*****UNCLASSIFIED*****

BUILDING 530
BUILDING REPAIRS

At the

Naval Air Station Oceana,
Dam Neck Annex
Virginia Beach, Virginia

PREPARED BY:

NAVFAC MID-ATLANTIC, ROICC OCEANA, PDCB PRA21
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REQUEST FOR PROPOSAL (RFP) PREPARED BY:

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Signature/Date:

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Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

PART 2 – GENERAL REQUIREMENTS

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

Part 2 General Requirements

PART 2

GENERAL REQUIREMENTS

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1.1 Definitions

As used throughout the contract, the following terms have the meaning set forth below:
Contracting Officer (KO): The individual designated to administer the contract. Throughout this contract this individual will be responsible and possess the authority to act on behalf of the Government with respect to the specific contract.

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

Contract: Contract or task order.

Contractor: The term Contractor refers to both the prime Contractor and all subcontractors, whether in contract with the Prime Contractor or other subcontractors at any tier, including the Designer of Record.

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

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

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

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

1.2 Accessibility

Provide barrier-free design in accordance with UFC 1-200-01, DoD Building Code.

1.3 Changes

No oral statement by any person other than the Contracting Officer, as provided in the Federal Acquisition Regulation (FAR) clause 52.243-5 entitled, "CHANGES AND CHANGED CONDITIONS," will in any manner or degree modify or otherwise affect the terms of this contract.

1.4 No Waiver by the Government

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

1.5 Equitable Adjustments

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

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

c. If required by the Contracting Officer, the Contractor agrees to 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 will discharge the Government, including its officers, agents, and employees, from any further claims, including, but not limited to, further claims arising out of delays or disruptions caused by the aforesaid change.

1.6 Warranty

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

1.7 Equipment Inventory Forms

The Contractor must submit an Equipment Inventory Form for existing equipment to be demolished/removed, or for new equipment to be provided under this contract. The Equipment Inventory Form must be completely filled-out and provided for each piece of equipment, for the entire equipment listings. Further clarification on the equipment types will also be discussed at the PAK or Pre-Construction Meetings, or as directed by the Contracting Officer. Submit all Equipment Inventory Forms to the Contracting Officer, prior to demolition of the existing equipment and prior to installation of the new equipment. (See PART 6 – ATTACHMENTS 6.6 for the Equipment Inventory Form to utilize).

01 11 00 SUMMARY OF WORK

1.0 Protection of Government Property

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

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

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

c. Preserve the natural resources in accordance with the approved environmental protection plan prepared in accordance with UFGS 01 57 19 *Temporary Environmental Controls*.

01 14 00.05 20 WORK RESTRICTIONS

1.1 Existing Underground Utilities

Verify on-site utilities and have them marked out by a third-party utility locator service prior to the

start of construction. Determine the elevations of existing utilities and underground obstructions indicated as existing to remain in locations to be traversed by new utilities and other work provided herein before new work is laid closer than the nearest manhole or other structure at which an adjustment in grade could be made. Where dig permits are required, obtain permits and notify the Contracting Officer 30 calendar days prior to any excavation.

Maintain all utility markings for the duration of the contract.

1.2 Work Hours, Access and Passes

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

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

a. Access to Buildings/ Occupied Buildings: The Contractor may work in or around existing occupied buildings. The Contractor is responsible, via the Contracting Officer, to obtain access to building and facilities and arrange for them to be opened and closed. Do not enter the building(s) without prior approval of the Contracting Officer. Keep the existing buildings and their contents secure at all times. Construction work areas must have complete and secure separation from adjacent occupied areas, as approved and directed by the Contracting Officer and Activity's Security Officer. Provide temporary closures as required to maintain security. Contract personnel will not be permitted in security-regulated buildings or areas unless cleared by the Security Officer.

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

   Obtain access to Navy installations through participation in the Defense Biometrics Identification System (DBIDS). Requirements for Contractor employee registration, and transition for employees currently under Navy Commercial Access Control System (NCACS), are available at https://www.cnic.navy.mil/om/dbids.html. No fees are associated with obtaining a DBIDS credential. Participation in the DBIDS is not mandatory, and Contractor personnel may apply for One-Day Passes at the Base Visitor Control Office to access an installation. Registration for DBIDS includes: Present a letter or official award document (i.e. DD Form 1155 or SF 1442) from the Contracting Officer, that provides the purpose for access, to the base Visitor Control Center representative.

   - Present valid identification, such as a passport or Real ID Act-compliant state driver's license

   - Provide completed SECNAV FORM 5512/1 to the base Visitor Control Center representative to obtain a background check. This form is available for download

at <URL>https://www.cnic.navy.mil/om/dbids.html</URL >

- Upon successful completion of the background check, the Government will complete the DBIDS enrollment process, which includes Contractor employee photo, finger prints, base restriction and several other assessments

- Upon successful completion of the enrollment process, the Contractor employee will be issued a DBIDS credential, and will be allowed to proceed to worksite

  DBIDS Eligibility Requirements: Throughout the length of the contract, the Contractor employee must continue to meet background screen standards. Periodic background screenings are conducted to verify continued DBIDS participation and installation access privileges. DBIDS access privileges will be immediately suspended or revoked if at any time a Contractor employee becomes ineligible. An adjudication process may be initiated when a background screen failure results in disqualification from participation in the DBIDS, and Contractor employee does not agree with the reason for disqualification. The Government is the final authority. DBIDS Notification Requirements: Immediately report instances of lost or stolen badges to the Contracting Officer. Immediately collect DBIDS credentials and notify the Contracting Officer in writing under the following circumstances: (1) An employee has departed the company without having properly returned or surrendered their DBIDS credentials. (2) There is a reasonable basis to conclude that an employee, or former employee, might pose a risk, compromise, or threat to the safety or security of the Installation or anyone therein.

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

d. Work Hours: Unless otherwise indicated, work will be located on a Government compound, military installation, or station. Contractor work hours are between 0700 and 1530 Monday through Friday. Obtain advance approval from the Contracting Officer for Contractor personnel are to remain on site beyond normal working hours. Notify the Contracting Officer and the Activity at least 48 hours in advance to request approval for access to the jobsite or work outside of normal working hours or on Saturday, Sunday, and Federal Holidays.

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

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

1.3 Security Requirements

All security requirements apply to all subcontractors and suppliers associated with this contract. Special or extraordinary security requirements are identified herein. Comply with the following in addition to special or extraordinary security requirements:

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

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

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

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

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

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

01 20 00.05 20 PRICE AND PAYMENT PROCEDURES

1.1 Schedule of Prices

Submit a schedule of prices for approval on forms furnished by the Government. The initial schedule of prices may be preliminary for construction activities until the design is developed. Include a detailed breakdown of the contract price with quantities and unit prices for each work activity or definable feature of work. Include general conditions, profit, and overhead costs within the unit prices. Break down into design and construction is required. The Contractor may invoice for bonds once the Government has approved the bonds, however, no other requests for payment will be processed without an approved schedule of prices and baseline schedule.

1.2 Contractor Invoices

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

a. Content of Invoice: Requests for payment in accordance with the terms of the contract must consist of the following: (If NFAS Clause 5252.232-9301 is present in the contract, documents must be provided as attachments in Wide Area Workflow (WAWF). The maximum size limit per attachment is less than 2 megabytes, but there are no limits on the number of attachments. If a document cannot be attached to WAWF due to system or size restrictions it must be provided as instructed by the contracting officer). If NFAS Clause 5252.232.9301 is not present in the contract, follow the invoicing instructions provided in the contract.

1. Contractor's Invoice on NAVFAC Form 7300/30, must show, in summary form, the basis for arriving at the amount of the invoice.
2. Contractor's Estimate for Voucher/ Contract Performance Statement on NAVFAC Form 7300/31 furnished by the Government, showing in detail: the estimated cost, percentage of completion, and value of completed performance for each of the construction categories stated in this contract. Use NAVFAC LANT Form 4-330/110 (New 7/84) on NAVFAC Atlantic contracts when a Monthly Estimate for Voucher is required.
3. Affidavit to accompany invoice (LANTDIV NORVA Form 4-4235/4 (Rev. 5/81)).
4. Updated copy of submittal register.
5. Updated copy of progress schedule. Furnish as specified in "FAR 52.236-15, Schedules for Construction Contracts."
6. Contractor Safety Self Evaluation Checklist (original)
7. Final release (for final payment only). Final invoice must be accompanied by the certification required by DFARS 252.247.7023 TRANSPORTATION OF SUPPLIES BY SEA, and the Contractor's Final Release.

b. Payment:
1. Payment will be made on Contractor's submission of itemized requests and will be subject to reduction for overpayments or increased for underpayments from previous payments. The Government may withhold payment or reduce payments for the following:
   a. Defects in material or workmanship.
   b. Claims the Government may have against the Contractor under or in connection with this contract.
   c. Contractor's failure to submit an updated schedule.
   d. Payroll violations.
   e. Unless otherwise adjusted, repayment to the Government upon demand for overpayments made to the Contractor.

2. Payments will not be made for materials stored off construction sites

1.3 Contractor Project Management

The Prime Contractor must be responsible for Project Management throughout the entire project. Project management must be provided during both the design and construction phases. It is the intent of the Government to partner with the Contractor to maximize project value while strictly controlling contract modifications and maintaining overall fiscal control.

Project Management documentation must be submitted at the design phase kick-off meeting and then expanded upon and updated during the entire design and construction sequencing of the contract. The purpose of project management documentation is to balance scope and value during critical project design decision phase and provide a format to track and update this information as the project progresses to completion. As a minimum, this project management documentation must address:

a. Project Budget:
Break-out major system and components. During the design phases, document that the DoR design has been coordinated with sub-contractors and is consistent with sub-contractor budgets. If there are any discrepancies that cannot be resolved by the General Contractor, these discrepancies must be identified within the design submissions with proposed resolutions.

All deviations to the RFP and/or UFC/UFGS criteria must be formally submitted in NAVFAC deviation request format, including justification of why the deviation is warranted, schedule impact, and any cost savings to the Government.

b. Project Schedule
Address components and/or systems that have “long-lead” impacts. Identify how these “longlead” items have been mitigated in the design and construction schedules.

Identify individual Definable-Features-of-Work (DFOW) that must be released for fabrication and/or begin construction prior to the DoR Final Design documents being signed and approved; proceeding only upon written permission by the Contracting Officer to proceed.

Note: Early construction start prior to approval of the Final DOR Design is at the sole risk of the Contractor. Any rework/replacement required in order to meet the requirements of this contract, will be the responsibility of the Contractor at no cost/expense to the Government.

01 30 00.05 20 ADMINISTRATIVE REQUIREMENTS

1.1 Supervision

The Contractor must have a superintendent fluent in English on the job site during working hours.

The Superintendent must have a minimum of 5 years of experience as a Superintendent on previous projects of similar size and complexity. The Superintendent **may not** serve as the Site Safety and Health Officer. Provide a Superintendent Resume for the proposed on-site Project Superintendent describing experience with references and qualifications to the Contracting Officer for approval. The Contracting Officer reserves the right to interview the proposed on-site Project Superintendent at any time in order to verify the submitted qualifications.

1.2 Required Insurance

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

a. Comprehensive General Liability: $500,000 per occurrence.

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

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

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

e. Others as required by state law.

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

g. The Certificate of Insurance must provide for 30 calendar days written notice to the Contracting Officer by the insurance company prior to cancellation or material change in policy coverage.

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

Private Qualified Person (PQP) as additional insureds.

01 31 19.05 20 POST AWARD MEETINGS

1.1 Post Award Kick-off Meeting (PAK)

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

The Contractor's key personnel must attend including the Project Manager, Superintendent, Site Safety and Health officer, Construction Quality (CQ) Manager, Design Quality Control (DQC) Manager, Designer of Record (DOR), and major subcontractors.

The Contractor must take detailed Meeting Minutes/Notes during the PAK meeting and must distribute the Meeting Minutes to the Contracting Officer/NAVFAC Team within 3 business days after the PAK Meeting was held.

1.2 Partnering

The Contracting Officer will organize initial and follow-up informal partnering sessions with key personnel of the project team, including Contractor's personnel and Government personnel. The initial session may be a part of the PAK Meeting. The initial partnering session will be conducted and facilitated using electronic media provided by the Contracting Officer. Follow-on partnering sessions will be conducted every 6 months or less frequent as determined by the Contracting Officer.

The Contractor must take detailed Meeting Minutes/Notes during any Partnering meetings and must distribute the Meeting Minutes to the Contracting Officer/NAVFAC Team within 3 business days after the Partnering meetings are held.

1.3 OnBoard Review (OBR) Meetings

Contractor must take detailed Meeting Minutes/Notes during any OBR meeting and must distribute the Meeting Minutes to the Contracting Officer/NAVFAC Team within 3 business days after the OBR meeting is held.

1.4 Pre-Construction Conference

Prior to construction or demolition, meet with representatives of the Contracting Officer to discuss and develop mutual understanding relative to administration of the safety programs, environmental issues, safety of building occupants and surrounding area, hazardous materials, waste disposal, construction QC procedures, construction schedule, labor provisions and other construction phase contract procedures.

The Contractor must take detailed Meeting Minutes/Notes during the PRECON conference, and must distribute the Meeting Minutes to the Contracting Officer/NAVFAC Team within 3

business days after the PRECON conference was held.

1.5 NAVFAC Red Zone Meeting (NRZ)

Participate in NAVFAC Red Zone (NRZ) meetings with the Contracting Officer to identify strategies to ensure the project is carried to expeditious closure and turnover to the client. The Contracting Officer will provide a template to the Contractor to use to develop a NRZ Checklist. Revise the template to include critical work activities and their planned completion dates based on the project scope of work and schedule. Discuss any progress changes with items listed on the NRZ Checklist during regularly scheduled NRZ Meetings beginning approximately at 75% stage of construction prior to project completion.

The Contractor must take detailed Meeting Minutes/Notes during the Red Zone Meeting and must distribute the Meeting Minutes to the Contracting Officer/NAVFAC Team within 3 business days after the Red Zone Meeting was held.

01 31 23.13 20 ELECTRONIC CONSTRUCTION AND FACILITY SUPPORT CONTRACT MANAGEMENT SYSTEM

See UFGS Section 01 31 23.13 20 Electronic Construction and Facility Support Contract Management System in Part 5 of this RFP for requirements for the use of eCMS. (See Part 5 – PRESCRIPTIVE SPECIFICATIONS).

01 32 17.00 20 COST-LOADED NETWORK ANALYSIS SCHEDULES (NAS)

Develop and implement a design and construction schedule in accordance with UFGS 01 32 17.00 20 in Part 5 of this RFP. (See PART 5 – PRESCRIPTIVE SPECIFICATIONS).

01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES

1.1 Construction submittals are to be Contractor-approved. Construction submittals must be reviewed by the Contractor's Construction Quality Control (CQC) Manager. The CQC Manager must certify that each submittal is in compliance with the contract requirements.

a. In addition to Contractor CQC approval, DOR Approval is required for the following:
   1. Fire Protection related submittals
   2. All components of the roof and exterior wall.
   3. All structural submittals
   4. All components of the interior doors, hardware, fireproofing/firestopping, railings, paint, finish materials/colors.
   5. HVAC Testing, Adjusting, and Balancing.
   6. SID submittals and equipment packages for review and approval by NAVFAC Architect
   7. All other submittals as required by UFGS specifications sections edited by the DOR
   8. All electrical submittals

b. In addition to Contractor CQC approval and DOR approval, Government Approval is required for the following:

   1. Division 1 Government approved submittals as required by UFGS specification

sections edited by the DOR.

2. Section 23 09 13 and 23 09 23.02
3. Section 23 05 93
4. Fire Protection related submittals pertaining to spray-applied fire proofing and fire stopping, exterior fire alarm reporting systems, interior fire alarm & detection systems, and fire suppression systems including fire pumps and standpipe systems.

Prior to submission to the DOR or the Government each submittal must be certified by the Contractor's CQC Manager as stated above. For each submittal, construction work on that item must not commence until after the submittal has been approved by the appropriate entity as indicated herein.

1.2 Submit the following construction submittals, approved by the DOR, to the Government for Surveillance (Government Surveillance does not prevent the Contractor from proceeding with construction, but allows the Government an opportunity to confirm the submittals have been approved by the DOR, and are in accordance with the contract documents):

a. Submit geotechnical related submittals pertaining to the soils investigations (reports and soils analysis), foundations (shallow and deep), pavements structure design, test pile and production pile testing and installation.

b. Submit roofing submittals pertaining to materials and systems used to make up the roof system.

c. Submit HVAC Testing, Adjusting, and Balancing required submittals.

d. Submit all Interim Special Inspection Reports on a bi-weekly basis until work requiring special inspections is complete. Submit all Structural Observation Reports and the final Report of IBC Special Inspections.

e. Submit doors, frames and hardware.

f. Submit Structural Shop Drawings and structural product data.

g. Submit Electrical Shop Drawings and electrical product data.

1.3 Construction Submittal Process

Provide to the Government submittals as listed. See Section 01 33 10.05 20 "Design Submittal Procedures" for specific design and construction submittal format and approval and surveillance requirements. Design drawings may be prepared more like shop drawings to minimize construction submittals after final designs are approved. Therefore, the Contractor is encouraged to prepare and submit with the design drawings, appropriate connection, fabrication, layout, and product specific drawings.

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

b. Construction submittals, prior to construction, approved in accordance with QC Plan, the DOR or QC Specialist is the approving authority for submittals unless otherwise indicated.

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

d. Safety Data Sheets (SDS) as applicable.

e. Baseline Schedule: due prior to PAK.

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

g. Contractor Safety Self-Evaluation Checklist.

h. Accident Reports - submit if incidence occurs.

i. Accident Prevention Plan and Activity Hazard Analysis: Submit prior to construction.

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

k. Record Drawings, due at Beneficial Occupancy

l. Operation and Maintenance Information: Due prior to testing as applicable, no later than 30 calendar days before Beneficial Occupancy.

m. Licenses and Permits: Per this section and Part 4.

n. Construction Submittals:

1) In addition to the design submittals noted in Section 01 33 10.05 20, construction submittals will be required. The list of required submittals will be generated from the Contractor-prepared specifications and indicated in the submittal register.

2) Shop drawing submissions will be governed by UFGS 01 33 00.05 20 Construction Submittal Procedures, available on the Whole Building Design website (www.wbdg.org). Contractor must assume a 15 day review period, and provide 3 hard copies of all submittals (in addition to electronic submittals) to be submitted to [FEAD] [installation].]

o. Equipment Inventory Form: Prior to demolition of existing or installation of new. (See PART 6 – ATTACHMENTS for the Equipment Inventory Form to utilize).

1.4 Operations and Maintenance Information (OMSI)

Provide operation and maintenance data on all equipment and material installed under this contract due to prior testing as applicable, but no later than Beneficial Occupancy. This data must be incorporated in an operations and maintenance manual.

Submit Operations and Maintenance data packages, manuals and training according to UFGS 01 78 23 OPERATION AND MAINTENANCE DATA. Quantity and format will also be discussed at the PAK meeting.

Operation and maintenance data information will be furnished by the manufacturer, or the system provider, to the equipment operator and maintenance personnel. Operating and maintenance personnel need this data for the safe and efficient operation, maintenance and repair of the item.

1.5 Licenses and Permits

Obtain all appointments, licenses and permits (inclusive of all Environmental Permits required for Naval Air Station Oceana/Dam Neck/Fentress Field AOR) required to perform work under this contract at no expense to the Government, prior to commencing any construction activities. Comply with all applicable federal, state, and local laws, and base regulations and procedures. Provide evidence of such permits and licenses to the Contracting Officer before work commences and at other times as requested by the Contracting Officer (see FAR 52.236-7, *Permits and Responsibilities*). Coordinate all permit applications and process with the Navy and the local NAS Oceana Environmental Office.

The contractor must submit a complete PROD form with the first design submittal package. A blank PROD form can be obtained from the NAVFAC Design-Build website at the following link http://www.wbdg.org/FFC/NAVFAC/NDBM/ST/PROD_Form.doc . Contractor must determine correct permit fees and pay said fees. Copies of all permits, permit applications, and the completed PROD form must be forwarded to the Government's Civil Reviewer and Environmental Reviewer.

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

1.6 Record Drawings

The as-built modifications must be accomplished by electronic drafting methods on the Contractor-originated DWG design drawings to create a complete set of record drawings. For each record drawing, provide CAD drawing identical to signed Contractor-originated PDF drawing that incorporate modifications to the as-built conditions. After all as-built conditions are recorded on the DWG files, produce a PDF file of each individual record drawing in conformance with FC 1-300-09N. Electronic signatures are not required on record drawings.

01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES

1.1 Summary

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

1.2 Reference Standards

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

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

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

a. U.S. Department of Defense (DoD) Unified Facilities Criteria (UFC)

UFC 1-200-01	DoD Building Code (General Building Requirements)
UFC 1-200-02	High Performance and Sustainable Building Requirements – NOT APPLICABLE
UFC 1-300-08	Criteria for Transfer and Acceptance of DoD Real Property
UFC 1-300-08	Criteria for Transfer and Acceptance of DoD Real Property
FC 1-300-09N	Navy and Marine Corps Design Procedures
UFC 3-560-01	Electrical Safety, O&M
UFC 3-600-01	Fire Protection Engineering
UFC 3-810-01N	Navy and Marine Corps Environmental Engineering for Facility Construction

b. UFC 1-200-01

UFC 1-200-01, DoD Building Code is a hub document that provides general building requirements and references other critical UFCs. A reference to UFC 1-200-01 in the RFP document requires compliance with the Tri-Service Core UFCs. Refer to the UFC 1-200-01 for a complete list of all applicable Tri-Service Core UFCs at website location http://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc . Contractor-originated design documents must provide a project design that complies with the Request For Proposal (RFP), FC 1-300-09N, UFC 1-200-01, UFC 3-810-01N, the Core UFCs, and other UFC's listed above.

1.3 Design Requirements

a. Provide design documents that include basis of design, design drawings and design specifications, reports and submittal register in accordance with FC 1-300-09N Navy and Marine Corps Design Procedures. Scanning of the existing record drawings to create contract drawings for this project is unacceptable.

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

c. Part 3 contains the project description, functional and performance requirements, scope

items, and expected quality levels that exceed Part 4. Part 4 identifies design criteria, verification requirements, and performance and quality requirements of products.

d. Provide professional registration and design signing and stamping requirements per requirements of FC 1-300-09N, *Design Procedures*. ***Each design drawing must only be signed, sealed, and dated by the Registered Architect or Professional Engineer who is registered to practice in the particular field involved for work depicted on that drawing, and serves as the Designer of Record for work depicted on that drawing! *** Interior Designers must be NCIDQ certified per UFC 3-120-10 *Interior Design*. The design effort must be overseen by a Design Quality Control (DQC) Manager who will ensure that the design meets the requirements of this RFP. The DQC Manager will prepare a DQC Plan describing how the design process will ensure conformance to the RFP.

e. Provide a Contractor-originated design specification that in conjunction with the drawings, demonstrates compliance with requirements of the RFP. The specified products, materials, systems, and equipment that are approved by the DOR; submitted to the Government by the Contractor; and reviewed by the Contracting Officer must be used to construct the project. Prescriptive specification sections contained in RFP Part 5 must become a part of the Contractor-originated specification without modification. The Contractor must prepare design specifications that include a UFGS specification for each product, material, or system on the project. Organize the specifications using Construction Specification Institute (CSI) Masterformat™ .

*****ON DRAWING SPECIFICATIONS WILL NOT BE ACCEPTED*****

Provide project specifications to include the following:

1. Provide the specification cover sheet with the professional seal and signature of the lead licensed architect or engineer of the project design team. Indicate the Contractor's company name and address on the specification coversheet.

2. Also, as "**a minimum"**, the following "front end" (Division 0 and Division 1) specifications must be provided:
   00 01 15 List of Drawings
   01 11 00 Summary of Work
   01 14 00 Work Restrictions
   01 20 00 Price and Payment Procedures
   01 30 00 Administrative Requirements
   01 31 23.13 20 Electronic Construction and Facility Support Contract Management System
   01 31 19 Post Award Meetings
   01 32 17.00 20 Cost-Loaded Network Analysis Schedule (NAS)
   01 33 00 Submittal Procedures
   01 35 26 Governmental Safety Requirements
   01 45 00.00 Quality Control *(for Design Build Projects)*
   01 50 00 Temporary Construction Facilities and Controls
   01 57 19 Temporary Environmental Controls
   01 78 00 Closeout Submittals
   01 78 23 Operation and Maintenance Data

   The UFGS Specification sections listed above must be edited to accommodate the requirements of this DB/RFP. Edit only the bracketed items of these Front-End Division 0 and Division 1 UFGS Specification Sections. Obtain approval from the Contracting Officer prior to the Prefinal Design Submittal for any edits to these sections other than edits to the bracketed items. Edits to any portion of

these front-end sections other than to the bracketed items are not permitted without prior approval of the Contracting Officer.

Technical Specifications (Divisions 02 and beyond) must be provided on materials/items that will be provided on the project. As a minimum, projects including DEMOLITION work must include UFGS Specification “02 41 00 DEMOLITION AND DECONSTRUCTION”.

