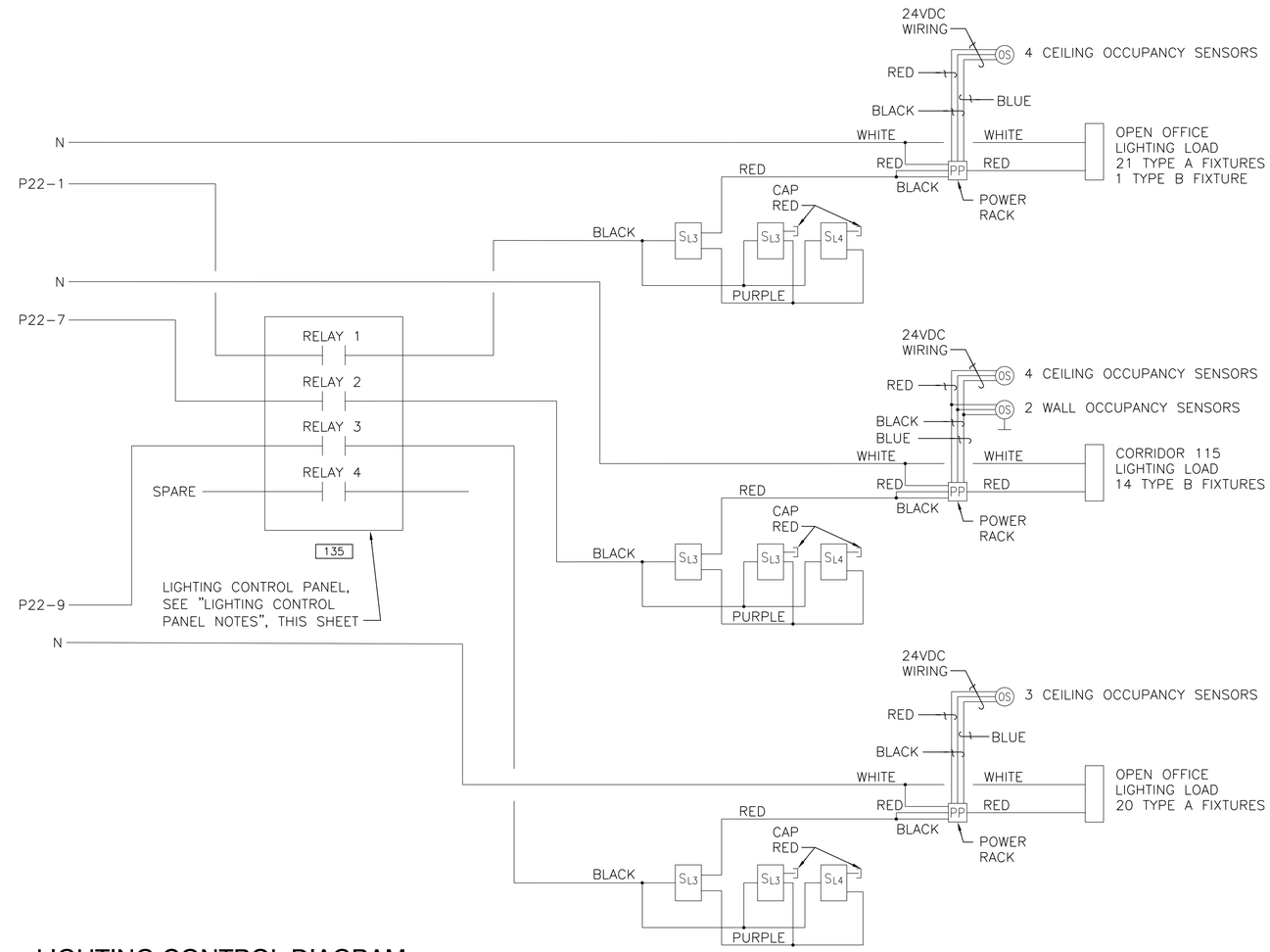



CEILING SENSOR REQUIREMENTS:

1. SPECIFICATIONS – SENSOR MOUNTS IN ROUND FIXTURE BOX OR MUD RING IN DOUBLE GANG BOX LOCATED ABOVE CEILING. OPERATES AT A TEMPERATURE OF 14°F TO 160°F IN IN 20% TO 90% NON-CONDENSING RELATIVE HUMIDITY. CONNECTED TO POWER PACK, WHICH CAN DRIVE UP TO 200mA LOW VOLTAGE LOAD.
2. FEATURES – PROGRAMMABLE AND ADJUSTABLE TIME DELAY FROM 30 SECONDS TO 20 MINUTES AT SELECTABLE 2.5 MINUTE INCREMENTS.
3. OPERATION – SENSOR OPERATES USING A POWER PACK, WHICH ACCEPTS LINE VOLTAGE AT 120V OR 277V, AND THEN OUTPUTS LOW VOLTAGE TO THE SENSORS. CHANGES IN THE INFRARED ENERGY GIVEN OFF BY OCCUPANTS IS DETECTED BY THE SENSORS, WHICH SWITCHES THE CONNECTED LIGHTING LOAD ON. ONCE ON, THE SENSOR DETECTS NOISE LEVEL CHANGES IN THE SPACE TO KEEP THE LIGHTS ON. A TIMER KEEPS LIGHTS ON DURING BRIEF PERIODS OF INACTIVITY. TIMER RESETS EVERY TIME OCCUPANCY IS DETECTED. ONCE THE TIMER EXPIRES, A 10 SECOND GRACE PERIOD ALLOWS THE OCCUPANT TO INITIATE VOICE OR MOTION TO REACTIVATE THE LIGHTS. IF THE GRACE PERIOD EXPIRES, THE SENSOR GOES INTO THE OFF STATE, AND THE SENSOR MUST DETECT CHANGES IN THE INFRARED ENERGY TO INITIATE THE SYSTEM TO THE ON STATE.
4. FIELD OF VIEW – THE SENSOR PROVIDES A MAXIMUM VIEWING ANGLE OF 56° IN A COMPLETE 360° CONICAL PATTERN. PLACE THE SENSOR ALONG THE ENTRANCE DOOR WALL TO PREVENT IT FROM VIEWING OUT OF THE SPACE. AVOID LOCATING THE SENSOR NEAR HVAC AIR DIFFUSERS BECAUSE THE "NOISE" FROM AIR FLOW WILL DECREASE SENSITIVITY OF THE SENSOR. HEAT PRODUCING SOURCES CONTROLLED BY THE SENSOR SHALL NOT BE IN THE VIEW PATTERN OF THE SENSOR.
5. OPTIONS – PROVIDE PHOTOCELL, LOW TEMP/HIGH HUMIDITY OPERATION AS INDICATED ON THE DRAWINGS.
6. CERTIFICATION – UL LISTED AND LABELED.
7. MULTIPLE SENSORS ARE WIRED IN PARALLEL, HOWEVER THE MAXIMUM LOAD RATINGS REMAIN THE SAME.

CEILING OCCUPANCY SENSOR – DUAL TECHNOLOGY (DT) TYPE

LIGHTING CONTROL PLATE: LC–7




## LIGHTING CONTROL DIAGRAM

NO SCALE

## LIGHTING CONTROL PANEL NOTES

1. PROVIDE A COMMERCIAL LIGHTING CONTROL PANEL THAT CAN OPERATE IN A NETWORKED CONFIGURATION OR STAND–ALONE MODE. PANEL SHALL BE NEMA 1 SURFACE ENCLOSURE WITH HINGED LOCKING DOOR.
2. PANEL ENCLOSURE SHALL CONTAIN A MAXIMUM OF FOUR (4) 120/277V, 20A SINGLE POLE RELAYS. RELAYS SURE BE NORMALLY OPEN AND ELECTRICALLY HELD.
3. SYSTEM ALLOWS FOR SIMPLE PROGRAMMING BASED ON USER–SELECTED INDOOR SCENARIOS. PROGRAMMING CAN CREATE GROUPS AND SCHEDULES USING A REAL TIME CLOCK OR ASTRONOMICAL CLOCK.
4. SYSTEM CAN ACCOMMODATE UP TO 64 SCHEDULES WITH DATE RANGE, NINETY–NINE (99) HOLIDAY DATES AND FOUR (4) HOLIDAY SCHEDULES.
5. PROGRAMMING SHALL BE CAPABLE OF SETTING OPEN/CLOSE TIME, AFTER HOUR SWEEPS AND BLINK WARNINGS. PANEL CAN BE OPERATED WITH THE DOOR CLOSED.
6. LIGHT SWITCHES USED FOR SPACE CONTROL SHALL BE LINE VOLTAGE TYPE AND CAPABLE OF 3–WAY AND 4–WAY SWITCHING. SWITCHES SHALL BE FROM THE SAME MANUFACTURER OF THE LIGHTING CONTROL SYSTEM TO MAINTAIN COMPATIBILITY THROUGHOUT THE SYSTEM.
7. DESIGN IS BASED ON HUBELL BUILDING AUTOMATION, CX SERIES.

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND – JAMES E. CRAWFORD III – No. 22422 – REGISTERED PROFESSIONAL ENGINEER – 4-12-13

12–022A

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES DGW DRW DJL CHK SGR

<<PM/DM>>

BRANCH MANAGER

CHIEF ENG/ARCH

<<XX>>

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ WASHINGTON
BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
DIAGRAM

SCALE: AS NOTED

EPROJECT NO.: –

CONSTR. CONTR. NO. N40080–12–R–4422

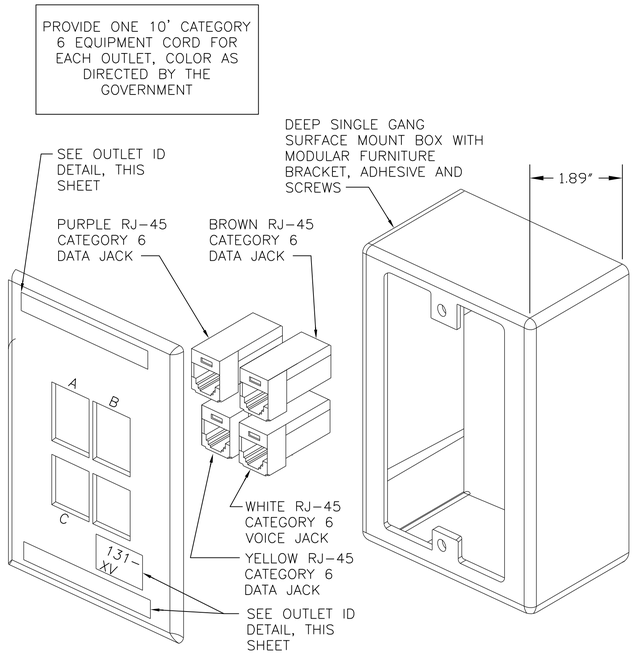
NAVFAC DRAWING NO. 13056703

SHEET 46 OF 53

E-503

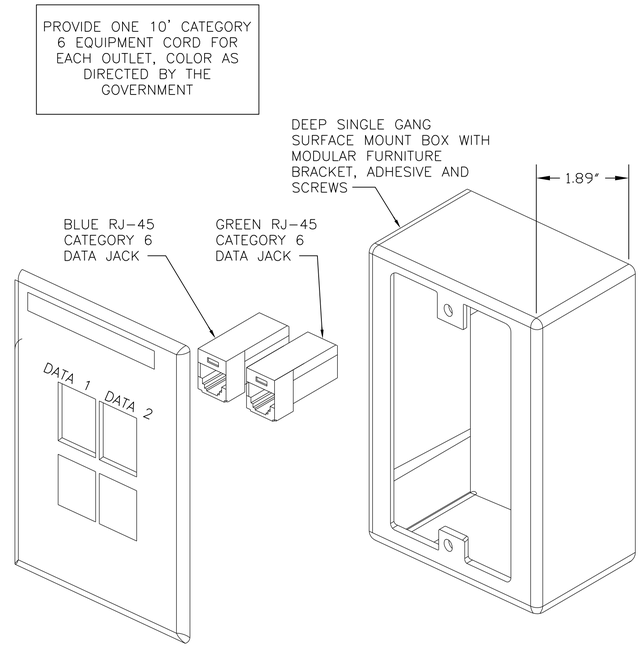
DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO, B-14\NAVGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-503 DIAGRAM.dwg LAYOUT NAME: E-503 DIAGRAM PLOTTED: Thursday, April 11, 2013 - 1:53pm USER: jperalta



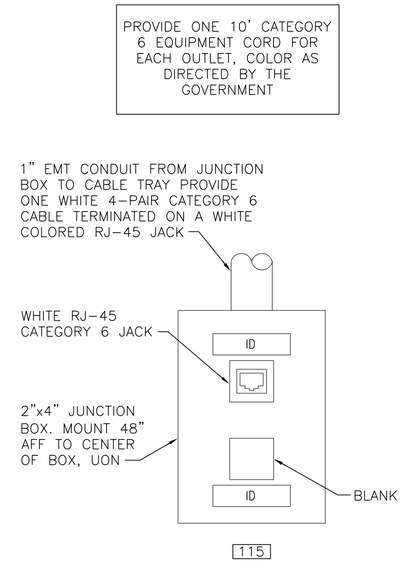

## TYPICAL TELECOMMUNICATIONS FURNITURE OUTLET FOR WRNMMC NETWORK ( ) ⬢

NO SCALE



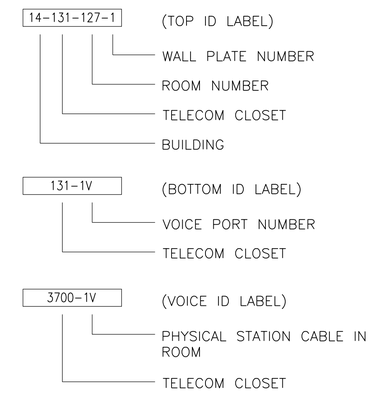

## TYPICAL TELECOMMUNICATIONS FURNITURE OUTLET FOR NMCI NETWORK ( ) ⬡

NO SCALE



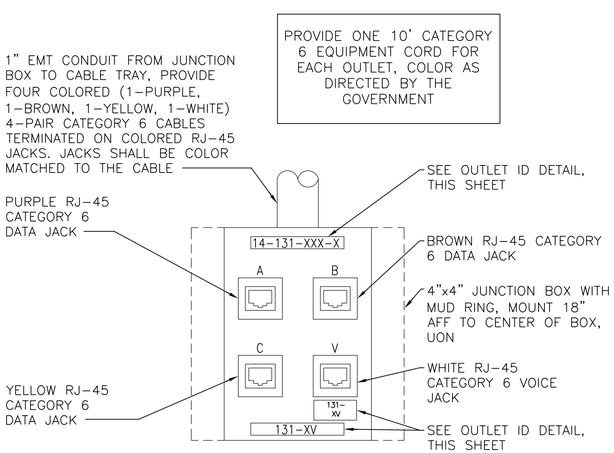

## VOICE WALL OUTLET ( ) ⏚

NO SCALE



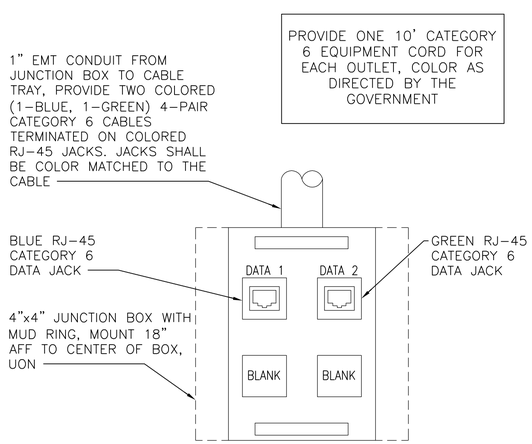

## OUTLET ID DETAIL

NO SCALE



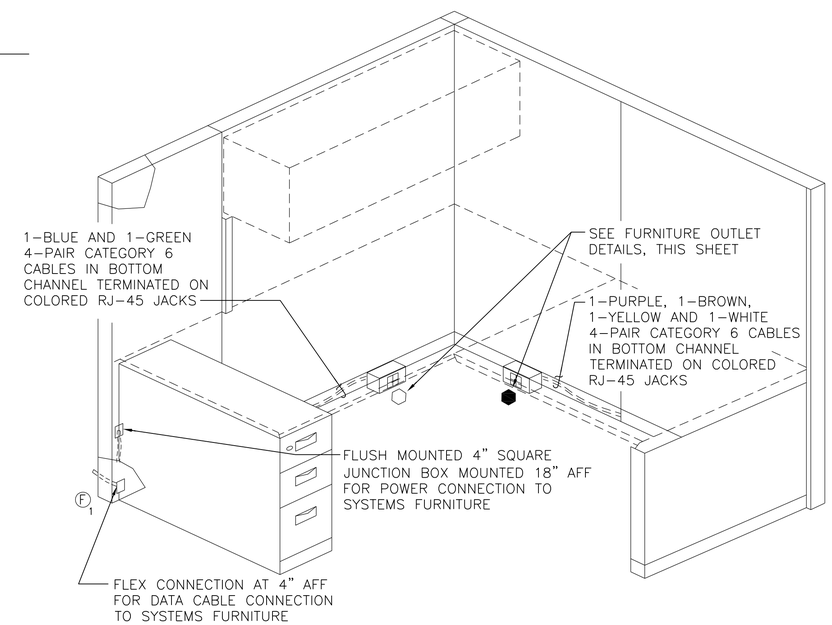

## TYPICAL TELECOMMUNICATIONS OUTLET FOR WRNMMC NETWORK ( ) ▼

NO SCALE




## TYPICAL TELECOMMUNICATIONS OUTLET FOR NMCI NETWORK ( ) ▽

NO SCALE




## SYSTEMS FURNITURE DETAIL

NO SCALE

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER 4-12-13

12-022A

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES DGW DRW DJL CHK SGR

<<PM/DM>>

BRANCH MANAGER

CHIEF ENG/ARCH

<<XXX>>

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ WASHINGTON
BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
DETAILS

SCALE: AS NOTED

EPROJECT NO.: –

CONSTR. CONTR. NO. N40080-12-R-4422

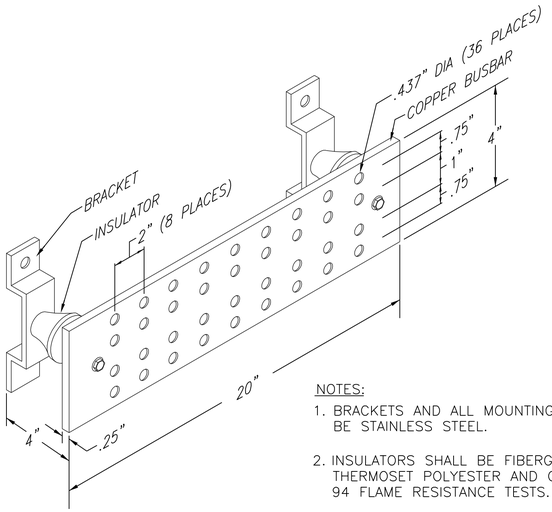
NAVFAC DRAWING NO. 13056704

SHEET 47 OF 53

E-504

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO, B-14\NAVGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-504 DETAILS.dwg LAYOUT NAME: E-504 DETAILS PLOTTED: Friday, April 12, 2013 - 11:05am USER: blunderwhite

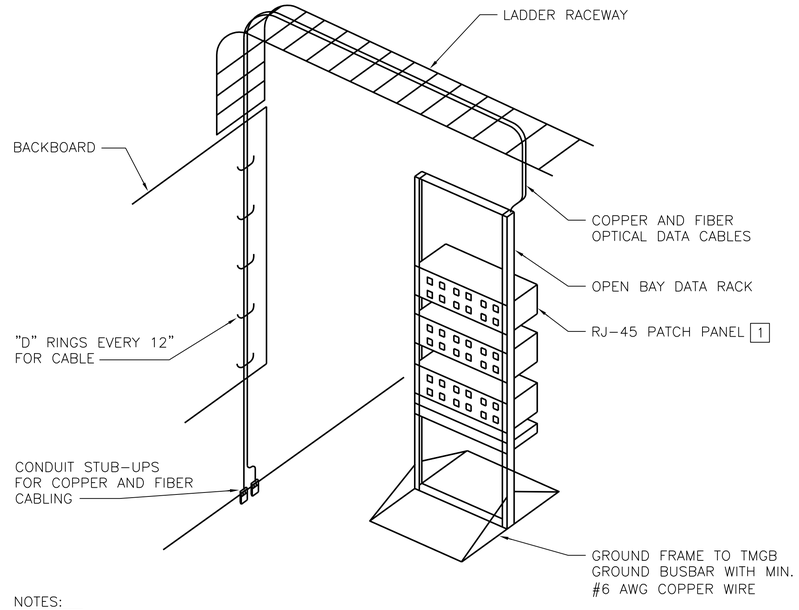



NOTES:

1. BRACKETS AND ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
2. INSULATORS SHALL BE FIBERGLASS-REINFORCED THERMOSET POLYESTER AND CONFORM TO UL 94 FLAME RESISTANCE TESTS.

