



**JL7CK  
Demolish Multiple Buildings, Part 1**

**U.S. Naval Academy & Naval Support Activity Annapolis  
ANNAPOLIS, MD**



**This Document contains information on  
Building NA128 Midshipmen Warehouse,  
demolished by NSA Annapolis.**

**Building NA128 Midshipmen Warehouse  
was located within the footprint of the  
New Commissary Building.**

**January 5, 2009**



## Part 1 – Proposal Forms

### DEMOLISH MULTIPLE BUILDINGS, PART 1 U. S. Naval Academy & Naval Support Activity, Annapolis, MD

JK7CK

Date: January 7, 2009

#### Table of Contents

---

Document 00001	Title Page
Document 00010	Table of Contents
Document 00100	Solicitation FORM 1442
Document 00101	Price Schedule
Document 00201	Instructions to Proposers
Document 00210	Evaluation Factors for Award
Document 00600	Representations and Certifications
Document 00710	Contract Clauses FAR 52.202-52.252 (full text)
Document 00720	Contract Clauses FAR 52.202-52.252 (by reference)
Document 00740	Contract Clauses for Foreign Projects
Document 00830	Davis-Bacon Wage Rates



## Part 2 – General Requirements

### Demolish Multiple Buildings, Part 1 JL7CK

#### U.S. Naval Academy & Naval Support Activity Annapolis

#### Annapolis, Maryland

Date: January 5, 2009

#### Table of Contents

---

SECTION 01 14 00.05 20	WORK RESTRICTIONS FOR DESIGN-BUILD
SECTION 01 20 00.05 20	PRICE AND PAYMENT PROCEDURES FOR DESIGN-BUILD
SECTION 01 30 00.05 20	ADMINISTRATIVE REQUIREMENTS FOR DESIGN-BUILD
SECTION 01 31 19.05 20	POST AWARD MEETINGS
SECTION 01 32 17.05 20	NETWORK ANALYSIS SCHEDULES (NAS) FOR DESIGN-BUILD
SECTION 01 33 00.05 20	CONSTRUCTION SUBMITTAL PROCEDURES
SECTION 01 33 10.05 20	DESIGN SUBMITTAL PROCEDURES
SECTION 01 35 29.05 20	SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS FOR DESIGN-BUILD
SECTION 01 45 00.05 20	DESIGN AND CONSTRUCTION QUALITY CONTROL
SECTION 01 57 19.05 20	TEMPORARY ENVIRONMENTAL CONTROLS FOR DESIGN-BUILD
SECTION 01 74 19.05 20	CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT FOR DESIGN-BUILD

SECTION 01 14 00.05 20

WORK RESTRICTIONS FOR DESIGN-BUILD  
11/07

PART 1 GENERAL

1.2 SUBMITTALS

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

SD-01 Preconstruction Submittals

List of contact personnel;G

1.3 SPECIAL SCHEDULING REQUIREMENTS

- a. Contractor shall be ready for operation as approved by Contracting Officer before work is started on the project which would interfere with normal operation.
- b. Have materials, equipment, and personnel required to perform the work at the site prior to the commencement of the work.
- c. The Naval Academy and the Naval Station will remain in operation during the entire construction period. The Contractor shall conduct operations so as to cause the least possible interference with normal operations of the activity.
- d. Permission to interrupt any Activity roads, railroads, and/or utility service shall be requested in writing a minimum of 15calendar days prior to the desired date of interruption.
- e. The work under this contract requires special attention to the scheduling and conduct of the work in connection with existing operations. Identify on the construction schedule each factor which constitutes a potential interruption to operations.

1.4 CONTRACTOR ACCESS AND USE OF PREMISES

1.4.1 Activity Regulations

Ensure that Contractor personnel employed on the Activity become familiar with and obey Activity regulations including safety, fire, traffic and security regulations. Keep within the limits of the work and avenues of ingress and egress. To minimize traffic congestion, delivery of materials shall be outside of peak traffic hours (6:30 to 8:00 a.m. and 3:30 to 5:00 p.m.) unless otherwise approved by the Contracting Officer.] Wear hard hats

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

#### 1.4.1.1 Subcontractors and Personnel Contacts

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

#### 1.4.1.2 Identification Badges

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

#### 1.4.1.3 Employee List

The Contractor shall provide to the Contracting officer, in writing, the names of two designated representatives authorized to request personnel and vehicle passes for employees and subcontractor's employees prior to commencement of work under this contract.

#### 1.4.1.4 Personnel Entry Approval

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

#### 1.4.5 Working Hours

Regular working hours shall consist of an 8 1/2 hour between 7 a.m. and 3:30 p.m., Monday through Friday, and 7 a.m. to 11 p.m. on Saturday, excluding Government holidays.

#### 1.4.6 Work Outside Regular Hours

Work outside regular working hours requires Contracting Officer approval. Make application 15 calendar days prior to such work to allow arrangements to be made by the Government, giving the specific dates, hours, location, type of work to be performed, contract number and project title. Based on the justification provided, the Contracting Officer may approve work outside regular hours. During periods of darkness, the different parts of the work shall be lighted in a manner approved by the Contracting Officer.

#### 1.4.7 Occupied and Existing Building[s]

The Contractor shall be working around existing buildings which are occupied.

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

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

Relocate movable furniture as required to perform the work], protect the furniture, and replace the furniture in its original location upon completion of the work. Leave attached equipment in place, and protect it against damage, or temporarily disconnect, relocate, protect, and reinstall it at the completion of the work.

#### 1.4.8 Utility Cutovers and Interruptions

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

##### 1.4.8.1 Location of Underground Utilities

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

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

#### 1.5 SECURITY REQUIREMENTS

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

#### 1.6 TRANSPORTATION OF PERSONNEL, MATERIALS, AND EQUIPMENT

##### 1.6.1 Agreement

Submit prior to shipment of materials and equipment by Government air and surface transportation, an agreement in the following form:

"In consideration of the carriage of the property described as follows:

---

(Description and maximum quantity to be shipped--the latter to be stated in both weight and measurement tons.) I, \_\_\_\_\_

(Acting both individually and as the duly authorized agent of \_\_\_\_\_, the owner of said property) hereby agrees that neither the carrying vessels, nor the United States, nor an agent or agency incorporated or unincorporated thereof, will be liable for loss of, or damage of any nature whatsoever to, said property or for any failure to deliver above said property in the same quantity and in the same order and condition as when received by the initial carrying vessel, or for any delay in such delivery, whether said loss, damage or failure of or delay in delivery is occasioned by the negligence of the carrying vessel, the United States, or any employee or agency thereof, or by any cause whatsoever. The owner of said property and \_\_\_\_\_ hereby further agree to hold harmless and indemnify the United States for any loss or damage arising out of the carriage of the aforesaid property and also agree to pay for freight and terminal service charges as may be determined by the Government loading and discharging terminals."

PART 2 PRODUCT:

NOT USED

PART 3 EXECUTION:

NOT USED

END OF SECTION

SECTION 01 20 00.05 20

PRICE AND PAYMENT PROCEDURES FOR DESIGN-BUILD  
11/07

PART 1 GENERAL

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

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

1.2 SUBMITTALS

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

SD-01 Preconstruction Submittals

Schedule of prices;G

1.3 SCHEDULE OF PRICES

1.3.1 Schedule Instructions

Payments will not be made until the Preliminary Schedule of Prices or Cost Loaded Critical Path Method (CPM) schedule has been submitted to and accepted by the Contracting Officer.

1.3.3 Data Required

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

1.4 CONTRACT MODIFICATIONS

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

1.5 CONTRACTOR'S INVOICE AND CONTRACT PERFORMANCE STATEMENT

1.5.1 Content of Invoice

Requests for payment will be processed in accordance with the Contract Clause "FAR 52.232-27, Prompt Payment Construction Contracts," and shall include items required by FAR 52.232-5, "Payments under Fixed-Price Construction Contracts" and the following:

- a. The Contractor's invoice certified by QC, on the form furnished by the Government for this purpose, showing in summary form, the basis for arriving at the amount of the invoice. Submit original and five copies.
  
- b. The Contract Performance Statement on the form furnished by the Government for this purpose, showing in detail, the estimated cost, percentage of completion, and value of completed performance. Submit original and two copies.  
number of copies required by the Contracting Officer.
  
- c. Final invoice shall be accompanied by Final Release Form. If the contractor is incorporated, the release shall contain the corporate seal. An officer of the corporation shall sign the release and the corporate secretary shall certify the release.
  
- d. Updated equipment delivery schedule.
  
- e. Contractor Safety Self Evaluation Checklist (original).
  
- f. Monthly Work-hour Report. (OSHA 300)
  
- g. Solid Waste Disposal Report.

1.5.2 Mailing of Invoices

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

]1.6 PAYMENTS TO THE CONTRACTOR

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

- a. Basis for Contracting Officer's consideration to allow progress payment for material delivered on the site (but not installed) and

for completed preparatory work, as authorized under FAR 52.232-5(b), shall be (1) major high cost items and (2) long lead special order items.

1.6.1 Payment for Materials On Site

Payment may be made for materials delivered to the site but not yet incorporated into the construction. Materials on site shall be listed as a separate item on the Contract Performance Statement. The value of the materials shall be supported by the Schedule of Prices and a separate list of all materials being invoiced shall be submitted with the invoice in the following format:

MATERIAL ON		MATERIAL		MATERIAL		MATERIAL
SITE LAST		RECEIVED		CONSUMED		ON
ITEM PERIOD	+	THIS PERIOD	-	THIS PERIOD	=	SITE

1.7 EQUITABLE ADJUSTMENTS: WAIVER AND RELEASE OF CLAIMS

a. Whenever the Contractor submits a claim for equitable adjustment under any clause of this Contract 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, adjustments arising out of delays or disruptions or both caused by such change.

b. Except as the parties may otherwise expressly agree, the Contractor shall be deemed to have waived (1) any adjustments to which it 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, he will 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, its officers, agents and employees, from any further claims, including but not limited to, further claims arising out of delays or disruptions or both caused by the aforesaid change.

1.8 CHANGES ESTIMATES

In making all equitable adjustments under the Changes Clause, compensation for additions will be based upon estimated costs at the time the work is performed and credit for deductions will be based upon estimated costs at the time the Contract was made. In arriving at the amount of the change in price, if any, allowance may be made for profit overhead and general expenses, plant rental and other similar items.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 30 00.05 20

ADMINISTRATIVE REQUIREMENTS FOR DESIGN-BUILD  
11/07

PART 1 GENERAL

1.1 REFERENCES

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

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

15 CFR 772 Definition of Terms

15 CFR 773 Special Licensing Procedures

1.2 SUBMITTALS

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

SD-01 Preconstruction Submittals

Insurance; G

1.3 MINIMUM INSURANCE REQUIREMENTS

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

- a. Comprehensive general liability: \$500,000 per occurrence
- b. Automobile liability: \$200,000 per person, \$500,000 per occurrence for bodily injury, \$20,000 per occurrence for property damage
- c. Workmen's compensation as required by Federal and State workers' compensation and occupational disease laws.
- d. Employer's liability coverage of \$100,000, except in States where workers compensation may not be written by private carriers,
- e. Others as required by the State.

1.4 CONTRACTOR PERSONNEL REQUIREMENTS

1.4.1 Subcontractor Special Requirements

1.4.1.1 Asbestos Containing Material

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

#### 1.5 SUPERVISION

Have at least one qualified supervisor capable of reading, writing, and conversing fluently in the English language on the job site during working hours. In addition, the Quality Control (QC) representative shall also have fluent English communication skills.

#### 1.10 AMERICAN PREFERENCE POLICY

This project is funded under the 1987 Defense Appropriation Act and is estimated to be over \$1,000,000. The American Preference policy applies as follows:

This policy precludes the award of construction contract estimated by the Government to exceed \$1,000,000 to a foreign contractor; unless the lowest responsive bid of a U.S. contractor exceeds the lowest responsible and responsive bid of a foreign contractor by greater than 20 percent. To qualify as a U.S. contractor, the firm (or if a joint venture, all members of the joint venture) must be incorporated in the U.S. and comply with the following: (a) the corporate headquarters shall be in the U.S.; (b) the firm shall have filed corporate franchise and employment tax returns (if required) in the U.S. for a minimum of 2 years, shall have filed state and federal income tax returns (if required) for a minimum of 2 corporate years, and paid any taxes determined to be due as a result of such filings; and (c) the firm shall employ U.S. citizens in key management positions.

#### 1.11 AVAILABILITY OF CADD DRAWING FILES

After award and upon request, the electronic "Computer-Aided Drafting and Design (CADD)" Site drawing files will be made available to the Contractor for use in preparation of construction drawings and data related to the referenced contract subject to the following terms and conditions.

The Contractor is responsible for determining if any conflict exists. Use of these CADD files does not relieve the Contractor of duty to fully comply with the contract documents, including and without limitation, the need to check, confirm and coordinate the work of all contractors for the project.

#### 1.12 CLEANUP

Remove waste and surplus materials, rubbish and construction facilities from the site. Level, grade, and plant the graded area as specified in the approved Sediment and Erosion Control Plans.

#### PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 31 19.05 20

POST AWARD MEETINGS  
011/07

PART 1 GENERAL

1.1 SUMMARY

This document includes post-award requirements for project kickoff and subsequent design and preconstruction meetings.

1.2 SUBMITTALS

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

SD-01 Preconstruction Submittals

Design Submittal Packaging Proposal: G

Project Schedule: G

Performance Assessment Plan (PAP); G

Design Presentation Concept Site and Floor Plans; G

Basis of Design with Cost Estimate;G

1.3 POST AWARD KICKOFF MEETING

The Post Award Kickoff (PAK) meeting is made up of Contract Administration, Concept Design Presentation/Design Development or Concept Design Workshop (CDW), Partnering, and Scheduling. If mutually beneficial to the Contractor and the Government, these four elements may be addressed in a single meeting or multiple meetings.

1.3.1 PAK Meeting Schedule and Location

Within 21 calendar days after contract award, and prior to commencing work, meet with the Contracting Officer for the PAK meeting(s). The meeting shall be located at a specific time and place to be determined by the Contracting Officer.

1.3.2 PAK Meeting Outcomes

The meeting(s) outcomes are:

- a. Integrate the Contractor and all client representatives into the project team.

- b. Achieve consensus from the project team on any issues and concerns with the Contractor's technical proposal and the User's functional requirements. Confirm the design is within the project budget.
- c. Establish and explain policies and procedures for completion of a successful project.
- d. Establish clear lines of communication and points of contact for Government and Contractor team members.
- e. Obtain an acceptable conceptual design including floor and site plans, signed by the client, Contractor and other key team members.
- f. Establish project design schedule, design submittal packaging, and preliminary construction schedule in accordance with UFGS Section 01 32 17.05 20, Network Analysis Schedule (NAS) for Design-Build. Discuss design milestones and events that will should be included in the Quality Control Communication Plan.
- g. Establish clear expectations for facility turnover.
- h. Establish procedure for design packages reviews, Contractor's resolution to comments, and Government's role in review of packages.

#### 1.3.3 PAK Meeting Contractor Attendees

The following Contractor key personnel shall attend the PAK: Project Manager, Project Scheduler, Lead Designer-of-Record (DOR), Design Staff responsible for each architectural/engineering discipline when facility design is discussed, Superintendent, QC Manager, and the Commissioning Authority. Optional attendees include: Principal, Assistant Project Manager, major subcontractors and specialized supplemental QC personnel.

#### 1.3.4 Contract Administration

Contract administration roles and responsibilities will be addressed.

#### 1.3.5 Design Presentation/Development

The Contractor shall lead discussions to develop an understanding of the accepted technical proposal and conduct working sessions to further develop the site plans and the sediment and the erosion control plans.

##### 1.3.5.1 Design Presentation/Development Contractor Meetings Attendees

The following Contractor key personnel shall attend the Design Presentation: Project Manager, Project Scheduler, Cost Estimator, Lead Designer of Record, Design Staff responsible for each

architectural/engineering discipline when facility design is discussed, Major Subcontractors, and DQC.

#### 1.3.6 Concept Design Workshop (CDW)

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

##### 1.3.6.1 CDW Meeting Attendees

The following Contractor key personnel shall attend the CDW: Project Manager, Project Scheduler, Cost Estimator, Lead Designer of Record, Design Staff representing each architectural/engineering discipline and Major Subcontractors when facility design is discussed, Superintendent, QC Manager, and DQC.

#### 1.4 DESIGN QUALITY ASSURANCE MEETINGS

After Government Quality Assurance (QA) of each Design Submittal has been completed, meet with the Government for a one-day conference to discuss review comments for the specific design submittal.

Provide consolidated copies of all Government comments with annotations of Contractor's action beside them. Notify the Contracting Officer in writing within five (5) days after receipt of Government's comments if the Contractor disagrees with comments technically or interprets comments to exceed the requirements of the contract.

##### 1.4.1 Design QA Meeting Attendees

The following Contractor key personnel shall attend the design QA meetings: Project Manager, QC Manager, Commissioning Authority, and Contractor's Design Staff (architect and engineering disciplines related to topics to be discussed).

##### 1.4.2 Design QA Meeting Location

Meetings shall be located at the office of the Contracting Officer's QA Team or may be conducted at other locations or by other electronic means if mutually acceptable to all parties.

##### 1.4.3 Minimum Design QA Meeting Agenda

Address all Government comments that are unresolved and present clarification or supporting information requested by the Contracting Officer's QA team during the previous meeting.

#### 1.5 PRECONSTRUCTION MEETING

Meet with the Contracting Officer to discuss construction items of concern to the Government and the Contractor such as outages, storage, trailer location, disposal of construction debris, and safety, at a location to be determined by the Contracting Officer. The

Preconstruction meeting may take place with the PAK meeting or at any time prior to mobilization and before any construction work begins.

#### 1.7 SITE TURNOVER PLANNING MEETINGS (NAVFAC Red Zone - NRZ)

Key personnel will meet to identify strategies to ensure the project is carried to expeditious closure and turnover to the Client. Start the turnover process at the PAK Meeting and convene the Facility Turnover Meetings once the project has reached approximately 75% completion or three to six months prior to Beneficial Occupancy Date (BOD), whichever comes first. The Contracting Officer's Representative will lead the meetings and guide the discussions based on an agenda provided by the Government. The Facility Turnover effort shall include the following:

##### b. Facility Turnover Meetings -

1. Fill in the NRZ Checklist including Contractor, Client, and NAVFAC Checklist Items and assigned a person responsible for each item and a due date. The Contracting Officer's Representative will facilitate the assignment of responsibilities and fill out the NRZ Checklist.
2. Review the Contractor's updated schedule. The Contractor shall develop a POAM for the completion of all Contractor, Client, and NAVFAC Checklist items.
3. Confirm that all NRZ Checklist items will be completed on time for the scheduled Facility Turnover.

#### 1.7.1 Facility Turnover Meeting Attendees

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

#### PART 2 PRODUCTS

Not Used.

#### PART 3 EXECUTION

Not Used.

-- End of Section --

SECTION 01 32 17.05 20

NETWORK ANALYSIS SCHEDULES (NAS) FOR DESIGN-BUILD  
11/07

PART 1 GENERAL

1.1 DESCRIPTION

The Contractor is responsible for scheduling all design, procurement and construction. A single schedule shall logically incorporate all design and construction for the entire project. Unless otherwise indicated, the contractor may begin construction when design is signed, stamped and submitted to the Government via the Contractor's quality control organization.

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

If Government approval is required for any portion of a final signed and sealed design package prior to construction, that review time shall be included in the schedule. The schedule shall also include times for procurement, Contractor quality control and construction, acceptance testing and training. Refer to Specification Section 01 33 00.05 20 Construction Submittal Procedures to determine if any items require Government approval prior to construction; if any are required, that submittal review time shall be included in the schedule.

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

The Contractor shall use the Critical Path Method (CPM) and the Precedence Diagram Method (PDM) to satisfy time and cost applications. For consistency, when scheduling software terminology is used in this specification, the terms in Primavera's scheduling programs are used.

1.2 SUBMITTALS

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

SD-01 Preconstruction Submittals

Network Analysis Schedule (NAS);G

Final Schedule;G

SD-07 Certificates

Monthly Network Analysis Schedule Updates;G

1.3 SCHEDULE ACCEPTANCE PRIOR TO START OF WORK

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

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

Only bonds will be paid prior to acceptance of the Schedule. Submittal of the Network, and subsequent schedule updates, will be understood to be the Contractor's certification that the submitted schedule meets all of the requirements of the Contract Documents, represents the Contractor's plan on how the work will be accomplished, and accurately reflects the work that has been accomplished and how it was sequenced (as-built logic).

1.4 SOFTWARE

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

1.5 NETWORK SYSTEM FORMAT

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

1.5.1 Diagrams

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

- a. Activity ID
- b. Activity Description
- c. Original Duration in Work Days
- d. Remaining duration
- e. Percent Complete
- f. Early Start Date
- g. Early Finish Date

h. Total Float

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

1.5.2 Schedule Activity Properties and Level of Detail

1.5.2.1 Activity Categories

- a. Design Activities
- b. Procurement Activities
- c. Government Activities
- d. Quality Management (QM) Activities
- e. Construction Activities

No on-site construction activity (definable feature of work) shall have a duration in excess of 20 working days. Contractor activities will be driven by calendars that reflect Saturdays, Sundays and all Federal Holidays as non-work days, unless otherwise defined in this contract.

1.5.2.2 Contract Milestones and Constraints

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

1.5.2.3 Activity Code

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

1.5.2.4 Anticipated Weather Delays

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

#### 1.5.2.5 Cost Loading

Equipment costs will be assigned to their respective procurement activities (i.e., the delivery milestone activity). Costs for installation of the material/equipment (labor, construction equipment, and temporary materials) will be assigned to their respective construction activities.

#### 1.5.3 Schedule Software Settings and Restrictions

- a. Activity Constraints: Date/time constraint(s), other than those required by the contract, will not be allowed unless accepted by the Contracting Officer. Identify any constraints proposed and provide an explanation for the purpose of the constraint in the Narrative Report.
- b. Default Progress Data Disallowed: Actual Start and Actual Finish dates on the CPM schedule shall match the dates on the Contractor Quality Control and Production Reports.
- c. Software Settings: Schedule calculations and Out-of-Sequence progress (if applicable) shall be handled through Retained Logic, not Progress Override. All activity durations and float values will be shown in days. Activity progress will be shown using Remaining Duration. Default activity type will be set to "Task".

#### 1.5.4 Required Tabular Reports

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

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

Show changes for: Added & Deleted Activities, Durations, Remaining Durations, Activity Percent Complete, Total Float, Free Float, Calendars, Descriptions, Constraints, Added/Deleted Relations, Changed Relation Lags, Changed Driving Relations, and Changed Critical Status, [Added/Deleted Resources, Resource Quantities, Costs, Resource Percents, Earned Value Report: List all activities showing budget amount and cost.

- b. Late Start / Late Finish Report: Use Late start/Actual start -- -Late finish/Actual finish sort (sorted by late start in chronological order).

- c. Narrative Report: Include abstract of what activities are and are not on schedule, critical path events for the following month, milestones that must complete the following month.

#### 1.6 SUBMISSION AND ACCEPTANCE

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

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

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

#### 1.6.1 Monthly Network Analysis Updates

At monthly intervals the Contractor and Government representatives will meet to jointly update and/or discuss and agree to be updated project schedule. The submission of an acceptable, updated schedule to the Government is a condition precedent to the processing of the Contractor's pay request. If a Schedule of Prices is the basis for progress payments, it shall be consistent with the logic and activity breakdowns on the progress schedule. If progress payments are based on a cost-loaded schedule, the Contractor and Government shall agree on percentage of payment for each activity progressed during the update period.

#### 1.6.2 Final Schedule

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

#### 1.7 CONTRACT MODIFICATION

Submit a Time Impact Analysis with each cost and time proposal for a proposed change. Time Impact Analysis (TIA) shall illustrate the influence of each change or delay on the Contract Completion Date or milestones.

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

modification, all changes in the fragnet used to determine impacts shall be incorporated into the schedule.

1.8 FLOAT

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

1.9 MONTHLY LOOK AHEAD SCHEDULE

Prepare a Monthly look ahead schedule from the Contract CPM Schedule showing planned work for the current week and subsequent three-week period. The monthly look ahead schedule shall be reviewed during each QC/ Production Meeting.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 33 00.05 20

CONSTRUCTION SUBMITTAL PROCEDURES  
11/07

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

This section covers construction submittals that are not included in the design submittals. Submit design submittals in accordance with 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES. When using Unified Facility Guide Specifications (UFGS) sections that reference Section 01 33 00 SUBMITTAL PROCEDURES, change reference to this section, Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES.

1.2 SUBMITTAL DESCRIPTIONS (SD)

Submittal requirements are specified in Unified Facilities Guide Specifications (UFGS) in Part 2, GENERAL REQUIREMENTS; in references in Part 4 PERFORMANCE TECHNICAL SPECIFICATIONS; and in UFGSs in Part 5, PRESCRIPTIVE SPECIFICATIONS. Submittals that are identified by SD numbers use descriptions of items included in submittal packages and titles as follow:

SD-01 Preconstruction Submittals

- Certificates of insurance.
- Surety bonds.
- List of proposed subcontractors.
- List of proposed products.
- Construction Progress Schedule.
- Submittal register.
- Schedule of values.
- Health and safety plan.
- Work plan.
- Quality control and Commissioning plans.
- Environmental protection plan.
- Sediment and Erosion Control Approved by MDE.

SD-02 Shop Drawings

Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.

Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

Not Applicable

SD-04 Samples

Not Applicable

SD-05 Design Data

Not Applicable

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)

Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports.

Daily checklists.

Final acceptance test and operational test procedure.

SD-07 Certificates

Confined space entry permits.

SD-08 Manufacturer's Instructions

N/A

SD-09 Manufacturer's Field Reports

N/A

SD-10 Operation and Maintenance Data

Data that is furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel. This data is needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

1.3 SUBMITTALS

The use of a "G" following a submittal indicates that an approval action is required, either by the Government or by the Contractor's Designer of Record (DOR) or QC Specialist.

Submit the following in accordance with the requirements of this section.

SD-01 Preconstruction Submittals

Submittal Register Format;G

1.3.1 Submittal Register

The submittal register will be prepared during the initial design stages of the project and indicate each design and construction submittal. Maintain an electronic version of the submittal register as work progresses. The DOR must assist the DQC in preparing the submittal register by determining all project submittals that require DOR approval. The Contractor proposed submittal register format must include all types of information pertinent to the submittal process and be approved by the Contracting Officer prior to the first submission.

1.4 CONSTRUCTION QUALITY CONTROL

1.4.1 Contractor Reviewing, Certifying, Approving Authority

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

In RFP PART 4 PERFORMANCE TECHNICAL SPECIFICATIONS (PTS), there are UFGS specification sections required to be submitted as part of the design submittal. Unless specified otherwise in this section, the Contractor's DOR is the approving authority for submittals listed in these UFGS specifications with a "G" designation, unless the DOR delegates to Contractor Quality Control approval. RFP Part 4 PTS sections also include submittals identified for DOR approval that are

not denoted with a "G" designation, these submittals cannot be delegated for Contractor Quality Control approval. If RFP PART 5 PRESCRIPTIVE SPECIFICATIONS are utilized in this RFP, the Contractor's DOR is the approving authority for submittals listed with a "G" designation, unless the DOR delegates to Contractor Quality Control approval.

DOR shall approve construction submittals that are incorporated in the design submittal prior to being submitted to the Government for design submittal approval. Indicate approval of these construction submittals on the accompanying submittal register for that design package.

Submittal items identified in RFP PARTS 2, 4, and 5 that are not identified with a "G" designation or not designated for DOR approval (in RFP Part 4) are for Contractor Quality Control approval.

Construction submittals that are approved by the DOR or certified by the QC are not required to be submitted to the Government for surveillance, except where specified in paragraph SUBMITTALS RESERVED FOR GOVERNMENT SURVEILLANCE.

#### 1.4.2 Submittals Reserved for Government Approval

The Government is the approving authority for submittals with a "G" designation in RFP Part 2 GENERAL REQUIREMENTS specification sections. Comply with additional Government approval requirements for Environmental submittals, as specified in RFP Part 2, Section 01 57 19.05 20 TEMPORARY ENVIRONMENTAL CONTROLS FOR DESIGN-BUILD.

##### 1.4.2.1 Scheduling for Government Approved Submittals

Except as specified otherwise, allow review period, beginning when Government receives submittal from the QC organization, of 20 working days for return of submittal to the Contractor. Period of review for submittals with Contracting Officer approval begins when Government receives submittal from QC organization. Period of review for each resubmittal is the same as for initial submittal.

#### 1.4.3 Submittals Reserved for Government Surveillance

Surveillance submittals are approved by the Contractor in accordance with paragraph CONTRACTOR REVIEWING, CERTIFYING, AND APPROVING AUTHORITY, but provide the Government the opportunity to oversee critical project issues.

If during the Government surveillance of construction submittals, items are brought to the Contractor's attention as non-compliant, the Contractor shall correct the submittal and construction to comply with the requirements of the RFP. Stamp surveillance submittals "APPROVED" by the DOR or QC Specialist and "FOR SURVEILLANCE ONLY." Submit the following Government surveillance submittals, prior to starting work for construction submittal items, and after the completion of the work for reports submittals items.

- a. HAZMAT manifests for disposal.

1.4.4 Constraints

- a. Submittals shall be complete for each definable feature of work; submit components of definable feature interrelated as a system at the same time.
- b. Approval of a separate material, product, or component does not imply approval of assembly in which item functions.

1.4.5 Variations

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

1.4.5.1 Considering Variations

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

1.4.6 Contractor's Responsibilities

Ensure no work has begun until submittals for that work have been "approved" or "approved as noted."

1.4.7 QC Organization Responsibilities

Stamp each sheet of each submittal with QC certifying statement or approving statement, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.

- a. When approving authority is Contracting Officer, QC organization will certify submittals, assure proper signatures, and forward to Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with contract Number (insert contract number here), is in compliance with the contract documents, can be installed in the allocated spaces, and is submitted for Government approval.

RFP Part Two Submittals:

Certified by QC Manager \_\_\_\_\_, Date \_\_\_\_\_  
(QC Manager)

RFP Part Four and Part Five Submittals:

Certified by DOR \_\_\_\_\_, Date \_\_\_\_\_

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

(1) Sign certifying statement or approval statement. The person signing certifying statements shall be QC organization member designated in the approved QC plan. The signatures shall be in original ink. Stamped signatures are not acceptable.

(2) Update submittal register database as submittal actions occur and maintain the submittal register at project site until final acceptance of all work by Contracting Officer.

(3) Retain a copy of approved submittals at project site, including Contractor's copy of approved samples.

b. When the Approving Authority is the Designer of Record, the DOR shall approve, professionally stamp, sign, and date submittals. DOR stamp on construction submittals or submission of design documents that include construction submittals indicates DOR approval for construction. QC organization will certify submittals, assure proper signatures, and forward to Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with contract Number (insert contract number here), is in compliance with the contract requirements, can be installed in the allocated spaces, and is submitted for DOR approval.

RFP Part Four and Part Five Submittals:

Approved by DOR \_\_\_\_\_, Date \_\_\_\_\_

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

(1) Sign certifying statement or approval statement. The person signing certifying statements shall be QC organization member designated in the approved QC plan. The signatures shall be in original ink. Stamped signatures are not acceptable.

(2) Update submittal register database as submittal actions occur and maintain the submittal register at project site until final acceptance of all work by Contracting Officer.

(3) Send copies of final DOR or QC Specialist approved and signed submittals that are identified in this section for Government surveillance to the Contracting Officer. Stamp copies "For Surveillance Only."

#### 1.4.8 Government's Responsibilities

When approving authority is the Contracting Officer, the Government will:

- a. Note date on which submittal was received from QC Manager, on each submittal.
- b. Review submittals for compliance with contract documents.

#### 1.4.8.1 Government Actions

Submittals will be returned with one of the following notations:

- a. Submittals marked "approved" or "approved as submitted" authorize Contractor to proceed with work covered.
- b. A submittal marked "not reviewed" will be returned with an explanation of the reason it was not reviewed.
- c. Submittals marked "approved as noted" or "approval except as noted; resubmission not required" authorize Contractor to proceed with work as noted provided Contractor takes no exception to the notations.
- d. Submittals marked "revise and resubmit" or "disapproved" indicate submittal is incomplete or does not comply with design concept or requirements of the contract documents and shall be resubmitted with appropriate changes. No work shall proceed for this item until resubmittal is approved.
- e. Submittals required for surveillance will be returned only if corrective actions are required.

#### 1.5 FORMAT OF SUBMITTALS

##### 1.5.1 Transmittal Form

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

##### 1.5.1.1 Combined Design and Construction Submittal Notification

Indicate on the design submissions transmittal form, which construction submittals have been combined with the design documents. Coordinate transmittal form list of combined design and construction submittals with submittal register to indicate DOR approval of all combined submittals.

#### 1.6 QUANTITY OF SUBMITTALS

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

Submit four copies of submittals of shop drawings requiring review and approval by Contracting Officer.

1.6.2 Quantity of Submittals Reserved for Government Surveillance

Submit three copies of submittals specified for surveillance to the Contracting Officer. Submit two additional copies of elevator submittals directly to the NAVFAC Elevator Specialist responsible for the NAVFAC elevator certification of the project.

-- End of Section --

SECTION 01 33 10.05 20

DESIGN SUBMITTAL PROCEDURES  
11/07

PART 1 GENERAL

1.1 SUMMARY

This section includes requirements for Contractor-originated design documents and design submittals.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. The latest version of the publication at time of award shall be used.

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

UFC 1-200-01	General Building Requirements
UFC 1-300-09N	Design Procedures
UFC 3-201-02	Landscape
UFC 3-800-10N	Environmental

1.3 GENERAL DOCUMENTATION REQUIREMENTS

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

- a. UFC 1-200-01
- b. UFC 3-201-02
- c. UFC 3-800-10N

1.4 SUBMITTALS

Submit design submittals, including shop drawings used as design drawings, to the Government for approval. The use of a "G" following a submittal indicates that a Government approval action is required. Submit the following in accordance with this section and Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES.

SD-01 Preconstruction Submittals

[Consolidated RFP Documents; G]

Submittal Register; G

SD-04 Samples

Final framed rendering and copies; G

SD-05 Design Data

Design Drawings; G

Specifications; G

Design Analysis; G

DD Form 1354; G

SD-11 Closeout Submittals

Record Documents; G

## 1.5 DESIGN QUALITY CONTROL

### 1.5.1 Contractor Reviewing and Certifying Authority

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

### 1.5.2 Government Approving Authority

The Contracting Officer is the approving authority for design submittals.

### 1.5.3 Designer of Record Certifying Authority

The Designer of Record (DOR), as registered and defined in UFC 1-300-09N, is the design certifying authority. The DOR accepts responsibility for design of work in each respective design discipline, by stamping and approving final construction drawings submitted to the Government approval authority.

### 1.5.4 Contractor Construction Actions

Upon submission of sealed and signed design documents certified by the DOR, the Commissioning Authority (CA) and the Quality Control (QC) Managers, the Contractor may proceed with material and equipment purchases, fabrication and construction of any elements covered by that submittal[, except as specified in the following paragraph].

1.5.5 Contractor's Responsibilities

- a. With the Designer or Record, verify site information provided in the RFP. In addition, provide additional field investigations and verification of existing site conditions as may be required to support the development of design and construction of the project.
- b. Indicate on the transmittal form accompanying submittal which design submittals are being submitted as shop drawings.
- c. Advise Contracting Officer of variations, as required by paragraph "Variations."
- d. Provide an updated, cumulative submittal register with each design package that identifies the design and construction submittals required by that design package and previous submittals.

1.5.6 QC Organization Responsibilities

- a. Both the CA and the QC Manager must certify design submittals for compliance with the contract documents. The DOR stamp on drawings indicates approval from the DOR.
- b. QC organization shall certify submittals forwarded by the Designer of Record (DOR) to the Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with Contract Number (insert contract number here), is in compliance with the contract documents, and is submitted for Government approval.

Certified by Commissioning Authority \_\_\_\_\_,  
Date \_\_\_\_\_

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

- c. Sign certifying statement. The persons signing certifying statements shall be the QC organization members designated in the approved QC plan. The signatures shall be in original ink. Stamped signatures are not acceptable.
- d. Update submittal register as submittal actions occur and maintain the submittal register at project site until final approval of all work by Contracting Officer.
- e. Retain a copy of approved submittals at project site.

1.5.7 Government Responsibilities

The Government will

- a. Note date on which submittal was received from QC manager, on each submittal.
- b. Perform a quality assurance (QA) review of submittals. Government will notify Contractor when comments for that design package are posted and ready for Contractor evaluation and resolution.
- c. Upon submittal of final design package and resolution of comments by the Contractor, the Government will sign final design package, when approved, and return electronic copy of signed design documents to the Contractor.

#### 1.5.7.1 Actions Possible

Submittals will be returned with one of the following notations:

- a. Submittals may be marked "approved."
- b. Submittals marked "not reviewed" will indicate submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and certified by Contractor, or is not complete. Submittal will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by Contractor or for being incomplete, with appropriate action, coordination, or change.
- c. Submittals marked "revise and resubmit" or "disapproved" indicate submittal is incomplete or does not comply with design concept or requirements of the contract documents and shall be resubmitted with appropriate changes. If work has been started on the unacceptable portion of the design submittal, the Contractor shall propose corrective action. No further work shall proceed until the issue is resolved in a manner satisfactory to the Government.

### 1.6 DESIGN DRAWINGS

#### 1.6.1 Shop Drawings Used as Design Drawings

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

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

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

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

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

#### 1.6.4 Drawing Standards

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

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

#### 1.6.5 Naval Facilities (NAVFAC) Engineering Command Drawing Numbers

Number the final Contractor-originated design drawings consecutively with NAVFAC drawing numbers. Determine the total number of sheets required for the complete set of drawings before requesting the NAVFAC drawing numbers from the Contracting Officer.

#### 1.6.6 Seal on Documents

All final Contractor-originated design drawings shall be signed, dated, and bear the seal of the registered architect or the registered engineer of the respective discipline in accordance with UFC 1-300-09N. This seal shall be the seal of the Designer of Record for that drawing, and who is professionally registered for work in that discipline. A principal or authorized licensed or certified employee shall electronically sign and date final drawings and cover sheet, in accordance with UFC 1-300-09N. Application of the electronic seal and signature accepts responsibility for the work shown thereon.

### 1.7 SPECIFICATIONS

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

#### 1.7.1 Specifications Format

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

- a. Cover sheet and table of contents.

- b. Specification sections.
- c. Manufacturer's Product Data.

#### 1.7.2 Identification of Manufacturer's Product Data Used as Specifications.

Provide complete and legible catalog cut sheets, product data, installation instructions, operation and maintenance instructions, warranty, and certifications for products and equipment for which final material and equipment choices have been made. Indicate, by prominent notation, each product that is being submitted including optional manufacturer's features, and indicate where the product data shows compliance with the RFP.

#### 1.7.3 Submittal Register

Submit a current submittal register with each design submittal. Provide a cumulative register that identifies the design and construction submittals required by each design package along with previous submittals. The DOR shall assist in developing the submittal register by determining which submittal items are required to be approved by the DOR. To obtain Government approval of the final design package, complete all fields in the submittal register.

#### 1.7.4 Specification Software

Submit the final specification source files in either MS Word or SpecsIntact.

## PART 2 PRODUCTS

### 2.1 CONSOLIDATED RFP DOCUMENTS

Within two weeks after contract award, provide 20 electronic and hard copies of consolidated RFP documents incorporating the Contractor's Proposal and all RFP amendments and revisions that are contained in the contract award. Identify the changes to the RFP with the "Red-lining" or "Track Changes" feature of SpecsIntact or MS Word to highlight the pre-award modifications to the contract. Identify the amendment source at each addition and deletion by annotation, such as footnote or reference in parenthesis.

### 2.2 DESIGN SUBMITTALS

Complete the Contractor-originated design submittals as defined by this contract, and coordinate with the approved design network analysis schedule.

#### 2.2.1 Design Submittal Packages

The Government prefers to review for Quality Assurance (QA) as few submittal packages as possible. Site Design Submittal Packages are required, however Critical Path Design Submittals are acceptable if they are substantiated as having an impact to the critical path in the Government approved Network Analysis Schedule. A Critical Path submittal shall include all design analyses, drawings, specifications and product data required to fully describe the project element for Government review.

Examples of project elements that may be submitted as Critical Path Design Submittal Packages are: Demolition Design or any other construction activity or project element that can be organized into a submittal package that can be reviewed and approved by the Government without being contingent upon subsequent design submittals.

#### 2.2.1.1 Site Design

The Site Design typically includes the following components:

- a. Master Site Plan
- b. Demolition
- c. Site work [including Environmental]

#### 2.2.2 Required Design Submittals

Provide the following Design Submittal packages. Provide design packages that include design documentation for project elements, fully developed to the design stage indicated, and in accordance with UFC 1-300-09N, except where specified otherwise.

- a. Design Development in-progress.
- b. Prefinal (100%) Design - Government Progress QA.
- c. Final Design - Government QA.

#### 2.2.3 Critical Path Design Submittals

Provide Critical Path Design Submittals that include design documents for the project elements involved. Include and provide full documentation that would normally have been provided in earlier submittal stages, such as Design Development Phase.

- a. 100 percent (Prefinal) Design - Government Progress QA. 21calendar day Government review time.
- b. Final Design - Government QA

#### 2.2.4 Review Copies of Design Submittal Packages

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

(1) 8 copies to the NAVFAC component.

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

## 2.3 IDENTIFICATION OF DESIGN SUBMITTALS

Provide a title sheet to clearly identify each submittal, the completion status, and the date. The title sheet shall use the standard format indicated in the UFC 1-300-09N for title sheets. The title sheet shall be unique to a particular design submittal. Submit the project title sheet with design status and date for the design submittals.

### 2.3.1 Critical Path Submittal Title Sheet

Identify Critical Path submittals as such, and include a title sheet indicating the type of critical path submittal, the status, and the date.

## PART 3 EXECUTION

### 3.1 CONTRACTOR'S RESOLUTION OF COMMENTS

Provide written responses to all written comments by the Government. Resubmittal of an unacceptable design submittal shall be a complete package that includes all the required, specified components of that design submittal. When required by the Government, Contractor resubmittal of design package, due to nonconformance to the contract, is not a delay in the contract.

### 3.2 VARIATIONS

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

### 3.3 THE CONTRACT AND ORDER OF PRECEDENCE

#### 3.3.1 Contract Components

The contract consists of the solicitation, the approved proposal, and the final design.

#### 3.3.2 Order of Precedence

NFAS Clause 5252.236-9312. In the event of conflict or inconsistency between any of the below described portions of the conformed contract, precedence shall be given in the following order:

a. Any portions of the proposal or final design that exceed the requirements of the solicitation.

- (1) Any portion of the proposal that exceeds the final design.
- (2) Any portion of the final design that exceeds the proposal.
- (3) Where portions within either the proposal or the final design conflict, the portion that most exceeds the requirements of the solicitation has precedence.

b. The requirements of the solicitation, in descending order of precedence:

- (1) Standard Form 1442, Price Schedule, and Davis Bacon Wage Rates.
- (2) Part 1 - Contract Clauses.
- (3) Part 2 - General Requirements.
- (4) Part 3 - Project Program Requirements.
- (5) Part 6 - Attachments (excluding Concept Drawings).
- (6) Part 5 - Prescriptive Specifications exclusive of performance specifications.
- (7) Part 4 - Performance Specifications exclusive of prescriptive specifications.
- (8) Part 6 - Attachments (Concept Drawings).

#### 3.3.2.1 Government Review or Approval

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

-- End of Section --

SECTION 01 35 29.05 20

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS FOR DESIGN-BUILD  
11/07

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

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

ASME INTERNATIONAL (ASME)

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

ASTM INTERNATIONAL (ASTM)

ASTM F855 (2004) Standard Specifications for Temporary Protective Grounds to be used on De-energized Electrical Power Lines and Equipment

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 1048 (2003) Guide for Protective Grounding of Power Lines

DEPARTMENT OF DEFENSE (DoD)

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

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

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

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

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

NFPA 70 (2008) National Electrical Code

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2008) Safety -- Safety and Health Requirements

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

29 CFR 1910. Occupational Safety and Health Standards

29 CFR 1910.146 Permit-required Confined Spaces

29 CFR 1915 Occupational Safety and Health Standards for Shipyard Employment

29 CFR 1926 Safety and Health Regulations for Construction

29 CFR 1926 Subpart M Fall Protection

1.2 SUBMITTALS

The use of a "G" following a submittal indicates that a Government approval action is required. Submit the following in accordance with Section 01 33

10.05 20 DESIGN SUBMITTAL PROCEDURES and Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES.