3. Table of contents for entire specification.
4. Individual UFGS specification sections for each product, material, and system required by the RFP. Edit UFGS sections in accordance with RFP Part 3 and 4.
5. If proprietary information is provided or required, include a coversheet for the product, material, or system information that is being proprietarily specified. This information must comply with the related UFGS specification.
6. If proprietary information is provided or required, include highlighted and annotated Catalog Cuts, Manufacturer's Product Data, Tests, Certificates, manufactures information and letters for each product, material, or system that is being proprietary specified.
7. Coordinated submittal register for all products, materials and systems with each design submittal. Provide a cumulative register that identifies the design and construction submittals required by each design package along with previous design submittals. The DOR must assist in developing the submittal register by determining which submittal items are required to be approved by the DOR. Complete all fields in the final submittal register in order to obtain Government approval of the final design.

f. 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. Attach this product data to the end of the applicable UFGS specification section that specifies the material.

g. Specification Software: Submit the final specification source files in SpecsIntact with a Submittal Register generated in SpecsIntact.

h. Submit design drawings/specifications, calculations and manufacturer's data to demonstrate compliance with contract requirements.

i. Provide hard and electronic copies of design submittal package(s) to allow the Government 21 calendar days for reviews. The OnBoard review meeting must take place within 7 calendar days of issuance of Government design review comments. The Contractor must submit their DOR Responses to the Government Review Comments a minimum of 3 business days prior to the OnBoard Review Meeting. OnBoard Review Meetings will occur at the 35% and Pre-Final Review stages. All hard copy submittals must be on minimum 30% postconsumer fiber paper, and, when 11x17 or smaller, double-sided.

j. Completed Design Packages from each discipline at every Design Submittal Stage must be submitted concurrently or will be rejected immediately. Specifications submitted during the 35% and Pre-Final Design Submittal stage(s) must be fully edited specific to the project, with red lines on, with all Specsintact bracket reports resolved (and included within the submittal).

k. Prior to the Final Design Submittal, an Interim Final Design Submittal will be submitted for Government review. This will allow a Government review of the Submittal Package and "close out" of all prior review comments, prior to proceeding with the Final Design Submittal. If the Interim Final Design Submittal is acceptable, then the Government will sign the PDF files and return to the DOR/Contractor for printing of the Final Submittal package (with all signatures). If the Interim Final Design Submittal is not acceptable, comments will be returned to the DOR/Contractor for corrective action, and then a re-submittal of the Interim Final Design Submittal must occur back to the Government.

l. The Government will perform a QA (Quality Assurance) review of the submittal package(s) to determine compliance with the intent of the RFP package. These reviews do not replace the General Contractor's and their sub-contractors' QC (Quality Control) process. The Government QA review(s) do not relieve the Contractor and his Designer of Record (DOR) from compliance with the RFP, UFC, UFGS, state and local codes unless specifically identified and addressed in the submittal package.

ProjNet must be utilized for collecting/tracking/responding to Government and Client QA review comments. The Contractor must set up an Office Account with ProjNet to provide a written response to Government/Client review comments.

	Deliverable	FEAD/CM	FEAD/DM	USER
	Design Development 35% - Hardcopies			
	Basis of Design / Calculations / Cut Sheets		4	-
	Half-size Drawings		4	-
	Specifications Outline		4	-
	Finish Documentation Color Board		1	-
	Structural Interior Design (SID)		1	-
	Design/Construction Schedule		1	-
	QC Review – Drawings and Specifications		PDF Only	-
	Budget Management Summary		1	
	Electronic PDF Files of all documents submitted via		1	

	DoD SAFE file transfer			
	Deliverable	**FEAD/CM**	**FEAD/DM**	**USER**
	Pre-Final Design - Hardcopies			
	Basis of Design / Calculations / Cut Sheets		4	-
	Half-size Drawings		4	-
	Specifications **(With Redline Edits Shown)**		4	-
	Finish Documentation Color Board		1	-
	Structural Interior Design (SID)		1	-
	DD 1354		2	
	Design/Construction Schedule		1	-
	QC Review – Drawings and Specifications		PDF Only	-
	Budget Management Summary		1	
	Electronic PDF Files of all documents submitted via DoD SAFE file transfer		1	
	Deliverable	**FEAD/CM**	**FEAD/DM**	**USER**
	Interim Final Design (Electronic Submission ONLY! On DoD SAFE file transfer)			
	Basis of Design / Calculations / Cut Sheets		1	
	Half-size Drawings		1	
	Specifications		1	
	Finish Documentation Color Board		1	

	Structural Interior Design (SID)		1	
	DD 1354		1	
	Design/Construction Schedule		1	
	Budget Management Summary		1	
	QC Review – Drawings and Specifications		1	

	Deliverable	FEAD/CM	FEAD/DM	USER
	Final Design – Hardcopies			
	Basis of Design / Calculations / Cut Sheets		4	-
	Half-size Drawings	2	4	-
	Specifications	2	4	-
	Finish Documentation Color Board		1	-
	Structural Interior Design (SID)	-	1	-
	DD 1354	2	1	
	Design/Construction Schedule	2	1	
	QC Review – Drawings and Specifications	PDF Only		
	Electronic PDF Files of all documents submitted, all native CAD files for the final drawings in AutoCAD 2018 format, and native SPECSINTACT Specification files. (Electronic Submission shall be on a DVD and also via DoD SAFE file transfer)		1	

	Deliverable	FEAD/CM	FEAD/DM	USER
	Project Close-Out (Electronic Submission ONLY! On a DVD and also via DoD SAFE file transfer)			
	As-Built Drawings		1	
	Project Specifications		1	
	Record of Materials		1	
	Warranty Documentation		1	
	Record Copies of “Equipment Inventory Forms”		1	
	Operation and Maintenance Information		1	

Note: CD of all Revit and AutoCAD drawings in native format including all external references (Xrefs). All files must be saved in 2020 format.

m. The Final DOR Design Submittal must be professionally signed and sealed by the DOR and forwarded to the Contracting Officer and Final Approved by the Government, prior to the start of construction activities. Separated final design packages may only be considered for Government review and approval during the Post Award Kick-off Meeting
Exception: Certain individual Definable-Features-of-Work (DFOW) may begin construction prior to the Final DOR Design being signed and approved, only upon written permission by the Contracting Officer to proceed. Early construction start prior to approval of the Final DOR Design is at the sole risk of the Contractor. Any rework/replacement required in order to meet the requirements of this contract, will be the responsibility of the Contractor at no cost/expense to the Government. The (DFOW)'s which may apply will be discussed and approved by the Contracting Officer at the PAK and/or Pre-Construction meeting(s).

n. **AS-BUILT DRAWINGS & RECORD OF MATERIALS**: Furnish as-built drawings, final specifications and record of materials. As-built drawings and specifications consist of updated design drawings, specifications and/or shop drawings. A typical list of materials includes, but would not be limited to, roofing, insulation, and wall coverings. Where several manufacturers' brands, types, or classes of the item listed have been used in the project, designate specific areas where each item was used. Designations must be keyed to the areas and spaces depicted on the drawings. Make all drawing changes in AutoCAD compatible format to the original design drawings. Transfer all signatures, initials, and dates in the title block area on the drawings as text onto the as-built. Electronic signatures are not required. Provide extra sheets as required to accommodate amendments, sketches and field changes. Save all drawing files with the exception of X-ref's with new names reflecting Record Drawing Status (RD). **Provide the Contracting Officer one (1) DVD/CD** containing all files in Adobe PDF, all native AutoCAD drawing files and SpecsIntact files, and all manufacturer's catalog cut sheets.

o. The Contractor must completely research the existing building and site; provide necessary field verifications/site survey investigations; as required to gain full and complete knowledge of the existing conditions.

p. In addition to the statement of work discussed herein, the Contractor and his Designer of Record (DOR) must schedule necessary meetings and site visits with the Activity and associated representative Contractors as required (Utilities, Physical Security, Furniture/Equipment Contractor etc.) in order to fully understand all conditions, needs and requirements, coordinated efforts, and detailed issues relating to the project.

1.4 Order of Precedence

The contract consists of the solicitation, the approved proposal, and the final design. In the event of conflict or inconsistency between any of the below described portions of the conformed contract, precedence must be given in the following order:

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

b. The requirements of the solicitation, in descending order of precedence:
   1. Standard Form 1442, Price Schedule, and Davis Bacon Wage Rates.
   2. Part 1 - Contract Clauses.
   3. Part 2 - General Requirements.

4. Part 3 - Project Program Requirements.
5. Part 6 - Attachments (excluding Concept Drawings).
6. Part 5 - Prescriptive Specifications exclusive of performance specifications.
7. Part 4 - Performance Specifications exclusive of prescriptive specifications.
8. Part 6 - Attachments (Concept Drawings).

c. Within Part 3- Project Program Requirements Section 5.0 ROOM REQUIREMENTS provides detailed requirements on a room by room basis that further defines requirements that are in addition to the ENGINEERING SYSTEMS REQUIREMENTS SECTION.

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

01 35 26.05 20 GOVERNMENT SAFETY REQUIREMENTS FOR DESIGN-BUILD

Develop and implement a safety program in accordance with UFGS 01 35 26.05 20 in Part 5 of this RFP and EM-385-1-1, Safety and Health Requirements Manual.

1.1 Ergonomics Considerations During Design

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

01 45 00.05 20 DESIGN AND CONSTRUCTION QUALITY CONTROL

Establish and maintain a quality control program as described herein.

1.1 Quality Control Plan

Submit a QC Plan for Government review and acceptance prior to the start of construction. Submit the QC Manager's resume for approval prior to all other administrative submittals with the exception of bonds and insurance. The QC plan must include the following:

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

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

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

d. TESTING LABORATORIES: Accredited laboratories as applicable.

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

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

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

h. SPECIAL INSPECTIONS: Special Inspections are required for this project. Provide Special Inspections including, testing, approvals, certifications, observations, and quality assurance plans as prescribed in Chapter 17 of IBC as modified by UFC 3-301-01. Provide Special Inspections for all foundation work, concrete work, masonry work, structural steel work, and steel deck work required by this contract. Provide specification section 01 45 35 SPECIAL INSPECTIONS along with a Schedule of Special Inspections and the Statement of Special Inspection. Special Inspection documentation can be found at the following address:

https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-01-45-35

1.2 Quality Control Manager Qualifications

Appoint a Quality Control Manager responsible for the QC program. The Superintendent may not serve as the Quality Control Manager on this project. The QC Manager must have a minimum 5 years of combined experience as a Project Superintendent, QC Manager, inspector, Project Manager, Project Engineer or Construction Manager on previous projects of similar size and complexity. The QC Manager must possess a current certificate showing successful completion of the NAVFAC Contractor Quality Management (CQM) Training.

1.3 Quality Control Manager Responsibilities

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

b. Ensure that no construction begins before the DOR has signed and stamped the design for that segment of work, and design and construction submittals are approved as required by the QC Plan.

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

d. Prepare QC Reports.

e. Hold weekly QC meetings with DOR, Superintendent and Government technical team; participation must be suitable for the phase of work.

f. Ensure that safety inspections are performed. Attend weekly Toolbox meetings.

g. Maintain submittal log.

h. Maintain updated as-built drawings on site.

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

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

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

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

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

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

1.4 Three Phases of Quality Control

Utilize the Three Phases of Quality Control process consisting of:

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

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

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

1.5 Contractor Production Report

Prepare Daily Production Reports on forms furnished for this purpose. Submit reports to the Contracting Officer by 10:00 am the following day. Reports must include:

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

b. Safety meetings, checks and inspections.

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

Environmental Protection Plan.

1. INSTRUCTIONS for FPQC Specialist:

Perform surveillance of fire protection system installation during construction and during pre-final and final acceptance inspections. Surveillance includes either visual inspections or observations performed by the FPQC as indicated in the following Schedule of Fire Protection System Inspections. Check boxes in the schedule indicate the inspections or observations that are applicable to this project, which must be performed and documented by the FPQC.

Surveillance of fire protection system inspections is divided into three phases:

Surveillance During Construction – Includes periodic on-site visits by the FPQC during construction

Pre-Final Acceptance Inspection – FPQC must be onsite during pre-final acceptance inspection

Final Acceptance inspection – FPQC must be onsite during final acceptance inspection

2. INSPECTION TYPE

VISUAL INSPECTION:

Perform on-site visual inspections as indicated in the Schedule of Fire Protection System Inspections as construction progresses to confirm work conforms with the contract requirements including but not limited to verifying proper installation of equipment and materials in accordance with applicable codes. Where work will be covered up by finished walls and ceilings, inspections must be scheduled and performed when work is still visible.

OBSERVATION:

Observe component and system testing in person on-site as indicated in the Schedule of Fire Protection System Inspections. Confirm testing is completed in accordance with applicable codes and that testing was successful.

DOCUMENTATION:

Document all inspections and observations in the FPQC Report in accordance with UFGS 01 45 00. Document any deficiencies and all work observed that has been successfully performed in accordance with the contract documents. Record deficiencies in the rework list.

PERFORM SURVEILLANCE DURING CONSTRUCTION

~ FIRE SUPPRESSION SYSTEM ~

PERFORM TASK IF CHECKED	TASK	INSPECTION TYPE	DESCRIPTION
☐	1. Verify proper installation of underground service main and service; laterals, thrust blocks, tie-rods and connection to above ground piping.	**VISUAL INSPECTION**	✓ Visually inspect materials ✓ Visually inspect installation
☐	2. Verify proper orientation of fire hydrants and fire department access	**VISUAL INSPECTION**	✓ Visually inspect installation and orientation
☐	3. Verify proper installation of interior and exterior attachments, coatings, and vortex plate prior to filling fire protection water tank	**VISUAL INSPECTION**	✓ Visually inspect fire protection water tank installation
☐	4. Hydrostatic/leak test for underground piping	**OBSERVE**	✓ Verify proper test method ✓ Confirm test was successful
☐	5. Hydrostatic/leak test for above ground piping prior to ceiling installation	**OBSERVE**	✓ Verify proper test method ✓ Confirm test was successful
☐	6. Underground system flush prior to connection to the riser	**OBSERVE**	✓ Verify system was properly flushed
☐	7. Forward flow test for Backflow preventer	**OBSERVE**	✓ Verify proper test method ✓ Confirm test was successful
☐	8. Suction pipe flush prior to fire pump startup	**OBSERVE**	✓ Verify system was properly flushed
☐	9. Hydrostatic test fire pump suction and discharge piping	**OBSERVE**	✓ Verify proper test method ✓ Confirm test was successful
☐	10. Fire pump startup	**OBSERVE**	✓ Confirm successful startup
☐	11. Verify proper installation of sprinkler piping prior to wall or ceiling installation	**VISUAL INSPECTION**	✓ Inspect pipe hangars, bracing, sprinkler heads ✓ Inspect for sprinkler obstructions; damaged, painted or covered heads ✓ Verify proper location of control valves, drains, vents, backflow, test header ✓ Verify proper component mounting heights
☐	12. Document inspections and observations in FPQC Report	**DOCUMENT**	✓ Submit report for each day inspections or observations occur ✓ Annotate deficiencies and satisfactory work observed ✓ Record rework items in FPQC report

~ SPECIAL FIRE SUPPRESSION SYSTEM ~			
PERFORM TASK IF CHECKED	TASK	INSPECTION TYPE	DESCRIPTION
☐	1. Verify proper installation of gaseous fire suppression system	**VISUAL INSPECTION**	✓ Inspect gas cylinders, initiating controls, shutdowns, aborts, and visual warning
☐	2. Verify proper installation of IR hangar detector	**VISUAL INSPECTION**	✓ Inspect detector and nozzle layout ✓ Inspect for obstructions, abort stations ✓ Inspect riser piping
☐	3. Verify proper installation of elevator fire protection	**VISUAL INSPECTION**	✓ Inspect elevator recall functions ✓ Inspect two-way communication
☐	4. Verify proper installation of fire suppression in secure spaces	**VISUAL INSPECTION**	✓ Inspect location of sprinkler piping and sprinklers
☐	5. Document inspections and observations in FPQC Report	**DOCUMENT**	✓ Submit report for each day inspections or observations occur ✓ Document deficiencies and satisfactory work observed in FPQC Report ✓ Record deficiencies in rework list
~ PASSIVE FIRE PROTECTION SYSTEMS ~			
PERFORM TASK IF CHECKED	TASK	INSPECTION TYPE	DESCRIPTION
☐	1. Verify proper construction of fire rated assemblies	**VISUAL INSPECTION**	✓ Inspect partitions for proper fire rated construction per design ✓ Inspect doors and door hardware for proper fire rating ✓ Inspect glass for proper fire rating
☐	2. Verify proper installation of fireproofing	**VISUAL INSPECTION**	✓ Inspect for use of proper fireproofing materials ✓ Inspect for cracking, spalling or delaminating ✓ Inspect for proper application thickness
☐	3. Verify proper installation of firestopping	**VISUAL INSPECTION**	✓ Inspect to confirm firestopping system is UL tested or an engineering judgement has been obtained and submitted ✓ Inspect for use of proper firestopping materials ✓ Inspect penetrations through fire rated walls, partitions and ceilings ✓ Inspect construction joints and gaps

☐	4. Document inspections and observations in FPQC Report	**DOCUMENT**	✓ Submit report for each day inspections or observations occur ✓ Document deficiencies and satisfactory work observed in FPQC Report ✓ Record deficiencies in rework list

~ FIRE ALARM SYSTEMS ~

PERFORM TASK IF CHECKED	TASK	INSPECTION TYPE	DESCRIPTION
☐	1. Verify proper installation of fire alarm system after conduit is installed and wiring pulled, but before devices are installed	**VISUAL INSPECTION**	✓ Inspect conduit, wiring, conduit fill, wire type ✓ Inspect installation heights of back boxes
☐	2. Document inspections and observations in FPQC Report	**DOCUMENT**	✓ Submit report for each day inspections or observations occur ✓ Document deficiencies and satisfactory work observed in FPQC Report ✓ Record deficiencies in rework list

~ END OF SURVEILLANCE DURING CONSTRUCTION SECTION

PERFORM DURING PRE-FINAL ACCEPTANCE INSPECTION

PERFORM TASK IF CHECKED	TASK	INSPECTION TYPE	DESCRIPTION
☐	1. Inspect all fire protection systems and all life safety features	**VISUAL INSPECTION**	✓ Verify proper installation of fire protection and life safety systems
☐	2. Witness functional testing of all fire protection and life safety systems	**OBSERVE**	✓ Verify proper testing is performed on fire protection and life safety systems
☐	3. Identify deficiencies that require correction	**VISUAL INSPECTION**	✓ Document deficiencies in FPQC Report and record in rework list
☐	4. Verify rework items have been corrected	**VISUAL INSPECTION**	✓ Record re-inspection results on FPQC Report
☐	5. Document results of pre-final inspection and photograph unsatisfactory conditions	**DOCUMENT**	✓ Document results of pre-final inspection in FPQC Report
☐	6. Certify installation and operation of all fire protection and life safety systems conform to the contract documents	**DOCUMENT**	✓ Provide separate letter certifying conformance with contract requirements

~ END OF PRE-FINAL INSPECTION SECTION

PERFORM DURING FINAL ACCEPTANCE INSPECTION

PERFORM TASK IF CHECKED	TASK	INSPECTION TYPE	DESCRIPTION
☐	1. Verify proper installation and operation of all fire protection systems and all life safety features	**VISUAL INSPECTION**	✓
☐	2. Note any deficiencies identified by Government FPE on deficiency list	**DOCUMENT**	✓ Document deficiencies identified by Government FPE on deficiency list
☐	3. Verify all deficiencies have been corrected	**VISUAL INSPECTION**	✓ Inspect rework to confirm all deficiencies have been corrected
☐	4. Certify that all deficiencies have been corrected	**DOCUMENT**	✓ Document inspection results on FPQC Report

~ END OF FINAL ACCEPTANCE INSPECTION SECTION

01 50 00.05 20 TEMPORARY FACILITIES AND CONTROLS

1.1 Contractor Work Site

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

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

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

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

1. All replacement units, parts, components, and materials to be used in the maintenance, repair and alteration of facilities and equipment must be new and compatible with the existing equipment on which it is to be used, and must comply with applicable Government, commercial, or industrial standards such as Underwriter's Laboratories, Inc., and National Electrical Manufacturers Association.
2. In addition, submit a current certificate recognized by the State or local authority that states the Contractor has completed at least 10 hours of training in backflow preventer installations.

1.2 Temporary Utilities

a. The Government will make available water and power in reasonable quantities, at no cost to the Contractor. Contractor is responsible for all connection and disconnection costs.

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

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

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

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

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

01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS

1.1 Unforeseen Hazardous Conditions

Do not disturb hazardous materials and report condition immediately to the Contracting Officer potentially hazardous conditions that are uncovered, or the Contractor becomes aware of that have not been identified in the RFP. This includes hazardous components and materials and contamination (see UFC 3-810-01N, *Navy and Marine Corps Environmental Engineering for Facility Construction*, for more information). This includes conditions that are not only hazardous to humans but wildlife, marine life and the environment. Stop work in the area of the questionable material or condition until identification and direction is provided.

1.2 Environmental Protection Requirements

The Contractor must complete and submit evidence of completion of the Environmental Compliance Assessment Training and Tracking (ECATTS) program. For more detailed information on ECATTS see UFGS 01 57 19.

The DOR must edit and submit UFGS 01 57 19, Temporary Environmental Controls, and UFGS 01 57 19.01 20, Supplementary Temporary Environmental Controls. Comply with state and local regulations within the edited UFGS section.

1.3 Existing Hazardous Materials

Hazardous material test reports are not available for Building 530 prior to contract award. Since this building was completed in 1984, it is not anticipated that any hazardous materials will be encountered under this contract. However, if during the performance of the work the contractor encounters hazardous substances, the Contractor must adhere to the directions as set forth in PART 4 – PERFORMANCE TECHNICAL SPECIFICATIONS, under “SECTION F2020 – HAZARDOUS COMPONENT ABATEMENT”. If during the performance of the work, the Contractor encounters hazardous substances or finds evidence of the existence of hazardous substances not known before award, the Contractor shall immediately stop work in the area suspected of having hazardous substances, and inform the Contracting Officer for direction. In no instance shall the Contractor perform the work involving the hazardous materials without notifying and receiving approval of the Contracting Officer, or without taking appropriate measures to protect workers as

well as the occupants of the facilities, public health in general, and the environment according to applicable laws and regulations.

01 74 19 CONSTRUCTION AND WASTE MANAGEMENT AND DISPOSAL

Develop a Waste Management Plan that identifies all recyclable material and disposal methods for all material. Contractor must reduce, recycle or salvage as much waste material as possible with a goal of diverting at least 60% of construction waste from landfill. Address waste reduction, recycling and salvage as part of the waste management plan. Report volume or weight of disposed and recycled materials. Report destination of debris diverted from disposal. The Contractor is responsible for removing and disposing of all waste materials generated. Consider all material recyclable or reusable, unless clearly demonstrated the material requiring disposal is waste material.

Provide Waste Management Plan according to UFGS section 01 74 19 CONTRUCTION WASTE MANAGEMENT AND DISPOSAL. This UFGS may be found on the UFGS website at www.wbdg.org .

01 78 00 CLOSEOUT SUBMITTALS

Develop and submit As-Built drawings. Document actual conditions, including deviations from the Contract Documents. These deviations and additions may result from coordination required by, but not limited to contract modifications; official responses to Contractor-submitted RFIs (Requests for Information); direction from the Contracting Officer; designs which are the responsibility of the Contractor, and differing site conditions. Maintain the As-Builts throughout construction as red-lined hard copies on site. As-Built drawings are further defined in NFAS 5252.236-9310. These files serve as the basis for the creation of the record drawings.

Develop and submit Record Drawings – Final compilation of actual conditions reflected in the As-Built drawings.

Submit source drawing files – Provide the full set of electronic drawings in the source format for Record Drawing preparation.

Provide closeout submittals according to UFGS 01 78 00 CLOSEOUT SUBMITTALS.

End of PART 2

Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

PART 3 – STATEMENT OF WORK/ PROJECT PROGRAM

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

Part 3 Statement of Work / Project Program

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1.0 PROJECT DESCRIPTION

Building 530 is an approximately 25,000 SF indoor pool facility located on Naval Air Station Oceana, Dam Neck Annex. The building consists of a central lobby, administrative office, male and female locker rooms, and the indoor pool (Natatorium). The project consists of the repair and replacement of multiple building systems including, but not limited to, the roof, natatorium HVAC and ventilation systems, natatorium wall and ceiling coverings, structural system coatings, pool surfacing, doors, and miscellaneous finish elements in the Natatorium.

Contractor must employ a pool consultant with extensive knowledge and experience in designing and building indoor pools. Pool consultant must deliver a comprehensive and integrated design approach, understanding the interaction among the pool water heating, pool water treatment, HVAC system and building envelope. HVAC system for the pool space must sufficiently control temperature, dehumidify the space and maintain proper building pressurization and dewpoint

control. Design must address elements as diverse as occupant comfort and health and long-term building sustainability by preventing condensation and corrosion. Finally, contractor must be able to provide a suitable and sustainable design in light of constraints imposed by renovation of an existing facility and budget limits.

With the Contractor's bid proposal, provide statement from pool consultant which includes the following:

1) Pool consultant name and firm.
2) Pool consultant credentials and relevant experience with respect to indoor pool projects.
3) Describe role of pool consultant with design team for this project.
4) Describe how you plan to approach this specific project. Address, but do not limit your response to the following:
   - Pool room temperature, humidity and pressurization controls.
   - Source capture exhaust system.
   - Pool room air/water temperature control.
   - Pool room chemistry effect on other building environmental controls.

   Effect of design on long-term sustainability of building components.

2.0 PROJECT OBJECTIVES

2.1 APPLICABLE CODES AND STANDARDS

In addition to the codes and standards listed in Part 4, the design and construction must be in accordance with the latest revision/edition of the following referenced codes and standards. The term "Latest Revision/Edition" is defined as the version as of the project award date.

DOD Unified Facilities Criteria (UFC): Documents can be referenced at the following website address: http://wbdg.org/ccb/browse_cat.php?o=29&c=4

DOD Unified Facilities Guide Specifications (UFGS): Documents can be referenced at the following website address: http://wbdg.org/ccb/browse_cat.php?c=3

Handicap Accessibility: Work must be in compliance with the Architectural Barriers Act and Accessibility Guidelines (ABAAG) dated July 23, 2004 edition, or most current ABA Accessibility Standards as required by "UFC 1-200-01 DoD Building Code (General Building Requirements), with most current Change".