## TELECOMMUNICATIONS MAIN GROUNDING BUSBAR (TMGB) DETAIL

NO SCALE

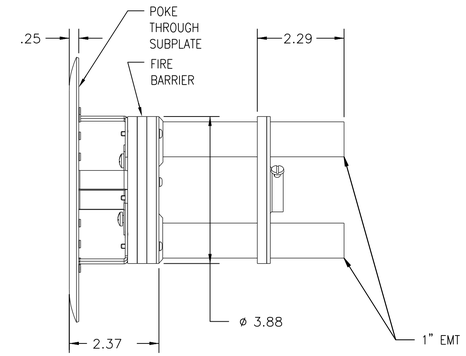



NOTES:

1 PROVIDE QUANTITY OF PATCH PANELS AS REQUIRED TO SUPPORT THE NUMBER OF WORKSTATION JACKS SHOWN ON TELECOMMUNICATIONS RISER DIAGRAM, SHEET E-602.

## EQUIPMENT RACK CONFIGURATION

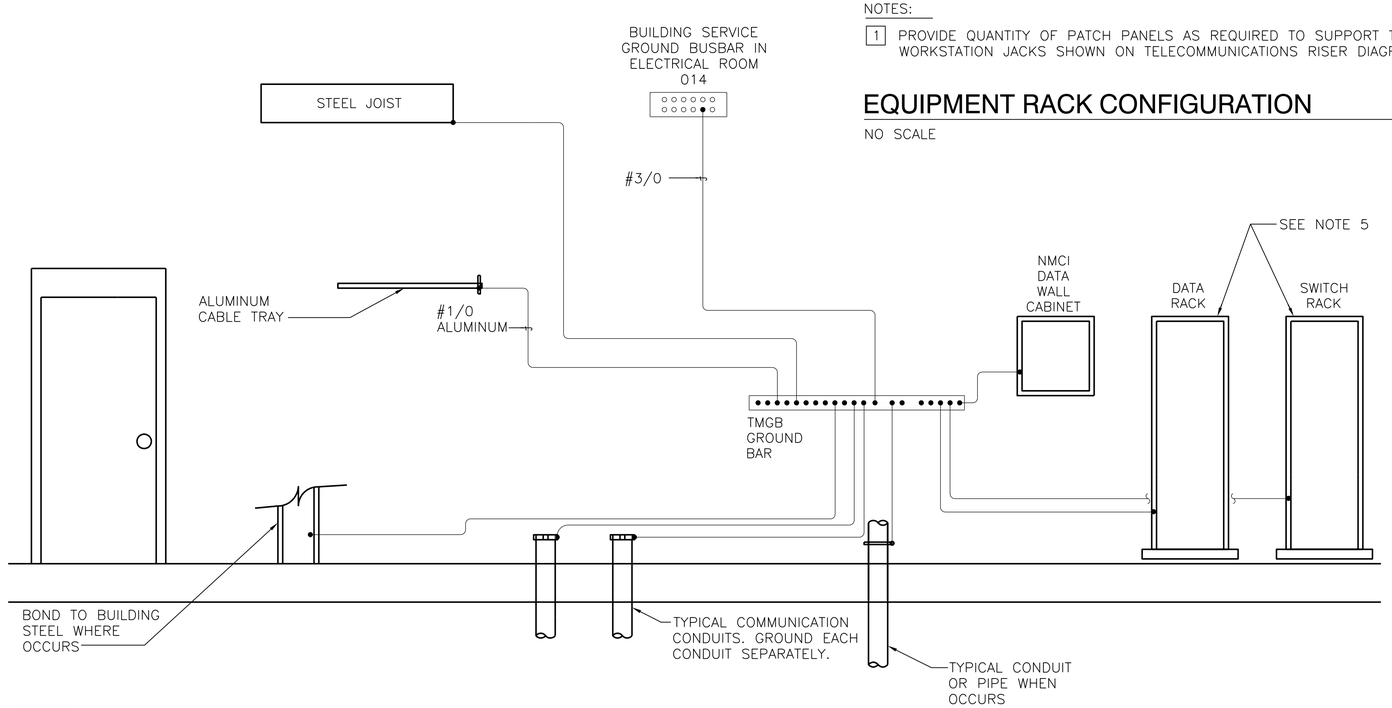
NO SCALE




*NOTE: DESIGN FOR POKE THROUGH FLOOR DEVICE BASED AROUND HUBBELL WIRING SYSTEM. COVER AND BOX ASSEMBLY SHALL MEET OR EXCEED UL514 SCRUB WATER EXCLUSION REQUIREMENTS.

## FLUSH FLOOR POKE THROUGH DETAIL

NO SCALE

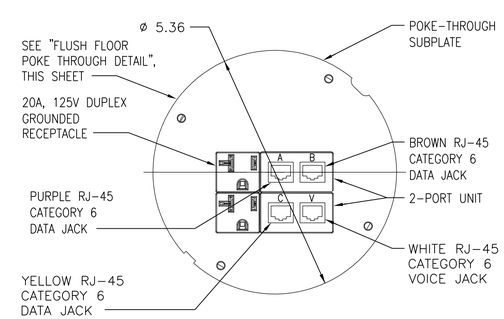



NOTES:

1. SEE "TELECOMMUNICATIONS MAIN GROUNDING BUSBAR DETAIL", THIS SHEET, FOR INSTALLATION AND CONNECTIONS TO THE GROUND BAR.
2. PROVIDE #6 BARE COPPER GROUND FOR ALL COMMUNICATION EQUIPMENT, UNLESS OTHERWISE NOTED.
3. PROVIDE EQUIPMENT GROUNDING CONDUCTORS FOR ALL POWER EQUIPMENT PER NEC.
4. PROVIDE MINIMUM #2 BARE COPPER GROUND FOR ALL OTHER EQUIPMENT, UON.
5. EACH RACK SHALL BE PHYSICALLY SECURED TO FLOOR AND THE TOP OF THE RACK SECURED TO STRUCTURAL CEILING AS DIRECTED BY RACK MANUFACTURER, IN ORDER TO PROHIBIT MOVEMENT AND SWAYING.

## ROOM 131 GROUNDING SCHEMATIC

NO SCALE




106

## CONFERENCE ROOM FLOOR OUTLET ( )

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND — ANDREW T. GRAHAM — No. 22422 — 4-12-13 — REGISTERED PROFESSIONAL ENGINEER

12-022A

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

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DES DGW DRW DJL CHK SGR

<<PM/DM>>

BRANCH MANAGER

CHIEF ENG/ARCH

<<XXX>>

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ WASHINGTON
BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
DETAILS

SCALE: AS NOTED

EPROJECT NO.: –

CONSTR. CONTR. NO. N40080-12-R-4422

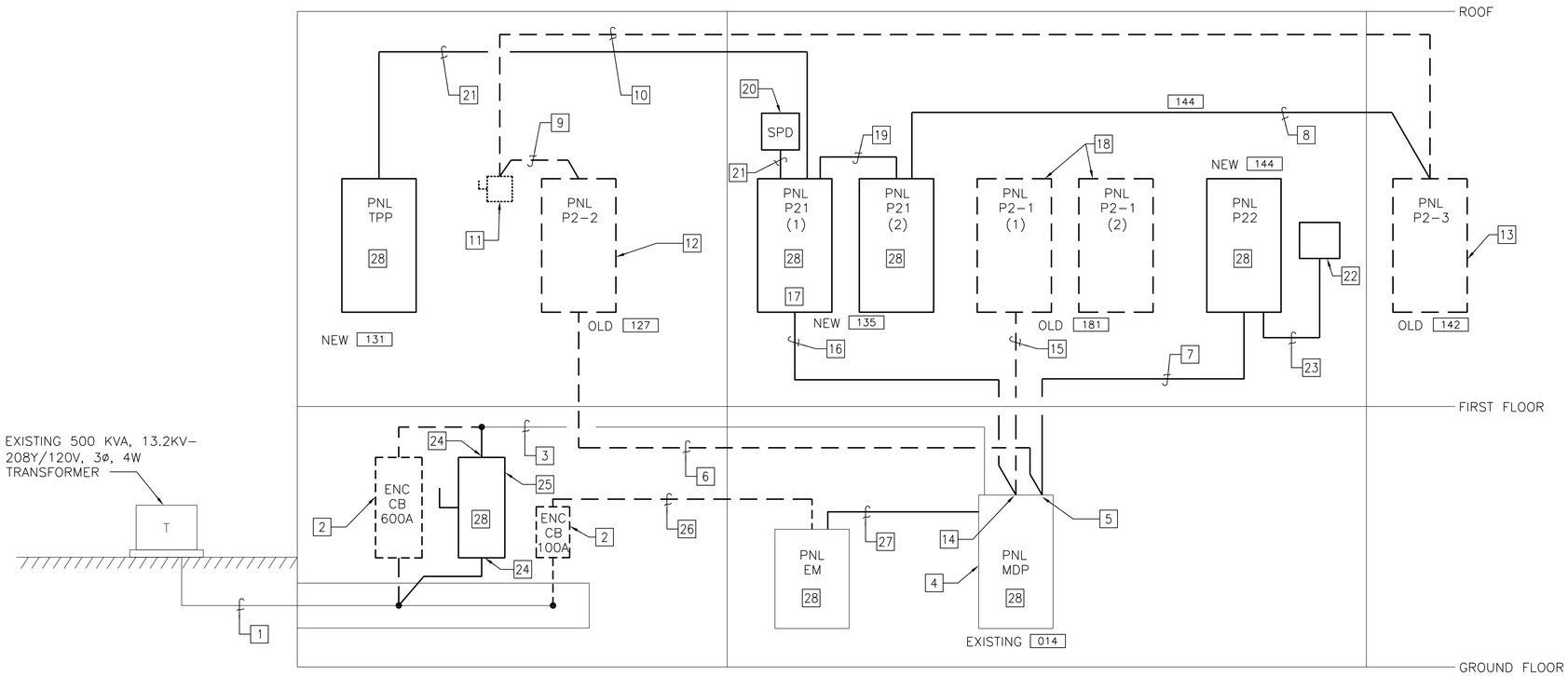
NAVFAC DRAWING NO. 13056705

SHEET 48 OF 53

E-505

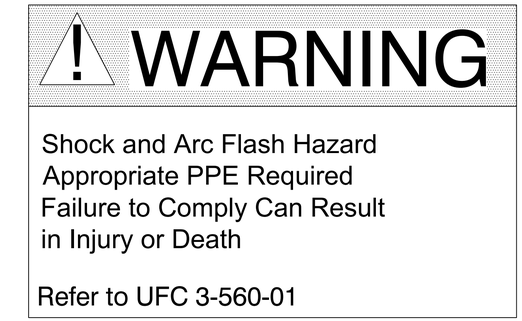
DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO, B-14\NAVCATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-505 DETAILS.dwg LAYOUT NAME: E-505 DETAILS PLOTTED: Thursday, April 11, 2013 - 1:53pm USER: iperotto




## POWER RISER DIAGRAM - DEMOLITION AND NEW WORK

NO SCALE




## ARCH FLASH WARNING LABEL

NO SCALE

## POWER RISER NOTES

1. EXISTING TWO 3–1/2" CONDUITS WITH FOUR 500 KCMIL IN EACH, TO REMAIN.
2. RECONNECT LINE SIDE AND LOAD SIDE FEEDERS TO NEW 600A FUSED DISCONNECT SWITCH LUGS.
3. EXISTING TWO 3" CONDUITS WITH FOUR 350 KCMIL & ONE #1/0 IN EACH, TO REMAIN.
4. EXISTING PANEL MDP, 600A MLO, 208Y/120V, 3ø, 4W, TO REMAIN.
5. PROVIDE TEMPORARY SPLICE OR DOUBLE TAP AT EXISTING 225A CIRCUIT BREAKER. BREAKER SHALL TEMPORARILY FEED EXISTING FEEDER TO EXISTING PANEL P2–2 AND NEW FEEDER TO NEW PANEL P22.
6. DISCONNECT FEEDER CONDUCTORS FROM EXISTING PANEL P2–2 AND REMOVE WIRING AND CONDUIT BACK TO PANEL MDP COMPLETE WHEN ALL BRANCH CIRCUITS HAVE BEEN REMOVED FROM PANEL P2–2.
7. RUN FOUR #4/0 AND ONE #4 GROUND IN 2–1/2" CONDUIT FROM PANEL P22 TO PANEL MDP AND CONNECT TO 225A CIRCUIT BREAKER THAT FORMALLY FED PANEL P2–2.
8. WHEN PANEL P21 HAS BECOME ENERGIZED, PROVIDE 50A/3P CIRCUIT BREAKER IN PANEL P21 SECTION 2 TO PROVIDE TEMPORARY FEED TO EXISTING PANEL P2–3. RUN FOUR #8 AND ONE #10 GROUND IN 1" CONDUIT FOR TEMPORARY FEED. REMOVE THIS FEEDER WHEN ALL BRANCH CIRCUITS HAVE BEEN REMOVED FROM PANEL P2–3.
9. DISCONNECT FEEDER FROM PANEL P2–2 AND REMOVE WIRING AND CONDUIT COMPLETE BACK TO DISCONNECT SWITCH.
10. DISCONNECT FEEDER FROM DISCONNECT SWITCH AND REMOVE WIRING AND CONDUIT COMPLETE BACK TO PANEL P2–3.
11. REMOVE DISCONNECT SWITCH COMPLETE.
12. PANEL SHALL REMAIN ENERGIZED AS REQUIRED THROUGHOUT DEMOLITION AND CONSTRUCTION. BRANCH CIRCUITS SCHEDULED FOR DEMOLITION SHALL HAVE WIRING AND CONDUIT REMOVED COMPLETE. BRANCH CIRCUITS THAT SHALL REMAIN SHALL BE DISCONNECTED AND EXTENDED TO PANEL P22 AND CONNECTED TO SPARE CIRCUIT BREAKERS. WHEN ALL CIRCUITS HAVE BEEN REMOVED COMPLETE, REMOVE FEEDER BACK TO PANEL MDP AND REMOVE PANEL COMPLETE.
13. PANEL SHALL REMAIN ENERGIZED AS REQUIRED THROUGHOUT DEMOLITION AND CONSTRUCTION. BRANCH CIRCUITS SCHEDULED FOR DEMOLITION SHALL HAVE WIRING AND CONDUIT REMOVED COMPLETE. BRANCH CIRCUITS THAT SHALL REMAIN SHALL BE DISCONNECTED AND EXTENDED TO PANEL P21 SECTION 2 AND CONNECTED TO SPARE CIRCUIT BREAKERS. WHEN ALL CIRCUITS HAVE BEEN REMOVED COMPLETE, REMOVE FEEDER BACK TO PANEL P21 SECTION 2 AND REMOVE PANEL COMPLETE.
14. PROVIDE TEMPORARY SPLICE OR DOUBLE TAP AT EXISTING 225A CIRCUIT BREAKER. BREAKER SHALL TEMPORARILY FEED EXISTING FEEDER TO EXISTING PANEL P2–1 SECTION 1 AND NEW FEEDER TO NEW PANEL P21 SECTION 1.
15. DISCONNECT FEEDER CONDUCTORS FROM EXISTING PANEL P2–1 AND REMOVE WIRING AND CONDUIT BACK TO PANEL MDP COMPLETE WHEN ALL BRANCH CIRCUITS HAVE BEEN REMOVED FROM BOTH SECTIONS OF PANEL P2–1.
16. RUN THREE #4/0 PHASE CONDUCTORS, TWO #4/0 NEUTRAL CONDUCTORS AND ONE #4 GROUND IN 2 1/2" CONDUIT FROM PANEL P21 TO PANEL MDP AND CONNECT TO 225A CIRCUIT BREAKER THAT FORMERLY FED PANEL P2–1.
17. PROVIDE PANEL P21 SECTION 1 WITH FEED THRU LUGS FOR CONNECTION OF TEMPORARY FEEDER.
18. PANEL SHALL REMAIN ENERGIZED AS REQUIRED THROUGHOUT DEMOLITION AND CONSTRUCTION. BRANCH CIRCUITS SCHEDULED FOR DEMOLITION SHALL HAVE WIRING AND CONDUIT REMOVED COMPLETE. BRANCH CIRCUITS THAT SHALL REMAIN SHALL BE DISCONNECTED AND EXTENDED TO PANEL P21 AND CONNECTED TO SPARE CIRCUIT BREAKERS. WHEN ALL CIRCUITS HAVE BEEN REMOVED COMPLETE, REMOVE FEEDER BACK TO PANEL MDP AND REMOVE PANEL COMPLETE.
19. THREE #4/0 PHASE CONDUCTORS, TWO #4/0 NEUTRAL CONDUCTORS AND ONE #4 GROUND IN 2–1/2" CONDUIT.
20. SURGE PROTECTIVE DEVICE.
21. FOUR #8 AND ONE #10 GROUND IN 1" CONDUIT.
22. LIGHTING CONTROL PANEL.
23. BRANCH CIRCUITS FROM PANEL P22 RUN IN 1–1/2" CONDUIT. SEE "LIGHTING CONTROL DIAGRAM", SHEET E–503, FOR REQUIRED CIRCUITS.
24. DISCONNECT LINE SIDE AND LOAD SIDE FEEDERS FROM ENCLOSED CIRCUIT BREAKER AND REMOVE COMPLETE.
25. PROVIDE 600A, 3–POLE, 240V, SERVICE RATED DISCONNECT SWITCH WITH THREE 600A CURRENT LIMITING, TIME DELAY CLASS J FUSES. CONNECT TO EXISTING LOAD SIDE AND LINE SIDE FEEDERS, AND RECONNECT TO SERVICE GROUND.
26. REMOVE THREE #2 AND 1–1/4" CONDUIT PANEL EM FEEDER COMPLETE BACK TO PANEL EM.
27. RUN THREE #6 AND ONE #8 GND FROM SPARE 60A/2P CIRCUIT BREAKER IN PANEL MDP AND CONNECT TO PANEL EM.
28. APPLY ARC FLASH WARNING LABEL TO INDICATED PIECE OF EQUIPMENT. SEE "ARC FLASH LABEL DETAIL", THIS SHEET.