SD-01 Preconstruction Submittals

Accident Prevention Plan; G

Activity Hazard Analysis; G

Crane Critical Lift Plan;G

SD-06 Test Reports

Reports

Accident Reports

Monthly Work-Hour Reports

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

SD-07 Certificates

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

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

1.3 DEFINITIONS

Weight Handling Equipment (WHE) Accident. A WHE accident occurs when any one or more of the six elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; and/or collision, including unplanned contact between the load, crane, and/or other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, roll over, etc.).

1.4 CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST

Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor at the pre-construction conference. The checklist will be completed monthly by the Contractor and submitted with each request for payment voucher. An acceptable score of 90 or greater is required. Failure to submit the completed safety self-evaluation checklist or achieve a score of at least 90, will result in a retention of up to 10 percent of the voucher.

## 1.5 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this contract, work performed shall comply with USACE EM 385-1-1, and the following Federal, State, and Local, laws, ordinances, criteria, rules and regulations. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

## 1.6 SITE QUALIFICATIONS, DUTIES AND MEETINGS

### 1.6.1 Personnel Qualifications

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

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

##### Level 2:

A minimum of 3 years safety work on similar project.  
30-hour OSHA construction safety class or equivalent within last 5 years.

#### 1.6.1.2 Crane Operators

Crane operators shall also meet the requirements of the State of Maryland for Crane certification.

### 1.6.2 Personnel Duties

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

In addition to duties required in EM 385-1-1 (2008), perform the following duties:

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

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

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

## 1.7 REPORTS

### 1.7.1 Accident Reports

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

b. For any weight handling equipment accident (including rigging gear accidents) the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the WHE Accident Report (Crane and Rigging Gear) form and provide the report to the Contracting Officer within 30 calendar days of the accident. Crane operations shall not proceed until cause is determined and corrective actions have been implemented to the satisfaction of the contracting officer. The Contracting Officer will provide a blank copy of the accident report form.

### 1.7.2 Accident Notification

Notify the Contracting Officer as soon as practical, but not later than four hours, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than \$2,000, or any weight handling equipment accident. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

### 1.7.3 Monthly Work-Hour Reports

Monthly work-hour reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

## 1.8 HOT WORK

Prior to performing "Hot Work" (welding, cutting, etc.) or operating other flame-producing/spark producing devices, a written permit shall be requested from the Fire Division. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. It is mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained

in accordance with NFPA 51B and remain on-site for a minimum of 30 minutes after completion of the task or as specified on the hot work permit.

Obtain services from a NFPA Certified Marine Chemist for "HOT WORK" within or around flammable materials (such as fuel systems, welding/cutting on fuel pipes) or confined spaces (such as sewer wet wells, manholes, vaults, etc.) that have the potential for flammable or explosive atmospheres.

## PART 2 PRODUCTS

Not used

## PART 3 EXECUTION

### 3.1 CONSTRUCTION AND OTHER WORK

The Contractor shall comply with USACE EM 385-1-1, NFPA 241, the APP, the AHA, Federal and/or State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard shall prevail.

#### 3.1.1 Hazardous Material Use

Each hazardous material must receive approval prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material.

#### 3.1.2 Hazardous Material Exclusions

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

#### 3.1.3 Unforeseen Hazardous Material

The design should have identified materials such as PCB, lead paint, and friable and non-friable asbestos. If [additional] material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

### 3.2 PRE-OUTAGE COORDINATION MEETING

Contractors are required to apply for utility outages at least 15 days in advance. As a minimum, the request should include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring shut down, the Contractor shall attend a pre-outage coordination meeting with the Contracting Officer to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist.

### 3.3 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

The Contractor shall establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The program shall include company policy, identify responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures.

#### 3.3.1 Fall Protection for Roofing Work

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

- a. Low Sloped Roofs: A safety monitoring system by itself is not adequate fall protection and is not authorized.
- b. Steep-Sloped Roofs: Work on steep-sloped roofs requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also includes residential or housing type construction.

### 3.5 EQUIPMENT

#### 3.5.1 Weight Handling Equipment

a. Crane Critical Lift Plan: Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. The plan shall be submitted 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.H.02. and the following:

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

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

- b. Certificate of Compliance: The Contractor shall provide a Certificate of Compliance for each crane entering an activity under this contract (see Contracting Officer for a blank certificate). Certificate shall state that the crane and rigging gear meet applicable OSHA regulations (with the Contractor citing which OSHA regulations are applicable, e.g., cranes used in construction, demolition, or maintenance shall comply with 29 CFR 1926 and USACE EM 385-1-1 section 16 and Appendix H. Certify on the Certificate of Compliance that the crane operator(s) is qualified and trained in the operation of the crane to be used. The Contractor shall also certify that all of its crane operators working on the DOD activity have been trained in the proper use of all safety devices (e.g., anti-two block devices). These certifications shall be posted on the crane.
- c. The Contractor shall notify the Contracting Officer 15 days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Contractor's operator shall remain with the crane during the spot check.
- d. The Contractor shall comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Erection shall be performed under the supervision of a designated person (as defined in ASME B30.5). All testing shall be performed in accordance with the manufacturer's recommended procedures.
- e. The Contractor shall comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for construction tower cranes, and ASME B30.8 for floating cranes and floating derricks.
- f. Under no circumstance shall a Contractor make a lift at or above 90% of the cranes rated capacity in any configuration.
- g. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and shall follow the requirements of USACE EM 385-1-1 section 11 and ASME B30.5 or ASME B30.22 as applicable.
- h. The Contractor shall use cribbing when performing lifts on outriggers.
- i. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.
- j. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by Contracting Officer personnel.
- k. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by Contracting Officer personnel.
- l. Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

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

### 3.6 EXCAVATIONS

#### 3.6.1 Utility Locations

Prior to digging, the appropriate digging permit must be obtained. All underground utilities in the work area must be positively identified by a private utility locating service in addition to any station locating service and coordinated with the station utility department. Any markings made during the utility investigation must be maintained throughout the contract. Locate utilities in accordance with Section 01 14 00.05 20 WORK RESTRICTIONS FOR DESIGN-BUILD

#### 3.6.2 Utility Location Verification

The Contractor must physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system. Digging within 0.061 m (2 feet) of a known utility must not be performed by means of mechanical equipment; hand digging shall be used. If construction is parallel to an existing utility the utility shall be exposed by hand digging every 30.5 m (100 feet) if parallel within 1.5 m (5 feet) of the excavation.

### 3.7 UTILITIES WITHIN CONCRETE SLABS

Utilities located within concrete slabs or pier structures, bridges, and the like, are extremely difficult to identify due to the reinforcing steel used in the construction of these structures. Whenever contract work involves concrete chipping, saw cutting, or core drilling, the existing utility location must be coordinated with station utility departments in addition to a private locating service. Outages to isolate utility systems shall be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the contractor from meeting this requirement.

### 3.8 ELECTRICAL

#### 3.8.1 Conduct of Electrical Work

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Contracting Officer and Station Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Attachment of temporary grounds shall be in accordance with ASTM F855 and IEEE 1048.

Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

### 3.9 WORK IN CONFINED SPACES

In addition to the requirements of Section 34.A of USACE EM 385-1-1, OSHA 29 CFR 1910.146 and OSHA 29 CFR 1926.21(b)(6) the Contractor shall comply with the following. Any potential for a hazard in the confined space requires a permit system to be used.

- a. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 34.A.04 of USACE EM 385-1-1 for entry procedures.) All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.
- b. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level.
- c. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.

### 3.10 ERGONOMICS CONSIDERATIONS DURING DESIGN PHASE

Facilities, processes, job tasks, tools and materials shall be designed to reduce or eliminate work-related musculoskeletal (WMSD) injuries and risk factors in the workplace. Designs shall ensure facility maintenance access is designed to reduce WMSD risk factors to the lowest level possible. In addition to the detailed requirements included in the provisions of this contract, the design work shall incorporate the requirements of MIL-STD-1472F, DOD-HDBK 743A and ANSI/HFES 100.

-- End of Section --

SECTION 01 45 00.05 20

DESIGN AND CONSTRUCTION QUALITY CONTROL  
07/06

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2008) Safety -- Safety and Health Requirements

1.2 SUBMITTALS

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

SD-01 Preconstruction Submittals

Design Quality Control (DQC) Plan; G

Submit a DQC Plan prior to the Post Award Kickoff Meeting.

Construction Quality Control (CQC) Plan; G

Submit a Construction QC Plan prior to start of construction.

1.3 QC PROGRAM REQUIREMENTS

Establish and maintain a QC program that is administered by a Design and Construction Quality Control organization, using Quality Control (Design and Construction) Plans, meetings, a Coordination and Mutual Understanding Meeting, three phases of control, submittal review and approval, testing, completion inspections, and QC certifications and documentation necessary to provide design, materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this Contract. The QC program shall cover on-site and off-site work. No construction work or testing may be performed unless the QC Manager is on the work site.

1.3.1 Design and Construction Quality Control Plans

The Contractor shall provide a project specific Design Quality Control (DQC) Plan and Construction Quality Control (CQC) Plan, for review and acceptance by the Government. The Contractor shall perform no construction under this contract until the Contracting Officer accepts the DQC Plan and the CQC Plan. The Contractor's plan shall include the following:

- a. The QC organization for this contract, including member resumes.
- b. A letter from an officer of the company designating the QC Manager, Alternate QC Manager, and DQC Manager, and their authority.
- c. QC Manager qualifications.
- d. DQC Manager qualifications.
- e. List of Definable Features of Work (DFOW) including list of design submittal packaging. DFOW is a task that is separate and distinct from other tasks and has control requirements and work crews unique to the task.
- f. Plan to implement the "Three Phases of Control" for each DFOW.
- g. Testing Plan, log and list of personnel and accredited laboratories that will perform tests. Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation with the testing plan.
- h. Submittal Log including design submittals, listing personnel who will review submittals and noting submittals for Government review.
- i. Procedures for submitting and reviewing variations prior to submission to the Government.

#### 1.4 QC ORGANIZATION

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

The Contracting Officer may require the QC Manager, or the DQC Manager, be removed and replaced, if the Contracting Officer determines that either is not performing satisfactorily.

##### 1.4.1 QC Manager

QC Manager qualifications:

- a. Complete the course entitled "Construction Quality Management (CQM) for Contractors."
- b. Five years of combined experience as a Superintendent, QC Manager, Project Manager, or Project Engineer on similar size and type construction contracts, and at least two years experience as a QC Manager.

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

QC Manager responsibilities:

a. Participate in the Post Award Kick-off, Partnering, Design Development, and Coordination and Mutual Understanding Meetings.

b. Implement the "Three Phase of Control" plan for each DFOW and notify the Contracting Officer at least 3 business days in advance of each Preparatory and Initial Phase meeting. Submit respective checklists to the Contracting Officer the next business day.

c. Ensure that no construction begins before the DOR has finalized the design for that segment of work, and construction submittals are approved as required.

d. Inspect all work and rework, using International Conference of Building Officials certified QC specialists as applicable, to ensure its compliance with contract requirements.

e. Immediately stop any segment of work, which does not comply with the contract plans and specifications, and direct the removal and replacement of any defective work.

f. Remove any individual from the site who fails to perform their work in a skillful, safe and workmanlike manner or whose work does not comply with the contract plans and specifications.

g. Prepare daily QC Reports.

h. Ensure that Contractor Production Reports are prepared.

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

j. Ensure that Safety Officer inspections are performed. Attend weekly Toolbox meetings.

k. Ensure that design and construction submittals are reviewed and approved, as required by the contract, prior to allowing material on site and work to proceed with these items. Maintain a submittal log.

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

m. Maintain a testing plan and log. Ensure that all testing is performed in accordance with the contract. Review all test reports and notify the Contracting Officer of all deficiencies, along with a proposal for corrective action.

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

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

- p. Perform Punch-out and Pre-final inspections, and participate in Final Inspections. Submit list of deficiencies to the Contracting Officer for each inspection. Correct all deficiencies prior to the Final inspection. Notify Contracting Officer prior to Final Inspection to establish a schedule date acceptable by the Contracting Officer.
- q. Ensure that all required keys, operation and maintenance manuals, warranty certificates, and the As-built drawings are correct and complete, in accordance with the contract, and submitted to the Contracting Officer.
- r. Assure that all applicable tests, special inspections, and observations required by the contract are performed.
- s. Coordinate all factory and on-site testing, Testing Laboratory personnel, QC Specialists, and any other inspection and testing personnel required by this Contract.
- t. Notify the Contracting Officer of any proposed changes to the QC plan.
- u. Retain a copy of approved submittals at project site, including Contractor's copy of approved samples.

#### 1.4.2 DQC Manager

##### DQC Manager qualifications:

- a. A minimum of 5 years experience as a design Architect or Engineer on similar size and type designs /or design-build contracts. Provide education, experience, and management capabilities on similar size and type contracts.
- b. Be a registered professional engineer or architect with active registration in the State in which the project will be constructed. Provide proof of registration as part of the resume submittal package.

##### DQC Manager responsibilities:

- a. Be responsible for the design integrity, professional design standards, and all design services required.
- b. Be a member of the Designer of Record's (DOR) firm.
- c. Be responsible for development of the design portion of the QC Plan, incorporation and maintenance of the approved Design Schedule, and the preparation of DQC Reports and minutes of all design meetings.
- d. Participate in the Post Award Kick-Off, all design planning meetings, design presentations, partnering, and QC meetings.
- e. Implement the DQC plan and shall remain on staff and involved with the project until completion of the project.
- f. Be cognizant of and assure that all design documents on the project have been developed in accordance with the Contract, and have been properly coordinated.

- g. Develop the submittal register. Coordinate with each DOR to determine what items need to be submitted, and who needs to approve.
- h. Coordinate all training issues and validate that the testing and training requirements of this contract are accomplished.
- i. Provide QC certification for design compliance.

#### 1.4.3 QC Specialists

QC Specialists shall assist and report to the QC Manager and may perform production related duties but must be allowed sufficient time to perform their assigned quality control duties. QC Specialists are required to attend the Coordination and Mutual Understanding Meeting, QC meetings and be physically present at the construction site to perform the three phases of control and prepare documentation for each definable feature of work in their area of responsibility at the frequency specified below.

#### 1.5 THREE PHASES OF CONTROL

The Three Phases of Control shall adequately cover both on-site and off-site work and shall include the following for each DFW.

##### 1.5.1 Preparatory Phase

Notify the Contracting Officer at least two work days in advance of each preparatory phase meeting. The meeting shall be conducted by the QC Manager and attended by the QC Specialists, the DQC Manager, the Project Superintendent, and the foreman responsible for the DFW. When the DFW will be accomplished by a subcontractor, that subcontractor's foreman shall attend the preparatory phase meeting. Document the results of the preparatory phase actions in the [daily Contractor Quality Control Report and in the] Preparatory Phase Checklist. Perform the following prior to beginning work on each DFW:

- a. Review each paragraph of the applicable specification sections;
- b. Review the Contract drawings;
- c. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required;
- d. Review the testing plan and ensure that provisions have been made to provide the required QC testing;
- e. Examine the work area to ensure that the required preliminary work has been completed;
- f. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data;
- g. Discuss construction methods, construction tolerances, workmanship standards, and the approach that will be used to provide quality

construction by planning ahead and identifying potential problems for each DFOW; and

h. Review the APP and appropriate Activity Hazard Analysis (AHA) to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted.

#### 1.5.2 Initial Phase

Notify the Contracting Officer at least two work days in advance of each initial phase. When construction crews are ready to start work on a DFOW, conduct the initial phase with the QC Specialists, the DQC Manager, the Project Superintendent, and the foreman responsible for that DFOW. Observe the initial segment of the DFOW to ensure that the work complies with Contract requirements. Document the results of the initial phase in the [daily CQC Report and in ] Initial Phase Checklist. Repeat the initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met. Perform the following for each DFOW:

- a. Establish the quality of workmanship required;
- b. Resolve conflicts;
- c. Ensure that testing is performed by the approved laboratory, and
- d. Check work procedures for compliance with the APP and the appropriate AHA to ensure that applicable safety requirements are met.

#### 1.5.3 Follow-Up Phase

Perform the following for on-going work daily, or more frequently as necessary, until the completion of each DFOW and document in the daily CQC Report:

- a. Ensure the work is in compliance with Contract requirements;
- b. Maintain the quality of workmanship required;
- c. Ensure that testing is performed by the approved laboratory; and
- d. Ensure that rework items are being corrected.

#### 1.5.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same DFOW if the quality of on-going work is unacceptable, if there are changes in the applicable QC organization, if there are changes in the on-site production supervision or work crew, if work on a DFOW is resumed after substantial period of inactivity, or if other problems develop.

#### 1.5.5 Notification of Three Phases of Control for Off-Site Work

Notify the Contracting Officer at least two weeks prior to the start of the preparatory and initial phases.

#### 1.5.6 Transition to Punch-out, Pre-final and Final Inspection Process

Transition to the three inspections leading to project completion shall not begin until all definable features of work, including associated system and component testing has been completed successfully without approval of the Contracting Officer.

#### 1.6 COMPLETION INSPECTIONS

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

#### 1.7 DOCUMENTATION

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

-- End of Section --

SECTION 01 57 19.00 20

TEMPORARY ENVIRONMENTAL CONTROLS  
01/08

PART 1 GENERAL

1.1 REFERENCES

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

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

UFC 3-200-10N Civil Engineering

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 530/F-93/004 (1993; Rev O; Updates I, II, IIA, IIB, and III) Test Methods for Evaluating Solid Waste (Vol IA, IB, IC, and II) (SW-846)

EPA 833-R-060-04 (2000) Developing Your Storm Water Pollution Prevention Plan, A Guide for Construction Sites

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

29 CFR 1910 Occupational Safety and Health Standards

29 CFR 1910.120 Hazardous Waste Operations and Emergency Response

40 CFR 82 Protection of Stratospheric Ozone

40 CFR 112 Oil Pollution Prevention

40 CFR 122.26 Storm Water Discharges (Applicable to State NPDES Programs, see section 40 CFR 123.25)

40 CFR 241 Guidelines for Disposal of Solid Waste

40 CFR 243 Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste

40 CFR 258 Subtitle D Landfill Requirements

40 CFR 260 Hazardous Waste Management System: General

40 CFR 261 Identification and Listing of Hazardous Waste

40 CFR 262 Standards Applicable to Generators of Hazardous Waste

40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 270	EPA Administered Permit Programs: The Hazardous Waste Permit Program
40 CFR 271	Requirements for Authorization of State Hazardous Waste Programs
40 CFR 272	Approved State Hazardous Waste Management Programs
40 CFR 273	Standards For Universal Waste Management
40 CFR 279	Standards for the Management of Used Oil
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
40 CFR 355	Emergency Planning and Notification
40 CFR 372-SUBPART D	Specific Toxic Chemical Listings
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 173	Shippers - General Requirements for Shipments and Packaging
49 CFR 178	Specifications for Packaging

1.2 DEFINITIONS

1.2.1 Sediment

Soil and other debris that have eroded and have been transported by runoff water or wind.

1.2.2 Solid Waste

Garbage, refuse, debris, sludge, or other discharged material, including solid, liquid, semisolid, or contained gaseous materials resulting from domestic, industrial, commercial, mining, or agricultural operations. Types of solid waste typically generated at construction sites may include:

a. Green waste: The vegetative matter from landscaping, land clearing and grubbing, including, but not limited to, grass, bushes, scrubs, small trees and saplings, tree stumps and plant roots. Marketable trees, grasses and plants that are indicated to remain, be re-located, or be re-used are not included.

b. Surplus soil: Existing soil that is in excess of what is required for this work, including aggregates intended, but not used, for on-site mixing of concrete, mortars and paving. Contaminated soil meeting the definition of hazardous material or hazardous waste is not included.

c. Debris: Non-hazardous solid material generated during the construction, demolition, or renovation of a structure which exceeds 60 mm( 2.5 inch) (2.5 inch) particle size that is: a manufactured object; plant or animal matter; or natural geologic material (e.g. cobbles and boulders), broken or removed concrete, masonry, and rock asphalt paving; ceramics; roofing paper and shingles. Inert materials [may] [may not] be reinforced with or contain ferrous wire, rods, accessories and weldments. A mixture of debris and other material such as soil or sludge is also subject to regulation as debris if the mixture is comprised primarily of debris by volume, based on visual inspection..

d. Wood: Dimension and non-dimension lumber, plywood, chipboard, hardboard. Treated and/or painted wood that meets the definition of lead contaminated or lead based contaminated paint is not included.

e. Scrap metal: Scrap and excess ferrous and non-ferrous metals such as reinforcing steel, structural shapes, pipe and wire that are recovered or collected and disposed of as scrap. Scrap metal meeting the definition of hazardous material or hazardous waste is not included.

f. Paint cans: Metal cans that are empty of paints, solvents, thinners and adhesives. If permitted by the paint can label, a thin dry film may remain in the can.

g. Recyclables: Materials, equipment and assemblies such as doors, windows, door and window frames, plumbing fixtures, glazing and mirrors that are recovered and sold as recyclable. Metal meeting the definition of lead contaminated or lead based paint contaminated may not be included as recyclable if sold to a scrap

metal company. Paint cans may not be included as recyclable if sold to a scrap metal company.

h. Hazardous Waste: By definition, to be a hazardous waste a material must first meet the definition of a solid waste. Hazardous waste and hazardous debris are special cases of solid waste. They have additional regulatory controls and must be handled separately. They are thus defined separately in this document.

Material not regulated as solid waste are: nuclear source or byproduct materials regulated under the Federal Atomic Energy Act of 1954 as amended; suspended or dissolved materials in domestic sewage effluent or irrigation return flows, or other regulated point source discharges; regulated air emissions; and fluids or wastes associated with natural gas or crude oil exploration or production.

#### 1.2.3 Hazardous Debris

As defined in Solid Waste paragraph, debris that contains listed hazardous waste (either on the debris surface, or in its interstices, such as pore structure) per 40 CFR 261; or debris that exhibits a characteristic of hazardous waste per 40 CFR 261.

#### 1.2.4 Chemical Wastes

This includes salts, acids, alkalizes, herbicides, pesticides, and organic chemicals.

#### 1.2.5 Garbage

Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

#### 1.2.6 Hazardous Waste

Any discarded material, liquid, solid, or gas, which meets the definition of hazardous material or is designated hazardous waste by the Environmental Protection Agency or State Hazardous Control Authority as defined in 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, 40 CFR 268, 40 CFR 270, 40 CFR 271, 40 CFR 272, 40 CFR 273, 40 CFR 279, and 40 CFR 280.

#### 1.2.7 Hazardous Materials

Hazardous materials as defined in 49 CFR 171 and listed in 49 CFR 172.

Hazardous material is any material that:

- a. Is regulated as a hazardous material per 49 CFR 173, or
- b. Requires a Material Safety Data Sheet (MSDS) per 29 CFR 1910.120, or
- c. During end use, treatment, handling, packaging, storage, transpiration, or disposal meets or has components that meet or

have potential to meet the definition of a hazardous waste as defined by 40 CFR 261 Subparts A, B, C, or D.

Designation of a material by this definition, when separately regulated or controlled by other instructions or directives, does not eliminate the need for adherence to that hazard-specific guidance which takes precedence over this instruction for "control" purposes. Such material include ammunition, weapons, explosive actuated devices, propellants, pyrotechnics, chemical and biological warfare materials, medical and pharmaceutical supplies, medical waste and infectious materials, bulk fuels, radioactive materials, and other materials such as asbestos, mercury, and polychlorinated biphenyls (PCBs). Nonetheless, the exposure may occur incident to manufacture, storage, use and demilitarization of these items.

#### 1.2.8 Waste Hazardous Material (WHM)

Any waste material which because of its quantity, concentration, or physical, chemical, or infectious characteristics may pose a substantial hazard to human health or the environment and which has been so designated. Used oil not containing any hazardous waste, as defined above, falls under this definition.

#### 1.2.9 Oily Waste

Those materials which are, or were, mixed with used oil and have become separated from that used oil. Oily wastes also means materials, including wastewaters, centrifuge solids, filter residues or sludges, bottom sediments, tank bottoms, and sorbents which have come into contact with and have been contaminated by, used oil and may be appropriately tested and discarded in a manner which is in compliance with other State and local requirements.

This definition includes materials such as oily rags, "kitty litter" sorbent clay and organic sorbent material. These materials may be land filled provided that:

- a. It is not prohibited in other State regulations or local ordinances
- b. The amount generated is "de minimus" (a small amount)
- c. It is the result of minor leaks or spills resulting from normal process operations
- d. All free-flowing oil has been removed to the practical extent possible

Large quantities of this material, generated as a result of a major spill or in lieu of proper maintenance of the processing equipment, are a solid waste. As a solid waste, a hazardous waste determination must be performed prior to disposal. As this can be an expensive process, it is recommended that this type of waste be minimized through good housekeeping practices and employee education.

#### 1.2.10 Regulated Waste

Those solid waste that have specific additional Federal, state, or local controls for handling, storage, or disposal.

1.2.11 Class I Ozone Depleting Substance (ODS)

Class I ODS is defined in Section 602(a) of The Clean Air Act and includes the following chemicals:

chlorofluorocarbon-11 (CFC-11)  
chlorofluorocarbon-12 (CFC-12)  
chlorofluorocarbon-13 (CFC-13)  
chlorofluorocarbon-111 (CFC-111)  
chlorofluorocarbon-112 (CFC-112)  
chlorofluorocarbon-113 (CFC-113)  
chlorofluorocarbon-114 (CFC-114) chlorofluorocarbon-115 (CFC-115)  
chlorofluorocarbon-211 (CFC-211)  
chlorofluorocarbon-212 (CFC-212) methyl bromide  
chlorofluorocarbon-213 (CFC-213)  
chlorofluorocarbon-214 (CFC-214)  
chlorofluorocarbon-215 (CFC-215)  
chlorofluorocarbon-216 (CFC-216)  
chlorofluorocarbon-217 (CFC-217)  
chlorofluorocarbon-500 (CFC-500)  
chlorofluorocarbon-502 (CFC-502)  
chlorofluorocarbon-503 (CFC-503)  
halon-1211  
halon-1301  
halon-2402  
carbon tetrachloride  
methyl bromide  
methyl chloroform

Class II ODS is defined in Section 602(s) of The Clean Air Act and includes the following chemicals:

hydrochlorofluorocarbon-21 (HCFC-21)  
hydrochlorofluorocarbon-22 (HCFC-22)  
hydrochlorofluorocarbon-31 (HCFC-31)  
hydrochlorofluorocarbon-121 (HCFC-121)  
hydrochlorofluorocarbon-122 (HCFC-122)  
hydrochlorofluorocarbon-123 (HCFC-123)  
hydrochlorofluorocarbon-124 (HCFC-124)  
hydrochlorofluorocarbon-131 (HCFC-131)  
hydrochlorofluorocarbon-132 (HCFC-132)  
hydrochlorofluorocarbon-133 (HCFC-133)  
hydrochlorofluorocarbon-141 (HCFC-141)  
hydrochlorofluorocarbon-142 (HCFC-142)  
hydrochlorofluorocarbon-221 (HCFC-221)  
hydrochlorofluorocarbon-222 (HCFC-222)  
hydrochlorofluorocarbon-223 (HCFC-223)  
hydrochlorofluorocarbon-224 (HCFC-224)  
hydrochlorofluorocarbon-225 (HCFC-225)  
hydrochlorofluorocarbon-226 (HCFC-226)  
hydrochlorofluorocarbon-231 (HCFC-231)  
hydrochlorofluorocarbon-232 (HCFC-232)  
hydrochlorofluorocarbon-233 (HCFC-233)  
hydrochlorofluorocarbon-234 (HCFC-234)

hydrochlorofluorocarbon-235 (HCFC-235)  
hydrochlorofluorocarbon-241 (HCFC-241)  
hydrochlorofluorocarbon-242 (HCFC-242)  
hydrochlorofluorocarbon-243 (HCFC-243)  
hydrochlorofluorocarbon-244 (HCFC-244)  
hydrochlorofluorocarbon-251 (HCFC-251)  
hydrochlorofluorocarbon-252 (HCFC-252)  
hydrochlorofluorocarbon-253 (HCFC-253)  
hydrochlorofluorocarbon-261 (HCFC-261)  
hydrochlorofluorocarbon-262 (HCFC-262)  
hydrochlorofluorocarbon-271 (HCFC-271)

#### 1.2.11.1 Universal Waste

The universal waste regulations streamline collection requirements for certain hazardous wastes in the following categories: batteries, pesticides, mercury-containing equipment (e.g., thermostats) and lamps (e.g., fluorescent bulbs). The rule is designed to reduce hazardous waste in the municipal solid waste (MSW) stream by making it easier for universal waste handlers to collect these items and send them for recycling or proper disposal. These regulations can be found at 40 CFR 273.

#### 1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; The following shall be submitted in accordance with Section 01 33 00 *Submittal Procedures*:

##### SD-01 Preconstruction Submittals

Environmental Management Plan; G  
Solid Waste Management Plan and Permit; G  
Regulatory Notifications; G  
Contractor Hazardous Material Inventory Log; G

##### SD-06 Test Reports

Laboratory Analysis  
Disposal Requirements  
Erosion and Sediment Control Inspection Reports  
Storm Water Inspection Reports for General Permit  
Contractor 40 CFR employee training records  
Solid Waste Management Report; G

##### SD-11 Closeout Submittals

Some of the records listed below are also required as part of other submittals. For the "Records" submittal, maintain on-site a separate three-ring Environmental Records binder and submit at the completion of the project. Make separate parts to the binder corresponding to each of the applicable sub items listed below.

Storm water pollution prevention plan compliance notebook; G

Sediment and Erosion control Permit by the State of Maryland

Waste Determination Documentation

Disposal Documentation for Hazardous and Regulated Waste

Contractor 40 CFR Employee Training Records

Solid Waste Management Report

Contractor Hazardous Material Inventory Log; G

Hazardous Waste/Debris Management

Regulatory Notifications

#### 1.4 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with Federal, State, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances, and noise pollution.

The Contractor may be required to promptly conduct tests and procedures for the purpose of assessing whether construction operations are in compliance with Applicable Environmental Laws. Analytical work shall be done by qualified laboratories; and where required by law, the laboratories shall be certified.

##### 1.4.2 Conformance with the Environmental Management System

The Contractor shall perform work under this contract consistent with the policy and objectives identified in the installation's Environmental Management System (EMS). The Contractor shall perform work in a manner that conforms to objectives and targets, environmental programs and operational controls identified by the EMS. The Contractor will provide monitoring and measurement information as necessary to address environmental performance relative to environmental, energy, and transportation management goals. In the event an EMS nonconformance or environmental noncompliance associated with the contracted services, tasks, or actions occurs, the Contractor shall take corrective and/or preventative actions. In addition, the Contractor shall ensure that its employees are aware of their roles and

responsibilities under the EMS and how these EMS roles and responsibilities affect work performed under the contract.

The Contractor is responsible for ensuring that their employees receive applicable environmental and occupational health and safety training, and keep up to date on regulatory required specific training for the type of work to be conducted onsite. All on-site Contractor personnel, and their subcontractor personnel, performing tasks that have the potential to cause a significant environmental impact shall be competent on the basis of appropriate education, training or experience. Upon contract award, the Contracting Officer's Representative will notify the installation's EMS coordinator to arrange EMS training. Refer to Section 01 57 19.01 20, Supplemental Temporary Environmental Controls for additional site specific EMS requirements related to construction. The installation's EMS coordinator shall identify training needs associated with environmental aspects and the EMS coordinator shall identify training needs associated with environmental aspects and the EMS, and arrange training or take other action to meet these needs. The Contractor shall provide training documentation to the contracting Officer. The installations EMS coordinator shall retain associated records.

## 1.5 QUALITY ASSURANCE

### 1.5.1 Preconstruction Survey

Perform a Preconstruction Survey of the project site with the Contracting Officer, and take photographs showing existing environmental conditions in and adjacent to the site. Submit a report for the record.

### 1.5.2 Regulatory Notifications

The Contractor is responsible for all regulatory notification requirements in accordance with Federal, State and local regulations. In cases where the Navy must also provide public notification (such as storm water permitting), the Contractor must coordinate with the Contracting Officer. The Contractor shall submit copies of all regulatory notifications to the Contracting Officer prior to commencement of work activities. Typically, regulatory notifications must be provided for the following (this listing is not all inclusive): demolition, renovation, NPDES defined site work, remediation of controlled substances (asbestos, hazardous waste, lead paint).

### 1.5.3 Environmental Brief

Attend an environmental brief to be included in the preconstruction meeting. Provide the following information: types, quantities, and use of hazardous materials that will be brought onto the activity; types and quantities of wastes/wastewater that may be generated during the contract. Discuss the results of the Preconstruction Survey at this time.

Prior to initiating any work on site, meet with the Contracting Officer and activity environmental staff to discuss the proposed Environmental Management Plan. Develop a mutual understanding relative to the details of environmental protection, including measures for protecting natural resources, required reports, required permits, permit requirements, and other measures to be taken.

### 1.5.4 Environmental Manager

Appoint in writing an Environmental Manager for the project site. The Environmental Manager will be directly responsible for coordinating contractor compliance with Federal, State, local, and station requirements.

The Environmental Manager will ensure compliance with Hazardous Waste Program requirements (including hazardous waste handling, storage, manifesting, and disposal); implement the Environmental Management Plan; ensure that all environmental permits are obtained, maintained, and closed out; ensure compliance with Storm Water Program Management requirements; ensure compliance with Hazardous Materials (storage, handling, and reporting) requirements; and coordinate any remediation of regulated substances (lead, asbestos, PCB transformers).

This can be a collateral position; however the person in this position must be trained to adequately accomplish the following duties: ensure waste segregation and storage compatibility requirements are met; inspect and manage Satellite Accumulation areas; ensure only authorized personnel add wastes to containers; ensure all Contractor personnel are trained in 40 CFR requirements in accordance with their position requirements; coordinate removal of waste containers; and maintain the Environmental Records binder and required documentation, including environmental permits compliance and close-out.

#### 1.5.5 Contractor 40 CFR Employee Training Records

Prepare and maintain employee training records throughout the term of the contract meeting applicable 40 CFR requirements. Submit these training records to the Contracting Officer at the conclusion of the project, unless otherwise directed.

## PART 2 PRODUCTS

Not used.

## PART 3 EXECUTION

### 3.1 ENVIRONMENTAL MANAGEMENT PLAN

Prior to initiating any work on site, the Contractor will meet with the Contracting Officer to discuss the proposed Environmental Management Plan and develop a mutual understanding relative to the details of environmental protection, including measures for protecting natural resources, required reports, and other measures to be taken. The Contractor's Environmental Management Plan shall incorporate construction related objectives and targets from the installation's Environmental Management System. The Environmental Management Plan will be submitted in the following format and shall include the elements specified below.

#### a. Description of the Environmental Management Plan

##### (1) General overview and purpose

(a) A brief description of each specific plan required by environmental permit or elsewhere in this contract. The Permit Record of decision (PROD) form found in UFC 3-200-10N may be used to help accomplish this task.

(b) The duties and level of authority assigned to the person(s) on the job site that oversee environmental compliance.

(c) A copy of any standard or project specific operating procedures that will be used to effectively manage and protect the environment on the project site.

(d) Communication and training procedures that will be used to convey environmental management requirements to contractor employees and subcontractors.

(e) Emergency contact information contact information (office phone number, cell phone number, and e-mail address).

b. Management of Natural Resources

- (1) Land resources
- (2) Tree protection
- (3) Replacement of damaged landscape features
- (4) Temporary construction
- (5) Stream crossings
- (6) Fish and wildlife resources
- (7) Wetland areas

c. Protection of Historical and Archaeological Resources

- (1) Objectives
- (2) Methods

d. Storm Water Management and Control

- (1) Ground cover
- (2) Erodible soils
- (3) Temporary measures
  - (a) Mechanical retardation and control of runoff
  - (b) Vegetation and mulch
- (4) Effective selection, implementation and maintenance of Best Management Practices (BMPs).

e. Protection of the Environment from Waste Derived from Contractor Operations

- (1) Control and disposal of solid and sanitary waste. If Section 01 74 19.05 20 is included in the contract, submit the plan required by that section as part of the Environmental Management Plan.
- (2) Control and disposal of hazardous waste (Hazardous Waste Management Section)

This item will consist of the management procedures for all hazardous waste to be generated. The elements of those procedures will coincide with the Activity Hazardous Waste Management Plan. A copy of the Activity Hazardous Waste Management Plan will be provided by the Contracting Officer. As a minimum, include the following:

- (a) Procedures to be employed to ensure a written waste determination is made for appropriate wastes which are to be generated;
- (b) Sampling/analysis plan;
- (c) Methods of hazardous waste accumulation/storage (i.e., in tanks and/or containers);
- (d) Management procedures for storage, labeling, transportation, and disposal of waste (treatment of waste is not allowed unless specifically noted);
- (e) Management procedures and regulatory documentation ensuring disposal of hazardous waste complies with Land Disposal Restrictions (40 CFR 268);
- (f) Management procedures for recyclable hazardous materials such as lead-acid batteries, used oil, and the like;
- (g) Used oil management procedures in accordance with 40 CFR 279;
- (h) Pollution prevention\hazardous waste minimization procedures;
- (i) Plans for the disposal of hazardous waste by permitted facilities;
- (j) Procedures to be employed to ensure all required employee training records are maintained.

f. Prevention of Releases to the Environment

- (1) Procedures to prevent releases to the environment
- (2) Notifications in the event of a release to the environment

g. Regulatory Notification and Permits

- (1) List what notifications and permit applications must be made. Demonstrate that those permits have been obtained by including copies of all applicable, environmental permits. Be aware that some permits required under the Environmental Management Plan require up to 30 days advance regulator notice before site work may begin.

3.1.1.1 Environmental Management Plan Review

Within thirty days after the Contract award date, submit the proposed Environmental Management Plan for further discussion, review, and approval. Commencement of work will not begin until the environmental management plan has been approved.

### 3.1.2 Licenses and Permits

Obtain licenses and permits pursuant to the "Permits and Responsibilities" FAR Clause 52.236-7.

No permits will be obtained by the Contracting Officer.

Where required by the State regulatory authority, the inspections and certifications will be provided through the services of a Professional Engineer (PE), registered in the State where the work is being performed. [Where a PE is not required, the individual must be otherwise qualified by other current State licensure, specific training and prior experience (minimum 5 years). As a part of the quality control plan, which is required to be submitted for approval by the quality control section, provide a sub item containing the name, appropriate professional registration or license number, address, and telephone number of the professionals or other qualified persons who will be performing the inspections and certifications for each permit.

### 3.2 PROTECTION OF NATURAL RESOURCES

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified. If the work is near streams, lakes, or other waterways, conform to the national permitting requirements of the Clean Water Act.

Do not disturb fish and wildlife. Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as indicated or specified.

Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without the Contracting Officer's permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages unless authorized by the Contracting Officer. Where such use of attached ropes, cables, or guys is authorized, the Contractor will be responsible for any resultant damage.

Protect existing trees which are to remain and which may be injured, bruised, defaced, or otherwise damaged by construction operations. Remove displaced rocks from uncleared areas. By approved excavation, remove trees with 30 percent or more of their root systems destroyed. Remove trees and other landscape features scarred or damaged by equipment operations, and replace with equivalent, undamaged trees and landscape features. Obtain Contracting Officer's approval before replacement.

The Contracting Officer's approval is required before any equipment will be permitted to ford live streams. In areas where frequent crossings are required, install temporary culverts or bridges. Obtain Contracting Officer's approval prior to installation. Remove temporary culverts or bridges upon completion of work, and repair the area to its original condition unless otherwise required by the Contracting Officer.

#### 3.2.1 Erosion and Sediment Control Measures

3.2.1.1 Burnoff

Burnoff of the ground cover is not permitted.

3.2.1.2 Protection of Erodible Soils

Immediately finish the earthwork brought to a final grade, as indicated or specified. Immediately protect the side slopes and back slopes upon completion of rough grading. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

3.2.1.3 Temporary Protection of Erodible Soils

Use the following methods to prevent erosion and control sedimentation:

a. Mechanical Retardation and Control of Runoff

(1) Mechanically retard and control the rate of runoff from the construction site. This includes construction of diversion ditches, benches, berms, and use of silt fences and straw bales to retard and divert runoff to protected drainage courses.

b. Vegetation and Mulch

(1) Provide temporary protection on sides and back slopes as soon as rough grading is completed or sufficient soil is exposed to require erosion protection. Protect slopes by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Stabilize slopes by hydroseeding, anchoring mulch in place, covering with anchored netting, sodding, or such combination of these and other methods necessary for effective erosion control.

(2) Seeding: Provide new seeding where ground is disturbed. Include topsoil or nutriment during the seeding operation necessary to establish or reestablish a suitable stand of grass.

3.2.2 Erosion and Sediment Control Inspection Reports

Submit "Erosion and Sediment Control Inspection Reports" (E&S) (form provided at the pre-construction conference) and Storm Water Inspection Reports for General Permit for General Permit to the Contracting Officer once every 7 calendar days and within 24 hours of a storm event that produces 12 mm( 0.5 inch) or more of rain.

Note erosion control inspection reports may be compiled as part of a stormwater pollution prevention plan inspection reports if applicable.

3.2.2.1 Storm Water Notice of Intent for Construction Activities and Storm Water Pollution Prevention Plan

The Contractor shall submit a Storm Water Notice of Intent (for NPDES coverage under the general permit for construction activities) and a Storm Water Pollution Prevention Plan (SWPPP) for the project to the Contracting Officer prior and gain approval prior to the commencement of work. The SWPPP will meet the requirements of the EPA or State general permit for storm water discharges from construction sites. Submit the SWPPP along with any required Notice of Intent, Notice of Termination, and appropriate permit

fees, via the Contracting Officer, to the appropriate Federal or State agency for approval, a minimum of 30 -45 calendar days prior to the start of any land disturbing activities. The Contractor shall maintain an approved copy of the SWPPP at the construction on-site office, and continually update as regulations require, reflecting current site conditions.

### 3.2.3 Stormwater Drainage and Construction Dewatering

There will be no discharge of excavation ground water to the sanitary sewer, storm drains, or to the river without prior specific authorization of the Environmental Division in writing. Discharge of hazardous substances will not be permitted under any circumstances.

Construction site runoff will be prevented from entering any storm drain or the U.S. Waters directly by the use of the best method suitable to the USNA Environmental Division. Contractor will provide erosion protection of the surrounding soils.

Construction Dewatering shall not be discharged to the sanitary sewer. If the construction dewatering is noted or suspected of being contaminated, it may only be released to the storm drain system if the discharge is specifically permitted. Authorization for any contaminated groundwater release shall be obtained in advance from the base Environmental Officer. Discharge of hazardous substances will not be permitted under any circumstances.

### 3.3 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Carefully protect in-place and report immediately to the Contracting Officer historical and archaeological items or human skeletal remains discovered in the course of work. Upon discovery, notify the Contracting Officer. Stop work in the immediate area of the discovery until directed by the Contracting Officer to resume work. The Government retains ownership and control over historical and archaeological resources.

### 3.4 SOLID WASTE MANAGEMENT PLAN AND PERMIT

Provide to the contracting officer written notification of the quantity of solid waste/debris that is anticipated to be generated by construction. Include in the plan the locations where various types of waste will be disposed or recycled. Include letters of acceptance or as applicable, submit one copy of a State and local solid waste management permit or license showing such agency's approval of the disposal plan before transporting wastes off Government property.

#### 3.4.1 Solid Waste Management Report

Monthly, submit a solid waste disposal report to the Contracting Officer. For each waste, the report will state the classification (using the definitions provided in this section), amount, location, and name of the business receiving the solid waste.

The Contractor shall include copies of the waste handling facilities' weight tickets, receipts, bills of sale, and other sales documentation. In lieu of sales documentation, the Contractor may submit a statement indicating the disposal location for the solid waste which is signed by an officer of the Contractor firm authorized to legally obligate or bind the firm. The sales documentation or Contractor certification will include the receiver's tax

identification number and business, EPA or State registration number, along with the receiver's delivery and business addresses and telephone numbers.