Natatorium (Indoor pool):
- FINA Facilities Rules 2017-2021
- UFC 4-750-07 Recreational Aquatic Facilities

2.2 SUSTAINABLE DESIGN – NOT APPLICABLE

2.3 STORMWATER MANAGMENT - LOW IMPACT DEVELOPMENT (LID) – NOT APPLICABLE

2.4 CYBERSECURITY – NOT APPLICABLE

3.0 SITE ANALYSIS

3.1 EXISTING SITE CONDITIONS

The site is located on NAS Oceana, Dam Neck Annex bounded by an existing roadway to the east and parking lots on the north, south, and west sides. Also on the west side is a grassy area. Existing utilities include water lines, sanitary gravity sewer main, sanitary pump station, sanitary force main, storm sewer, overhead and underground electric and underground telephone.
Any Government provided geotechnical data is included for the Contractor's information only. Provide the services of a geotechnical engineer to conduct subsurface exploration, investigation, testing, and analysis for the design and construction of the applicable proposed work. The geotechnical engineer must be registered as a Professional Engineer (Geotechnical Engineer where required by law) and experienced with soil conditions in the region where the project site is located. The geotechnical engineer must prepare a report addressing any elements of the work requiring geotechnical services. The report must indicate, in addition to all other pertinent information, design bearing capacities of soils expected to support required foundations, the seismic site soil classification, and the site-specific frost penetration depth. The report must be submitted to the Contracting Officer accompanied by a letter from the Designer of Record certifying that the Geotechnical Engineer has reviewed the construction documents and that the design reflects the recommendations of the geotechnical report.

For additional geotechnical requirements, see Part 4, Chapter 2.0, Section A10 FOUNDATION.

4.0 BUILDING/GENERAL REQUIREMENTS

In addition to the statement of work discussed herein, the Contractor and his Designer of Record (DOR) must schedule necessary meetings and site visits with the Activity and associated Representative Contractors as required (Utilities, Physical Security, etc.) in order to fully understand all conditions, needs and requirements, coordinated efforts, and detailed issues relating to the project. The Contractor must completely research the existing building/site and provide field verifications/site survey investigations to gain full and complete knowledge of the existing conditions.

The design-build contract must not exceed the available funding limit as set forth by the Contracting Officer.

Record Drawings and Reference Drawings are included in "PART 6 - ATTACHMENTS 6.1, 6.2 & 6.3". These documents are for informational purposes only and may not accurately reflect current as-built conditions and the complete scope of work.

Any/all deviations from this RFP must be clearly identified in the Contractor's proposal. Any/all deviations must be submitted in writing to the Contracting Officer, and must have prior approval by the Contracting Officer before any action or implementation of the deviation. The Contractor at no expense to the Government must correct any unapproved deviations that are deemed unacceptable by the Government.

All work under this contract must comply with the "Buy American Act". Any proposed deviations from the "Buy American Act" must be submitted in writing to the Contracting Officer, and must have prior approval by the Contracting Officer before any action is taken on the deviation. If the Contractor submits a written deviation for consideration, it must include a detailed justification including documentation (proof) that the products/materials in question are specialty or unique items that cannot be obtained in order to meet the guidelines of the "Buy American Act". The Contractor must not use "Costs" as a determining factor on whether products/materials can meet

the “Buy American Act”. The Contractor at no expense to the Government must correct any unapproved deviations.

Existing reference drawings are available and may be issued by request, **subject to the availability of a DoD approved means of distribution**. Reference drawings must be used for informational purposes only, and may not accurately reflect current as-built conditions. **The Design Build Contractor must not solely rely on the reference drawings to determine existing conditions, but must field verify all existing conditions pertinent to the project.**

5.0 ROOM REQUIREMENTS

EXTERIOR:

- Demolish and provide existing modified bitumen roof system with new, complete.
- Demolish and provide (3) existing fixed roof access ladders with new code-compliant ladders, complete.
- Provide wall and/or roof penetrations, louvers (or) curbs, and flashings for new mechanical natatorium ventilation system.
- Remove existing mechanical equipment refer to mechanical description. Remove all associated curbs and platforms. Close all roof openings after removal of mechanical equipment with metal deck to match existing.
- Replace existing hollow metal door, frame, and hardware complete with new at rooftop mechanical room access (Door 33)
    - Clean, prep, and coat existing structural steel wall framing around door opening (min. 1 primer coat and 2 finish coats with high performance coating).

NATATORIUM:

- Architectural:
    - Clean, prep, and coat existing exposed structural steel framing, open web roof joists, and underside of metal roof deck.
        - Existing structural steel columns to be addressed from the pool deck up.
    - Remove existing monorail and associated structure.
    - Remove and salvage existing Marine training equipment. Reinstall to steel structure after finishing painting steel structure.
    - Provide moisture impervious wall board on interior side of existing exterior wall metal framing, extending from top of existing wall board to underside of roof deck. Provide insulation behind wall board panel.
    - Provide acoustical control of Natatorium space through use of natatorium specific moisture impervious ceiling baffles.
    - Infill existing CMU openings with demolition of mechanical units HV#2, HV#3 and EF-1 with CMU wall construction to match existing wall thickness.
        - Clean, prep, and coat existing steel lintel/frame at exterior wall opening.
    - Replace (9) existing aluminum sliding/stacking doors, frames, and hardware (Doors 22, 23, 24, 25, 26, 28, 29, 30, & 31) with new.
    - Replace (8) existing hollow metal doors, frames, and hardware (Doors 7, 8, 11, 12, 14, 21, 27, & 32) with new prefinished FRP doors, frames and hardware.
    - Replace (1) existing steel folding door and hardware at monorail (Door 16) with new prefinished FRP door and hardware.
    - Replace existing painted guardrails around (4) roof drain leaders and structural columns with new stainless-steel guardrails.
    - Clean, Prep, and provide fresh coat of paint on existing lifeguard stands.
    - Replace existing steel floor hatch with new adjacent to monorail door 16.
    - Replace tile wall base around pool deck perimeter with new, complete.
    - Replace damaged ceramic tile from pool deck or tiles damaged during construction.
    - Resurface and restripe the pool with rubber based paint. Follow International Swimming

Pool and SPA code for striping.
  - Prep, prime and paint existing and new CMU walls.
  - Provide 8'-0" high reinforced masonry screen wall around new outdoor mechanical equipment on exist west deck.
  - Provide permanent hooks for Backstroke flags.
- Structural:
  - Provide support of the pool dehumidifier unit located on the existing west deck exterior to the existing building. Provide a concrete pad to support this unit such that the top of concrete pad is 6 inches minimum above the top of adjacent existing concrete slab. The existing concrete slab slopes here. Ensure the top of concrete pad supporting the dehumidifier unit is level. Extend this concrete pad past the edges of the dehumidifier unit to allow maintenance personnel to stand on the concrete pad while accessing the unit (provide the greater of either a 3'-0" pad extension around the entire dehumidifier unit or a pad extension to provide proper maintenance). For bidding purposes, assume the existing concrete slab and subgrade have the capacity to adequately support the dehumidifier unit and concrete pad placed on top of the existing concrete slab. The contractor's geotechnical engineer must verify that the existing slab and subgrade can adequately support these items if the existing slab is to be left in place for this use.
  - Provide a foundation for a screen wall around the dehumidifier unit to support the screen wall and prevent it from overturning due to all applicable code-specified loads. Ensure the screen wall can adequately resist all code-specified loads. For the screen wall, see the architectural requirements.
  - Rusting of existing column bases is present at each existing column, and in some cases the rusting is significant. Remove existing surrounding tile floor as required to expose full depth of existing base plate for cleaning and coating. Clean surfaces of existing steel to a minimum of SSPC-SP 10 in preparation for a new protective coating. Remove all rust complete. For coatings and floor tile demolition and replacement, see the architectural requirements. See the electrical requirements for temporary disconnection of the existing grounding system during the cleaning process. Reconnect the existing grounding system upon completion of the steel coating work.
  - Perform structural repairs to the base of existing steel column D-12 (see Part 6, Attachment 6.1, Original Drawings Sheet S-2 for location). The existing base plate has experienced significant section loss at two of the four existing exposed bolt holes, reducing the ability of the two existing anchor rods here to transfer shear into the existing base plate. Design and provide a steel repair to adequately transfer the shear from the existing column into the existing base plate (for existing base details, see Part 6, Attachment 6.1, Original Drawings Sheet S-11, Column Base Details, Type B). Design the connection repair to transfer a shear magnitude equal to the LRFD ultimate shear design capacity of the combined two steel rods considering only steel strength. Design the repair considering a direction of shear parallel to Grid Line 12. When calculating the ultimate shear capacity of the existing anchor rods to transfer to the existing base plate, consider the original design size of the existing anchor rods. The existing two anchor rods in question occur on the interior side of the existing column. The opposite two existing anchor rods at this existing column occur within the exterior existing wall and are unable to be viewed. Assume these exterior existing anchor rods adequately transfer their portion of shear from the existing column to the existing base plate. Structural design calculations must show the calculation of the ultimate shear values and the design of the repair to adequately transfer these loads.
  - Infill existing roof deck openings following demolition of existing louver penthouses and existing mechanical vents with metal deck to match existing.
  - Demolish the existing 5-ton capacity hoist monorail system hanging from the existing south roof trusses over the existing pool. Remove the existing monorail system complete, including existing monorail hangers, shims, and connections.
  - Demolish the existing structural steel supports for existing mechanical units HV-1 and HE-1, along with the existing steel walkways servicing these existing mechanical units. Existing mechanical units HV-1 and HE-1 hang from the existing high roof structure and

will be demolished in accordance with the mechanical requirements of this RFP.
    - Provide galvanized lintels for penetrations through existing exterior wall, coordinate with the architectural and mechanical work.
    - Provide structural support for mechanical rooftop equipment with a positive attachment to the existing roof structure.
    - Provide additional incidental structural work to support architectural, mechanical, and electrical work.
- Plumbing:
    - Demolish and provide all new roof drains on roof decks above pool area for Base Price. Demolish and provide all new roof drains on lower roof for Option 1.
- Mechanical:
    - Replace existing pool area HVAC systems with new pool dehumidification and source capture exhaust systems that will positively control humidity and temperature for the pool and adjacent areas.
    - Provide fabric duct system for pool area supply air.
    - Provide DDC system.
    - Perform TAB of all HVAC systems.
    - Demolish selected existing mechanical equipment.
- Electrical:
    - Demolish existing power and control wiring, conduit, and equipment for the existing HVAC systems.
    - Provide power and controls for HVAC systems.
    - Demolish existing ceiling-mounted speaker system.
    - Provide wall-mounted speakers connected to existing PA and two-way communication system.
    - Demolish existing wall-mounted fluorescent light fixtures and circuits in suspended mechanical room.
    - Demolish existing pool area lighting fixtures and controls.
    - Provide LED lighting and controls for pool area.
- Fire Protection:
    - Refer to D40 Fire Protection Systems.

ADMINISTRATIVE AREA:

- Architectural:
    - Remove acoustical and metal ceiling and grid at women's toilet, men' toilet and office area to facilitate removal of existing duct work as described in mechanical section. Provide new acoustical and metal ceiling and grid to match existing where suspended ceiling is removed.
- Mechanical:
    - Selectively demolish existing mechanical systems.
    - Provide rooftop DOAS.
    - Provide heat pump for Lobby/Office area.
    - Provide modifications for space heating hot water system.
- Electrical:
    - Provide power and controls for HVAC systems.

6.0 ENGINEERING SYSTEMS REQUIREMENTS (ESR)

A10 Foundations
A20 Basement Construction – NOT APPLICABLE
B10 Superstructure
B20 Exterior Closure
B30 Roofing
C10 Interior Construction
C20 Stairs – NOT APPLICABLE

C30 Interior Finishes
D10 Conveying Systems – NOT APPLICABLE
D20 Plumbing
D30 HVAC
D40 Fire Protection Systems
D50 Electrical Power and Lighting
E10 Equipment – NOT APPLICABLE
E20 Furnishings – NOT APPLICABLE
F10 Special Construction – NOT APPLICABLE
F20 Selective Building Demo – NOT APPLICABLE
G10 Site Preparations – NOT APPLICABLE
G20 Site Improvements – NOT APPLICABLE
G30 Site Civil/Mechanical Utilities – NOT APPLICABLE
G40 Site Electrical Utilities – NOT APPLICABLE

A10 FOUNDATION

Design and provide a foundation for the screen wall and a concrete support pad for the dehumidifier unit to support all code-specified loads in accordance with UFC 3-301-01. Submit structural design calculations performed by a registered professional engineer that include the following, at a minimum:

List the loads used in the design of the foundations.

2. Provide calculations demonstrating that foundations adequately spread all applicable loads such that the bearing capacity of the soil indicated in the contractor's geotechnical investigation report is not exceeded. Demonstrate that the foundations have the design strength to support the required loads.
3. Provide calculations demonstrating that the foundations, as well as all applicable connections of the supported items above to the foundations, will adequately resist sliding, uplift, and overturning as applicable when subjected to code-specified wind and seismic loads.
4. Include registered professional engineer's seal and signature affixed to the cover sheet of the calculations. Include evidence that the calculations have been reviewed by a separate structural engineer different from the engineer who performed the calculations.

Perform a geotechnical investigation of the site specific to this project in accordance with Part 3, section 3.1 of this RFP. For bidding purposes, assume the design bearing capacity of the existing soil to be 1,000 psf and the frost penetration depth to be 8 inches. Base the foundation construction and design on the geotechnical investigation performed under this contract, not on the assumed bidding quantities provided in this paragraph.

For additional foundation requirements, see Part 4, Chapter 2.0, Section A10 FOUNDATION.

A20 BASEMENT CONSTRUCTION – NOT APPLICABLE

B10 SUPERSTRUCTURE

The existing building structure is a steel framed structure with braced frames. The existing roof structure comprises 77'-6" long trusses and joist purlins with a flat metal deck. The existing exterior walls are composed of concrete masonry units. The existing foundation is a pile-supported system, with an existing structural concrete slab supported by existing grade beams spanning between piles.

The structural system must be designed in accordance with UFC 3-301-01, *Structural Engineering,* using the following parameters:

Risk Category: II.

Live loads: In accordance with UFC 3-301-01, *Structural Engineering*.

Wind loads: Design wind speed: 125 mph; Exposure Category D.

Snow loads: Ground snow load: 29 psf; Roof exposure: Fully exposed.

Earthquake loads: Mapped seismic acceleration parameters: SS 10%G; S1: 3.9%G.

Submit structural design calculations to include all structural work required by this RFP. Include registered professional engineer's seal and signature affixed to the cover sheet of the calculations. Include evidence that the calculations have been reviewed by a separate structural engineer different from the engineer who performed the calculations.

For additional concrete, structural steel, miscellaneous steel, steel deck, and masonry requirements, see Part 4, Chapter 2.0, Section B10 SUPERSTRUCTURES.

B20 EXTERIOR ENCLOSURE

B2010 EXTERIOR WALLS

Existing Natatorium exterior wall assemblies consist of 2" EIFS on ½" gypsum sheathing, on 3 5/8" metal studs. 6" Concrete masonry backup wall is present to a height of approximately 8'-0"+/- on the interior side, with coated moisture resistant gypsum wall board fastened to metal studs above. Gypsum wall board extends to underside of current curved suspended ceiling system.

Vapor Retarder, and Insulation
Confirm building envelope thermal performance with infrared thermography testing described in RFP Part 4.

Evaluate seasonal impact of indoor and outdoor humidity to identify the need and properly locate new vapor barriers in the existing wall assembly.

Exterior Louvers & Screens
Provide exterior louvers and screens, where required, that match the finish of the existing windows and are detailed to integrate with the architecture of the building, as appropriate to the design of the building.

B2020 EXTERIOR WINDOWS

Exterior storefront must be prefinished aluminum. The storefronts must meet antiterrorism requirements. Provide storefront meeting thermal performance required by RFP Part 4.

Storefronts
Provide thermally broken storefront system only at existing doors **22, 24, 25, 26 & 31**.
Provide thermally broken storefront system with a door placed in the center at existing doors **23, 28, 29 & 30.**

Storefronts must be thermally broken aluminum frame.

Exterior Glazing
Glazing color to meet the requirements in the applicable installation exterior architectural guidelines; Glazing is to be in compliance with UFC 4 010 01, Chapter 3 requirements.

B2030 EXTERIOR DOORS

Exterior doors and frames must be Fiber Reinforced Plastic (FRP). Provide doors meeting thermal performance required by RFP Part 4.

Doors must be Maximum Duty Doors -–, Level 4, physical performance Level A, Model 1.

Door hardware finish must be stainless steel. All door hardware must be extra heavy duty.

Solid Doors: (Doors 21, 27, 32, & 33)
Provide FRP door assemblies including prefinished heavy-duty, non-corroding, insulated doors with frames and hardware. Openings in exterior flush doors must be flashed with aluminum flashings at the bottom of the openings. Also provide accessories and wall opening elements such as sills and flashings.
Provide prefinished FRP doors and frames. Provide doors meeting thermal performance required by RFP Part 4.

Doors must be Extra Heavy Duty Doors Level 3, physical performance Level A, Model 1 for type of door.

Also provide louvers (Door 33) and accessories and wall opening elements such as lintels sills and flashings.

Exterior Door Hardware
Provide the services of a certified door hardware consultant to prepare the door hardware schedule.

Provide hardware keying compatible with the existing base-wide keying system.

Door hardware finish must be stainless steel.

B30 ROOFING

Provide a complete new insulated roof system design and construction services for the entire facility roof system and including all necessary ancillary and incidental work necessary for a complete, new, watertight roof system installation.

B3010 ROOF COVERINGS

Demolish all the existing modified bitumen roofing, flashing, coverboard, and insulation down to the existing deck. Properly dispose of the demolished materials off the military installation.

The existing roof deck is metal.

Assume the project will require the replacement of approximately 10% of the existing metal roof deck. Infill of existing (6) rooftop mechanical exhaust vents, and (4) rooftop louver penthouse deck openings is also required prior to installation of roofing system.

For reroofing Low Slope Roofing (less than 3 in 12) construction the roof system must be Modified Bitumen 2-ply roof with granule surface (Mod bit base sheet, Mineral granular cap sheet).

Re-roof systems over existing construction may slope a minimum of 1/4 inch per foot when slope must be accomplished with a tapered insulation system.

Provide all new insulation, coverboard, roof membrane, membrane flashing, sheet metal flashing materials, and accessories and incidental work necessary for a complete, new, watertight modified bitumen roof system installation.

Insulation system above roof deck must be minimum R-30 in accordance with ASHRAE 90.1, Chapter 5 for project climate zone

Provide new two-ply granule-surfaced modified bitumen roof membrane with granule surface modified bitumen cap sheet, complying with requirements of Standard Design-Build Template PTS B30 and referenced criteria and standards therein. All membrane flashing must be two-ply modified bitumen flashing.

Provide factory fabricated insulated roof curbs to secure mechanical equipment to the roofing system such as HVAC units and fans to distribute the weight of the unit and provide an air-tight and water-tight seal of ductwork penetrating the roof and connecting to the unit.

Provide factory fabricated insulated roof curb the cap integrating graduated step boots for piping and conduit penetrations to provide water-proof penetration of the roof assembly.

Provide factory fabricated roof supports/rails to secure mechanical equipment and piping/conduit supports to the roofing system to distribute the weight of the equipment and provide a water-tight seal with the roofing system. Use of pressure treated lumber is not acceptable.

Pitch pockets are not allowed.

Provide new wall flashings to extend from top of new counter flashing to top of parapet.

Provide new prefinished sheet metal coping.

Provide new sheet metal flashings at all roof perimeters, penetrations, and curbs. Exposed sheet metal items must be of the same material.

Provide new flexible flashing devices around pipe penetrations. Refer to PART 4 for minimal requirements.

Provide traffic pads to protect roof from foot traffic. Provide traffic pads around roof mounted mechanical equipment and underneath removable mechanical equipment access panels. Traffic pads must be of compatible material to roof.

B3020 PERFORMANCE REQUIREMENTS

The installed roof system must be watertight; free of defects in materials and workmanship; free of damage, including blisters, delamination, cuts, scratches, abrasions, and patchwork; provide for positive drainage of the roof surface area; and suitable for the climatic and service conditions of the installation.

Provide roof system with total thermal performance as prescribed by ASHRAE 90.1, Chapter 5 for project climate zone and as required by other project sustainability goals.

B3030 WIND UPLIFT AND FIRE RESISTANCE REQUIREMENTS

The roof system must be designed and attached to resist wind uplift pressures calculated in accordance with ASCE 7. Uplift resistance must be validated by applicable Factory Mutual (FM) uplift testing, or calculations based on standard engineering practice and applicable recommendations of FM.

Sheet metal perimeter and flashing components must be designed, attached, and installed to provide for wind resistance equivalent to or greater than that required for the roof membrane system, and in accordance with FM, NRCA, or other applicable industry standard recommendations. Gravel stops and fascia on low slope built-up, modified bitumen, and single-ply roofs less than 2:12 in slope must conform to the requirements of ANSI/SPRI ES-1.

The roof system must provide Class A or Class B fire resistance, as tested by standard ASTM, FM, or UL procedures.

B3040 ROOF WARRANTY

Provide a manufacturer no-dollar-limit 20-year watertightness warranty for the total roof system, including flashings, in accordance with referenced requirements of Standard Design-Build Template PTS B30.
Manufacturer's warranty must provide for full removal and replacement of failed, defective, and damaged roof system materials or installation workmanship in the event of water intrusion into or through the roof system, and repair of defects such as blistering, delamination, open seams, cracking, splitting, and excessive weathering. Warranty for corrective action must not be limited in dollar value.

Provide minimum two-year contractor warranty against defects in installation workmanship in accordance with referenced requirements of Standard Design-Build Template PTS B30. Contractor warranty must provide for full removal and replacement of failed or defective workmanship and damaged materials, including sheet metal flashings.

SPECIAL MAINTENANCE WARRANTY: Manufacturer's warranty document in which manufacturer agrees to maintain, repair or replace components of the roofing systems that fail in materials or workmanship within the specified special maintenance warranty period. Failure includes roof leaks and the complete roofing assembly and its components, including those components supplied by those other than the manufacturer providing this special warranty. The coverage must include the membrane, insulation, flashing, all sheet metal related details and termination details. The special Maintenance warranty must include the following:

1. Special Maintenance Warranty period must be **10 years from date of CCD.** The Contractor and Roofing Installer's Special Maintenance Warranty Agreement document must be submitted to the Government at time of CCD. (See PART 6 – ATTACHMENT 6.5 for the **SPECIAL MAINTENANCE WARRANTY AGREEMENT** document).

2. Must include provisions requiring the manufacturer to make follow up site inspections of the roof system and perform the manufacturer's recommended preventative maintenance. **A minimum of (1) site inspection visit every (6) months must be provided during the special maintenance warranty period. The site inspections must be inclusive of the following at a minimum.**

    a. Inspection of the complete roofing system and all associated roofing system components installed as part of the contract.

b. Routine preventative maintenance and clean-up of potentially damaging debris on the roof and repairs to any damage to the roof system, excluding such damage to the roof system excluded from the warranty and service agreements as a result of vandalism of other excluded cause as describe in manufacturer's published terms and conditions at the date of this contract.
c. A formal report of the site visit inspection documenting roofing conditions and any preventative maintenance/clean-up measures performed or repairs made must be submitted to the Government, after every site visit inspection. The formal report must be submitted to the Government Facilities Maintenance Specialist Department at:

ATTN: Requirements Department Branch Head
NAS Oceana, 953 Hornet Drive, Building 820, Room 118, Virginia Beach, VA 23460

B3050 ROOF SPECIFICATION AND DETAILING

All work, materials, installation and details must be in accordance with Standard Design-Build Template PTS B30 and comply with all applicable Unified Facilities Guide Specification (UFGS) materials and installation requirements. UFGS's are referenced in PTS B30 and are available at www.wbdg.org/ccb/browse_cat.php?c=3 . Provide for complete rough carpentry, roof insulation, roof covering, sheet metal flashing, and other components necessary to complete the installation.

Utilize the applicable UFGS for development of the roof membrane specification. Edit for application to the specific project and compliance with the RFP. Provide complete rough carpentry, roof insulation, and sheet metal flashing specification sections coordinated and compatible with the membrane specification.

All details must be in accordance with recommendations and guidelines of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual and Construction Details and as required by the RFP.

The roof system must comply with the applicable requirements of the International Building Code. Refer to UFC 3-110-03, *Roofing*, and UFC 3-101-01, *Architecture* for additional technical requirements for the roof system to be installed.

B3060 ROOF DESIGNER REQUIREMENTS

Provide materials specification, installation requirements, and system detailing to include all flashings, penetrations, closures, corners, intersections, terminations, transitions, interfaces, joint, and lap conditions to provide for a watertight installation.

The Contractor must utilize the services of a Registered Roof Consultant (RRC) certified by the Roof Consultants Institute, or a Registered Professional Architect or Professional Engineer either of which is knowledgeable and experienced in roof investigation, inspection, and design and specializes in roof design and roof consulting services. The consultant must be thoroughly familiar with the field conditions and prepare the design or provide design review and approval prior to design acceptance by the Contracting Officer. The consultant must validate in writing familiarity with field conditions and that the design for the project is complete, in accordance with the RFP, and provides for a complete and effective roof system solution and design.

B3070 QUALITY CONTROL PROGRAM

Contractor must establish a quality control program to assure adherence to the RFP design and construction requirements and to report on the installation quality.

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Fixed Partitions
Provide moisture impervious wall board on interior side of existing exterior wall metal framing above 8'-0" CMU. New impervious wall board to extend from top of existing wall board to underside of roof deck.

Infill existing mechanical ductwork wall openings with CMU wall construction to match existing wall thickness.

C1020 INTERIOR DOORS

Doors 7, 8, 11, 12, 13, 14, 16

Provide FRP door assemblies including prefinished heavy-duty, non-corroding with frames and hardware. Also provide accessories such as sills and door stop.

Interior Door Hardware
Provide the services of a Certified Door Hardware Consultant to prepare the door hardware schedule.

Provide hardware keying compatible with the existing base-wide keying system

C1030 SPECIALTIES

Guardrails
Provide 316 stainless steel guardrail assembly to replace existing at pool deck locations.

Floor Hatch
Provide 316 stainless steel single leaf, diamond pattern plate hatch, frame, and accessory components to replace existing.

Swimming Pool
Resurface and restripe existing concrete swimming pool with rubber based paint. Follow paint manufacturer's recommendation for pool surface preparation. Follow International Swimming Pool and SPA code for striping.

C20 STAIRS – NOT APPLICABLE

C30 INTERIOR FINISHES

C3010 WALL FINISHES

A meeting must be scheduled during design to discuss finish selection.