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND — STEVEN G. SCHRADER — No. 22492 — 4-12-13 — REGISTERED PROFESSIONAL ENGINEER

12–022A

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES DGW DRW DJL CHK SGR

<<PM/DM>>

BRANCH MANAGER

CHIEF ENG/ARCH

<<XXX>>

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND – WASHINGTON
BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
POWER RISER DIAGRAM

SCALE: AS NOTED

EPROJECT NO.: –

CONSTR. CONTR. NO.
N40080–12–R–4422

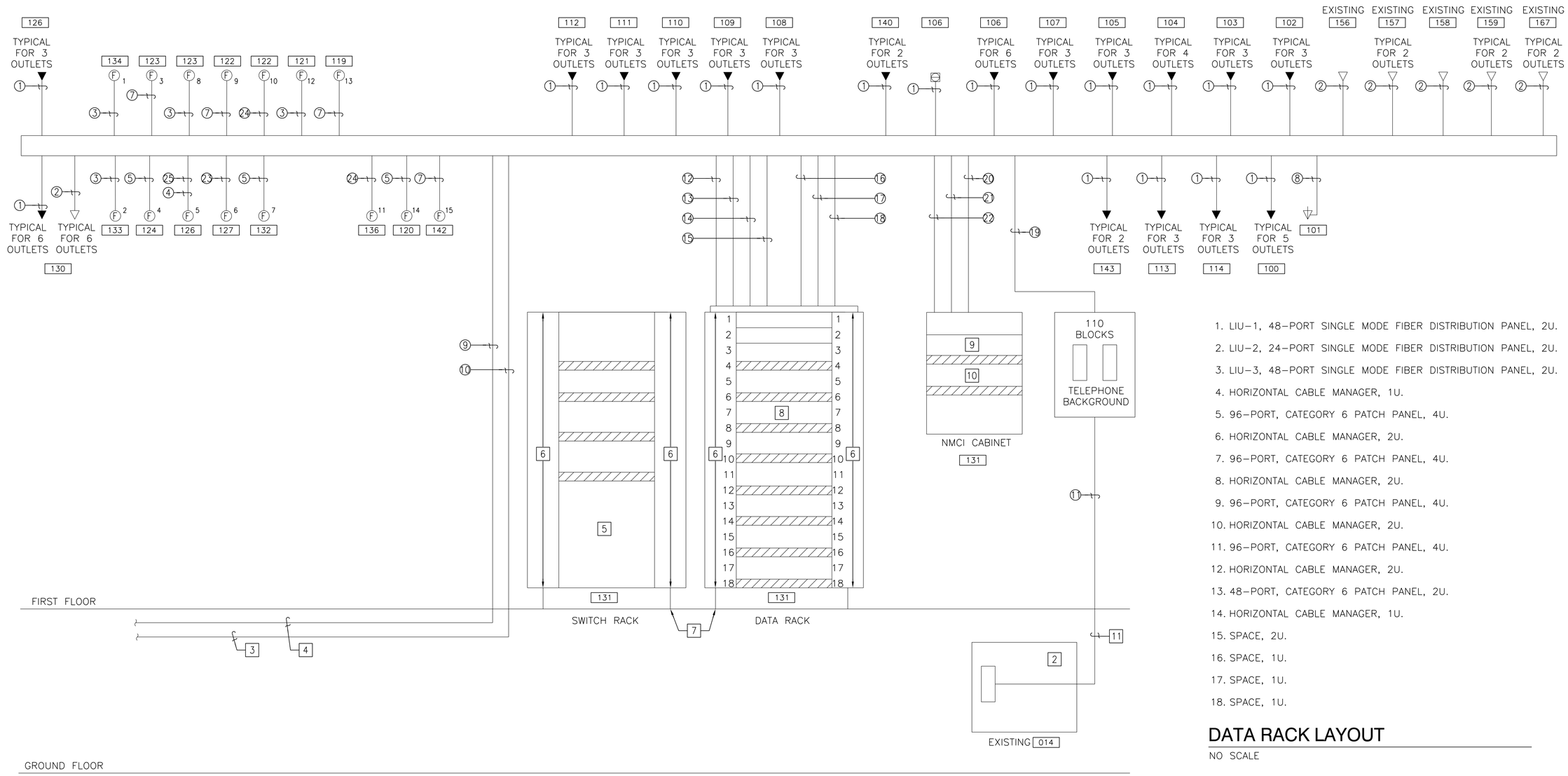
NAVFAC DRAWING NO.
13056706

SHEET 49 OF 53

E–601

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12–022A FMD RENO. B–14\NAVIGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E–601 POWER RISER DIAGRAM.dwg LAYOUT NAME: E–601 POWER RISER DIAGRAM PLOTTED: Thursday, April 11, 2013 – 1:53pm USER: jperalta




## TELECOMMUNICATIONS RISER DIAGRAM 1

NO SCALE

1. LIU-1, 48-PORT SINGLE MODE FIBER DISTRIBUTION PANEL, 2U.
2. LIU-2, 24-PORT SINGLE MODE FIBER DISTRIBUTION PANEL, 2U.
3. LIU-3, 48-PORT SINGLE MODE FIBER DISTRIBUTION PANEL, 2U.
4. HORIZONTAL CABLE MANAGER, 1U.
5. 96-PORT, CATEGORY 6 PATCH PANEL, 4U.
6. HORIZONTAL CABLE MANAGER, 2U.
7. 96-PORT, CATEGORY 6 PATCH PANEL, 4U.
8. HORIZONTAL CABLE MANAGER, 2U.
9. 96-PORT, CATEGORY 6 PATCH PANEL, 4U.
10. HORIZONTAL CABLE MANAGER, 2U.
11. 96-PORT, CATEGORY 6 PATCH PANEL, 4U.
12. HORIZONTAL CABLE MANAGER, 2U.
13. 48-PORT, CATEGORY 6 PATCH PANEL, 2U.
14. HORIZONTAL CABLE MANAGER, 1U.
15. SPACE, 2U.
16. SPACE, 1U.
17. SPACE, 1U.
18. SPACE, 1U.

## DATA RACK LAYOUT

NO SCALE

## RISER NOTES

1. SEE CABLE SCHEDULE, SHEET E-603, FOR WIRING DESCRIPTIONS.
2. EXISTING TELEPHONE SYSTEM AND BACKBOARD IN ROOM 014. TELEPHONE SYSTEM HAS SPARE 50-PAIR CAPACITY AT THIS LOCATION TO EXTEND TO SERVER ROOM 131.
3. 24-STRAND SINGLE MODE FIBER FROM BUILDING 27, ROOM 1132. SEE "SITE WORK REQUIREMENTS", SHEET E-001, FOR DESCRIPTION OF WORK.
4. 24-STRAND SINGLE MODE FIBER FROM BUILDING 2, ROOM 3265. SEE "SITE WORK REQUIREMENTS", SHEET E-001, FOR DESCRIPTION OF WORK.
5. PROVIDE FOUR 1U CABLE MANAGEMENT RACK MOUNTED PANELS FOR SWITCH RACK. GOVERNMENT TO FURNISH AND INSTALL SWITCHES IN THIS RACK.
6. PROVIDE VERTICAL CABLE MANAGEMENT RUN FULL HEIGHT OF EQUIPMENT RACK.
7. THE 19" RACK SHALL BE PHYSICALLY SECURED TO THE FLOOR AND THE TOP OF THE RACK SECURED TO STRUCTURAL CEILING AS DIRECTED BY RACK MANUFACTURER, IN ORDER TO PROHIBIT MOVEMENT AND SWAYING.
8. SEE "DATA RACK LAYOUT", THIS SHEET FOR RACK EQUIPMENT DESCRIPTION. SEE "PATCH PANEL NAMING CONVENTION", SHEET E-603, FOR TYPICAL IDENTIFICATION OF PATCH PANEL PORTS.
9. PROVIDE 24-PORT, CATEGORY 6 PATCH PANEL, 1U, FOR TERMINATION OF BLUE NMCI DATA CABLES, WITH A HORIZONTAL CABLE MANAGER, 1U, LOCATED DIRECTLY BENEATH.
10. PROVIDE 24-PORT, CATEGORY 6 PATCH PANEL, 1U, FOR TERMINATION OF GREEN NMCI DATA CABLES, WITH A HORIZONTAL CABLE MANAGER, 1U, LOCATED DIRECTLY BENEATH.
11. COORDINATE WITH THE GOVERNMENT FOR LOCATION OF 50-PAIR SPARE CABLES. EXISTING TELEPHONE CABLES THAT ARE REMOVED BACK TO ROOM 014 DURING DEMOLITION SHALL ALSO BE AVAILABLE FOR REUSE.

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER 4-12-13

12-022A

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES DGW DRW DJL CHK SGR

<<PM/DM>>

BRANCH MANAGER

CHIEF ENG/ARCH

<<XXX>>

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND ~ WASHINGTON
BETHESDA NAVY MEDICAL CENTER

BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD

FMD RENOVATION, BUILDING 14
FIRST FLOOR

TELECOMMUNICATIONS RISER DIAGRAMS

SCALE: AS NOTED
EPROJECT NO.: -
CONSTR. CONTR. NO. N40080-12-R-4422
NAVFAC DRAWING NO. 13056707
SHEET 50 OF 53

E-602

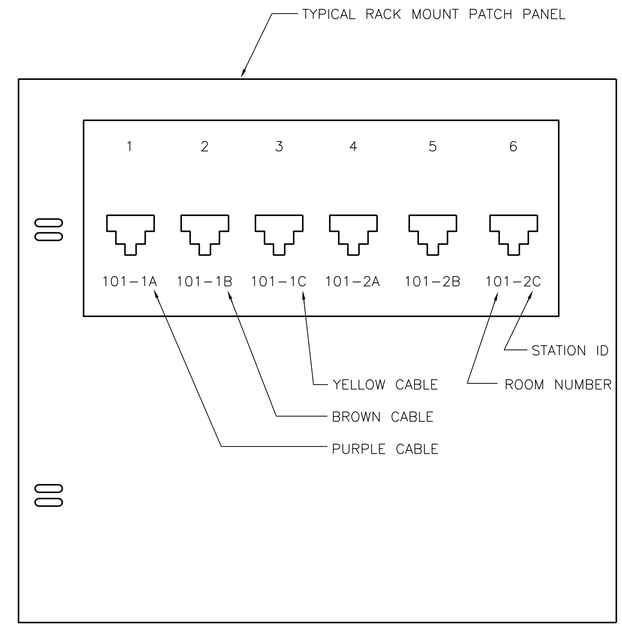
DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO, B-14\NAVGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-602 TELECOMMUNICATIONS RISER DIAGRAMS.dwg LAYOUT NAME: E-602 TELECOMMUNICATIONS RISER DIAGRAMS PLOTTED: Friday, April 12, 2013 - 11:03am USER: blunderwhite

# CABLE SCHEDULE

| MARK | FROM | TO | CABLE | RACEWAY | REMARKS |
|---|---|---|---|---|---|
| 1 | WRNMMC WALL OUTLET | DATA RACK PATCH PANEL | (1) PURPLE CATEGORY 6 CABLE | 1" EMT CONDUIT TO CABLE TRAY | |
| | | | (1) BROWN CATEGORY 6 CABLE | | |
| | | | (1) YELLOW CATEGORY 6 CABLE | | |
| | | TELEPHONE BACKBOARD 110 BLOCKS | (1) WHITE CATEGORY 6 CABLE | | |
| 2 | NMCI WALL OUTLET | NMCI CABINET PATCH PANEL | (1) BLUE CATEGORY 6 CABLE | 1" EMT CONDUIT TO CABLE TRAY | |
| | | | (1) GREEN CATEGORY 6 CABLE | | |
| 3 | F 1,2,8 & 12 (3 WRNMMC FURNITURE OUTLETS) | DATA RACK PATCH PANEL | (3) PURPLE CATEGORY 6 CABLES | 1-1/2" EMT TO CABLE TRAY | |
| | | | (3) BROWN CATEGORY 6 CABLES | | |
| | | | (3) YELLOW CATEGORY 6 CABLES | | |
| | | TELEPHONE BACKBOARD 110 BLOCKS | (3) WHITE CATEGORY 6 CABLES | | |
| 4 | F 5 (1 NMCI FURNITURE OUTLET) | NMCI CABINET PATCH PANEL | (1) BLUE CATEGORY 6 CABLE | 1-1/2" EMT TO CABLE TRAY | |
| | | | (1) GREEN CATEGORY 6 CABLE | | |
| 5 | F 4,7,14 (2 WRNMMC FURNITURE OUTLETS) | DATA RACK PATCH PANEL | (2) PURPLE CATEGORY 6 CABLES | 1-1/2" EMT TO CABLE TRAY | |
| | | | (2) BROWN CATEGORY 6 CABLES | | |
| | | | (2) YELLOW CATEGORY 6 CABLES | | |
| | | TELEPHONE BACKBOARD 110 BLOCKS | (2) WHITE CATEGORY 6 CABLES | | |
| 6 | F NOT USED | | | | |
| | | | | | |
| 7 | F 3,9,13 & 15 (4 WRNMMC FURNITURE OUTLETS) | DATA RACK PATCH PANEL | (4) PURPLE CATEGORY 6 CABLES | 2" EMT TO CABLE TRAY | |
| | | | (4) BROWN CATEGORY 6 CABLES | | |
| | | | (4) YELLOW CATEGORY 6 CABLES | | |
| | | TELEPHONE BACKBOARD 110 BLOCKS | (4) WHITE CATEGORY 6 CABLES | | |
| 8 | TELEPHONE WALL OUTLET | TELEPHONE BACKBOARD 110 BLOCKS | (1) WHITE CATEGORY 6 CABLE | 1" EMT CONDUIT TO CABLE TRAY | |
| 9 | BUILDING 2, ROOM 3265 | DATA RACK LIU-1 | (1) 24-STRAND SM FIBER | 1" YELLOW CORRUGATED | RUN IN CEILING SPACE OF GROUND FLOOR AND TURN UP INTO ROOM 131 USING 4" SLEEVE TO CABLE TRAY |
| 10 | BUILDING 27, ROOM 1130 | DATA RACK LIU-1 | (1) 24-STRAND SM FIBER | 1" YELLOW CORRUGATED | RUN IN CEILING SPACE OF GROUND FLOOR AND TURN UP INTO ROOM 131 USING 4" SLEEVE TO CABLE TRAY |
| 11 | TELEPHONE BACKBOARD ROOM 014 | TELEPHONE BACKBOARD ROOM 131 | (1) 50-PAIR 24AWG COPPER CABLE | 2" EMT CONDUIT | RUN INTO ROOM USING 4" SLEEVE TO CABLE TRAY |
| 12 | CABLE TRAY | DATA RACK LIU-1 | (1) 24-STRAND SM FIBER | CABLE TRAY | |
| 13 | CABLE TRAY | DATA RACK LIU-1 | (1) 24-STRAND SM FIBER | CABLE TRAY | |
| 14 | CABLE TRAY | DATA RACK LIU-2 | (1) 24-STRAND SM FIBER | CABLE TRAY | REROUTE EXIST. 24-STRAND FIBER FROM BLDG 11 TO ROOM 131 |
| 15 | CABLE TRAY | DATA RACK LIU-3 | (2) 24-STRAND SM FIBER | CABLE TRAY | REROUTE EXIST. 24-STRAND FIBER FROM BLDG 8 AND 24-STRAND FIBER FROM BLDG 13 TO ROOM 131 |
| 16 | CABLE TRAY | DATA RACK PATCH PANEL | (114) PURPLE CATEGORY 6 CABLES | CABLE TRAY | |
| 17 | CABLE TRAY | DATA RACK PATCH PANEL | (114) BROWN CATEGORY 6 CABLES | CABLE TRAY | |
| 18 | CABLE TRAY | DATA RACK PATCH PANEL | (114) YELLOW CATEGORY 6 CABLES | CABLE TRAY | |
| 19 | CABLE TRAY | TELEPHONE BACKBOARD 110 BLOCKS | (115) WHITE CATEGORY 6 CABLES | CABLE TRAY | |
| 20 | CABLE TRAY | NMCI CABINET FIBER BLOCK | (1) 24-STRAND SM FIBER | CABLE TRAY | |
| 21 | CABLE TRAY | NMCI CABINET PATCH PANEL | (7) BLUE CATEGORY 6 CABLES | CABLE TRAY | |
| 22 | CABLE TRAY | NMCI CABINET PATCH PANEL | (7) GREEN CATEGORY 6 CABLES | CABLE TRAY | |
| 23 | F 6 (5 WRNMMC FURNITURE OUTLETS) | DATA RACK PATCH PANEL | (5) PURPLE CATEGORY 6 CABLE | 2" EMT CONDUIT TO CABLE TRAY | |
| | | | (5) BROWN CATEGORY 6 CABLE | | |
| | | | (5) YELLOW CATEGORY 6 CABLE | | |
| | | TELEPHONE BACKBOARD 110 BLOCKS | (5) WHITE CATEGORY 6 CABLE | | |

CONTINUED ON SHEET E-605




## PATCH PANEL NAMING CONVENTION

NO SCALE

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER 4-12-13

12-022A

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES DGW DRW DJL CHK SGR

<<PM/DM>>

BRANCH MANAGER

CHIEF ENG/ARCH

<<XXX>>

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ WASHINGTON
BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
SCHEDULE

SCALE: AS NOTED
EPROJECT NO.: –
CONSTR. CONTR. NO. N40080-12-R-4422
NAVFAC DRAWING NO. 13056708
SHEET 51 OF 53

E-603

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO, B-14\NAVGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-603 SCHEDULE.dwg LAYOUT NAME: E-603 SCHEDULE PLOTTED: Friday, April 12, 2013 - 11:04am USER: blunderwhite

# PANELBOARD "MDP" SCHEDULE

600A, MAIN LUGS ONLY, 208Y/120V, 3 PHASE, 4 WIRE, 10 KAIC MIN, SURFACE MOUNT

| LOAD SERVED | LOAD (AMP) A | B | C | BRKR TRIP | WIRE SIZE | CKT NO | PHASE A B C | CKT NO | WIRE SIZE | BRKR TRIP | LOAD (AMP) A | B | C | LOAD SERVED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PANEL P22 | 65.4 | | | 225 | 4/0 | 1 | | 2 | – | 175 | – | | | SPARE |
| | | 61.7 | | | | | | | | | | – | | |
| | | | 67.9 | | | | | | | | | | – | |
| PANEL P1–1 | * | | | 225 | * | 7 | | 8 | 4/0 | 225 | 141 | | | PANEL P21 |
| | | * | | | | | | | | | | 135 | | |
| | | | * | | | | | | | | | | 136 | |
| SPACE | – | | | – | – | 13 | | 14 | * | 90 | * | | | PANEL PA–2 |
| SPACE | | – | | – | – | 15 | | | | | | * | | |
| SPACE | | | – | – | – | 17 | | | | | | | * | |
| SPARE | – | | | 100 | – | 19 | | 20 | * | 50 | * | | | ROOF AHU |
| | | – | | | | | | | | | | * | | |
| | | | – | | | | | | | | | | * | |
| ELECTRIC ROOM | * | | | 100 | * | 25 | | 26 | 6 | 60 | * | | | PANEL EM |
| | | * | | | | | | | | | | * | | |
| | | | * | | | | | 30 | * | 40 | | | * | ROOF TOP AC UNIT |
| SPARE | – | | | 100 | – | 31 | | | | | – | | | |
| | | – | | | | | | | | | | – | | |
| | | | – | | | | | 36 | – | – | | | – | SPACE |
| PRINTING MACHINE | * | | | 20 | * | 37 | | 38 | – | – | – | | | SPACE |
| | | * | | | | | | 40 | – | – | | – | | SPACE |
| | | | * | | | | | 42 | * | 20 | | | * | VENDING MACHINE |
| TOTAL | 65.4 | 61.7 | 67.9 | | | | | | | | 117 | 119 | 108 | TOTAL |

TOTAL CONNECTED AMPS A: 182.4 B: 180.7 C: 175.9

# PANELBOARD "TPP" SCHEDULE

50A, MCB, 208Y/120V, 3 PHASE, 4 WIRE, 10 KAIC MIN, SURFACE MOUNT

| LOAD SERVED | LOAD (AMP) A | B | C | BRKR TRIP | WIRE SIZE | CKT NO | PHASE A B C | CKT NO | WIRE SIZE | BRKR TRIP | LOAD (AMP) A | B | C | LOAD SERVED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EQUIPMENT RACK | 8.0 | | | 20 | 12 | 1 | | 2 | 12 | 20 | 5.0 | | | SIEMENS SERVER |
| EQUIPMENT RACK | | 8.0 | | 20 | 12 | 3 | | 4 | 10 | 30 | | 5.0 | | UPS UNIT |
| NMCI CABINET | | | 8.0 | 20 | 12 | 5 | | | | | | | 5.0 | |
| RECEPTACLES | 4.0 | | | 20 | 12 | 7 | | 8 | | 20 | – | | | SPARE |
| SPARE | | – | | 20 | | 9 | | 10 | | 20 | | – | | SPARE |
| SPARE | | | – | 20 | | 11 | | 12 | | 20 | | | – | SPARE |
| SPACE | – | | | – | – | 13 | | 14 | – | – | – | | | SPACE |
| SPACE | | – | | – | – | 15 | | 16 | – | – | | – | | SPACE |
| SPACE | | | – | – | – | 17 | | 18 | – | – | | | – | SPACE |
| TOTAL | 12 | 8 | 8 | | | | | | | | 5 | 5 | 5 | TOTAL |

TOTAL CONNECTED AMPS A: 17 B: 13 C: 13

# PANELBOARD "P22" SCHEDULE

225A, MCB, 208Y/120V, 3 PHASE, 4 WIRE, 10 KAIC MIN, SURFACE MOUNT

| LOAD SERVED | LOAD (AMP) A | B | C | BRKR TRIP | WIRE SIZE | CKT NO | PHASE A B C | CKT NO | WIRE SIZE | BRKR TRIP | LOAD (AMP) A | B | C | LOAD SERVED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OPEN OFFICE LIGHTING | 9.0 | | | 20 | 12 | 1 | | 2 | 12 | 20 | 6.0 | | | RM 118 RECEPTACLES |
| RM 105,107–112 LIGHTING | | 5.8 | | 20 | 12 | 3 | | 4 | 12 | 20 | | 6.0 | | RM 125 RECEPTACLES |
| RM 126,130,131 LIGHTING | | | 7.7 | 20 | 12 | 5 | | 6 | 12 | 20 | | | 4.5 | RM 115 RECEPTACLES |
| CORRIDOR 115 LIGHTING | 2.9 | | | 20 | 12 | 7 | | 8 | 12 | 20 | 8.0 | | | COPIER |
| OPEN OFFICE LIGHTING | | 8.3 | | 20 | 12 | 9 | | 10 | 10 | 30 | | 13.6 | | MSO–1 |
| OFFICE 100–103, 113, 114 LIGHTING | | | 5.3 | 20 | 12 | 11 | | | | | | | 13.6 | |
| RM 137–141 LIGHTING | 3.6 | | | 20 | 12 | 13 | | 14 | 12 | 20 | 5.8 | | | EF–2 |
| CONFERENCE 104 LIGHTING | | 4.0 | | 20 | 12 | 15 | | 16 | 12 | 20 | | 2.0 | | EF–1 |
| CONFERENCE 106 LIGHTING | | | 4.8 | 20 | 12 | 17 | | 18 | 12 | 20 | | | 4.5 | BATHROOM RECEPTACLES |
| SPARE | – | | | 20 | – | 19 | | 20 | 12 | 20 | 9.8 | | | GARBAGE DISPOSAL |
| LIGHTING CONTROL PANEL | | 2.0 | | 20 | 12 | 21 | | 22 | 12 | 20 | | 5.0 | | KITCHEN RECEPTACLE |
| VAV–2–7,2–8,2–13,2–14,2–15, | | | 16.0 | 20 | 12 | 23 | | 24 | 12 | 20 | | | 6.0 | WASTE COMPACTOR |
| 2–16 | 16.0 | | | | | | | 26 | 12 | 20 | 10.0 | | | MICROWAVE |
| VAV–1–2,1–3,1–4,1–5, | | 11.0 | | 20 | 12 | 27 | | 28 | 12 | 20 | | 5.0 | | REFRIGERATOR |
| 1–6,1–7 | | | 11.0 | | | | | 30 | 12 | 20 | | | 6.5 | EWC |
| VAV–1–8,1–9,1–10,1–12, | 15.0 | | | 20 | 12 | 31 | | 32 | 12 | 20 | 3.0 | | | RM 140 RECEPTACLES |
| 1–13,1–14 | | 15.0 | | | | | | 34 | 12 | 20 | | 10.0 | | COPIER |
| SPACE | | | – | – | – | 35 | | 36 | 12 | 20 | | | 4.5 | RM 115 RECEPTACLES |
| SPACE | – | | | – | – | 37 | | 38 | 12 | 20 | 3.0 | | | KITCHEN RECEPTACLES |
| SPACE | | – | | – | – | 39 | | 40 | 12 | 20 | | 4.5 | | RM 135 RECEPTACLES |
| SPACE | | | – | – | – | 41 | | 42 | 12 | 20 | | | 10.8 | INSTANT WATER HEATER |
| TOTAL | 46 | 46 | 45 | | | | | | | | 46 | 46 | 50 | TOTAL |