For each solid waste retained by the Contractor for his own use, the Contractor will submit on the solid waste disposal report the information previously described in this paragraph. Prices paid or received will not be reported to the Contracting Officer unless required by other provisions or specifications of this Contract or public law.

### 3.4.2 Control and Management of Solid Wastes

Pick up solid wastes, and place in covered containers which are regularly emptied. Do not prepare or cook food on the project site. Prevent contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean. Recycling is encouraged and can be coordinated with the Contracting Officer and the activity recycling coordinator. Remove all solid waste (including non-hazardous debris) from Government property and dispose off-site at an approved landfill. Solid waste disposal off-site must comply with most stringent local, State, and Federal requirements including 40 CFR 241, 40 CFR 243, and 40 CFR 258.

Manage spent hazardous material used in construction, including but not limited to, aerosol cans, waste paint, cleaning solvents, contaminated brushes, and used rags, as per environmental law.

#### 3.4.2.1 Dumpsters

Equip dumpsters with a secure cover and paint the standard base color. Keep cover closed at all times, except when being loaded with trash and debris. Locate dumpsters behind the construction fence or out of the public view. Empty site dumpsters at least once a week, or as needed to keep the site free of debris and trash. If necessary, provide 208 liter (55 gallon) trash containers painted the darker base color to collect debris in the construction site area. Locate the trash containers behind the construction fence or out of the public view. Empty trash containers at least once a day. For large demolitions, large dumpsters without lids are acceptable but should not have debris higher than the sides before emptying.

### 3.5 WASTE DETERMINATION DOCUMENTATION

Complete a Waste Determination form (provided at the pre-construction conference) for all contractor derived wastes to be generated. Base the waste determination upon either a constituent listing from the manufacturer used in conjunction with consideration of the process by which the waste was generated, EPA approved analytical data, or laboratory analysis (Material Safety Data Sheets (MSDS) by themselves are not adequate). Attach all support documentation to the Waste Determination form. As a minimum, a Waste Determination form must be provided for the following wastes (this listing is not all inclusive): oil and latex based painting and caulking products, solvents, adhesives, aerosols, petroleum products, and all containers of the original materials.

### 3.6 CONTRACTOR HAZARDOUS MATERIAL INVENTORY LOG

Submit the "Contractor Hazardous Material Inventory Log" (found at: <http://www.wbdg.org/ccb/NAVGRAPH/graphtoc.pdf>), which provides information required by (EPCRA Sections 312 and 313) along with

corresponding Material Safety Data Sheets (MSDS) to the Contracting Officer at the start and at the end of construction (30 days from final acceptance), and update no later than January 31 of each calendar year during the life of the contract. Documentation for any spills/releases, environmental reports or off-site transfers may be requested by the Contracting Officer.

### 3.6.1 Disposal Documentation for Hazardous and Regulated Waste

Manifest, pack, ship and dispose of hazardous or toxic waste and universal waste that is generated as a result of construction in accordance with the generating facilities generator status under the Resource Conservation and Recovery Act. Contact the Contracting Officer for the facility RCRA identification number that is to be used on each manifest.

Submit a copy of the applicable EPA and or State permit(s), manifest(s), or license(s) for transportation, treatment, storage, and disposal of hazardous and regulated waste by permitted facilities. Hazardous or toxic waste manifest must be reviewed, signed, and approved by the Navy before the Contractor may ship waste. To obtain specific disposal instructions the Contractor must coordinate with the Activity environmental office. Refer to Section 01 57 19.01 20 for the Activity Point of Contact information.

### 3.7 POLLUTION PREVENTION/HAZARDOUS WASTE MINIMIZATION

Minimize the use of hazardous materials and the generation of hazardous waste. Include procedures for pollution prevention/ hazardous waste minimization in the Hazardous Waste Management Section of the Environmental Management Plan. Consult with the activity Environmental Office for suggestions and to obtain a copy of the installation's pollution prevention/hazardous waste minimization plan for reference material when preparing this part of the plan. If no written plan exists, obtain information by contacting the Contracting Officer. Describe the types of the hazardous materials expected to be used in the construction when requesting information.

### 3.8 WHM/HW MATERIALS PROHIBITION

No waste hazardous material or hazardous waste shall be disposed of on government property. No hazardous material shall be brought onto government property that does not directly relate to requirements for the performance of this contract. The government is not responsible for disposal of Contractor's waste material brought on the job site and not required in the performance of this contract.

The intent of this provision is to dispose of that waste identified as waste hazardous material/hazardous waste as defined herein that was generated as part of this contract and existed within the boundary of the Contract limits and not brought in from offsite by the Contractor. Incidental materials used to support the contract including, but not limited to aerosol cans, waste paint, cleaning solvents, contaminated brushes, rags, clothing, etc. are the responsibility of the Contractor.

The list is illustrative rather than inclusive. The Contractor is not authorized to discharge any materials to sanitary sewer, storm drain, or to the river or conduct waste treatment or disposal on government property without written approval of the Contracting Officer.

### 3.9 HAZARDOUS MATERIAL MANAGEMENT

No hazardous material shall be brought onto government property that does not directly relate to requirements for the performance of this contract.

Include hazardous material control procedures in the Safety Plan. Address procedures and proper handling of hazardous materials, including the appropriate transportation requirements. Submit a MSDS and estimated quantities to be used for each hazardous material to the Contracting Officer prior to bringing the material on base.

Typical materials requiring MSDS and quantity reporting include, but are not limited to, oil and latex based painting and caulking products, solvents, adhesives, aerosol, and petroleum products. At the end of the project, provide the Contracting Officer with the maximum quantity of each material that was present at the site at any one time, the dates the material was present, the amount of each material that was used during the project, and how the material was used.

Ensure that hazardous materials are utilized in a manner that will minimize the amount of hazardous waste that is generated. Ensure that all containers of hazardous materials have NFPA labels or their equivalent. Keep copies of the MSDS for hazardous materials on site at all times and provide them to the Contracting Officer at the end of the project. Certify that all hazardous materials removed from the site are hazardous materials and do not meet the definition of hazardous waste per 40 CFR 261.

### 3.10 PETROLEUM PRODUCTS AND REFUELING

Conduct the fueling and lubricating of equipment and motor vehicles in a manner that protects against spills and evaporation. Manage all used oil generated on site in accordance with 40 CFR 279. Determine if any used oil generated while on-site exhibits a characteristic of hazardous waste. Used oil containing 1000 parts per million of solvents will be considered a hazardous waste and disposed of at Contractor's expense. Used oil mixed with a hazardous waste will also be considered a hazardous waste.

#### 3.10.1 Oily and Hazardous Substances

Prevent oil or hazardous substances from entering the ground, drainage areas, or navigable waters. In accordance with 40 CFR 112, surround all temporary fuel oil or petroleum storage tanks with a temporary berm or containment of sufficient size and strength to contain the contents of the tanks, plus 10 percent freeboard for precipitation. The berm will be impervious to oil for 72 hours and be constructed so that any discharge will not permeate, drain, infiltrate, or otherwise escape before cleanup occurs.

#### 3.10.2 Inadvertent Discovery of Petroleum Contaminated Soil or Hazardous Wastes

If petroleum contaminated soil or suspected hazardous waste is found during construction that was not identified in the contract documents, the contractor shall immediately notify the contracting officer. The contractor shall not disturb this material until authorized by the contracting officer.

### 3.11 FUEL TANKS

Petroleum products and lubricants required to sustain up to 30 days of construction activity may be kept on site. Storage and refilling practices shall comply with 40 CFR Part 112. Secondary containment shall be provided and be no less than 110 percent of the tank volume plus five inches of free-board.

If a secondary berm is used for containment then the berm shall be impervious to oil for 72 hours and be constructed so that any discharge will not permeate, drain, infiltrate, or otherwise escape before cleanup occurs. Drips pans are required and the tanks must be covered during inclement weather.

### 3.12 RELEASES/SPILLS OF OIL AND HAZARDOUS SUBSTANCES

Exercise due diligence to prevent, contain, and respond to spills of hazardous material, hazardous substances, hazardous waste, sewage, regulated gas, petroleum, lubrication oil, and other substances regulated by environmental law. Maintain spill cleanup equipment and materials at the work site. In the event of a spill, take prompt, effective action to stop, contain, curtail, or otherwise limit the amount, duration, and severity of the spill/release.

In the event of any releases of oil and hazardous substances, chemicals, or gases; immediately (within 15 minutes) notify the Base or Activity Fire Department, the activity's Command Duty Officer, and the Contracting Officer. If the contractor's response is inadequate, the Navy may respond. If this should occur, the contractor will be required to reimburse the government for spill response assistance and analysis.

The Contractor is responsible for verbal and written notifications as required by the federal 40 CFR 355, State, local regulations and Navy Instructions. Spill response will be in accordance with 40 CFR 300 and applicable State and local regulations. Contain and clean up these spills without cost to the Government. If Government assistance is requested or required, the Contractor will reimburse the Government for such assistance. Provide copies of the written notification and documentation that a verbal notification was made within 20 days.

Maintain spill cleanup equipment and materials at the work site. Clean up all hazardous and non-hazardous (WHM) waste spills. The Contractor shall reimburse the government for all material, equipment, and clothing generated during any spill cleanup. The Contractor shall reimburse the government for all costs incurred including sample analysis materials, equipment, and labor if the government must initiate its own spill cleanup procedures, for Contractor responsible spills, when:

- a. The Contractor has not begun spill cleanup procedure within one hour of spill discovery/occurrence, or
- b. If, in the government's judgment, the Contractor's spill cleanup is not adequately abating life threatening situation and/or is a threat to any body of water or environmentally sensitive areas.

### 3.13 CONTROL AND MANAGEMENT OF HAZARDOUS WASTES

#### 3.13.1 Facility Hazardous Waste Generator Status

All work conducted within the boundaries of this activity must meet the regulatory requirements of this generator designation. The Contractor will comply with all provisions of Federal, State and local regulatory requirements applicable to this generator status regarding training and storage, handling, and disposal of all construction derived wastes.

3.13.2 Hazardous Waste/Debris Management

Identify all construction activities which will generate hazardous waste/debris. Provide a documented waste determination for all resultant waste streams. Hazardous waste/debris will be identified, labeled, handled, stored, and disposed of in accordance with all Federal, State, and local regulations including 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, and 40 CFR 268.

Hazardous waste will also be managed in accordance with the approved Hazardous Waste Management Section of the Environmental Management Plan. Store hazardous wastes in approved containers in accordance with 49 CFR 173 and 49 CFR 178. Hazardous waste generated within the confines of Government facilities will be identified as being generated by the Government.

Prior to removal of any hazardous waste from Government property, all hazardous waste manifests must be signed by activity personnel from the Station Environmental Office. No hazardous waste will be brought onto Government property. Provide to the Contracting Officer a copy of waste determination documentation for any solid waste streams that have any potential to be hazardous waste or contain any chemical constituents listed in 40 CFR 372-SUBPART D. For hazardous wastes spills, verbally notify the Contracting Officer immediately.

3.13.2.1 Regulated Waste Storage/Satellite Accumulation/90 Day Storage Areas

If the work requires the temporary storage/collection of regulated or hazardous wastes, the Contractor will request the establishment of a Regulated Waste Storage Area, a Satellite Accumulation Area, or a 90 Day Storage Area at the point of generation. The Contractor must submit a request in writing to the Contracting Officer providing the following information:

<u>Contract Number</u>	_____	<u>Contractor</u>	_____
<u>Haz/Waste or Regulated Waste POC</u>	_____	<u>Phone Number</u>	_____
<u>Type of Waste</u>	_____	<u>Source of Waste</u>	_____
<u>Emergency POC</u>	_____	<u>Phone Number</u>	_____

Location of the Site: \_\_\_\_\_  
(Attach Site Plan to the Request)

Attach a waste determination form. Allow ten working days for processing this request. The designated area where waste is being stored shall be

barricaded and a sign identifying as follows: "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT"

[3.13.2.2 Sampling and Analysis of HW

a. Waste Sampling

Sample waste in accordance with EPA 530/F-93/004. Each sampled drum or container will be clearly marked with the Contractor's identification number and cross referenced to the chemical analysis performed.

b. Laboratory Analysis

Follow the analytical procedure and methods in accordance with the 40 CFR 261. The Contractor will provide all analytical results and reports performed to the Contracting Officer

c. Analysis Type

Identify waste hazardous material/hazardous waste by analyzing for the following properties as a minimum: ignitability, corrosiveness, total chlorides, BTU value, PCBs, TCLP for heavy metals, and cyanide.

][3.13.2.3 Asbestos Certification

Items, components, or materials disturbed by or included in work under this contract do involve asbestos. Other materials in the general area around where work will be performed may contain asbestos. All thermal insulation, in all work areas, should be considered to be asbestos unless positively identified by conspicuous tags or previous laboratory analysis certifying them as asbestos free.

Inadvertent discovery of non-disclosed asbestos that will result in an abatement action requires a change in scope before proceeding. Upon discovery of asbestos containing material not identified in the contract documents, the Contractor shall immediately stop all work that would generate further damage to the material, evacuate the asbestos exposed area, and notify the Contracting Officer for resolution of the situation prior to resuming normal work activities in the affected area.

The Contractor will not remove or perform work on any asbestos containing materials without the prior approval of the Contracting Officer. The Contractor will not engage in any activity, which would remove or damage such materials or cause the generation of fibers from such materials.

Asbestos containing waste shall be managed and disposed of in accordance with applicable environmental law. Asbestos containing waste shall be manifested and the manifest provided to the Contracting Officer.

3.13.2.4 Hazardous Waste Disposal

No hazardous, toxic, or universal waste shall be disposed or hazardous material abandoned on government property. And unless otherwise otherwise noted in this contract, the government is not responsible for disposal of Contractor generated waste material.

The disposal of incidental materials used to accomplish the work including, but not limited to aerosol cans, waste paint, cleaning solvents,

contaminated brushes, rags, clothing, etc. are the responsibility of the Contractor. The list is illustrative rather than inclusive.

The Contractor is not authorized to discharge any materials to sanitary sewer, storm drain, or water way or conduct waste treatment or disposal on government property without written approval of the Contracting Officer.

Control of stored waste, packaging, sampling, analysis, and disposal will be determined by the details in the contract. The requirements for jobs in the following paragraphs will be used as the guidelines for disposal of any hazardous waste generated.

a. Responsibilities for Contractor's Disposal

Contractor responsibilities include any generation of WHM/HW requiring Contractor disposal of solid waste or liquid.

(1) The Contractor agrees to provide all service necessary for the final treatment/disposal of the hazardous material/waste in accordance with all local, State and Federal laws and regulations, and the terms and conditions of the contract within sixty (60) days after the materials have been generated. These services will include all necessary personnel, labor, transportation, packaging, detailed analysis (if required for disposal, and/or transportation, including manifesting or completing waste profile sheets, equipment, and the compilation of all documentation is required).

(2) Contain all waste in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, 40 CFR 268, 40 CFR 270, 40 CFR 272, 40 CFR 273, 40 CFR 279, 40 CFR 280, and 40 CFR 761.

(3) Obtaining a representative sample of the material generated for each job done to provide waste stream determination.

(4) Analyzing for each sample taken and providing analytical results to the Contracting Officer. Provide two copies of the results.

(5) Determine the DOT proper shipping names for all waste (each container requiring disposal) and will demonstrate how this determination is developed and supported by the sampling and analysis requirements contained herein to the Contracting Officer.

Contractor Disposal Turn-In Requirements

For any waste hazardous materials or hazardous waste generated which requires the Contractor to dispose of, the following conditions must be complied with in order to be acceptable for disposal:

(1) Drums compatible with waste contents and drums meet DOT requirements for 49 CFR 173 for transportation of materials.

(2) Drums banded to wooden pallets. No more than three (3) 55 gallon drums to a pallet, or two (2) 85 gallon over packs.

(3) Band using 1-1/4 inch minimum band on upper third of drum.

(4) Recovery materials label located in middle of drum, filled out to indicate actual volume of material, name of material manufacturer, other vendor information as available.

(5) Always have three to five inches of empty space above volume of material. This space is called 'outage'.

#### 13.13.3 Class I [and II] ODS Prohibition

Class I and II ODS as defined and identified herein will not be used in the performance of this contract, nor be provided as part of the equipment. This prohibition will be considered to prevail over any other provision, specification, drawing, or referenced documents. Regulations related to the protection of stratosphere ozone may be found in 40 CFR 82.

#### 3.13.4 Universal Waste/e-Waste Management

Universal waste including but not limited to some mercury containing building products such as florescent lamps, mercury vapor lamps, high pressure sodium lamps, CRTs, batteries, aerosol paint containers, electrical equipment containing PCBs, and consumed electronic devices, shall be managed in accordance with applicable environmental law and installation instructions.

#### 3.14 DUST CONTROL

Keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing will be permitted only for cleaning nonparticulate debris such as steel reinforcing bars. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not unnecessarily shake bags of cement, concrete mortar, or plaster.

##### 3.14.1 Dirt and Dust Control Plan

Submit truck and material haul routes along with a plan for controlling dirt, debris, and dust on base roadways. As a minimum, identify in the plan the subcontractor and equipment for cleaning along the haul route and measures to reduce dirt, dust, and debris from roadways.

#### 3.15 ABRASIVE BLASTING

##### 3.15.1 Blasting Operations

The use of silica sand is prohibited in sandblasting.

Provide tarpaulin drop cloths and windscreens to enclose abrasive blasting operations to confine and collect dust, abrasive, agent, paint chips, and other debris in accordance with the requirements specified. Perform work involving removal of hazardous material in accordance with 29 CFR 1910.

##### 3.15.2 Disposal Requirements

Submit analytical results of the debris generated from abrasive blasting operations per paragraph entitled Laboratory Analysis of this section. Hazardous waste generated from blasting operations will be managed in accordance with paragraph entitled "Hazardous Waste\Debris Management" of this section and with the approved HWMP. Disposal of non-hazardous abrasive blasting debris will be in accordance with paragraph entitled, "Control and Disposal of Solid Wastes".

3.16 NOISE

Make the maximum use of low-noise emission products, as certified by the EPA. Blasting or use of explosives will not be permitted without written permission from the Contracting Officer, and then only during the designated times.

3.17 MERCURY MATERIALS

Mercury is prohibited in the construction of this facility, unless specified otherwise, and with the exception of mercury vapor lamps and fluorescent lamps. Dumping of mercury-containing materials and devices such as mercury vapor lamps, fluorescent lamps, and mercury switches, in rubbish containers is prohibited. Remove without breaking, pack to prevent breakage, and transport out of the activity in an unbroken condition for disposal as directed. Immediately report to the Environmental Office and the Contracting Officer instances of breakage or mercury spillage. Clean mercury spill area to the satisfaction of the Contracting Officer.

Cleanup of a mercury spill shall not be recycled and shall be managed as a hazardous waste for disposal.

-- End of Section --

SECTION 01 74 19.05 20

DEMOLITION WASTE MANAGEMENT FOR DESIGN-BUILD  
07/06

PART 1 GENERAL

1.1 GOVERNMENT POLICY

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

1.2 PLAN

A waste management plan shall be submitted within 15 days after contract award and prior to initiating any site preparation work. The plan shall include the following:

- a. Name of individuals on the Contractor's staff responsible for waste prevention and management.
- b. Actions that will be taken to reduce solid waste generation.
- c. Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas and equipment to be used for processing, sorting, and temporary storage of wastes.
- d. Characterization, including estimated types and quantities, of the waste to be generated.
- e. Name of landfill and/or incinerator to be used and the estimated costs for use, assuming that there would be no salvage or recycling on the project.
- f. Identification of local and regional reuse programs, including non-profit organizations such as schools, local housing agencies, and organizations that accept used materials such as materials exchange networks and Habitat for Humanity.
- g. List of specific waste materials that will be salvaged for resale, salvaged and reused, or recycled. Recycling facilities that will be used shall be identified.
- h. Identification of materials that cannot be recycled/reused with an explanation or justification.
- i. Anticipated net cost savings determined by subtracting Contractor program management costs and the cost of disposal from the revenue generated by sale of the materials and the incineration and/or landfill cost avoidance.

1.3 RECORDS

Records shall be maintained to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. The records shall be made available to the Contracting Officer during construction, and a copy of the records shall be delivered to the Contracting Officer upon completion of the construction.

1.4 DISPOSAL

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

1.4.1 Reuse.

First consideration shall be given to salvage for reuse since little or no re-processing is necessary for this method, and less pollution is created when items are reused in their original form. Sale or donation of waste suitable for reuse shall be considered. Salvaged materials, other than those specified in other sections to be salvaged and reinstalled, shall not be used in this project.

1.4.2 Recycle.

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

1.4.3 Waste.

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

-- End of Section --



## Part 3 – Project Program

### Demolish Multiple Buildings, Part 1 JL7CK

### U.S. Naval Academy & Naval Support Activity Annapolis

Annapolis, Maryland

Date: January 5, 2009

#### Table of Contents

---

1. Project Description
2. Project Objectives
  - 2.1 Mission Statement
  - 2.2 Facility Function
  - 2.3 Project Specific Priorities
  - 2.4 Appropriate Design
  - 2.5 Workflow Process
    - 2.5.1 Hours of Operation
    - 2.5.2 Staffing / Occupancy
  - 2.6 Special Design Challenges
    - 2.6.1 Renovation and Demolition Sequencing Plan
    - 2.6.2 Stormwater Management Plan
  - 2.7 Adaptability and Flexibility
3. Site Analysis
  - 3.1 Existing Site Conditions
    - 3.1.1 Natural and Manmade Constraints
      - 3.1.1.1 Site Descriptions
      - 3.1.1.2 Site Utilities
      - 3.1.1.3 Hazardous Material
  - 3.2 Site Development Requirements
    - 3.2.1 Pedestrian Access and Circulation
    - 3.2.2 UFAS / ADA
    - 3.2.3 AT / FP
    - 3.2.4 Landscaping
    - 3.2.5 Signage
    - 3.2.6 Site Utilities
    - 3.2.7 Sustainable Development
    - 3.2.8 Temporary Facilities and Controls and Environmental Controls
4. Building Requirements
  - 4.1 Space Tabulation
  - 4.2 Space Relationships
  - 4.3 Exterior Character
5. Room Requirements
6. Engineering Systems Requirements



## Part 3 – Project Program

### Demolish Multiple Buildings, Part 1 JL7CK

### U.S. Naval Academy & Naval Support Activity Annapolis

Annapolis, Maryland

Date: January 5, 2009

#### Table of Contents

---

F20	Selective Building Demolition
G10	SITE PREPARATION
G20	Site Improvements
G40	Site Electrical Utilities



# Project Program

**Demolish Multiple Buildings, Part 1**

**JL7CK**

**DE-002-08**

**FY08**

**Category Code: Varies**

**U.S. Naval Academy & Naval Station  
Annapolis, Maryland**

**28 January 2009**

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

## 1. PROJECT DESCRIPTION

The purpose of this project is to demolish various buildings located on the grounds of the United States Naval Academy (A) and Naval Station, Annapolis (S) (each facility will be a separate bid option item) as follows:

- Building NA273 (S) Battery Switchgear @NA60
- Building NA60 (S) Former CBU 403
- Building NA68 (S) Helix House
- Building NA69 (S) Helix House
- Building NA7 (S) Battery House Rear of NA5
- **Building NA 128 (S) Midshipman Warehouse**
- Building NA 5 (S) SPAWARS PW Storage

Prior to the demolition of the structures listed above, any and all hazardous material located within is to be identified, removed and safely disposed of according to applicable regulations and disconnect all utilities from the source for each building. The contractor will be responsible for the HAZMAT removal of all buildings.

The following buildings require additional work to replace necessary Medium Voltage Electrical Utility equipment or special care to isolate the Medium Voltage electrical Utility equipment during and after the demolition of the Facilities:

Building NA 128 (S) Midshipman Warehouse: SW-128 is part of the Greenbury point Medium Voltage Electrical Distribution System. It must be isolated from the Demo, made secure and protected from the environment.

Building NA60 (S) Former CBU 403: The Greenbury Point Fire Protection System electrical power circuit must be isolated from the Demo and made operational prior to the demo. This requires replacement of conduits, cables and Transformers.

Building NA273 (S) Battery Switchgear @NA60: Power to the Greenbury Point Fire Protection System circuit is supplied from this facility. It can not be demolished until the Fire Protection System is replaced.

Building NA 5 (S) SPAWARS PW Storage: SW-118 is located in the rear of NA5. SW-118 must be replaced prior to demo of facility.  
Building NA7 (S) Battery House Rear of NA5: This facility maintains DC power to SW-118 and can not be demolished prior to the replacement of SW-118.

## 2. PROJECT OBJECTIVES

### 2.1 Mission Statement

The United States Naval Academy's mission is to develop midshipmen morally, mentally and physically and to imbue them with the highest ideals of duty, honor and loyalty in order to provide graduates who are dedicated to a career of naval service and have potential for future development in mind and character to assume the highest responsibilities of command, citizenship and government.

The primary mission of Naval Support Activity Annapolis is to provide general support for midshipmen enrolled at the U.S. Naval Academy including: underway seamanship and sail training, small arms weapons familiarization and navigation and engineering professional development. To assist in the

accomplishment this mission, the command maintains a fleet of over 250 Yard Patrol and sail craft, operates an Industrial Repair Department consisting of electronics, hull, sail loft, carpentry shop, and rigging divisions, employs divers who ensure the underwater integrity of all operations, and provides more than 90 points of various competitive, combat, and general use pistol and rifle ranges.

## 2.2 Facility Function

The buildings to be demolished are described as follows:

- Building NA273 (S):
  - Function: Battery Switchgear @NA60
  - Construction: Metal
  - Status: Part of the Greenbury Point Fire Protection System
  
- Building NA60, NA68, and NA69 (S) Former CBU 403
  - Function: two story brick building built in 1941 as part of the transmitter facility
  - Construction: two story brick
  - Status: Part of the Greenbury Point Fire Protection System.
  
- Building NA7 (S) Battery House Rear of NA5
  - Function: Battery House Rear of NA5

- Construction: single story, no basement, brick building with vent and access door, flat roof, houses electrical.  
Status: Required for operation of SW-118

- Building NA 128 (S)
  - Function: Midshipman Warehouse
  - Construction: Midshipmen Warehouse is a 25,397 SF two story concrete building built in 1954
  - Status: In use and physically connected to the Greenbury Point Electrical Utility System - SW-124.
  
- Building NA 5 (S) :
  - Function: SPAWARS PW Storage  
Construction: 8,700 SF single story brick building that was built in 1918. It was originally constructed as a transmitter facility
  
  - Status: Physically connected to the Greenbury Point Electrical Utility System - SW-118

## 2.3 Project Specific Priorities

The demolition of structures and all associated work shall be executed safely, in compliance with all applicable codes, standards and regulations and with as little disruption as possible to the normal functioning of the Academy and the Naval Station.

### 2.3.1 Sustainable Design

Contractor shall recycle all demolished materials to the greatest extent possible,

## 2.4 Special Design Challenges

### 2.4.1 Demolition Sequencing Plan

In addition to all other required submittals and prior to commencing any demolition activities, the successful offeror shall submit for review and approval a plan detailing the phasing and sequencing of the demolition activities. The plan shall include sufficient details of and allowances for activities as follows:

- Installation of the proper sediment and Erosion Control parameters.
- Transportation, installation and verification of fully operational status of all mission critical equipment and materials to be relocated from temporary accommodations and structures to be demolished.
- Demolition and removal of indicated structures and the removal from service and permanent securing of all necessary utilities.
- 

### 2.4.2 Stormwater Management Plan

In addition to all other required submittals and prior to commencing any demolition activities, the successful offeror shall begin the process of obtaining a Memorandum of Understanding (MOU) from the Maryland Department of the Environment (MDE) concerning stormwater management credits. The purpose of the MOU is to initiate a process in which the Government may receive credit from MDE in regard to stormwater management treatment requirements incurred during the course of other future construction projects. A result of this project will be to reduce the net impervious area on the Academy and Naval Support Activity grounds. The Government seeks to receive consideration from MDE, under pre-negotiated rates and terms, for the net reduction in imperviousness resulting from this

project such that credit may be used to offset some or all of the stormwater management treatment requirements incurred by other future construction projects which result in a net increase in imperviousness on the Academy and Naval Support Activity grounds.

## 3.1 Existing Site Conditions

### 3.1.1 Site Descriptions

Each separate structure to be demolished is located in and surrounded by developed areas. The structures are shown in photographs, plan view and general location on the plans and documents included as attachments in Part 6 of this document. Each separate site is described as follows:

**Building NA5 NRTF Helix Building:** Demolish NA5 structure, foundation and supporting infrastructure to reduce footprint and restore site. Demolition of NA5 will reduce existing footprint by 16,000 SF of structure and 40,000 SF of asphalt, site improvement and supporting structures, totaling 56,000 SF of footprint reduction. Demolish entire structure and remove complete foundation. SW-118 must be replaced and fully operational prior to demolition of NA5.

**Building NA60, NA68, & NA 69 – Former CBU 403:** Demolish NA60 structure, foundation and supporting infrastructure to reduce footprint and restore site. Demolition of NA60 will reduce existing footprint by 32,770 SF of structure, and 70,000 SF of asphalt, site improvement and supporting structures, totaling 102,770 SF of footprint reduction. Building NA60 were built in 1941 and improved in 1972. NA68 and NA69 were built at the same time for support structures. Demolish entire structure and remove complete foundation. The electrical circuit for the Greenbury

Point Fire Protection System must be replaced and the system must be operational prior to demo of NA60.

**Building NA 128:** NA128 Midshipmen Warehouse is a 25,397 SF two story concrete building built in 1954.

**Building NA 273:** Building 273 is a steel container used for Switchgear, area of 273 is 361 SF. Demolish entire structure and remove complete foundation. The switch in NA273 is part of the electrical circuit for the Greenbury Point Fire Protection System and must be replaced and the system must be operational prior to demo of NA60.

**Building NA 7:** NA7 is a 160 SF single story brick building located adjacent to NA5 built in 1918 as a helix support structure. Demolish entire structure and remove complete foundation. NA7 maintains DC power for SW-118 and must not be demolished until SW-118 is replaced and operational.

#### 3.1.1.2 Site Utilities

Known site utilities are shown in the site drawings included in Part 6 of this RFP. These utilities include, but are not limited to, Storm Drainage, Sanitary Sewer, Domestic Water, Electrical, Telephone and Natural Gas.

#### 3.1.1.3 Hazardous Material

Remove and properly dispose of all hazardous materials. Refer to the hazardous material survey report in Part 6 of this RFP for a full description of hazardous materials and recommendations for removal and disposal of same. Representative lists of all Asbestos Containing Materials and Lead Painted Surfaces identified in the subject buildings are as follows:

**Building NA5 NRTF Helix Building:**

See part 6 for details.

**Building NA60, NA68, & NA 69 –**

One (1000 gallon) Aboveground Fuel Tank and two (500 gallons) tanks to be removed. One 8000 gallon Underground Tank to be removed.

No data is available – Hazardous Material survey is required.

**Building NA 128:**

No data is available on NA128-Hazardous Material survey is required.

**Building NA 273:**

No data is available – Hazardous Material survey is required.

**Building NA 7:**

No data is available – Hazardous Material survey is required.

**3.2 Site Demolition Requirements**

**3.2.1 Site Demolition Limits**

Demolish each separate structure as follows:

**Building NA5 NRTF Helix Building:** Demolish NA5 structure, foundation and supporting infrastructure to reduce footprint and restore site. Demolition of NA5 will reduce existing footprint by 16,000 SF of structure and 40,000 SF of asphalt, site improvement and supporting structures, totaling 56,000 SF of footprint reduction.

**Building NA60, NA68, & NA 69 – Former CBU 403:** Demolish NA60 structure, foundation and supporting infrastructure to reduce footprint and restore site. Demolition of NA60 will reduce existing footprint by 32,770 SF of structure, and 70,000 SF of asphalt, site improvement and supporting structures, totaling 102,770 SF of footprint reduction. Building NA60 were built in 1941 and improved in 1972. NA68 and NA69 were built at the same time for support structures. Demolish entire structure and remove complete foundation.

**Building NA 128:** NA128 Midshipmen Warehouse is a 25,397 SF two story concrete building built in 1954.

**Building NA 273:** Building 273 is a steel container used for Switchgear, area of 273 is 361 SF. Demolish entire structure and remove complete foundation.

**Building NA 7:** NA7 is a 160 SF single story brick building located adjacent to NA5 built in 1918 as a helix support structure. Demolish entire structure and remove complete foundation.

### **3.2.2 Site Restoration and Permanent Stabilization**

Perform site restoration and permanent stabilization as required for each separate structure to be demolished as follows:

Provide permanent seed or sod with grass type matching or compatible with adjacent areas. Provide grading complimentary to and in conformity with the surface drainage patterns of adjacent areas. Provide grading such that positive surface drainage through and/or away from the site shall be maintained in a non-erosive and stable condition.

For Building 99RL: Provide grading complimentary to and in conformity with the surface drainage patterns of adjacent areas. Provide new asphalt paving of appropriate strength over disturbed areas as necessary to match surrounding paving in line and grade. Provide new replacement fence of same type and functional characteristics as adjacent to maintain existing fence line.

### **3.2.3 Site Utilities**

All utilities as listed are according to available records; descriptions may not be fully representative of current field conditions. The contractor shall locate, terminate, and render safe all utility services associated with the structures to be demolished. In addition, the contractor shall repair any utility damaged during or as a result of demolition and/or construction activities.

- Existing utilities located at this structures consist of water, electricity, communications, sanitary sewer, steam and storm drain.

### **3.2.4 Demolition Related Permits**

Identifying and obtain all necessary demolition related permits including but not necessarily limited to the following:

- Naval Academy Digging Permit.
- Sediment and Erosion Control from MDE

## **3.3 Site Development Requirements**

### **3.3.1 Pedestrian Access and Circulation**

Identify and provide new and replacement pedestrian access and circulation on the site as necessary and as required by the facility function. All site improvements shall be in conformance with AT/FP requirements and Station standards.

### **3.3.2 UFAS/ADA**

N/A

### **3.3.3 AT/FP**

Ensure that all design and construction is in conformance with AT/FP requirements including as described in UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings. The contractor's AT/FP conformance analysis shall be conducted assuming that the Station is to have a secured perimeter. It is anticipated that at the time of commencement of demolition activities associated with this contract a secured perimeter will have been instated on Station grounds.

### **3.3.4 Landscaping**

Provide new landscaping as necessary and as replacement for any existing landscaping to remain that is damaged during the demolition process. All new landscaping shall be in conformance with Naval Support Activities standards and in compliance with AT/FP requirements.

### **3.3.5 Signage**

Identify and provide new and replacement site and building signage as necessary and as required by the facility

function. All signage shall be in conformance with AT/FP requirements and Naval Support Activities standards.

### **3.3.6 Fencing**

Identify and provide approved fencing of the type and with the functional characteristics to match existing adjacent and as required to maintain the continuity of existing security and aesthetic fencing. All fencing shall be in conformance with AT/FP requirements and Station standards.

### **3.3.7 Site Utilities**

All utilities as listed are according to available records; descriptions may not be fully representative of current field conditions. The contractor shall locate all utility services in proximity to the structures to be renovated. In addition, the contractor shall repair any utility damaged during or as a result of demolition activities.

### **3.3.8 Site Drainage and Stormwater Runoff**

Identify and provide new and replacement site drainage systems. All site drainage shall properly augment the existing drainage systems in order to promote positive drainage away from improvements. All drainage is to be in conformance with AT/FP requirements and Station standards.

### **3.3.9 Sustainable Development**

Participation in the LEED program is not a requirement for this project; however, incorporation of sustainable design principles is encouraged.

### **3.3.10 Environmental Assessment**

An Environmental Assessment has not been conducted as a part of the development of this RFP. Data is not available on some of the structure, therefore Hazardous Material Survey is required.

### **3.3.12 Development Related Permits**

Identify and obtain all necessary development related permits including but not necessarily limited to the following:

- Naval Academy Digging Permit.
- Maryland Department of the Environment, Erosion & Sediment Control and Stormwater Management

## **3.4 Selective Demolition Requirements**

### **3.4.1 Selective Demolition Limits**

N/A

### **3.4.2 Site Restoration and Permanent Stabilization**

Perform all necessary site restoration required to restore facilities damaged during demolition and/or construction activities. Site restoration shall be to conditions equivalent to

or better than those prior to the start of activities associated with this contract. All disturbed areas shall be permanently stabilized according to approved methods and as indicated.

### **3.4.3 Building Utilities**

See Part 6 for details

### **3.4.4 Demolition Related Permits**

Identify and obtain all necessary selective demolition related permits including but not necessarily limited to the following:

- Naval Academy Digging Permit.
- Maryland Department of the Environment, Erosion & Sediment Control and Stormwater Management

**3.4.5 UFAS / ADA** - Project shall be designed in accordance with all UFAS / ADA requirements.

**3.4.6 Post Demolition Surveying:** Provide post demolition topographic survey with 1' interval in accordance with the Naval Academy Datum . Topographic maps shall be in ACAD format 2008 or later and two hard copies. Maps shall show the capped utilities locations. Provide new control points to replace the one removed during demolition.

## 6. ENGINEERING SYSTEMS REQUIREMENTS

### F20 SELECTIVE BUILDING DEMOLITION

#### GENERAL SYSTEMS REQUIREMENTS

Perform all off-site work necessary to meet the requirements of the project, local codes, reference standards, technical specifications and performance criteria.

Identify and obtain all permits to comply with all federal, state, and local regulatory requirements associated with this work. The contractor shall submit complete the "Permits Record of Decision" (PROD) form with the first design submittal package. A blank PROD form is in the UFC 3-200-10N, *Civil Engineering*. Contractor shall determine correct permit fees and pay said fees. Copies of all permits, permit applications, and the completed PROD form shall be forwarded to the EFD Environmental Reviewer.

Coordinate and obtain approval from the Contracting Officer for proposed haul route(s), work site access point(s), employee parking location(s) and material laydown and storage area(s).

#### F2010 BUILDING ELEMENTS DEMOLITION

This project includes the complete demolition and removal of the following Buildings :

BLDG #	NAME	Square Foot
NA128	Midshipmen Warehouse	25,397SF
NA273	Battery Switchgear @ NA60	361 SF
NA5	SPAWARS PW Storage	15,680 SF
NA60	Former CBU 403	32,770 SF
NA68	Helix House	748 SF
NA69	Helix House	660 SF
NA7	Battery Hse Rear of NA5	160 SF

#### F2010 1.1 GENERAL DEMOLITION

Remove indicated existing structure with foundations and parking lot if exist.

#### F2010 1.2 UTILITIES

Utility demolition and removal from the building to the main and must be coordinated with on-site personnel for planned outages. All Utilities will be marked and the government shall approve all work prior to start. The Government will require a two week notice for the electrical outage. The Government will require a two week notice to disconnect the building electrical equipment prior to Demo. Extreme Care will be taken to not disturb the Medium Voltage equipment or circuits.

#### F2010 1.3 DUST CONTROL

Prevent the spread of dust and debris and avoid the creation of a nuisance or hazard in the surrounding area.

#### F2010 1.4 TRAFFIC CONTROL

## **F2010 1.5 WEATHER PROTECTION**

N/A

## **F2010 1.6 BURNING**

Burning will not be permitted.

## **F201001 SUBSTRUCTURE & SUPERSTRUCTURE**

**Building NA5 NRTF Helix Building:** Demolish NA5 structure, foundation and supporting infrastructure to reduce footprint and restore site. Demolition of NA5 will reduce existing footprint by 16,000 SF of structure and 40,000 SF of asphalt, site improvement and supporting structures, totaling 56,000 SF of footprint reduction. Demolish entire structure and remove complete foundation. SW-118 shall be replaced. The Government and Contractor shall determine a new site depending upon location and cost. The location shall be approved by the Contracting Officer. All Utilities will be marked and the government shall approve all work prior to start. The Government will require a two week notice for the electrical outage. The Government will require a two week notice to disconnect electrical equipment prior to Demo. All work shall be completed to work to Demo NA5 and NA7 starts. The new SW-118 shall be energized, tested and operated at least 24 hours prior to Demo start.

- **Building NA60, NA68, & NA 69 – Former CBU 403:** Demolish NA60 structure, foundation and supporting infrastructure to reduce footprint and restore site. Demolition of NA60 will reduce existing footprint by 32,770 SF of structure, and 70,000 SF of asphalt, site improvement and supporting structures, totaling 102,770 SF of footprint reduction. Building NA60 were built in 1941 and improved in 1972. NA68 and NA69 were built at the same time for support structures. Demolish entire structure and remove complete

foundation. The circuits necessary to power the Fire Protection System shall be replaced. It shall be necessary to power the Fire Protection at all times. New underground concrete-encased conduits and cables shall be installed from SW-50 to new transformers located near the Fire Protection System. The Transformers shall be sized similar to the existing transformers and shall meet all load requirements. It is recommended that the conduits, pads and transformers be built and installed prior to any demolition in the area. The new transformers shall be energized, tested and operated at least 24 hours prior to Demo start

- **Building NA 128:** NA128 Midshipmen Warehouse is a 25,397 SF two story concrete building built in 1954. NA134 is an abandoned gate house at the driveway entrance to NA128. It was also built in 1954 of concrete. All Utilities will be marked and the government shall approve all work prior to start. The Government will require a two week notice for the electrical outage. The Government will require a two week notice to disconnect the building electrical equipment prior to Demo. Extreme Care will be taken to not disturb the Medium Voltage equipment or circuits. The contractor shall enclose the Medium Voltage equipment while meeting all NEC and UFC requirements. The contractor shall enclose the equipment in order to enhance the equipments ability to operate in foul weather. Emergency generators, sized for the designated locations shall be either on site or immediately available (within two hours) at the designated locations.
- **Building NA 273:** Building 273 is a steel container used for Switchgear, area of 273 is 361 SF. Demolish entire structure and remove complete foundation. The switch in NA273 is part of the electrical circuit for the Greenbury Point Fire Protection

System and must be replaced and the system must be operational prior to demo of NA60.

- **Building NA 7:** NA7 is a 160 SF single story brick building located adjacent to NA5 built in 1918 as a helix support structure. Demolish entire structure and remove complete foundation. NA7 maintains DC power for SW-118 and must not be demolished until SW-118 is replaced and operational.

### **F201006 MECHANICAL SYSTEMS**

Demolish all plumbing and drainage components within the demolition activities area to the systems main. Demolish existing steam heat radiators and cap off at main. Demolition shall include risers and existing radiators. Demolish all HVAC and related ducting system.

### **F201007 ELECTRICAL SYSTEMS**

All internal building electrical systems shall be demolished. All connections to the Electrical Utility System shall be disconnected and tagged out of service by the Government or their representative. A two week notice is required for disconnection. All Medium Voltage Utility Circuits shall be maintained. Electrical equipment to be replaced has been identified. Extreme Care will be taken to not disturb the Medium Voltage equipment or circuits.

### **F201008 EQUIPMENT & FURNISHINGS**

All equipments and furnishings systems shall be demolished.

### **F2020 HAZARDOUS COMPONENT ABATEMENT**

A reports for each of the following: asbestos, and/or lead based paint are provided to support this project. However, these materials were used in the construction and maintenance of this facility in the past. Design investigations shall determine the presence of these materials, or other known hazards, as much as reasonably possible. In the event these materials are discovered and must be dealt with as part of this project the contractor shall provide the requested optional pricing quotes.

If encountered perform asbestos related work in accordance with:  
All Federal, State and local regulations.  
Contracting Officer direction.

If encountered perform lead based paint related work in accordance with:  
All Federal, State and local regulations  
Contracting Officer direction.

### **F2020 1.3 ASBESTOS**

Remove and dispose of the following asbestos-containing materials.

Perform asbestos work in accordance with AHERA regulations.

### **F2020 1.4 LEAD BASED PAINT**

See lead based paint, see the lead based paint report in Part 6 of the RFP.

### **F2020 1.5 PAINT RELATED WORK**

For more detailed information regarding concentrations and locations of existing paints, see the paint report in Part 6 of the RFP.