Conceptual Wall Finish Schedule

SPACE	MINIMUM FINISH REQUIREMENT
Natatorium	Epoxy coating system suitable for wet locations

All interior concrete masonry walls and partitions must be painted approximate height of 8’-0”.

C3020 FLOOR FINISHES

Tile Floor Finishes: Replace Pool Deck damaged or damaged during construction ceramic tile and waterproofing in accordance with TCNA instructions. Tiles to match existing 1”x1” tile and color.

Base: Replace wall base ceramic tile to match existing 1”x1” tile.
Provide epoxy grout for all tile finishes.

C3030 CEILING FINISHES

Natatorium
Exposed structural systems must be painted according to Section C3040 INTERIOR COATINGS AND SPECIAL FINISHES.

Acoustical Baffles
Provide natatorium specific moisture impervious acoustic baffle system designed to reduce the noise reverberation time to a reasonable T60 target of 2.0 seconds. Measure existing and new Reverberation Time (RT) in accordance with ISO 3382-2.

Locker/Shower/Janitor Closet / Toilets Areas
Primary ceiling finish must be 24 inches by 24 inches by 5/8 inch minimum thickness suspended acoustical panel ceiling system. Acoustical ceiling panels must have a tegular edge. Acoustical panel ceiling system must be moisture resistant in all wet areas.

Lobby/Office Areas
Demolish existing SMT (Suspended Metal Tile) system to facilitate demolition of existing EF-1 and new DOAS system. Provide new SMT (Suspended Metal Tile) to match existing.

C3040 INTERIOR COATINGS AND SPECIAL FINISHES

Paint new and previously painted interior surfaces including walls as well as all interior exposed metal items, to include existing lifeguard stands.
Exposed structural steel Framing (columns, roof framing and associated bracing, bridging, decking etc.) in the Natatorium must be painted with a high-performance epoxy coating system in accordance with UFC 3-190-06, *Protective Coatings and Paints*.

D10 CONVEYING SYSTEMS – NOT APPLICABLE

D20 PLUMBING

D2010 PLUMBING FIXTURES – NOT APPLICABLE

D2020 DOMESTIC WATER DISTRIBUTION – NOT APPLICABLE

D2030 SANITARY WASTE – NOT APPLICABLE

D2040 RAINWATER DRAINAGE

Roof Drains
Replace existing roof drains and with new cast iron roof drains and strainers. Insulate under roof drains. Insulate all portions of existing rain leaders (vertical and horizontal) that are within 20 vertical feet of the associated roof drain.

The existing domestic hot water system is existing to remain.

Mechanical contractor must provide the plumbing system freeze protection during construction.

D2090 OTHER PLUMBING SYSTEMS – NOT APPLICABLE

D30 HVAC

HVAC System General Description and Existing Conditions
The existing Heating and Ventilating (H&V) system serving the Pool area consists of a heating and ventilating unit (HV-1) with an air-to-air heat recovery unit (HE#1) recovering heat from the pool area and locker/shower/janitor closet exhaust systems. Heating and ventilating units (HV-2 and HV-3) draw air from the pool area to heat and ventilate the locker and shower areas and another heating and ventilating unit (HV-4) recirculates air to heat and ventilate the Lobby and Office areas. An existing boiler and circulating pump provides hot water for these heating and ventilating units, plus unit heaters and fin-tube radiation in utility spaces and the Foyer. Standalone exhaust fans serve utility spaces and six rooftop (6) exhaust fans provide manual control of supplemental ventilation in the pool area.

The existing heating and ventilating systems provide indirect control of humidity.

Demolition:

Demolish the existing heating and ventilating system (HV-1, HE-1, EF-1 & associated ductwork) serving the pool area, complete.

Demolish the supplemental pool air exhaust system (EF-5, EF-6, EF-7, EF-8, EF-9, EF-10), complete.

Demolish existing air-to-air heat exchanger (HE-2) and exhaust fan (EF-2 and EF-3) system and associated ductwork, complete.

Demolish existing heating and ventilating system serving the Locker Room/Shower and Lobby/Office areas (HV-2, HV-3, HV-4) and associated ductwork, complete.

Demolish space heating hot water boiler (B-20), associated gas train, associated space heating hot water pump(s) (P-9) and hydronic specialties, complete. Demolish all space heating hot water piping in the pool area, complete. Selectively demolish all other space heating hot water piping not to be reused.

Selectively demolish balancing valves and control valves for each space heating hot water unit heater (UH-1 thru UH-4) and fin tube radiator (FT-1 thru FT-4).

Demolish existing Trane DDC system, complete.

Demolish air compressor and controls associated with hoist being demolished.

Demolition of ductwork includes associated GRD, supports & hangers and other associated air system components.

Patch all wall and roof penetrations left by removal of existing equipment, ductwork or piping. See Architectural section C1010 for additional information.

Existing to Remain:

Space heating hot water unit heaters (UH-1 thru UH-4) are existing to remain. Associated balancing valves and control valves will be selectively demolished.

Space heating hot water fin tube radiators (FT-1 thru FT-4) are existing to remain. Associated balancing valves and control valves will be selectively demolished.

Domestic hot water boiler (DHW-9), associated pump(s), storage tank, piping and hydronic specialties are existing to remain.

Pool water heating system (including steam boiler (B-19), shell & tube heat exchanger, pump, piping and associated hydronic specialties) are existing to remain.

The pool water filtration, pumping and treatment system is existing to remain.

All exhaust fans not identified to be demolished are existing to remain.

HVAC Scope of Work – General Description/Existing Conditions
The existing heating and ventilating systems provide indirect control of humidity. The scope of work for this project is to provide positive control of the humidity and pressurization of the pool, Locker Room/Shower and Lobby/Office areas, including but not limited to the following:

New Work:

Pool Area:

Provide Pool Dehumidification Unit specifically designed for the **positive control** of dehumidification and temperature for an indoor pool. (This one of two DOAS systems in this project will be referred to hereafter in this RFP as a Pool Dehumidification Unit (PDU) and the DOAS serving the Locker Room/Shower and Lobby/Office areas will be referred to as a Dedicated Outdoor Air System (DOAS).) The PDU system must include ventilation air / exhaust air heat recovery, heat pipe reheat, hot gas reheat and/or other energy conservation means. Provide the PDU system ductwork system including exposed fabric supply air ductwork and source capture exhaust system specifically design for indoor pool applications. Indoor equipment and systems must be designed and manufactured for the indoor pool environment. Exterior equipment and portions of interior equipment exposed to outdoor air must be designed according to the Corrosion Protection criteria in UFGS 23 74 33 Dedicated Outdoor Air Systems (DOAS), using the most stringent option for each category. For Remote Outdoor Condenser Coils and Exposed Outdoor Cabinet, use 10,000 hours for salt spray resistance.

The new PDU system is designed to provide positive control of dehumidification and temperature. As a result, the pool cannot be operated as an outdoor pool space.

Locker Room/Shower and Lobby/Office Areas:

Provide complete system for conditioning the Locker Room/Shower and Lobby/Office areas, including a rooftop dedicated outdoor air system (DOAS). This is primarily a ventilation load for the Locker Room/Shower areas. Cooling is required only for the Lobby/Office areas. The DOAS and exhaust systems must include interconnected exhaust air heat recovery to pre-condition ventilation air.

Pool:

In support of the construction efforts, the General Contractor must provide the services of a pool sub-contractor to provide the services including but not limited to draining the pool, refilling the pool (including a water testing and chemicals) to return the pool to operation.

The mechanical contractor must provide the controlled shutdown and restarting of the pool water heating system in coordination with taking the pool water system out and back into service.

Follow requirements in Mechanical Waste Water Disposal in Part 6 – ATTACHMENTS 6.11.

Miscellaneous:

Refer to the following paragraphs and Part 4 for additional information.

HVAC System Requirements
Provide air conditioning, dehumidification and heating for spaces as indicated and for the following Design conditions:

Design Conditions
Outside Conditions

Outside Conditions according to:

- UFC 4-750-07 Recreational Aquatic Facilities (with most recent changes)
- UFC 3-410-01 Heating, Ventilating, and Air Conditioning Systems (with most recent changes)
- UFC 3-400-02 Design: Engineering Weather Data (with most recent changes).

Inside Conditions: Pool Room

Design according to:

- UFC 4-750-07 Recreational Aquatic Facilities (with most recent changes)
- 2023 ASHRAE Handbook Heating, Ventilating, and Air-Conditioning Applications.

Maintain Pool Room air temperature at 2°F above pool water temperature. Pool temperature setpoint is 83°F. Maintain Pool Room relative humidity between 50 and 60% RH.

Maintain all surfaces (walls, windows, doors) in pool room above pool room dew point temperature.

Provide minimum 6 Air Changes Per Hour for pool area.

Maintain pool space at a negative pressure (0.05 to 0.15 in water) relative to outdoors and adjacent indoor spaces. See UFC 4-750-07 Recreational Aquatic Facilities for additional requirements.

Provide Ventilation rates and systems per the latest edition of ASHRAE Standard 62.1, *Ventilation for Acceptable Indoor Air Quality and UFC 4-750-07 Recreational Aquatic Facilities*.

Required Calculations

Required calculations include but are not limited to the following. Calculations must demonstrate:

System is capable of maintaining all inside surfaces of exterior walls, windows and doors above dew point temperature under all operating and weather conditions. System is capable of maintaining all pipe and duct surfaces in pool room above dew point temperature under all operating and weather conditions. Calculations must fully reflect existing conditions.

Outside air ventilation required by code.

System provides minimum 6 ACH under all operating conditions.

System is capable of maintaining pool room at negative air pressure (0.05 to 0.15 in water) relative to outdoors and adjacent indoor spaces.

System selection accounts for derating of coils due to protective coating.

Provide psychrometric analysis and mapping for all of the above.

Condensate drain systems are properly sized and condensate will not freeze in design winter conditions.

Outside air intake screen has sufficient free area to allow required intake airflow.

Adequate pump flow and head for entire space heating hot water system.

Size boiler to satisfy whole building heating load plus 10% warm-up. Adequate intake and vent air for boiler. Adequate gas pipe size.

Design References
Design system according to the following:

- Recreational Aquatic Facilities, UFC 4-750-07 (most recent edition)
- ASHRAE Handbook HVAC Applications 2023
- Model Aquatic Health Code (MAHC)
- ASHRAE 62.1 Ventilation for Acceptable Indoor Air Quality (most recent edition)
- ANSI/ACCA 10 Manual SPS-2011 (RA 2017)
- ACCA 2017 HVAC Design for Swimming Pools and Spas

Designer of Record Requirements
Contractor's Designer of Record (DOR) must have previous experience with pool HVAC design and be thoroughly familiar with the design references listed above. Contractor must submit evidence of DOR's previous successful pool projects with bid.

D3010 ENERGY SUPPLY – NOT APPLICABLE

D3020 HEAT GENERATING SYSTEMS

Space Heating Hot Water System
Provide constant flow space heating hot water hydronic system, including all specialties required to comprise a complete system. All components must be new unless a specific exception is made in this RFP.

Space Heating Hot Water Boiler
Provide space heating hot water boiler and gas train and connect to existing gas piping. Provide combustion air system. Provide calculations for ventilation air requirements. If existing ventilation air components are adequately sized according to DOR's calculations, existing ventilation air components may be reused. If existing ventilation air components are not adequately sized, provide new.

Select space heating hot water boiler for loads from pool dehumidification unit, DOAS on low roof and existing to remain unit heaters and fin tube radiators.

Space Heating Hot Water Pumps
Provide two pumps, one to act as primary and the other as standby. Alternate primary pump via DDC system.

Space Heating Hot Water Piping
Provide space heating hot water piping to Pool Dehumidification Unit and DOAS on low roof. Provide space heating hot water piping to all existing to be reused unit heaters and fin tube radiators.

Reuse of Existing Space Heating Hot Water Equipment
Existing space heating hot water unit heaters (UH-1 thru UH-4) will be reused.

Existing space heating hot water fin tube radiators (FT-1 thru FT-4) will be reused.

Provide balancing valve and control valve for each space heating hot water unit heater and fin tube radiator.

Reuse of Existing Space Heating Hot Water Piping
Some existing space heating hot water piping may be reused. Runouts to existing unit heaters and fin tube radiators may be reused provided the reuse criteria is met.

Other portions of existing space heating hot water piping (only in the area under the low roof) may be reused provided each section of pipe meets the reuse criteria.

No space heating hot water piping inside the pool area may be reused.

The criteria for reuse of existing space heating hot water piping follow. All criteria must be met.

- Are the piping and related components in acceptable condition? Acceptable is defined by a reasonable expectation of properly functioning for a minimum of 10 additional years.

- Are the piping and related components sized suitably for the intended use?

- Are the piping and related components capable of sustaining adequate flow? This must take into account the design flow rate, factoring in the internal condition of the piping

(fouling factor, degradation of piping cross section, etc.).

Piping and related components must still pass the TAB. All reused existing piping and components responsible for failing the TAB must be replaced at the expense of the Contractor.

All space heating hot water piping, whether new or existing must be provided with new insulation.

D3030 POOL DEHUMIDIFICATION SYSTEM

Pool Dehumidification System Requirements
Pool Dehumidification Unit (PDU) must be specifically designed and manufactured for pool dehumidification usage and from a manufacturer that has provided pool dehumidification systems commercially and continuously for no less than 7 years.

Provide PDU capable of heating, cooling and dehumidifying the pool room to the conditions specified. PDU must be air-cooled.

PDU must be located outside the building on a raised equipment pad above grade (see Location of Pool Dehumidification Unit in Part 6 – Attachment 6.10). If not integral to the PDU, air cooled condenser units must be located in the same general area as the Pool Dehumidification Unit.

PDU must be capable of balancing outside and exhaust airflows and positively controlling space pressurization.

PDU must be equipped with dual circuit dehumidification using wrap-around heat pipes.

PDU must include integral hot water auxiliary heater coil. PDU must be equipped to recover energy from exhaust air.

PDU must be of modular design to allow replacement of individual modules without replacing the entire unit. Provide minimum 2-stage compressors, MERV-8 filters, variable speed fan drive and 18 gauge sloped stainless steel condensate drain pan.

Fabric Duct System
Provide fabric duct system for supply air from dehumidification unit to pool room. Fabric duct and hanger system selected must be suitable for a chlorine pool environment. Duct system must be designed to “wash” the pool room wall surfaces with dehumidified supply air. Provide internal framework that maintains tension over the entire circumference and length of the fabric system at all times so that the fabric does not “collapse” when the dehumidification unit fan is not operating. Provide color and logo selection by Activity.

Source Capture Exhaust System
Provide source capture exhaust system to capture chloramines near the point of release from pool water. System must induce airflow across pool water surface. Measured airflow across pool surface must not exceed 30 fpm. Provide exhaust slot capture (or other) air devices at and across entire width of pool deck. Provide exhaust duct(s) and fan(s). Captured air must be exhausted directly outdoors. Fan(s) and ductwork must be constructed of materials suitable for a chlorine pool environment. Provide chase(s) or soffit(s), etc. for ductwork. Follow design criteria in ASHRAE Applications 2023, as well as other industry design publications.

Pool Dehumidification Unit Exhaust Air System
Provide exhaust air system at PDU. Pool Dehumidification Unit components and air paths must be of materials suitable for a chlorine pool environment.

Condensate Drain System
Provide condensate drain systems for PDU and DOAS. Point of discharge must be chosen so as not to create a hazard or nuisance. Condensate must not freeze in piping or after disposal. Condensate must be discharged in accordance with UFC/UFGS criteria, building codes and local ordinances.

D3040 DISTRIBUTION & OTHER SYSTEMS

Dedicated Outdoor Air System (DOAS)
Provide packaged DOAS to serve the Locker Room/Shower and Lobby/Office areas. Locate DOAS on low roof and provide manufacturer's roof curb. Reuse existing roof penetration if possible. Provide air side energy recovery from exhaust air via DOAS. Do not use heat wheel. Provide ductwork and associated air system components. All new ductwork and other air system components carrying any portion of shower exhaust must be of aluminum construction.

Provide heating hot water connection to DOAS.

Deliver neutral air via DOAS to the Locker Room/Shower and Lobby/Office areas.

Provide air to air heat pump for Office/Lobby area.

Condition Locker Room/Shower areas by supplying neutral air to locker rooms and exhausting through shower and toilet areas.

Provide temperature sensor and humidistat for each locker room. Control airflow to locker rooms via DDC system averaging of locker room sensors. Control for minimum air changes, temperature and humidity.

Complete System
Provide all air and water system components for complete and workable systems.

D3050 TERMINAL & PACKAGE UNITS – NOT APPLICABLE

D3060 CONTROLS AND INSTRUMENTATION

HVAC Controls
The existing HVAC control is Trane Tracer system connected to the Dam Neck Trane Building Automation System (BAS).

Demolish existing controls, complete. The new controls with graphics must connect to the JCI server in Dam Neck Building 527.

Provide Johnson Controls Direct Digital Control (DDC) system to maintain positive control of temperature, humidity and space pressurization. DDC system must monitor and control new equipment and existing. Connect DDC system to the Johnson Controls server in Dam Neck Building 527 over the Dam Neck Johnson Controls base-wide system. Coordinate all DDC work with NAS Oceana DDC office. Provide all sensors, wiring and other components required for measuring and controlling to the stated design conditions. Provide two laptop computers with Johnson Controls SCT and CCT software tools for control of system. Update the existing Johnson Controls server in Dam Neck Building 527 with the latest version of the software.

D3070 SYSTEMS TESTING AND BALANCING

Provide complete Testing and Balancing (TAB) of all air and water system components, including but not limited to the following:

- Pool Dehumidification System
- Source Capture Exhaust System
- DOAS (for Locker Room/Shower & Lobby/Office areas)
- Space Heating Hot Water System.
- DDC System

The following are excluded from Testing and Balancing (TAB):

- Pool Water Heating System
- Domestic Hot Water System
- Pool Water Treatment System and Filtration System
- Existing to remain exhaust fans

D40 FIRE PROTECTION SYSTEMS

Refer to Part 4 Section D40 for performance requirements of the building elements included in the fire protection systems.

SYSTEM DESCRIPTION

Provide a voice-evacuation fire alarm system capable of notifying building occupants inside the facility of an emergency event. Provide panic hardware on all new egress doors associated with the secure area to comply with all life safety requirements.

GENERAL SYSTEM REQUIREMENTS

The Contractor must be responsible to engage and coordinate ALL required Fire Protection related outages with the “existing NASO fire protection maintenance contractor”. The successful bid must include all associated costs and fees incurred by the “existing NASO fire protection maintenance contractor” to perform all required Fire Protection related outages for the project

Provide working space around all equipment. Provide concrete pads under all equipment. Provide all required fittings, connections and accessories required for a complete and usable system. Install equipment in accordance with the criteria of PTS section D40 and the manufacturer’s recommendations. Where the word "should" is used in the manufacturer's recommendations, substitute the word "must".

All Design Documents, (i.e. Building Code/Life Safety Analysis, plans, specifications, and calculations) developed for Section D40 must be prepared by, or under the supervision of the design/build contractor's Qualified Fire Protection Engineer, the Fire Protection Designer of

Record (FPDOR).

Installation drawings, shop drawings or working plans, calculations, other required pre-construction documentation and as-built drawings must be prepared by, or under the direct supervision of a National Institute for Certification in Engineering Technologies (NICET) engineering technician as specified below. NICET engineering technicians must hold a current certification as an engineering technician in the field of Fire Protection Engineering Technology with Level III certification in the appropriate subfield.

Provide training for the active systems consisting of two (2) eight (8)-hour sessions to accommodate all shifts of the base fire department and allow for rescheduling for unforeseen fire department responses.

D4010 FIRE ALARM AND DETECTION SYSTEMS

Provide a fire alarm system to provide coverage throughout the building. This system must be capable of communicating with the base fire alarm reporting system utilizing a compatible radio transceiver. The fire alarm system must be able to be overridden by the building mass notification system. Provide LED text sign(s) at main entrance that can be utilized by the fire alarm and mass notification systems. Visual notification will be provided during fire alarm and mass notification messages.

Provide a compatible mass notification system transceiver to communicate with the base-wide mass notification system front-end system. Modify current PA system to function as in-building mass notification system. The PA must be able to broadcast base-wide and in-building live messages.

Coordinate with Electrical to modify the existing PA system to have general PA and mass notification modes.

Any portion of the fire alarm and mass notification system located in areas susceptible to moisture presence must be enclosed with weather-proof or water-resistant system. These include panels, junction boxes, and conduit/raceway system being utilized.

Provide explosion devices and raceways as needed.

Monitor and supervise carbon monoxide detectors if required.

Provide a remote annunciator with alarm acknowledge, alarm silence, and reset functions. The remote annunciator must be located as directed by the Contracting Officer in conjunction with the cognizant NAVFAC Fire Protection Engineer.

Provide Class A Notification Appliance Circuits, Class B Signaling Line Circuits. Any Class B Initiation Device Circuits must be less than 10 feet in length.

Fire alarm signals must be sent to the fire alarm receiving station via the radio transmitter. Provide a dedicated power for fire alarm and mass notification systems via coordination with Electrical.

All fire alarms, supervisory alarms and trouble conditions indicated at the fire alarm control panel must be transmitted to the fire alarm receiving station. Transmitter zones must be as follows:

a. Smoke Detector
b. Manual Pull Station

c. Supervisory
d. Duct Smoke Detector

D4020 FIRE SUPPRESSION WATER SUPPLY AND EQUIPMENT – NOT APPLICABLE

D4040 SPRINKLERS – NOT APPLICABLE

D4090 OTHER FIRE PROTECTION SYSTEMS – NOT APPLICABLE

D50 ELECTRICAL

The electrical design must comply with the design criteria specified in UFC 3-501-01, Electrical Engineering, and its referenced documents.

The Electrical Engineering Designer of Record (DOR) shall be a registered Professional Engineer (P.E.) licensed in the Commonwealth of Virginia.

D5010 ELECTRICAL SERVICE & DISTRIBUTION

All electrical work shall be coordinated with work described in D30 MECHANICAL REQUIREMENTS.

Demolish electrical circuits for HVAC equipment being demolished as specified in D30 MECHANICAL REQUIREMENTS back to source. Demolish all electrical equipment connections, safety disconnect switches and circuits (raceways and wiring) from the switches to the mechanical equipment.

Demolish Motor Starter Panel MS and Panel MDP, including circuit breakers. Provide Panel, with circuit breakers, to replace Panels MS and MDP.

Provide power for HVAC equipment installed in D30 MECHANICAL section above.

Disconnect column grounding connections to support column base cleaning. Reconnect all column grounding connections when column base cleaning work is complete.

Provide an insulated equipment-grounding conductor in all raceways for systems operating at greater than 50 volts.

D5020 LIGHTING & BRANCH WIRING

Demolish existing lighting system in the pool area complete.

Provide LED lighting and controls in the pool area. New lighting fixture quantities and layout shall provide uniform lighting levels throughout the pool area.

D5030 COMMUNICATIONS & SECURITY

Demolish existing ceiling-mounted speaker system.

Provide wall-mounted speakers connected to the existing building PA and two-way communication system. Provide one indoor speaker for every 800sq. ft. of net floor area.

E10 EQUIPMENT – NOT APPLICABLE

E20 FURNISHINGS

INTERIOR DESIGN REQUIREMENTS

Furnishings include fixed furnishings the design and documentation of the movable furnishings, the Furniture, Fixtures, and Equipment (FF&E) Concept Package. Refer to ATTACHMENT 6. Furnishing will be provided by others and not part of this contract.

The design and documentation of both will be funded as a separate contract. The purchase and installation of the FF&E Package will be funded separately. Contractor to coordinate and provide FF&E power and data requirements with FF&E installer.

The movable furniture and furnishings (FF&E) for this facility may include, but are not limited to movable furniture systems and freestanding furniture.

The Audio Visual (AV) Equipment is part of this Package. Refer to Part 3 Section E1090 of this RFP.

Interior Design Submittal and Meeting Requirements:

Structural Interior Design (SID) Submittal

The SID submittal process must begin following the award of the RFP The SID submittal must include interior finish/color and material sample boards. Refer to this RFP Part 2. Minutes of all meetings must be submitted to the NAVFAC Interior Designer within 7 days.

Provide the following SID meetings and submittals:

a. Design Development (35%-50%) Submittal: The Contractor's Interior Designer must provide a conceptual Finish Schedule, proposing finish materials to be used in all spaces.

   1. SID "Over the Shoulder" Review: Prior to the Prefinal (100%) Submittal, the Contractor's Interior Designer must meet with the NAVFAC Architect for an "over-the-shoulder" review meeting to present a minimum of (3) options for the interior building finishes/colors/materials. Finishes must display manufacturer's label/specifications and be presented in a "loose" format for preliminary approval prior to the presentation with the Activity. The over-the-shoulder review meeting is to be held at NAVFAC Oceana Office.
   2. SID Review: Prior to the Prefinal Submittal, the Contractor's Interior Designer must present a minimum of (3) NAVFAC-approved interior building finishes/color/material options, to the Activity for approval. Each of these finish options must be presented and documented loose format. The presentation must be held at the Activity.

b. Prefinal (100%) Submittal: The submittal must include an updated Finish Schedule, Floor Finish Plan, and Finish Legend for review and approval.

Prefinal SID Color Boards: One (1) set of 16x20 inch color boards including finishes and materials specified for presentation to the Activity indicating overall design intent.

c. Final Submittal: The Contractor's Interior Designer must incorporate the final approved Finish Schedule, Floor Finish Plan and Finish Legend into the Contractor's final drawing set. These drawings and all approved finishes must be submitted in 8-1/2" x 11" binder format, using heavy duty plastic sheet protectors. Three electronic (1) sets of the Final SID Submittal must be distributed to the Activity, and one (1) original set forwarded to the government Architect.

SID CONSTRUCTION SUBMITTALS

Substitutions to the SID finishes are not permitted once they have been approved by NAVFAC during the design phase. In the event that revisions may be required due to unforeseen conditions such as discontinued product, such revisions must be submitted via the ROICC for approval by the NAVFAC Interior Designer before substitutions can be made.