TOTAL CONNECTED AMPS A: 92 B: 92 C: 95

# PANELBOARD "P21" SCHEDULE (SECTION 1)

225A, MCB, 208Y/120V, 3 PHASE, 4 WIRE, 10 KAIC MIN, SURFACE MOUNT, 200% NEUTRAL BUS

| LOAD SERVED | LOAD (AMP) A | B | C | BRKR TRIP | WIRE SIZE | CKT NO | PHASE A B C | CKT NO | WIRE SIZE | BRKR TRIP | LOAD (AMP) A | B | C | LOAD SERVED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RM 134 COMPUTERS | 6.0 | | | 20 | 12 | 1 | | 2 | 12 | 20 | 4.5 | | | RM 119 COMPUTERS |
| RM 134 RECEPTACLES | | 6.0 | | 20 | 12 | 3 | | 4 | 12 | 20 | | 6.0 | | RM 119 RECEPTACLES |
| RM 134 RECEPTACLES | | | 6.0 | 20 | 12 | 5 | | 6 | 12 | 20 | | | 6.0 | RM 119 RECEPTACLES |
| RM 123 COMPUTERS | 6.0 | | | 20 | 12 | 7 | | 8 | 12 | 20 | 6.0 | | | RM 127 COMPUTERS |
| RM 123 RECEPTACLES | | 6.0 | | 20 | 12 | 9 | | 10 | 12 | 20 | | 6.0 | | RM 127 RECEPTACLES |
| RM 123 RECEPTACLES | | | 6.0 | 20 | 12 | 11 | | 12 | 12 | 20 | | | 9.0 | RM 127 RECEPTACLES |
| RM 121 COMPUTERS | 6.0 | | | 20 | 12 | 13 | | 14 | 12 | 20 | 3.0 | | | RM 120 COMPUTERS |
| RM 121 RECEPTACLES | | 6.0 | | 20 | 12 | 15 | | 16 | 12 | 20 | | 3.0 | | RM 120 RECEPTACLES |
| RM 121 RECEPTACLES | | | 6.0 | 20 | 12 | 17 | | 18 | 12 | 20 | | | 3.0 | RM 120 RECEPTACLES |
| RM 133 COMPUTERS | 4.5 | | | 20 | 12 | 19 | | 20 | 12 | 20 | 3.0 | | | RM 132 COMPUTERS |
| RM 133 RECEPTACLES | | 6.0 | | 20 | 12 | 21 | | 22 | 12 | 20 | | 3.0 | | RM 132 RECEPTACLES |
| RM 133 RECEPTACLES | | | 3.0 | 20 | 12 | 23 | | 24 | 12 | 20 | | | 3.0 | RM 132 RECEPTACLES |
| RM 122 COMPUTERS | 6.0 | | | 20 | 12 | 25 | | 26 | 12 | 20 | 3.0 | | | RM 130 COMPUTERS |
| RM 122 RECEPTACLES | | 6.0 | | 20 | 12 | 27 | | 28 | 12 | 20 | | 4.5 | | RM 130 RECEPTACLES |
| RM 122 RECEPTACLES | | | 6.0 | 20 | 12 | 29 | | 30 | 12 | 20 | | | 9.0 | RM 130 RECEPTACLES |
| RM 124 COMPUTERS | 3.0 | | | 20 | 12 | 31 | | 32 | 12 | 20 | 6.0 | | | RM 142 COMPUTERS |
| RM 124 RECEPTACLES | | 3.0 | | 20 | 12 | 33 | | 34 | 12 | 20 | | 3.0 | | RM 142 RECEPTACLES |
| RM 124 RECEPTACLES | | | 3.0 | 20 | 12 | 35 | | 36 | 12 | 20 | | | 3.0 | RM 142 RECEPTACLES |
| SPD | 1.0 | | | 30 | 8 | 37 | | 38 | 8 | 50 | 17 | | | PANEL TPP |
| | | 1.0 | | | | | | | | | | 13 | | |
| | | | 1.0 | | | | | | | | | | 13 | |
| TOTAL | 33 | 34 | 31 | | | | | | | | 43 | 39 | 46 | TOTAL |

TOTAL CONNECTED AMPS A: 76 B: 73 C: 77

# PANELBOARD "P21" SCHEDULE (SECTION 2)

225A, MLO, 208Y/120V, 3 PHASE, 4 WIRE, 10 KAIC MIN, SURFACE MOUNT, 200% NEUTRAL BUS

| LOAD SERVED | LOAD (AMP) A | B | C | BRKR TRIP | WIRE SIZE | CKT NO | PHASE A B C | CKT NO | WIRE SIZE | BRKR TRIP | LOAD (AMP) A | B | C | LOAD SERVED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RM 111–112 COMPUTERS | 6.0 | | | 20 | 12 | 43 | | 44 | 12 | 20 | 6.0 | | | RM 104 COMPUTERS |
| RM 111–112 RECEPTACLES | | 9.0 | | 20 | 12 | 45 | | 46 | 12 | 20 | | 9.0 | | RM 104, 106 RECEPTACLES |
| RM 109–110 COMPUTERS | | | 6.0 | 20 | 12 | 47 | | 48 | 12 | 20 | | | 5.0 | RM 106 TELEVISIONS |
| RM 109–110 RECEPTACLES | 9.0 | | | 20 | 12 | 49 | | 50 | 12 | 20 | 9.0 | | | RM 105,106 RECEPTACLES |
| RM 107–108 COMPUTERS | | 6.0 | | 20 | 12 | 51 | | 52 | 12 | 20 | | 3.0 | | RM 105 COMPUTERS |
| RM 107–108 RECEPTACLES | | | 9.0 | 20 | 12 | 53 | | 54 | 12 | 20 | | | 3.0 | RM 122 COMPUTERS |
| RM 113–114 COMPUTERS | 6.0 | | | 20 | 12 | 55 | | 56 | 12 | 20 | 6.0 | | | RM 122 COMPUTERS |
| RM 113–114 RECEPTACLES | | 9.0 | | 20 | 12 | 57 | | 58 | 12 | 20 | | 9.0 | | RM 122 RECEPTACLES |
| RM 102–103 COMPUTERS | | | 6.0 | 20 | 12 | 59 | | 60 | 12 | 20 | | | 9.0 | RM 122 RECEPTACLES |
| RM 102–103 RECEPTACLES | 9.0 | | | 20 | 12 | 61 | | 62 | 12 | 20 | 4.5 | | | RM 136 COMPUTERS |
| RM 100 COMPUTERS | | 5.0 | | 20 | 12 | 63 | | 64 | 12 | 20 | | 9.0 | | RM 136 RECEPTACLES |
| RM 100 RECEPTACLES | | | 6.0 | 20 | 12 | 65 | | 66 | 12 | 20 | | | 9.0 | RM 136 RECEPTACLES |
| RM 126 COMPUTERS | 3.0 | | | 20 | 12 | 67 | | 68 | 12 | 20 | 3.0 | | | RM 136 COMPUTERS |
| RM 126 RECEPTACLES | | 3.0 | | 20 | 12 | 69 | | 70 | – | – | | – | | SPACE |
| RM 126 PLOTTERS | | | 6.0 | 20 | 12 | 71 | | 72 | – | – | | | – | SPACE |
| RM 126 RECEPTACLES | 3.0 | | | 20 | 12 | 73 | | 74 | – | – | – | | | SPACE |
| SPARE | | – | | 20 | – | 75 | | 76 | – | – | | – | | SPACE |
| SPARE | | | – | 20 | – | 77 | | 78 | – | – | | | – | SPACE |
| SPARE | – | | | 20 | – | 79 | | 80 | – | – | – | | | SPACE |
| SPARE | | – | | 20 | – | 81 | | 82 | – | – | | – | | SPACE |
| SPARE | | | – | 20 | – | 83 | | 84 | – | – | | | – | SPACE |
| TOTAL | 36 | 32 | 33 | | | | | | | | 29 | 30 | 26 | TOTAL |

TOTAL CONNECTED AMPS A: 65 B: 62 C: 59

TOTAL CONNECTED AMPS FOR P21 SECTIONS 1 AND 2 A: 141 B: 135 C: 136

PNL MDP | PNL P21 (1) | PNL TPP | PNL P21 (2) | PNL P22

PANEL ID

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND — ANDREW C. FRANKS — No. 22422 — REGISTERED PROFESSIONAL ENGINEER — 4-12-13

12–0224

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES DGW DRW DJL CHK SGR

<<PM/DM>>

BRANCH MANAGER

CHIEF ENG/ARCH

<<XXX>>

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ WASHINGTON
BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER
BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
PANELBOARDS

SCALE: AS NOTED

EPROJECT NO.: –

CONSTR. CONTR. NO. N40080–12–R–4422

NAVFAC DRAWING NO. 13056709

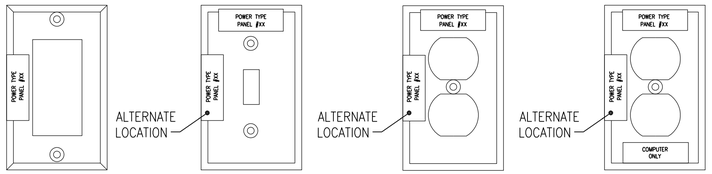
SHEET 52 OF 53

E-604

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-0224 FMD RENO, B-14\NAVIGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-604 PANELBOARDS.dwg LAYOUT NAME: E-604 PANELBOARDS PLOTTED: Thursday, April 11, 2013 - 1:54pm USER: jperalta

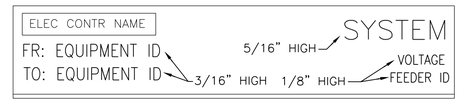
## WIRING DEVICE COVER PLATE MARKING




PROVIDE 0.59" WIDE POLYESTER ADHESIVE TAPE LABELS, 1.77" LONG WITH BLACK 1/8" HIGH TIMES NEW ROMAN TEXT. REPLACE POWER TYPE WITH PANEL SOURCE, EXAMPLE: "NORMAL POWER", "PANEL" WITH THE PANEL NAME, AND "XX" WITH THE CIRCUIT NUMBER OR NUMBERS SEPERATED BY COMMASS. DO NOT COVER SCREWS.

COLOR CODING OF LABELS
NORMAL POWER: SILVER
EMERGENCY POWER: RED (IF AVAILABLE)

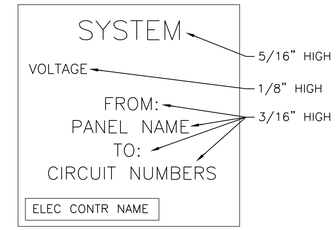
## CONDUIT MARKING




PROVIDE 1.25" WIDE POLYESTER ADHESIVE TAPE LABELS, 6" LONG WITH BLACK ARIAL NARROW TEXT, HEIGHT AS NOTED. REPLACE "SYSTEM" WITH POWER TYPE, EXAMPLE: "NORMAL POWER", "EQUIPMENT ID" WITH THE SOURCE AND DESTINATION EQUIPMENT NAME, "VOLTAGE" WITH THE FEEDER VOLTAGE, AND "FEEDER ID" WITH THE FEEDER NUMBER.

COLOR CODING OF LABELS
NORMAL POWER: SILVER
EMERGENCY POWER: RED (IF AVAILABLE)

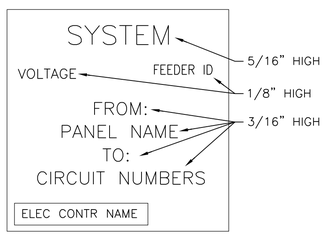
## JUNCTION BOX MARKING




PROVIDE 3" POLYESTER ADHESIVE TAPE LABELS 3" LONG WITH ARIAL NARROW TEXT, HEIGHT AS NOTED. REPLACE "SYSTEM" WITH POWER TYPE, EXAMPLE: "NORMAL POWER", "PANEL NAME" WITH THE SOURCE, "CIRCUIT NUMBER" WITH CIRCUIT NUMBER(S) AND "VOLTAGE" WITH THE FEEDER VOLTAGE.

COLOR CODING OF LABELS
NORMAL POWER: SILVER
EMERGENCY POWER: RED (IF AVAILABLE)

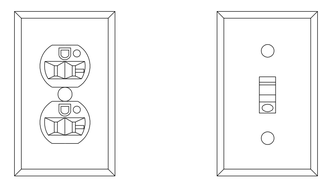
## PULLBOX MARKING




PROVIDE 3" POLYESTER ADHESIVE TAPE LABELS 3" LONG WITH ARIAL NARROW TEXT, HEIGHT AS NOTED. REPLACE "SYSTEM" WITH POWER TYPE, EXAMPLE: "NORMAL POWER", "EQUIPMENT ID" WITH THE SOURCE, AND DESTINATION EQUIPMENT NAME "VOLTAGE" WITH THE FEEDER VOLTAGE, AND "FEEDER ID" WITH THE FEEDER NUMBER.

COLOR CODING OF LABELS
NORMAL POWER: SILVER
EMERGENCY POWER: RED (IF AVAILABLE)

## WIRING DEVICE REQUIREMENTS AND COLOR CODING



ALL RECEPTACLES SHALL BE INDUSTRIAL, EXTRA HEAVY DUTY SPECIFICATION GRADE FOR 125V, 20A, NEMA 5-20R AND FOR SPECIAL PURPOSE RECEPTACLES AS WELL. INSTALL ALL RECEPTACLES WITH GROUND PIN IN UP POSITION. RECEPTACLES AND SWITCH DEVICE COVER PLATES SHALL BE BRUSHED STAINLESS STEEL. ELECTRICAL DEVICES INCLUDING TOGGLE SWITCHES, OCCUPANCY SENSORS 9WALL AND CEILING MOUNTED) AND RECEPTACLES, TO BE COLOR CODED AS FOLLOWS.

NORMAL POWER SYSTEMS (FOR COMPUTER RECEPTACLES ONLY); IVORY

NORMAL POWER SYSTEMS (FOR SWITCHES AND RECEPTACLES); BROWN

EMERGENCY POWER SYSTEMS: RED (IF AVAILABLE)

## CABLE SCHEDULE

CONTINUED FROM SHEET E-603

| MARK | FROM | TO | CABLE | RACEWAY | REMARKS |
|---|---|---|---|---|---|
| 24 | F 10,11 (6 WRNMMC FURNITURE OUTLETS) | | (6) PURPLE CATEGORY 6 CABLE | 2" EMT CONDUIT TO CABLE TRAY | |
| | | | (6) BROWN CATEGORY 6 CABLE | | |
| | | | (6) YELLOW CATEGORY 6 CABLE | | |
| | | TELEPHONE BACKBOARD 110 BLOCKS | (6) WHITE CATEGORY 6 CABLE | | |
| 25 | F 5 (1 WRNMMC FURNITURE OUTLETS) | | (1) PURPLE CATEGORY 6 CABLE | 1" EMT CONDUIT TO CABLE TRAY | |
| | | | (1) BROWN CATEGORY 6 CABLE | | |
| | | | (1) YELLOW CATEGORY 6 CABLE | | |
| | | TELEPHONE BACKBOARD 110 BLOCKS | (1) WHITE CATEGORY 6 CABLE | | |

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|

NAVFAC

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER 4-12-13

12-022A

BOWMAN, FOSTER & ASSOC.
CONSULTING ENGINEERS
6379 CENTER DR
NORFOLK, VA 23502
2424 26th ROAD SOUTH
ARLINGTON, VA 22206

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES DGW DRW WLF CHK SGR

<<PM/DM>>

BRANCH MANAGER

CHIEF ENG/ARCH

<<XXX>>

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND – WASHINGTON
BETHESDA NAVY MEDICAL CENTER
BETHESDA NAVY MEDICAL CENTER BETHESDA, MD
FMD RENOVATION, BUILDING 14
FIRST FLOOR
IDENTIFICATIONS DIAGRAMS

SCALE: AS NOTED
EPROJECT NO.: –
CONSTR. CONTR. NO. N40080-12-R-4422
NAVFAC DRAWING NO. 13056710
SHEET 53 OF 53

E-605

DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: G:\2012\12-022A FMD RENO. B-14\NAVGATOR\FMD RENOVATION, BUILDING 14 SECOND FLOOR\Sheets\E-605 IDENTIFICATIONS DIAGRAMS.dwg LAYOUT NAME: E-605 IDENTIFICATIONS DIAGRAMS PLOTTED: Thursday, April 11, 2013 - 1:54pm USER: ipenalto

## ELECTRICAL SYMBOLS

**PLAN SYMBOLS**

| | |
|---|---|
| 1 | PLAN REFERENCE NOTE SYMBOL |
| | EXISTING TO REMAIN |
| | NEW WORK |

**EMERGENCY LIGHTING**

| | |
|---|---|
| B | FLUORESCENT STRIP LIGHT FIXTURE |
| | FLUORESCENT DIRECT/INDIRECT FIXTURE |
| | EXIT LIGHT – SINGLE FACE<br>ARROWS INDICATE DIRECTION OF EXIT |
| | EXIT LIGHT – DOUBLE FACE<br>ARROWS INDICATE DIRECTION OF EXIT |
| | BATTERY POWERED EMERGENCY LIGHTING UNIT |

**SWITCHING**

| | |
|---|---|
| S | SINGLE POLE SWITCH |
| S3 | THREE–WAY SWITCH |
| Sos | WALL SWITCH OCCUPANCY SENSOR |
| OS | CEILING MOUNTED OCCUPANCY SENSOR |
| PP | OCCUPANCY SENSOR SYSTEM POWER PACK |

**POWER**

| | |
|---|---|
| | GENERAL USE DUPLEX RECEPTACLE – WALL MOUNTED, 120V, 20A +18" AFF (UON) |
| | GFI DUPLEX RECEPTACLE – WALL MOUNTED, 120V, 20A +18" AFF (UON) |
| J | JUNCTION BOX – SIZE AS REQUIRED |
| J | WALL MOUNTED JUNCTION BOX |
| 30 | NON–FUSED DISCONNECT SWITCH, SIZED AS NOTED |
| 30/15 | FUSED DISCONNECT SWITCH, SIZED (SWITCH/FUSE) AS NOTED |
| LP–10,12 | HOMERUN TO PANELBOARD. NUMERALS AND LETTERS ADJACENT TO ARROW HEAD(S) INDICATE ASSIGNED PANEL AND CIRCUIT(S) NUMBERS(S). SEE PANEL SCHEDULE(S) FOR CIRCUIT WIRE AND CONDUIT SIZES/QUANTITIES. |
| | PANELBOARD |

**COMMUNICATIONS**

| | |
|---|---|
| | COMBINATION TELE/DATA OUTLET LOCATION, +18" AFF (UON) WITH ¾" EC STUBBED OUT OF WALL AT CEILING |

## FIRE ALARM SYMBOLS

**FIRE ALARM**

| | |
|---|---|
| F | MANUAL PULL STATION, +54" AFF (UON) |
| V 15 | CEILING MOUNTED VISUAL NOTIFICATION APPLIANCE WITH CANDELA RATING AS INDICATED |
| AV 15 | WALL MOUNTED AUDIO/VISUAL NOTIFICATION APPLIANCE WITH CANDELA RATING AS INDICATED. |
| AV 15 | CEILING MOUNTED AUDIO/VISUAL NOTIFICATION APPLIANCE WITH CANDELA RATING AS INDICATED. |