### **F2020 1.11 DISPOSAL**

Demolish Multiple Buildings, Part 1  
U.S. Naval Academy & Naval Support Activity Annapolis, Maryland

JL7CK

All waste materials shall become the property of the Contractor and shall be transported, disposed of and recycled in accordance with:

All applicable Federal, State and Local regulations. Documentation (such as but not limited to manifests) recording the disposal or recycling of various materials may be requested by the Government, and the contractor shall provide this information within 14 calendar days.

--End of Section--

## 6. ENGINEERING SYSTEMS REQUIREMENTS

### G10 SITE PREPARATION

#### SYSTEM DESCRIPTION

The site preparation system consists of site clearing, demolition, salvage, relocation, earthwork, and hazardous waste remediation necessary to ready the site for other work associated with the project.

#### GENERAL SYSTEM REQUIREMENTS

Develop the project site and perform all off-site work necessary to meet the requirements of the project, antiterrorism criteria, local codes, reference standards, technical specifications and performance criteria.

A topographic survey of the existing site has not been performed. Previous site plans of the existing site are being provided to the contractor in lieu of a topographic survey. Prior to starting work, physically verify the location of all existing utilities and obtain all additional survey data required to provide a quality final design.

Minimize the impact of construction activity on operations and neighboring facilities.

Identify and obtain all permits to comply with all federal, state, and local regulatory requirements associated with this work. The contractor shall submit a complete "Permits Record of Decision" (PROD) form with the first design submittal package. A blank PROD form can be obtained at the Download Tab of Part 6 of the NAVFAC Design-Build website at the following link

<http://www.wbdg.org/ndbm/Download/Download.html?Tab=Download>.

Contractor shall determine correct permit fees and pay said fees. Copies of all permits, permit applications, and the completed PROD form shall be

forwarded to the Government's Civil Reviewer and Environmental Reviewer.

Jurisdictional tidal and non-tidal wetlands have been identified on the project site. All tidal and non-tidal wetlands work shall be performed in accordance with the permits obtained as required by UFC 3-200-10N, *Civil Engineering*. Coordinate and obtain the Project Management Engineering Branch (PMEB) Project Manager approval for proposed haul route(s), work site access point(s), employee parking location(s) and material laydown and storage area(s).

Refer to Site Analysis and Building Requirements Sections for additional site preparation functional program information.

#### G1010 SITE CLEARING

#### G101002 TREE REMOVAL

Not used

#### G101003 STUMP REMOVAL

Not used

#### G101006 DEBRIS DISPOSAL

All grubbing and clearing residue, demolished material, rubbish and debris generated by this project shall be disposed of in the Activity's sanitary landfill according to its requirements and regulations hauled off-site and off station by the Contractor.

#### G1020 SITE DEMOLITION & RELOCATIONS

The items to be salvaged include pumps, meters, valves, fence, and any other items. .

**G102001 BUILDING MASS DEMOLITION**

Demolish the existing buildings. Refer to Section F2020, "Hazardous Component Abatement" for requirements regarding removal of hazardous components.

**G102002 ABOVEGROUND SITE DEMOLITION**

**1.1 ABOVEGROUND STORAGE TANKS**

An aboveground storage tank report is located at building NA51, NA71, and NA72 has 1000 gallon aboveground tank. Building NA 60 has two (500) gallon and one (1000) gallon aboveground tanks

Prior to starting work, conduct any additional testing that may be needed to provided a final design and comply with all applicable federal, regional, state and local regulations. Refer to 3-800-10N, *Environmental Engineering for Facility Construction*, for additional requirements and criteria.

**G102003 UNDERGROUND SITE DEMOLITION**

Preserve the following underground site elements:

Abandonment of utility systems shall be done in a manner that conforms to applicable codes and regulations, removes their presence from the ground surface and clearly indicates that they have been abandoned. Utilities shall not be abandoned in place underneath or within 10 feet of any new facilities.

All conduits to be abandoned shall have wiring removed. All piping to be abandoned shall be removed. Remove existing utility structures to 3 feet (900 mm) below existing or new adjacent grade, whichever is greater. Break up bases to permit drainage. Fill with clean sand.

**G102003 1.1 UNDERGROUND STORAGE TANKS**

Not used

**G1030 SITE EARTHWORK**

Excavate, grade to drain, seed the area after removing the demolished facility.

**G103001 GRADING**

Finish site elevations for new facilities shall be above the 100year flood elevation.

**G103003 ROCK EXCAVATION**

Blasting will not be permitted.

**G103004 FILL & BORROW**

Borrow and select fill shall come from off-base sources.

**G1040 HAZARDOUS WASTE REMEDIATION**

**G1040 1.2 STOCKPILED SOILS**

Contractor is responsible for any sampling required by the state.

**G1040 1.3 CLEAN FILL**

Soils that are determined as clean fill via testing shall be backfilled and compacted in accordance with the requirements listed in this section.

**G1040 1.4 SPILLS**

In the event of a spill or release of hazardous substances, pollutant, contaminant or oil, notify the Contracting Officer immediately. Containment/Control actions shall be taken immediately to minimize the effect of any spill or leak. Clean up shall be performed at the Contractor's

Demolish Multiple Buildings, Part 1  
U.S. Naval Academy & Naval Support Activity Annapolis, Maryland

JL7CK

expense in accordance with the United States Naval Academy  
Environmental regulations

### **G1040 1.5 DISPOSAL**

All waste materials shall become the property of the Contractor and  
shall be transported, disposed of or recycled .

--End of Section--

## **6. ENGINEERING SYSTEMS REQUIREMENTS**

### **G20 SITE IMPROVEMENTS**

#### **SYSTEM DESCRIPTION**

The site improvements system consists of pavements and pavement related features, landscaping and other exterior site development work related to this project.

#### **GENERAL SYSTEMS REQUIREMENTS**

Provide site improvements as required to make a useable facility that meets functional and operational requirements, incorporates all applicable anti-terrorism, force protection and physical security requirements and blends into the existing environment.

Provide site improvements in conformance with applicable requirements of the Uniform Federal Accessibility Standards.

Identify and obtain all permits to comply with all federal, state, and local regulatory requirements associated with this work. The contractor shall complete the "Permits Record of Decision" (PROD) form with the first design submittal package. A blank PROD form can be obtained at the Download Tab of Part 6 of the NAVFAC Design-Build website at the following link

<http://www.wbdg.org/ndbm/Download/Download.html?Tab=Download>.

Contractor shall determine correct permit fees and pay said fees. Copies of all permits, permit applications, and the completed PROD form shall be forwarded to the Government's Civil Reviewer.

Provide improvements as required to conform to all applicable anti-terrorism and physical security requirements.

Minimize the impact of construction activity on operations and neighboring facilities.

Refer to Site Analysis and Building Requirements Sections for additional site improvement functional program information.

### **G2050 LANDSCAPING**

Provide complete landscaping consisting of lawn, groundcover, trees, and shrubs.

### **G205001 FINE GRADING AND SOIL PREPARATION**

Grade are to drain after backfilling and compaction.

### **G205002 EROSION CONTROL MEASURES**

Prevent erosion from occurring by providing erosion control measures as required by city, state and federal requirements.

### **G205003 TOPSOIL AND PLANTING BEDS**

See G205005 Plantings.

### **G205004 SEEDING SPRIGGING AND SODDING**

Areas indicated to be turfed in another part of this RFP shall be seeded or sodded.

### **G205005 PLANTINGS**

Preserve existing trees to the greatest extent possible.

--End of Section--

## 6. ENGINEERING SYSTEMS REQUIREMENTS

### G40 SITE ELECTRICAL UTILITIES

#### SYSTEM DESCRIPTION

This section covers new equipment installations and existing utility equipment that is connected to or in direct proximity to facilities that are designated to be demolished. Transformers TS-117 and switch PS-118 shall be replaced. Options to replace the switch at NA128 (PS-128) and a second option to build an underground electrical duct-work, conduit and manholes to run approximately three-thousand feet from a location near NA128 to one by NA74. The ductwork shall be built for two medium voltage feeders and one spare conduit. Manholes shall be placed at each end and placed to allow cable access throughout the run.

#### GENERAL SYSTEM REQUIREMENTS

Provide an Electrical System complete in place, tested and approved, as specified throughout this RFP, as needed for a complete, usable and proper installation. All equipment shall be installed per the criteria of RFP Section G40 and the manufacturer's recommendations. Where the word "should" is used in the manufacturer's recommendations, substitute the word "shall".

### G4010 ELECTRICAL DISTRIBUTION

The existing Electrical Distribution System shall be re-used portions of the system necessary to be moved because of building demo shall be moved and upgraded to new NAVFAC electrical utility requirements. All sections not subject to demo or moving shall be protected and upgraded to NAVFAC electrical utility requirements as necessary.

#### G401001 SUBSTATIONS

Substations identified as to be left in place, shall be upgraded to meet all NAVFAC Utility Substation Requirements.

#### G401002 TRANSFORMERS

Replace the transformers (TS-117) used to provide power to the Greenbury Point Fire Protection System. The Transformers shall be replaced with similar type transformers that meet all NAVFAC electrical utility requirements.

#### G401003 SWITCHES, CONTROLS AND DEVICES

Provide SF6 Insulated Pad Mounted Switchgear to replace Switch PS118. configured to the existing underground distribution system.

#### G401004 OVERHEAD ELECTRIC CONDUCTORS

N/A

#### G401005 TOWERS, POLES, CROSSARMS AND INSULATORS

N/A

#### G401006 UNDERGROUND ELECTRIC CONDUCTORS

Provide a medium voltage and underground electrical power distribution systems to meet the connection requirements as indicated in paragraph G4010 "Electrical Distribution". Provide fused cut-outs on connections to overhead distribution systems.

#### G401007 DUCTBANKS, MANHOLES, HANDHOLES AND RACEWAYS

Provide a system of concrete encased ductbanks, handholes and manholes for all underground power wiring.

#### G401008 GROUNDING SYSTEMS

Provide a complete grounding system for the electrical power distribution system.

**G401009 METERING**

Provide a separate Kilowatt Demand Meter for each Pad Mounted Transformer. Equipment shall have capabilities to connect to the existing system.

Provide each secondary switchgear with a separate digital circuit monitor/analyzer. Equipment shall have capabilities to connect to the existing system.

**G401010 CATHODIC PROTECTION SYSTEMS**

N/A

**G401011 EQUIPMENT REQUIREMENTS FOR COASTAL AND HIGH HUMIDITY AREAS**

Provide exterior equipment designed for coastal and high humidity areas.

**G4020 SITE LIGHTING**

Provide site lighting for distribution, handholes, grounding, poles, fixtures and controls as required for a complete and usable system.

**G402001 EXTERIOR LIGHTING FIXTURES AND CONTROLS**

Provide lighting control for exterior lighting fixtures with individual photocell switches on each luminary as designed requirements dictate

**G402002 SPECIAL SECURITY LIGHTING SYSTEMS**

N/A

**G402003 OTHER AREA LIGHTING**

N/A

**G402004 LIGHTING POLES**

As designed requirements dictate

**G402005 UNDERGROUND ELECTRIC CONDUCTORS**

Provide a complete underground distribution system for all specified site lighting systems.

**G402006 DUCTBANKS, MANHOLES AND HANDHOLES**

Provide a direct buried underground system including conduits and handholes to meet the connection requirements indicated in paragraph G4020 "Site Lighting".

**G402007 GROUNDING SYSTEMS**

Provide a complete grounding system for all site lighting systems.

**G4030 SITE COMMUNICATION AND SECURITY**

N/A

**G4090 OTHER SITE ELECTRICAL UTILITIES**

[Provide other site electrical utility systems consisting of [Solar Systems] [Wind Energy Systems] [Cathodic Protection Systems] [ ] including all conduit and wiring, underground structures, termination equipment, and grounding systems as required for a complete and usable system.]

-- End of Section --



**Part 4 – Performance Specifications**

**Demolish Multiple Buildings, Part 1  
JL7CK**

**U.S. Naval Academy & Naval Support Activity Annapolis**

Annapolis, Maryland

Date: January 27, 2009

Table of Contents

---

Section F20	Selective Building Demolition
SECTION G10	SITE PREPARATION
Section G20	Site Improvements
SECTION G40	SITE ELECTRICAL UTILITIES
SECTION Z10	GENERAL PERFORMANCE TECHNICAL SPECIFICATION

**SECTION F20**  
**BUILDING DEMOLITION**  
**4/08**

**F20 GENERAL**

**F20 1.1 DESIGN GUIDANCE**

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

Industry standards, codes, and government standards that are referenced in the section text that are **not** found in the Unified Master Reference List (UMRL) in the Construction Criteria Base (CCB) at the Whole Building Design Guide Website, are listed below for basic designation identification. Comply with the required and advisory portions of the current edition of the standard at the time of contract award.

**F20 1.1.1 Industry Standards**

Refer to UMRL for reference designation identification.

**F20 1.1.2 Government Standards**

UNIFIED FACILITIES CRITERIA (UFC)

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

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS 01 57 19.00 20, *Temporary Environmental Controls*

UFGS 01 57 19.01 20, *Supplementary Temporary Environmental Controls*

UFGS 02 82 14.00 10, *Asbestos Hazard Control Activities*

UFGS 02 83 19.00 10, *Lead Based Paint Hazard Abatement, Target Housing and Child Occupied Facilities*

**F20 1.2 QUALITY ASSURANCE**

Disposal of materials shall be as specified and performed in a manner to protect workers and existing structures to remain.

**F20 1.3 PERFORMANCE VERIFICATION AND ACCEPTANCE CRITERIA**

Compliance with the requirements will be determined by a review of the design and construction submittals and by field inspection. See UFGS Section 01 33 10.05 20, *Design Submittal Procedures*, and UFGS Section 01 33 00.05 20, *Construction Submittal Procedures*, for additional requirements.

**F20 1.4 DESIGN SUBMITTALS**

Design Submittals shall be in accordance with Z10, *General Performance Technical Specifications*, UFGS section 01 33 10.05 20, *Design Submittal*

*Procedures, UFC 1-300-09N, Design Procedures, and UFC 3-800-10N, Environmental Engineering for Facility Construction.*

**F20 1.5 CONSTRUCTION SUBMITTALS**

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the Z10 requirements and if applicable to this project, the Designer of Record (DOR) shall obtain governing body approval for the construction submittals contained in the following UFGS sections as a minimum:

UFGS 01 57 19.05 20, *Temporary Environmental Controls for Design-Build*

UFGS 01 57 19.01 20, *Supplementary Temporary Environmental Controls*

UFGS 02 82 14.00 10, *Asbestos Hazard Control Activities*

UFGS 02 83 19.00 10, *Lead Based Paint Hazard Abatement, Target Housing and Child Occupied Facilities*

**F2010 BUILDING ELEMENTS DEMOLITION**

All demolition materials and appurtenances shall be properly disposed and in accordance with all applicable regulations. Maximize the use of deconstruction and recycling services. Before demolition can commence, any hazardous materials shall be abated in accordance with the requirements of the ESR and other parts of the RFP. The Contractor shall obtain approval from the Contracting Officer for the proposed demolition plan and work/outage schedule prior to demolition activities.

**F2010 1.1 GENERAL DEMOLITION**

The work includes demolition and removal of resulting rubbish and debris. Rubbish and debris shall be removed from Government property daily, unless otherwise directed. Materials that cannot be removed daily shall be stored in areas specified in the approved Demolition Plan as described in UFGS 01 57 19.00 20.

**F2010 1.2 UTILITIES**

Repair, replace, Medium Voltage Utility service as necessary and as directed by the Contracting Officer. A Protective Device coordination study, Short-Circuit Study, One Line Diagram and an Arc Flash Hazard Study shall be completed for sections of the feeders and distribution systems replaced and/or repaired.

The studies shall include all portions of the electrical distribution system from the normal power source or sources, and emergency/standby sources, down to and including the smallest circuit breaker in the section of the distribution system (for short circuit calculations).

**F2010 1.3 DUST CONTROL**

Perform dust control activities in accordance with approved Dirt and Dust Control Plan as described in UFGS 01 57 19.00 20.

**F2010 1.4 TRAFFIC CONTROL**

Where pedestrian and vehicle safety is endangered, use traffic barricades.

**F2010 1.6 BURNING**

**NO BURNING IS ALLOWED.F201001 SUBSTRUCTURE & SUPERSTRUCTURE**

Perform substructure or superstructure demolition work in accordance with the ESR.

**F201002 EXTERIOR CLOSURE**

Perform exterior closure demolition work in accordance with the ESR.

**F201003 ROOFING**

Perform roofing demolition work in accordance with the ESR.

**F201004 INTERIOR CONSTRUCTION & FINISHES**

Perform interior construction & finishes demolition in accordance with the ESR.

**F201006 MECHANICAL SYSTEMS**

Perform mechanical systems demolition in accordance with the ESR.

**F201007 ELECTRICAL SYSTEMS**

Perform electrical systems demolition in accordance with the ESR.

**F201008 EQUIPMENT & FURNISHINGS**

Perform special equipment and furnishing demolition in accordance with the ESR.

**F201009 OTHER NON-HAZARDOUS SELECTIVE BUILDING DEMOLITION**

Perform non-hazardous selective building demolition in accordance with the ESR.

**F2020 HAZARDOUS COMPONENTS ABATEMENT**

Prior to starting work, conduct any additional testing that may be needed to provide a final design and comply with all applicable Federal, regional, state and local regulations. Refer to UFC 3-800-10N, *Environmental Engineering for Facility Construction*, for restrictions and for additional requirements and criteria.

**F2020 1.2 FURNISHINGS**

All furnishings and equipments left in the buildings shall be the responsibility of the Contractor to dispose.

**F2020 1.3 ASBESTOS**

Perform asbestos related work as indicated in the RFP, in accordance with the ESR, and the approved asbestos removal work plan as described in UFGS 01 57 19..

For asbestos work in DoD schools the Designer of Record shall edit UFGS 02 82 14.00 10, *Asbestos Hazard Control Activities*, as described in UFGS 01 57 19.00 20. The Designer of Record must be an EPA accredited Asbestos Project

Designer. Perform asbestos related work in DoD schools in accordance with the approved edited UFGS 02 82 14.00 10.

**F2020 1.4 LEAD BASED PAINT**

Perform lead based paint related work as indicated in the RFP, in accordance with the ESR and the approved lead based paint removal work plan as described in UFGS 01 57 19..

All federal, state and local regulations regarding lead based paint within a child occupied facility must be followed. For lead based paint work performed in child occupied facilities the Designer of Record shall edit UFGS 02 83 19.00 10, *Lead Based Paint Hazard Abatement, Target Housing and Child Occupied Facilities*, as described in UFGS 01 57 19.00 20. The Designer of Record must be an EPA accredited Lead Project Designer. Perform lead based paint related work in child occupied facilities in accordance with the approved edited UFGS 02 82 14.00 10.

**F2020 1.5 PAINT RELATED WORK**

Perform paint related work as indicated in the RFP, in accordance with the ESR and the approved paint removal work plan as described in UFGS 01 57 19..

**F2020 1.6 MERCURY & LLR COMPONENTS**

Perform work as indicated in the RFP, in accordance with the ESR and the approved mercury & LLR components removal work plan as described in UFGS 01 57 19..

**F2020 1.7 PCB'S**

Perform PCB related work as indicated in the RFP, in accordance with the ESR and the approved PCB removal work plan as described in UFGS 01 57 19..  
Notify the contracting officer immediately on discovery of any equipment leaking PCB containing fluid. Take reasonable preventative measures to contain the leak and prevent movement of the PCB containing fluids.

**F2020 1.8 ODS**

Perform ODS related work as indicated in the RFP, in accordance with the ESR and the approved ODS removal work plan as described in UFGS 01 57 19..

**F2020 1.11 DISPOSAL**

All waste materials shall become the property of the Contractor and shall be transported, disposed of and recycled in accordance with the approved disposal plan as described in UFGS 01 57 19.

**F202009 OTHER HAZARDOUS SELECTIVE BUILDING DEMOLITION**

Perform all other building components abatement work in accordance with the ESR.

-- End of Section --

**SECTION G10**

**SITE PREPARATION**

**4/08**

**G10 GENERAL**

**G10 1.1 DESIGN GUIDANCE**

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

**G10 1.1.1 Industry Standards and Codes**

Refer to UMRL for reference designation identification.

**G10 1.1.2 Government Standards**

CORPS OF ENGINEERS (COE)

COE EM 385-1-1, *Safety and Health Requirements Manual*

UNIFIED FACILITIES CRITERIA (UFC)

UFC 3-200-10N, *Civil Engineering*

UFC 3-220-01N, *Geotechnical Engineering*

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

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS 31 23 00.00 20, *Excavation and Fill*

**G10 1.2 PERFORMANCE VERIFICATION AND ACCEPTABLE TESTING**

Compliance with the requirements will be determined by a review of the design and construction submittals and by field inspection. See Section 01 33 10.05 20, *Design Submittal Procedures*, and Section 01 33 00.05 20, *Construction Submittal Procedures*, for additional requirements.

Verification of satisfactory earthwork performance shall be via testing detailed in the paragraph, "Field Quality Control", in UFGS Specification Section 31 23 00.00 20, *Excavation and Fill*.

**G10 1.3 DESIGN SUBMITTALS**

Design Submittals shall be in accordance with UFGS section 01 33 10.05 20, *Design Submittal Procedures*, UFC 1-300-09N, *Design Procedures*, UFC 3-200-10N, *Civil Engineering*, and UFC 3-220-01N.

In addition, UFGS sections listed below or in the body of the PTS text are to be used by the Designer of Record (DOR) as a part of the design

submittal. If the UFGS products or systems are applicable to the project, the DOR shall edit these referenced UFGS sections and submit them as a part of the design submittal specification. Edit the specification sections in accordance with the limitations stated in PTS section Z10, *General Performance Technical Specifications*.

UFGS 31 23 00.00 20 (02315N), *Excavation and Fill*

**G10 1.4 CONSTRUCTION SUBMITTALS**

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

Submittals in UFGS 01 57 19.05 20 (01577N), *Temporary Environmental Controls for Design-Build*. Submittals in UFGS Specification Section 31 23 00.00 20 (02315N), *Excavation and Fill*. Demolition plan in accordance with Section 01 74 19, *Construction and Demolition Waste Management*.

**G1010 SITE CLEARING**

**G1010 1.1 GENERAL**

Clear and grub project site as required for project demolition.

**G101001 CLEARING**

**G101001 1.1 CLEARING**

The Contractor shall clear all trees, shrubs, brush and vegetation necessary for the project demolition. Clearing includes the felling, trimming, and cutting of trees into sections.

**G101001 1.2 PRESERVATION**

Preserve and protect trees, shrubs and vegetation not directly impacted by the demolition in accordance with Section 01 57 19.00 20, *Temporary Environmental Controls*.

**G101002 TREE REMOVAL**

Remove and dispose of trees to a depth of at least 18 inches (450 mm) below ground surface. Fill depressions with satisfactory material and compact. Mound fill 2 inches (50 mm) above adjacent surface to allow for settling when not part of a subbase.

**G101003 STUMP REMOVAL**

Remove stumps to a depth of at least 18 inches (450 mm) below ground surface and grind stumps 18 to 30 inches (450 to 750 mm) below ground surface. Fill depressions with satisfactory material and compact. Mound fill 2 inches (50 mm) above adjacent surface to allow for settling when not part of a subbase.

**G101004 GRUBBING**

Within the clearing limits, remove and dispose of all logs, shrubs, brush, matted roots, roots larger than 2 inches (50 mm) in diameter, and other debris to a depth of at least 18 inches (450 mm) below ground surface. Fill depressions made by grubbing with satisfactory material and compact to make the new surface conform to the adjacent surface of the ground.

**G101006 DEBRIS DISPOSAL**

Prevent spillage on pavements, streets, or adjacent areas. Dispose of all surplus and unsuitable material off of Government property.

**G1020 SITE DEMOLITION & RELOCATIONS**

**G1020 1.1 GENERAL**

Demolition work shall include the demolition, removal and legal disposal of existing construction debris as required to accommodate the new construction. The Contractor shall take care to prevent damages to existing utilities, construction and materials not scheduled for demolition, repair or replacement, and shall repair damages to the construction and materials to the satisfaction of the Contracting Officer and at no additional cost to the Government.

**G1020 1.2 AUTHORIZATION**

Do not begin demolition until the Demolition Plan has been approved by and authorization is received from the Contracting Officer.

**G1020 1.3 TITLE TO MATERIALS**

Whenever possible, all features demolished shall be salvaged or recycled in lieu of being disposed of as waste in a landfill. Existing features to be demolished which are not salvageable or reused, shall become the property of the Contractor and shall be removed from project site. The Government will not be responsible for the condition, loss of, or damage to, such property after contract award. Materials and equipment shall not be viewed by prospective purchasers or sold on the site.

**G102001 BUILDING MASS DEMOLITION**

Refer to Section F20 for additional information.

**G102002 ABOVEGROUND SITE DEMOLITION**

**G102002 1.1 DUST AND DEBRIS CONTROL**

Prevent the spread of dust and debris to occupied portions of a building or on pavements and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water for dust control if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution. Sweep pavements as often as necessary to control the spread of debris that may result in foreign object damage potential to aircraft.

**G102002 1.2 PROTECTION**

**G102002 1.2.1 Traffic Control**

Where pedestrian and driver safety is endangered in the area of removal work, use traffic barricades with flashing lights. Provide temporary traffic control in accordance with UFC 3-200-10N, *Civil Engineering*.

**G102002 1.2.4 Noise Pollution**

Make the maximum use of low-noise emission products, as certified by the EPA.

**G102002 1.3 PAVING AND SLABS**

Remove concrete and asphaltic concrete paving and slabs as required for demolition project. Remove the existing aggregate base in areas to receive new pavement to the depth of the proposed pavement section below new finish grade. Remove the existing aggregate base in areas not to receive new pavement to a depth of 8 inches (200 mm) below existing adjacent grade and break remaining pavement (if any) to allow drainage. Provide neat sawcuts at limits of pavement removal; protect sawcuts so that new pavement will butt against the existing without feathering.

**G102002 1.4 ABOVEGROUND STORAGE TANKS**

Perform aboveground storage tank removal work as indicated in the RFP, in accordance with the ESR and the approved aboveground storage tank removal work plan as described in Section 01 57 19.00 20, *Temporary Environmental Controls*.

**G102003 UNDERGROUND SITE DEMOLITION**

**G102003 1.1 UTILITY TERMINATION**

Terminate utilities in accordance with state and local rules and regulations; the nationally recognized code; and the requirements of the utility provider covering the specific utility; UFC 3-200-10N, *Civil Engineering*; and approved by the Contracting Officer.

**G102003 1.2 PROTECTION OF EXISTING UTILITIES**

Protect existing utilities to remain. Where removal of existing utilities and pavement is required, provide approved barricades, temporary covering of exposed areas, and temporary services or connections. Repair damage to existing utilities to remain at no additional expense to the government.

**G102007 SITE CLEANUP**

Remove rubbish and debris from the station daily; do not allow accumulations inside or outside the building(s) or on pavements. Store materials that cannot be removed daily in areas specified by the Contracting Officer.

**G1030 SITE EARTHWORK**

**G1030 1.1 GENERAL**

This section includes the design and construction requirements for earthwork and grading related to construction of the roadways, parking, paved areas and other related sitework. The Designer of Record shall utilize UFGS Specification Section 31 23 00.00 20, *Excavation and Fill*, for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

**G103001 GRADING**

**G103001 1.2 SITE GRADING**

The Contractor shall preserve natural topographic features to minimize the impact on the existing drainage patterns at and adjacent to the site. Provide site grading in accordance with the requirements of the UFC 3-200-10N, *Civil Engineering*.

**G103001 1.3 FINISHED SURFACES**

Finish grading shall provide drainage towards new and existing drainage features. Finish grading shall not result in low spots that hold water or that direct runoff towards new or existing facilities or site amenities. Finish grading shall be in accordance with the requirements of the UFC 3-200-10N, *Civil Engineering*.

**G103002 COMMON EXCAVATION**

The Contractor shall preserve natural topographic features to minimize cut and fill requirements. All unsuitable material and surplus excavation shall become the property of the Contractor and shall be disposed of as indicated in the Project Program.

**G103004 FILL & BORROW**

**G103004 1.1 SOURCES**

Where sufficient topsoil and satisfactory materials are not available on the project site, provide suitable borrow materials.

**G103004 1.2 UNSATISFACTORY SOIL MATERIALS**

Remove unsatisfactory soil materials from the site in accordance with the Project Program and replace with satisfactory soil materials in accordance with UFGS Specification Section 31 23 00.00 20, *Excavation and Fill*.

**G103004 1.3 TOPSOIL**

Refer to Section G2050, "Landscaping". Remove unsatisfactory, existing topsoil from the site in accordance with the Project Program.

**G103005 COMPACTION**

Provide compaction in accordance with UFGS Specification Section 31 23 00.00 20, *Excavation and Fill*, and the recommendations of the Contractor's *Geotechnical Engineer*, whichever is greater.

**G103006 SOIL STABILIZATION**

Provide soil stabilization designed to function as required by site conditions in accordance with the State Highway specifications and standards in the state where the project is located. Apply and install geosynthetics in accordance with the manufacturer's written instructions.

**G103007 SLOPE STABILIZATION**

Provide slope stabilization methods in accordance with the State Highway specifications and standards in the state where the project is located. Design and install manufactured products, gabions, geogrids, rock anchors in accordance with the manufacturer's written instructions.

**G103010 TEMPORARY DEWATERING**

The design of the temporary dewatering system shall account for soil conditions, rainfall, fluctuations in the groundwater elevations and the potential settlement impact on adjacent facilities due to dewatering. Provide dewatering in accordance with UFGS Specification Section 31 23 00.00 20. While the excavation is open, the water level shall be maintained continuously, at least 1.0 foot (0.30 m) below the working level.

**G103011 TEMPORARY EROSION & SEDIMENT CONTROL**

**G103011 1.1 TEMPORARY EROSION & SEDIMENT CONTROL**

Develop and implement temporary erosion and sediment control measures and other Best Management Practices (BMPs) prior to or in conjunction with commencement of earthwork in accordance with the state Erosion and Sediment Control Laws and Regulations. Remove all non-permanent erosion control measures after vegetation is fully established.

**G103011 1.2 MAINTENANCE**

Maintain temporary erosion control measures in accordance with state Erosion and Sediment Control Laws and Regulations throughout the project until areas are fully stabilized.

**G103090 OTHER SITE EARTHWORK**

**G103090 1.3 TOPSOIL AND SEED**

Provide topsoil and seed according to UFGS Specification Section 31 23 00.00 20, *Excavation and Fill*, except when landscaping is required.

**G1040 HAZARDOUS WASTE REMEDIATION**

**G1040 1.1 EXCAVATION**

Perform excavation of contaminated soil and groundwater as indicated in the RFP, in accordance with the ESR and the approved contaminated soil and groundwater removal work plan as described in Section 01 57 19.00 20, *Temporary Environmental Controls*. Areas of contamination shall be excavated to the depth noted elsewhere in the RFP. Select methods and equipment to minimize disturbance to areas beyond the limits of the excavation area. Material that becomes contaminated as a result of the Contractor's operations shall be removed and disposed of at no additional cost to the Government. Where excavation extends into groundwater levels, dewatering methods shall be employed on a localized basis to facilitate excavation operations. Water generated by dewatering during excavation shall be collected and tested in accordance with the ESR and the approved work plan.

Water that contains contaminants above the levels indicated in the ESR shall be disposed of in accordance with the ESR and the approved work plan.

Non-contaminated water may be disposed of on-site.

**G1040 1.2 STOCKPILED SOILS**

Soils determined to be contaminated in accordance with the criteria in the ESR must be stockpiled in accordance with the contaminated soil and groundwater removal work plan as described in Section 01 57 19.00 20, *Temporary Environmental Controls*, and shall be disposed of in accordance with the requirements of the ESR.

Soils that are determined to contain contaminants below the criteria listed in the ESR may be used as clean fill.

**G1040 1.3 CLEAN FILL**

Soils that are determined as clean fill via testing shall be backfilled and compacted in accordance with the requirements listed in the ESR.

**G1040 1.4 SPILLS**

In the event of a spill or release of hazardous substances, pollutant, contaminant or oil, notify the Contracting Officer immediately. Containment actions shall be taken immediately to minimize the effect of any spill or leak. Clean up shall be performed at the Contractor's expense in accordance with the ESR and the approved spill work plan as described in Section 01 57 19.00 20, *Temporary Environmental Controls*.

**G1040 1.5 DISPOSAL**

All waste materials shall become the property of the Contractor and shall be transported, disposed of in accordance with the criteria listed in the ESR and the approved disposal plan as described in Section 01 57 19.00 20, *Temporary Environmental Controls*.

-- End of Section --

**SECTION G20**

**SITE IMPROVEMENTS  
4/08**

**G20 GENERAL**

**G20 1.1 DESIGN GUIDANCE**

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

**G20 1.1.1 Industry Standards and Codes**

AMERICAN SOD PRODUCERS ASSOCIATION (ASPA)

NATIONAL FEDERATION OF STATE HIGH SCHOOL ASSOCIATIONS (NF)

U.S CONSUMER PRODUCT SAFETY COMMISSION, PUBLICATION NO. 325

**G20 1.1.2 Government Standards**

CORPS OF ENGINEERS (COE)

TM 5-822-5, *Pavement Design for Roads, Streets, Walks, and Open Storage Areas*

UNIFIED FACILITIES CRITERIA (UFC)

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

UFC 3-200-10N, *Civil Engineering*

UFC 3-201-02, *Landscape Architecture*

UFC 3-270-01, *O&M: Asphalt Maintenance and Repair*

UFC 3-270-04, *O&M: Concrete Repair*

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

UNITED FACILITIES GUIDE SPECIFICATIONS (UFGS)

32 11 26.16, *Bituminous Concrete Base Course*

32 11 36.13, *Lean Concrete Base Course*

32 11 30, *Lime Treated Subgrade [Lime Modified Soils]*

32 11 24, *Graded Crushed Aggregate Base Course for Flexible Pavement*

32 12 17, *Hot Mix Bituminous Pavement*

32 13 13.06, *Portland Cement Concrete Pavement for Roads and Site Facilities*

**G20 1.2 QUALITY ASSURANCE**

**G20 1.2.2 Qualifications of New Landscape Contractor**

Construction company shall hold a landscape contractor's license in the state where the work is to be performed and have a minimum five years of landscape construction experience.

**G20 1.3 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING**

Compliance with the requirements will be determined by a review of the design and construction submittals and by field inspection. See Section 01 33 10.05 20, *Design Submittal Procedures*, and Section 01 33 00.05 20, *Construction Submittal Procedures*, for additional requirements.

Verification of satisfactory performance shall be via Performance Verification, as detailed in this section of the RFP. Verification of satisfactory performance shall also be via testing as detailed in the paragraph, Field Quality Control, in applicable UFGS Specification Sections utilized.

**G20 1.3.6 Topsoil Performance Verification**

Prior to planting design, provide a commercial soil analysis. Amend planting areas based on the soil test's interpretation, amendment type, and quantity recommendations (including soil nutrients and texture, with percentages shown). Additional topsoil shall be used only in areas where soil analysis shows that the existing soil is inadequate for growth of plant materials.

**G20 1.3.7 Final Inspection for Planting**

Final inspection shall be made upon written request from the Contractor at least 10 days prior to the last day of the planting. Establishment Period. The Landscape Contractor shall attend the inspection with the Contracting Officer and document the inspection. The Landscape Architect-of-Record shall also attend the inspection and provide the Contracting Officer with a letter certifying that the planting is installed per the plans and irrigation coverage is correct and appropriate for optimum plant survival. At the end of the Establishment Period, remove all stakes and guy cables.

**G20 1.3.8 Landscape and Irrigation Establishment Period and Guarantee**

All seeded areas shall be guaranteed for a period of one year after the Contracting Officer's final acceptance. All ground covers that die or have 20 percent or more of their crowns that die during planting operations or the guarantee period shall be replaced with healthy plants of the same species or variety during the appropriate planting season. The Landscape Architect-of-Record shall, along with the Contracting Officer, attend, approve and document the start of the Establishment Period and document quarterly and final inspections. During this period, the Contractor shall perform tasks which shall include, but not be limited to: watering, mowing, overseeding, and fertilizing. All grass is in a healthy and thriving condition or the Contractor shall replace it at his own expense. Broadcast seeded or hydro-seeded areas that do not achieve the 95-percent coverage by the end of the Establishment Period shall be reseeded by the same method and be maintained an additional 120 days to ensure coverage requirements are met. Turf shall be maintained in a manner that promotes proper health, growth, rich natural green color, and a neat, uniform, manicured appearance, free of bare areas, ruts, holes, weeds, pests, dead

vegetation, debris, and unwanted vegetation that present an unsightly appearance.

**G20 1.4 DESIGN SUBMITTALS**

Design Submittals shall be in accordance with UFGS section 01 33 10.05 20, *Design Submittal Procedures*, UFC 1-300-09N, *Design Procedures*, and UFC 3-200-10N, *Civil Engineering*.

In addition, UFGS sections listed below or in the body of the PTS text are to be used by the Designer of Record (DOR) as a part of the design submittal. If the UFGS products or systems are applicable to the project, the DOR shall edit these referenced UFGS sections and submit them as a part of the design submittal specification. Edit the specification sections in accordance with the limitations stated in PTS section Z10, *General Performance Technical Specifications*.

32 11 30, *Lime Treated Subgrade [Lime Modified Soils]*

**G20 1.5 CONSTRUCTION SUBMITTALS**

Provide product data for all exterior furnishings.

Submit construction submittals in accordance with PTS Section Z10, *General Performance Technical Specifications*. In addition to the Z10 requirements, the Designer of Record (DOR) shall approve the following construction submittals as a minimum:

**G201002 CURBS & GUTTERS**

Provide concrete curbs and gutters in accordance with the SHS and standards or as specified in UFC 3-200-10N, *Civil Engineering*, whichever is more stringent to continue those existing at the street where driveways and parking lots have been demolished.

**G203003 PAVED SURFACES**

**G203003 1.1 SIDEWALKS**

Sidewalks shall be provided to continue those existing in areas where pavement has been demolished. Sidewalks shall be portland cement concrete pavement, 4 inches (100 mm) thick minimum. Provide concrete in accordance with the applicable standard mix of the SHS for a minimum compressive strength at 28 days of 3500 psi (25 MPa) concrete. Sidewalks shall be at least 5 feet (1.5 meters) wide, except that sidewalks connecting entry points of housing units to the housing unit's parking shall be at least 36 inches (900 mm) wide. Use the maximum percentage of fly ash allowed in the applicable standard mix of the SHS. In housing areas, offset sidewalks paralleling streets to maintain a minimum grassed separation of 5 feet (1.5 meters) from the back face of the curb to the closest edge of the sidewalk. Provide a broomed finish. Unless indicated otherwise, provide a transverse slope of 1/48. Limit variation in cross section to 0.25 inch in 5 feet (6 mm in 1.50 m).

**G203003 1.1.1 Joints**

PROVIDE CONTRACTION JOINTS SPACED AT INTERVALS EQUIVALENT TO THE WIDTH OF THE SIDEWALK. PROVIDE 0.5 INCH (13 MM) THICK TRANSVERSE EXPANSION JOINTS AT CHANGES IN DIRECTION WHERE SIDEWALK ABUTS CURB, STEPS, RIGID PAVEMENT, OR OTHER SIMILAR STRUCTURES; SPACE EXPANSION JOINTS EVERY 50 FEET (15 M) MAXIMUM. PROVIDE ISOLATION JOINTS BY PLACING A 1/2-INCH (12 MM) PREFORMED EXPANSION

JOINT FILLER AROUND EACH STRUCTURE THAT EXTENDS INTO OR THROUGH THE SIDEWALK BEFORE CONCRETE IS PLACED AT THAT LOCATION.

**G204005 SIGNAGE:**

Remove and dispose off all sight signage associated with facilities to be demolished.

**G2050 LANDSCAPING**

**G205001 FINE GRADING AND SOIL PREPARATION**

See Section G10, *Site Preparation*.

**G205002 EROSION CONTROL MEASURES**

See Section G10, *Site Preparation*.

**G205004 SEEDING, SPRIGGING, AND SODDING**

Areas that are to be seeded that are larger than 1,000 square feet (92.90 square meters) shall be hydroseeded. Hydroseed mix composition shall be appropriate for surrounding land use and compatible and consistent with local application rates, seed availability and established practice in the project area. If project dates are unknown, specify required planting dates or alternative species for different seasons. Apply seed at a time best suited for germination of the selected species. Seeded areas shall achieve a 95-percent coverage of the selected species and be weed free at the end of the Establishment Period.

**G205005 PLANTINGS**

**G205005 1.1 EXISTING PLANT MATERIAL TO REMAIN OR BE TRANSPLANTED**

Preserve existing trees to the greatest extent possible. The Contractor shall tag trees to be saved with plastic or vinyl tape tied to the tree caliper. The Contractor shall protect existing trees by fencing planting areas to remain from compaction and any other damage with a barrier of metal poles a maximum 8 feet (2.4 meter) on center with plastic netting to a minimum of 10 feet (3.0 meter) radius from outside of the tree's trunk. Where tree drip lines are greater than 10 feet (3.0 meter) from the tree's trunk, locate barrier fencing at the drip line of the tree. The Contractor shall not allow debris from tree or stump removal operations to fall on or otherwise damage plants that are not scheduled for removal. Plastic tape and barrier fencing shall not be removed until planting operations are ready to begin and or instructed by the Contracting Officer. Existing trees to remain or to be transplanted that are unhealthy, that die, or have 20 percent or more of their crowns that die during the establishment period shall be replaced with healthy plants of the same species or variety during the appropriate planting season. During the landscape establishment period, trees, turf, shrubs, and ground cover that are damaged or destroyed during construction operations shall be replaced by the Contractor at no additional cost to the Government. The Contractor, at the direction of the Contracting Officer, shall remove the existing tree and stump and replace it with trees of the same genus and species equal to the total caliper of the existing tree. Minimum caliper of replacement trees shall be 4 inch (100 mm). Replace shrubs with 5 gallon (18.9 liter) size container, ground cover with flat containers planted at 8 inches (200 mm) on center, and turf with sod, all of the same genus and species.

**G205005 1.3 RECYCLING**

Green waste: Contact the Public Works Department for potential green waste collection and hauling by the Government. Green waste not collected by the Government shall be separated from construction debris and delivered to the base's or local landfill's green waste recycling area. Quantify and report diverted waste to the Contracting Officer.

**G205005 1.4 PLANTING**

**G205005 1.4.2 Plant Quality**

All plants shall comply with ANSI Z60.1 and ANSI Z133.1, current editions. All plants shall be in a healthy, disease and pest free condition. All seed, sod, and sprigs shall be State Certified.

**G205005 1.4.3 Plant Selection**

The reviewing Government Landscape Architect shall have final approval authority on all selected plant material. Species deemed unsuitable for planting by the Government Landscape Architect will not be allowed.

**G205005 1.4.4 Plant Installation**

Planting operations, including but not limited to planting soil mixes and fertilization, shall comply with local established practices and agricultural extension service recommendations. Stake or guy new or transplanted trees with three stakes {2 - 2 ½ inch (63.5 mm) x 8 feet (2.4 m) hardwood}, or three guy cables {five-strand, 3/16 inch (5 mm) diameter galvanized steel cable}.

**G205005 1.4.6 Fertilizer**

Fertilize all new trees, shrubs, ground covers, turf, perennials and ornamental grasses as recommended by local agricultural extension services.

**G205005 1.4.7 Weed Fabric and Erosion Control Fabric**

Provide a weed barrier fabric of sheet polypropylene or polyester fabric specifically designed for weed control purposes beneath all planted or mulched non-planted areas. Fabric shall be treated for protection against deterioration due to ultraviolet radiation. Fabric shall be a minimum 99 percent opaque to prevent photosynthesis and seed germination from occurring, yet allowing air, water and nutrients to pass through to the roots. Minimum weight shall be 5 ounces per square yard (0.11 kg per square meter) with a minimum thickness of 20 mils (0.50 mm) with a 20 year minimum guarantee. Provide a biodegradable product designed specifically for erosion control on all sloped areas 3:1 and greater in slope.

**G205005 1.4.8 Drainage**

Provide for proper grading and drainage of turf and planting areas. Provide sub-surface drainage where soil or other conditions do not allow surface drainage. Do not drain roof gutters into planter areas.