F10 SPECIAL CONSTRUCTION – NOT APPLICABLE

F20 SELECTIVE BUILDING DEMOLITION

EXTERIOR:

- Demolish (4) existing rooftop louver penthouses, complete.
  - Infill existing openings through the metal roof deck with metal deck to match existing.
- Demolish (6) existing rooftop mechanical vents, and curbs, complete.
  - Infill existing openings through the metal roof deck with metal deck to match existing.
- Demolish existing modified bitumen roof system complete down to existing sloped metal roof deck complete.
- Demolish (3) existing fixed roof access ladders, complete.
- Demolish existing hollow metal door, frame, and hardware at rooftop mechanical room access (Door 33), complete.

NATATORIUM:

- Demolish (8) existing hollow metal doors, frames, and hardware, complete (Doors 7, 8, 11, 12, 13, 14, 21, 27, & 32).
- Demolish (1) existing steel folding door and hardware at monorail (Door 16).
  - Steel frame to remain.
- Demolish existing monorail system, complete.
- Demolish existing catwalk to mechanical equipment, complete.
- Demolish existing painted guardrails around (4) roof drain leaders and structural columns.
- Demolish existing steel floor hatch adjacent to monorail door 16, complete.
- Demolish existing tile wall base around pool deck perimeter, complete.
- Demolish any remaining suspended ceiling hangers and miscellaneous elements following demolition of ceiling system by others, complete.
- Demolish existing HVAC system, complete. Includes all equipment, ductwork, piping, and electrical components, complete.
- Demolish existing mechanical ventilation system, complete. Includes all equipment, ductwork,

and electrical components.

- Demolish existing wall-mounted fluorescent light fixtures in the suspended mechanical space above pool. Demolish existing circuits.
- Demolish existing speaker system previously mounted in suspended ceiling system.

LOCKER/SHOWER/JANITOR CLOSET/ TOILETS AREAS:

- Demolish existing SAT (Suspended Acoustical Tile) system to facilitate demolition of existing HV#2 and installation of new DOAS system. Support all existing ceiling appurtenances for demolition and installation of new acoustical ceiling tile system. Reinstall all ceiling appurtenances once the new ceiling system is installed.

LOBBY/OFFICE AREAS

- Demolish existing SMT (Suspended Metal Tile) system to facilitate demolition of existing EF-1 and installation of new DOAS system. Support all existing ceiling appurtenances demolition and installation of new metal ceiling tile ceiling system. Reinstall all existing ceiling appurtenances once the SMT system is reinstalled.

G10 SITE PREPARATION – NOT APPLICABLE

G20 SITE IMPROVEMENTS – NOT APPLICABLE

G30 SITE CIVIL/MECHANICAL UTILITIES – NOT APPLICABLE

G40 SITE ELECTRICAL UTILITIES – NOT APPLICABLE

Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

PART 4 – MINIMAL MATERIALS, ENGINEERING AND CONSTRUCTION REQUIREMENTS

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

Part 4 Minimum Materials, Engineering and Construction Requirements

1.0 GENERAL REQUIREMENTS

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

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

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

Recycled Materials Considerations:

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

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

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

1.1 MATERIALS AND METHODS OF CONSTRUCTION

Only new materials and equipment are to be installed in the work. All materials, equipment and appliances must be of the current manufacturers' products. Do not use obsolete or discontinued materials, equipment and appliances, except that construction materials containing recycled content as described in Paragraph 1 of this Part that completely comply with all materials specifications found elsewhere in this Part may be used.

1.2 APPLICABLE CODES AND STANDARDS

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

1.3 LOCATION-SPECIFIC CODES AND STANDARDS

See Part 3.

1.4 DISCREPANCIES

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

2.0 PERFORMANCE TECHNICAL SPECIFICATIONS

Note: The paragraph numbers used correspond with the numbers used in UNIFORMAT II/Work Breakdown Structures (WBS) as listed in the Whole Building Design Guide, Navy Design Build

Master, accessible at this website: www.wbdg.org/ndbm .

SECTION A. SUBSTRUCTURE

A10 FOUNDATION

Foundations must be reinforced concrete slabs-on-grade with continuous strip footings or isolated spread footings. Concrete slabs must not be less than 4 inches in thickness and footings must not be less than 18 inches below the lowest adjacent grade. Design and construct foundations of reinforced concrete. Comply with IBC, applicable UFGS and with applicable requirements in Section B Shell. For the purposes of interpreting IBC Chapter 18, the "Owner" and "Building Official" is interpreted to mean the "Government", and the "Applicant" is interpreted to mean the "Contractor/Designer of Record".

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

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

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

A20 BASEMENT CONSTRUCTION

Provide basement construction in accordance with UFC 3-301-01, *Structural Engineering*. Basement walls include exterior walls below the ground floor level of the building, including walls that are below grade, elevator pits and other pits. Provide basement walls constructed of cast-in-place concrete, precast concrete, or masonry. Provide waterproofing and insulation of basement walls. If basement construction is required in Part 3, refer to Standard Design-Build template PTS Section A20 BASEMENT CONSTRUCTION.

SECTION B. SHELL

B10 SUPERSTRUCTURES

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

required.

1. **Concrete**: All concrete must be constructed in accordance with ACI 301. Concrete must have a 28-day minimum compressive strength of 3,000 psi. Slump must be between 2 and 4 inches in accordance with ASTM C143. Provide joints as required to minimize cracking. All concrete must be reinforced. Provide joints as required by applicable ACI standards. Unless otherwise specified in Part 3 or as indicated by the contracting officer, provide steel trowel finish for all exposed floor surfaces. Exterior surfaces must be a broom finish.

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

3. **Structural Steel**: Structural steel exposed to weathering must be adequately protected to prevent corrosion.

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

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

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

B20 EXTERIOR ENCLOSURE

B2010 EXTERIOR WALLS

1. **Exterior Wall Performance**:
   a. **Vapor Transmission Analysis:** Perform a job specific vapor transmission analysis in accordance with ASHRAE 90.1 or WUFI. The conclusion of the analysis must indicate the appropriate locations of needed vapor retarders, air barriers, and anticipated dew-point locations in the exterior enclosure during different critical times of the year.
   b. **Maximum Air Infiltration:** The air leak flow rate must not exceed 0.25 CFM at 75 Pa per square foot (0.076 cm 75 Pa per square meter) of building envelope area including roof or ceiling, walls and floor as provided by the DOR.

      Where required in RFP Part 3, provide air barrier testing. Perform testing as required by UFGS 07 08 27.00 10, *Building Air Barrier System Testing for Commissioning.* DOR must edit this section and incorporate into the project specification. Repair leaks and repeat testing until prescribed maximum air leak flow rate is achieved. Provide intermediate and final reports.
   c. **Wind Loads:** Provide wind load calculations for exterior cladding in accordance with ASCE-7 with comparative analysis of the cladding system to be provided.
   d. **Water Penetration:** No water penetration is acceptable at a pressure of 39 Kg/m2 (8 psf) of fixed area when tested in accordance with ASTM E 331.
   e. **Insulating Value:** Provide complete thermal envelope in accordance with ASHRAE 90.1, Chapter 5 with improvements required to meet project energy goals.

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

2. **Masonry Veneer Exterior Wall Closure Components**: Masonry veneer includes load bearing and non-load bearing exterior walls of the structure, and must include colored mortar, special shapes such as sills, headers, trim units and copings of brick masonry, precast concrete, concrete masonry units, or other approved material. Utilize BIA Technical Notes to design, detail, and construct brick masonry walls. Substitute directive language in the place of BIA suggestive language. The results of these wording substitutions change this document to required procedures. Tie the veneer to the backup wall system with a system that allows the veneer to move independently of the backup wall system, while being structurally supported. The masonry veneer must allow for expansion and contraction of the veneer without cracking the exterior material.
   a. **Masonry Veneer Installation:** Conform to ACI 530.1 for masonry veneer installation, including cold weather construction. Antifreeze admixtures are not to be used.
   b. **Mortar:** Provide factory-tinted colored mortar conforming to ASTM C270, unless DOR directs otherwise.
   c. **Expansion/Control Joints:** Locate expansion/control joints and seal with proper backing material and ASTM C 920 polyurethane sealant, or preformed foam or rubberized expansion joint closure. Conform to UFC 3-101-01, *Architecture* and

BIA Technotes 18, 18A.

d. **Brick:** Meet ASTM C216, Grade SW, type FBS, or type FBX for detail work. ASTM C67 test rating shall be "Not effloresced". Use FBA brick only for special architectural effects requiring a non-uniform size.

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

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

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

h. **Through-Wall Flashing Components:** Through-wall flashing with weep holes must be incorporated in cavity wall construction. Flashing must be 7 ounce copper flashing with a 3 ounce bituminous coating on each side or a fiberglass fabric bonded on each side of the copper sheet; 16-ounce uncoated copper, 28 gauge Type 302 or 304 stainless steel is also acceptable. 'Flexible membrane flashing, plastic or PVC-based membrane flashing is prohibited.

i. **Reinforcing in Veneer Layer:** Reinforcing in the veneer layer must be galvanized in accordance with ASTM A 123/A123M, ASTM A153/A153M, or ASTM A653/A653M, Z275 (G90) coating, and be of sufficient size to eliminate damage to the veneer layer from wind and other live and dead loads imposed on the veneer layer.

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

3. **Metal Wall Panel Exterior Closure**

Panels must have factory applied, baked coating to the exterior and interior of metal wall panels and metal accessories. Exterior finish topcoat must be of 70 percent polyvinylidene fluoride (PVDF) resin with not less than 0.8 mil dry film thickness (DFT). Exterior primer must be standard with panel manufacturer with not less than 0.8 mil dry film thickness (DFT).

Wall system and attachments must resist wind loads as determined by ASCE 7, with a factor of safety appropriate for the material holding the anchor. Maximum deflection due to wind on aluminum wall panels must be 1/60. Maximum deflection due to wind on steel wall panels and girts behind aluminum or steel wall panels must be limited to 1/120 of their respective spans, except that when interior finishes are used the maximum allowable deflection must be limited to 1/180 of their respective spans.

Conformations - Non-insulated steel or aluminum wall panels must have configurations for overlapping adjacent sheets or interlocking ribs for securing adjacent sheets and must be fastened to framework using concealed fasteners, or choose the option for exposed fasteners when exposed fasteners are acceptable at the installation. Length of sheets must be sufficient to cover the entire height of any unbroken wall surface.

a. **Steel Wall Panels**:

1) Material and Coating: Form sheets from steel conforming to ASTM A 653/A 653M, Structural Grade 40, galvanized coating conforming to ASTM A 924/A 924M, Class G-90; aluminum-coated steel conforming to SAE AMS 5036; or steel-coated with aluminum-zinc alloy conforming to ASTM A 792/A 792M, except that coating chemical composition must be approximately 55 percent aluminum, 1.6 percent silicon, and 43.4 percent zinc with minimum coating weight of 0.5 ounce per square foot.

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

b. **Aluminum Wall Panels**:

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

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

c. **Insulated Aluminum or Steel Wall Panels**: Insulated wall panels must be steel or aluminum factory-fabricated units with insulating core between metal face sheets securely fastened together and uniformly separated with rigid spacers. Panels must have a factory color finish. Wall panels must have edge configurations with interlocking ribs for securing adjacent panels. System must utilize factory fabricated corners and trim pieces at intersections with other materials. Insulated wall panels must be fastened to framework using concealed fasteners.

1) Insulated Steel Panels - Zinc-coated steel conforming to ASTM A 653/A 653M; or Aluminum-zinc alloy coated steel conforming to ASTM A 792/A 792M, AZ 55 coating. Uncoated wall panels must be 0.61 mm (0.024 inch) thick minimum.

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

4. **Stucco Exterior Wall Closure**

a. **Portland Cement Plaster:** ASTM C150, gray Portland cement Type II with 13 mm (1/2 inch) maximum chopped alkali resistant fiberglass strands, minimum 1.5 percent by weight to cement; .68 kg (1 1/2 pounds) per sack of cement. Lime must conform to ASTM C206, Type S. System must utilize stainless steel or zinc corner beads, J-beads and other accessories. Unless specifically deleted, the system must utilize an acrylic admixture or coating to give additional moisture suppression to control fungus growth.

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

5. **Precast Concrete Wall Panels**: ACI 211.1 and ACI 301. PCI MNL-116 or PCI MNL-117. Concrete must have a minimum 28-day compressive strength of 281 Kg/cm2 (4000 psi). Joints must include properly sized and placed backing material and fully loaded and tooled sealant joint of no less than 1/4 inch sealant material thickness.

6. **Other Wall Finish Systems**

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

Species and Grades 1. Grade 1 Common spruce-pine-fir; NELMA, NLGA, WCLIB, or WWPA. 2. Grade Prime or D finish, pressure-preservative-treated hem-fir; NLGA, WCLIB, or WWPA.; 3. Grade D Select (Quality) eastern white pine, eastern hemlock-balsam fir-tamarack, eastern spruce, or white woods; NELMA, NLGA, WCLIB, or WWPA. 4. Grade D Select northern white cedar; NELMA or NLGA. 5. Grade B & B, pressure-preservative-treated southern pine; SPIB.

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

c. **Manufactured Faced Panels Systems Exterior Wall Siding:** Glass Fiber

Reinforced Cementitious Panels System: Siding made from fiber-cement board that does not contain asbestos fibers; complies with ASTM C 1186, Type A, Grade II; horizontal or vertical pattern in plain or beaded-edge style. Texture: Rough sawn or smooth, factory primed.

7. **Exterior Wall Backup Construction**
   a. **Concrete Unit Masonry:** Provide concrete unit masonry to comply with ACI 530.1. Load-bearing units: ASTM C90, Non-load bearing- units: ASTM C129, Type I or II. Provide ground face units, split-faced units, ground-faced units, or split-ribbed units for exposed exterior walls. Provide water repellent admixture to masonry units where the exterior face of the units will not receive a waterproof coating such as paint
   b. **Dampproofing:** Dampproof the cavity-facing wythe of the backup masonry using asphaltic primer according to ASTM D 41, if dampproofing is not provided by a sprayed on foam or other DOR-approved membrane insulation system.

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

9. **Exterior Studs**:

Max. Deflection Criteria	Exterior Finish
L/360	Cement Plaster, Wood Veneer, Synthetic Plaster, Metal Panels
L/600	Brick Veneer, Stone Panels

Wall deflections must be computed on the basis that studs withstand all lateral forces independent of any composite action from sheathing materials. Studs abutting windows or louvers must also be designed not to exceed 1/4-inch maximum deflection and as required in UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings.

1) Studs - ASTM A 1003/ASTM A 1003M, Structural Grade 50, Type H minimum; provide Z180 (G60) galvanized coating in accordance with ASTM A 653/ASTM A 653M. Do not expose studs to direct moisture contact
2) Bracing - Provide horizontal bracing in accordance with design calculations and AISI SG-673, consisting of, as a minimum, runner channel cut to fit between and welded to the studs.
3) Sheathing - Provide sheathing to withstand structural loads imposed on the wall structure. Cover sheathing with either a 15 pound asphalt-impregnated building paper, or air barrier as required by the wall moisture analysis. Sheathing must be one of the following:

a) Plywood: C-D Grade, Exposure 1;
b) Structural-Use and OSB Panels;
c) Gypsum: ASTM C 79/C 79M and ASTM C 1177/C 1177M, 13 mm (1/2 inch) thick fire retardant (Type X) 15 mm (5/8 inch) thick; 1.2 meters

(4 feet) wide with square edge for supports 400 mm (16 inches) o.c. with or without corner bracing of framing. Gypsum sheathing must be faced with materials capable of resisting six months of weathering exposure without degradation of the covering or the gypsum. Seal all joints as recommended by the manufacturer.

10. **Wood Framing System**: All materials shall be kiln-dried lumber complying with DOC PS 20. Installation must be in accordance with AF&PA T11. Use preservative pressure treated lumber at sill plates and other members in contact with concrete and masonry surfaces.
    a. **Species and Grades:** Provide species and grades listed: 1) Grade 2 Common spruce-pine-fir; NELMA, NLGA, WCLIB, or WWPA: 2) Grade 2 Common, hem-fir; Douglas-fir; NLGA, WCLIB, or WWPA; 3) Grade 2 Common, southern pine; SPIB.
    b. **Sheathing:** Sheathing must withstand structural loads imposed on the wall structure. Cover sheathing with either a 15 pound asphalt-impregnated building paper, or air barrier as required by the wall moisture analysis. Sheathing must be as for Metal Studs.

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

12. **Insulation and Vapor Retarder**: Insulation, Vapor Retarders, and Air Barrier Systems in or on Exterior Enclosure must include: insulation, liquid, sheet or continuous film materials installed separately in or on wall assemblies to provide resistance to heat loss/gain, and vapor penetration.
    a. **Vapor retarder:** Comply with ASTM C755. Incorporate in the exterior wall system where required by vapor transmission calculations or dew point analysis indicates the need or in conditions of high moisture exposure.
    b. **Bituminous Dampproofing:** Bituminous Dampproofing must be ASTM D449, Type I or Type II bituminous dampproofing on the exterior surface of the interior wythe of masonry in a cavity wall (back-up wall for masonry veneer).
    c. **Building Paper:** FS UU-B-790, Type I, Grade D, Style 1.
    d. **Air Barrier:** Building wrap consisting of air barrier sheeting complying with ASTM E 1677, Type 1, not less than 3 mils thick with a permeance of not less than 575 ng/Pa x s x sq.m. (10 perms). Building wrap must have a flame spread index of less than 25 in accordance with ASTM E 84. Provide building wrap over sheathing of wood or metal framed construction to reduce air penetration and airborne vapor penetration. Provide building wrap tape as recommended by the manufacturer for sealing all joints in the building wrap. Install in accordance with manufacturer's instructions. Air barrier installation at windows must be in accordance with ASTM E 2112.
    e. **Insulation Systems:** Vertical and horizontal polystyrene insulation conforming to ASTM C578 or rigid polyisocyanurate board wall insulating products conforming to ASTM C591 or mineral-fiber blanket insulation conforming to ASTM C 665 must be provided.

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

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

    Storm shutters must comply with ASTM E 1996-03.

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

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

17. **Exterior Painting and Special Finishes**; All painting and coating materials must be low VOC. Painting practices must comply with applicable federal, state and local laws enacted to insure compliance with Federal Clean Air Standards. Apply coating materials in accordance with SSPC PA 1. SSPC PA 1 methods are applicable to all substrates.

    All paint must be in accordance with the Master Painters Institute (MPI) standards for the exterior architectural surface being finished. The current MPI, "Approved Product List" which lists paint by brand, label, product name and product code as of the date of contract award, will be used to determine compliance with the submittal requirements of this specification. Provide paint systems tested to "Detailed Performance Level" standard as defined by MPI.

18. **Exterior Joint Sealant**: Sealant joint design, priming, tooling, masking, cleaning and application must be in accordance with the general requirements of Sealants: A Professionals' Guide from the Sealant, Waterproofing & Restoration Institute (SWRI). All sealant must conform to ASTM C 920.

19. **Sun Control Devices**: Sun control devices must be manufactured devices to provide sun control on exterior windows and storefronts. Sun control devices must be designed and installed to withstand the wind loads prevailing at the project site.

B2020 EXTERIOR WINDOWS

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

Unless otherwise allowed by Part 3, windows for new facilities must be aluminum. In building additions or renovations windows must match existing window materials, except when all windows are to be replaced. If all windows are to be replaced, they shall be aluminum. Exterior windows design, dimension, and construction must meet or exceed the requirements for Anti Terrorism Force Protection requirements. In addition, exterior windows must meet or exceed Energy Star requirements. The design and placement of exterior windows must take into considerations view, natural light, privacy, and protection for the occupants of the facilities. Provide operable hardware and insect screen for exterior windows. Windows must be fabricated by manufacturers normally involved in the manufacturing of windows and be of the current make and model. Do not use obsolete or discontinued windows. Provide weather stripping, STC and IIC rating, commensurate with the intended use of the facility. Submit catalog information and manufacturer's specifications for approval by Contracting Officer prior to purchase of windows.

All window assemblies must meet performance grade CW 60 minimum tested in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-08 or most current edition of this standard.

Where windows separate conditioned spaces from non-conditioned spaces, provide windows bearing NFRC energy label indicating window exceeds current Energy Star criteria. For

storefront or curtainwall systems, provide thermally broken framing and insulating glazing with whole-assembly U-value of 0.40 or less. Provide windows exceeding requirements of ASHRAE 90.1, Table 5.5 for project climate zone.

Windows must consist of fixed and operable sash used singly and in multiples. Provide operable sash in spaces occupied by people as a minimum. Include operating hardware, non-corroding framed metal screens for operable sash, integrated blinds set between glass panels and security grilles. Provide jamb support for larger windows where recommended by manufacturer.

1. **Metal Windows**: All windows must conform to ANSI/AAMA/WDMA 101. Metal windows with insulating glass must have thermally broken frames and sash. Factory finish aluminum windows and provide with aluminum frame screens with aluminum mesh at operable sash, hardware and locks, and tinted glazing. Aluminum screens must comply with ANSI/SMA 1004.

2. **Wood Windows**: Clad wood and wood windows must consist of complete units including sash, glass, frame, weatherstripping, insect screen, and hardware. Window units must meet the requirements of AAMA 101, except maximum air infiltration shall not exceed 0.30 CFM per linear foot of sash crack when tested under uniform static air pressure difference of 7.66 Kg/m2 (1.57 psf).

3. **Storefronts**: Provide one-story storefront system fabricated from formed and extruded aluminum and glass components for exterior use. Utilize the specific section of the Standard Design-Build Performance Technical Specifications Section B202002 for the storefront to be provided. Storefront framing must meet or exceed the structural requirements, as measured in accordance with ANSI/ASTM E330: Design system to withstand this as a minimum and comply with design pressure established within the required ASCE 7-05 Wind Speed Calculations determined by the overall average opening within the project.

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

B2030 EXTERIOR DOORS

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

face of all exterior doors. Weather-protect all exterior doors and related construction with low infiltration weatherstripping and sealants. Provide threshold with offset to stop water penetration while maintaining accessibility compliance. Conform to the design criteria of ASCE 7. See the hardware schedule for door hardware requirements.

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

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

1) Standard Duty Doors - Level 1, MSG # 20 (IP 0.032", 0.8 mm), physical performance Level C, Model 1 or 2.2) Heavy Duty Doors - MSG # 18 (IP 0,042", 1 mm), physical performance Level B, Model 1 or 2.3) Extra Heavy Duty Doors - Level 3, MSG #16, (0.053", 1.3 mm) physical performance Level A, Model 1, 2, or 3.4) Maximum Duty Doors - Level 4 (IP 0.067", 1.6 mm), physical performance Level A, Model 1 or 2.
   b. Insulated steel doors and frames are required for entrances to dwelling units, and may also be specified as a Contractor's option to Level 1 standard hollow metal doors. Do not use wood doors for exterior doors, unless they are fully protected from the elements, an exterior grade species, and specially finished. If wood doors are used, provide in accordance with Standard Design-Build Performance Technical Specification Paragraph B203001 2.

2. **Standard Steel Frames**: ANSI A 250.8. Form frames with welded corners for installation in exterior walls. Form stops and beads of 20 gage steel. Frames must be set in accordance with ASTM A250.11. Anchor all frames with a minimum of three jamb anchors and base steel anchors per frame, zinc-coated or painted with rust-inhibitive paint, not lighter than 18 gage. Mortar infill frames in masonry walls, and infill with gypsum board compound at each jamb anchor in metal frame walls. Only use surface exposed bolted anchors in concrete walls.

3. **Door and Frame Finishes**: a) Exterior Doors, Factory-Primed and Field Painted Finish - Doors and frames must be factory primed with a rust inhibitive coating as specified in ANSI A250.8. Factory prime doors on six sides of the door; b) Exterior Doors Galvanized Finish -- Must be Commercial Quality, Coating Class A, zinc coating in accordance with ASTM A 591 when facility is located further than 91 meters (300 feet) from the ocean. When facility is located within 91 meters (300 feet) of the ocean, provide G60 galvanized coating in accordance with ASTM A 924/A 924M and ASTM A 653/A 653M.

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

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

6. **Rolling Service Doors and Grilles**: Coiling overhead doors must have minimum 22

gage thermal insulated slats. Electric operators must have three-button switches conforming to NEMA MG 1, NEMA ICS 1, and NEMA ICS 2, and auxiliary hand chain operation, weather-stripping and wind-locks. Doors must be capable of withstanding the design wind loading of ASCE 7 and still operate normally. Finish of the door must be hot-dipped galvanized with a painted finish.

7. **Sectional Overhead Doors**: Sectional overhead doors must conform to NAGDM 102, Residential or Commercial or Industrial door standards. If doors are electrically operated, pushbuttons must be full-guarded to prevent accidental operation, and include limit switches to automatically stop doors at the fully open and closed positions. Limit switch positions must be readily adjustable.

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

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

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

B30 ROOFING

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

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

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

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

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

B3010 ROOF COVERINGS

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

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

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

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

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

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

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

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

      2) A slip sheet is required to separate the roofing panels from the insulation

facing where the facing would be in direct contact with the roofing panels. If a slip sheet is necessary for use with a vapor retarder, use a 5 lb. per 100 square feet rosin-sized, unsaturated building paper.

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

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

e. **Fasteners:** Provide fasteners that meet all requirements of the NRCA and Factory Mutual.

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

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

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

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

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

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

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

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

4. **OTHER ROOFING**

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

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

SECTION C. INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

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

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

2. **Demountable or Removable Partitions**: Must be of materials allowed by code and shall be anchored firmly to the structure to carry their own weight as well as impact forces and seismic lateral forces. Sound Transmission Class (STC) rating and Impact Isolation Class (IIC) rating shall be in accordance with ASTM E 90 or ASTM E 413 for frequency data, and shall meet the requirements of the intended use in Part 3. The majority of the components and hardware must be provided by a single manufacturer and on the manufacturer's current GSA price list. The product must be included on the NAVFAC Selection Tool for Movable Walls.