## ELECTRICAL DRAWING LIST


| | |
|---|---|
| E–1 | SYMBOLS AND ABBREVIATIONS |
| E–2 | SPECIFICATIONS – ELECTRICAL |
| E–3 | LIGHTING DEMOLITION AND NEW WORK |
| E–4 | POWER DEMOLITION AND NEW WORK |
| E–5 | FIRE ALARM DEMOLITION AND NEW WORK |
| E–6 | RISER DIAGRAM AND SCHEDULES |
| E–7 | PANEL SCHEDULES |


## ELECTRICAL ABBREVIATIONS

**ABBREVIATIONS**

| | | | |
|---|---|---|---|
| A | AMPS | KVA | KILOVOLT AMPERE |
| AIC | AMPS INTERRUPTING CAPACITY | KV | KILOVOLTS |
| A/C | AIR CONDITIONING | KW | KILOWATTS |
| AFF | ABOVE FINISHED FLOOR | LTG | LIGHTING |
| AHJ | AUTHORITY HAVING JURISDICTION | MAX | MAXIMUM |
| ATS | AUTOMATIC TRANSFER SWITCH | MCB | MAIN CIRCUIT BREAKER |
| AWG | AMERICAN WIRE GAGE | MCC | MOTOR CONTROL CENTER |
| C | CONDUIT | MDP | MAIN DISTRIBUTION PANEL |
| CB | CIRCUIT BREAKERS | MIN | MINIMUM |
| CCTV | CLOSED CIRCUIT TV CAMERA | MLO | MAIN LUGS ONLY |
| CKT | CIRCUIT | N | NEW |
| CLG | CEILING | NEC | NATIONAL ELECTRIC CODE |
| CT | CURRENT TRANSFORMER | NFSS | NON FUSED SAFETY SWITCH |
| E | EXISTING TO REMAIN | NTS | NOT TO SCALE |
| EC | EMPTY CONDUIT | PB | PULL BOX |
| ELEC | ELECTRIC | PH | PHASE |
| EMER | EMERGENCY | PNL | PANEL |
| ER | RELOCATED EQUIPMENT | R | EQUIPMENT TO BE RELOCATED |
| EWC | ELECTRIC WATER COOLER | T | TRANSFORMER |
| FA | FIRE ALARM | TYP | TYPICAL |
| FAAP | FIRE ALARM ANNUNCIATOR PANEL | TELE | TELEPHONE |
| FACP | FIRE ALARM CONTROL PANEL | TTB | TELEPHONE TERMINAL BOARD |
| FLA | FULL LOAD AMPS | SW | SWITCH |
| FRE | FIBERGLASS REINFORCED EPOXY | UON | UNLESS OTHERWISE NOTED |
| FSS | FUSED SAFETY SWITCH | V | VOLTS |
| G | GROUND | W | WATTS |
| GFI | GROUND FAULT INTERRUPTER | WP | WEATHERPROOF |
| HOA | HANDS OFF AUTOMATIC | (X) | EXISTING TO BE REMOVED |
| HP | HORSEPOWER | XFRMR | TRANSFORMER |
| HZ | HERTZ | | |
| IG | ISOLATED GROUND | | |

| SYM | DESCRIPTION | DATE | APPR. |
|---|---|---|---|
| | 100% SUBMISSION | 07/21/10 | |
| | 95% SUBMISSION | 05/25/10 | |
| A | 95% SUBMISSION | 10/30/09 | |

NAVFAC


COLIMORE THOEMKE
1240 Key Highway
Baltimore, Maryland 21230
Tel. 410.752.3720
Fax. 410. 752.4823
colimore@thoemke.com
ARCHITECTS


ARCH LOGO


encon
ENCON GROUP INC.
10605 Concord St., Suite 307
Kensington, MD 20895
301.949.5900/ fax 240.363.3006
www.encongroup.com
Encon Project No. 09137


MEP LOGO

| | |
|---|---|
| DES | DRW |
| REVIEWED BY | |
| PM/DM | |
| CHIEF ENG/ARCH | |

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NATIONAL NAVY MEDICAL CENTER BUILDING #14
STATION – BETHESDA, MD
IPT PWD
PROJECT STATION
PROJECT– BETHESDA, MD

# OICC / FEAD OFFICE EXPANSION

## SYMBOLS AND ABBREVIATIONS

| | |
|---|---|
| CODE ID. NO. 80091 | SIZE D |
| SCALE: | |
| MAXIMO NO. | ###### |
| STA. PROJ. NO. | P–### |
| WORK ORDER NO. | ###### |
| CONSTR. CONTR. NO. | N40080–08–D–0305 |
| NAVFAC DRAWING NO. | |
| SHEET 1 OF X | |

E-1

REVDATE:

# ELECTRICAL SPECIFICATIONS

**GENERAL:**

A. SEE MECHANICAL COVER SHEET FOR GENERAL PROJECT REQUIREMENTS.

B. THE CONTRACTOR SHALL SUBMIT A MINIMUM OF SIX (6) COPIES OF SHOP DRAWINGS FOR THE FOLLOWING EQUIPMENT AND MATERIALS TO THE ENGINEER FOR REVIEW AND APPROVAL.

1. PANELBOARD
2. CIRCUIT BREAKERS
3. LIGHT FIXTURES
4. OCCUPANCY SENSOR SYSTEM EQUIPMENT
5. FIRE ALARM DEVICES

C. ALL EQUIPMENT INSTALLED SHALL BE NEW AND SHALL CONFORM IN ALL RESPECTS TO THE LATEST APPROVED STANDARDS OF IEEE, ANSI, NEMA AND UNDERWRITERS LABORATORIES, INC., UNLESS INDICATED OTHERWISE. SUBSTITUTIONS SHALL ONLY BE ACCOMPLISHED AT THE DISCRETION OF THE ENGINEER.

D. UNLESS SPECIFICALLY NOTED ON THE PLANS, REMOVE ALL LIGHTING, SWITCHES, RECEPTACLES, CLOCK OUTLETS AND ASSOCIATED CIRCUITRY. CIRCUITRY TO BE REMOVED SHALL BE ALL CONDUCTORS AND ANY EXPOSED RACEWAYS INCLUDING WIREMOLD AND ALL RACEWAY THAT BECOMES EXPOSED UPON REMOVAL OF WALLS AND CEILINGS.

E. UNLESS SPECIFICALLY NOTED ON THE PLANS, ALL CIRCUITRY, EQUIPMENT, DEVICES, ETC., NOT NOTED AS EXISTING TO REMAIN OR TO BE RELOCATED, SHALL BE NEW. THE CONTRACTOR MAY REUSE ALL EXISTING CIRCUITRY AS FIELD CONDITIONS PERMIT. REMOVE ALL DEVICES AND CIRCUITRY NOT BEING REUSED. CIRCUITRY TO BE REMOVED SHALL BE REMOVED BACK TO THE SOURCE AND ALL HOLES SHALL BE REPAIRED TO CONFORM TO FINISHED SURFACE. ALL CIRCUITS THAT ARE TO REMAIN IN SERVICE UPON COMPLETION OF THIS PROJECT WHICH ARE PRESENTLY FED MUST BE CONTINUED IN SERVICE. OUTAGES ON EXISTING CIRCUITS TO REMAIN SHALL BE COORDINATED WITH THE OWNER.

F. LOCATE, IDENTIFY AND PROTECT ELECTRICAL SERVICES PASSING THROUGH DEMOLITION AREA AND SERVING OTHER AREAS OUTSIDE THE DEMOLITION LIMITS. MAINTAIN SERVICES TO AREAS OUTSIDE DEMOLITION LIMITS. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPORARY SERVICES FOR AFFECTED AREAS.

G. ADVANCE NOTICE SHALL BE GIVEN TO OWNER BEFORE COMMENCEMENT OF WORK ON ANY ELECTRICAL CIRCUITRY, WHETHER OR NOT AN OUTAGE IS REQUIRED.

H. A LICENSED QUALIFIED ELECTRICIAN SHALL BE ON THE JOB SITE AT ALL TIMES DURING THE EXECUTION OF ANY ELECTRICAL WORK.

I. EXCEPT AS OTHERWISE NOTED, ALL EXISTING ELECTRICAL WORK WHICH WILL NOT BE RENDERED OBSOLETE AND WHICH MAY BE DISTURBED DUE TO ANY CHANGES REQUIRED UNDER THIS CONTRACT SHALL BE RESTORED TO ITS ORIGINAL OPERATING CONDITION.

**PRODUCTS:**

A. RACEWAYS, BOXES, CONDUITS:

1. EMT CONNECTORS AND COUPLINGS SHALL BE OF THE ALL-STEEL, COMPRESSION OR SET-SCREW TYPE.
2. OUTLET BOXES SHALL BE A MINIMUM OF 4" SQUARE WITH THE APPROPRIATE PLASTER RING OR TILE COVER.

B. WIRE AND CABLE:

1. ALL CONDUCTORS SHALL BE COPPER, MINIMUM #12, (EXCEPT CONTROL CONDUCTORS AND LIGHTING TAPS AS PERMITTED BY NEC, CONDUCTORS FOR SWITCHING LIGHTS SHALL NOT BE CONSIDERED, CONTROL CONDUCTORS), WITH 600 VOLT TYPE "THHN-THWN" INSULATION, UNLESS OTHERWISE NOTED. CONDUCTORS #10 AND LARGER SHALL BE STRANDED.
2. WHERE INDICATED ON THE DRAWINGS, "MC" CABLE SHALL BE UTILIZED FOR CONCEALED INTERIOR BRANCH CIRCUITS.

C. WIRING DEVICES AND TELEPHONE/DATA OUTLETS:

1. WALL MOUNTED WIRING DEVICES SHALL BE EQUAL TO THE FOLLOWING:

| | |
|---|---|
| SINGLE POLE SWITCH | HUBBELL 1221 |
| THREE WAY SWITCH | HUBBELL 1223 |
| DUPLEX RECEPTACLE | HUBBELL 5352 |
| DUPLEX RECEPTACLE WITH GFCI* | HUBBELL GF5352 |

*GFCI – GROUND FAULT CIRCUIT INTERRUPTER

2. DEVICE PLATES SHALL SATIN FINISH STAINLESS STEEL OR AS DIRECTED BY THE PROJECT MANAGER.

D. DISCONNECTS AND CIRCUIT BREAKERS:

1. ENCLOSED NON-FUSIBLE SWITCH SHALL BE NEMA HEAVY-DUTY TYPE WITH ENCLOSURE CONSISTENT WITH ENVIRONMENT WHERE LOCATED, HANDLE LOCKABLE WITH 2 PADLOCKS, AND INTERLOCKED WITH COVER IN "CLOSED" POSITION.
2. ENCLOSED FUSIBLE SWITCHES SHALL BE NEMA HEAVY-DUTY TYPE WITH CLIPS TO ACCOMMODATE SPECIFIED FUSES, ENCLOSURE CONSISTENT WITH ENVIRONMENT WHERE LOCATED, HANDLE LOCKABLE WITH 2 PADLOCKS AND INTERLOCKED WITH COVER IN "CLOSED" POSITION. SWITCHES SHALL HAVE MINIMUM FAULT CURRENT RATING OF 200,000 SYMMETRICAL RMS AMPERES.
3. ENCLOSED MOLDED-CASE CIRCUIT BREAKER: FRAME SIZE, TRIP RATING, NUMBER OF POLES, AND AUXILIARY DEVICES AS INDICATED; INTERRUPTING CAPACITY RATING TO MEET AVAILABLE FAULT CURRENT, 10,000 SYMMETRICAL RMS AMPERES MINIMUM; WITH APPROPRIATE APPLICATION LISTING WHEN USED FOR SWITCHING FLUORESCENT LIGHTING LOADS OR HEATING, AIR CONDITIONING, AND REFRIGERATION EQUIPMENT.
4. ENCLOSURE: NEMA TYPE 1, UNLESS SPECIFIED OR REQUIRED OTHERWISE TO MEET ENVIRONMENTAL CONDITIONS OF INSTALLED LOCATION.

E. PANELBOARDS:

1. IN PANELBOARDS, "EQUIPPED SPACE" OR "SPACE" IS DEFINED TO INCLUDE ALL NECESSARY BUS, DEVICE SUPPORTS AND CONNECTIONS FOR INSERTION OF A FUTURE DEVICE.
2. PANELBOARD BUS SHALL BE COPPER.
3. PANELBOARD SHALL BE EQUAL TO SQUARE D TYPE NEHB OR NQOD, UNLESS OTHERWISE NOTED.
4. CIRCUIT BREAKERS: MOLDED CASE CIRCUIT BREAKER: FRAME SIZE, TRIP RATING, NUMBER OR POLES, AND AUXILIARY DEVICES AS INDICATED; INTERRUPTING CAPACITY RATING TO MEET AVAILABLE FAULT CURRENT, 10,000 SYMMETRICAL RMS AMPERES MINIMUM: WITH APPROPRIATE LISTING WHEN USED FOR SWITCHING FLUORESCENT LIGHTING LOADS OR HEATING, AIR CONDITIONING, AND REFRIGERATION EQUIPMENT. BUSSING AND BREAKERS SHALL MAKE A FULLY RATED SYSTEM. SERIES RATED EQUIPMENT IS NOT ACCEPTABLE.

F. LIGHTING:

1. PROVIDE A COMPLETE AND OPERABLE LIGHTING SYSTEM, WHICH SHALL INCLUDE IN PART, FLUORESCENT LIGHTING FIXTURES, BALLASTS, LAMPS, LENSES, SUPPORTS, CANOPIES, FRAMES, HARDWARE AND ANY OTHER NECESSARY APPURTENANCES AS MAY BE REQUIRED.
2. PROVIDE ALL NECESSARY ACCESSORY FITTINGS, HANGERS, CLAMPS, BRACKETS, YOKES, PLASTER FLANGES AND MISCELLANEOUS DEVICES AS REQUIRED FOR A COMPLETE INSTALLATION.
3. PROVIDE LAMPS FOR EACH TYPE OF LIGHTING FIXTURE IN ACCORDANCE WITH THE FIXTURE MANUFACTURERS LAMP REQUIREMENTS AND RECOMMENDATIONS, UNLESS INDICATED OTHERWISE. ALL TRACK AND ACCENT LAMPS SHALL BE INSTALLED AT END OF JOB.
4. FLUORESCENT LIGHTING BALLASTS SHALL BE HIGH POWER FACTOR TYPE, CLASS P, ENERGY SAVING, CBM AND ETL CERTIFIED AND RATED FOR SYSTEM VOLTAGE AND FREQUENCY WITH THE QUIETEST SOUND LEVEL RATING AVAILABLE FOR THE TYPE REQUIRED.
5. COLOR OF LIGHTING FIXTURES SHALL BE AS SELECTED BY THE ARCHITECT.

G. FIRE ALARM SYSTEM:

1. CONTRACTOR SHALL FURNISH THE FIRE ALARM DEVICE BUT THEY WILL BE INSTALLED BY OTHERS. DEVICES SHALL BE INSTALLED IN THE LOCATION SHOWN ON THESE DRAWINGS. COORDINATE WITH OWNER PRIOR TO ORDERING.
2. ALL DEVICES SHALL BE COMPLETELY COMPATIBLE WITH THE EXISTING BUILDING FIRE ALARM SYSTEM. THE EXISTING BUILDING SYSTEM MANUFACTURER SHALL BE VERIFIED WITH BUILDING MANAGEMENT PRIOR TO PROCUREMENT. NO DEVIATION WILL BE ALLOWED WITHOUT SPECIFIC AUTHORIZATION FROM BUILDING MANAGEMENT. BFPE SHALL FURNISH THE FIRE ALARM DEVICES AND THE DEVICES SHALL BE INSTALLED BY THE CONTRACTOR. ALL CONNECTIONS TO THE EXISTING FIRE ALARM SYSTEM SHALL BE PERFORMED BY BFPE.

**EXECUTION:**

A. RACEWAYS, BOXES, CONDUITS:

1. OUTDOORS WIRING METHODS: USE THE FOLLOWING WIRING METHODS:
   a. EXPOSED: RIGID OR INTERMEDIATE METAL CONDUIT
   b. CONCEALED: RIGID OR INTERMEDIATE METAL CONDUIT
   c. CONNECTION TO MOTORS AND OTHER VIBRATING EQUIPMENT: LIQUIDTIGHT FLEXIBLE METAL CONDUIT
   d. BOXES AND ENCLOSURES: NEMA TYPE 3R, UNLESS OTHERWISE NOTED
2. INDOORS WIRING METHODS: USE THE FOLLOWING METHODS
   a. CONNECTION TO MOTORS AND OTHER VIBRATING EQUIPMENT: FLEXIBLE METAL CONDUIT
   b. DAMP OR WET LOCATIONS: RIGID STEEL CONDUIT
   c. EXPOSED: ELECTRICAL METALLIC TUBING
   d. CONCEALED: ELECTRICAL METALLIC TUBING OR MC CABLE
   e. ALL CIRCUITRY IN FINISHED AREAS SHALL BE RUN CONCEALED. MINIMUM SIZE CONDUIT SHALL BE 3/4".
3. EXPOSED AND CONCEALED CIRCUITRY SHALL BE RUN TIGHT TO CEILING SLAB (AS HIGH AS POSSIBLE TO MAXIMIZE HEADROOM) IN A NEAT, WORKMANLIKE MANNER. ALL RUNS SHALL BE PARALLEL OR PERPENDICULAR TO BUILDING WALLS.
4. ALL CIRCUITRY RUNS INDICATED ARE DIAGRAMMATIC. THE CONTRACTOR SHALL DETERMINE IN THE FIELD THE MOST SUITABLE ROUTES.
5. ALL EMPTY RACEWAYS SHALL CONTAIN A DRAG WIRE. EMPTY RACEWAYS 2" OR LARGER IN SIZE SHALL HAVE A MAXIMUM OF (3) 90° BENDS. PROVIDE 3/4" EMT FROM EACH TELEPHONE OR COMMUNICATIONS OUTLET DEVICE TO CEILING SPACE FROM ALL INSULATED WALLS.
6. PROVIDE PULL, JUNCTION, OUTLET AND FLOOR BOXES WHERE SHOWN AND REQUIRED. SIZE AS REQUIRED BY THE NEC AND OTHER APPLICABLE STATE AND LOCCAL CODES.
7. EXPOSED LOW VOLTAGE WIRING SHALL BE INSTALLED IN A RACEWAY, UNLESS OTHERWISE NOTED.
8. WHERE EXISTING WALLS ARE FURRED OUT AND DEVICES ARE NOT NOTED TO BE REMOVED, PROVIDE EXTENSION BOXES TO BRING FACE OF DEVICES FLUSH WITH NEW FINISH SURFACE AND CONTINUE IN SERVICE.

B. WIRE AND CABLE:

1. ALL 120 VOLT CIRCUIT HOMERUNS WHICH ARE OVER 100 LINEAR FEET SHALL BE #10 CONDUCTORS MINIMUM.
2. RUN MULTIPLE HOMERUNS TO ALTERNATELY NUMBERED PANELBOARD CIRCUITS (I.E. 1, 3, 5).
3. ALL CIRCUITRY RUNS ARE DIAGRAMMATIC. THE CONTRACTOR SHALL DETERMINE IN THE FIELD THE MOST SUITABLE ROUTES. ALL RECEPTACLES, LIGHTING FIXTURES, MOTORS, ETC. SHALL BE GROUNDED PER N.E.C.
4. ALL WIRING AND EQUIPMENT FOR "PLACES OF ASSEMBLY" SHALL COMPLY WITH ARTICLE 518 OF THE N.E.C.

C. WIRING DEVICES AND TELEPHONE/DATA OUTLETS:

1. THE LOCATION OF ALL WIRING DEVICES AND TELEPHONE/DATA OUTLETS SHALL BE VERIFIED BEFORE INSTALLATION WITH THE ARCHITECT. THE ARCHITECT MAY, AT HIS OPTION, RELOCATE ANY DEVICE 5 FEET AT NO CHARGE TO THE OWNER.
2. WHERE TWO OR MORE DEVICES ARE SHOWN TOGETHER ON THE PLANS, A MULTI-GANG BOX AND PLATE SHALL BE USED. DEVICES OF DIFFERENT VOLTAGES SHALL BE SEPARATED BY PERMANENTLY INSTALLED BOX PARTITIONS.
3. ALL OUTLETS SHOWN ON A WALL BACK TO BACK SHALL BE OFFSET A MINIMUM OF 6" HORIZONTALLY.
4. COORDINATE LIGHT SWITCHES SHOWN ON DRAWINGS WITH DOOR SWINGS. LOCATE LIGHT SWITCH ON LOCK SIDE OF DOOR.
5. COORDINATE WALL MOUNTED TELEPHONE/DATA OUTLET LOCATIONS WITH THE ARCHITECT. PROVIDE FOR COMPLETE INSTALLATION OF FLOOR DEVICES INCLUDING ALL ACCESSORIES.
6. MOUNTING HEIGHT FOR RECEPTACLES AND TELEPHONE OUTLETS SHALL BE 18" A.F.F., UNLESS OTHERWISE NOTED ON PLANS OR OTHERWISE REQUIRED BY LOCAL JURISDICTION.
7. MOUNTING HEIGHT FOR TOGGLE SWITCHES SHALL BE 48" A.F.F., UNLESS OTHERWISE REQUIRED BY THE LOCAL JURISDICTION.
8. THE TELEPHONE/DATA SYSTEM OUTLET LOCATIONS SHALL BE AS SHOWN ON THE DRAWINGS AND AS REQUIRED BY THE TELEPHONE/DATA COMPANY.