-- End of Section --

**SECTION G40**

**SITE ELECTRICAL UTILITIES  
DEC 2008**

**G40 1.1 - NARRATIVE**

This section includes but is not limited to all changes to the Electrical Utility Systems at the Naval Station Annapolis, MD.

**G40 1.2 - ELECTRICAL DESIGN GUIDANCE**

Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*.

**G40 1.2.1 - Government Standards**

UNITED FACILITIES CRITERIA (UFC)

UFC 3-500-10N, *Electrical Engineering*

UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS 26 12 19.10, *Three-Phase Pad Mounted Transformers*

UFGS 26 12 19.20, *Single-Phase Pad Mounted Transformers*

UFGS 33 71 01.00 20, *Overhead Transmission and Distribution*

UFGS 26 13 00.00 20, *SF6 Insulated Pad Mounted Switch Gear*

UFGS 26 11 13, *Secondary Unit Substations*

UFGS 26 11 16.00 20, *Primary Unit Substation*

UFGS 26 23 00, *Switchboards and Switchgear*

RFP 3M1172DA\_DEMOLISH VARIOUS BLDGS Part 5

UFGS 26 12 19 00 40 PAD-MOUNTED LIQUID FILLED MEDIUM-VOLTAGE TRANSFORMERS

UFGS 26 23 00 00 40, *Switchboards and Switchgear*

**G40 1.3 - QUALITY ASSURANCE**

Qualifications, certifications, and Test Plans indicated herein shall be submitted 45 calendar days prior to the expected date of execution. Notify the Contracting Officer 14 calendar days prior to all testing. Submit test results within 7 calendar days of completion of testing.

The Designer of Record is responsible for approving the submittals listed below.

**G40 1.3.1 - Qualified Testing Organization**

Contractor shall engage the services of a qualified testing organization to provide inspection, testing, calibration, and adjustment of the electrical distribution system and equipment listed in paragraph entitled "Acceptance Tests and Inspections" herein. Organization shall be independent of the supplier, manufacturer, and installer of the equipment. The organization shall be a first tier subcontractor.

a. Submit name and qualifications of organization. Organization shall have been regularly engaged in the testing of electrical materials, devices, installations, and systems for a minimum of 5 years. The organization shall have a calibration program, and test instruments used shall be calibrated in accordance with NETA ATS.

b. Submit name and qualifications of the lead engineering technician performing the required testing services. Include a list of three comparable jobs performed by the technician with specific names and telephone numbers for reference. Testing, inspection, calibration, and adjustments shall be performed by an engineering technician, certified by NETA or the National Institute for Certification in Engineering Technologies (NICET) with a minimum of 5 years' experience inspecting, testing, and calibrating electrical distribution and generation equipment, systems, and devices.

**G40 1.3.2 - NEC Qualified Worker**

Provide in accordance with NFPA 70. Qualified Workers shall be allowed to be assisted by helpers on a 1 to 1 ratio, provided such helpers are registered in recognized apprenticeship programs. Submit a certification confirming NEC Qualified Worker requirements.

**G40 1.3.3 - Qualified Medium Voltage Electrician**

All workers on medium voltage electrical crews shall have 5 years experience working medium voltage systems on similar projects involving the same or higher voltage.

**G40 1.3.4 - Qualified Cable Splicer (Medium Voltage Cable)**

Certification shall include the training, and experience of the individual on the specific type and classification of medium voltage cable to be provided under this contract.

In order to establish the cable splicer's competency, the Contractor shall be required to submit the following 30 calendar days prior to commencement of the splice/termination:

- a. Documentation to verify that the individual has completed a splice and or termination of the type to be installed under this contract.
- b. Documentation that said splice/termination has been tested and passed in accordance with NETA ATS requirements. Test results shall be included.
- c. A statement of the number of years in which the individual has been splicing/terminating medium voltage cable.

**G40 1.3.5 - Qualified Cable Splicer (Telecommunications)**

Certification shall include the training, and experience of the individual on specific type and classification of telecommunications cable to be provided under this contract.

**G40 1.3.6 - Qualified Cable Installer and Splicer (Fiber Optic Cable)**

Certification shall include the training, and experience of the individual on specific type and classification of Fiber Optic media to be provided under this contract.

**G40 1.3.7 - Qualified Fiber Optic (FO) Cable Manufacturer**

The FO media manufacturer shall have a minimum of 3 years experience in the manufacturing, assembly, and factory testing of FO media that complies with RUS REA Bull 1753F-601 (PE-90). Manufacturer shall provide a list of customers with 3 years of maintenance logs documenting experience with government customers.

**G40 1.3.8 - Material Standards**

Ensure service support and provide manufacturer's nameplate in accordance with PTS Section Z10, *General Performance Technical Specification*.

**G40 1.3.8.1 - Warning Labels**

Each enclosure of electrical equipment, including substations, pad-mounted transformers, pad-mounted switches, pad-mounted sectionalizing termination cabinets, and switchgear, shall have a warning label identifying the enclosure as 1) containing energized electrical equipment and 2) an arc flash hazard.

**G40 1.3.9 - Factory Testing**

The Government reserves the right to witness all factory testing. The manufacturer shall have a calibration program that assures that all applicable test instruments are maintained within rated accuracy.

**G40 1.3.10 - Electrical System Startup and Testing**

Submit test plans for approval. The test plans shall be tailored to the systems provided.

The test plan shall list make and model and provide functional description of the test instruments and accessories and shall describe the setup of the tests to be conducted. Test instruments shall be capable of measuring and recording or displaying test data at a higher resolution and greater accuracy than specified for the equipment's performance.

**G40 1.3.10.1 - Factory Trained Engineer**

Provide a factory trained engineer to supervise start-up and testing as required in referenced specifications.

**G40 1.3.10.2 - Performance Verification Testing**

The Contractor shall show by demonstration in service that all circuits and devices are in operating condition. Tests shall be such that each item of control equipment will function not less than five times. The Contractor shall provide all necessary test equipment, tools, fuel, load banks, etc., labor, and materials for testing. As a minimum, all systems shall be tested in accordance with manufacturer's recommendations. Additional testing requirements for the various systems are described with those systems, hereinafter. The Contractor shall assure that all applicable test instruments are maintained within rated accuracy. Dated calibration labels shall be visible on all test equipment.

Submit a separate electrical field test plan in accordance with manufacturer's recommendations and that conforms to NETA ATS for each piece of Electrical Distribution Equipment and/or System requiring Performance Verification Testing.

The following items identify specific test requirements. Additional test requirements are contained in the applicable UFGS.

- a. Cable - Test cable in accordance with the manufacturer's recommendations and NETA ATS. Adhere to precautions and limits as specified in the applicable NEMA/ICEA Standard for the specific cable.
- b. Grounding - Test ground systems in accordance with the manufacturer's recommendations and NETA ATS.

**G40 1.3.10.3 - Acceptance Tests and Inspections**

The Qualified Testing Organization shall provide the Acceptance Tests and Inspections test plan and procedures and perform the acceptance tests and inspections. Test methods, procedures, and test values shall be performed and evaluated in accordance with NETA ATS, the manufacturer's recommendations, and paragraph entitled "Field Quality Control" of each applicable specification section. Tests identified as optional in NETA ATS are not required unless otherwise specified. Equipment shall be placed in service only after completion of required tests and evaluation of the test results has

been completed. Contractor shall supply to the testing organization complete sets of shop drawings, settings of adjustable devices, and other information necessary for an accurate test and inspection of the system prior to the performance of any final testing.

Specific test requirements are contained in the UFGS for equipment.

**G40 1.4 - DESIGN SUBMITTALS**

Design submittals shall be in accordance with PTS Section Z10, *General Performance Technical Specification*; UFGS 01 33 10.05 20, *Design Submittal Procedures*; and UFC 3-500-10N, *Electrical Engineering*.

**G40 1.5 - CONSTRUCTION SUBMITTALS**

The general requirements of this PTS section are located in PTS Section Z10, *General Performance Technical Specification*. Construction submittals shall be in accordance with UFGS 01 33 00.05 20, *Construction Submittal Procedures*.

If an OMSI manual is not a contract requirement, then provide product data for all equipment; and submit operation and maintenance data in accordance with Section 01 78 24.05 20, *Facility Operation and Maintenance Support Information*.

Provide certification that all adjustable protective device settings have been set in accordance with the coordination study for the as-built equipment and configuration.

**G4010 ELECTRICAL DISTRIBUTION**

**G401001 SUBSTATIONS**

When secondary unit substations are required, the Designer of Record shall utilize Section 26 23 00, *Switchboards and Switchgear* and shall use Part five section 26 23 00 00 40, *Switchboards and Switchgear* as a guide and for facility requirements for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

**G401002 TRANSFORMERS**

The Designer of Record shall utilize Section 26 12 19.10, *Three-Phase Pad Mounted Transformers* as a part of the design submittal for the project and use Part 5 26 12 19 00 40 *PAD-MOUNTED LIQUID FILLED MEDIUM-VOLTAGE TRANSFORMERS* as a guide and for facility requirements.

**G401003 SWITCHES, CONTROLS AND DEVICES**

When switches or control devices are required, the Designer of Record shall utilize Section 26 23 00, *Switchboards and Switchgear* and shall use Part five section 26 23 00 00 40, *Switchboards and Switchgear* as a guide and for facility requirements for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

**G401004 OVERHEAD ELECTRIC CONDUCTORS**

N/A.

**G401005 TOWERS, POLES, CROSSARMS AND INSULATORS**

N/A

**G401006 UNDERGROUND ELECTRIC CONDUCTORS**

Route underground cables to minimize splices. Cable pulling tensions shall not exceed the maximum pulling tension recommended by the cable manufacturer. Medium voltage cable termination shall be suitable for the location installed and meet IEEE Std. 48 Class 1 requirements.

**G401007 DUCTBANKS, MANHOLES, HANDHOLES AND RACEWAYS**

Concrete manholes and handholds shall be standard type pre-cast concrete. Composite/Fiberglass handholds shall be polymer concrete reinforced with a heavy weave fiberglass reinforcing as indicated. Load ratings of manholes and handholds shall be suitable for the location installed.

**G401008 GROUNDING SYSTEMS**

**G401009 METERING**

**G401010 CATHODIC PROTECTION SYSTEMS**

N/A.

**G401011 EQUIPMENT REQUIREMENTS FOR COASTAL AND HIGH HUMIDITY AREAS**

**G4020 SITE LIGHTING**

**G402001 EXTERIOR LIGHTING FIXTURES AND CONTROLS**

Maintained mean area lighting levels shall be 6 lux (0.5 fc). Lighting uniformity shall be maintained with the following average to minimum (avg/min) uniformity ratios:

- a. Highway Lighting, 3:1
- b. Secondary Street Lighting, 6:1
- c. Residential Streets, 6:1
- d. Area And Parking Lighting, 6:1

**G402004 LIGHTING POLES**

Poles shall meet Uniform Building Code for street lighting poles, and AASHTO loadings for highway and sports lighting poles taking into account the effective projected areas of the luminaries provided. Poles shall be direct set or anchor-base type designed for use with underground supply conductors.

**G402005 UNDERGROUND ELECTRIC CONDUCTORS**

Provide in accordance with Paragraph G401006.

**G402006 DUCTBANKS, MANHOLES AND HANDHOLES**

Handholds and underground conduits for site lighting shall be in accordance with Paragraph G401007.

**G402007 GROUNDING SYSTEMS**

**G4030 SITE COMMUNICATION AND SECURITY**

**N/A**

--End of Section--

## SECTION Z10

### GENERAL PERFORMANCE TECHNICAL SPECIFICATION

04/08

#### GENERAL

##### Z10 1.1 - NARRATIVE

All Performance Technical Specification (PTS) sections must be used in conjunction with all parts of the Design Build (D/B) Request for Proposal (RFP) to determine the full requirements of this solicitation. This PTS section provides general requirements for the other PTS sections of this RFP and is used in conjunction with the other PTS sections.

Refer to UFGS section 01 33 10.05 20, *Design Submittal Procedures* for the Order of Precedence of the RFP Parts. Requirements listed in the Project Program take precedence over the PTS sections requirements; therefore, requirements identified in the Project Program eliminate options related to that requirement in the PTS sections.

The PTS Sections are general in nature and not all items listed in the PTS sections will be required for this project. Refer to RFP Part 3 - Project Program, including the ESRs for project specific requirements.

##### Z10 1.2 - DESIGN GUIDANCE

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

The PTS Sections reference published standards, the titles of which can be found in the Unified Master Reference List (UMRL) on the Whole Building Design Guide at the Unified Facilities Guide Specification (UFGS) Website. The publications referenced form a part of this specification to the extent referenced. The publications are referred to in the section text by the basic designation only. Industry standards, codes, and Government standards referenced in the section text, and not found in the UMRL, are listed at the beginning of the PTS sections.

The advisory provisions of all referenced codes, standards, and specifications shall be mandatory. Reference to the "authority having jurisdiction" shall be interpreted to mean "Contracting Officer". Comply with the required and advisory portions of the current edition of the standard at the time of contract award.

The following list of codes and standards is not comprehensive and is augmented by other codes and standards referenced and cross-referenced in the RFP.

##### Z10 1.2.1 - INDUSTRY CODES

INTERNATIONAL BUILDING CODE (IBC) - with exceptions and additions noted in UFC 1-200-01

INTERNATIONAL MECHANICAL CODE (IMC)

INTERNATIONAL PLUMBING CODE (IPC)

NATIONAL FIRE CODES (NFC) - with exceptions and additions noted in UFC  
1-200-01 and UFC 3-600-01

**Z10 1.2.2 - INDUSTRY REQUIREMENTS**

WHOLE BUILDING DESIGN GUIDE (WBDG)

WHOLE BUILDING DESIGN GUIDE, Ensure Occupant Safety and Health (Systems  
Safety Engineering) at [http://www.wbdg.org/design/ensure\\_health.php](http://www.wbdg.org/design/ensure_health.php)

**Z10 1.2.3 - GOVERNMENT STANDARDS**

**Z10 1.2.3.1 - UNIFIED FACILITIES CRITERIA (UFC):**

The UFC's required by this project are referenced in the contract documents or cross-referenced within referenced documents. The complete list of final UFC documents is located on the Whole Building Design Guide at [http://www.wbdg.org/ccb/browse\\_cat.php?o=29&c=4](http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4). The following are significant UFC's available on the website above that are applicable to this project:

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

UFC 3-201-02, *Landscape Architecture*

UFC 3-420-01, *Plumbing Systems*

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

**Z10 1.2.3.2 - FEDERAL STANDARDS:**

Uniform Federal Accessibility Standard (UFAS)

Occupational Safety and Health Association (OSHA)

**Z10 1.6 - SUBMITTALS**

Contractor's design submittals that combines design and construction submittals, must jointly comply with UFGS sections 01 33 00.05 20, *Construction Submittal Procedures* and 01 33 10.05 20, *Design Submittal Procedures*. Contractor's construction submittals that submitted separate from the design submittals must comply with UFGS 01 33 00.05 20, *Construction Submittal Procedures*.

Refer to "Construction Quality Control" in UFGS 01 33 00.05 20, *Construction Submittal Procedures* and 01 45 00.05 20, *Design and Construction Quality Control* to define reviewing and approving Authority of design and construction submittals.

**Z10 1.6.1 - DESIGN SUBMITTALS**

Design submittals shall be in accordance with Unified Facility Guide Specification (UFGS) section 01 33 10.05 20, *Design Submittal Procedures*, UFC 1-300-09N, *Design Procedures*, and other discipline-specific guidelines listed in the applicable PTS sections.

Some PTS sections identify and utilize UFGS sections as a project requirement. When a PTS section requires the use of a UFGS section, the Designer of Record (DOR) shall edit these UFGS sections for the project and submit the edited specification as a part of the design submittal. These required UFGS sections may only be augmented by manufacturer's data and catalog cuts in the design submittal. The manufacturer's data and catalog cuts can not take the place of these required specification sections in a combined design and construction submittal.

The DOR edited UFGS specifications shall (1) utilize the UFGS specification wording and requirements, (2) delete only portions of the UFGS specification that are not applicable to the project, (3) edit only the bracketed choices that are within the UFGS specification text, (4) edit blank bracketed options to include requirements that exercise prudence and adherence to acceptable industry standards, and (5) comply with the directions, directives, and requirements of all UFGS Criteria Notes. The UFGS Criteria Notes are typically bordered on the top and bottom by a line of asterisks to highlight their location.

**Z10 1.6.2 - CONSTRUCTION SUBMITTALS**

Submit for approval to the Designer of Record (DOR), construction submittals, product data, manufacturer's information, shop drawings, and test reports on all materials and systems installed in the project, unless the DOR designates for QC approval. Refer to each PTS section for further construction submittal requirements relating to the work identified in that particular PTS section. Some PTS sections reference UFGS sections that will require more construction submittals for DOR approval than is stated above. Refer to Section 01 33 00.05 20 for the list of construction submittals reserved for Government Approval and Government Surveillance.

--End of Section--



## Part 5 – Prescriptive Specifications

# Demolish Multiple Buildings, Part 1 JL7CK

## U.S. Naval Academy & Naval Support Activity Annapolis

Annapolis, Maryland

Date: January 7, 2009

### Table of Contents

---

SECTION 26 12 19 00 40	PAD-MOUNTED LIQUID FILLED MEDIUM-VOLTAGE TRANSFORMERS
SECTION 26 23 00 40	SWITCHBOARDS AND SWITCHGEAR

*Note: Part five shall be used for guidance and reference to develop requirements for electrical equipment used on the Electrical Utility System at the Naval Support Activity Annapolis, Annapolis MD. Transformers TS-117 and switch PS-118 shall be replaced. Options to replace the switch at NA128 (PS-128) and a second option to build an underground electrical duct-work, conduit and manholes to run approximately three-thousand feet from a location near NA128 to one by NA74.*

SECTION 26 12 19.00 40

PAD-MOUNTED, LIQUID-FILLED, MEDIUM-VOLTAGE TRANSFORMERS  
Dec 2008

PART 1 GENERAL

1.1 REFERENCES

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

ACI INTERNATIONAL (ACI)

ACI 318M (2008) Metric Building Code Requirements for Structural Concrete and Commentary

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C12.7 (2005) Requirements for Watthour Meter Sockets

ASTM INTERNATIONAL (ASTM)

ASTM A 167 (1999; R 2004) Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip

ASTM C 260 (2006) Standard Specification for Air-Entraining Admixtures for Concrete

ASTM D 117 (2002) Standard Guide for Sampling, Test Methods, Specifications and Guide for Electrical Insulating Oils of Petroleum Origin

ASTM D 1535 (2008) Specifying Color by the Munsell System

ASTM D 3487 (2000; R 2006) Standard Specification for Mineral Insulating Oil Used in Electrical Apparatus

ASTM D 877 (2002; R 2007) Standard Test Method for Dielectric Breakdown Voltage of Insulating Liquids Using Disk Electrodes

ASTM D 92 (2005a) Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester

ASTM D 97 (2008) Pour Point of Petroleum Products

FM GLOBAL (FM)

FM P7825

(2005) Approval Guide

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

- IEEE C2 (2007; Errata 2007; INT 2008) National Electrical Safety Code
- IEEE C37.47 (1981) Distribution Fuse Disconnecting Switches, Fuse Supports, and Current-Limiting Fuses\*\*
- IEEE C57.12.00 (2006) Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers
- IEEE C57.12.25 (1990) Standard for Transformers - Pad-Mounted, Compartmental-Type, Self-Cooled, Single-Phase Distribution Transformers with Separable Insulated High-Voltage Connectors; High Voltage (34 500-Grd Y/19 920 Volts and Below; Low Voltage, 240/120 Volts; 167 kVA and Smaller - Requirements)
- IEEE C57.12.28 (2005) Standard for Pad-Mounted Equipment - Enclosure Integrity
- IEEE C57.12.34 (2004; Errata 2005) Pad-Mounted, Compartmental-Type, Self-Cooled, Three-Phase Distribution Transformers, 2500 kVA and Smaller-High-Voltage: 34 500 GrdY/19 920 Volts and Below; Low Voltage: 480 Volts and Below
- IEEE C57.12.80 (2002) Standard Terminology for Power and Distribution Transformers
- IEEE C57.12.90 (2006) Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers
- IEEE C57.13 (2008) Standard Requirements for Instrument Transformers
- IEEE C57.98 (1993; R 1999) Guide for Transformer Impulse Tests
- IEEE C62.11 (2005; Amendment A 2008) Standard for Metal-Oxide Surge Arresters for Alternating Current Power Circuits (>1kV)
- IEEE Std 100 (2000) The Authoritative Dictionary of IEEE Standards Terms
- IEEE Std 386 (2006) Standard for Separable Insulated Connector Systems for Power Distribution Systems Above 600V

INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)

NETA ATS (2003) Acceptance Testing Specifications

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA C12.1 (2008) Electric Meters; Code for Electricity Metering

NEMA C12.10 (2004) Physical Aspects of Watthour Meters

NEMA LI 1 (1998) Industrial Laminated Thermosetting Products

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2007; AMD 1 2008) National Electrical Code - 2008 Edition

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD)

OECD Test 203 (1992) Fish Acute Toxicity Test

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 600/4-90/027F (1993) Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms

EPA 712-C-98-075 (1996) Fate, Transport and Transformation Test Guidelines - OPPTS 835.3100- "Aerobic Aquatic Biodegradation"

UNDERWRITERS LABORATORIES (UL)

UL 467 (2007) Standard for Grounding and Bonding Equipment

1.2 RELATED REQUIREMENTS

Section 26 08 00 APPARATUS INSPECTION AND TESTING applies to this section, with the additions and modifications specified herein.

1.3 DEFINITIONS

- a. Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, shall be as defined in IEEE Std 100.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00  
SUBMITTAL PROCEDURES:

NAVFAC Washington - USNA Shall review and approve all submittals in this section requiring Government approval. As an exception to this paragraph, transformers manufactured by ABB in Jefferson City, MO; by Cooper Power Systems in Waukesha, WI; by ERMCO in Dyersburg, TN; or by Howard Industries in Laurel, MS need not submit the entire submittal package requirements of this contract. Instead, submit the following items:

- a. A certification, from the manufacturer, that the technical requirements of this specification shall be met.
- b. An outline drawing of the transformer with devices identified (paragraph entitled "Pad-Mounted Transformer Drawings", item a).
- c. ANSI nameplate data of the transformer (paragraph entitled "Pad-Mounted Transformer Drawings", item b).
- d. Manufacturer's published time-current curves (on full size logarithmic paper) of the transformer high side fuses (paragraph entitled "Pad-Mounted Transformer Drawings", item e).
- e. Routine and other tests (in PART 2, see paragraph entitled "Routine and Other Tests"), shall be conducted by the manufacturer and may be witnessed by the government (in Part 2, see paragraph entitled "Source Quality Control"). Provide transformer test schedule required by submittal item "SD-11 Closeout Submittals". Provide certified copies of the tests.
- f. Provide acceptance test reports required by submittal item "SD-06 Test Reports".
- g. Provide operation and maintenance manuals required by submittal item "SD-10 Operation and Maintenance Data".

#### SD-02 Shop Drawings

Pad-mounted transformer drawings; G

#### SD-03 Product Data

Pad-mounted transformers; G

Submittal shall include manufacturer's information for each component, device, and accessory provided with the transformer.

#### SD-06 Test Reports

Acceptance checks and tests; G

#### SD-07 Certificates

Transformer losses; G

Submit certification from the manufacturer indicating conformance with the paragraph entitled "Specified Transformer Losses."

#### SD-09 Manufacturer's Field Reports

Pad-mounted transformer design tests; G

Pad-mounted transformer routine and other tests; G

#### SD-10 Operation and Maintenance Data

Transformer(s), Data Package 5; G

Submit operation and maintenance data in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA and as specified herein.

#### SD-11 Closeout Submittals

Transformer test schedule; G

Submit report of test results as specified by paragraph entitled "Field Quality Control."

### 1.5 QUALITY ASSURANCE

#### 1.5.1 Pad-Mounted Transformer Drawings

Drawings shall indicate, but not be limited to the following:

- a. An outline drawing, with front, top, and side views.
- b. ANSI nameplate data.
- c. Elementary diagrams and wiring diagrams with terminals identified of watt-hour meter and current transformers.
- d. One-line diagram, including switch(es), current transformers, meters, and fuses.
- e. Manufacturer's published time-current curves (on full size logarithmic paper) of the transformer high side fuses.

#### 1.5.2 Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

#### 1.5.3 Standard Products

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or

brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in this section.

#### 1.5.3.1 Alternative Qualifications

Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

#### 1.5.3.2 Material and Equipment Manufacturing Date

Do not use products manufactured more than 3 years prior to date of delivery to site, unless specified otherwise.

### 1.6 MAINTENANCE

#### 1.6.1 Additions to Operation and Maintenance Data

In addition to requirements of Data Package 5, include the following on the actual [transformer\(s\)](#) provided:

- a. An instruction manual with pertinent items and information highlighted
- b. An outline drawing, front, top, and side views
- c. Prices for spare parts and supply list
- d. Routine and field acceptance test reports
- e. Fuse curves for primary fuses
- f. Information on watthour demand meter, CT's, and fuse block
- g. Actual nameplate diagram
- h. Date of purchase

#### 1.7 WARRANTY

The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

## PART 2 PRODUCTS

### 2.1 PRODUCT COORDINATION

Products and materials not considered to be pad-mounted transformers and related accessories are specified in NAVFAC UFCs.

### 2.2 THREE-PHASE [PAD-MOUNTED TRANSFORMERS](#)

IEEE C57.12.34, IEEE C57.12.28 and as specified herein.

2.2.1 Compartments

Separate the high- and low-voltage compartments with steel isolating barriers extending the full height and depth of the compartments.  
 Compartment doors: hinged lift-off type with stop in open position and three-point latching.

2.2.1.1 High Voltage, Dead-Front

High-voltage compartment shall contain the incoming line, insulated high-voltage load-break connectors, bushing well inserts, six high-voltage bushing wells configured for loop feed application, load-break switch handle(s), access to oil-immersed fuses or dry-well fuse canisters, dead-front surge arresters, tap changer handle, connector parking stands with insulated standoff bushings, protective caps, and ground pad.

- a. Insulated high-voltage load-break connectors: IEEE Std 386, rated 15 kV, 95 kV BIL. Current rating: 200 amperes rms continuous. Short time rating: 10,000 amperes rms symmetrical for a time duration of 0.17 seconds. Connector shall have a steel reinforced hook-stick eye, grounding eye, test point, and arc-quenching contact material.
- b. Bushing well inserts and feed-thru inserts: IEEE Std 386, 200 amperes, 15 kV Class. Provide a bushing well insert for each bushing well unless indicated otherwise.
- c. Load-break switch

Radial-feed oil-immersed type rated at 15 kV, 95 kV BIL, with a continuous current rating and load-break rating of 200 amperes, and a make-and-latch rating of 10,000 rms amperes symmetrical. Locate the switch handle in the high-voltage compartment.

Loop feed sectionalizer switches: Provide three, two-position, oil-immersed type switches to permit closed transition loop feed and sectionalizing. Each switch shall be rated at 15 kV, 95 kV BIL, with a continuous current rating and load-break rating of 200 amperes, and a make-and-latch rating of 10,000 rms amperes symmetrical. Locate the switch handles in the high-voltage compartment. Operation of switches shall be as follows:

ARRANGE- MENT NO.	DESCRIPTION OF SWITCH ARRANGEMENT	SWITCH POSITION					
		LINE A SW.		LINE B SW		XFMR. SW	
		OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE
1	Line A connected to Line B and both lines connected to transformer		X		X		X
2	Transformer connected to		X	X			X

ARRANGE- MENT NO.	DESCRIPTION OF SWITCH ARRANGEMENT	SWITCH POSITION					
		LINE A SW.		LINE B SW		XFMR. SW	
		OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE
	Line A only						
3	Transformer connected to Line B only	X			X		X
4	Transformer open and loop closed		X		X	X	
5	Transformer open and loop open	X		X		X	

- d. Provide bayonet type, oil-immersed, expulsion fuses in series with oil-immersed, partial-range, current-limiting fuses. Bayonet fuse links shall sense both high currents and high oil temperature in order to provide thermal protection to the transformer. Coordinate transformer protection with expulsion fuse clearing low-current faults and current-limiting fuse clearing high-current faults beyond the interrupting rating of the expulsion fuse. In order to eliminate or minimize oil spills, the bayonet fuse assembly shall include an oil retention valve inside the housing which closes when the fuse holder is removed and an external drip shield. Conspicuously display warning within the high-voltage compartment cautioning against removing or inserting fuses unless the load-break switch is in the open position and the tank pressure has been released.

Bayonet fuse assembly: 150 kV BIL.

Oil-immersed current-limiting fuses: **IEEE C37.47**; 50,000 rms amperes symmetrical interrupting rating at the system voltage specified. Connect current-limiting fuses ahead of the radial-feed load-break switch.

- e. Current-limiting fuses, dry-well mount: **IEEE C37.47**. Provide fuses in air-insulated, oil-sealed, dead-front, non-load-break dry-well fuse canisters, on the load side of the load-break switch serving the transformer. Interlock fuse canisters with the load-break switch so that the fuses may be removed and inserted only when the switch is in the "Off" position. Fuses shall remove the transformer from service in case of an internal fault. Size fuses to approximately 150 percent of the transformer primary full load current rating and in accordance with fuse manufacturer's recommendations for dry-well mounting. Fuses shall have an interrupting rating of 50,000 rms amperes symmetrical at the system voltage specified. Furnish a spare fuse for each fuse provided.
- f. Surge arresters: **IEEE C62.11**, rated 10 kV, fully shielded, dead-front, metal-oxide-varistor, elbow type with resistance-graded gap, suitable for plugging into inserts. Provide three arresters for radial feed circuits.

- g. Parking stands: Provide a parking stand near each bushing well. Provide insulated standoff bushings for parking of energized load-break connectors on parking stands.
- h. Protective caps: IEEE Std 386, 200 amperes, 15 kV Class. Provide insulated protective caps (not shipping caps) for insulating and sealing out moisture from unused bushing well inserts and insulated standoff bushings.

#### 2.2.1.2 Low Voltage

Low-voltage compartment shall contain low-voltage bushings with NEMA spade terminals, accessories, metering, stainless steel or laser-etched anodized aluminum diagrammatic transformer nameplate, and ground pad.

- a. Accessories shall include drain valve with sampler device, fill plug, pressure relief device, liquid level gage, pressure-vacuum gage, and dial type thermometer with maximum temperature indicator.

#### 2.2.1.3 Three-Phase Metering

1. Design: Provide meter designed for use on a 3-phase, 4-wire, volt systems with 3 current transformers. Include necessary KYZ pulse initiation hardware for Energy Monitoring and Control System EMCS.
2. Coordination: Provide meter coordinated with ratios of current transformers and transformer secondary voltage.
3. Class: 20; Form: 9S; Accuracy: +/- 1.0 percent; Finish: Class II
4. Cover: Polycarbonate and lockable to prevent tampering and unauthorized removal.
5. Kilowatt-hour Register: 5 digit electronic programmable type
6. Demand Register:
  - (a) Provide solid state
  - (b) Meter reading multiplier:
    - (1) Indicate multiplier on the meter face.
  - (c) Demand interval length: shall be programmed for 30 minutes with rolling demand up to six subintervals per interval.
7. Meter fusing: Provide a fuse block mounted in the secondary compartment containing one fuse per phase to protect the voltage input to the watt-hour meter. Size fuses as recommended by the meter manufacturer.
8. Socket: ANSI C12.7. Provide NEMA Type 3R, box-mounted socket having automatic circuit-closing bypass and having jaws compatible with requirements of the meter. Cover unused hub openings with blank hub plates. Paint box Munsell 7GY3.29/1.5 green to match the pad-mounted transformer to which the box-mounted socket is

attached. The Munsell color notation is specified in [ASTM D 1535](#).

9. Current transformers: [IEEE C57.13](#). Provide butyl-molded window type current transformers with 600-volt insulation, 10 kV BIL and mount on the low-voltage bushings. Route current transformer leads in a location as remote as possible from the power transformer secondary cables to permit current measurements to be taken with hook-on-ammeters. Provide three current transformers per power transformer with characteristics listed in the following table.

#### 2.2.2 Compartment Construction

Two compartment: Separate the high- and low-voltage compartments with steel isolating barriers extending the full height and depth of the compartments. Compartment doors: hinged lift-off type with stop in open position and three-point latching.

#### 2.2.3 Transformer

- a. Oil-insulated, two winding, 60 hertz, 65 degrees C rise above a 30 degrees C average ambient, self-cooled type.
- b. Transformer shall be rated similar to the existing transformers.
- c. Transformer voltage ratings: shall be rated similar to the existing transformers
- d. Tap changer shall be externally operated, manual type for changing tap setting when the transformer is de-energized. Provide four 2.5 percent full capacity taps, two above and two below rated primary voltage. Tap changers shall clearly indicate which tap setting is in use.
- e. Minimum tested impedance shall be rated similar to the existing transformers.
- f. Audible sound levels shall be rated similar to the existing transformers
- g. Transformer shall include lifting lugs and provisions for jacking under base. The transformer base construction shall be suitable for using rollers or skidding in any direction. Provide transformer top with an access handhole. Transformer shall have its kVA rating conspicuously displayed on its enclosure. The transformer shall have an insulated low-voltage neutral bushing with NEMA spade terminal, and with removable ground strap.

##### 2.2.3.1 Specified [Transformer Losses](#)

shall be rated similar to the existing transformers

#### 2.2.4 Insulating Liquid

- a. Mineral oil: [ASTM D 3487](#), Type II, tested in accordance with [ASTM D 117](#). Provide identification of transformer as "non-PCB" and "Type II mineral oil" on the nameplate.

##### 2.2.4.1 Liquid-Filled Transformer Nameplates

Provide distribution transformers with nameplate information in accordance with [IEEE C57.12.00](#) and as modified or supplemented by this section.

#### 2.2.5 Corrosion Protection

Bases and cabinets of transformers shall be corrosion resistant and shall be fabricated of stainless steel conforming to [ASTM A 167](#), Type 304 or 304L. Base shall include any part of pad-mounted transformer that is within [3 inches](#) of concrete pad. Paint bases, cabinets, and tanks Munsell 7GY3.29/1.5 green. Paint coating system shall comply with [IEEE C57.12.28](#). The Munsell color notation is specified in [ASTM D 1535](#). Entire transformer assembly, including tank and radiator, base, enclosure, and metering enclosure shall be fabricated of stainless steel conforming to [ASTM A 167](#), Type 304 or 304L. Form enclosure of stainless steel sheets. Paint entire transformer assembly Munsell 7GY3.29/1.5 green. Paint coating system shall comply with [IEEE C57.12.28](#). The Munsell color notation is specified in [ASTM D 1535](#).

#### 2.3 WARNING SIGNS

Provide warning signs for the enclosures of pad-mounted transformers having a nominal rating exceeding 600 volts.

- a. When the enclosure integrity of such equipment is specified to be in accordance with [IEEE C57.12.28](#), such as for pad-mounted transformers, provide self-adhesive warning signs on the outside of the high voltage compartment door(s). Sign shall be a decal and have nominal dimensions of [7 by 10 inches](#) with the legend "DANGER HIGH VOLTAGE" printed in two lines of nominal [2 inch](#) high letters. The word "DANGER" shall be in white letters on a red background and the words "HIGH VOLTAGE" shall be in black letters on a white background. Decal shall be Panduit No. PPS0710D72 or approved equal.
- b. When such equipment is guarded by a fence, mount signs on the fence. Provide metal signs having nominal dimensions of [14 by 10 inches](#) with the legend "DANGER HIGH VOLTAGE KEEP OUT" printed in three lines of nominal [3 inch](#) high white letters on a red and black field.

#### 2.4 GROUNDING AND BONDING

[UL 467](#). Provide grounding and bonding as specified NAVFAC UFCs.

#### 2.5 PADLOCKS

Provide padlocks for pad-mounted equipment and for each fence gate. Padlocks shall be keyed alike. Padlocks shall comply with Section [08 71 00 DOOR HARDWARE](#) .

#### 2.6 CAST-IN-PLACE CONCRETE

Concrete associated with electrical work for other than encasement of underground ducts shall be [4000 psi](#) minimum 28-day compressive strength unless specified otherwise. The concrete pad shall be sized such that a minimum of 10 inches shall be raised above ground level.

Shall be composed of fine aggregate, coarse aggregate, portland cement, and water so proportioned and mixed as to produce a plastic, workable mixture. Fine aggregate shall be of hard, dense, durable, clean, and uncoated sand. The coarse aggregate shall be reasonably well graded from 3/16 inch to 1 inch. The fine and coarse aggregates shall be free from injurious amounts of dirt, vegetable matter, soft fragments or other deleterious substances. Water shall be fresh, clean, and free from salts, alkali, organic matter, and other impurities. Concrete associated with electrical work for other than encasement of underground ducts shall be 4000 psi minimum 28-day compressive strength unless specified otherwise. Slump shall not exceed 4 inches. Retempering of concrete will not be permitted. Exposed, unformed concrete surfaces shall be given a smooth, wood float finish. Concrete shall be cured for a period of not less than 7 days, and concrete made with high early strength portland cement shall be repaired by patching honeycombed or otherwise defective areas with cement mortar as directed by the Contracting Officer. Air entrain concrete exposed to weather using an air-entraining admixture conforming to ASTM C 260. Air content shall be between 4 and 6 percent.

## 2.7 SOURCE QUALITY CONTROL

### 2.7.1 Transformer Test Schedule

The Government reserves the right to witness tests. Provide transformer test schedule for tests to be performed at the manufacturer's test facility. Submit required test schedule and location, and notify the Contracting Officer 30 calendar days before scheduled test date. Notify Contracting Officer 15 calendar days in advance of changes to scheduled date.

#### a. Test Instrument Calibration

1. The manufacturer shall have a calibration program which assures that all applicable test instruments are maintained within rated accuracy.
2. The accuracy shall be directly traceable to the National Institute of Standards and Technology.
3. Instrument calibration frequency schedule shall not exceed 12 months for both test floor instruments and leased specialty equipment.
4. Dated calibration labels shall be visible on all test equipment.
5. Calibrating standard shall be of higher accuracy than that of the instrument tested.
6. Keep up-to-date records that indicate dates and test results of instruments calibrated or tested. For instruments calibrated by the manufacturer on a routine basis, in lieu of third party calibration, include the following:
  - (a) Maintain up-to-date instrument calibration instructions and procedures for each test instrument.
  - (b) Identify the third party/laboratory calibrated instrument to

verify that calibrating standard is met.

### 2.7.2 Design Tests

IEEE C57.12.00, and IEEE C57.12.90. Section 5.1.2 in IEEE C57.12.80 states that "design tests are made only on representative apparatus of basically the same design." Submit design test reports (complete with test data, explanations, formulas, and results), in the same submittal package as the catalog data and drawings for the specified transformer(s). Perform design tests prior to the award of this contract.

- a. Tests shall be certified and signed by a registered professional engineer.
- b. Temperature rise: "Basically the same design" for the temperature rise test means a pad-mounted transformer with the same coil construction (such as wire wound primary and sheet wound secondary), the same kVA, the same cooling type (ONAN), the same temperature rise rating, and the same insulating liquid as the transformer specified.
- c. Lightning impulse: "Basically the same design" for the lightning impulse dielectric test means a pad-mounted transformer with the same BIL, the same coil construction (such as wire wound primary and sheet wound secondary), and a tap changer, if specified. Design lightning impulse tests shall include the primary windings only of that transformer.
  1. IEEE C57.12.90, paragraph 10.3 entitled "Lightning Impulse Test Procedures," and IEEE C57.98.
  2. State test voltage levels.
  3. Provide photographs of oscilloscope display waveforms or plots of digitized waveforms with test report.
- d. Lifting and moving devices: "Basically the same design" requirement for the lifting and moving devices test means a test report confirming that the lifting device being used is capable of handling the weight of the specified transformer in accordance with IEEE C57.12.34.
- e. Pressure: "Basically the same design" for the pressure test means a pad-mounted transformer with a tank volume within 30 percent of the tank volume of the transformer specified.
- f. Short circuit: "Basically the same design" for the short circuit test means a pad-mounted transformer with the same kVA as the transformer specified.

### 2.7.3 Routine and Other Tests

IEEE C57.12.00. Routine and other tests shall be performed by the manufacturer of the actual transformer(s) prepared for this project to ensure that the design performance is maintained in production. Submit test reports, by serial number and receive approval before delivery of equipment to the project site. Required tests and testing sequence shall be as follows:

- a. Cold resistance measurements (provide reference temperature)
- b. Phase relation
- c. Ratio
- d. No-load losses (NLL) and excitation current
- e. Load losses (LL) and impedance voltage
- f. Dielectric
  - 1. Impulse
  - 2. Applied voltage
  - 3. Induced voltage
- g. Leak
- h. Dissolved gas analysis (DGA)

### PART 3 EXECUTION

#### 3.1 INSTALLATION

Electrical installations shall conform to **IEEE C2**, **NFPA 70**, and to the requirements specified herein. Provide new equipment and materials unless indicated or specified otherwise.

#### 3.2 GROUNDING

**NFPA 70** and **IEEE C2**, except that grounding systems shall have a resistance to solid earth ground not exceeding 5 ohms.

##### 3.2.1 Grounding Electrodes

Provide driven ground rods as specified. Connect ground conductors to the upper end of ground rods by exothermic weld or compression connector. Provide compression connectors at equipment end of ground conductors.

##### 3.2.2 Pad-Mounted Transformer Grounding

Provide separate copper grounding conductors and connect them to the ground loop as indicated. When work in addition to that indicated or specified is required to obtain the specified ground resistance, the provision of the contract covering "Changes" shall apply.

##### 3.2.3 Connections

Make joints in grounding conductors and loops by exothermic weld or compression connector. Install exothermic welds and compression connectors as specified.

##### 3.2.4 Grounding and Bonding Equipment

UL 467, except as indicated or specified otherwise.

### 3.3 TRANSFORMER GROUNDING

Provide a 1/0 bare copper-ground girdle around transformer. Girdle shall be buried one foot deep and placed 3 feet laterally from the transformer enclosure. Connect girdle to enclosure at two opposite places using 1/0 copper. Exothermically weld joints.

### 3.4 INSTALLATION OF EQUIPMENT AND ASSEMBLIES

Install and connect pad-mounted transformers furnished under this section as indicated on project drawings, the approved shop drawings, and as specified herein.

#### 3.4.1 Meters and Current Transformers

NEMA C12.1.

### 3.5 FIELD APPLIED PAINTING

Where field painting of enclosures is required to correct damage to the manufacturer's factory applied coatings, provide manufacturer's recommended coatings and apply in accordance with manufacturer's instructions.

### 3.6 WARNING SIGN MOUNTING

Provide the number of signs required to be readable from each accessible side, but space the signs a maximum of 30 feet apart.

### 3.7 FOUNDATION FOR EQUIPMENT AND ASSEMBLIES

Mount transformer on concrete slab. Unless otherwise indicated, the slab shall be at least 10 inches thick, reinforced with a 6 by 6 - W2.9 by W2.9 mesh, placed uniformly 4 inches from the top of the slab. Place the slab on a 6 inch thick, well-compacted gravel base. Top of concrete slab shall be approximately 6 inches above finished grade with gradual slope for drainage. Edges above grade shall have 1/2 inch chamfer. Slab shall be of adequate size to project at least 12 inches beyond the equipment.

Stub up conduits, with bushings, 2 inches into cable wells in the concrete pad. Coordinate dimensions of cable wells with transformer cable training areas.

The location shall meet the following requirements. The selected location must be conducive to the installation of underground primary electrical cables.

The edge of the concrete pad nearest the building shall be:

- No closer than 14 ft. from doorways.

- No closer than 10 ft. from building wall, windows or other openings.

Transformers shall be located such that:

- The front of the transformer faces away from the building.

- There are 10 ft. of clearance in front of the transformer doors.

- They are easily accessible by personnel and heavy equipment during construction and after project completion.

- The minimum spacing between transformers is 5 ft.

There is unrestricted air flow for cooling requirements. Trees, shrubs, and other similar vegetation must be kept at least 10 ft. from all sides of the

transformer.

The Transformers shall be sized similar to the existing transformers and shall meet all load requirements.