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

C1020 INTERIOR DOORS

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

2. **Steel doors**: Must be ANSI A 250.8, Level 1, (occasional use, low abuse types such as closet doors without locks); Level 2, (low use, moderate abuse types such as office/storeroom doors); Level 3, (moderate use, high abuse types such as BEQ sleeping room doors); Level 4, (high use, high abuse types such as corridors, stairways, assembly spaces, and main entry doors), with a physical performance level of 'A'. Maximum door undercut must not exceed 19 mm (3/4 inch).

3. **Sound Insulated Doors and Frames**: Utilize Sound Insulated Doors and Frames with sound control weatherstripping in rooms requiring wall assemblies to be sound insulated

with a Sound Transmission Class (STC) rating as required. The STC rating for the door and frame assembly must be not less than the wall assembly STC rating.

4. **Aluminum Doors and Frames**: Provide swing-type aluminum doors and frames complete with framing members, transoms, side-lites, and accessories. Fabricate of ASTM B 221, Alloy 6063-TS for extrusions.

5. **Steel Door Frames**: ANSI A 250.8. Form frames with welded corners for installation in masonry partitions and knock-down field assembled corners for installation in metal stud and GWB partitions. Install frames in accordance with SDI 105. Form stops and beads with 20 gauge steel.

   Provide a minimum of three jamb anchors and base steel anchors per frame, zinc-coated or painted with rust-inhibitive paint, not lighter the 18 gauge. Secure frames to previously installed concrete or masonry with expansion bolts in accordance with SDI 11-F. Provide mortar infill of frames in masonry walls, and gypsum board compound infill at each jamb anchor in metal frame walls.

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

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

7. **Interior Door Hardware**: Provide the services of a certified door hardware consultant to prepare the door hardware schedule. Unless otherwise noted, interior doors include latch, hinges, door stops and door silencers. Provide closers and kick plates for fire-rated, corridor, stairway and high-use non-residential doors.
   a. **Hinges** - BHMA A156.1, Grade 1, 108 x 108 mm (4 1/2 x 4 1/2 inches) with non-removable pin or anti-friction bearing hinges.
   b. **Locks and Latches** - For non-residential buildings use Series 1000, Operational Grade 1, Security Grade 2 for stairways, building entrances, corridors, assembly spaces, and other high use interior doors. Use Series 4000, Grade 1 for non-residential locations not using Series 1000 hardware. For residential buildings use Series 4000, Grade 2 for interior doors. a) Mortise Locks and Latches - BHMA A 156.13, Series 1000, Operation Grade 1, Security Grade 2. b) Bored Locks and Latches - BHMA A 156.2, Series 4000, Grade 1, or Grade 2.
   c. **Exit Devices** - BHMA A 156.3, Grade 1. Provide touch bars in lieu of conventional crossbars and arms. Use manufacturer's integral touch bars in aluminum storefront doors.
   d. **Card Key Access** - Provide card key type access units for specialized entries. Provide lithium battery powered, magnetic stripe keycard locksets that are ANSI/BHMA A156.13, Series 1000, Grade 1, mortise or ANSI/BHMA A156.2, Series 4000, Grade 1, cylindrical locks, tamper resistant, UL listed with 25 mm (1 inch) throw deadbolt, 19 mm (3/4-inch) throw latch bolt, auxiliary dead-locking latch, and 68.75 mm (2-3/4 inch) backset.

      Provide hardware keying compatible with the existing base-wide keying system. Replacement interchangeable cores must be compatible with the Best Lock system.

e. **Key Cabinet**: Provide a Key Cabinet with 30% over capacity.

C1030 SPECIALTIES

1. **Compartments, Cubicles, & Toilet Partitions**: FS A-A-60003. Provide toilet compartments at multi-fixture toilet rooms of Type I, Style B-Ceiling Hung, C-Overhead Braced, or F-Overhead braced-alcove. Reinforce panels to receive partition-mounted accessories. Urinal screens must be FS A-A-60003. Type III, Style A, floor supported and wall hung or Style D, wall hung. Wall hung urinal screens must be secured with continuous flanges to urinal screen and wall. Steel and Plastic toilet partitions must have a recovered materials content of 20 to 30 percent. Chrome-plated or stainless steel door latches and coat hooks. Provide one coat hook per compartment door. Latches and hinges for handicapped compartments must comply with ABA Accessibility Standards.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

C20 STAIR CONSTRUCTION

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

C30 INTERIOR FINISHES

C3010 WALL FINISHES

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

1. **Ceramic Tile**: Provide ceramic tile wall systems as defined in the Tile Council of America (TCA) handbook for ceramic tile installation and materials for the service requirements listed. Provide installation and materials in accordance with ANSI A108/A118 series standards, except do not use organic adhesives. Provide manufacturer's full range of colors and styles. Tile must be a minimum of one grade above base grade. Coordinate with ceramic bath accessories for modularity. Include all trim pieces, caps, stops, and returns to complete installation.

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

C3020 FLOOR FINISHES

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

1. **Ceramic Tile**: Provide ceramic tile floor systems as defined in the Tile Council of America (TCA) handbook for ceramic tile installation and materials for the service requirements listed. Provide installation and materials in accordance with ANSI A108/A118 series standards, except do not use organic adhesives. Provide manufacturer's full range of colors and styles. Tile must be a minimum of one grade above base grade. Provide ceramic or porcelain tile with a minimum breaking strength of 202kg (300 pounds), ASTM C648, and a maximum absorption rate of 0.5%, ASTM C373. Tile must have a minimum coefficient of friction (wet and dry) of 0.6, ASTM C1028.

2. **Resilient Flooring**: Meet or exceed applicable ABA Accessibility Standards horizontal requirements. Install flooring per manufacturer's recommended methods and adhesives. Provide manufacturers full line of color and pattern selections, including multi-color patterns. Linoleum Sheet or Tile Flooring must be 2.5 mm (0.10 inch) gage; minimum 250 psi static load limit, ASTM F970; and with multi-color pattern and color extending throughout thickness, ASTM F2034, Type I. Resilient homogeneous vinyl sheet flooring must be commercial quality, 2.0 mm (0.080 inch) overall gage, with minimum 1.6 mm (.066 inch) thick wear layer, protective urethane finish, ASTM F1303, Type II, Grade 1, Class A. Resilient vinyl composition tile must be commercial grade, 3 mm (.125 inch) gage, ASTM F1066, Comp. 1, Class 2, through pattern.

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

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

C3030 CEILING FINISHES

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

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

C3040 PAINTING

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

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

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

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

SECTION D. SERVICES

D10 CONVEYING Elevators and Escalators - Not used

D20 PLUMBING

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

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

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

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

D2010 PLUMBING FIXTURES

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

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

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

3. **Urinals**: Provide U.S. Environmental Protection Agency (EPA) WatersenseÂ® certified and labeled ceramic-type urinals.

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

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

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

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

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

8. **Service sinks**: ASME A112.19.1M, white enameled cast-iron or ASME A112.19.2M white vitreous china, wall mounted and floor supported by wall outlet cast-iron P-trap, minimum dimensions of 560 mm (22 inches) wide by 457 mm (18 inches) front to rear with 230 mm (9 inch) splashback, and stainless steel rim guard. Provide ASME A112.18.1M copper alloy back-mounted combination faucets with vacuum breaker and 20 mm (0.75 inch) external hose threads

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

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

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

D2020 DOMESTIC WATER DISTRIBUTION

1. **Natural Gas or Propane Fired Storage Water Heaters**: Provide high efficiency storage type natural gas or propane fired water heaters per ANSI Z21.10.1 or ANSI Z21.10.3 meeting AGA requirements. For California, unit efficiency must meet or exceed that listed in the Title-24 Standards. Equipment efficiency must be in accordance with Energy Star or FEMP designated products list, http://energy.gov/eere/femp/find?product?categories?coveredefficiency?programs For gas water heaters use Energy Star labeled products. For products not listed by Energy Star or FEMP provide products with efficiency rated in the top 25% of available products. Water heaters must be equipped with glass-lined steel tanks, minimum R-15 polyurethane foam insulation, replaceable anodes, and adjustable range thermostat to allow hot water settings between 43 and 71 degrees C (110 and 160 degrees F). Water heater warranty must be a minimum of 10 years. Provide vent in accordance with NFPA 54. Provide low NOx burners that meet SCAQMD requirements. Install in accordance with manufacturer's instructions and the code. Where earthquake loads are applicable, water heater supports must be designed and installed for seismic forces in accordance with the International Building Code.

2. **Electric Water Heaters**: Provide electric water heaters with double heating element per UL 174. Unit efficiency must meet or exceed that listed for FEMP or ENERGYSTAR, or as listed in ASHRAE 90.1, whichever is greatest. Water heaters must be equipped with glass-lined steel tanks, high efficiency type, insulated with polyurethane foam insulation, replaceable anodes, and adjustable range thermostat to allow hot water settings between 43 and 71 degrees C.

3. **Domestic Water Boilers**: Boilers must be designed, tested, and installed per ASME CSD-1 (Controls and Safety Devices) and ASME BPVC (Boiler and Pressure Vessel Code). The boiler must meet the requirements of the UL 795, NFPA 85, ANSI Z83.3, and ASME CSD. Boilers must be certified by Naval Personnel or a contractor approved by the Contracting Officer.

D2030 SANITARY WASTE & VENT

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

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

D2040 RAINWATER DRAINAGE

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

D2090 OTHER PLUMBING SYSTEMS

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

D30 HEATING, VENTILATION AND AIR CONDITIONING (HVAC) SYSTEMS

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

1. **Equipment Clearance**: Provide working space around all equipment. Provide all required fittings, connections and accessories required for a complete and usable system. All equipment shall be installed per the manufacturer's recommendations. Where the word "should" is used in manufacturer's instructions, substitute the word "shall".

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

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

3. **Motors**: Single-phase fractional-horsepower alternating-current motors must be high efficiency types corresponding to the applications listed in NEMA MG 11. Select polyphase motors based on high efficiency characteristics relative to the applications as listed in NEMA MG 10. Additionally, all polyphase squirrel-cage medium induction motors with continuous ratings must meet or exceed energy efficient ratings per Table 12-10 of NEMA MG 1.& Provide controllers for 3-phase motors rated 0.75 kW (1 hp) and above with phase voltage monitors designed to protect motors from phase loss and over/under-voltage. Provide means to prevent automatic restart by a time adjustable restart relay. For packaged equipment, the manufacturer must provide controllers including the required monitors and timed restart. Provide reduced voltage starters for all motors 25 hp and larger.

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

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

6. **Equipment Insulation**: Provide insulation on all chilled water equipment. Insulate hot and chilled water pumps and equipment as suitable for the temperature and service in rigid block, semi-rigid board, or flexible unicellular insulation to fit as closely as possible to equipment. Provide vapor retarder for chilled water applications.

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

D3020 HEAT GENERATING SYSTEMS

1. **Boilers**: Boilers must be designed, tested, and installed per ASME CSD-1 (Controls and Safety Devices) and ASME BPVC (Boiler and Pressure Vessel Code). The boiler must meet the requirements of the UL 795, NFPA 85, ANSI Z83.3, and ASME CSD. Do not provide watertube boiler(s) for hydronic heating when size permits otherwise. Provide insulated boiler stack in accordance with manufacturer's recommendations and conform to NFPA 211 or provide pre-manufactured, multi-wall stacks complying with NFPA 54 or NFPA 58 and UL-listed. Low pressure boilers must be equipped with one or more pressure relieving devices, adjusted and sealed to discharge at a pressure not to exceed the maximum allowable working pressure of the boiler. The combined capacity of these devices must be such that with the fuel burning equipment installed and operating at maximum capacity, the pressure cannot rise more than 5 psi for steam boilers or 10% for water boilers above the maximum allowable working pressure of the boiler. Pressure relieving devices must be installed as required by the referenced code, be ASME stamped and rated, and must be installed with the valve spindle in the vertical position. Provide with manual lifting device for periodic testing. Boilers must comply with the local

air quality regulations. Boilers must be equipped with pressure and temperature gauges as required for proper maintenance and operation. Thermometers must also be provided at the inlet and exit of the boiler, and be visible to the operator from the operating area.

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

D3030 COOLING GENERATING SYSTEMS

1. **Chillers**: Air-cooled chillers must be type indicated in Part 3 and meet the requirements of ARI 550/590-98. Provide control panel with the manufacturers' standard controls and protection circuits. If DDC system is required in project, provide a control interface for remote monitoring of the chiller's operating parameters, functions and alarms from the DDC control system central workstation. Provide complete start-up and operational testing of chiller equipment.

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

3. **Refrigerants**: The use of Ozone Depleting Substances (ODS) as well as the qualifications and credentials of personnel servicing equipment that contains ODS is restricted. Refrigerants must have an Ozone Depletion Potential (ODP) of 0.0 with exception to R-123. The ODP must be in accordance with the "Montreal Protocol on Substances That Deplete the Ozone Layer", September 1987, as amended through 2000, sponsored by the United Nations Environment Programme.

4. **Coils**: If coatings are indicated in Part 3, provide with copper tube/copper fin construction or immersion applied, baked phenolic or other approved coating that passes the 3000 hour salt spray resistance test using ASTM B117 procedure. Field applied coatings are not acceptable.

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

D3040 DISTRIBUTION SYSTEMS

1. **Ductwork**: All ductwork must be provided in accordance with the latest SMACNA guidelines. Flexible duct lengths must not exceed 5 feet. Provide galvanized sheet metal ducts except for special exhaust systems and the following:
   a. For fume hood exhaust, kitchen hood exhaust, and dishwasher exhaust, provide stainless steel ductwork.
   b. For shower area exhausts, provide aluminum or stainless steel ductwork and sloped to drain provisions. After the shower exhaust is mixed with a volume of general exhaust air equal to 200% of the shower exhaust rate, standard galvanized construction may be used.
   c. Internal insulation-lined ductwork is prohibited in all areas. For ductwork located exterior to the building, provide externally insulated systems with sheet metal cladding. Provide external thermal insulation for all ductwork. Insulate ductwork in concealed spaces with blanket flexible mineral fiber. Insulate ductwork in Mechanical Rooms and exposed locations with rigid mineral fiber insulation. Provide insulation with factory applied all-purpose jacket with integral vapor retarder. In exposed locations, provide a jacket with white surface suitable for painting. Flame spread/smoke developed rating for all insulation shall not exceed 25/50. Minimum insulation thickness must be the minimum thickness required by ASHRAE 90.1. Insulate the backs of all supply air diffusers with blanket flexible mineral fiber insulation.
   d. The ductwork must be sealed with an approved duct sealer and in accordance with SMACNA standards. If leakage testing is indicated in part 3, the duct leakage must not exceed 2%.
   e. Provide manual volume dampers in each branch take-off from the main duct to control air quantity. Dampers must conform to SMACNA DCS. Dampers must be installed in accessible locations.

2. **Fire Dampers**: Fire dampers must be rated per UL 555. Fire dampers must be dynamic type rated for closure against a moving airstream. Provide fire dampers that do not intrude into the air stream when in the open position.

3. **Piping**:
   a. Provide insulated, steel piping for sizes 4 inches and larger and insulated copper piping for sizes less than 4 inches for water supply and return piping to serve the HVAC equipment throughout the facility.
   b. Provide system flushing and start-up for water systems.
   c. Oil piping: ANSI/ASTM A53 or A106 piping with associated ASME fittings or ASTM B88, type L or M copper tubing with ASME B16.26 flared fittings or compression type fittings.

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

5. **Air handling units**: Modular construction, double wall air handling units with minimum of 25 mm (1 inch) casing insulation. Provide ARI 430 certified fans and ARI certified

coils. Provide stainless steel, positive draining condensate drain pan. For 100% outside air units provide capability for cooling, heating, dehumidification and reheat.

D3050 TERMINAL AND PACKAGE UNITS

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

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

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

4. **Packaged units**:

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

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

D3060 CONTROLS AND INSTRUMENTATION

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

2. **Distributed Direct Digital Controls (DDC)**: DDC hardware must be UL-916 rated. Use controllers in a distributed control manner. Controllers must be stand alone with an internal clock and modem. The total number of I/O hardware points shall not exceed 48 in any controller. Provide sufficient memory for each controller to support required control, communication, trends, alarms, and messages. Provide communications ports for controller to controller interface and on-site interface. When providing a partial DDC system or connecting to an existing DDC system, provide a laptop computer with all necessary software for user interface.

D3070 SYSTEMS TESTING AND BALANCING

All HVAC water and air systems, both new and retrofit, must be TABed in accordance with NEBB or AABC standards. As part of any TAB air balancing effort, acceptable air quantity variations must be 0 to -10% for exhaust systems and 0 to +10% for supply air systems.

D40 FIRE PROTECTION

Provide new or extend existing Automatic Fire Sprinkler systems, Smoke and Heat detection systems, Fire Alarm and Mass Notification systems as required. The work for fire sprinklers, fire

alarm, smoke detection, and heat detection must be provided by contractors licensed to perform such work.

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

D4010 FIRE ALARM AND DETECTION

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

D4020 FIRE SUPPRESSION WATER SUPPLY AND EQUIPMENT

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

D4040 SPRINKLERS

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

D50 ELECTRICAL

D5010 ELECTRICAL SERVICE & DISTRIBUTION

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

1. **Wiring**: All wiring must be in electrical metal conduits and must be concealed except in the industrial spaces and at locations indicated in Part 3. No conductors are permitted to be smaller than No. 12 AWG, copper wires. Wiring below slab or underground must be in Schedule 40 PVC with ground wire. Exposed conduits on the exterior of the building are prohibited. Provide a ground conductor for each circuit; conduits must not be used as the sole means of grounding. Cable assemblies Types AC, MC, or MI and flat conductors may only be used in locations allowed by UFC 3-520-01. Circuit breakers must be bolt-on type. Series rated circuit breakers and fusible panelboards must not be used.

2. **Outlet Circuits** Lighting and convenience outlets must be on separate circuits. Install GFI protected receptacles at all wet or damp areas. Location of outlets must be as required by applicable codes and standards. Provide extra outlets for maintenance and service staffs in spaces such as corridors, hallways and other public spaces as identified below. All exterior outlets must be on separate circuits, be GFI protected, and equipped with a cover to prevent accidental water infiltration into the devices.

   In addition to the location requirements specified by NFPA 70, locate general purpose

and dedicated outlets in accordance with the following:

a. Mechanical equipment: Provide receptacle within 7.6 m (25 ft) of mechanical equipment on the interior and exterior of buildings.

b. Office, staff support spaces, and other workstation locations: One receptacle for each workstation with a minimum of one for every 3050 mm (10 ft) of wall space. When less than 3500 mm (10 ft) of wall at the floor line, provide a minimum of two receptacles spaced appropriately to anticipate furniture relocations. Limit loads to a maximum of four workstations per 20 amp circuit. See Appendix C, Table C1 for workstation load data.

c. Conference rooms and training rooms: One for every 3.6 m (12 ft) of wall space at the floor line. Ensure one receptacle is located next to each voice/data outlet. Provide one receptacle above the ceiling to support video projection device. Extend circuit to wall location for connection to motorized screen. When it is expected that a conference room table will be specifically dedicated to floor space in a conference room, locate a floor-mounted receptacle under the table. This receptacle may be part of combination power/communications outlet.

d. Provide power outlets throughout the building to serve all proposed equipment, including government furnished equipment, and allow for future reconfiguration of equipment layout. Provide power connections to all ancillary office equipment such as printers, faxes, plotters, and shredders. Provide dedicated circuits where warranted.

e. In each telecommunications room provide a dedicated 20 amp circuit with a receptacle adjacent to each rack or backboard for each of the following:

   1) CCTV for training systems

   2) CCSTV for security systems

   3) CATV

   4) Voice systems

   5) Data systems.

f. Provide dedicated receptacles as required throughout the facility for television monitors. These outlets will typically be located at the ceiling level for wall mounted television monitors.

g. Provide dedicated receptacles as required throughout the facility for tape players and disc players.

h. Corridors: One every 15 m (50 ft) maximum with a minimum of one per corridor.

i. Janitor's closet and toilet rooms: One GFI receptacle per closet. Provide GFI receptacles at counter height for each counter in toilets such that there is a minimum of one outlet for each two sinks.

j. Space with counter tops: One for every 1.200 m (4 ft) of countertop, with a minimum of one outlet. Provide GFI protection of outlets when located within 1.8 m (6 ft) of plumbing fixtures.

k. Building exterior: One for each wall, GFI protected and weatherproof.

l. Kitchen non-residential: One for each 3.05 m (10 ft) of wall space at the floor line. Provide GFI protection when located within 1.8 m (6 ft) of plumbing fixture.

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

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

o. Special purpose receptacles: Designer of Record must coordinate with the user

to provide any special purpose outlets required. Provide outlets to allow connection of equipment in special use rooms.

3. **Service Entrance Equipment**: When a switchboard or switchgear is required, the Designer of Record must utilize UFGS Section 26 23 00, *Low Voltage Switchgear or UFGS 26 24 13 Switchboards*, for the project specification, and must submit the edited specification section as a part of the design submittal for the project.

D5020 LIGHTING & BRANCH WIRING

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

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

D5030 COMMUNICATIONS & SECURITY

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

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

3. **Intercommunications Systems**: Provide an Intercommunication System to allow two-way communications between all locations identified in Part 3.

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

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

D5090 OTHER ELECTRICAL SERVICES

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

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

3. **Emergency Generators**: When an emergency generator is required, the Designer of Record must utilize UFGS Section 26 32 13.00 20 for the project specification, and must submit the edited specification section as a part of the design submittal for the project.

4. **Automatic Transfer and Bypass/Isolation Switches**: When an Automatic Transfer Switch is required, the Designer of Record must utilize UFGS Section 26 36 23.00 20 for the project specification, and must submit the edited specification section as a part of the design submittal for the project.

5. **Uninterruptible Power Supply (UPS) System:** When a UPS system is required, the Designer of Record must utilize UFGS Section 26 33 53.00 20 and must submit the edited specification section as a part of the design submittal for the project.

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

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

8. **Building Photovoltaic System:** When a PV system is required, the Designer of Record must utilize UFGS Section 26 31 00 for the project specification, and must submit the edited specification section as part of the design submittal for the project.

SECTION E. EQUIPMENT AND FURNISHINGS

E10 EQUIPMENT

Equipment and Appliances: Provide appliances and equipment to fulfill the work for Part 3. Whenever possible, all appliances and equipment provided for the facilities in the contract must be by the same manufacturer and must be the current model available at the time of proposals. Discontinued makes and models are prohibited. All appliances and equipment must comply with applicable Energy Star efficiency rating requirements and must be rated as high efficiency models. Appliances and equipment on California projects must comply with California Title 24 and be rated as high efficiency. All appliances must be of the same manufacturer and shall be the same, or similar in color. Submit catalog information for approval by the Contracting Officer prior to

purchasing, delivery and installation of the appliances at the job site. Equipment and appliances such as dishwashers, ice machines with drains, garbage disposers, and ovens/ranges are not considered FF&E.

E20 FURNISHINGS

E20 1.1 FURNISHINGS

The Contractor must have an Interior Designer, certified by the National Council for Interior Design Qualification (NCIDQ) or a state and/or jurisdiction Certified, Registered, or Licensed Interior Designer prepare both the FF&E and the SID Package and participate in any design charrettes to develop the building floor plan. As required, the Contractor must obtain services of equipment specialists to specify the audiovisual, shop, or specialty equipment. The Interior Designer and any specialists must not be affiliated with any furniture dealership/vendor or manufacturer. The Government Interior Designer reserves the right to approve/disapprove the qualifications of the Contractor's Interior Designer.

Systems furnishings installers must be the systems furniture manufacturer's approved dealer of record. In addition, installation dealers must be located within a 100 mile radius of the project site unless approved by the government Interior Designer.

For renovation projects, contractor to re-purpose/recycle existing furniture if not relocated by the government. Contractor to provide verification that the existing furniture was not disposed of at the landfill.

WINDOW TREATMENTS

Provide interior window coverings, associated hardware and controls at each exterior window and at any interior view window where privacy may be required. Refer to the Project Program for size, pattern and style of window treatments. At a minimum, functional window coverings are required on all projects.

Provide energy efficient solar shading systems for exterior windows. The system shall maintain visibility while reducing glare, solar heat gain during the summer and heat loss during the winter. Openness configuration shall be no more than 5% for most areas. The system fabrics and components must be dimensionally stable and must be manufactured to withstand fading, fire, mildew, and soiling. Product must have a minimum 10 year commercial warranty.

AUDITORIUM, LECTURE AND CLASSROOM SEATING

The system must permit the standards to be installed on radial lines from a common center for which concentric circles are determined with each row of units utilizing common middle standards. Standards in each row must be placed laterally so the aisle-end standards will be in alignment as indicated on seating layout drawing. The angle of inclination of backs must be adjusted for variations in sightlines. Mechanical attachment of components must be of sufficient flexibility so that when permanently assembled they will compensate for the changing dimensions laterally between standards caused by convergence toward the center. Seat and back attachments must absorb inaccuracies in lateral spacing of standards at point of attachment caused by unevenness of floor. Varying lateral dimensions of backs and seats must be in accordance with approved seating layout. Minimum width of seating unit must be 20 inches and may be used only to complete a specific row dimension.

TABLES FOR AUDITORIUM, LECTURE AND CLASSROOMS

Provide worksurfaces mounted to floor standards of tubular steel, sheet steel, or cast iron. The standards must be formed to fit the floor incline so that the standards will be vertical. The feet must be formed to eliminate tripping hazards and must have holes for bolt attachment to the floor. Provide riser standards, cantilevered standards and aisle and end standards as required. Provide communications, data and power routing as required. Provide a high-pressure plastic laminate over medium density particleboard for the worksurfaces with coordinating vinyl or resin edge detail.

MOVABLE FURNISHINGS

Furnishings, Fixtures, and Equipment (FF&E) includes furniture, shop equipment, audiovisual equipment, and specialty equipment. Weapon racks, drying cages, and lockers are not considered FF&E. FF&E must be fully integrated with the building systems and finishes. FF&E may also include specialty items for which the customer activity will be responsible for specifying.

Design and provide as required FF&E for all areas as developed during client programming. Design an FF&E package and prepare supporting plans and procurement data in accordance with the general interior design requirements in UFC 3-120-10.