D. DISCONNECTS AND CIRCUIT BREAKERS:

1. LOCATE DISCONNECT SWITCH FOR MECHANICAL EQUIPMENT TO PERMIT SERVICING OF EQUIPMENT. CHECK MOTORS FOR PROPER ROTATION. CONNECT CONDUCTORS AS REQUIRED BY MANUFACTURER.
2. PROPERLY SUPPORT DISCONNECT OR ENCLOSED CIRCUIT BREAKER ON WALL WITH METAL FRAMING AS REQUIRED.
3. PROVIDE FUSES IF REQUIRED BY MANUFACTURER OF EQUIPMENT FOR UL APPROVAL OR HACR CURCUIT BREAKERS.
4. PROVIDE SAFETY SWITCHES WHERE INDICATED AND AS REQUIRED BY CODE WITH RATINGS AS REQUIRED BY THE SYSTEM VOLTAGE, PHASE AND LOAD SERVED.

E. PANELBOARDS:

1. PROVIDE A TYPED CIRCUIT DIRECTORY FOR EACH PANELBOARD INSTALLED UNDER THIS CONTRACT, IN PLASTIC SLEEVE ATTACHED TO DOOR, WITH COPY OF DIRECTORY TO TENANT.
2. PANELBOARD CIRCUITING SHALL MATCH THE DRAWINGS. CIRCUITING CHANGES MUST APPROVED BY THE ENGINEER.
3. BEFORE ORDERING PANELBOARDS, COORDINATE ALL CIRCUIT BREAKER TRIPS WITH MECHANICAL EQUIPMENT MANUFACTURER'S REQUIREMENTS. COORDINATE CONDUCTOR SIZE WITH ACTUAL MOTORS AND OTHER MECHANICAL AND ARCHITECTURAL EQUIPMENT FURNISHED BEFORE INSTALLING CIRCUITRY.
4. SURFACE MOUNTED PANELBOARD CABINETS SHALL BE INSTALLED ON AN APPROVED STEEL FRAMEWORK TO DISTRIBUTE THE WEIGHT EVENLY TO THE WALL AND FLOOR AND TO PROVIDE A 1-INCH AIR SPACE BETWEEN WALL AND CABINET. PAINT FRAMEWORK WITH TWO COATS OF GRAY ENAMEL AFTER FABRICATION.
5. FOR RECESSED PANELBOARDS, RUN ONE 3/4" CONDUIT FROM TOP OF PANEL 6" INTO CEILING SPACE FOR EVERY SET OF 3 SPARE CIRCUIT BREAKERS OR SPACES.

F. LIGHTING:

1. COORDINATE LIGHTING FIXTURES WITH MECHANICAL EQUIPMENT AND ARCHITECTURAL CEILING PLAN. GRID LAYOUT ON PLANS IS APPROXIMATE. ADJUST LIGHTING FIXTURES IN FIELD PER PROJECT MANAGER.
2. ALL NEW LIGHTING FIXTURES SHALL BE INSTALLED COMPLETE WITH LAMPS. SEE PLANS FOR SPECIFIC REQUIREMENTS.
3. REFER TO ENGINEERING DRAWINGS FOR FIXTURE TYPES, QUANTITIES AND LOCATIONS. SEE ENGINEERING PLANS FOR CIRCUITING.

G. ELECTRICAL IDENTIFICATION:

1. CONDUCTOR COLOR CODING: PROVIDE COLOR CODING FOR FEEDERS AND BRANCH CIRCUIT CONDUCTORS AS FOLLOWS:

| 208/120 VOLTS | PHASE |
|---|---|
| BLACK | A |
| RED | B |
| BLUE | C |
| WHITE | NEUTRAL |
| GREEN | GROUND |

2. APPLY EQUIPMENT IDENTIFICATION LABELS (MINIMUM 1" HIGH LETTERS) OF ENGRAVED PLASTIC-LAMINATE ON EACH MAJOR UNIT OF ELECTRICAL EQUIPMENT. APPLY LABELS FOR EACH UNIT OF THE FOLLOWING CATEGORIES OF ELECTRICAL EQUIPMENT.
   a. PANELBOARDS, ELECTRICAL CABINETS AND ENCLOSURES.
   b. DIMMERS.
3. APPLY CIRCUIT/CONTROL/ITEM DESIGNATION LABELS OF ENGRAVED PLASTIC LAMINATE FOR DISCONNECT SWITCHES, BREAKERS, PUSHBUTTONS, PILOT LIGHTS, MOTOR CONTROL CENTERS, AND SIMILAR ITEMS FOR POWER DISTRIBUTION AND CONTROL COMPONENTS ABOVE.
3. FOR PANELBOARDS INSTALLED OR MODIFIED UNDER THIS PROJECT: PROVIDE FRAMED, TYPED CIRCUIT SCHEDULES WITH EXPLICIT DESCRIPTION AND IDENTIFICATION OF ITEMS CONTROLLED BY EACH INDIVIDUAL BREAKER. FURNISH ADDITIONAL COPY OF EACH SCHEDULE TO OWNER.
4. EACH RECEPTACLE AND OUTLET SHALL BE LABELED TO INDICATE PANEL AND CIRCUIT BREAKER(S) SUPPLYING THE RECEPTACLE OR OUTLET. PROVIDE PRESSURE SENSITIVE, LAMINATED LABEL WITH BLACK LETTERING ON WHITE BACKGROUND. LETTERING HEIGHT IS 1/8".
5. OUTLET BOXES SERVING LIGHTING FIXTURES SHALL BE LABELED ON THE COVER PLATE TO SHOW THE PANEL AND CIRCUIT BREAKER(S) SUPPLYING THE FIXTURE(S).

H. GROUNDING:

1. GROUND ELECTRICAL SYSTEMS AND EQUIPMENT IN ACCORDANCE WITH NEC EXCEPT WHERE GROUNDING IN EXCESS OF NEC REQUIREMENTS IS INDICATED.
2. ALL CIRCUITS SHALL CONTAIN AN INSULATED GROUNDING CONDUCTOR.

I. SUPPORTING DEVICES:

1. INSTALL SUPPORTING DEVICES TO FASTEN ELECTRICAL COMPONENTS SECURELY AND PERMANENTLY IN ACCORDANCE WITH NEC REQUIREMENTS AND ANY ADDITIONAL LOCAL CODES.

J. EQUIPMENT CONNECTION:

1. EXTEND WIRING TO ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS AND MAKE FINAL AND COMPLETE CONNECTIONS TO ALL EQUIPMENT. BEFORE ROUGHING IN, THE LOCATION AND TYPE OF DEVICE SHALL BE VERIFIED FROM SHOP DRAWINGS OF THE EQUIPMENT. STARTERS AND DISCONNECTS AND OTHER ELECTRICAL CIRCUITRY AND DEVICES SHALL BE LOCATED TO ALLOW ACCESS TO DEVICES AND NOT INTERFERE WITH THE OPERATION OF THE MECHANICAL OR ARCHITECTURAL DEVICES OR THEIR POSSIBLE MAINTENANCE OR REMOVAL.

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| A | 95% SUBMISSION | 10/30/09 | |
| | 95% SUBMISSION | 06/25/10 | |
| | 100% SUBMISSION | 07/21/10 | |

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COLIMORE THOEMKE
1240 Key Highway
Baltimore, Maryland 21230
Tel. 410.752.3720
Fax. 410.752.4823
colimore@thoemke.com
ARCHITECTS


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encon
ENCON GROUP INC.
10605 Concord St., Suite 307
Kensington, MD 20895
301.949.5900/ fax 240.363.3006
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DES | DRW
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PM/DM
CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NATIONAL NAVY MEDICAL CENTER BUILDING #14
STATION – BETHESDA, MD
IPT PWD
PROJECT STATION
PROJECT– BETHESDA, MD
OICC / FEAD OFFICE EXPANSION
SPECIFICATIONS - ELECTRICAL

CODE ID. NO. 80091 | SIZE D
SCALE:
MAXIMO NO. ######
STA. PROJ. NO. P-###
WORK ORDER NO. ######
CONSTR. CONTR. NO. N40080-08-D-0305
NAVFAC DRAWING NO.
SHEET 2 OF X

E-2

REVDATE:

## DEMOLITION PLAN NOTES

1. REMOVE ALL LIGHTING FIXTURES, SWITCHES, AND EXISTING LIGHTING CIRCUITRY FROM THE SCOPE OF WORK AREA. REMOVE CIRCUITRY BACK TO THE SOURCE CIRCUIT BREAKER IN THE CORRESPONDING PANEL IN THE ELECTRIC ROOM. CONTRACTOR SHALL NOT ABANDON ELECTRICAL EQUIPMENT IN THE EXPOSED CEILING. THE EXPOSED CEILING SURFACE OR CAVITY SHALL BE CLEAN OF ALL EQUIPMENT WIRING AND DEBRIS.

2. REMOVE ALL LIGHTING FIXTURES, SWITCHES, AND EXISTING LIGHTING CONTROL CIRCUITRY IN THIS SCOPE OF WORK AREA. RETAIN EXISTING LIGHTING CIRCUIT(S) TO FEED THE REPLACEMENT LIGHT FIXTURES. REMOVE ALL ABANDONED ELECTRICAL EQUIPMENT AND CIRCUITRY.

## DEMOLITION NOTES

1. LIGHTING CIRCUITRY SHALL BE REMOVED FROM THE SCOPE OF WORK AREA. UNUSED CIRCUITS SHALL BE MADE SPARE.

## 2009 INTERNATIONAL ENERGY CONSERVATION CODE COMPLIANCE

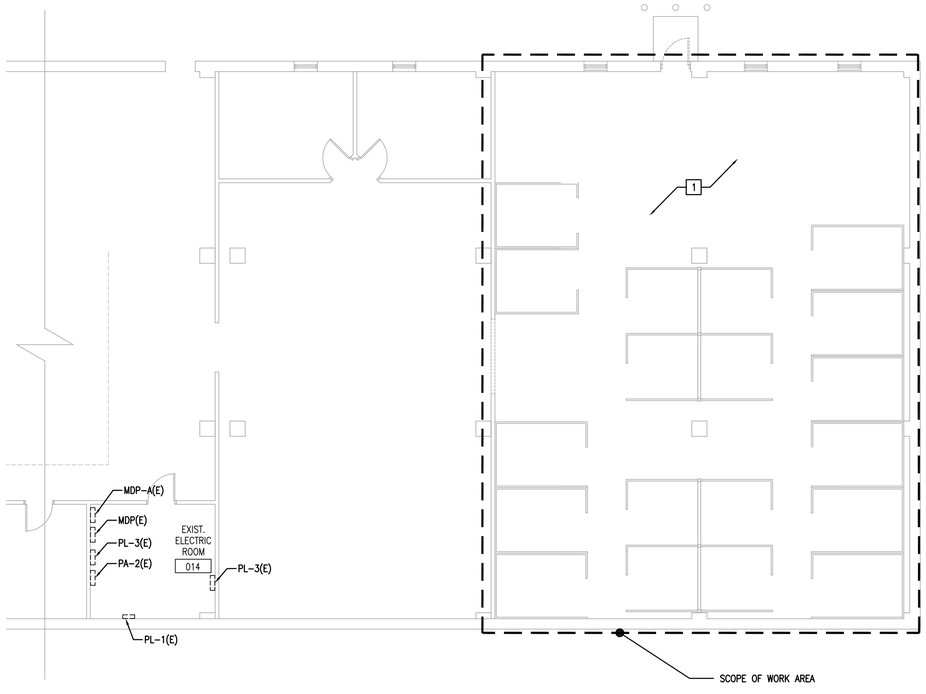
| | | |
|---|---|---|
| SQUARE FOOTAGE: | = | 3,755 SF |
| INTERIOR LIGHTING POWER: | = | 1.0 W/SF |
| ALLOWABLE WATTAGE: | = | 3,755 WATTS |
| WATTAGE USED: | = | 3,644 WATTS |

## PLAN NOTES

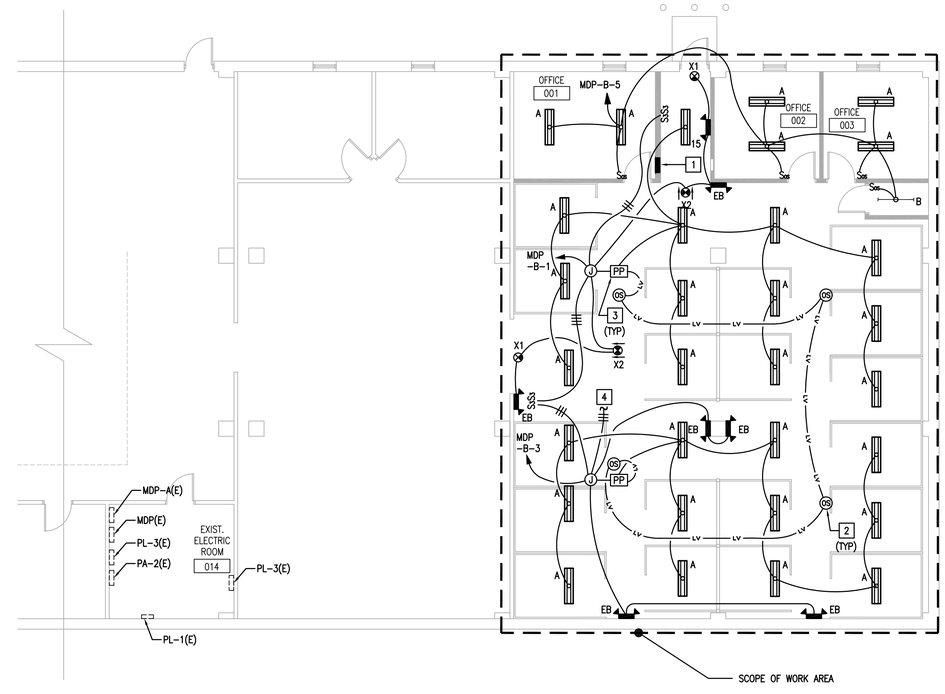
1. NEW PANELBOARD "MDP-B". NEW WALL SHALL BE AT LEAST 6" DEEP TO ACCOMMODATE THE NEW RECESSED PANELBOARD.
2. PROVIDE CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR EQUIVALENT TO WATT STOPPER CATALOG No. DT-305.
3. PROVIDE CEILING MOUNTED POWER PACK EQUIVALENT TO WATT STOPPER CATALOG No. BZ-150.
4. TO THREE-WAY SWITCH AT EXTERIOR DOOR.
5. UTILIZE EXISTING LIGHTING CIRCUIT(S) IN THIS AREA TO FEED THE REPLACEMENT LIGHTING. LIMIT LOAD ON ANY CIRCUIT TO LESS THAN 16 AMPERES.

## GENERAL NOTES

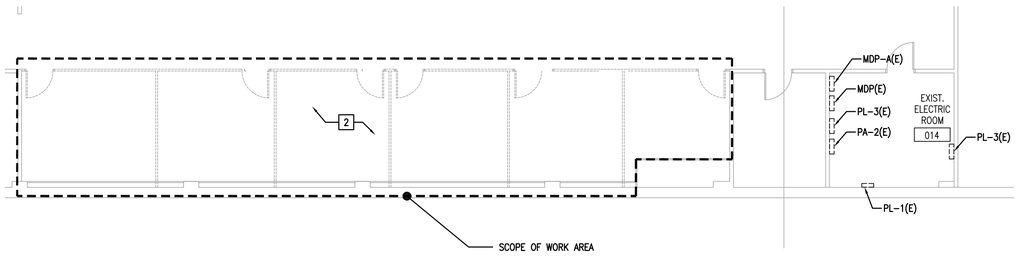
1. REFER TO DRAWING E-7 FOR PANEL SCHEDULES.
2. ALL FLUORESCENT LIGHT FIXTURES SHALL BE PENDANT MOUNTED AT 18-1/2 INCHES BELOW THE CEILING SLAB. CONTRACTOR SHALL MOUNT FLUORESCENT LIGHTING FIXTURES TO AVOID ALL FIRE SPRINKLER PIPING.
3. ALL EXIT SIGNS SHALL BE PENDANT MOUNTED AT 18-1/2 INCHES BELOW THE CEILING SLAB. CONTRACTOR SHALL MOUNT EXIT SIGNS TO AVOID ALL FIRE SPRINKLER PIPING.
4. REFER TO DRAWING E-6 FOR LIGHTING FIXTURE SCHEDULE.
5. ALL EMERGENCY BATTERY PACKS AND EXIT SIGN FIXTURES SHALL BE CONNECTED AHEAD OF ANY SWITCHING WITH 2#12+#12G IN 3/4" CONDUIT.
6. THE EXPOSED CEILING CAVITY WILL BE OPEN TO THE SLAB. ALL LIFE-SAFETY AND FIRE ALARM EQUIPMENT SHALL HAVE A WHITE FINISH.



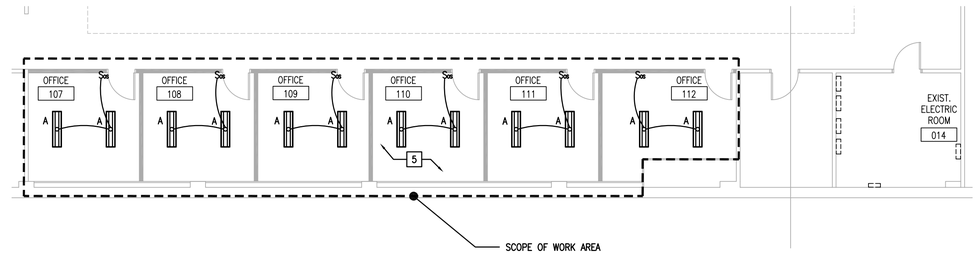

PARTIAL FIRST FLOOR PLAN EXPANSION AREA - LIGHTING - DEMOLITION - ELECTRICAL
SCALE: 1/8" = 1'- 0"




PARTIAL FIRST FLOOR PLAN EXPANSION AREA - LIGHTING - NEW WORK - ELECTRICAL
SCALE: 1/8" = 1'- 0"




PARTIAL FIRST FLOOR PLAN OFFICE AREA - LIGHTING - DEMOLITION - ELECTRICAL
SCALE: 1/8" = 1'- 0"




PARTIAL FIRST FLOOR PLAN OFFICE AREA - LIGHTING - NEW WORK - ELECTRICAL
SCALE: 1/8" = 1'- 0"

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| | 100% SUBMISSION | 07/21/10 | |
| | 95% SUBMISSION | 05/25/10 | |
| A | 95% SUBMISSION | 10/30/09 | |

NAVFAC


COLIMORE THOEMKE
1240 Key Highway
Baltimore, Maryland 21230
Tel. 410.752.3730
Fax. 410. 752.4823
colimorethoemke.com
ARCHITECTS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ENCON GROUP INC.
10605 Concord St., Suite 307
Kensington, MD 20895
301.949.5900/ fax 240.363.3006
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| DES | DRW |
| REVIEWED BY | REW |
| PM/DM | JY |
| CHIEF ENG/ARCH | |

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NATIONAL NAVY MEDICAL CENTER BUILDING #14
STATION – BETHESDA, MD
IPT PWD
PROJECT STATION
PROJECT– BETHESDA, MD
OICC / FEAD OFFICE EXPANSION
LIGHTING DEMOLITION AND NEW WORK

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| CODE ID. NO. 80091 | SIZE D |
| SCALE: | |
| MAXIMO NO. | ##### |
| STA. PROJ. NO. | P-### |
| WORK ORDER NO. | ##### |
| CONSTR. CONTR. NO. | N40080-08-D-0305 |
| NAVFAC DRAWING NO. | |
| SHEET | 3 OF X |

E-3

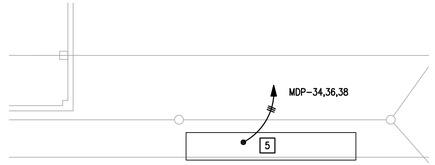
REVDATE:

## DEMOLITION PLAN NOTES

1. REMOVE ALL POWER DEVICES, TELE-DATA DEVICES AND WIRING/CONDUIT FROM THE SCOPE OF WORK AREA. REMOVE CIRCUITRY BACK TO THE SOURCE CIRCUIT BREAKER IN THE CORRESPONDING PANEL IN THE ELECTRIC ROOM. CONTRACTOR SHALL NOT ABANDON ANYTHING IN THE CEILING. THE CEILING SURFACE SHALL BE CLEAN OF ALL EQUIPMENT WIRING AND DEBRIS. CEILING SHALL BE OPEN TO THE SLAB ABOVE.
2. DISCONNECT EXISTING FAN COIL UNIT (TO BE RELOCATED). EXISTING CIRCUITRY TO BE EXTENDED TO RELOCATED UNIT.