### 3.7.1 Cast-In-Place Concrete

Cast-in-place concrete work shall conform to the requirements of NAVFAC UFC

### 3.7.2 Sealing

When the installation is complete, the Contractor shall seal all conduit and other entries into the equipment enclosure with an approved sealing compound. Seals shall be of sufficient strength and durability to protect all energized live parts of the equipment from rodents, insects, or other foreign matter.

## 3.8 FIELD QUALITY CONTROL

### 3.8.1 Performance of [Acceptance Checks and Tests](#)

Perform in accordance with the manufacturer's recommendations and include the following visual and mechanical inspections and electrical tests, performed in accordance with [NETA ATS](#).

#### 3.8.1.1 Pad-Mounted Transformers

##### a. Visual and mechanical inspection

1. Compare equipment nameplate information with specifications and approved shop drawings.
2. Inspect physical and mechanical condition. Check for damaged or cracked insulators and leaks.
3. Inspect all bolted electrical connections for high resistance using low-resistance ohmmeter, verifying tightness of accessible bolted electrical connections by calibrated torque-wrench method, or performing thermographic survey.
4. Verify correct liquid level in tanks.
5. Perform specific inspections and mechanical tests as recommended by manufacturer.
6. Verify correct equipment grounding.
7. Verify the presence of transformer surge arresters.

##### b. Electrical tests

1. Perform resistance measurements through all bolted connections with low-resistance ohmmeter.
2. Verify that the tap-changer is set at specified ratio.
3. Verify proper secondary voltage phase-to-phase and phase-to-neutral after energization and prior to loading.

### 3.8.1.2 Current Transformers

#### a. Visual and mechanical inspection

1. Compare equipment nameplate data with specifications and approved shop drawings.
2. Inspect physical and mechanical condition.
3. Verify correct connection.
4. Verify that adequate clearances exist between primary and secondary circuit.
5. Inspect all bolted electrical connections for high resistance using low-resistance ohmmeter, verifying tightness of accessible bolted electrical connections by calibrated torque-wrench method, or performing thermographic survey.
6. Verify that required grounding and shorting connections provide good contact.

#### b. Electrical tests

1. Perform resistance measurements through all bolted connections with low-resistance ohmmeter, if applicable.
2. Perform insulation-resistance test.
3. Perform a polarity test.
4. Perform a ratio-verification test.

### 3.8.1.3 Watthour Meter

#### a. Visual and mechanical inspection

1. Compare equipment nameplate data with specifications and approved shop drawings.
2. Inspect physical and mechanical condition.
3. Verify tightness of electrical connections.

#### b. Electrical tests

1. Calibrate watthour meters according to manufacturer's published data.
2. Verify that correct multiplier has been placed on face of meter, where applicable.
3. Verify that current transformer secondary circuits are intact.

### 3.8.1.4 Grounding System

- a. Visual and mechanical inspection
  - 1. Inspect ground system for compliance with contract plans and specifications.
- b. Electrical tests
  - 1. Perform ground-impedance measurements utilizing the fall-of-potential method. On systems consisting of interconnected ground rods, perform tests after interconnections are complete. On systems consisting of a single ground rod perform tests before any wire is connected. Take measurements in normally dry weather, not less than 48 hours after rainfall. Use a portable ground testing megger in accordance with manufacturer's instructions to test each ground or group of grounds. Equip the instrument with a meter reading directly in ohms or fractions thereof to indicate the ground value of the ground rod or grounding systems under test.
  - 2. Submit the measured ground resistance of each ground rod and grounding system, indicating the location of the rod and grounding system. Include the test method and test setup (i.e., pin location) used to determine ground resistance and soil conditions at the time the measurements were made.

### 3.8.2 Follow-Up Verification

Upon completion of acceptance checks and tests, the Contractor shall show by demonstration in service that circuits and devices are in good operating condition and properly performing the intended function. As an exception

to requirements stated elsewhere in the contract, the Contracting Officer shall be given 5 working days advance notice of the dates and times of checking and testing.

-- End of Section --

SECTION 26 23 00.00 40

SWITCHBOARDS AND SWITCHGEAR

12/08

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- ANSI C12.15 (1990) Solid-State Demand Registers for Electromechanical Watthour Meters
- ANSI C39.1 (1981; R 1992) Requirements for Electrical Analog Indicating Instruments

ASTM INTERNATIONAL (ASTM)

- ASTM A 123/A 123M (2008) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- ASTM A 153/A 153M (2005) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- ASTM A 167 (1999; R 2004) Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
- ASTM A 653/A 653M (2008) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- ASTM A 780 (2001; R 2006) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
- ASTM D 149 (1997a; R 2004) Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies
- ASTM D 1535 (2008) Specifying Color by the Munsell System
- ASTM D 709 (2001; R 2007) Laminated Thermosetting Materials

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C12.16	(1991) Solid-State Electricity Meters
IEEE C2	(2007; Errata 2007; INT 2008) National Electrical Safety Code
IEEE C37.13	(1990; R 1995) Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures
IEEE C37.20.1	(2002; Addenda A 2005; Addenda B 2006; R 2007) Standard for Metal-Enclosed Low-Voltage Power Circuit-Breaker Switchgear
IEEE C37.90.1	(2002; Errata 2003) Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus
IEEE C57.12.28	(2005) Standard for Pad-Mounted Equipment - Enclosure Integrity
IEEE C57.12.29	(2005) Pad-Mounted Equipment - Enclosure Integrity for Coastal Environments
IEEE C57.13	(2008) Standard Requirements for Instrument Transformers
IEEE Std 100	(2000) The Authoritative Dictionary of IEEE Standards Terms
IEEE Std 81	(1983) Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System (Part 1) Normal Measurements

INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)

NETA ATS	(2003) Acceptance Testing Specifications
----------	--

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA C12.1	(2008) Electric Meters; Code for Electricity Metering
NEMA C12.10	(2004) Physical Aspects of Watthour Meters
NEMA C12.4	(1984; R 2002) Mechanical Demand Registers
NEMA ICS 6	(1993; R 2006) Standard for Industrial Controls and Systems Enclosures
NEMA LI 1	(1998) Industrial Laminated Thermosetting Products
NEMA PB 2	(2006) Deadfront Distribution Switchboards

NEMA PB 2.1 (2007) General Instructions for Proper Handling, Installation, Operation and Maintenance of Deadfront Distribution Switchboards Rated 600 Volts or Less

NEMA ST 20 (1992; R 1997) Standard for Dry-Type Transformers for General Applications

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2007; AMD 1 2008) National Electrical Code - 2008 Edition

UNDERWRITERS LABORATORIES (UL)

UL 1558 (1999; Rev thru Mar 2006) Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear

UL 198M (2003; Rev thru Oct 2007) Mine-Duty Fuses

UL 467 (2007) Standard for Grounding and Bonding Equipment

UL 489 (2002; Rev thru Jun 2006) Standard for Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures

UL 512 (1993; Rev thru Jan 2008) Fuseholders

UL 891 (2005) Dead-Front Switchboards

1.2 DEFINITIONS

- a. Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, shall be as defined in IEEE Std 100.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Switchgear Drawings; G

Include wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment

devices. Submittals shall include the nameplate data, size, and capacity. Submittals shall also include applicable federal, military, industry, and technical society publication references.

#### SD-03 Product Data

Switchgear; G

#### SD-06 Test Reports

Switchgear design tests; G

Switchgear production tests; G

Acceptance checks and tests; G

#### SD-10 Operation and Maintenance Data

Switchgear Operation and Maintenance, Data Package 5; G

#### SD-11 Closeout Submittals

Assembled Operation and Maintenance Manuals; G

Equipment Test Schedule; G

Request for Settings; G

### 1.5 QUALITY ASSURANCE

#### 1.5.1 Switchgear Product Data

Each submittal shall include manufacturer's information for each component, device and accessory provided with the switchgear including:

- a. Circuit breaker type, interrupting rating, and trip devices, including available settings
- b. Manufacturer's instruction manuals and published time-current curves (on full size logarithmic paper) of the main secondary breaker and largest secondary feeder device.

#### 1.5.2 Switchgear Drawings

Drawings shall include, but are not limited to the following:

- a. One-line diagram including breakers, fuses, current transformers, and meters
- b. Outline drawings including front elevation, section views, footprint, and overall dimensions
- c. Bus configuration including dimensions and ampere ratings of bus bars
- d. Markings and NEMA nameplate data, including fuse information (manufacturer's name, catalog number, and ratings)

- e. Circuit breaker type, interrupting rating, and trip devices, including available settings
- f. Three-line diagrams and elementary diagrams and wiring diagrams with terminals identified, and indicating prewired interconnections between items of equipment and the interconnection between the items.
- g. Manufacturer's instruction manuals and published time-current curves (on full size logarithmic paper) of the main secondary breaker and largest secondary feeder device. These shall be used by the designer of record to provide breaker settings that will ensure protection and coordination are achieved.

### 1.5.3 Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

### 1.5.4 Standard Products

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in this section.

#### 1.5.4.1 Alternative Qualifications

Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

#### 1.5.4.2 Material and Equipment Manufacturing Date

Products manufactured more than 3 years prior to date of delivery to site shall not be used, unless specified otherwise.

## 1.6 MAINTENANCE

### 1.6.1 Switchgear Operation and Maintenance Data

Submit Operation and Maintenance Manuals in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

### 1.6.2 Assembled Operation and Maintenance Manuals

Manuals shall be assembled and bound securely in durable, hard covered, water resistant binders. The manuals shall be assembled and indexed in the following order with a table of contents. The contents of the assembled operation and maintenance manuals shall be as follows:

- a. Manufacturer's O&M information required by the paragraph entitled "SD-10, Operation and Maintenance Data".
- b. Catalog data required by the paragraph entitled, "SD-03, Product Data".
- c. Drawings required by the paragraph entitled, "SD-02, Shop Drawings".
- d. Prices for spare parts and supply list.
- e. Information on metering
- f. Design test reports
- g. Production test reports

### 1.6.3 Spare Parts

Spare parts shall be furnished as specified below. All spare parts shall be of the same material and workmanship, shall meet the same requirements, and shall be interchangeable with the corresponding original parts furnished.

- a. 2 - Fuses of each type and size.

## 1.7 WARRANTY

The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

## PART 2 PRODUCTS

### 2.1 SWITCHGEAR

The switchgear will be manufactured by S & C Electric Company or from a manufacturer of a switchgear of similar design and quality. The specification detail is attached to this section as an attachment and will be used as a comparison and for the design ratings requirement for the new switchgear. The switchgear will be similar in rating to the existing switchgear. The design and quality will be confirmed by the Contracting Officer.

Provide a microprocessor-based device designed to monitor and display parameters of the circuit breaker electronic trip units. The central monitor shall have the following features:

- a. Alphanumeric display.

- b. Indication of circuit breaker status; tripped, open, closed.
- c. Cause of circuit breaker trip.
- d. Phase, neutral, and ground current for each breaker.
- e. Energy parameters for each breaker.
- f. Provisions for communicating directly to a remote computer.

## 2.2 Watthour and Digital Meters

### 2.2.1 Digital Meters

IEEE C37.90.1 for surge withstand. Provide true rms, plus/minus one percent accuracy, programmable, microprocessor-based meter enclosed in sealed cases with a simultaneous three line, twelve value LED display.

- a. Multi-Function Meter: Meter shall simultaneously display a selected phase to neutral voltage, phase to phase voltage, percent phase to neutral voltage THD, percent phase to phase voltage THD; a selected phase current, neutral current, percent phase current THD, percent neutral current; selected total PF, kW, KVA, kVAR, FREQ, kVAh, kWh. Detected alarm conditions include over/under current, over/under voltage, over/under KVA, over/under frequency, over/under selected PF/kVAR, voltage phase reversal, voltage imbalance, reverse power, over percent THD. The meter shall have a Form C KYZ pulse output relay.
- b. Power Meter: Meter shall simultaneously display Watts, VARs, and selected KVA/PF. Detected alarm conditions include over/under KVA, over/under PF, over/under VARs, over/under reverse power.
- c. Volt Meter: Meter shall be selectable between simultaneous display of the three phases of phase to neutral voltages and simultaneous display of the three phases of the phase to phase voltages. Detected alarm conditions include over/under voltage, over/under voltage imbalance, over percent THD.
- d. Ammeter: Meter shall simultaneously display phase A, B, and C currents. Detected alarm conditions include over/under current, over percent THD.
- e. Digital Watthour Meter: Meter shall have a single selectable display for watts, total kilowatt hours (kWh) and watt demand (Wd). The meter shall have a Form C KYZ pulse output relay.

### 2.2.2 Wire Marking

Mark control and metering conductors at each end. Provide factory-installed, white, plastic tubing, heat stamped with black block type letters on factory-installed wiring. On field-installed wiring, provide white, preprinted, polyvinyl chloride (PVC) sleeves, heat stamped with black block type letters. Each sleeve shall contain a single letter or number, shall be elliptically shaped to securely grip the wire, and

shall be keyed in such a manner to ensure alignment with adjacent sleeves. Provide specific wire markings using the appropriate combination of individual sleeves. Each wire marker shall indicate the device or equipment, including specific terminal number to which the remote end of the wire is attached.

### 2.3 MANUFACTURER'S NAMEPLATE

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable. This nameplate and method of attachment may be the manufacturer's standard if it contains the required information.

### 2.4 FIELD FABRICATED NAMEPLATES

**ASTM D 709.** Provide laminated plastic nameplates for each switchgear, equipment enclosure, relay, switch, and device; as specified in this section or as indicated on the drawings. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125 inch thick, white with black center core. Provide red laminated plastic label with white center core where indicated. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be one by 2.5 inches. Lettering shall be a minimum of 0.25 inch high normal block style.

### 2.5 SOURCE QUALITY CONTROL

#### 2.5.1 Equipment Test Schedule

The Government reserves the right to witness tests. Provide equipment test schedules for tests to be performed at the manufacturer's test facility. Submit required test schedule and location, and notify the Contracting Officer 30 calendar days before scheduled test date. Notify Contracting Officer 15 calendar days in advance of changes to scheduled date.

#### a. Test Instrument Calibration

1. The manufacturer shall have a calibration program which assures that all applicable test instruments are maintained within rated accuracy.
2. The accuracy shall be directly traceable to the National Institute of Standards and Technology.
3. Instrument calibration frequency schedule shall not exceed 12 months for both test floor instruments and leased specialty equipment.
4. Dated calibration labels shall be visible on all test equipment.
5. Calibrating standard shall be of higher accuracy than that of the instrument tested.
6. Keep up-to-date records that indicate dates and test results of instruments calibrated or tested. For instruments calibrated by

the manufacturer on a routine basis, in lieu of third party calibration, include the following:

(a) Maintain up-to-date instrument calibration instructions and procedures for each test instrument.

(b) Identify the third party/laboratory calibrated instrument to verify that calibrating standard is met.

#### 2.5.2 Switchgear Design Tests

NEMA PB 2 and UL 891IEEE C37.20.1 and UL 1558.

##### 2.5.2.1 Design Tests

Furnish documentation showing the results of design tests on a product of the same series and rating as that provided by this specification.

#### 2.5.3 Switchgear Production Tests

IEEE C37.20.1 and UL 1558. Furnish reports which include results of production tests performed on the actual equipment for this project. These tests include:

- a. 60-hertz dielectric tests
- b. Mechanical operation tests
- c. Electrical operation and control wiring tests
- d. Ground fault sensing equipment test

#### 2.6 COORDINATED POWER SYSTEM PROTECTION

Provide a power system study as specified in UFCs.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

Electrical installations shall conform to IEEE C2, NFPA 70, and to the requirements specified herein.

#### 3.2 GROUNDING

NFPA 70 and IEEE C2, except that grounds and grounding systems shall have a resistance to solid earth ground not exceeding 5 ohms.

##### 3.2.1 Grounding Electrodes

Connect ground conductors to the upper end of the ground rods by exothermic weld or compression connector. Provide compression connectors at equipment end of ground conductors.

##### 3.2.2 Equipment Grounding

Provide bare copper cable not smaller than No. 4/0 AWG not less than 24 inches below grade connecting to the indicated ground rods. When work in addition to that indicated or specified is directed to obtain the specified ground resistance, the provision of the contract covering "Changes" shall apply.

### 3.2.3 Connections

Make joints in grounding conductors and loops by exothermic weld or compression connector.

### 3.2.4 Grounding and Bonding Equipment

UL 467, except as indicated or specified otherwise.

## 3.3 INSTALLATION OF EQUIPMENT AND ASSEMBLIES

Install and connect equipment furnished under this section as indicated on project drawings, the approved shop drawings, and as specified herein.

### 3.3.2 Switchgear

IEEE C37.20.1.

### 3.3.3 Meters and Instrument Transformers

NEMA C12.1.

### 3.3.4 Field Applied Painting

Where field painting of enclosures is required to correct damage to the manufacturer's factory applied coatings, provide manufacturer's recommended coatings and apply in accordance with manufacturer's instructions.

### 3.3.5 Galvanizing Repair

Repair damage to galvanized coatings using ASTM A 780, zinc rich paint, for galvanizing damaged by handling, transporting, cutting, welding, or bolting. Do not heat surfaces that repair paint has been applied to.

### 3.3.6 Field Fabricated Nameplate Mounting

Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets.

## 3.4 FOUNDATION FOR EQUIPMENT AND ASSEMBLIES

### 3.4.1 Exterior Location

Mount switchgear on concrete slab. Unless otherwise indicated, the slab shall be at least 8 inches thick, reinforced with a 6 by 6 inch No. 6 mesh placed uniformly 4 inches from the top of the slab. Slab shall be placed on a 6 inch thick, well-compacted gravel base. The top of the concrete slab shall be approximately 6 inches above the finished grade. Edges above grade shall have 1/2 inch chamfer. The slab shall be of adequate size to

project at least 12 inches beyond the equipment. Provide conduit turnups and cable entrance space required by the equipment to be mounted. Seal voids around conduit openings in slab with water- and oil-resistant caulking or sealant. Cut off and bush conduits 3 inches above slab surface. .

### 3.5 FIELD QUALITY CONTROL

Contractor shall submit settings of breakers to the Contracting Officer after approval of switchgear and at least 30 days in advance of their requirement.

#### 3.5.1 Performance of Acceptance Checks and Tests

Perform in accordance with the manufacturer's recommendations and include the following visual and mechanical inspections and electrical tests, performed in accordance with NETA ATS.

##### 3.5.1.1 Switchboard Assemblies

###### a. Visual and Mechanical Inspection

1. Compare equipment nameplate data with specifications and approved shop drawings.
2. Inspect physical, electrical, and mechanical condition.
3. Confirm correct application of manufacturer's recommended lubricants.
4. Verify appropriate anchorage, required area clearances, and correct alignment.
5. Inspect all doors, panels, and sections for paint, dents, scratches, fit, and missing hardware.
6. Verify that fuse and circuit breaker sizes and types correspond to approved shop drawings.
7. Verify that current transformer ratios correspond to approved shop drawings.
8. Inspect all bolted electrical connections for high resistance using low-resistance ohmmeter, verifying tightness of accessible bolted electrical connections by calibrated torque-wrench method, or performing thermographic survey.
9. Confirm correct operation and sequencing of electrical and mechanical interlock systems.
10. Clean switchboard.
11. Inspect insulators for evidence of physical damage or contaminated surfaces.
12. Verify correct installation and operation.

13. Exercise all active components.
14. Inspect all mechanical indicating devices for correct operation.
15. Verify that vents are clear.
16. Test operation, alignment, and penetration of instrument transformer withdrawal disconnects.
17. Inspect control power transformers.

b. Electrical Tests

1. Perform all test recommended by Manufacturer.

3.5.1.2 Switchgear

a. Visual and Mechanical Inspection

1. Compare equipment nameplate data with specifications and approved shop drawings.
2. Inspect physical, electrical, and mechanical condition.
3. Confirm correct application of manufacturer's recommended lubricants.
4. Verify appropriate anchorage, required area clearances, and correct alignment.
5. Inspect all doors, panels, and sections for paint, dents, scratches, fit, and missing hardware.
6. Verify that fuse and circuit breaker sizes and types correspond to approved shop drawings.
7. Inspect all bolted electrical connections for high resistance using low-resistance ohmmeter, verifying tightness of accessible bolted electrical connections by calibrated torque-wrench method, or performing thermographic survey.
8. Confirm correct operation and sequencing of electrical and mechanical interlock systems.
9. Clean switchgear.
10. Inspect insulators for evidence of physical damage or contaminated surfaces.
11. Verify correct barrier installation and operation.
12. Exercise all active components.
13. Inspect all mechanical indicating devices for correct operation.
14. Verify that vents are clear.

15. Test operation, alignment, and penetration of instrument transformer withdrawal disconnects.

#### 3.5.1.3 Grounding System

##### a. Visual and Mechanical Inspection

1. Inspect ground system for compliance with contract plans and specifications.

##### b. Electrical Tests

1. **IEEE Std 81.** Perform ground-impedance measurements utilizing the fall-of-potential method. On systems consisting of interconnected ground rods, perform tests after interconnections are complete. On systems consisting of a single ground rod perform tests before any wire is connected. Take measurements in normally dry weather, not less than 48 hours after rainfall. Use a portable ground testing megger in accordance with manufacturer's instructions to test each ground or group of grounds. The instrument shall be equipped with a meter reading directly in ohms or fractions thereof to indicate the ground value of the ground rod or grounding systems under test.
2. Submit the measured ground resistance of each ground rod and grounding system, indicating the location of the rod and grounding system. Include the test method and test setup (i.e., pin location) used to determine ground resistance and soil conditions at the time the measurements were made.

#### 3.5.2 Follow-Up Verification

Upon completion of acceptance checks, settings, and tests, the Contractor shall show by demonstration in service that circuits and devices are in good operating condition and properly performing the intended function. Circuit breakers shall be tripped by operation of each protective device. Test shall require each item to perform its function not less than three times. As an exception to requirements stated elsewhere in the contract, the Contracting Officer shall be given 5 working days advance notice of the dates and times for checks, settings, and tests.

-- End of Section --

1.0 GENERAL

1.01 The switchgear shall be in accordance with the single-line diagram, and shall conform to the following specification.

1.02 The switchgear shall consist of a gas-tight tank containing SF6 gas, load-interrupter switches and resettable fault interrupters with visible open gaps and integral visible grounds, and a microprocessor-based overcurrent control. Load-interrupter switch terminals shall be equipped with bushings rated 600 or 900 amperes continuous, and fault-interrupter terminals shall be equipped with bushing wells rated 200 amperes continuous or bushings rated 600 or 900 amperes continuous (as specified) to provide for elbow connection. Manual operating mechanisms and viewing windows shall be located on the opposite side of the tank from the bushings and bushing wells, so that operating personnel shall not be required to perform any routine operations in close proximity to high-voltage elbows and cables. Using gas-tight air-insulated bushings on one or both sides of the tank, multiple tanks shall be joined together, as required, with air-insulated transition bays.

1.03 Ratings

The ratings for the integrated switchgear shall be as designated below. *(Select values from the table on page 2.)*

Frequency, Hz	_____
Short-Circuit	
Amperes, RMS, Symmetrical	_____
Voltage Class, kV	_____
Maximum Voltage, kV	_____
BIL Voltage, kV	_____
Main Bus Continuous Current, Amperes	_____
Three-Pole Load-Interrupter Switches	
Continuous Current, Amperes	_____
Load Dropping Current, Amperes	_____
Fault-Closing Current, Duty-Cycle	
Three-Time, Amperes, RMS, Symmetrical	_____
Three-Time, Amperes, Peak	_____
Ten-Time, Amperes, RMS, Symmetrical	_____
Ten-Time, Amperes, Peak	_____
Fault Interrupters	
Continuous Current, Amperes	_____
Load Dropping Current, Amperes	_____
Fault Interrupting Current, Duty-Cycle	
Three-Time, Amperes, RMS, Symmetrical	_____
Ten-Time, Amperes, RMS, Symmetrical	_____
Fault-Closing Current, Duty-Cycle	
Three-Time, Amperes, RMS, Symmetrical	_____
Three-Time, Amperes, Peak	_____
Ten-Time, Amperes, RMS, Symmetrical	_____
Ten-Time, Amperes, Peak	_____



SELECTION OF RATINGS<sup>①</sup>

		IEC			ANSI		
Frequency, Hz		50 or 60			50 or 60		
Short-Circuit Current, Amperes, RMS, Symmetrical		12 500			12 500		
Voltage Class, kV		12	24	36	15.5	27	38
Maximum Voltage, kV		15.5	29	38	15.5	29	38
BIL Voltage, kV		95	125	150	95	125	150
Main Bus Continuous Current, Amperes <sup>②</sup>		630	630	630	600	600	600
Three-Pole Load-Interrupter Switches	Continuous Current, Amperes	630	630	630	600	600	600
	Load Dropping Current, Amperes	630	630	630	600	600	600
	Fault Closing Current, Duty-Cycle						
	Three-Time, Amperes, RMS, Symmetrical	16 000	16 000	16 000	16 000	16 000	16 000
	Three-Time, Amperes, Peak	41 600	41 600	41 600	41 600	41 600	41 600
	Ten-Time, Amperes, RMS, Symmetrical	16 000	16 000	16 000	16 000	16 000	16 000
Ten-Time, Amperes, Peak	41 600	41 600	41 600	41 600	41 600	41 600	
Fault Interrupters	Continuous Current, Amperes	200★	200★	200★	200★	200★	200★
	Load Dropping Current, Amperes	200★	200★	200★	200★	200★	200★
	Fault Interrupting Current, Duty-Cycle						
	Three-Time, Amperes, RMS, Symmetrical	12 500	12 500	12 500	12 500	12 500	12 500
	Ten-Time, Amperes, RMS, Symmetrical	12 500	12 500	12 500	12 500	12 500	12 500
	Fault Closing Current, Duty-Cycle						
	Three-Time, Amperes, RMS, Symmetrical	12 500	12 500	12 500	12 500	12 500	12 500
	Three-Time, Amperes, Peak	32 000	32 000	32 000	32 000	32 000	32 000
Ten-Time, Amperes, RMS, Symmetrical	12 500	12 500	12 500	12 500	12 500	12 500	
Ten-Time, Amperes, Peak	32 500	32 500	32 500	32 500	32 500	32 500	

		50 or 60			50 or 60		
Frequency, Hz		50 or 60			50 or 60		
Short-Circuit Current, Amperes, RMS, Symmetrical		25 000			25 000		
Voltage Class, kV		12	24	36	15.5	27	38
Maximum Voltage, kV		15.5	29	38	15.5	29	38
BIL Voltage, kV		95	125	150	95	125	150
Main Bus Continuous Current, Amperes <sup>②</sup>		630	630	630	600	600	600
Three-Pole Load-Interrupter Switches	Continuous Current, Amperes <sup>③</sup>	630	630	630	600	600	600
	Load Dropping Current, Amperes <sup>③</sup>	630	630	630	600	600	600
	Fault Closing Current, Duty-Cycle						
	Three-Time, Amperes, RMS, Symmetrical	25 000	25 000	25 000	25 000	25 000	25 000
	Three-Time, Amperes, Peak	65 000	65 000	65 000	65 000	65 000	65 000
	Ten-Time, Amperes, RMS, Symmetrical	16 000	16 000	16 000	16 000	16 000	16 000
Ten-Time, Amperes, Peak	41 600	41 600	41 600	41 600	41 600	41 600	
Fault Interrupters	Continuous Current, Amperes <sup>②</sup>	630	630	630	600	600	600
	Load Dropping Current, Amperes <sup>②</sup>	630	630	630	600	600	600
	Fault Interrupting Current, Duty-Cycle						
	Three-Time, Amperes, RMS, Symmetrical	25 000	25 000	25 000	25 000	25 000	25 000
	Ten-Time, Amperes, RMS, Symmetrical	12 500	12 500	12 500	12 500	12 500	12 500
	Fault Closing Current, Duty-Cycle						
	Three-Time, Amperes, RMS, Symmetrical	25 000	25 000	25 000	25 000	25 000	25 000
	Three-Time, Amperes, Peak	65 000	65 000	65 000	65 000	65 000	65 000
Ten-Time, Amperes, RMS, Symmetrical	16 000	16 000	16 000	16 000	16 000	16 000	
Ten-Time, Amperes, Peak	41 600	41 600	41 600	41 600	41 600	41 600	

① Actual capabilities may be limited to lower values by the bushing inserts, elbows, and cables used on these units.

② 1200-ampere bus rating is available.

③ 900-ampere load interrupting and fault interrupting ratings are available.

★ Ratings are 600 amperes (630 amperes for IEC) continuous and load dropping when the fault interrupters are furnished with 600-ampere bushings.

#### 1.04 Certification of Ratings

- (a) The manufacturer of the switchgear shall be completely and solely responsible for the performance of the load-interrupter switch and fault interrupter as well as the complete integrated assembly as rated.
- (b) The manufacturer shall furnish, upon request, certification of ratings of the load-interrupter switch, fault interrupter, and the integrated switchgear assembly consisting of switches and fault interrupters in combination with the gas-tight tank.

#### 1.05 Compliance with Standards and Codes

The switchgear shall conform to or exceed the applicable requirements of the following standards and codes:

- (a) The applicable portions of ANSI C57.12.28, covering enclosure integrity for pad-mounted equipment.
- (b) The applicable portions of ANSI C37.71, ANSI C37.72, ANSI C37.73, IEC 56, and IEC 265-1 (Class A), which specify test procedures and sequences for the load-interrupter switches, fault interrupters, and the complete switchgear assembly.

### 2.0 CONSTRUCTION

#### 2.01 SF<sub>6</sub>-Gas Insulation

- (a) The SF<sub>6</sub> gas shall conform to ASTM D2472.
- (b) The switchgear shall be filled with SF<sub>6</sub> gas to a pressure of 7 psig at 68° F.
- (c) The gas-tight tank shall be evacuated prior to filling with SF<sub>6</sub> gas to minimize moisture in the tank.
- (d) The switchgear shall withstand system voltage at a gas pressure of 0 psig at 68° F.
- (e) A gas-fill valve shall be provided.
- (f) A temperature-compensated pressure gauge shall be provided that is color coded to show the operating range. The gauge shall be mounted inside the gas-tight tank (visible through a large viewing window) to provide consistent pressure readings regardless of the temperature or altitude at the installation site.

#### 2.02 Gas-Tight Tank

- (a) The tank shall be submersible and able to withstand up to 10 feet of water over the base.
- (b) The tank shall be of welded construction and shall be made of 7-gauge mild steel or Type 304L stainless steel, as specified in Section 4.0.
- (c) A means of lifting the tank shall be provided.

2.03 Gas-Tight Tank Finish (for mild steel only)

- (a) To remove oils and dirt, to form a chemically and anodically neutral conversion coating to improve the finish-to-metal bond, and to retard underfilm propagation of corrosion, mild-steel surfaces shall undergo a thorough pretreatment process comprised of a fully automated system of cleaning, rinsing, phosphatizing, sealing, drying, and cooling, before any protective coatings are applied. By utilizing an automated pretreatment process, the mild-steel surfaces of the gas-tight tank shall receive a highly consistent thorough treatment, eliminating fluctuations in reaction time, reaction temperature, and chemical concentrations.
- (b) After pretreatment, protective coatings shall be applied that shall help resist corrosion and protect the mild-steel surfaces of the gas-tight tank. To establish the capability to resist corrosion and protect the mild steel, representative test specimens coated by the manufacturer's finishing system shall satisfactorily pass the following tests:
  - (1) 1500 hours of exposure to salt-spray testing per ASTM B 117 with:
    - (i) Underfilm corrosion not to extend more than 1/32 in. from the scribe, as evaluated per ASTM D 1645, Procedure A, Method 2 (scraping); and
    - (ii) Loss of adhesion from bare metal not to extend more than 1/8 in. from the scribe.
  - (2) 1000 hours of humidity testing per ASTM D 4585 using the Cleveland Condensing Type Humidity Cabinet, with no blistering as evaluated per ASTM D 714.
  - (3) Crosshatch-adhesion testing per ASTM D 3359 Method B, with no loss of finish.

Certified test abstracts substantiating the above capabilities shall be furnished upon request.

- (c) The finish shall be inspected for scuffs and scratches. Blemishes shall be touched up by hand to restore the protective integrity of the finish.
- (d) The finish shall be indoor light gray, satisfying the requirements of ANSI Standard Z55.1 for No. 61.

2.04 Viewing Windows

- (a) Each load-interrupter switch shall be provided with a large viewing window at least 6 inches by 12 inches to allow visual verification of the switch-blade position (closed, open, and grounded) while shining a flashlight on the blades.
- (b) Each fault interrupter shall be provided with a large viewing window at least 6 inches by 12 inches to allow visual verification of the disconnect-blade position (closed, open, and grounded) while shining a flashlight on the blades.
- (c) Viewing windows shall be located on the opposite side of the gear from the bushings and bushing wells so that operating personnel shall not be required to perform any routine operations in close proximity to high-voltage elbows and cables.
- (d) A cover shall be provided for each viewing window to prevent operating personnel from viewing the flash which may occur during switching operations.

---

## 2.05 High-Voltage Bus

- (a) Bus and interconnections shall withstand the stresses associated with short-circuit currents up through the maximum rating of the switchgear.
- (b) Before installation of aluminum bus, all electrical contact surfaces shall first be prepared by machine-abrading to remove any oxide film. Immediately after this operation, the electrical contact surfaces shall be coated with a uniform coating of an oxide inhibitor and sealant.

## 2.06 Provisions for Grounding

- (a) One ground-connection pad shall be provided on the gas-tight tank of the switchgear.
- (b) The ground-connection pad shall be constructed of stainless steel and welded to the gas-tight tank, and shall have a short-circuit rating equal to that of the switchgear.
- (c) When an enclosure is provided, no less than one enclosure ground pad shall be provided.

*The following optional feature should be specified as required:*

- (d) One ground-connection pad per way shall be provided.

## 2.07 Connections

- (a) *For gear rated 12.5 kA short circuit*, load-interrupter switches shall be equipped with 600-ampere bushings, and fault interrupters shall be equipped with 200-ampere bushing wells.
- (b) *For gear rated 25 kA short circuit*, load-interrupter switches and fault interrupters shall be equipped with 600- or 900-ampere bushings.
- (c) Bushings and bushing wells shall be located on one side of the gear to reduce the required operating clearance.

*The following optional feature should be specified as required:*

- (d) Bushings rated 600 or 900 amperes continuous shall be provided *without* a threaded stud.

*For gear rated 12.5 kA only, the following optional features should be specified as required:*

- (e) Fault interrupters shall be equipped with 600-ampere bushings.
- (f) Load-interrupter switches shall be equipped with 200-ampere bushing wells.

## 2.08 Bushings and Bushing Wells

- (a) Bushings and bushing wells shall conform to ANSI/IEEE Standard 386.
- (b) Bushings and bushing wells shall include a semiconductive coating.
- (c) Bushings and bushing wells shall be mounted in such a way that the semiconductive coating is solidly grounded to the gas-tight tank.

3.0. BASIC COMPONENTS (*Select applicable component specifications from those that follow.*)

3.01 Load-Interrupter Switches

- (a) The three-phase, group-operated load-interrupter switches shall have a three-time and ten-time duty-cycle fault-closing rating as specified under “Ratings.” This rating defines the ability to close the switch the designated number of times against a three-phase fault with asymmetrical (peak) current in at least one phase equal to the rated value, with the switch remaining operable and able to carry and interrupt rated current. Certified test abstracts establishing such ratings shall be furnished upon request.
- (b) The switch shall be provided with an integral ground position that is readily visible through the viewing window to eliminate the need for cable handling and exposure to high voltage to ground the equipment.
- (c) The ground position shall have a three-time and ten-time duty-cycle fault-closing rating.
- (d) The switch shall be provided with an open position that is readily visible through the viewing window to eliminate the need for cable handling and exposure to high voltage to establish a visible gap.
- (e) The open gaps of the switch shall be sized to allow cable testing through a feedthru bushing or the back of the elbow.

3.02 Fault Interrupters

- (a) Fault interrupters shall have a three-time and ten-time duty-cycle fault-closing and fault interrupting rating as specified under “Ratings.” This rating defines the fault interrupter’s ability to close the designated number of times against a three-phase fault with asymmetrical (peak) current in at least one phase equal to the rated value and clear the resulting fault current, with the interrupter remaining operable and able to carry and interrupt rated current. Certified test abstracts establishing such ratings shall be furnished upon request.
- (b) The fault interrupter shall be provided with a disconnect with an integral ground position that is readily visible through the viewing window to eliminate the need for cable handling and exposure to high voltage to ground the equipment.
- (c) The ground position shall have a three-time and ten-time duty-cycle fault-closing rating.
- (d) The disconnect shall be provided with an open position that is readily visible through the viewing window to eliminate the need for cable handling and exposure to high voltage to establish a visible gap.
- (e) The fault interrupter, including its three-position disconnect, shall be a single integrated design so that operation between the closed and open positions or the open and grounded positions is accomplished with a single, intuitive movement.
- (f) The open gaps of the disconnect shall be sized to allow cable testing through a feedthru bushing or the back of the elbow.
- (g) An internal indicator shall be provided for each fault interrupter to show when it is in the tripped condition. The indicator shall be clearly visible through the viewing window.

3.03 Operating Mechanisms

- (a) Load-interrupter switches and fault interrupters shall be operated by means of a quick-make, quick-break mechanism.
- (b) The manual handle shall charge the operating mechanism for closing, opening, and grounding of the switches and fault interrupters.

- (c) A single, integrated operating mechanism shall fully operate each fault interrupter or load interrupter switch in a continuous movement, so that additional operations are not required to establish open or grounded positions.
- (d) Operating mechanisms shall be equipped with an operation selector to prevent inadvertent operation from the closed position directly to the grounded position, or from the grounded position directly to the closed position. The operation selector shall require physical movement to the proper position to permit the next operation.
- (e) Operating shafts shall be padlockable in any position to prevent operation.
- (f) The operation selector shall be padlockable to prevent operation to the grounded position.
- (g) The operating mechanism shall indicate switch position which shall be clearly visible from the normal operating position.

#### 3.04 Overcurrent Control

- (a) A microprocessor-based overcurrent control shall be provided to initiate fault interruption.
- (b) The control shall be mounted in a watertight enclosure and shall be removable in the field without taking the gear out of service.
- (c) Control settings shall be field-programmable using a personal computer connected via a data port to the control. The data port shall be accessible from the exterior of the enclosure. Neither external power nor energization of the gear shall be required to set or alter control settings.
- (d) Power and sensing for the control shall be supplied by integral current transformers.
- (e) The minimum total clearing time (from initiation of the fault to total clearing) for fault interruption shall be 40 milliseconds (2.4 cycles) at 60 hertz or 44 milliseconds (2.2 cycles) at 50 hertz.
- (f) The control shall feature time-current characteristic (TCC) curves including standard E-speed, K-speed, coordinating-speed tap, coordinating-speed main, and relay curves per IEEE C37.112-1996. Coordinating-speed tap curves shall optimize coordination with load-side weak-link/backup current-limiting fuse combinations, and coordinating-speed main curves shall optimize coordination with tap-interrupter curves and upstream feeder breakers.
- (g) The standard E-speed curve shall have phase-overcurrent settings ranging from 25E through 400E. The standard K-speed curve shall have phase-overcurrent settings ranging from 25K through 200K. The coordinating-speed tap curve shall have phase-overcurrent and independent ground-overcurrent settings ranging from 50 amperes through 400 amperes. The coordinating-speed main curve shall have phase-overcurrent settings ranging from 100 amperes through 800 amperes and independent ground-overcurrent settings ranging from 100 amperes through 400 amperes.
- (h) Time-current characteristic curves shall conform to the following IEEE C37.112-1996 IEEE Standard Inverse-Time Characteristic Equations for Overcurrent Relays: U.S. Moderately Inverse Curve U1, U.S. Inverse Curve U2, U.S. Very Inverse Curve U3, U.S. Extremely Inverse Curve U4, U.S. Short-Time Inverse Curve U5, I.E.C. Class A Curve (Standard Inverse) C1, I.E.C. Class B Curve (Very Inverse) C2, I.E.C. Class C Curve (Extremely Inverse) C3, I.E.C. Long-Time Inverse Curve C4, and I.E.C. Short-Time Inverse Curve C5.

- (i) The control shall have field-adjustable instantaneous-trip settings (0.2 kA through 6 kA) and definite-time delay settings (32 ms through 96 ms for coordinating-speed tap and 64 ms through 128 ms for coordinating-speed main), to allow tailoring of the coordinating-speed tap and coordinating-speed main curves to the application.
- (j) Event records shall be easily extractable from the control using a personal computer connected to the data port.

3.05 Source-Transfer Control (*Select one of the two operating descriptions.*)

(a) Operating Description

(1) Transfer on Loss and Return of Source Voltage in Common-Bus Primary-Selective Systems

- (i) The normal condition shall be with one source load-interrupter switch (for the preferred source, as field-programmed) closed to energize the high-voltage bus, and with the other source load-interrupter switch (for the alternate source) open with its associated circuit available as a standby.

The control shall monitor the conditions of both power sources and shall initiate automatic switching when the preferred-source voltage has been lost (or reduced to a predetermined level) for a period of time sufficient to confirm that the loss is not transient. Automatic switching shall open the preferred-source load-interrupter switch and then close the alternate-source load-interrupter switch to restore power to the high-voltage bus. The total transfer time from the preferred to the alternate source shall be approximately 6 seconds.

- (ii) When normal voltage returns to the preferred source for a preset time, the control shall initiate retransfer to the preferred source if in the automatic return mode, or await manual retransfer if in the hold return mode. In the hold return mode, if the alternate source fails and the preferred source has been restored, the control shall initiate automatic retransfer to the preferred source.
- (iii) In the automatic return mode, the control shall provide either open transition (nonparalleling) or closed transition (paralleling) on retransfer, as field-programmed.

(2) Transfer on Loss and Return of Source Voltage in Split-Bus Primary-Selective Systems

- (i) The normal condition shall be with the two source load-interrupter switches closed and with the bus-tie load-interrupter switch open, so that each section of high-voltage bus is energized by its associated, separate source.

The control shall monitor the conditions of both power sources and shall initiate automatic switching when voltage has been lost (or reduced to a predetermined level) on either source for a period of time sufficient to confirm that the loss is not transient. Automatic switching shall open the load-interrupter switch associated with the affected source and then close the bus-tie load-interrupter switch to restore power to the affected section of the high-voltage bus.

- (ii) When normal voltage returns to the affected source for a preset time, the control shall initiate retransfer to the original configuration if in the automatic return mode, or await manual retransfer if in the hold return mode. In the hold return mode, if the source in use fails and if voltage on the other source has been restored, the control shall initiate automatic retransfer on the restored source.
  - (iii) In the automatic return mode, the control shall provide either open transition (nonparalleling) or closed transition (paralleling) on retransfer, as field-programmed.
- (3) Transfer on Unbalance Condition
- (i) A field-programmable unbalance detection feature shall initiate automatic switching on detection of source-side open-phase conditions at the same system voltage level as the switchgear, whether caused by utility-line burndown, broken conductors, single-phase switching, equipment malfunctions, or single-phasing resulting from blown source-side fuses. The control shall continuously develop and monitor the negative-sequence voltage to detect any unbalance present as a result of an open-phase condition. Automatic switching shall occur when the system unbalance exceeds a predetermined unbalance-detect voltage for a period of time sufficient to confirm that the condition is not transient.
  - (ii) When normal phase voltages return to the preferred source, the control shall initiate retransfer as described in 3.05 (a) (1) (ii) and (iii) for common-bus primary-selective systems or 3.05 (a) (2) (ii) and (iii) for split-bus primary-selective systems.
- (b) Control Features
- (1) The operating characteristics of the source-transfer control and its voltage-, current-, and time-related operating parameters shall be field-programmable and entered into the control by means of a keypad. To simplify entry of this information, a menu arrangement shall be utilized including keys dedicated to the operating characteristics and to each of the operating parameters. Entry of an access code shall be necessary before any operating characteristic or operating parameter can be changed.
  - (2) All operating characteristics and operating parameters shall be available for review on a liquid-crystal display with backlighting.
  - (3) Light-emitting diode lamps shall be furnished for indicating the presence of acceptable voltage on each high-voltage source.
  - (4) A light-emitting diode lamp shall be furnished for indicating that the control is in the automatic mode, the operation selector for each operator is in the operating position, and all control circuitry is properly connected for automatic transfer.  
  