FF&E PACKAGE

Design and provide a fully usable and complete facility to include a FF&E movable furnishings package from Government supply sources according to Federal Acquisition Regulations The FF&E will include, but not limited to, systems and modular furniture, training and conference furniture, seating, tables, artwork, decorative window covering, specialty furniture and equipment, dormitory room furnishings, and accessories. NAVSUP Blanket Purchase Agreements (BPA) must be used. The government will provide separate funding for the FF&E package. Construction funds will not be used. The FF&E Package must include shipping, freight, handling, installation and the HAR percentage as applied to the final FF&E total cost.

Authorization

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

The government Interior Designer will approve the final FF&E submittal. The FF&E package will be presented to the Contracting Officer and the Contractor must provide the FF&E exactly as specified and approved.

The Contractor will receive a letter of authorization from the Contracting Officer citing the name of the furniture dealer and other information to use when accessing the government

supply sources. FF&E items are subject to the Trade Agreement Act and Buy American Act.

PURCHASE AND INSTALLATION

The Contractor must coordinate the building completion date with the installation dealer specified in the FF&E Package. The Contractor or contractor's representative is responsible for the following: issuing purchase orders, receiving acknowledgements, sending copies of purchase orders to the installation dealer(s) specified in the FF&E package, and providing necessary deposits to furniture manufacturers.

The FF&E installation dealer(s) is responsible for the following: Receiving and installing all FF&E specified in the FF&E package, coordinating delivery and installation with the Contractor, inspecting for damage, providing delivery receipts to the Contractor, filing necessary freight claims, hanging artwork, bulletin boards, etc., removing packaging material, cleaning up the site upon completion, and adhering to Contractor's safety requirements.

Use of GSA Schedules and Blanket Purchase Agreements (BPAs)

The prime contractor or FF&E dealer will be authorized to purchase supplies or services from the Navy Furniture BPAs for FF&E requirements under the terms of the contract. The Contractor will receive a letter of authorization from the contracting officer citing the name of the furniture dealer and other information to use when accessing the government supply sources or BPAs.

Deposits

The Contractor should anticipate providing a deposit of between 30% to 50% of the furniture costs when placing their order.

The Contractor must also anticipate possible manufacturer price increases. Recommend ordering FF&E product once funds are received to avoid incurring additional costs. Delayed production and delivery dates can be noted at the time of order placement to coincide with building completion dates. Any costs incurred due to manufacturer price increases will be the burden of the contractor.

Davis Bacon Wages

Davis Bacon Wages do not apply to the FF&E installer from the government supply sources. The workforce for the FF&E installation and delivery shall be separate and distinct from the labor workforce performing under the construction contract.

Sales Tax

Exemptions for certain State or Local taxes may be available to the contractor and/or its subcontractors. The contractor must take maximum advantage of all exemptions, including obtaining a resale permit, from State and Local taxation authorities whether available to it directly or available to the contractor based on an exemption afforded the government. The responsibility for paying applicable taxes rests with the contractor. State and local taxes applicable to the FF&E line will be included with the subcontractor's quote, if applicable. Any items purchased as building materials such as carpet are taxable.

Bonds

FF&E line item is not considered construction and the prime contractor shall not be required to secure any additional bond for the award of the FF&E line item unless otherwise indicated in the RFP. If any additional bond is required for the FF&E line item it is to be included in the prime contractor's FF&E HAR.

Unique item identification and valuation is a system of marking and valuing items delivered to DoD that enhances logistics, contracting, and financial business transactions. The IUID policy is mandatory for all DoD contracts that require the delivery of items. An item is a single article or a single unit formed by a grouping of subassemblies, components or constituent parts The contractor must provide DoD Unique item identification, valuation and delivery of data for all required FF&E items for which the government's unit acquisition cost is $5,000 or more.

Buy American and Trade Agreement Acts

All supplies under the FF&E line item are subject to the Buy American Act and Trade Agreement Act as indicated in the project contract. The GSA contracts and NAVSUP Blanket Purchase Agreements are required to comply with the Buy American Act and Trade Agreement Act

Small Business Requirements

The FF&E is subject to the Contractor's Small Business Goals however the government requires the furniture be purchased from NAVSUP Blanket Purchase Agreements (BPA). Most manufacturers on the Office Furniture BPA are large business and most manufacturers on the Dorm and Quarters BPA are small business. Installation dealers are small business. Under the terms of the BPA, the FF&E must be ordered directly through the GSA manufacturer. Using pass-through companies to achieve Small Business Goals will not provide the Contractor credit unless they manufacturer 20% or provide 50% of the service purchased. The government will not incur additional costs to use small business.

Installation

The FF&E package includes the installation of all furniture and furnishings as specified in the FF&E package. The installation dealer specified in the FF&E package will receive, store, if required, transport to the project site, off load, inside deliver, unpack, assemble, place/install, clean, if required, and dispose of all the trash for all furniture and furnishings. The Contractor's Interior Designer will be responsible for specifying installation services and warehousing, as required, for all collateral equipment. It is the Contractor's responsibility to coordinate the building completion, occupancy, and furniture installation dates with the installation dealer specified in the FF&E package. Any costs associated with storing or delaying furniture shipments is the responsibility of the construction contractor.

Installation Warranty

All movable furnishings must be installed in accordance with the manufacturer's instructions and warranty requirements. All movable furnishings must be level and aligned and all doors, drawers and accessories must be level and aligned to open, close and otherwise operate smoothly and securely. All systems furniture must be installed by the systems furniture manufacturer's dealer of record and not the general Contractor. The Contractor must repair, to the customer's satisfaction, any/all damage to any facility finish that is a result of the furniture installation and correct all punch list items for the furniture/furnishings.

Ordering Documentation

Two copies of all ordering documentation must be provided to the contracting officer including Factory Order number (FO) and warranty information.

Post Award Changes

After award of the FF&E line item modification, any request to change the FF&E items must be submitted on the Contracting Officer. The FF&E modification has been accepted, priced, and negotiated based on specific line items as detailed in the final package. Those items have been agreed to considering color, specific type and quality of material, price, sustainability, life cycle, and dealership service. The Government will expect and require the contractor to provide exactly those items. Should changes become necessary, careful consideration is required to ensure that equivalent quality, price and other aspects of the item is maintained. Otherwise, price adjustments must be negotiated. The Contracting Officer will obtain approval from the Government Interior Designer/Collateral Equipment Manager in consultation with the client for any changes to the FF&E.

Post award FF&E manufacturer's price increases are the responsibility of the Contractor and must not be transferred to the government. Recommend ordering FF&E product once funds are received to avoid incurring additional costs. Delayed production and delivery dates can be noted at the time of order placement to coincide with building completion dates.

BEST VALUE DETERMINATION

A best value determination (BVD) is required by FAR 8.404 when placing orders against Federal Supply Schedules for the selection of furniture and furnishings. A BVD must also be provided for FF&E installation services. Best Value is defined in FAR 2.101 as ensuring that the order to be placed under a Federal Supply Schedule results in the lowest overall cost alternative (considering price, special features, administrative costs and client’s needs) to meet the government's needs.

The Contractor's Interior Designer is responsible for the following written BVD justifications:

$3,000 or less: For any procurement in the FF&E package with a value of $3,000 or less, the interior designer may utilize any BPA holder. If the BPA holders cannot supply the item, then any other manufacturer may be utilized.

Greater than $3,000 and $150,000 or less: for any procurement in the FF&E package with a value greater than $3,000 and $150,000 or less, the contractor's interior designer shall always review pricing from at least three manufacturers as well as UNICOR. In addition to the review of published list prices, the contractor's interior designer must confirm the pricing with the vendor. Manufacturer's quotes are NOT required. The BVD form must be completed and submitted for all FF&E procurements greater than $3,000 and $150,000 or less.

Greater than $150,000: The contractor's interior designer shall solicit proposals from all BPA holders under the applicable group for FF&E procurements greater than $150,000. UNICOR must always be solicited. The contractor's interior designer shall develop performance criteria and project requirements based on a generic design for the BPA holders and UNICOR to develop a price and performance proposal. The BVD form must be completed and submitted for all FF&E procurements greater than $150,000 and manufacturer's quotes and a summary of all proposals must be attached.

Federal Prison Industries (UNICOR) must be considered as part of all BVDs. This must be done

by sending an email with the requirements and evaluation criteria if they are not comparable in one or more areas of price, quality, and time of delivery, the designer can specify product under NAVSUP BPA or GSA schedule.

The best value determination must address issues such as space planning; human factors data related to anthropometrics (reach, clearance, adjustability), space, and acoustics; ergonomics; product quality (including construction and materials); sustainability features, product warranties; history of the product and/or manufacturer; ability to service products through dealers or others within a certain geographical range of the project; price (including freight); aesthetics; appropriateness; and lighting, power and telecommunications systems management and/or coordination as related to the facility (when applicable); and other project specific factors as identified and/or required. Emphasis must be to create a fully integrated design solution by providing quality products to meet the functional needs of the customer. Customer preferences must be considered. The focus must be on the best overall value. Use the GSA Best Value Determination forms provided in Part 6 of this RFP as guidelines for information to be provided.

SECTION F. SPECIAL CONSTRUCTION AND DEMOLITION

F10 SPECIAL CONSTRUCTION AND DEMOLITION

F1010 SPECIAL STRUCTURES

1. Pre-Engineered Buildings

Provide the design and installation in accordance with the UFC 3-101-01, *Architecture* and UFC 3-301-01, *Structural Engineering.*

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

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

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

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

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

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

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

d. **Wall and Roof materials -**

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

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

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

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

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

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

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

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

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

F20 SELECTIVE BUILDING DEMOLITION

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

Demolition Plan: No demolition work is permitted to take place until a Demolition Plan has been submitted to, and approved by, the Contracting Officer. The Plans must take into consideration, and indicate method of removal, disposition, and abatement of environmentally hazardous materials. Demolition, disposition, and abatement of hazardous materials must comply with all applicable Local, State, and Federal regulations and laws. If destructive investigation is to occur, the Contracting Officer shall approve a Destructive Investigation Plan.

When hazardous materials such as asbestos, lead paint, PCB and other hazardous materials are involved in the performance of the work, the contractor must abate, remove and manage the hazardous materials in construction and finish materials such as insulation, flooring, wall materials, ceiling materials, roofing materials, heating, plumbing, ventilation, air conditioning equipment and

installations in accordance with National as well as local Environmental Protection Laws and Regulations.

F2020 HAZARDOUS COMPONENT ABATEMENT

1. Asbestos in Schools and Child Occupied Facilities: For projects that require removal or disturbance of asbestos containing materials within schools and child occupied facilities, perform work in accordance with the edited UFGS 02 82 16, Asbestos Remediation.

2. Asbestos Materials: Asbestos must be removed, transported and managed in accordance with the edited UFGS 02 82 16, Asbestos Remediation.

3. Lead Based Paint in Target Housing and Child Occupied Facilities: Perform work for projects that require removal or disturbance of painted surfaces within target housing and a child occupied facilities in accordance with the edited UFGS 02 82 33, Lead Remediation.

4. Paint Related Work: Perform work which requires the disturbance of paint that have been determined to contain all or any of the following: lead, cadmium and chromium in accordance with the edited UFGS 02 83 13, Lead Remediation.

5. LLR Components: Perform work which requires removal of mercury and LLR components in accordance with the edited UFGS 01 57 19, Temporary Environmental Controls.

6. PCBs: Perform work which requires removal of PCB containing components or materials in accordance with the edited UFGS 02 84 33, Removal and Disposal of Polychlorinated Biphenyls (PCBs).

7. Animal Droppings: Perform work which requires removal of animal droppings in accordance with the edit UFGS 01 57 19, Temporary Environmental Controls.

8. Mold and Spores: Perform work which requires removal, disposal and remediation of mold contaminated areas in accordance with the edit UFGS 02 85 00, Mold Remediation.

9. Radon: Perform work which involves implementation of a radon mitigation system in accordance with the edited UFGS 31 21 13, Radon Mitigation.

10. Mercury: Perform work which requires the removal of mercury containing equipment in accordance with the edited UFGS 02 84 16, Handling of Lighting Ballasts and Lamps Containing PCBs and Mercury.

11. Hazardous Materials Reporting:

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

SECTION G. BUILDING SITEWORK

G10 SITE PREPARATIONS

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

2. **Project Limitations**: Prior to the start of design, determine the exact limit-of-work line for the project periphery, considering items such as, but not limited to, utility work, landscape re-vegetation of disturbed areas, and lay down areas. The Civil Engineer of Record in coordination with other design team disciplines must determine limit-of-work lines. Minimize the impact of construction activity on operations and neighboring facilities.

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

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

G1010 SITE CLEARING

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

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

G1020 SITE DEMOLITION & RELOCATIONS

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

Remove existing utility structures to 900 mm (3 feet) below existing or new adjacent grade,

whichever is greater.& Break up bases to permit drainage. Fill with clean sand.

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

G1030 SITE EARTHWORK

The DOR must utilize UFGS Section 31 23 00.00 20 for the project specification and must submit the edited section as a part of the design submittal. Perform quality assurance for earthwork in accordance with UFGS Section 31 23 00.00 20. If sheeting/shoring or dewatering is required, the Contractor must provide a registered Professional Engineer to provide excavation, sheeting, shoring, and dewatering plans and inspection of excavations and soil/groundwater conditions throughout construction. The Engineer must be responsible for performing pre-construction and periodic site visits throughout construction to assess site conditions. The Engineer, with the concurrence of the contractor and the Contracting Officer, must update the excavation, sheeting, shoring, and dewatering plans as construction progresses to reflect actual site conditions and must submit the updated plan and a written report (with professional seal) at least monthly informing the Contractor and the Contracting Officer of the status of the plan and an accounting of Contractor adherence to the plan; specifically addressing any present or potential problems. The Engineer must be available to meet with the Contracting Officer at any time throughout the contract duration.

G20 SITE IMPROVEMENTS

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

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

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

   Provide pavement design and pavement section materials in accordance with UFC 3-201-01, *Civil Engineering*. Provide pavement markings in accordance with the SHS. Design materials for life expectancy of at least 3 years under an average daily traffic count per lane of approximately 9000 vehicles. Water based paints must have durability rating of at least 4 when determined in the wheel path area. Provide a half-rate initial marking application on bituminous pavements. Provide the remaining application at the end of the normal curing period.

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

3. **Performance Verification And Acceptance Testing**:
   a. **Subgrade Preparation:** If required by the Designer of Record, perform proof rolling. Proof rolling must be performed in the presence of the Contracting Officer. Rutting or pumping of material must be undercut as directed by the Contracting Officer and replaced with satisfactory soil materials as defined by the

Geotechnical Engineer.

b. **Base Course Performance Verification**: At a minimum, Contractor must perform visual performance verification. Surface must be smooth with no ruts, sloped or crowned to not pond water.

c. **Bituminous Concrete Pavement Performance Verification**: At a minimum, Contractor must perform visual performance verification. Finished surface must be uniform in texture and appearance, free of defects such as cracks and creases, and be sloped or crowned so as to not pond water.

d. **Portland Cement Concrete Pavement Performance Verification**: At a minimum, Contractor must perform visual performance verification. Finished surface must be uniform in texture and appearance, free of defects such as cracks and spalls, and be sloped or crowned so as to not pond water.

e. **Concrete Joint Performance Verification**: Joint sealer that fails to cure properly, or fails to bond to joint walls, or reverts to uncured state or fails in cohesion, or shows excessive air voids, blisters, or has surface defects, swells, or other deficiencies, or is not recessed within indicated tolerances will be rejected. Remove rejected sealer, re-clean and reseal joints.

4. **Bases and Subbases:**

a. Prepare subgrade in accordance with Section G10, *Site Preparation*. Geotextiles may be used for separation or reinforcement in accordance with manufacturer's instructions. Provide base course under paved areas in accordance with the State Highway specifications (SHS) in the state where the project is located.

b. Place base course in accordance with the SHS for that particular base course and in layers of equal thickness with no compacted layer more than 6 inches (150 mm) thick. Compact base course at optimum moisture content to 100 percent ASTM D 1557 maximum dry density.

c. Where SHS are not available or applicable, the Designer of Record must utilize the applicable UFGS Specification Sections referenced under paragraph 1.1.2 entitled "Government Standards" for the project specification. Submit these specifications in edited form as a part of the design submittal for the project.

5. **Curbs and Gutters:** Provide concrete curbs and gutters in accordance with the SHS and standards or as specified in UFC 3-201-01, *Civil Engineering*, whichever is more stringent. Where the SHS do not include concrete materials for curbs and gutters, provide concrete in accordance with the applicable standard mix of the SHS for a minimum compressive strength at 28 days of 3500 psi (25 MPa) concrete.

6. **Paved Surfaces:** Where SHS are not available or applicable, the Designer of Record must utilize the applicable UFGS Specification Sections for the project specification. Submit these specifications in edited form as a part of the design submittal for the project.

7. **Pavement Mix:**

a. **Bituminous Concrete Pavement:** Provide bituminous concrete pavement in accordance with the applicable standard mix of the SHS based on the pavement design and vehicle loading indicated in this RFP.

b. **Bituminous Concrete Placement:** Provide bituminous concrete placement, including minimum temperature during placement, joints, and maximum lift thickness in accordance with the SHS. Compact bituminous concrete in accordance with the SHS, modified to 96 percent of maximum laboratory density.

c. **Portland Cement Concrete Pavement:** If reinforced, provide the welded wire fabric in conformance to ASTM A185. Provide bar reinforcement in conformance to ASTM A615/A615M, Grade 400 (Grade 60). Provide concrete in accordance with the applicable standard mix of the SHS for the design strength required by UFC 3-201-01, *Civil Engineering*, plus any allowable

deviations. Unless noted otherwise in Part 3 or Part 6, provide a minimum compressive strength at 28 days of 3500 psi (25 MPa) concrete. If required for applicable sustainability goal, provide Portland cement concrete pavement with a Solar Reflectance Index (SRI) greater than or equal to 29.

8. **Joints for Portland Cement Concrete Pavement:** Provide joints in accordance with SHS and the applicable portions of UFC 3-250-01, *Pavement Design for Roads and Parking Areas*. Install joints in a manner and at such time to prevent random or uncontrolled cracking. Joints must form a regular rectangular pattern. Wherever curved pavement edges occur, make joints to intersect tangents to curve at right angles.
   a. **Expansion Joints:** Provide thickened edge expansion joints at the intersection of two rigid pavements. Use preformed joint filler, ASTM D1751. Filler must be compatible with joint sealer material. Securely hold preformed joint filler in position during concreting operations.
   b. **Isolation Joints:** Provide thickened edge isolation joints by placing a 1/2-inch (12 mm) preformed joint filler (ASTM D 1751) around each structure that extends into or through the pavement before concrete is placed at that location.
   c. **Contraction Joints:** Saw joint lines within specified tolerance, straight, and extend for width of transverse joint, and for entire length of longitudinal joint.
   d. **Construction Joints:** If an emergency stop occurs remove the concrete back to location of transverse joint and install a construction joint.
   e. **Joint Sealants:** ASTM D5893/D5893M; provide single component cold-applied silicone. Silicone sealant must be self-leveling and non-acid curing.
   f. **Preformed Compression Seals:** Use preformed compression seals in areas where silicone joint sealant does not perform, such as areas subject to water inundation, blasts, or constant/repeated fuel spillage. ASTM D 2628. ASTM D 2835, for lubricant.

9. **Prime Coat:** Use prime coat in accordance with the SHS. Prime coat must be emulsified asphalt materials.

10. **Tack Coat:** Tack coat is required for bituminous pavement overlays and on vertical cut faces of pavement patches. Provide tack coat in accordance with the SHS.

11. **Pavement Patches:** Provide pavement patches for existing pavements where required for installation of utility trenches. Sawcut 12 inches beyond edge of trench. Provide thicknesses of pavement materials equal to or greater than the existing pavement section. For spalls or repairs of existing concrete pavement, perform repairs in conformance with UFC 3-270-03, *Concrete Crack and Partial Depth Spall Repair*, and UFC 3-270-04, *Concrete Repair*. Spall repair materials must be either Rapid Setting Cementitious Concrete (RSCC), epoxy concrete, or polymer-modified Portland Cement (non-sag mortar) products specially formulated for spall repairs, with a proven record (in service at least three years) of satisfactory use under loading and environmental conditions similar to those at the location of intended use. Provide a manufacturer's data sheet and certificate supporting the satisfactory use to the Contracting Officer with the design. A product manufacturer's representative is required to be present during the initial two days of product application to verify that manufacturer's instructions for use are adhered to by the contractor. Give the Contracting Officer 7 days notice prior to the initial application in order to be present.

12. **Markings and Signage:** Provide pavement markings in accordance with the SHS. Design materials for life expectancy of at least 3 years under an average daily traffic count per lane of approximately 9000 vehicles. Water based paints must have durability rating of at least 4 when determined in the wheel path area. Provide a half-rate initial

marking application on bituminous pavements. Provide the remaining application at the end of the normal curing period. Provide signage in accordance with the MUTCD.

13. **Guardrails and Barriers:** Provide guard (guide) rails in accordance with the SHS. Where the SHS do not include materials for guardrails, provide guardrails in accordance with the applicable portions of the *AASHTO Roadside Design Guide*.

14. **Bollards:** For bollards to prevent damage, provide minimum 4 feet height, 4 inch diameter steel pipe filled with concrete, painted, and embedded in a portland cement concrete foundation. For bollards located at building entries or other high-visibility areas provide decorative bollards matching the design of the facility or consistent with the Base Exterior Architecture Plan (BEAP) and the Installation Appearance Plan.

15. **Resurfacing:** Adjust rims of existing utility structures to match proposed grades after resurfacing.
    a. **Slurry Seal:** ASTM D 3910 and in accordance with the SHS.
    b. **Bituminous Concrete Overlay:** Remove old pavement by cold milling to depths required to provide new surface and leave underlying materials intact. Clean the pavement of excessive dirt, clay or other foreign matter with power brooms and hand brooms immediately prior to the milling operation. Repair or replace damaged utility structures, valve boxes, or pavement that is torn, cracked, gouged, rutted, broken or undercut at no addition expense to the government. Provide bituminous concrete overlay produced from hot or cold recycling of the milled material or from virgin materials in accordance with the applicable provisions of UFC 3-201-01, *Civil Engineering*, and the standard mix of the SHS based on the pavement design and vehicle loading as indicated in this RFP.
    c. **Crack Sealing:** Use fiber reinforced crack sealer for sealing cracks in asphalt pavement after milling and prior to resurfacing. Provide crack sealing conforming to the following requirements in UFC 3-270-01, *Asphalt Maintenance and Repair*, and UFC 3-270-02, *Asphalt Crack Repair*.

16. **Parking Lots:** Refer to Pavements above.

17. **Permeable Pavements:** Provide permeable concrete pavers of solid interlocking paving units complying with ASTM C936, resistant to freezing and thawing when tested according to ASTM C67, and made from normal-weight aggregates. If required for applicable sustainability goal, provide permeable concrete pavers with a Solar Reflectance Index (SRI) greater than or equal to 29. Provide pervious concrete in accordance with UFGS Specification Section 32 13 43, *Pervious Concrete Paving*. Do not use asphalt-surfaced porous pavement.
    a. **Bases and Subbases:** Refer to Bases and Subbases paragraph above.
    b. **Curbs and Gutters:** Refer to Curbs and Gutters paragraph above**.**
    c. **Paved Surfaces:** Refer to Paved Surfaces paragraph above**.**
    d. **Markings and Signage:** Refer to Markings and Signage paragraph above. Provide water-based paints only.& Mark neatly to denote traffic lanes and parking spaces; mark in accordance with the requirements of UFC 3-201-01, *Civil Engineering*.
    e. **Guardrails and Barriers:** Refer to Guardrails and Barriers paragraph above**.**
    f. **Wheelstops:** Provide precast concrete wheelstops.

18. **Pedestrian Paving:** Locate new sidewalks such that they maintain continuity of pedestrian traffic to and from the existing sidewalks adjacent to the site(s).
    a. **Bases & Subbases:** Provide as required by local standards or geotechnical

report; refer to Bases and Subbases paragraph above.

b. **Paved Surfaces:**

c. **Concrete Sidewalks:** Provide sidewalks of Portland cement concrete pavement with 4 inches (100 mm) thick minimum or permeable pavement. Provide concrete and permeable pavement in accordance with Section G201003 and G2020, respectively. For PCC sidewalks, provide a broomed finish. Provide sidewalks of at least 5 feet (1.5 meters) wide, except that sidewalks connecting entry points of housing units to the housing unit's parking are required to be at least 36 inches (900 mm) wide. In housing areas, offset sidewalks paralleling streets to maintain a minimum grassed separation of 5 feet (1.5 meters) from the back face of the curb to the closest edge of the sidewalk Unless indicated otherwise, provide a transverse slope of 1/48. Limit variation in cross section to 0.25 inch in 5 feet (6 mm in 1.50 m). Submit samples boards per ESR G2050 and PTS G2050 and finish schedule on final plans. 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.

d. **Concrete Pavers as Sidewalk:** Concrete pavers shall meet ASTM C936. Install in accordance with manufacturers recommendations.

19. **Chain Link Fencing and Gates:** Chain link fence fabric must be at least 9 gauge (3 mm) steel wire mesh material (before any coating) with mesh openings not larger than 2 inches (51 mm). Do not use aluminum fabric, posts or accessories. Install fence in accordance with ASTM F567 and the manufacturer's written installation instructions. Provide rails in accordance with FS RR-F-191/3, Class 1, steel pipe, Grade A. Provide gates in accordance with FS RR-F-191/2 with posts and fabric as specified for fence. Provide posts and braces in accordance with FS RR-F-191/3, Class 1, steel pipe, Grade A. Each gate, terminal and end post will be braced with truss rods. Provide fencing accessories in accordance with FS RR-F-191/4. If PVC coating is required, provide accessories with PVC color coating similar to that specified for chain-link fabric or framework.