## DEMOLITION NOTES

1. POWER WIRING/CONDUIT SHALL BE REMOVED FROM THE SCOPE OF WORK AREA. UNUSED CIRCUITS SHALL BE MADE SPARE.



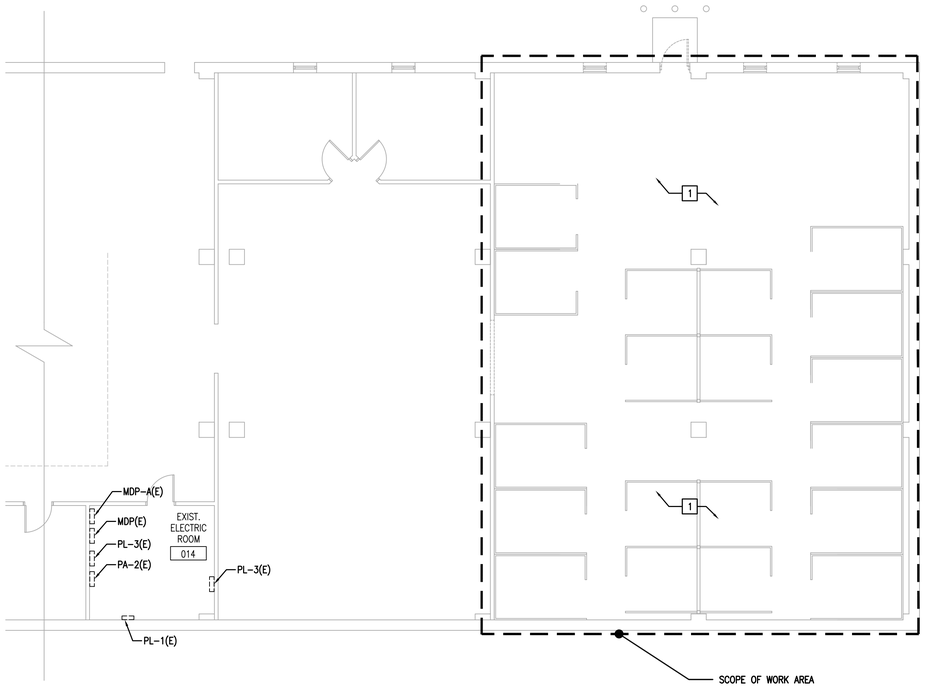

N
## PARTIAL ROOF PLAN POWER - NEW WORK - ELECTRICAL
SCALE: 1/8" = 1'- 0"

## PLAN NOTES

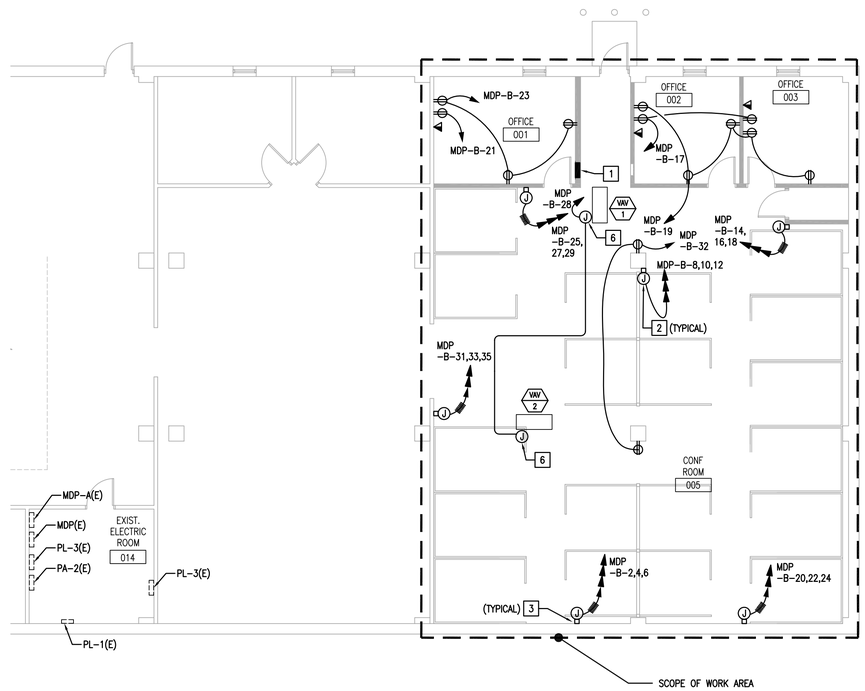
1. NEW PANELBOARD "MDP-B"..
2. PROVIDE POLE TOP JUNCTION BOX FOR CONNECTION TO POWER POLE.
3. PROVIDE BLANK ALUMINUM POWER POLE (WIREMOLD CATALOG No. NP600C-10-2B OR EQUAL). COORDINATE POWER POLE LOCATION WITH SYSTEM FURNITURE INSTALLER.
4. EXTEND EXISTING CIRCUIT AND RECONNECT RELOCATED FAN COIL UNIT.
5. ROOFTOP AIR HANDLER WITH FACTORY INSTALLED DISCONNECT AND SERVICE RECEPTACLE. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION.
6. PROVIDE CEILING MOUNTED JUNCTION BOX FOR FAN POWERED VAV CONTROL CIRCUIT CONNECTION.
7. MOUNT JUNCTION BOX NEAR CEILING AND FISH MC CABLE THROUGH EXISTING WALL CAVITY TO NEW RECEPTACLE MOUNTED FLUSH IN WALL.

## GENERAL NOTES

1. REFER TO DRAWINGS E-6 FOR RISER DIAGRAM AND E-7 FOR PANEL SCHEDULES.
2. SYSTEMS FURNITURE AT POWER POLES BASIS OF DESIGN SHALL BE 3-CIRCUIT, 8-WIRE.
3. CONTRACTOR SHALL ENSURE THAT ALL DATA CONDUITS ARE RUN UP TO THE CEILING AND TURNED OUT INTO THE ROOM.
4. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION OF ROOF TOP UNIT.
5. THE CEILING IS EXPOSED IN THE SCOPE OF WORK AREA AND SHALL BE PAINTED WHITE. ALL JUNCTION BOXES AND CONDUIT SHALL HAVE A WHITE FINISH.
6. ALL EXPOSED CIRCUITRY SHALL BE INSTALLED IN CONDUIT.




N
## FIRST FLOOR PLAN OFFICE AREA - POWER - DEMOLITION - ELECTRICAL
SCALE: 1/8" = 1'- 0"

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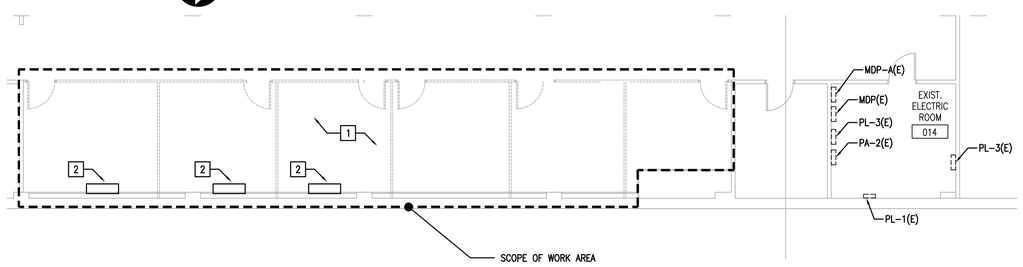
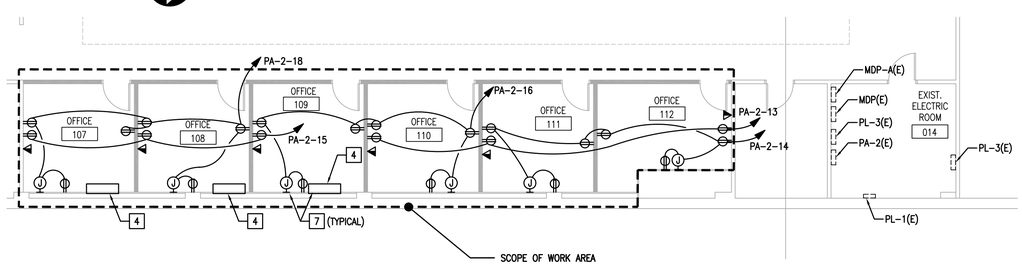
## FIRST FLOOR PLAN EXPANSION AREA - POWER - DEMOLITION - ELECTRICAL
SCALE: 1/8" = 1'- 0"




N
## FIRST FLOOR PLAN OFFICE AREA - POWER - NEW WORK - ELECTRICAL
SCALE: 1/8" = 1'- 0"




N
## FIRST FLOOR PLAN EXPANSION AREA - POWER - NEW WORK - ELECTRICAL
SCALE: 1/8" = 1'- 0"

REVDATE:

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| | 100% SUBMISSION | 07/21/10 | |
| | 95% SUBMISSION | 09/29/10 | |
| A | 85% SUBMISSION | 10/05/09 | |

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COLIMORE THOEMKE
1240 Key Highway
Baltimore, Maryland 21230
Tel. 410.752.3730
Fax. 410. 752.4823
colimorethoemke.com
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ENCON GROUP INC.
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301.949.5900/ fax 240.363.3006
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Encon Project No. 09137

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| DES | DRW |
| REVIEWED BY | REW |
| PM/DM | JY |
| CHIEF ENG/ARCH | |

NAVAL FACILITIES ENGINEERING COMMAND
STATION - BETHESDA, MD
DEPARTMENT OF THE NAVY
NATIONAL NAVY MEDICAL CENTER BUILDING #14
IPT PWD
PROJECT STATION
PROJECT- BETHESDA, MD
OICC / FEAD OFFICE EXPANSION
POWER DEMOLITION AND NEW WORK

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| CODE ID. NO. 80091 | SIZE D |
| SCALE: | |
| MAXIMO NO. | ###### |
| STA. PROJ. NO. | P-### |
| WORK ORDER NO. | ###### |
| CONSTR. CONTR. NO. | N40080-08-D-0305 |
| NAVFAC DRAWING NO. | |
| SHEET 4 OF X | |

E-4

## DEMOLITION PLAN NOTES

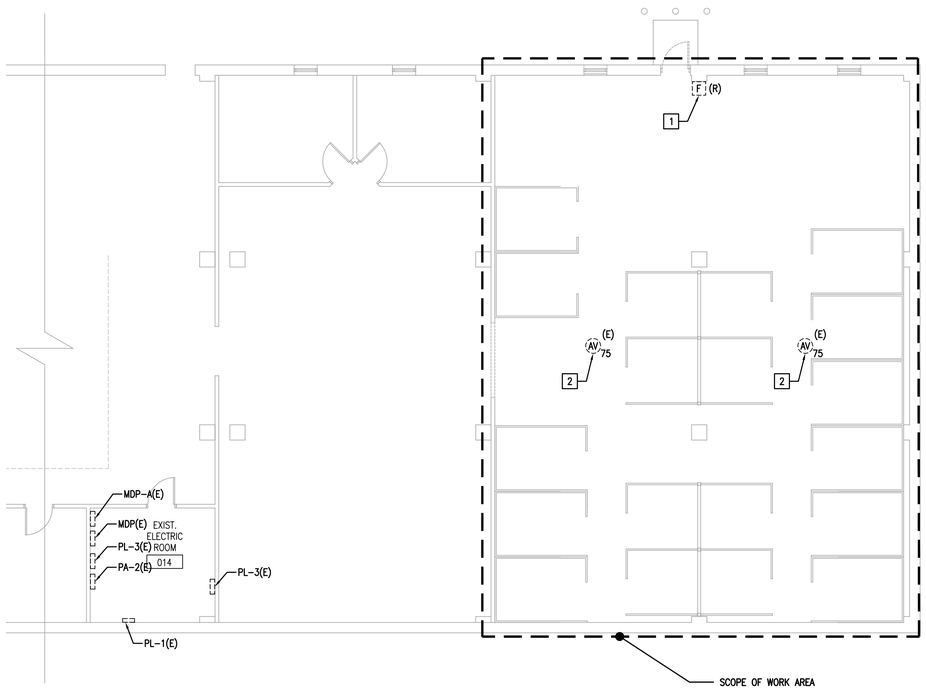
1. RELOCATE EXISTING WALL MOUNTED FIRE ALARM MANUAL PULL STATION FROM THE EXISTING LOCATION. REFER TO NEW WORK PLAN FOR NEW LOCATION.
2. EXISTING AUDIO/VISUAL ALARM APPLIANCES TO REMAIN. TEMPORARILY REMOVE AND REINSTALL TO ALLOW FOR CEILING WORK IF NECESSARY.

## DEMOLITION NOTES

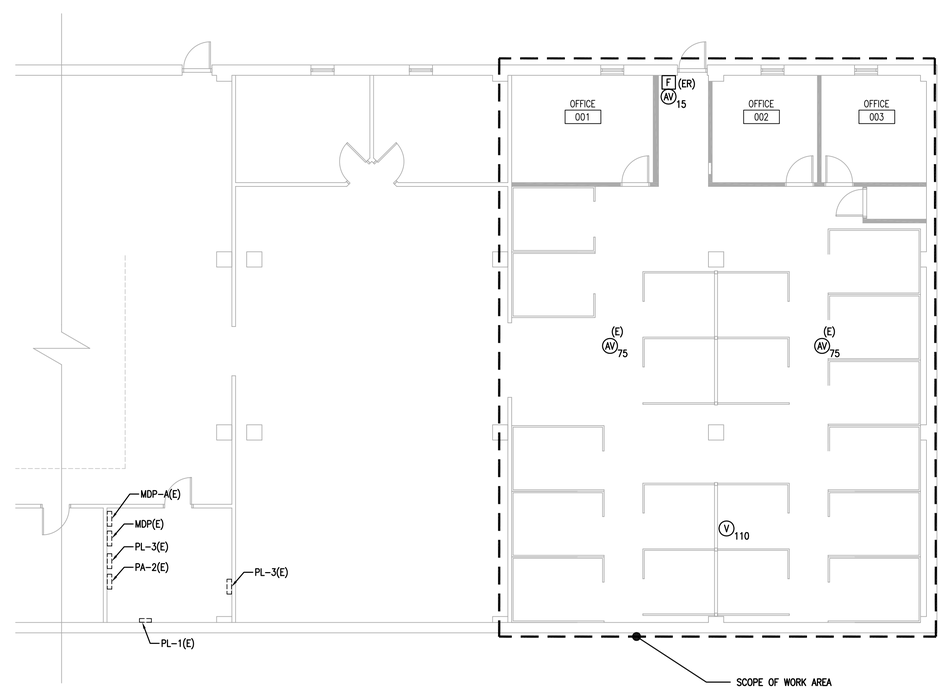
1. FIRE ALARM DEVICES IN THE SCOPE OF WORK AREA SHALL BE RELOCATED. REFER TO NEW WORK PLAN THIS DRAWING FOR FURTHER INFORMATION.

## GENERAL NOTES

1. REFER TO DRAWING E-1 FOR SYMBOLS AND ABBREVIATIONS.
2. FIRE ALARM DEVICE INSTALLATION SHALL BE PERFORMED BY BFPE. ALL FIRE ALARM TIE-IN'S TO THE EXISTING FIRE ALARM SYSTEM SHALL BE PERFORMED BY BFPE. CONTACT BFPE PRIOR TO ORDERING ANY FIRE ALARM DEVICE. BFPE 7512 CONNELLY DRIVE, HANOVER, MD 21076, PHONE: 800-966-2212.
3. NEW FIRE ALARM DEVICES SHALL BE MANUFACTURED BY WHEELOCK OR EQUAL AS APPROVED BY BFPE.




N
FIRST FLOOR PLAN FIRE ALARM - DEMOLITION - ELECTRICAL
SCALE: 1/8" = 1'- 0"




N
FIRST FLOOR PLAN FIRE ALARM - NEW WORK - ELECTRICAL
SCALE: 1/8" = 1'- 0"

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| | 100% SUBMISSION | 07/21/10 | |
| | 95% SUBMISSION | 06/25/10 | |
| A | 95% SUBMISSION | 10/30/09 | |

NAVFAC

COLIMORE THOEMKE
1240 Key Highway
Baltimore, Maryland 21230
Tel. 410.752.3720
Fax. 410. 752.4823
colimorethoemke.com
ARCHITECTS

ARCH LOGO

ENCON GROUP INC.
10605 Concord St., Suite 307
Kensington, MD 20895
301.949.5900/ fax 240.363.3006
www.encongroup.com
Encon Project No. 09137

MEP LOGO

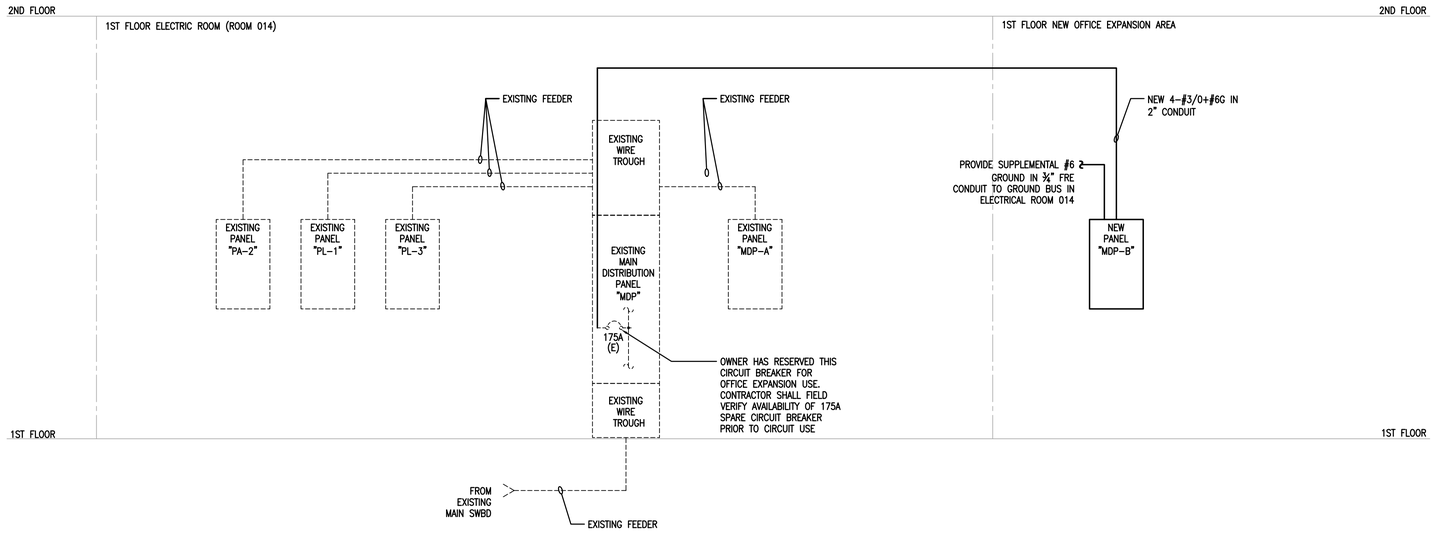
| | |
|---|---|
| DES | DRW |
| REVIEWED BY | REW |
| PM/DM | JY |
| CHIEF ENG/ARCH | |

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NATIONAL NAVY MEDICAL CENTER BUILDING #14
STATION - BETHESDA, MD
IPT PWD
PROJECT STATION
PROJECT- BETHESDA, MD
OICC / FEAD OFFICE EXPANSION
FIRE ALARM DEMOLITION AND NEW WORK

| | |
|---|---|
| CODE ID. NO. 80091 | SIZE D |
| SCALE: | |
| MAXIMO NO. | ##### |
| STA. PROJ. NO. | P-### |
| WORK ORDER NO. | ##### |
| CONSTR. CONTR. NO. | N40080-08-D-0305 |
| NAVFAC DRAWING NO. | |
| SHEET 5 OF X | |

E-5

REVDATE:




## RISER DIAGRAM - ELECTRICAL

SCALE: NOT TO SCALE

## LIGHTING FIXTURE SCHEDULE

| DESIGNATION OR SYMBOL | DESCRIPTION | MANUFACTURER | CATALOG NO. | LAMP | VOLT | MOUNTING | NOTES |
|---|---|---|---|---|---|---|---|
| A | FLUORESCENT DIRECT/INDIRECT | NEO-RAY | 302DIP-3T5-DC04-1EB-RP | (2) FP28/835/ECO | 120 | PENDANT | |
| B | FLUORESCENT STRIP WITH WIRE GUARD | LITHONIA | C132-120-GEB10IS-WGCUN | (1) F032/835/ECO | 120 | SURFACE | |
| EB | EMERGENCY BATTERY PACK | LITHONIA | ELM1254-H2012-N-SD | (2) 20W HALOGEN | 120 | SURFACE | COORDINATE COLOR WITH PROJECT MANAGER PRIOR TO ORDERING |
| X1 | SINGLE FACE EXIT SIGN | LITHONIA | LOC-W-1-R-ELN-ELA-W-US12 | LED | 120 | PENDANT | |
| X2 | DOUBLE FACE EXIT SIGN | LITHONIA | LOC-W-2-R-ELN-ELA-W-US12 | LED | 120 | PENDANT | DIRECTIONAL ARROWS SHALL BE AS SHOWN ON THE LIGHTING NEW WORK DRAWING |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**NOTES:**