The display specified in 3.05 (b) (2), when not being used to show menu information, shall show messages explaining why this lamp is not lighted.
  - (5) A selector switch shall be furnished for choosing manual or automatic operating mode. In the manual mode, local electrical open and closed operation by means of push buttons shall be enabled while automatic switching shall be inhibited.

- (6) Test keys shall be furnished for simulating loss of voltage on each of the two sources, as well as for checking the functioning of the lamps, display, and keypad.
  - (7) The control shall automatically record system status and source-transfer control status every time a control operation occurs, for use in analyzing system events. All such operations shall be indicated by the illumination of a light-emitting diode lamp and shall be available for display by means of a dedicated event key.
  - (8) The present source voltage and current inputs, and the present status of discrete inputs to and outputs from the control shall be available for display by means of a dedicated examine key.
  - (9) The control shall have the capability to automatically calibrate to a known voltage on each source. This capability shall be keypad-selectable.
- (c) Construction Features
- (1) The source-transfer control shall use an advanced microprocessor and other solid-state electronic components to provide the superior reliability and serviceability required for use in power equipment. All components shall be soldered on printed-circuit boards to minimize the number of interconnections for increased reliability.
  - (2) All interconnecting-cable connector pins and receptacle contacts shall be gold-over-nickel plated to minimize contact pressure.
  - (3) The surge withstand capability of the control shall be verified by subjecting the device to both the ANSI/IEEE Surge Withstand Capability Test (ANSI Standard C37.90.1), and to ANSI Standard C62.41 Category B Power Line Surge.
  - (4) To identify and eliminate components that might be prone to early failure, the control shall be subjected to a dielectric test, a functional check, and a 48-hour screening test followed by a second functional check. For the screening test, the device shall be energized at rated control voltage while subjected to 48 hours of temperature cycling repeatedly between -40° C and +65° C.
  - (5) The control shall be located in the grounded, steel-enclosed low-voltage compartment/enclosure, with the operators. The compartment shall provide isolation from high voltage.
- (d) Voltage Sensing and Control Power
- (1) Voltage sensing shall be provided by three capacitively coupled voltage sensors on the line side of each source load-interrupter switch.
  - (2) The output of the voltage sensors shall be directly proportional to line-to-ground voltage.
  - (3) Control power shall be provided by unfused voltage transformers internal to the tank.

*The following optional features should be specified as required:*

- (e) An overcurrent-lockout feature shall be provided to prevent an automatic transfer operation that would close a source load-interrupter switch into a fault. The feature shall include a light-emitting diode lamp for indicating when a lockout condition has occurred, a reset key for manually resetting the lockout condition, and three current sensors for each source. Provisions shall be furnished for manually resetting the overcurrent-lockout feature from a remote location. Test keys shall be provided for simulating an overcurrent condition on each source.
- (f) Remote-indication provisions shall be provided to permit remote monitoring of the presence or absence of preferred- and alternate-source voltage; the operating mode of the source-transfer control (i.e., automatic or manual); and the status of the indicating lamp furnished in 3.05 (b) (4), the indicating lamp furnished in 3.05 (b) (7), and (where applicable) overcurrent lockout.
- (g) A test panel shall be provided to permit the use of an external, adjustable three-phase source to verify, through independent measurement, the response of the control to loss-of-source, phase-unbalance, and (where applicable) overcurrent-lockout conditions.
- (h) Supervisory control provisions shall be provided to permit switch operation from a remote location.
- (i) A communications card shall be provided to permit local loading, to a user-furnished personal computer, of system events recorded by the source-transfer control; operating characteristics and voltage-, current-, and time-related operating parameters programmed in the control; discrete inputs and outputs from the control; and messages explaining why the indicating lamp furnished in 3.05 (b) (4) is not lighted. The communications card shall also permit local downloading of the user's standard operating parameters from the personal computer to the control.

### 3.06 Source-Transfer Low-Voltage Compartment/Enclosure and Components

- (a) The low-voltage compartment/enclosure shall be a separate, grounded structure, and shall allow complete accessibility for test and/or maintenance without exposure to medium voltage. The low-voltage compartment shall be mounted on the outside of the pad-mounted enclosure for pad-mounted style switchgear. The low-voltage enclosure shall be mounted to a vault wall for vault-mounted style switchgear.
- (b) The low-voltage compartment/enclosure shall be large enough to house all motor operator controls and the source-transfer control.
- (c) All low-voltage components, including the batteries, shall operate over the temperature range of -40° C to +65° C.
- (d) To guard against unauthorized or inadvertent entry, the low-voltage compartment/enclosure shall not have any externally accessible hardware.
- (e) The low-voltage compartment/enclosure shall include appropriate vents to prevent moisture buildup. Vents shall be screened and filtered to prevent entry of insects and shall be mounted to prevent rain entry and to minimize entry of dust into the enclosure.

- (f) The low-voltage compartment/enclosure shall be made of 14-gauge mild steel.
- (g) Control cabling between the tank and the low-voltage enclosure 15 feet or greater in length shall be furnished with a braided shield to protect electronic components from damage under surge and transient conditions.
- (h) Single-point grounding methods shall be used on cabling between the tank and the low-voltage enclosure to protect electronic components from damage under surge and transient conditions.

*The following optional feature should be specified as required:*

- (i) To guard against corrosion due to extremely harsh environmental conditions, the exterior of the compartment/enclosure shall be fabricated from Type 304 stainless steel.

### 3.07 Source-Transfer Motor Operators and Controls

- (a) Motor operators shall be furnished for the load-interrupter switches.
- (b) Each motor operator shall have its own control board, located within the low-voltage compartment/enclosure.
- (c) The control board shall have push buttons for locally operating the switches between the closed, open, and (except for the bus-tie switch in split-bus configuration switchgear) grounded positions.
- (d) Each control board shall have position indicating lamps to show the closed, open, and grounded state of the motor operator.
- (e) Each motor operator control board shall have a non-resettable, four-digit-minimum operation counter, which will only increment on a closed-to-open transition.
- (f) Each motor operator control board shall have an adapter for a portable remote control device, which will allow the user to activate the motor operator at a maximum distance of 50 feet from the gear.
- (g) No decoupling or any adjustments shall be required to manually operate a motor operator.
- (h) Removing the motor operator for decoupling shall be a simple, quick process requiring only standard tools.
- (i) Only one local/remote switch shall be required for the entire gear.
- (j) The motor operator shall be watertight. Each unit shall be submersion-tested to verify that water under pressure does not enter the operator housing.
- (k) It shall not be possible for the motor operator to be changed from the closed position directly to the grounded position using local push buttons or remote control. The grounded position shall be directly accessible only from the open position.

- (l) A mechanical interlock shall be provided to prevent a decoupled motor operator from being incorrectly recoupled.
- (m) An integral means shall be provided for testing the position indicating lamps on the motor controls.
- (n) Controls shall be easy to operate with or without 25-kV high-voltage rubber gloves and protectors.

### 3.08 Remote Supervisory Low-Voltage Compartment/Enclosure and Components

- (a) The low-voltage compartment/enclosure shall be a separate, grounded structure, and shall allow complete accessibility for test and/or maintenance without exposure to medium voltage. The low-voltage compartment shall be mounted on the outside of the pad-mounted enclosure for pad-mounted style switchgear. The low-voltage enclosure shall be mounted to a vault wall for vault-mounted style switchgear.
- (b) The low-voltage compartment/enclosure shall be large enough to accommodate six motor operator controls.
- (c) The low-voltage compartment/enclosure shall have a minimum space of 16 in. high X 26 in. wide X 11 in. deep for a user-specified RTU and communication device.
- (d) All low-voltage components, including the batteries, shall operate over the temperature range of -40° C to +65° C.
- (e) To guard against unauthorized or inadvertent entry, the low-voltage compartment/enclosure shall not have any externally accessible hardware.
- (f) The low-voltage compartment/enclosure shall include appropriate vents to prevent gas and moisture buildup. Vents shall be screened and filtered to prevent entry of insects and to minimize entry of dust into the enclosure.
- (g) Low-voltage wiring, except for short lengths, such as connections to terminal blocks, shall be shielded for isolation from medium voltage.
- (h) The low-voltage compartment/enclosure shall be made of 14-gauge mild steel.
- (i) Control cabling between the tank and the low-voltage enclosure 15 feet or greater in length shall be furnished with a braided shield to protect electronic components from damage under surge and transient conditions.
- (j) Single-point grounding methods shall be used on cabling between the tank and low-voltage enclosure to protect electronic components from damage under surge and transient conditions.

*The following optional feature should be specified as required:*

- (k) To guard against corrosion due to extremely harsh environmental conditions, the exterior of the compartment/enclosure shall be fabricated from Type 304 stainless steel.

3.09 Remote Supervisory Motor Operators and Controls

- (a) Motor operators for local and remote supervisory control shall be available for source load-interrupter ways and three-pole fault-interrupter ways.
- (b) Each motor operator shall have its own control board, located within the low-voltage compartment/enclosure.
- (c) The control board shall have push buttons for locally operating the switches between the closed and open positions and, optionally, between the open and grounded positions.
- (d) Each control board shall have position indicating lamps to show the closed, open, and grounded state of the motor operator.
- (e) Each motor operator control board shall have a non-resettable, four-digit minimum operation counter, which will only increment on a closed-to-open transition.
- (f) Each motor operator control board shall have an adapter for a portable remote control device, which will allow the user to activate the motor operator at a maximum distance of 50 feet from the gear.
- (g) No decoupling or any adjustments shall be required to manually operate a way that is equipped with a motor operator.
- (h) Removing the motor operator for decoupling shall be a simple, quick process requiring only standard tools.
- (i) Motor operators and controls shall be interchangeable between load-interrupter switch ways by simply moving the operator. No modifications to any low-voltage compartment/enclosure control components shall be required.
- (j) Motor operators and controls shall be interchangeable between three-pole fault-interrupter ways by simply moving the operator. No modifications to any low-voltage compartment/enclosure control components shall be required.
- (k) The motor operators shall take no more than three seconds to change state from the time a local or remote control signal is received.
- (l) Only one local/remote switch shall be required for the entire gear.
- (m) The motor operator control boards shall be designed to prevent simultaneous operation of two or more motor operators.
- (n) The motor operator shall be watertight. Each unit shall be submersion-tested to verify that water under pressure does not enter the operator housing.
- (o) It shall not be possible for the motor operator to be changed from the closed position directly to the grounded position using local push-button or remote control. The grounded position must be directly accessible only from the open position.
- (p) A mechanical interlock shall be provided to prevent a decoupled motor operator from being incorrectly recoupled.
- (q) An integral means shall be provided for testing the position indicating lamps on the motor controls.

- (r) Controls shall be easy to operate with or without 25-kV high-voltage rubber gloves and protectors.
- (s) The gear shall have batteries to power the motor operators and controls in the event the external ac power is lost.
- (t) The motor operator controls shall be capable of interfacing with a remote terminal unit.

### 3.10 Optional Voltage Indication (*Specify one of the following as required.*)

- (a) Voltage indication
  - (1) Voltage indication shall be provided for each load-interrupter switch and fault interrupter by means of capacitive taps on the bushings, eliminating the need for cable handling and exposure to high voltage to test the cables for voltage prior to grounding. This feature shall include a flashing liquid-crystal display to indicate the presence of voltage for each phase, and a solar panel to supply power for testing of the complete voltage-indication circuit.
  - (2) The voltage-indication feature shall be mounted on the covers for the viewing windows, on the opposite side of the gear from the bushings and bushing wells, so that operating personnel shall not be required to perform any routine operations in close proximity to high-voltage elbows and cables.
- (b) Voltage indication with provisions for low-voltage phasing
  - (1) Voltage indication with provisions for low-voltage phasing shall be provided for each load-interrupter switch and fault interrupter by means of capacitive taps on the bushings, eliminating the need for cable handling and exposure to high voltage to test the cables for voltage and phasing. This feature shall include a flashing liquid crystal display to indicate the presence of voltage for each phase, and a solar panel to supply power for testing of the complete voltage-indication circuit and phasing circuit.
  - (2) The voltage-indication feature shall be mounted on the covers for the viewing windows, on the opposite side of the gear from the bushings and bushing wells, so that operating personnel shall not be required to perform any routine operations in close proximity to high-voltage elbows and cables.

## 4.0 SWITCHGEAR STYLE (*Select dry-vault-mounted or pad-mounted style.*)

### 4.01 Dry-Vault-Mounted Style

- (a) The switchgear shall be suitable for installation in a vault.
- (b) The gas-tight tank shall be made of 7-gauge mild steel.

*The following optional features should be specified as required:*

- (c) To guard against corrosion due to extremely harsh environmental conditions, the gas-tight tank shall be made of Type 304L stainless steel.
- (d) *For gear rated 12.5 kA short circuit*, the switchgear shall conform to or exceed the requirements of applicable portions of IEC 298, Appendix AA covering arc resistance, through 12.5 kA for 15 cycles.
- (e) *For gear rated 25 kA short circuit*, the switchgear shall conform to or exceed the requirements of applicable portions of IEC 298, Appendix AA covering arc resistance, through 25 kA for 15 cycles.

4.02 Pad-Mounted Style

- (a) The gas-tight tank shall be made of 7-gauge mild steel.

*The following optional feature should be specified as required:*

- (b) To guard against corrosion due to extremely harsh environmental conditions, the gas-tight tank shall be made of Type 304 L stainless steel.
- (c) *For gear rated 12.5 kA short circuit*, the switchgear shall conform to or exceed the requirements of applicable portions of IEC 298, Appendix AA covering arc resistance, through 12.5 kA for 15 cycles.
- (d) *For gear rated 25 kA short circuit*, the switchgear shall conform to or exceed the requirements of applicable portions of IEC 298, Appendix AA covering arc resistance, through 25 kA for 15 cycles.
- (e) Enclosure
- (1) The switchgear shall be provided with a pad-mounted enclosure suitable for installation of the gear on a concrete pad.
  - (2) The pad-mounted enclosure shall be separable from the switchgear to allow clear access to the bushings and bushing wells for cable termination.
  - (3) The basic material shall be 14-gauge hot-rolled, pickled and oiled steel sheet.
  - (4) The enclosure shall be provided with removable front and back panels, and hinged lift-up roof sections for access to the operating and termination compartments. Each roof section shall have a retainer to hold it in the open position.
  - (5) Lift-up roof sections shall overlap the panels and shall have provisions for pad-locking that incorporate a means to protect the padlock shackle from tampering.
  - (6) The base shall consist of continuous 90-degree flanges, turned inward and welded at the corners, for bolting to the concrete pad.
  - (7) Panel openings shall have 90-degree flanges, facing outward, that shall provide strength and rigidity as well as deep overlapping between panels and panel openings to guard against water entry.
  - (8) For bushings rated 600 amperes continuous, the termination compartment shall be of an adequate depth to accommodate encapsulated surge arresters mounted on 600-ampere elbows having 200-ampere interfaces.
  - (9) For bushing wells rated 200 amperes continuous, the termination compartment shall be of an adequate depth to accommodate 200-ampere elbows mounted on feedthru inserts.
  - (10) An instruction manual holder shall be provided.
  - (11) Non-removable lifting tabs shall be provided.

*The following optional feature should be specified as required:*

- (12) To guard against corrosion due to extremely harsh environmental conditions, the entire exterior of the enclosure shall be fabricated from Type 304 stainless steel.

## (f) Enclosure Finish

- (1) All exterior welded seams shall be filled and sanded smooth for neat appearance.
- (2) To remove oils and dirt, to form a chemically and anodically neutral conversion coating to improve the finish-to-metal bond, and to retard underfilm propagation of corrosion, all surfaces shall undergo a thorough pretreatment process comprised of a fully automated system of cleaning, rinsing, phosphatizing, sealing, drying, and cooling, before any protective coatings are applied. By utilizing an automated pretreatment process, the enclosure shall receive a highly consistent thorough treatment, eliminating fluctuations in reaction time, reaction temperature, and chemical concentrations.
- (3) After pretreatment, protective coatings shall be applied that shall help resist corrosion and protect the steel enclosure. To establish the capability to resist corrosion and protect the enclosure, representative test specimens coated by the manufacturer's finishing system shall satisfactorily pass the following tests:
  - (i) 4000 hours of exposure to salt-spray testing per ASTM B 117 with:
    - (a) Underfilm corrosion not to extend more than 1/32 in. from the scribe, as evaluated per ASTM D 1645, Procedure A, Method 2 (scraping); and
    - (b) Loss of adhesion from bare metal not to extend more than 1/8 in. from the scribe.
  - (ii) 1000 hours of humidity testing per ASTM D 4585 using the Cleveland Condensing Type Humidity Cabinet, with no blistering as evaluated per ASTM D 714.
  - (iii) 500 hours of accelerated weathering testing per ASTM G 53 using lamp UVB-313, with no chalking as evaluated per ASTM D 659, and no more than 10% reduction of gloss as evaluated per ASTM D 523.
  - (iv) Crosshatch-adhesion testing per ASTM D 3359 Method B, with no loss of finish.
  - (v) 160-inch-pound impact, followed by adhesion testing per ASTM D 2794, with no chipping or cracking.
  - (vi) 3000 cycles of abrasion testing per ASTM 4060, with no penetration to the substrate.

Certified test abstracts substantiating the above capabilities shall be furnished upon request.

- (4) The finish shall be inspected for scuffs and scratches. Blemishes shall be touched up by hand to restore the protective integrity of the finish.
- (5) The finish shall be olive green, Munsell 7GY3.29/1.5.

*The following optional feature should be specified as required:*

- (6) The finish shall be outdoor light gray, satisfying the requirements of ANSI Standard Z55.1 for No. 70.

4.03 Transition Bay

(a) Enclosure

- (1) The switchgear shall be furnished with an air-insulated transition bay(s) suitable for installation on a concrete pad.
- (2) The transition bay shall allow units of dry-vaulted-mounted or pad-mounted style switchgear to be joined together or to other equipment, through gas-tight air-insulated bushings on one or both sides of the switchgear tanks.
- (3) The transition bay shall house user-specified voltage transformers, current transformers, and/or other equipment as required.

*The following optional feature should be specified as required:*

- (4) To guard against corrosion due to extremely harsh environmental conditions, the entire exterior of the enclosure shall be fabricated from Type 304 stainless steel.

(b) Enclosure Finish

- (1) All exterior welded seams shall be filled and sanded smooth for neat appearance.
- (2) To remove oils and dirt, to form a chemically and anodically neutral conversion coating to improve the finish-to-metal bond, and to retard underfilm propagation of corrosion, all surfaces shall undergo a thorough pretreatment process comprised of a fully automated system of cleaning, rinsing, phosphatizing, sealing, drying, and cooling, before any protective coatings are applied. By utilizing an automated pretreatment process, the enclosure shall receive a highly consistent thorough treatment, eliminating fluctuations in reaction time, reaction temperature, and chemical concentrations.
- (3) After pretreatment, protective coatings shall be applied that shall help resist corrosion and protect the steel enclosure. To establish the capability to resist corrosion and protect the enclosure, representative test specimens coated by the manufacturer's finishing system shall satisfactorily pass the following tests:
  - (i) 4000 hours of exposure to salt-spray testing per ASTM B 117 with:
    - (a) Underfilm corrosion not to extend more than 1/32 in. from the scribe, as evaluated per ASTM D 1645, Procedure A, Method 2 (scraping); and
    - (b) Loss of adhesion from bare metal not to extend more than 1/8 in. from the scribe.
  - (ii) 1000 hours of humidity testing per ASTM D 4585 using the Cleveland Condensing Type Humidity Cabinet, with no blistering as evaluated per ASTM D 714.
  - (iii) 500 hours of accelerated weathering testing per ASTM G 53 using lamp UVB-313, with no chalking as evaluated per ASTM D 659, and no more than 10% reduction of gloss as evaluated per ASTM D 523.
  - (iv) Crosshatch-adhesion testing per ASTM D 3359 Method B, with no loss of finish.

- (v) 160-inch-pound impact, followed by adhesion testing per ASTM D 2794, with no chipping or cracking.
- (vi) 3000 cycles of abrasion testing per ASTM 4060, with no penetration to the substrate.

Certified test abstracts substantiating the above capabilities shall be furnished upon request.

- (4) The finish shall be inspected for scuffs and scratches. Blemishes shall be touched up by hand to restore the protective integrity of the finish.
- (5) The finish shall be olive green, Munsell 7GY3.29/1.5.

*The following optional feature should be specified as required:*

- (6) The finish shall be outdoor light gray, satisfying the requirements of ANSI Standard Z55.1 for No. 70.

## 5.0 LABELING

### 5.01 Hazard-Alerting Signs

- (a) The exterior of the pad-mounted enclosure (if furnished) shall be provided with “Warning—Keep Out—Hazardous Voltage Inside—Can Shock, Burn, or Cause Death” signs.
- (b) Each unit of switchgear shall be provided with a “Danger—Hazardous Voltage—Failure to Follow These Instructions Will Likely Cause Shock, Burns, or Death” sign. The text shall further indicate that operating personnel must know and obey the employer’s work rules, know the hazards involved, and use proper protective equipment and tools to work on this equipment.
- (c) Each unit of switchgear shall be provided with a “Danger—Keep Away—Hazardous Voltage—Will Shock, Burn, or Cause Death” sign.

### 5.02 Nameplates, Ratings Labels, and Connection Diagrams

- (a) Each unit of switchgear shall be provided with a nameplate indicating the manufacturer’s name, catalog number, model number, date of manufacture, and serial number.
- (b) Each unit of switchgear shall be provided with a ratings label indicating the following: voltage rating; main bus continuous current rating; short-circuit rating; fault-interrupter ratings including interrupting and duty-cycle fault-closing; and load-interrupter switch ratings including duty-cycle fault-closing and short-time.

## 6.0 ACCESSORIES (*Specify as required.*)

- 6.01 A USB cable kit shall be provided for connecting an overcurrent control to a user-furnished personal computer.

7.0 ANALYTICAL SERVICES

*The following analytical services should be specified as required:*

7.01 Short-Circuit Analysis

- (a) The manufacturer shall provide a short-circuit analysis to determine the currents flowing in the electrical system under faulted conditions. Since expansion of an electrical system can result in increased available short-circuit current, the momentary and interrupting ratings of new and existing equipment on the system shall be checked to determine if the equipment can withstand the short-circuit energy. Fault contributions from utility sources, motors, and generators shall be taken into consideration. If applicable, results of the analysis shall be used to coordinate overcurrent protective devices and prepare an arc-flash hazard analysis of the system.
- (b) Data used in the short-circuit analysis shall be presented in tabular format, and shall include the following information:
  - (1) Equipment identifications.
  - (2) Equipment ratings.
  - (3) Protective devices.
  - (4) Operating voltages.
  - (5) Calculated short-circuit currents.
  - (6) X/R ratios.
- (c) A single-line diagram model of the system shall be prepared, and shall include the following information:
  - (1) Identification of each bus.
  - (2) Voltage at each bus.
  - (3) Maximum available fault current, in kA symmetrical, on the utility source side of the incoming feeder or first upstream device.
  - (4) Data for each transformer
    - (i) Three-phase kVA rating
    - (ii) Percent impedance
    - (iii) Temperature rise, 65 °C and 55/65 °C
    - (iv) Primary voltage
    - (v) Primary connection
    - (vi) Secondary voltage
    - (vii) Secondary connection
    - (iix) X/R ratio
    - (ix) Tap settings and available settings
- (d) The manufacturer shall use commercially available PC-based computer software such as Power System Analysis Framework (PSAF – Fault) from CYME International, CYMDIST, and/or SKM Power Tools® for Windows with the PTW Dapper Module to calculate three-phase, phase-to-phase, and phase-to-ground fault currents at relevant locations in the

electrical system, in accordance with ANSI Standards C37.010, C37.5, and C37.13. If applicable, an ANSI closing-and-latching duty analysis shall also be performed to calculate the maximum currents following fault inception.

#### 7.02. Overcurrent Protective Device Coordination Analysis

- (a) The manufacturer shall provide an overcurrent protective device coordination analysis to verify that electrical equipment is protected against damage from short-circuit currents. Analysis results shall be used to select appropriately rated protective devices and settings that minimize the impact of short-circuits in the electrical system, by isolating faults as quickly as possible while maintaining power to the rest of the system.
- (b) As applicable, the analysis shall take into account pre-load and ambient-temperature adjustments to fuse minimum-melting curves, transformer magnetizing-inrush current, full-load current, hot-load and cold-load pick-up, coordination time intervals for series-connected protective devices, and the type of reclosers and their reclosing sequences. Locked-rotor motor starting curves and thermal and mechanical damage curves shall be plotted with the protective-device time-current characteristic curves, as applicable.
- (c) Differing per-unit fault currents on the primary and secondary sides of transformers (attributable to winding connections) shall be taken into consideration in determining the required ratings or settings of the protective devices.
- (d) The time separation between series-connected protective devices, including the upstream (source-side) device and largest downstream (load-side) device, shall be graphically illustrated on log-log paper of standard size. The time-current characteristics of each protective device shall be plotted such that all upstream devices shall be clearly depicted on one sheet.
- (e) The manufacturer shall furnish coordination curves indicating the required ratings or settings of protective devices to demonstrate, to the extent possible, selective coordination. The following information shall be presented on each coordination curve, as applicable:
  - (1) Device identifications.
  - (2) Voltage and current ratios.
  - (3) Transformer through-fault withstand duration curves.
  - (4) Minimum-melting, adjusted, and total-clearing fuse curves.
  - (5) Cable damage curves.
  - (6) Transformer inrush points.
  - (7) Maximum available fault current, in kA symmetrical, on the utility source side of the incoming feeder or first upstream device.
  - (8) Single-line diagram of the feeder branch under study.
  - (9) A table summarizing the ratings or settings of the protective devices, including:
    - (i) Device identification.
    - (ii) Relay current-transformer ratios, and tap, time-dial, and instantaneous-pickup settings.
    - (iii) Circuit-breaker sensor ratings; long-time, short-time, and instantaneous settings; and time bands.

- (iv) Fuse type and rating.
- (v) Ground fault pickup and time delay.
  
- (f) The manufacturer shall use commercially available PC-based computer software such as CYMTCC from CYME International and/or SKM Captor to create the time-current characteristic curves for all protective devices on each feeder.
- (g) As applicable, a technical evaluation shall be prepared for areas of the electrical system with inadequate overcurrent protective device coordination, with recommendations for improving coordination.

### 7.03 Arc-Flash Hazard Analysis

- (a) The manufacturer shall provide an arc-flash hazard analysis to verify that electrical equipment on the system is “electrically safe” for personnel to work on while energized. An arc flash is a flashover of electric current in air—from one phase conductor to another phase conductor, or from one phase conductor to ground—that can heat the air to 35,000° F. It can vaporize metal and cause severe burns to unprotected workers from direct heat exposure and ignition of improper clothing. And the arc blast resulting from release of the concentrated radiant energy can damage hearing and knock down personnel, causing trauma injuries.
- (b) The arc-flash hazard analysis shall include the following:
  - (1) Identification of equipment locations where an arc-flash hazard analysis is required.
  - (2) Collection of pertinent data at each equipment location, including:
    - (i) Transformer kVA ratings, including voltage, current, percent impedance, winding ratio, and X/R ratio, plus wiring connections.
    - (ii) Protective device ratings, including current, time-current characteristics, settings, and time delays.
    - (iii) Switchgear data, including conductor phase spacing, type of grounding, and appropriate working distances.
  - (3) Preparation of a single-line diagram model of the system.
  - (4) Preparation of a short-circuit study to determine the three-phase bolted fault current at each location.
  - (5) Preparation of arc-flash calculations in accordance with NFPA 70E and IEEE 1584, including:
    - (i) Calculation of arc current in accordance with applicable guidelines.
    - (ii) Determination of protective device total-clearing times based upon the time-current characteristics.
    - (iii) Calculation of arc-flash incident energy level based on the protective device total-clearing times and appropriate working distance.

- (6) Determination of appropriate personal protective equipment in accordance with risk levels defined in NFPA 70E.
- (7) Calculation of the arc-flash protection boundary distance.
- (8) Documentation of the results of the analysis, including:
  - (i) Preparation of a written report.
  - (ii) Preparation of single-line diagrams.
  - (iii) Preparation of arc-flash hazard labels to be affixed to the equipment.
- (9) The manufacturer shall use commercially available PC-based computer software such as the arc-flash module in SKM Power Tools® for Windows to calculate the incident energy category levels, in accordance with IEEE 1584.

#### 7.04. Analytical Service Site Visits

- (a) The manufacturer shall perform a site walk-down to gather:
  - (1) Transformer ratings, including voltage, current, power, percent impedance, winding ratio, and X/R ratio, plus wiring connections.
  - (2) Protective device ratings, including current, time-current characteristics, settings, and time delays.
  - (3) Switchgear data, including conductor phase spacing, type of grounding, and appropriate working distances.





## Part 6 – Attachments

### Demolish Multiple Buildings, Part 1 JL7CK

#### U.S. Naval Academy & Naval Support Activity Annapolis

Annapolis, Maryland

Date: January 29, 2009

#### Table of Contents

---

##### Civil Drawings

- C110 BUILDINGS NA5 & NA7 SITE PLAN
- C112 BUILDINGS NA60, NA69, NA273, & NA254
- C113 BUILDINGS NA 128 SITE PLAN

##### Existing Buildings Plans – Elevations, Floor Plans, & Foundations

##### Hazardous Materials Reports

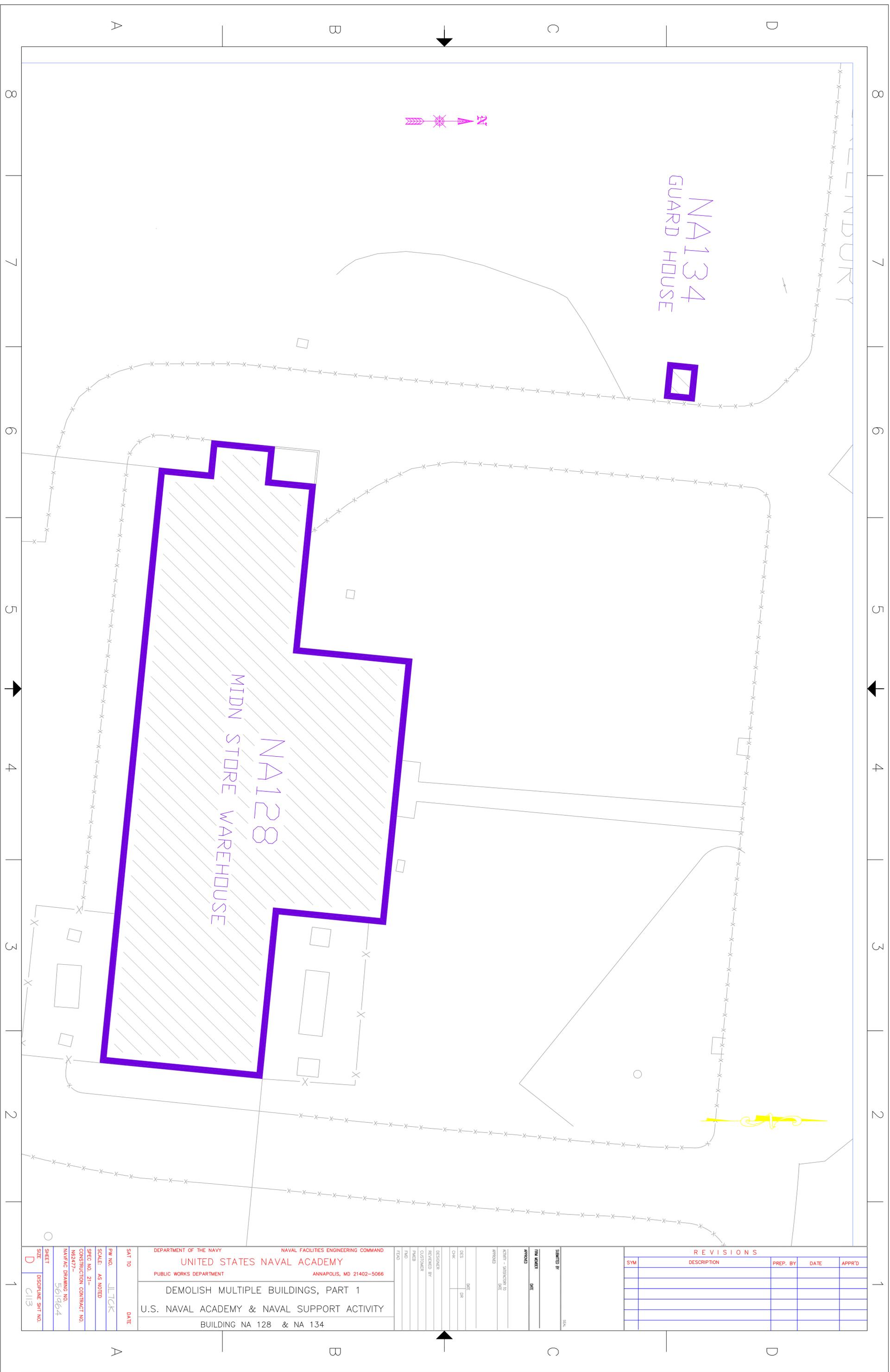
##### Greenburry point Electrical Drawings

##### Existing Buildings Pictures







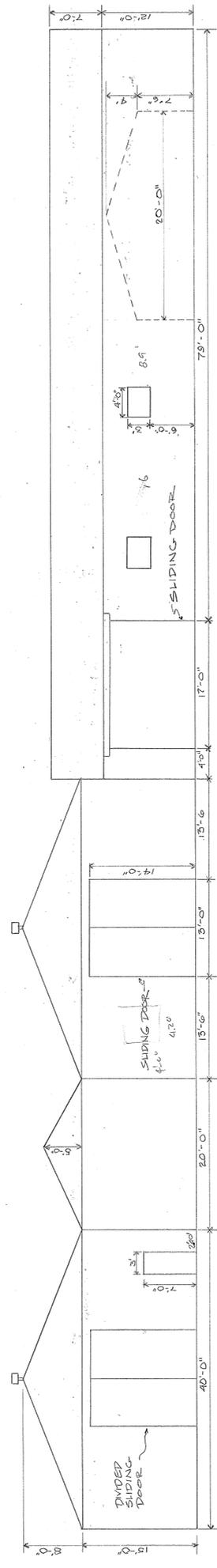
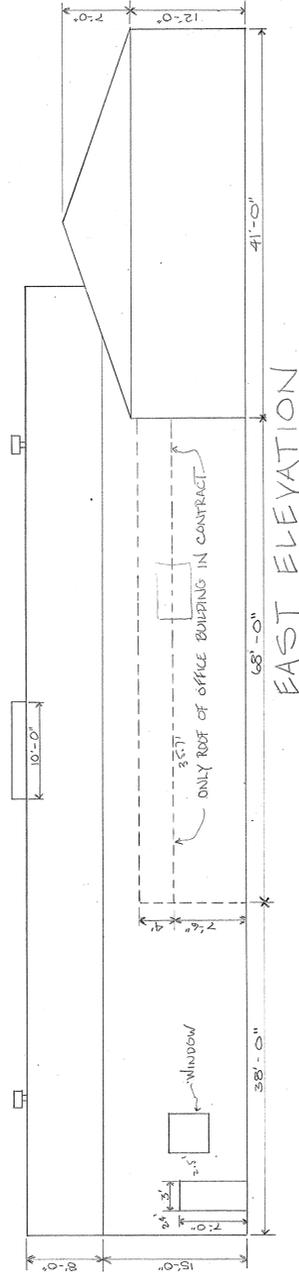
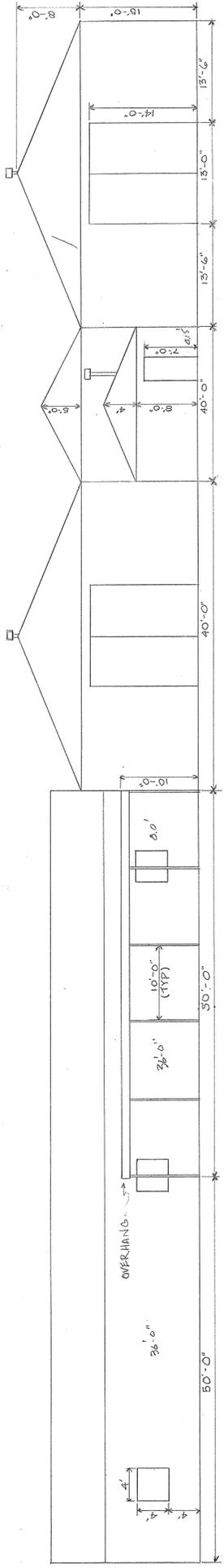
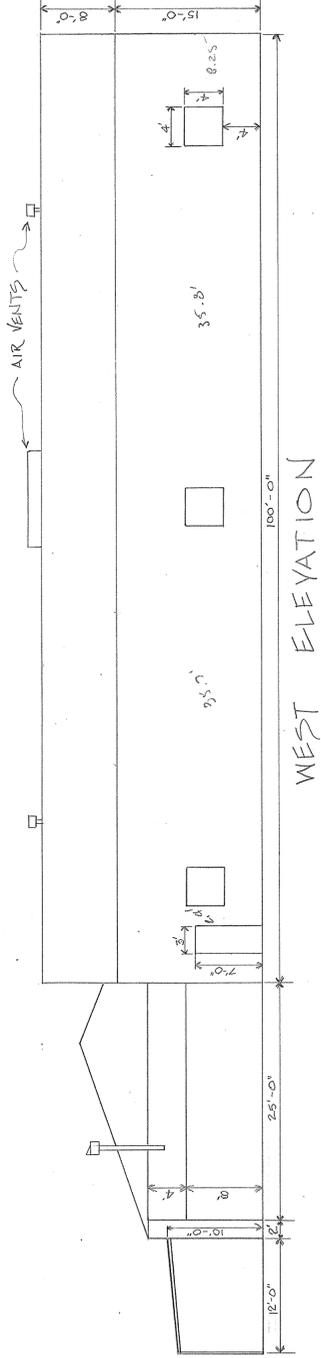


REVISIONS			
SYM	DESCRIPTION	PREP. BY	DATE

DATE	DATE
DESIGNER	DATE
REVIEWED BY	DATE
CUSTOMER	DATE
PROJECT	DATE
NO.	DATE
FIELD	DATE

DEPARTMENT OF THE NAVY  
**UNITED STATES NAVAL ACADEMY**  
 PUBLIC WORKS DEPARTMENT  
 NAVAL FACILITIES ENGINEERING COMMAND  
 ANNAPOLIS, MD 21402-5066  
**DEMOLISH MULTIPLE BUILDINGS, PART 1**  
 U.S. NAVAL ACADEMY & NAVAL SUPPORT ACTIVITY  
 BUILDING NA 128 & NA 134

SAT TO	DATE
PW NO.	JLTKK
SCALE	AS NOTED
SPEC NO.	21-
CONSTRUCTION CONTRACT NO.	NA6477-
NAVFAC DRAWING NO.	561964
SHEET	DISCIPLINE SHIT NO.
SIZE	C113

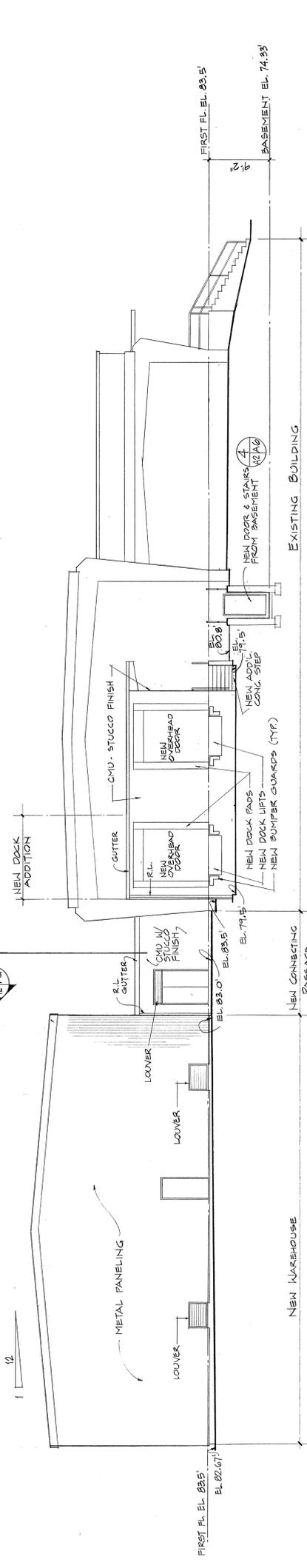


NAVAL CONSTRUCTION BATTALION UNIT 403 U.S. NAVAL ACADEMY, ANNAPOLIS, MARYLAND	
DES.	CBU 403 COMPOUND ELEVATIONS
DRWN BY: C.O. FOSTER	
CHKD. APPROVED	
DATE	
SIZE	D
SCALE	1/8" = 1'-0"
CBU 403 DRAWING NO.	2243
CBU 403 J.O. NO.	
SHEET	1 OF 1

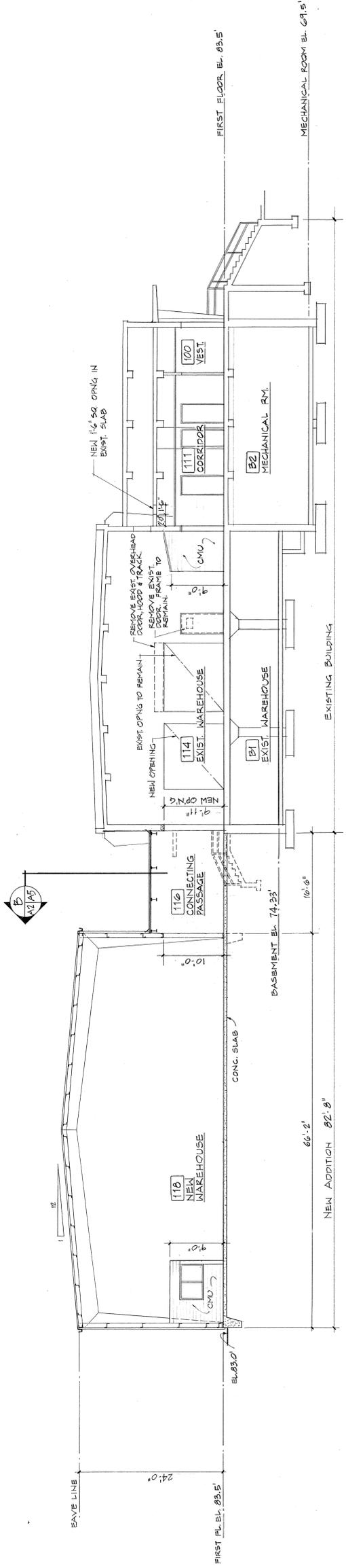
54-7



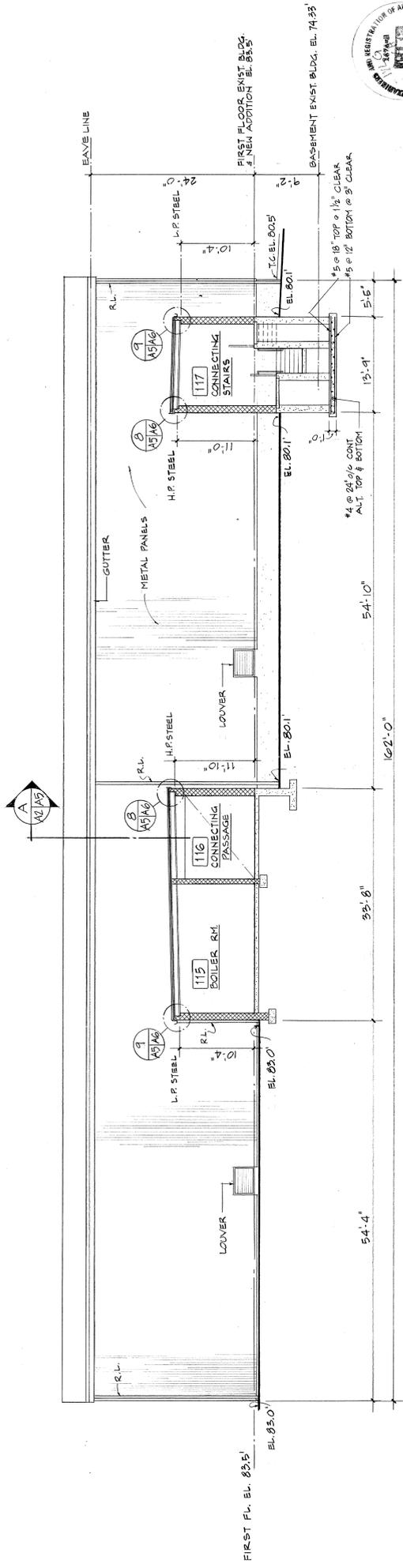
SYM	REVISIONS	DATE	APPROVED
	DESCRIPTION		



**EAST ELEVATION**  
SCALE: 1/8" = 1'-0"



**A BUILDING SECTION 'A-A'**  
SCALE: 1/8" = 1'-0"



**B SECTION 'B-B'**  
SCALE: 1/8" = 1'-0"

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND  
CHESAPEAKE DIVISION  
WASHINGTON, D.C.

NAVAL STATION ANNAPOLIS, MARYLAND

**GENERAL WAREHOUSE**  
BLDG. T-128 - ELEVATIONS & SECTIONS

ARCHITECTURAL

SIZE (CODE IDENT. NO.) 3021979

DATE 8/23/88

APPROVED [Signature] 8/23/88

CONSTR. CONTR. NO. N62477-78-C-0088

SCALE GRAPHIC SPEC. 21-78-0088 SHEET 8 OF 23

ED FOR COMMANDER, NAVFAC



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

NOTE: CHECK ACCURACY OF GRAPHIC SCALES BEFORE USING.



**ASBESTOS-CONTAINING MATERIALS,  
LEAD-BASED PAINT, PCB CONTAINING LIGHT BALLASTS  
AND MERCURY CONTAINING COMPONENTS  
SURVEY REPORT**

**UNITED STATES NAVAL ACADEMY  
NAVAL STATION ANNAPOLIS  
FSBS SUPPORT FACILITY (BUILDING NA5)  
ANNAPOLIS, MARYLAND**

Prepared For:

A. Morton Thomas and Associates, Inc.  
12750 Twinbrook Parkway  
Rockville, Maryland 20852-1700

Prepared By:

Froehling & Robertson, Inc.  
7798 Waterloo Road  
Jessup, Maryland 20794

F&R Project Number E68-195E  
May 11, 2005

Prepared by:

Abbigale N. Keefer  
Environmental Scientist

Reviewed by:

John O'Connor  
Environmental Services Manager



## TABLE OF CONTENTS

1.0 Introduction .....	1
2.0 Asbestos-Containing Materials (ACM)	
2.1 Methodology.....	1
2.2 Findings.....	1
2.3 Conclusions and Recommendations.....	4
2.4 Removal Cost Estimates .....	5
3.0 Lead-Based Paint (LBP)	
3.1 Methodology.....	5
3.2 Findings.....	5
3.3 Conclusions and Recommendations.....	6
3.4 Removal Cost Estimates .....	7
4.0 PCB Containing Light Ballasts	
4.1 Methodology.....	7
4.2 Findings.....	7
4.3 Conclusions and Recommendations.....	7
5.0 Mercury Containing Components	
5.1 Methodology.....	8
5.2 Findings.....	8
5.3 Conclusions and Recommendations.....	8
6.0 Limitations.....	8
Appendix A – ACM Documentation	
Appendix B – LBP Documentation	
Appendix C – Building Diagram	



## **1.0 Introduction**

On May 4, 2005, Froehling & Robertson, Inc. (F&R) conducted a hazardous materials survey of selected areas of the FSBS Support Facility (Building NA5) located at the United States Naval Station in Annapolis, Maryland. F&R's scope of services were limited to select portions of the building that were predetermined by the USNA Public Works Department and A. Morton Thomas (the Client). A copy of a building diagram is included in Appendix C.

The hazardous materials survey was being conducted in order to determine the presence of hazardous materials (i.e. asbestos containing materials; lead painted for suspect asbestos-containing materials (ACM's); lead-based painted surfaces, and mercury surfaces, etc.) in the areas of the planned renovation. The survey included the inspection of the building and PCB-containing components. A. Morton Thomas (the Client) defined the scope of services to include the following:

- Asbestos-Containing Materials (ACM) and Lead-Based Paint (LBP) Survey
- PCB Containing Light Ballasts and Mercury Containing Components Survey
- ACM and LBP Handling/Abatement and Hazardous Waste Management Specifications and Cost Estimation

## **BUILDING**

The section of the FSBS Support Facility surveyed consisted of approximately ~8000 SF including office space, a warehouse type area and other miscellaneous rooms. Floors were mostly tiled and the walls consisted mainly of concrete, brick and some small areas of drywall.

## **2.0 Asbestos-Containing Materials (ACM)**

### **2.1 Methodology**

Ms. Abbigale N. Keefer, accredited by the U.S. Environmental Protection Agency (EPA) as an asbestos building inspector, conducted the survey at the subject site for the presence suspect asbestos containing materials (ACM's). F&R was not provided with previous ACM survey reports for the building. F&R performed the ACM survey in general accordance with the federal AHERA protocol (40 CFR 763).

Bulk samples of each suspect ACM encountered by the inspector were collected in randomly located areas. F&R personnel attempted to conduct the bulk samples in non-visible areas wherever possible. To collect a bulk sample, a clean sampling tool was used to obtain a "thumbnail sized" sample. This sample was placed in a single-use 2-mil plastic bag, sealed and labeled. The sampling tool was cleaned with an amended water solution and dried between uses. Samples were then submitted to an accredited laboratory for analysis by Polarized Light Microscopy (PLM) method.

### **2.2 Findings**

Bulk samples included those obtained from suspect ACM's. Bulk samples of the suspect ACM's were taken during F&R's survey to obtain compliance with AHERA sampling protocol. A total of forty-five (45) suspect ACM bulk samples were collected and submitted for analysis by PLM method. Three (3) bulk samples were identified as asbestos containing. A "Positive Stop" Method was employed in analysis of these bulk samples. Bulk samples not analyzed are assumed to be positive for ACM. A diagram of bulk



sample locations is included in Appendix A. The following table presents the results of the bulk sample analysis:

**TABLE 1: ACM SAMPLE ANALYTICAL RESULTS**

Sample ID	Description	General Location	Friable	Asbestos Content
NS01A	9x9 Beige Floor Tile	Building 5, Area I	No	<b>3% Chrysotile</b>
NS01B	9x9 Beige Floor Tile	Building 5, Area I	No	Sample not analyzed
NS01C	9x9 Beige Floor Tile	Building 5, Area I	No	Sample not analyzed
NS01A M	9x9 Beige Floor Tile Mastic	Building 5, Area I	No	<b>2% Chrysotile</b>
NS01B M	9x9 Beige Floor Tile Mastic	Building 5, Area I	No	Sample not analyzed
NS01C M	9x9 Beige Floor Tile Mastic	Building 5, Area I	No	Sample not analyzed
NS02A	2x2 Dotted/Fissured Ceiling Tile	Building 5, Area I	Yes	NAD
NS02B	2x2 Dotted/Fissured Ceiling Tile	Building 5, Area I	Yes	NAD
NS02C	2x2 Dotted/Fissured Ceiling Tile	Building 5, Area I	Yes	NAD
NS03A	12x12 Brown Speckled Floor Tile	Building 5, Area IA	No	NAD
NS03B	12x12 Brown Speckled Floor Tile	Building 5, Area IA	No	NAD
NS03C	12x12 Brown Speckled Floor Tile	Building 5, Area IA	No	NAD
NS03A M	12x12 Brown Speckled Floor Tile Mastic	Building 5, Area IA	No	NAD
NS03B M	12x12 Brown Speckled Floor Tile Mastic	Building 5, Area IA	No	NAD
NS03C M	12x12 Brown Speckled Floor Tile Mastic	Building 5, Area IA	No	NAD
NS04A	Cove Base	Building 5, Area IA	No	NAD
NS04B	Cove Base	Building 5, Area IA	No	NAD
NS04C	Cove Base	Building 5, Area IA	No	NAD
NS05A	12x12 Dark Brown Floor Tile	Building 5, Area I	No	NAD
NS05B	12x12 Dark Brown Floor Tile	Building 5, Area I	No	NAD



Sample ID	Description	General Location	Friable	Asbestos Content
NS05C	12x12 Dark Brown Floor Tile	Building 5, Area I	No	NAD
NS05A M	12x12 Dark Brown Floor Tile Mastic	Building 5, Area I	No	NAD
NS05B M	12x12 Dark Brown Floor Tile Mastic	Building 5, Area I	No	NAD
NS05C M	12x12 Dark Brown Floor Tile Mastic	Building 5, Area I	No	NAD
NS06A	12x12 Light Brown Floor Tile	Building 5, Area I	No	NAD
NS06B	12x12 Light Brown Floor Tile	Building 5, Area I	No	NAD
NS06C	12x12 Light Brown Floor Tile	Building 5, Area I	No	NAD
NS07A M	12x12 Light Brown Floor Tile Mastic	Building 5, Area I	No	NAD
NS07B M	12x12 Light Brown Floor Tile Mastic	Building 5, Area I	No	NAD
NS07C M	12x12 Light Brown Floor Tile Mastic	Building 5, Area I	No	NAD
NS08A	12x12 White Floor Tile	Men's Room	No	NAD
NS08B	12x12 White Floor Tile	Men's Room	No	NAD
NS08C	12x12 White Floor Tile	Men's Room	No	NAD
NS08A M	12x12 White Floor Tile Mastic	Men's Room	No	NAD
NS08B M	12x12 White Floor Tile Mastic	Men's Room	No	NAD
NS08C M	12x12 White Floor Tile Mastic	Men's Room	No	NAD
NS09A	2x4 Dotted and Fissured Ceiling Tile	Area III Workshop	Yes	NAD
NS09B	2x4 Dotted and Fissured Ceiling Tile	Area III Workshop	Yes	NAD
NS09C	2x4 Dotted and Fissured Ceiling Tile	Area III Workshop	Yes	NAD
NS10A	Drywall	Area III Workshop	No	NAD
NS10B	Drywall	Area III Workshop	No	NAD
NS10C	Drywall	Area III Workshop	No	NAD
NS11A	Expansion Joint	Exterior A	No	NAD
NS11B	Expansion Joint	Exterior A	No	NAD
NS11C	Expansion Joint	Exterior A	No	NAD
NS12A	Caulking	Exterior A	No	NAD
NS12B	Caulking	Exterior A	No	NAD
NS12C	Caulking	Exterior A	No	NAD
NS13A	Duct Covering-Silver	Exterior C	No	<b>3% Chrysotile</b>



Sample ID	Description	General Location	Friable	Asbestos Content
NS13B	Duct Covering-Silver	Exterior C	No	Sample not analyzed
NS13C	Duct Covering-Silver	Exterior C	No	Sample not analyzed
NS14A	Duct Covering-Black	Exterior B	No	NAD
NS14B	Duct Covering-Black	Exterior B	No	NAD
NS14C	Duct Covering-Black	Exterior B	No	NAD
NS15A	Duct Covering-Gray	Exterior C	No	NAD
NS15B	Duct Covering-Gray	Exterior C	No	NAD
NS15C	Duct Covering-Gray	Exterior C	No	NAD

NAD-No Asbestos Detected

### 2.3 Conclusions and Recommendations

Non-friable ACM expected to become friable during renovation/demolition activities should be removed and handled as friable ACM. Asbestos containing materials (ACM) should be handled in accordance with applicable regulations set forth by the State of Maryland and the Environmental Protection Agency. Based on the forty five (45) suspect ACM bulk samples collected and analyzed, the following materials were determined to be ACM:

#### ASBESTOS CONTAINING MATERIAL (ACM) TABLES

Materials	Location	Approximate Quantity	Asbestos Content
9x9 Beige Floor Tile	Area I	1100 SF	3% Chrysotile
9x9 Beige Floor Tile Mastic	Area I	1100 SF	2% Chrysotile
Duct Covering-Silver	Exterior C	600 SF	3% Chrysotile

LF = Linear feet; SF = Square feet, ea = Each

- The actual total quantities present of these ACM's may be greater than those observed during the survey period due to limited access and/or obstructed views above ceiling plenum areas, behind walls, under/around storage items, etc.
- **Areas behind wall surfaces were inaccessible and could not be visually surveyed for ACM. ACM including, but not limited to, thermal pipe insulation and thermal pipe fitting insulation may exist in those locations. Quantities of these ACM's may be discovered during renovation/demolition activities. If these materials or other suspect ACM's are identified during renovation/demolition activities, bulk samples of the material(s) should be collected and analyzed for ACM. If the material(s) are determined to be ACM, they should be handled according to all applicable federal, state and local regulations.**

ACM should be abated and properly disposed of prior to planned renovation/demolition activities as OSHA Class I and II asbestos work in compliance with applicable federal, state and local requirements.



A licensed and accredited asbestos abatement contractor must be used. The contractor must use appropriately trained and protected personnel when removing and disposing of the friable ACM as required by the Occupational Safety and Health Administration (OSHA).

## 2.4 Removal Cost Estimates

### FSBS SUPPORT FACILITY

Material	Approximate Quantity	Removal Cost Estimate
9x9 Beige Floor Tile	1100SF	\$2200.00
9x9 Beige Floor Tile Mastic	1100SF	\$2750.00
Duct Covering-Silver	600 SF	\$12,000.00
<b>TOTAL ESTIMATED ASBESTOS REMOVAL COST</b>	--	\$16,950.00

The purpose of the preceding cost estimates is to provide a construction cost estimate for preliminary budgeting purposes only. It has been prepared based on our experience within the environmental industry with projects of a similar scope. No other warranty, expressed or implied, is made. Furthermore, it is not intended to replace competitive bidding by construction contractors who are interested and qualified to perform the work. The construction costs will vary dependant upon when this cost estimate was obtained verses when the work will be performed and other factors such as seasonality of the work and the status of the economy. F&R does not assume liability for the use of the cost estimates for purposes other than which it is intended, as stated above.

These estimations are based upon unit pricing for the removal and disposal of the materials identified as asbestos-containing materials (ACM's). Prices for other methods of asbestos abatement (i.e., enclosure, encapsulation, etc.) may differ substantially.

## 3.0 Lead-Based Paint (LBP)

### 3.1 Methodology

F&R representative Mr. John A. Rang, an accredited LBP risk assessor, conducted a survey of the building. Personnel specifically trained in radiation safety related to operating the XRF performed the analysis of painted surfaces using a Niton Corporation Model XL-309 X-Ray Fluorescence Analyzer (XRF). The instrument was calibrated against a known concentration of lead in paint (generally 1.0 mg/cm<sup>2</sup>) provided in a Standard Reference Material. The instrument is within calibration limits when the average of three samples is between 0.9 and 1.2 mg/cm<sup>2</sup>. The calibration was repeated between each floor or every two hours, whichever is greater.

The definition for lead-based paint is based upon the Maryland Department of the Environment (MDE).

Positive: Lead present at or above the State of Maryland standard of 0.7 mg/cm<sup>2</sup> by XRF, or 0.5% by dry-weight, on one or more of the components.

Negative: Lead is not present on any of the components at or above the State of Maryland standard of 0.7 mg/cm<sup>2</sup> or 0.5%. Note that lead may still be present and hazardous leaded dust may be generated during modernization, renovation,



remodeling, maintenance or other disturbances of painted surfaces.

**If a component is negative based on the State of Maryland Lead Standards, it may still contain lead, which when disturbed may generate lead dust greater than the maximum exposure concentration of 30 micrograms per cubic meter (30 ug/m<sup>3</sup>) of air established by the Occupational Safety and Health Administration's (OSHA) "Lead Exposure in Construction Rule (29 CFR 1926.62)."**

### 3.2 Findings

A total of eighty two (82) readings were collected at the buildings and structures located on the subject site. Seventeen (17) readings were determined to have lead based paint present. Building surfaces that were tested for the presence of lead paint included doors, door casings, wall surfaces, window components, etc. A complete listing of the surfaces tested for lead paint in each building/structure can be found in Appendix B including a diagram of the wall designations and sample locations. The following table shows those surfaces that were determined to contain lead-based paint (LBP):

#### LBP Testing Results

##### FSBS SUPPORT FACILITY

Material Description	Substrate(s)	Condition
White Brick Walls	Brick	Good
Brown Brick Walls	Brick	<b>Poor</b>
White Window Frame (Area VI)	Wood	<b>Poor</b>
White Window Casing (Area VI)	Wood	<b>Poor</b>
White Door Jamb (Area VI)	Metal	<b>Poor</b>
White Door Lintel (Area VI)	Metal	Good

### 3.3 Conclusions/Recommendations

During completion of the lead paint survey, the following surfaces were found to contain LBP:

- Wood door jambs and lintels
- Wood window frames and casing
- Brick walls

Based on the findings of the lead paint survey, it is recommended that all brick walls, and wooden door and window components be considered to contain lead paint unless previously tested and proven to be non-lead.

F&R recommends that only an accredited lead abatement contractor for the State of Maryland conduct the removal of LBP and lead-contaminated dust. Adequate personal protection should be provided to any personnel working on the LBP surfaces, or other similar surfaces which are painted with the same painting history, when there is potential for generation of airborne lead dust or fumes (i.e., through grinding, cutting, or sanding). During demolition work, environmental controls will be required to capture



lead dust that is generated. Lead dust and/or residue should be properly removed and disposed of in accordance with federal, state, and local regulations. Demolition debris should be tested for hazardous waste determination per the EPA Toxicity Characteristic Leaching Procedure (TCLP) prior to disposal; and disposed of accordingly.

F&R recommends informing the demolition contractor of the presence of LBP in the work area. If the removal of LBP is the primary scope of the demolition project, it is recommended that only an accredited contractor licensed in the State of Maryland perform the work. It is further recommended that environmental and personal monitoring be conducted during any removal process to determine actual personal exposure during demolition activity to determine the levels of personal protection and environmental controls required. Generally the demolition contractor performing the work should determine, through monitoring, the levels of personal protection and environmental controls needed for their work.

### 3.4 Removal Cost Estimates

The following removal cost estimates are based upon unit pricing for component removal and disposal of the material identified as containing LBP. Prices for other methods of lead abatement (i.e., enclosure, encapsulation, etc.) may differ substantially.

Material	Removal Cost Estimate
Window components (sashes, sills, casings, etc.)	\$150.00/Unit
Wood door jambs, casings, doors	\$150.00/Unit
Brick walls	\$5.00/SF

### 4.0 PCB Containing Light Ballasts

#### 4.1 Methodology

Light ballasts are the electrical components at the end of fluorescent light fixtures under a metal overplate. Prior to 1978, ballasts were commonly manufactured with polychlorinated biphenyls (PCBs). PCBs were used in fluorescent light ballasts because of their good electrical insulating capabilities. Ballasts made after 1978 are usually marked "Non-PCB." F&R personnel removed several ballasts and inspected them for this marking. Quantities are approximate due to limited access to certain areas of the building during the survey period.

#### 4.2 Findings

Based on a limited, random inspection it was determined that light ballasts examined were labeled as Non-PCB. An approximate total quantity of 138 suspect PCB-containing light ballasts were observed throughout the buildings. The Total Estimated Removal and Recycling Cost for PCB-containing components is **\$690.00**.

#### 4.3 Conclusions/Recommendations

The disposal of fluorescent light ballasts should be based upon the presence or lack thereof of PCBs and the condition of the ballasts (leaking, etc.). The best option for non-leaking PCB ballasts is to recycle them at an approved recycling facility. Non-leaking PCB ballasts that aren't recycled must be



managed and disposed as hazardous waste. Leaking PCB ballasts should be handled with extreme caution to avoid personal exposure and contamination of the environment. Light fixtures observed to be contaminated with fluids from leaking PCB ballasts, should be managed and disposed of as hazardous waste. If the light fixture is to remain in place, the fixture should be cleaned and the residual fluid should be disposed of as hazardous waste. Applicable federal, state and local regulations should be followed for removal and disposal of these materials.

## **5.0 Mercury Containing Components**

### **5.1 Methodology**

Mercury is used in several building components including fluorescent lamps and liquid thermometers. In fluorescent lighting, mercury-containing dust forms from the mercury vapor found within the lamps. Quantities are approximate due to limited access to certain areas of the building during the survey period.

### **5.2 Findings**

An approximate total of 276 fluorescent lamps were observed throughout the building. The Total Estimated Removal and Recycling Cost for Mercury-containing components is **\$276.00**.

### **5.3 Conclusions/Recommendations**

Mercury containing lamps should be removed and disposed of/recycled according to regulatory guidelines by an appropriately licensed/certified contractor. Mercury containing waste components are considered a hazardous waste in the State of Maryland. Applicable federal, state and local regulations should be followed for removal and disposal of these materials.

## **6.0 Limitations**

This report has been prepared for the exclusive use of A. Morton Thomas and their Clients. This service has been performed in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made. Our conclusions and recommendations are based, in part, upon information provided to us by others and our site observations. We have not verified the completeness or accuracy of the information provided by others, unless otherwise noted. Our observations and recommendations are based upon conditions readily visible at the site at the time of our site visit, and upon current industry standards. During F&R's inspection, accessible areas were visually surveyed for the presence of suspected asbestos-containing materials (ACM) and lead-based paints (LBP). Inaccessible areas, such as behind ceilings or walls may not have been surveyed and therefore suspected ACM and LBP may not have been identified. Areas inspected for suspect ACM and LBP were limited to those designated by the scope of services. Hazardous materials quantities are approximate and should be verified prior to planned renovation/demolition activities.

F&R, by virtue of providing the services described in this report, does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any federal, state or local public agencies any conditions at the site that may present a potential danger to public health, safety, or the environment. It is the Client's responsibility to notify the appropriate federal, state and local public agencies as required by law, or otherwise to disclose, in a timely manner, any information that may be necessary to prevent any danger to public health, safety, or the environment.



Under this scope of services, F&R assumes no responsibility regarding response actions (e.g. O&M plan, encapsulation, abatement, removal, etc.) initiated as a result of these findings. Response actions are the sole responsibility of the Client and should be conducted in accordance with federal, state, and/or local requirements, and should be performed by appropriate licensed-asbestos and/or lead personnel, as warranted.



**Appendix A**  
**ACM Documentation**





**BULK SAMPLING CHAIN OF CUSTODY**

**PROJECT NAME: USNA HAZMAT**  
**PROJECT NUMBER: E68-195E**  
**PROJECT LOCATION: USNA**

**DATE: MAY 4, 2005**  
**SAMPLED BY: ABBIGALE KEEFER**

<b>SAMPLE TYPE (ASBESTOS, LEAD, ETC.)</b>	<b>SAMPLE NUMBER</b>	<b>HOMOGENOUS AREA</b>	<b>SAMPLE LOCATION</b>	<b>DATE SAMPLED</b>
ACM	NS01A NS01B NS01C	9x9 Beige Floor Tile and Mastic	Building 5, Area I	5/4
ACM	NS02A NS02B NS02C	2x2 Dotted/Fissured Ceiling Tile	Building 5, Area I	5/4
ACM	NS03A NS03B NS03C	12x12 Brown Speckled Floor Tile and Mastic	Building 5, Area IA	5/4
ACM	NS04A NS04B NS04C	Cove Base	Building 5, Area IA	5/4
ACM	NS05A NS05B NS05C	12x12 Dark Brown Floor Tile and Mastic	Building 5, Area I	5/4
ACM	NS06A NS06B NS06C	12x12 Light Brown Floor Tile and Mastic	Building 5, Area I	5/4
ACM	NS07A NS07B NS07C	Drywall	Building 5, Area VI	5/4
ACM	NS08A NS08B NS08C	12x12 White Floor Tile and Mastic	Men's Room	5/4
ACM	NS09A NS09B NS09C	2x4 Dotted and Fissured Ceiling Tile	Area III Workshop	5/4
ACM	NS10A NS10B NS10C	Drywall	Area III Workshop	5/4
ACM	NS11A NS11B NS11C	Expansion Joint	Exterior A	5/4
ACM	NS12A NS12B NS12C	Caulking	Exterior A	5/4
ACM	NS13A NS13B NS13C	Duct Covering-Silver	Exterior C	5/4



<b>SAMPLE TYPE (ASBESTOS, LEAD, ETC.)</b>	<b>SAMPLE NUMBER</b>	<b>HOMOGENOUS AREA</b>	<b>SAMPLE LOCATION</b>	<b>DATE SAMPLED</b>
ACM	NS14A NS14B NS14C	Duct Covering-Black	Exterior B	5/4
ACM	NS15A NS15B NS15C	Duct Covering-Gray	Exterior C	5/4

Please analyze all mastic separately and use positive stop method.

Total Number of Samples: 45

Submitted By: Abbigale Keefer

Date: 5/4/2005

**CERTIFICATE OF ANALYSIS**

**Client:** Froehling & Robertson  
**Address:** 7798 Waterloo Road  
 Jessup, Maryland 20794

**Job Name:** USNA  
**Job Location:** Not Provided  
**Job Number:** E68-195E  
**P.O. Number:** Not Provided

**Chain Of Custody:** 116556  
**Date Analyzed:** 5/10/2005  
**Person Submitting:** Abbigale Keefer

**Attention:** John O'Connor

**Summary of Polarized Light Microscopy**

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Homogeneity	Analyst ID	Comments
0536307	NS01A FT	3	3	--	--	--	--	--	--	--	--	97	Beige	Homogeneous	CK	
0536308	NS01B FT	--	--	--	--	--	--	--	--	--	--	--			CK	Sample Not Analyzed-Positive Stop
0536309	NS01C FT	--	--	--	--	--	--	--	--	--	--	--			CK	Sample Not Analyzed-Positive Stop
0536310	NS02A	NAD	--	--	--	--	5	--	20	--	--	75	Gray	Homogeneous	CK	
0536311	NS02B	NAD	--	--	--	5	--	--	20	--	--	75	Gray	Homogeneous	CK	
0536312	NS02C	NAD	--	--	--	3	--	--	17	--	--	80	Gray	Homogeneous	CK	
0536313	NS03A FT	NAD	--	--	--	--	--	--	--	--	--	100	Beige	Homogeneous	CK	
0536314	NS03B FT	NAD	--	--	--	--	--	--	--	--	--	100	Beige	Homogeneous	CK	
0536315	NS03C FT	NAD	--	--	--	--	--	--	--	--	--	100	Beige	Homogeneous	CK	
0536316	NS04A	NAD	--	--	--	--	--	--	--	--	--	100	Black	Homogeneous	CK	
0536317	NS04B	NAD	--	--	--	--	--	--	TR	--	--	100	Black	Homogeneous	CK	
0536318	NS04C	NAD	--	--	--	--	--	--	--	--	--	100	Black	Homogeneous	CK	
0536319	NS05A FT	NAD	--	--	--	--	--	--	TR	--	--	100	Brown	Homogeneous	CK	
0536320	NS05B FT	NAD	--	--	--	--	--	--	--	--	--	100	Brown	Homogeneous	CK	
0536321	NS05C FT	NAD	--	--	--	--	--	--	--	--	--	100	Brown	Homogeneous	CK	
0536322	NS06A FT	NAD	--	--	--	--	--	--	--	--	--	100	Beige	Homogeneous	CK	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

All rights reserved. AMA Analytical Services, Inc.

**CERTIFICATE OF ANALYSIS**

**Client:** Froehling & Robertson  
**Address:** 7798 Waterloo Road  
 Jessup, Maryland 20794

**Job Name:** USNA  
**Job Location:** Not Provided  
**Job Number:** E68-195E  
**P.O. Number:** Not Provided

**Chain Of Custody:** 116556  
**Date Analyzed:** 5/10/2005  
**Person Submitting:** Abbigale Keefer

**Attention:** John O'Connor

**Summary of Polarized Light Microscopy**

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Homogeneity	Analyst ID	Comments
0536323	NS06B FT	NAD	--	--	--	--	--	--	--	--	--	100	Beige	Homogeneous	CK	
0536324	NS06C FT	NAD	--	--	--	--	--	--	--	--	--	100	Beige	Homogeneous	CK	
0536325	NS07A	NAD	--	--	--	--	--	5	5	--	--	95	Off-White	Homogeneous	CK	
0536326	NS07B	NAD	--	--	--	--	--	5	5	--	--	95	Off-White	Homogeneous	CK	
0536327	NS07C	NAD	--	--	--	--	--	5	5	--	--	95	Off-White	Homogeneous	CK	
0536328	NS08A FT	NAD	--	--	--	--	--	--	--	--	--	100	Off-White	Homogeneous	CK	
0536329	NS08B FT	NAD	--	--	--	--	--	--	--	--	--	100	Off-White	Homogeneous	CK	
0536330	NS08C FT	NAD	--	--	--	--	--	--	--	--	--	100	Off-White	Homogeneous	CK	
0536331	NS09A	NAD	--	--	--	--	20	--	20	--	--	60	Gray	Homogeneous	CK	
0536332	NS09B	NAD	--	--	--	--	20	--	20	--	--	60	Gray	Homogeneous	CK	
0536333	NS09C	NAD	--	--	--	--	20	--	20	--	--	60	Gray	Homogeneous	CK	
0536334	NS10A	NAD	--	--	--	--	--	--	2	--	--	98	Off-White	Homogeneous	CK	
0536335	NS10B	NAD	--	--	--	--	--	--	TR	--	--	100	Off-White	Homogeneous	CK	
0536336	NS10C	NAD	--	--	--	--	--	--	TR	--	--	100	Off-White	Homogeneous	CK	
0536337	NS11A	NAD	--	--	--	--	--	--	--	--	TR	100	Gray	Homogeneous	CK	
0536338	NS11B	NAD	--	--	--	--	--	--	--	--	--	100	Gray	Homogeneous	CK	
0536339	NS11C	NAD	--	--	--	--	--	--	--	--	--	100	Gray	Homogeneous	CK	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

All rights reserved. AMA Analytical Services, Inc.

**CERTIFICATE OF ANALYSIS**

**Client:** Froehling & Robertson  
**Address:** 7798 Waterloo Road  
 Jessup, Maryland 20794

**Job Name:** USNA  
**Job Location:** Not Provided  
**Job Number:** E68-195E  
**P.O. Number:** Not Provided

**Chain Of Custody:** 116556  
**Date Analyzed:** 5/10/2005  
**Person Submitting:** Abbigale Keefer

**Attention:** John O'Connor

**Summary of Polarized Light Microscopy**

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Homogeneity	Analyst ID	Comments
0536340	NS12A	NAD	--	--	--	--	--	--	--	--	--	100	Gray	Homogeneous	CK	
0536341	NS12B	NAD	--	--	--	--	--	--	--	--	--	100	Gray	Homogeneous	CK	
0536342	NS12C	NAD	--	--	--	--	--	--	--	--	--	100	Gray	Homogeneous	CK	
0536343	NS13A	3	3	--	--	--	12	--	--	--	--	85	Silver	Homogeneous	CK	
0536344	NS13B	--	--	--	--	--	--	--	--	--	--	--			CK	Sample Not Analyzed-Positive Stop
0536345	NS13C	--	--	--	--	--	--	--	--	--	--	--			CK	Sample Not Analyzed-Positive Stop
0536346	NS14A	NAD	--	--	--	--	--	5	--	--	--	95	Black	Homogeneous	CK	
0536347	NS14B	NAD	--	--	--	--	--	5	--	--	--	95	Black	Homogeneous	CK	
0536348	NS14C	NAD	--	--	--	--	--	6	--	--	--	94	Black	Homogeneous	CK	
0536349	NS15A	NAD	--	--	--	--	10	--	--	--	--	90	Green	Homogeneous	CK	
0536350	NS15B	NAD	--	--	--	--	2	--	--	--	--	98	Gray	Homogeneous	CK	
0536351	NS15C	NAD	--	--	--	--	10	--	--	--	--	90	Gray	Homogeneous	CK	
0537470	NS01A M	2	--	--	--	--	--	--	--	--	--	98	Black	Homogeneous	CK	
0537471	NS01B M	--	--	--	--	--	--	--	--	--	--	--			CK	Sample Not Analyzed-Positive Stop
0537472	NS01C M	--	--	--	--	--	--	--	--	--	--	--			CK	Sample Not Analyzed-Positive Stop
0537473	NS03A M	NAD	--	--	--	--	--	TR	--	--	--	100	Brown	Homogeneous	CK	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

All rights reserved. AMA Analytical Services, Inc.

**CERTIFICATE OF ANALYSIS**

Client: Froehling & Robertson Job Name: USNA Chain Of Custody: 116556  
 Address: 7798 Waterloo Road Job Location: Not Provided Date Analyzed: 5/10/2005  
 Jessup, Maryland 20794 Job Number: E68-195E Person Submitting: Abbigale Keefer  
 P.O. Number: Not Provided

Attention: John O'Connor

**Summary of Polarized Light Microscopy**

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Homogeneity	Analyst ID	Comments
0537474	NS03B M	NAD	--	--	--	--	--	--	TR	--	--	100	Brown	Homogeneous	CK	
0537475	NS03C M	NAD	--	--	--	--	--	--	TR	--	--	100	Brown	Homogeneous	CK	
0537476	NS05A M	NAD	--	--	--	--	--	--	TR	--	--	100	Black	Homogeneous	CK	
0537477	NS05B M	NAD	--	--	--	--	--	--	TR	--	--	100	Black	Homogeneous	CK	
0537478	NS05C M	NAD	--	--	--	--	TR	--	--	--	--	100	Black	Homogeneous	CK	
0537479	NS06A M	NAD	--	--	--	--	--	--	TR	--	--	100	Brown	Homogeneous	CK	
0537480	NS06B M	NAD	--	--	--	--	TR	--	TR	--	--	100	Brown	Homogeneous	CK	
0537481	NS06C M	NAD	--	--	--	--	TR	--	TR	--	--	100	Brown	Homogeneous	CK	
0537482	NS08A M	NAD	--	--	--	--	--	--	--	--	--	100	Brown	Homogeneous	CK	
0537483	NS08B M	NAD	--	--	--	--	--	--	TR	--	--	100	Brown	Homogeneous	CK	
0537484	NS08C M	NAD	--	--	--	--	TR	--	TR	--	--	100	Brown	Homogeneous	CK	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

All rights reserved. AMA Analytical Services, Inc.

**CERTIFICATE OF ANALYSIS**

Client: Froehling & Robertson  
 Address: 7798 Waterloo Road  
 Jessup, Maryland 20794

Job Name: USNA  
 Job Location: Not Provided  
 Job Number: E68-195E  
 P.O. Number: Not Provided

Chain Of Custody: 116556  
 Date Analyzed: 5/10/2005  
 Person Submitting: Abbigale Keefer

Attention: John O'Connor  
 Page 5 of 5

**Summary of Polarized Light Microscopy**

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Sample Percent	Homogeneity ID	Analyst	Comments
-------------------	-----------------	----------------	--------------------	-----------------	---------------------	------------------------	----------------------	--------------------	-----------------	-------------------	---------------	----------------------------	----------------	---------	----------

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

- 1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.
- 2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993  
 NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

*Crystal Kellam*  
 Crystal Kellam

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

All rights reserved. AMA Analytical Services, Inc.





### Lead Inspection Form

Location: BLDG 5

Site: USN Station

Date: 5/4/05

Surface Testing Location	Sample Location	Substrate	Condition	Color	Shell	Reading	+/-	Lead Y/N
<b>AREA 3 HALLWAY</b>								
Door Frame	MR	Wood	Good	Black	L	0.0	0.1	No
Door Casing	MR	Wood	Good	Black	L	0.0	0.1	No
Baseboard	MC	Wood	Good	Black	L	0.0	0.1	No
Wall A	MC	Drywall	Good	White	L	0.0	0.1	No
Wall B	UL	Drywall	Good	White	L	0.0	0.1	No
<b>Wall C</b>	<b>UL</b>	<b>Brick</b>	<b>Good</b>	<b>White</b>	<b>K</b>	<b>29</b>	<b>8.8</b>	<b>Yes</b>
Wall D	MC	Drywall	Good	White	L	0.0	0.1	No
<b>MENS ROOM</b>								
Door	UC	Wood	Good	Black	L	0.0	0.1	No
Door Frame	ML	Wood	Good	Black	L	0.0	0.1	No
Door Casing	ML	Wood	Good	Black	L	0.0	0.1	No
Wall A	MC	Drywall	Good	White	L	0.0	0.1	No
<b>Wall B</b>	<b>MC</b>	<b>Brick</b>	<b>Good</b>	<b>White</b>	<b>K</b>	<b>12.6</b>	<b>5.3</b>	<b>Yes</b>
Wall C	MC	Drywall	Good	White	L	0.0	0.1	No
Wall D	MC	Drywall	Good	White	L	0.0	0.1	No
<b>LADIES ROOM</b>								
Door	UC	Wood	Good	Black	L	0.0	0.1	No
Door Frame	MR	Wood	Good	White	L	0.0	0.1	No
Door Casing	MR	Wood	Good	White	L	0.0	0.1	No
<b>Wall A</b>	<b>MC</b>	<b>Brick</b>	<b>Good</b>	<b>White</b>	<b>K</b>	<b>18</b>	<b>5.6</b>	<b>Yes</b>
Wall B	MC	Concrete	Good	White	L	0.0	0.1	No
Wall C	MC	Drywall	Good	White	L	0.0	0.1	No
Wall D	MC	Drywall	Good	White	L	0.0	0.1	No



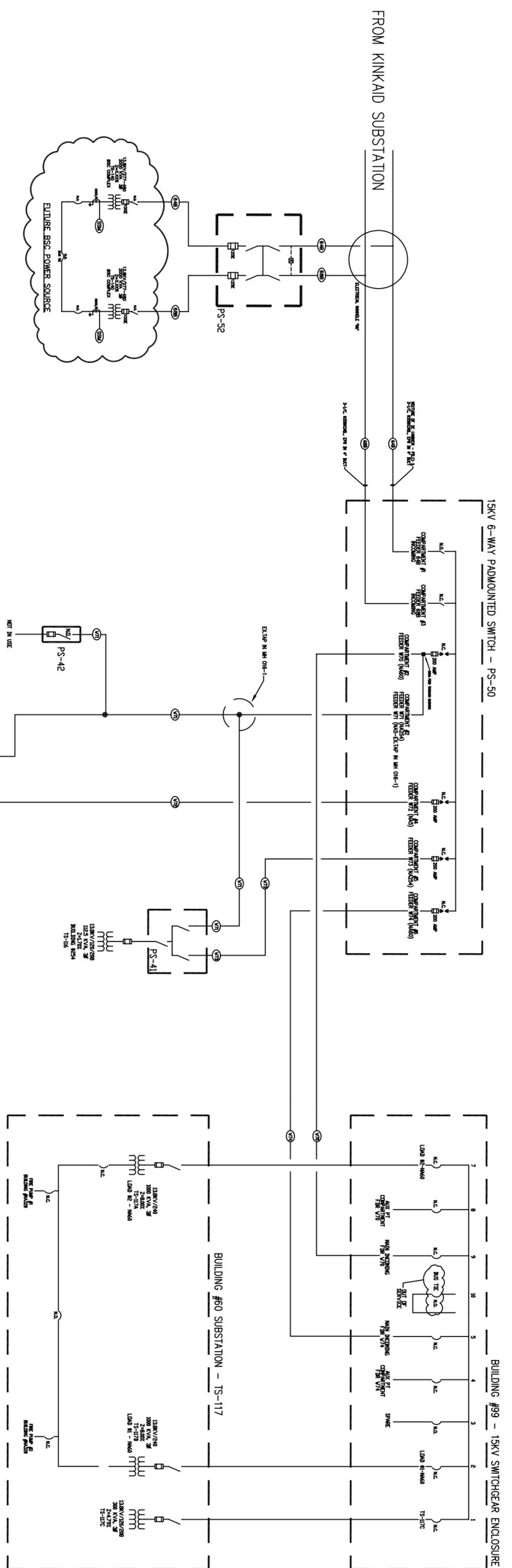




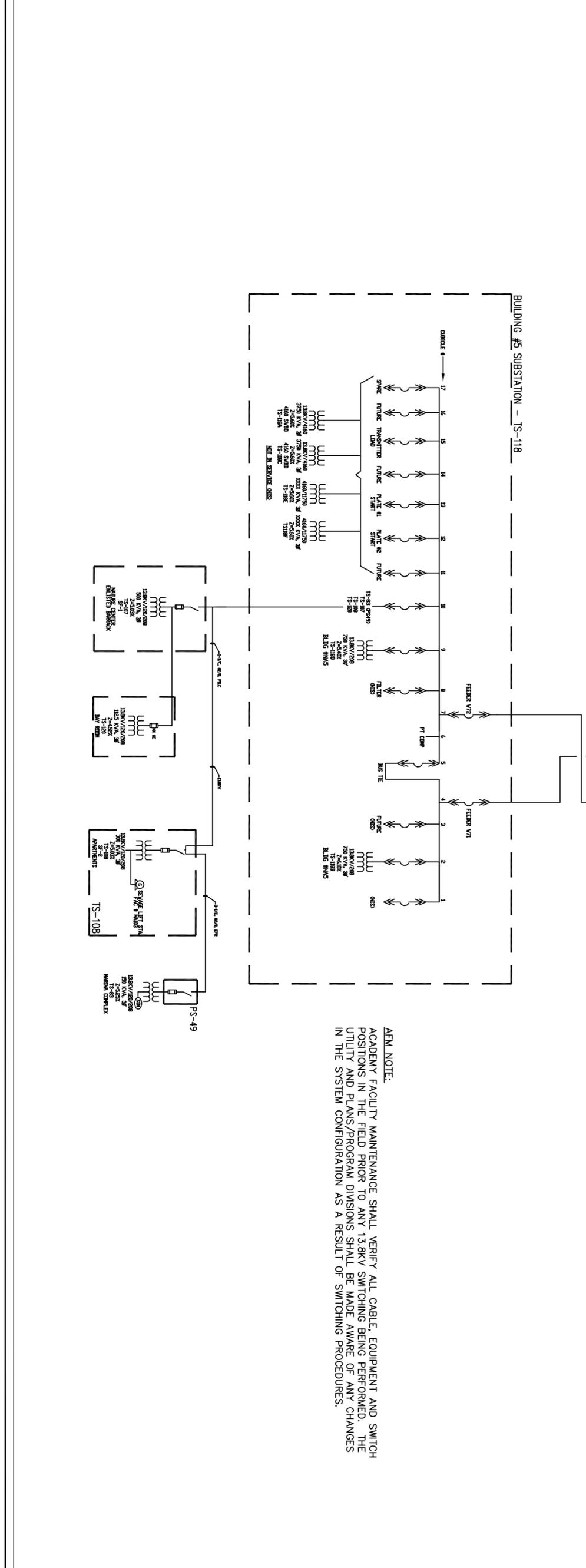


**Appendix C**  
**Building Diagram**





AFM NOTE:  
 ACADEMY FACILITY MAINTENANCE SHALL VERIFY ALL CABLE, EQUIPMENT AND SWITCH POSITIONS IN THE FIELD PRIOR TO ANY 13.8KV SWITCHING BEING PERFORMED. THE UTILITY AND PLANS/PROGRAM DIVISIONS SHALL BE MADE AWARE OF ANY CHANGES IN THE SYSTEM CONFIGURATION AS A RESULT OF SWITCHING PROCEDURES.



# DEMOLISH MULTIPLE BUILDINGS, PART 1

## EXISTING CONDITIONS PHOTOS



Construction Battalion Unit (CBU) 403, Building NA60: front perspectives (top photos).

Right side (similar to left side) of building (bottom photo).

**DE002-08, DEMO 26 BUILDINGS TO REDUCE FOOTPRINT**  
EXISTING CONDITIONS PHOTOS



**Space and Naval Warfare Systems (SPAWARS) Public Works storage, Building NA5**

# DEMOLISH MULTIPLE BUILDINGS, PART 1

## EXISTING CONDITIONS PHOTOS



Building NA5, side and rear of building

# DEMOLISH MULTIPLE BUILDINGS, PART 1

## EXISTING CONDITIONS PHOTOS



Building NA273, Battery Switchgear

**DEMOLISH MULTIPLE BUILDINGS, PART 1**  
EXISTING CONDITIONS PHOTOS



**Building NA68, Helix House**

# DEMOLISH MULTIPLE BUILDINGS, PART 1

## EXISTING CONDITIONS PHOTOS



Building NA69, Helix House behind NA60

# DEMOLISH MULTIPLE BUILDINGS, PART 1

## EXISTING CONDITIONS PHOTOS



Building NA7, Battery House at rear of NA5

**DEMOLISH MULTIPLE BUILDINGS, PART 1**  
EXISTING CONDITIONS PHOTOS



**Building NA128, Midshipmen warehouse**