VERIFY MANUFACTURER, MODELS, FINISHES, COLORS AND OPTIONS FOR ALL FIXTURES WITH PROJECT MANAGER PRIOR TO ORDERING.

| SYM | DESCRIPTION | DATE | APPR. |
|---|---|---|---|
| | 100% SUBMISSION | 07/21/10 | |
| | 95% SUBMISSION | 06/25/10 | |
| A | 95% SUBMISSION | 10/30/09 | |

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MEP LOGO

DES | DRW
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DEPARTMENT OF THE NAVY
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RISER DIAGRAM AND SCHEDULES

CODE ID. NO. 80091 | SIZE D
SCALE:
MAXIMO NO. ######
STA. PROJ. NO. P-###
WORK ORDER NO. ######
CONSTR. CONTR. NO. N40080-08-D-0305
NAVFAC DRAWING NO.
SHEET 6 OF X

E-6

REVDATE:

## EXISTING PANEL PMI 2849 'MDP' SCHEDULE

BUS: 600A | VOLTAGE: 208Y/120 | NO. POLES: 42 | LOCATION: ELECTRIC ROOM
NEUTRAL: 600A | PHASE/WIRE: 3PH/4W | SECTION: 1 OF 1 | MOUNTING: SURFACE
MLO: 600A | AIC RATING: 65K | FED FROM: BASEMENT SWBD

| ITEM SERVED | LOAD | CONDUIT AND CONDUCTOR | CB TRIP | CKT NO. | PHASE KVA A | PHASE KVA B | PHASE KVA C | CKT NO. | CB TRIP | CONDUIT AND CONDUCTOR | LOAD | ITEM SERVED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EXST PANEL MDP-A (PANEL P-2-2) | 0.00 | EXISTING | 225 | 1 | 9.15 | | | 2 | 175 | **4#3/0+#6GIN 2"C** | **9.15** | **NEW PANEL MDP-B** |
| | 0.00 | | | 3 | | 8.51 | | 4 | | | **8.51** | |
| | 0.00 | | | 5 | | | 8.72 | 6 | | | **8.72** | |
| EXISTING PANEL P1-1 | 0.00 | EXISTING | 225 | 7 | 0.00 | | | 8 | 225 | EXISTING | 0.00 | EXISTING PANEL P2-1 |
| | 0.00 | | | 9 | | 0.00 | | 10 | | | 0.00 | |
| | 0.00 | | | 11 | | | | 12 | | | 0.00 | |
| SPACE | 0.00 | | | 13 | 0.00 | | | 14 | 90 | EXISTING | 0.00 | EXST PANEL PA-2 |
| SPACE | 0.00 | | | 15 | | 0.00 | | 16 | | | 0.00 | |
| SPACE | 0.00 | | | 17 | | | 0.00 | 18 | | | 0.00 | |
| SPARE | 0.00 | | 100 | 19 | 0.00 | | | 20 | 50 | EXISTING | 0.00 | EXST ROOF AHU |
| | 0.00 | | | 21 | | 0.00 | | 22 | | | 0.00 | |
| | 0.00 | | | 23 | | | 0.00 | 24 | | | 0.00 | |
| EXST PANEL PL-3 (PANEL 1-3) | 0.00 | EXISTING | 100 | 25 | 0.00 | | | 26 | 60 | | 0.00 | SPARE |
| | 0.00 | | | 27 | | 0.00 | | 28 | | | 0.00 | |
| | 0.00 | | | 29 | | | 0.00 | 30 | 40 | | 0.00 | SPARE |
| SPARE | 0.00 | EXISTING | 100 | 31 | 0.00 | | | 32 | | | 0.00 | |
| | 0.00 | | | 33 | | 0.00 | | 34 | | | 0.00 | |
| | 0.00 | | | 35 | | | 1.25 | 36 | **25*** | **3#10 + #10G IN 3/4"C** | **1.25** | **NEW ROOFTOP UNIT (RTU-1)** |
| EXST PRINTING MACH | 0.00 | EXISTING | 20 | 37 | 1.25 | | | 38 | | | **1.25** | |
| | 0.00 | | | 39 | | 1.25 | | 40 | | | **1.25** | |
| | 0.00 | | | 41 | | | 0.00 | 42 | 20 | EXISTING | 0.00 | EXST RCPT COKE MACH |
| ADDED KVA | 30.13 | | | | 10.40 | 9.76 | 9.97 | | | | | |
| ADDED AMPS | 83.69 | | | | | | | | | | | |

*PROVIDE INDICATED CIRCUIT BREAKER IN EXISTING SPACE.

| CATEGORY | CONNECTED KVA | DEMAND FACTOR | DEMAND KVA | DEMAND AMPS |
|---|---|---|---|---|
| LIGHTING | 0.00 | 1.25 | 0.00 | 0.00 |
| RECEPTACLES | 0.00 | 1.00 | 0.00 | 0.00 |
| RECEPTACLES OVER 10KVA | 0.00 | 0.50 | 0.00 | 0.00 |
| LARGEST MOTOR | 0.00 | 1.25 | 0.00 | 0.00 |
| HEATING | 0.00 | 1.00 | 0.00 | 0.00 |
| COOLING | 2.50 | 1.00 | 2.50 | 6.944 |
| OTHER | 26.38 | 1.00 | 26.38 | 73.278 |
| TOTAL | 28.88 | 1.00 | 28.88 | 80.222 |

## PANEL MDP NEW LOAD SUMMARY

| | | |
|---|---|---|
| PHASE A | 130A @ 120V – | 15.6KVA |
| PHASE B | 160A @ 120V – | 19.2KVA |
| PHASE C | 147A @ 120V – | 17.6KVA |
| TOTAL | | 52.4KVA |
| +25% PER NEC | | 13.1KVA |
| NEC TOTAL | | 65.5KVA |
| ADDED LOAD | | |
| PANEL MDP–B | | 26.3KVA |
| RTU | | 3.8KVA |
| PANEL PA–2 | | 5.6KVA |
| TOTAL | | 101.2KVA (281A) |

## NEW PANEL 'MDP-B' SCHEDULE

BUS: 225A | VOLTAGE: 208Y/120 | NO. POLES: 42 | LOCATION: SEE FLOOR PLAN
NEUTRAL: 225A | PHASE/WIRE: 3PH/4W | SECTION: 1 OF 1 | MOUNTING: RECESSED
MCB: 175A | AIC RATING: 10K | FED FROM: MDP

| ITEM SERVED | LOAD | CONDUIT AND CONDUCTOR | CB TRIP | CKT NO. | PHASE KVA A | PHASE KVA B | PHASE KVA C | CKT NO. | CB TRIP | CONDUIT AND CONDUCTOR | LOAD | ITEM SERVED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **OPEN OFF LTG** | **1.09** | **2#12 + #12 IN 3/4"C** | **20** | 1 | 2.29 | | | 2 | **20** | **2#12 + #12 IN 3/4"C** | **1.20** | **POWER POLE** |
| **OPEN OFF LTG** | **1.01** | **2#12 + #12 IN 3/4"C** | **20** | 3 | | 2.21 | | 4 | **20** | **2#12 + #12 IN 3/4"C** | **1.20** | **POWER POLE** |
| **OFF. 001,002,003 LTG** | **0.54** | **2#12 + #12 IN 3/4"C** | **20** | 5 | | | 1.98 | 6 | **20** | **2#12 + #12 IN 3/4"C** | **1.44** | **POWER POLE** |
| **SPARE** | **0.00** | | **20** | 7 | 1.20 | | | 8 | **20** | **2#12 + #12 IN 3/4"C** | **1.20** | **POWER POLE** |
| **SPARE** | **0.00** | | **20** | 9 | | 1.20 | | 10 | **20** | **2#12 + #12 IN 3/4"C** | **1.20** | **POWER POLE** |
| **SPARE** | **0.00** | | **20** | 11 | | | 1.44 | 12 | **20** | **2#12 + #12 IN 3/4"C** | **1.44** | **POWER POLE** |
| **SPARE** | **0.00** | | **20** | 13 | 1.20 | | | 14 | **20** | **2#12 + #12 IN 3/4"C** | **1.20** | **POWER POLE** |
| **SPARE** | **0.00** | | **20** | 15 | | 1.20 | | 16 | **20** | **2#12 + #12 IN 3/4"C** | **1.20** | **POWER POLE** |
| **CMPTR RCPTS 002-003** | **0.80** | **2#12 + #12 IN 3/4"C** | **20** | 17 | | | 1.88 | 18 | **20** | **2#12 + #12 IN 3/4"C** | **1.08** | **POWER POLE** |
| **GEN RCPTS 002-003** | **0.90** | **2#12 + #12 IN 3/4"C** | **20** | 19 | 2.10 | | | 20 | **20** | **2#12 + #12 IN 3/4"C** | **1.20** | **POWER POLE** |
| **CMPTR RCPTS 001** | **0.40** | **2#12 + #12 IN 3/4"C** | **20** | 21 | | 1.60 | | 22 | **20** | **2#12 + #12 IN 3/4"C** | **1.20** | **POWER POLE** |
| **GEN RCPTS 001** | **0.54** | **2#12 + #12 IN 3/4"C** | **20** | 23 | | | 1.62 | 24 | **20** | **2#12 + #12 IN 3/4"C** | **1.08** | **POWER POLE** |
| **POWER POLE** | **0.80** | **2#12 + #12 IN 3/4"C** | **20** | 25 | 1.16 | | | 26 | **20** | **2#12 + #12 IN 3/4"C** | **0.36** | **GEN RECPTS 00.1** |
| **POWER POLE** | **0.80** | **2#12 + #12 IN 3/4"C** | **20** | 27 | | 1.10 | | 28 | **20** | **2#12 + #12 IN 3/4"C** | **0.30** | **VAV CNTRL CKT** |
| **POWER POLE** | **0.72** | **2#12 + #12 IN 3/4"C** | **20** | 29 | | | 0.72 | 30 | | | | **SPACE** |
| **POWER POLE** | **1.20** | **2#12 + #12 IN 3/4"C** | **20** | 31 | 1.20 | | | 32 | | | | **SPACE** |
| **POWER POLE** | **1.20** | **2#12 + #12 IN 3/4"C** | **20** | 33 | | 1.20 | | 34 | | | | **SPACE** |
| **POWER POLE** | **1.08** | **2#12 + #12 IN 3/4"C** | **20** | 35 | | | 1.08 | 36 | | | | **SPACE** |
| **SPACE** | | | | 37 | 0.00 | | | 38 | | | | **SPACE** |
| **SPACE** | | | | 39 | | 0.00 | | 40 | | | | **SPACE** |
| **SPACE** | | | | 41 | | | 0.00 | 42 | | | | **SPACE** |
| TOTAL KVA | 26.38 | | | | 9.15 | 8.51 | 8.72 | | | | | |
| TOTAL AMPS | 73.28 | | | | | | | | | | | |

| CATEGORY | CONNECTED KVA | DEMAND FACTOR | DEMAND KVA | DEMAND AMPS |
|---|---|---|---|---|
| LIGHTING | 2.64 | 1.25 | 3.30 | 9.167 |
| RECEPTACLES | 8.64 | 1.00 | 8.64 | 24.00 |
| RECEPTACLES OVER 10KVA | 0.00 | 0.50 | 0.00 | 0.00 |
| LARGEST MOTOR | 0.00 | 1.25 | 0.00 | 0.00 |
| HEATING | 0.00 | 1.00 | 0.00 | 0.00 |
| COOLING | 0.00 | 1.00 | 0.00 | 0.00 |
| MISCELLANEOUS | 15.10 | 1.00 | 15.10 | 41.944 |
| TOTAL | 26.38 | 1.025 | 27.04 | 75.111 |

## LOAD SUMMARY

THE LOADS IN THIS TABLE WERE MEASURED BY NMCC BETHESDA ON 9/29/09 AND PROVIDED TO ENCON:

Panel "PMI 2849"
Located in Bldg 14, Ground Floor
FPE, 600 amp, 120/208, 3 phase, 4 wire
Type NDP, No ground bar or buss
Feed from 600Amp main in Mechanical room

| | | | | | |
|---|---|---|---|---|---|
| Panel P-2-2 | 1 | | | 2 | **Spare** |
| Panel P-2-2 | 3 | 3p-225A | 3P-175A | 4 | **Spare** |
| Panel P-2-2 | 5 | | | 6 | **Spare** |
| Panel P1-1 | 7 | | | 8 | Panel P2-1 |
| Panel P1-1 | 9 | 3p-225A | 3P225A | 10 | Panel P2-1 |
| Panel P1-1 | 11 | | | 12 | Panel P2-1 |
| Space | 13 | | | 14 | Panel PA-2 |
| Space | 15 | | 3P-90A | 16 | Panel PA-2 |
| Space | 17 | | | 18 | Panel PA-2 |
| **Spare** | 19 | | | 20 | AHU, Roof |
| **Spare** | 21 | 3P-100 | 3P-50A | 22 | AHU, Roof |
| **Spare** | 23 | | | 24 | AHU, Roof |
| Panel P1-3 | 25 | | 2P-60A | 26 | **Spare** |
| Panel P1-3 | 27 | | | 28 | **Spare** |
| Panel P1-3 | 29 | | | 30 | **Spare** |
| **Spare** | 31 | | 3P-40 | 32 | **Spare** |
| **Spare** | 33 | 3P-100 | | 34 | **Spare** |
| **Spare** | 35 | | | 36 | Space |
| Printer | 37 | | | 38 | Space |
| Printer | 39 | 3P-20 | | 40 | Space |
| Printer | 41 | | 1P-20 | 42 | Coke Mechine |

This panel is fed by parallel sets of 500MCM aluminum to a trough in the electrical room, they are landed on a buss bar with a 4/0
Panel MDP-A is feed from the buss bars.

Load readings of Panel PMI 2849, 600 Amp, MLO

| | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|
| Phase "A" | 75 | 88 | 117 |
| Phase "B" | 64 | 106 | 112 |
| Phase "C" | 147 | 75 | 129 |

Load readings of Panel MDP-A, 225 Amp, MCB

| | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|
| Phase "A" | 26 | | |
| Phase "B" | 24 | | |
| Phase "C" | 25 | | |

Load readings of Main Switch in Mechanical room, 600 Amp non-fused main Switch

| | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|
| Phase "A" | 118 | 130 | |
| Phase "B" | 160 | 128 | |
| Phase "C" | 130 | 143 | |

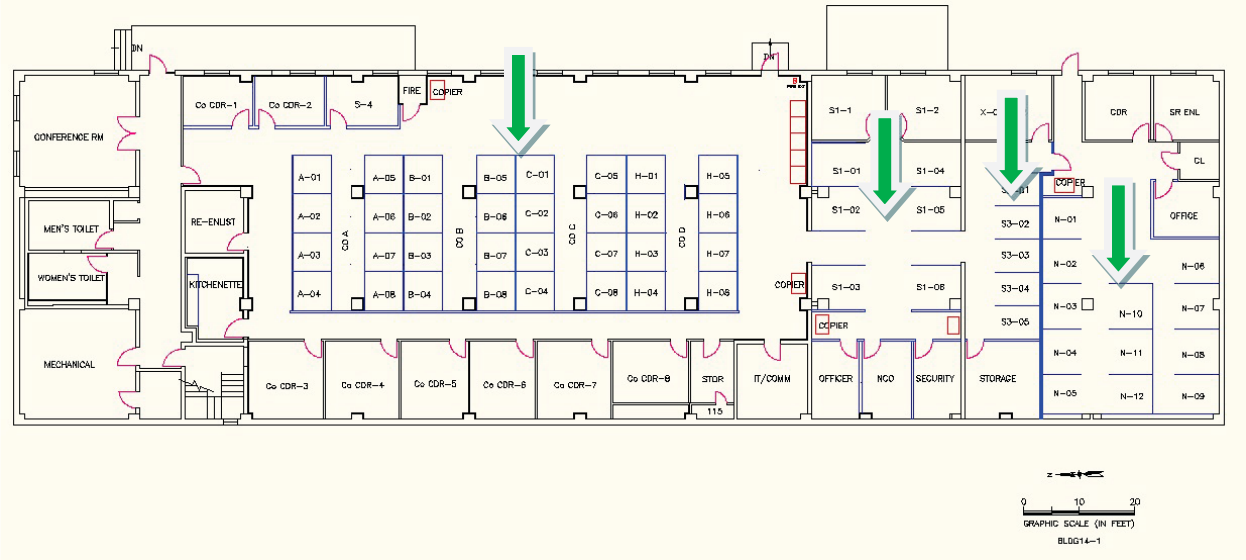
## EXISTING PANEL 'PA-2' SCHEDULE

BUS: 100A | VOLTAGE: 208Y/120 | NO. POLES: 30 | LOCATION: ELECTRIC ROOM
NEUTRAL: 100A | PHASE/WIRE: 3PH/4W | SECTION: 1 OF 1 | MOUNTING: SURFACE
MLO: 100A | AIC RATING: 10K | FED FROM: MDP

| ITEM SERVED | LOAD | CONDUIT AND CONDUCTOR | CB TRIP | CKT NO. | PHASE KVA A | PHASE KVA B | PHASE KVA C | CKT NO. | CB TRIP | CONDUIT AND CONDUCTOR | LOAD | ITEM SERVED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LTG | 1.92 | EXISTING | 20 | 1 | 3.84 | | | 2 | 20 | EXISTING | 1.92 | LTG |
| OFF RCPTS | 1.08 | EXISTING | 20 | 3 | | 2.28 | | 4 | 20 | EXISTING | 1.20 | WORK STATION |
| OFF RCPTS | 1.08 | EXISTING | 20 | 5 | | | 2.28 | 6 | 20 | EXISTING | 1.20 | WORK STATION |
| WORK STATION | 1.20 | EXISTING | 20 | 7 | 2.28 | | | 8 | 20 | EXISTING | 1.08 | WORK STATION |
| WORK STATION | 1.20 | EXISTING | 20 | 9 | | 2.28 | | 10 | 20 | EXISTING | 1.08 | WORK STATION |
| WORK STATION | 1.08 | EXISTING | 20 | 11 | | | 2.16 | 12 | 20 | EXISTING | 1.08 | WORK STATION |
| **CMPTR RCPTS 110-112** | **1.20** | **2#12 + #12 IN 3/4"C** | ***20** | 13 | 2.28 | | | 14 | ***20** | **2#12 + #12 IN 3/4"C** | **1.08** | **GEN RCPTS 111-112** |
| **CMPTR RCPTS 107-109** | **1.20** | **2#12 + #12 IN 3/4"C** | ***20** | 15 | | 2.28 | | 16 | ***20** | **2#12 + #12 IN 3/4"C** | **1.08** | **GEN RCPTS 109-110** |
| SPACE | | | | 17 | | | 1.08 | 18 | ***20** | **2#12 + #12 IN 3/4"C** | **1.08** | **GEN RCPTS 107-108** |
| SPACE | | | | 19 | 0.00 | | | 20 | | | | SPACE |
| SPACE | | | | 21 | | 0.00 | | 22 | | | | SPACE |
| SPACE | | | | 23 | | | 0.00 | 24 | | | | SPACE |
| SPACE | | | | 25 | 0.00 | | | 26 | | | | SPACE |
| SPACE | | | | 27 | | 0.00 | | 28 | | | | SPACE |
| SPACE | | | | 29 | | | 0.00 | 30 | | | | SPACE |
| TOTAL KVA | 20.76 | | | | 8.40 | 6.84 | 5.52 | | | | | |
| TOTAL AMPS | 57.67 | | | | | | | | | | | |

*PROVIDE INDICATED CIRCUIT BREAKER IN EXISTING SPACE.

| CATEGORY | CONNECTED KVA | DEMAND FACTOR | DEMAND KVA | DEMAND AMPS |
|---|---|---|---|---|
| LIGHTING | 3.84 | 1.25 | 4.80 | 13.333 |
| RECEPTACLES | 9.72 | 1.00 | 9.72 | 27.00 |
| RECEPTACLES OVER 10KVA | 0.00 | 0.50 | 0.00 | 0.00 |
| LARGEST MOTOR | 0.00 | 1.25 | 0.00 | 0.00 |
| HEATING | 0.00 | 1.00 | 0.00 | 0.00 |
| COOLING | 0.00 | 1.00 | 0.00 | 0.00 |
| MISCELLANEOUS | 7.20 | 1.00 | 7.20 | 20.00 |
| TOTAL | 20.76 | 1.046 | 21.72 | 60.333 |

| SYM | DESCRIPTION | DATE | APPR. |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

# Building 14 Lower Level Planned Floor Plan