20. **Security Fencing:** Provide security fencing systems in accordance with UFC 4-022-03, *Security Fences and Gates*, and this RFP. Provide chain link fence in accordance with paragraphs above, except as noted otherwise. Ensure that the fabric has twisted and barbed selvage at the top and bottom. Do not provide top rails. Locate all posts and structural supports on the inner side of the fencing. Install outriggers facing outward except when the fence must be mounted directly on the property line. Provide signage at a minimum of 200 foot (61 m) intervals along the entire perimeter. Provide protective measures to prevent access through culverts, storm drains, sewers, air intakes, exhaust tunnels and utility openings or across drainage ditches or swales as required in UFC 4-022-03. Do not cover, block or lace openings in perimeter fencing and security fencing with material which would prevent a clear view of personnel, vehicles or material in the outer or inner vicinity of the fence line.

21. **Fence Grounding:** Grounding and bonding of the fencing must be in accordance with the National Electric Safety Code (NESC) - IEEE C2 and UFC 4-022-03. Ground fencing on either side of every gate and at other locations when the fencing is near and parallel to high tension power lines. Grounding is also required at intervals of 1000 feet (305 meters) to 1500 feet (457 meters) when the fencing runs through isolated areas and at lesser distances depending on the proximity of the fencing to public roads, highways and buildings where the fencing is around or within any explosive storage, production,

operating or handling areas.

22. **Enclosures for Utility Equipment:** Where fencing is used to provide an enclosure for utility equipment, ensure a minimum clearance is provided no less than 3 feet (900 mm) around the equipment to permit maintenance access and ventilation. Provide stone, gravel or concrete paving within the enclosure.

G2040 EXTERIOR FURNISHINGS

All site furnishings must be permanently attached to concrete pads. Site furnishings must conform to the Base Exterior Architecture Plan (BEAP) or Installation Appearance Plan (IAP) for each Activity. If no product guidance is given, coordinate material, finish and color with architecture (fiberglass and aluminum are not acceptable) and provide to the greatest extent possible, materials with industrial recycled content, preferably from regionally local manufacturers. At a minimum, provide a trash and ash receptacle at each entry and gathering/smoking area.

G2050 LANDSCAPING

G30 SITE CIVIL/MECHANICAL UTILITIES

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

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

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

G3010 WATER SUPPLY

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

2. **Notifications**: Notify the utility provider of the additional demand generated by the proposed facility. Provide a copy of all correspondence with the utility provider to the Government's Civil/Mechanical Reviewer.

3. **Performance Verification And Acceptance Testing**: Provide testing on water mains and service lines in accordance with the state waterworks' regulations and the following:
   a. Ductile iron and other materials: AWWA C600.
   b. PVC: AWWA C605.

   Whichever is more stringent. Do not begin testing on any section of a pipeline where concrete thrust blocks have been provided until at least 5 days after placing of the concrete.

4. **Disinfection:** Disinfect new water piping and existing water piping affected by Contractor's operations in accordance with the state waterworks' regulations and AWWA C651.

5. **Water Distribution Mains:** For underground applications, water mains 12 inches (300 mm) in diameter and less must be ductile iron or PVC. Water mains deeper than 10 feet (3.0 m) or larger than 12 inches (300 mm) in diameter must be ductile iron. For aboveground applications, water mains shall be flanged ductile iron pipe.
   a. Ductile Iron Pressure Pipe:
      1) Pipe: AWWA C151, Pressure Class 350.
      2) Fittings: AWWA C110 or AWWA C153.
      3) Interior Lining: AWWA C104.
      4) Exterior Protection (if required): AWWA C105, polyethylene encasement.
   b. PVC Pressure Pipe:
      1) Pipe: AWWA C900, Pressure Class 150.
      2) Fittings: Ductile Iron (AWWA C110 or AWWA C153).
   c. Flanged Ductile Iron Pipe:
      1) Pipe: AWWA C115 and its appendices.
      2) Fittings: AWWA C110 or AWWA C153.
      3) Lining: AWWA C104.

6. **Installation of Water Distribution Mains:**
   a. Ductile Iron: AWWA C600.
   b. PVC: AWWA C605.
   c. Provide nondetectable warning tape and a continuous length of tracer wire for the full length of each run of nonmetallic piping below grade. Warning tape to be color coded with warning and identification of utility type imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (utility type) LINE BELOW" or similar wording. Color to be blue for potable water systems and purple for nonpotable, reclaimed water, and irrigation lines. Terminate tracer wire above grade at valve boxes and at exterior of building.

7. **Connections to Existing Water Lines:** Make connections to existing water lines after approval from the system owner is obtained and with a minimum interruption of service on the existing line. Make connections to existing lines under pressure in accordance with the recommended procedures of the manufacturer of the pipe being tapped.

8. **Water Service Lines:** Water service lines less than 4 inches (100 mm) in diameter must be copper tubing or PVC. Water service lines 4 inches (100 mm) and 6 inches (150 mm) in diameter must be ductile iron pipe and PVC pressure pipe; see paragraph "Water Distribution Mains" for additional requirements for ductile iron and PVC piping.
   a. Copper Tubing
      1) Pipe: ASTM B 88/B 88M, Type K.
      2) Fittings for Solder-Type Joint: ANSI B16.8 or ASME B16.22.
      3) Fittings for Compression-Type Joint: ASME B16.26, flared tube type.

b. PVC Pressure Pipe
1) Pipe: ASTM D1785, Schedule 40 or ASTM D 2241, with SDR rating for 160 psi (1.1 MPa) pressure rating.
2) Fittings: ASTM D 2466.
3) Joints: Elastomeric gaskets for pressure rating; solvent cement joints, ASTM D 2564.

c. Service Connections: Connect service lines 2-inch (50 mm) diameter or less to the main by a corporation stop and install a gate valve on service line below the frostline.
1) Ductile-iron water mains: AWWA C600.
2) PVC water mains: UBPPA UNI-PUB-8 and the recommendations of AWWA M23, Chapter 9, "Service Connections."

9. **Installation of Water Service Lines:** Install pipe, fittings and accessories in accordance with manufacturer's instructions.
a. Metallic Piping: applicable requirements of AWWA C600.
b. PVC: ASTM D 2774 and ASTM D 2855.

10. **Corrosion Protection:** Provide insulating joints to prevent contact between dissimilar metals at the joint between adjacent sections of piping in accordance with the pipe manufacturer's recommendations. Ensure that there is no metal-to-metal contact between dissimilar metals after the joint has been assembled. To prevent the possibility of bi-metallic corrosion, service lines of dissimilar metal to the water mains and the attendant corporation stops must be wrapped with polyethylene or suitable dielectric tape for a minimum clear distance of 3 feet (900 mm) from the main.

11. **Valves:** Install valves with the same diameter and have the same joint ends as the mains to which they are installed. Each type of valve must be of one manufacturer.
a. **Gate Valves:** Install valves at all new points of connection. At a minimum, locate valves to ensure that no more than two fire hydrants will be out of service in the event of a single break in a water main. Locate valves outside of pavement and heavy traffic areas whenever possible.
b. **Gate Valves 3-inch (75 mm) and Larger in Diameter:**
1) Valves (20-inch and smaller in diameter): AWWA C509 or AWWA C515, nonrising stem and of one manufacturer.
2) Valves (greater than 20-inch in diameter): AWWA C500.
3) Valves for Indicator Post: AWWA C509 or AWWA C500, as indicated above, with indicator post flange in accordance with applicable requirements of UL 262.
4) Interior Coating: AWWA C550.
c. **Gate Valves Smaller than 3-inch (75 mm) in Diameter:** MSS SP-80, Class 150, solid wedge. Provide valves with flanged or threaded end connections, with unions on both sides of the valve and a handwheel operator.
d. **Valve Box:** Provide a cast iron, adjustable, valve box for each gate valve on buried piping. Provide valve boxes of a size suitable for the valve on which it is to be used with a minimum diameter of 5-1/4 inches (130 mm). Provide a round head and cast the word "WATER" on the lid.
e. **Check Valves:** Provide check valves sized 2-inches (50 mm) to 24-inches (600 mm) as swing-check type (AWWA C508) and with a protective epoxy interior coating conforming to AWWA C550. For underground applications, provide check valve in a valve vault.
f. **Air Release, Air/Vacuum, and Combination Air Valves:** AWWA C512 and AWWA M51.
g. **Corporation Stops:** If service lines 2-inch diameter or less are tapping water mains, provide corporation stops. The corporation stops must be ground key type, bronze, ASTM B61 or ASTM B62.

h. **Installation of Valves:** Make and assemble joints to valves as specified for making and assembling the same type of joints between pipe and fittings.

12. **Water Meters:** Provide water meter and remote reading as required by the utility provider and in accordance with AWWA standards.

13. **Backflow Prevention:** Provide backflow prevention and cross connection control in accordance with AWWA M-14 and governing local/state plumbing codes and waterworks' regulations.

14. **Fire Hydrants:** Fire hydrants must be of one manufacturer and in accordance with UFC 3-600-01, *Fire Protection Engineering*. Coordinate with the project's fire protection designer of record. Provide protection for fire hydrants located in areas subject to vehicle damage. Fire hydrants must have National Standard threads on hose and pumper connections. Provide a 6 inch (150 mm) inlet, two 2.5 inch (62 mm) hose connections and one pumper connection sized to accommodate local fire department equipment requirements. Paint hydrants with at least one coat of primer and two coats of enamel paint. Barrel and bonnet colors shall be in accordance with UFC 3-600-01. Stencil hydrant number and main size on the hydrant barrel using black stencil paint.
    a. Dry Barrel Fire Hydrants: AWWA C502 with frangible sections.
    b. Wet Barrel Fire Hydrants AWWA C503 or UL 246, "Wet Barrel" design, with breakable features.
    c. Installation: Install hydrants with the pumper connection facing the adjacent paved surface. If there are two, paved adjacent surfaces, contact the Contracting Officer for further direction.

15. **Thrust Restraint:** Provide thrust restraint for all piping, valves, fittings, and other appurtenances of the water distribution system. Provide thrust restraint using restrained joints in accordance with pipe manufacturer's recommendations, AWWA C600 and if for fire service main, NFPA 24.

16. **Fire Protection Water Distribution:** Refer to applicable portions of this Section and Section D40, *Fire Protection Systems*. Water main piping, service lines, fittings, valves, accessories and all other materials must meet the American Water Works Association (AWWA) standards for a minimum system working pressure of 200 psi (1380 kPa).
    a. **Detector Checks:** UL 312; detector check includes bypass meter, piping, gate valves, check valve and connections to detector check valve. Set valve to allow minimal water flow through bypass meter when major water flow is required.
    b. **Fire Department Connections:** UL 405.
    c. **Indicator Posts:** UL 789.

G3020 SANITARY SEWER

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

2. **Notifications:** Notify the utility provider of the additional wastewater flow generated by the proposed facility. Provide a copy of all correspondence with the utility provider to the Government Civil Reviewer.

3. **Wastewater Pump Station:** Where required, provide a duplex, grinder pump station in

accordance with the utility provider's requirements. Provide pump station wet well of fiberglass construction. Provide adjacent valve vault of precast concrete construction.

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

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

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

4. **Performance Verification And Acceptance Testing:**

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

1) Visual Test: Remove manhole covers and conducts a visual inspection as follows:

a) Inspect for visible leaks in lines or manholes.
b) Inspect condition of grout in the interior joints of the manholes.
c) Inspect manhole frames and covers for proper type and installation.
d) Inspect to see if lines are free of debris.
e) Inspect manhole benches and inverts.
f) Check alignment and grade of gravity lines by laser or by introducing sufficient water into the line to verify the absence of sags, as directed by the Contracting Officer.
g) Mirror test: Check each straight run of pipeline for gross deficiencies by holding a light in a manhole; it shall show a full circle of light through the pipeline when viewed from the adjoining end of line.

2) Leakage Tests: Test lines for leakage by either infiltration tests or exfiltration tests, or by low-pressure air tests in accordance with the following:

a) Exfiltration Tests: ASTM C 969M (ASTM C 969) and perform calculations in accordance with its Appendix.
b) Low-pressure Air Tests: Pipelines: ASTM C 924M (ASTM C 924) and perform calculations in accordance with its Appendix. PVC plastic pipelines: UBPPA UNI-B-6 and perform calculations in accordance with its Appendix.

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

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

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

b Sanitary Sewer Manholes Verification Testing: Provide testing on sanitary sewer manholes in accordance with the state sewerage regulations. At minimum, perform hydraulic testing in accordance with ASTM C 969M (ASTM C 969).

c. Wastewater Pump Station Verification Testing: Test the wastewater pump station in accordance with the state sewerage regulations. Conduct testing on discharge piping and force main in accordance with tests for water distribution mains; see G30, paragraph 1.3.2. Test pumps, controls, and alarms, in operation, under design conditions to ensure proper operation of all equipment.

d. TV Inspection for Sanitary Sewer: Post-installation TV inspection will be performed on all segments of the installed system when the total footage of sanitary sewer mains installed in the contract is in excess of 300 feet. Complete the post-installation TV inspection to confirm that the completed lines are free of defects. For video recordings include an audio track recorded by the inspection technician during the actual inspection work describing the parameters of the line being inspected. The minimum information to be included is the pipe material, pipe size, starting and stopping manholes and descriptions of any features as they occur. Video recording playback must be at the same speed that it was recorded. Permanently label CDs / DVDs according to their contents; CDs / DVDs will become the property of the Government. Provide all TV inspections of sanitary sewer mains in accordance with the Pipeline Assessment and Certification Program as sponsored by the National Association of Sewer Service Companies (NASSCO). Prior to initiating CCTV inspection, provide copies of PACP Certification of the operators that will be performing the work. Complete pipe segments and manhole work, including pipe penetrations, manhole benches, main line and manhole visual inspection, pressure testing, deflection and leakage tests on a section of line (manhole to manhole) prior to performing TV. Complete post-installation TV inspection in the presence of the Contracting Officer or his designated representative. The importance of accurate measurements is emphasized. The meter device must be accurate to one tenth of a foot. Utilize the full capabilities of the camera equipment to document the completion and the conformance of the work to the Contract Documents. Provide a full 360Ã‚Â° view of the pipe, joints and service connections. Move the camera through the line in either direction at a moderate rate, stopping when necessary to permit proper documentation of the sewer's condition. The maximum speed must be no greater than 30 feet per minute. Use manual winches, power winches, TV cable and powered rewinds or other devices that do not obstruct the camera view or interfere with the proper documentation of the sewer conditions to move the camera through the sewer line. Once video recording has commenced, the recording must be continuous, without interruption, until the termination manhole is reached. Provide a color video showing the completed work. Prepare and submit Television Inspection Logs providing location of service connections along with the location of any discrepancies. Keep computer printed location records (Television Inspection Logs) and clearly show the location and orientation in relation to an adjacent manhole for each point observed during the TV inspection. Record features of significance such as locations and orientations of service connections, pipe deflections, leaks, rolled or dislodged gaskets, sags or bellies in the line, or wide joints. Document noted defects and lateral connections as color digital files and color hard copy prints. Photo logs must accompany each photo submitted. Prior to submission of the TV inspection video, Television Inspection Logs, and digital photographs to the Contracting Officer, review the submittal items to ensure that they meet the quality criteria set forth in this specification. A copy of such video along with the Television Inspection Logs and Digital photographs must be supplied to the

Contracting Officer within five (5) business days of completion of the video-inspection. In the event that the video, Television Inspection Logs or digital photographs are deemed of poor quality or substandard by the Contracting Officer, the videos, and / or Television Logs, or digital photographs will be returned and a re-inspection provided by the Contractor, at no additional cost to the Government.

5. **Gravity Sewer Piping:** Gravity sanitary sewer mains and laterals must be Ductile Iron, PVC or Polypropylene sewer pipe and fittings. Use Ductile Iron under roadways or at depths greater than 10 feet (3.0 m). PVC and Polypropylene may only be used under roadways or at depths greater than 10 feet (3.0 m) when written approval is received by the Government's Civil Reviewer or indicated in another part of the RFP.
   a. PVC Gravity Sewer Pipe
      1) Piping and Fittings: ASTM D3034 or ASTM F679, SDR 35.
      2) Joints: ASTM D3212 and ASTM F477.
   b. Ductile Iron Gravity Sewer Pipe
      1) Piping: ASTM A746. Provide required Thickness Class based on design information and methods in ASTM A746.
      2) Fittings: AWWA C110 or AWWA C153.
      3) Joints: AWWA C111.
      4) Interior Coating: AWWA C104.
      5) Exterior Protection (if required): AWWA C105, polyethylene encasement.
   c. Dual Wall and Triple Wall Polypropylene Sewer Pipe 12" to 60"
      1) Piping and Fittings: ASTM F2736 and ASTMF2764/F2764M.
      2) Joints: ASTM D3212 and ASTM F477.

6. **Connections to Existing Lines:** Obtain approval from the Contracting Officer before making a connection to an existing line. Conduct work so that there is minimum interruption of service on existing line and provide a new manhole at the connection point.

7. **Gravity Sewer Installation:** Install pipe, fittings and accessories in accordance with manufacturer's instructions.
   a. PVC and Dual and Triple Wall Polypropylene: ASTM D2321. Do not use ASTM D2321 Class IV or V materials for bedding, haunching or initial backfill materials.
   b. Ductile Iron: AWWA C600.
   c. Provide nondetectable warning tape and a continuous length of tracer wire for the full length of each run of nonmetallic piping below grade. Warning tape to be color coded with warning and identification of utility type imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (utility type) LINE BELOW" or similar wording. Color to be green for sewer systems. Terminate tracer wire above grade at valve boxes and at exterior of building.

8. **Piping for Gravity Sewer Cleanouts:** Install cast iron pipe and fittings in accordance with the recommendations of the pipe manufacturer.
   a. Cast-Iron Soil Pipe for Cleanouts
      1) Pipe: ASTM A 74, service.
      2) Joints: ASTM C 564 compression-type rubber gaskets.
      3) Exterior Protection (if required): AWWA C105, polyethylene encasement.

9. **Sanitary Sewer Manholes and Cleanouts:** Provide all materials, equipment, labor, testing, and miscellaneous related items for the sanitary manholes in accordance with the following:
   a. Set manhole rim elevations flush with finished surface of paved areas or 1 inch (25 mm) above finished grade in unpaved areas.

b. Resilient connectors for making joints between manhole and pipes entering manhole must conform to ASTM C 923/C 923M.

c. Provide drop manholes when a gravity sewer pipe enters a manhole at an elevation of 24 inches (610 mm) or more above the manhole invert.

d. Precast Concrete Manholes: ASTM C 478/C 478M; base and first riser must be monolithic. Precast manhole sections must have:
1) ASTM C 990/C 990M butyl gaskets;
2) ASTM C 443/C 443M rubber O-ring joints; or
3) ASTM C 443, Type B gaskets.

e. Cast-in-Place Concrete Manholes: Reinforced concrete; designed according to ASTM C 890 for A-16 (AASHTO HS20-44), heavy-traffic, structural loading. Provide concrete work in accordance with ACI 301/301M and ACI 350-01; provide a minimum compressive strength of 4000 psi (28 MPa).

f. Manhole Frames and Covers: Frame and cover must be cast gray iron, ASTM A48/A48M, Class 35B, cast ductile iron, ASTM A536, Grade 65-45-12, or reinforced concrete, ASTM C478 ASTM C478M. Frame and cover must be designed to accommodate the imposed live load. Stamp or cast the words "Sanitary Sewer" into covers so that it is plainly visible.

g. Manhole Steps:
1) Zinc-coated steel: 29 CFR 1910.27.
2) Plastic or rubber coating pressure molded to steel: ASTM D 4101, copolymer polypropylene; or ASTM C 443/C 443M, except shore A durometer hardness must be 70 plus or minus 5.
3) Aluminum steps or rungs will not be permitted. Steps are not required in manholes less than 4 feet (1.2 m) deep.

10. **Manhole Construction:** Where a new manhole is constructed on an existing line, remove existing pipe as necessary to construct the manhole. Cut existing pipe so that pipe ends are approximately flush with the interior face of manhole wall, but not protruding into the manhole. For changes in direction of the sewer and entering branches into the manhole, make a circular curve in the manhole invert of as large a radius as manhole size will permit. For cast-in-place concrete, no parging will be permitted on interior manhole walls.

11. **Connections to Existing Manholes:** Center pipe connections to existing manholes on the manhole. Holes for the new pipe must be of sufficient diameter to allow packing cement mortar around the entire periphery of the pipe but no larger than 1.5 times the diameter of the pipe. Cut the manhole in a manner that will cause the least damage to the walls.

12. **Cleanouts:** Construct cleanouts of cast iron soil pipe and fittings; see paragraph, "Piping for Gravity Sewer Cleanouts" above.

13. **Lift Stations and Pumping Stations:** If a pump station is allowed, provide all materials, equipment, labor, testing and miscellaneous related items for a packaged lift or pump station system for the facility in compliance with the UFC 3-240-01, *Wastewater Collection*; the state sewerage regulations; and the utility provider's requirements.

a. **Submersible Pumps:** Provide pumps capable of handling raw wastewater and passing spheres of at least 3 inches (75 mm) in diameter. The pump's suction and discharge openings must be at least 4 inches (100 mm) in diameter. Provide submersible type sewage pumps, with guide rail system. Include ASTM A48/A48M, Class 25, nonclog, cast-iron impeller; and hermetically sealed motor with moisture-sensing probe, mechanical seals, and waterproof power cable. Construct the guide rail system of stainless steel. Provide a stainless steel lifting chain for raising and lowering the pump in the basin.

b. **Grinder Pumps:** Provide grinder-type sewage pumps, with guide rail system.

Include stainless steel or bronze impeller and hermetically sealed motor with moisture-sensing probe, mechanical seals, and waterproof power cable. Construct the guide rail system of stainless steel. Provide a stainless steel lifting chain for raising and lowering the pump in the basin.

c. **Suction Lift Pumps:** Provide pumps capable of handling raw wastewater and passing spheres of at least 3 inches (75 mm) in diameter. The pump's suction and discharge openings must be at least 4 inches (100 mm) in diameter. Provide dry-chamber-mounting, vacuum-primed, nonclog sewage pumps located in dry compartment above wet pit. Include ASTM A48/A48M, Class 25, nonclog, cast iron impeller; mechanical or stuffing box seals; pedestal mounted motor; and suction piping extending to bottom of wet pit. Provide suction-lift pumps capable of automatic rapid self priming and re-priming at the "lead pump on" elevation. Suction piping must not exceed 25 feet (7.6 meters) in total length. Priming lift at the "lead pump on" elevation must include a safety factor of at least 4 feet (1.2 meters) from the maximum allowable priming lift for the specific equipment at design operating conditions. The combined total of dynamic suction-lift at the "pump off" elevation and the required net positive suction head at design operating conditions must not exceed 22 feet (6.7 meters).

d. **Pump Motors:** Provide pump motor sized to accommodate pump operation along the entire impeller curve.

e. **Station Piping Within Wet Well and Valve Vault:**
Piping Less than 4-Inch (100 mm) in Diameter

1) PVC Pressure Pipe

a. Pipe: ASTM D 1785, Schedule 80.b. Fittings: Schedule 80 socket fittings, ASTM D 2467; Schedule 80 threaded fittings, ASTM D 2464.**Piping 4 inch (100 mm) Diameter and Larger**

2) Flanged Ductile Iron Pipe

a. Pipe: AWWA C115 and its appendices.
b. Fittings: AWWA C110 or AWWA C153.c. Lining: AWWA C104.

14. **Force Mains:**

a. **Force Mains for Submersible and Suction Lift Pumps:** Force mains must be at least 4 inches (100 mm) in diameter and must be either ductile iron or PVC pressure pipe.

1) Ductile Iron Pressure Pipe

a. Pipe: AWWA C151, Pressure Class 350.
b. Fittings: AWWA C110 or AWWA C153.
c. Interior Lining: AWWA C104.d. Exterior Protection (if required): AWWA C105, polyethylene encasement.

2) PVC Pressure Pipe

a. Pipe: AWWA C900, Pressure Class 150. AWWA C905.
b. Fittings: Ductile Iron (AWWA C110 or AWWA C153).b. **Force Mains for Grinder Pumps:** Force mains less than 4 inches (100 mm) in diameter must be PVC pressure pipe:
1) PVC Pressure Pipe

a. Pipe: ASTM D 1785, Schedule 40 or ASTM D 2241, with SDR rating for 160 psi (1.1 MPa) pressure rating.
b. Fittings: ASTM D 2466.c. Joints: Elastomeric gaskets for pressure rating; solvent cement joints, ASTM D 2564.15. **Piping Accessories:**

b. **Insulating Joints:** Provide between pipes of dissimilar metals a rubber gasket or other approved type of insulating joint or dielectric coupling to effectively prevent metal-to-metal contact between adjacent sections of piping.

c. **Accessories:** Provide flanges, connecting pieces, transition glands, transition sleeves, and other adapters as required.

d **Flexible Flanged Coupling:** Provide flexible flanged coupling applicable for sewage as indicated. Use flexible flanged coupling designed for a working pressure of 350 psi (2400 kPa).

16. **Valves:** Provide suitable shutoff and check valves on the discharge line of each pump. Locate the check valve between the shutoff valve and the pump. Locate valves in accordance with state sewerage regulations. Check valves must be suitable for the material being handled and placed on the horizontal portion of the discharge piping except for ball check valves, which may be placed in the vertical run. Provide valves capable of withstanding normal pressure and water hammer. Use valves from one manufacturer.

a. **Shut Off Valves**

Shut Off Valves Less than 4 Inch (100 mm) in Diameter

PVC ball valves.

1) Shut Off Valves 4 Inch (100 mm) and Larger in Diameter

AWWA C509 or AWWA C515, nonrising stem, and flanged. Provide valves with handwheels that open by counterclockwise rotation of the valve stem. Provide epoxy coating in accordance with AWWA C550.

b. **Check Valves**

1) Check Valves Less than 4-Inch (100 mm) in Diameter

Neoprene ball check valve with integral hydraulic sealing flange, designed for a hydraulic working pressure of 175 psi (1200 kPa).

Check Valves 4-Inch (100 mm) and Larger in Diameter

AWWA C508, flanged. Provide a nonclog, swing check valve rated for not less than 175 psig (1200 kPa) working pressure capable of passing 3-inch (75 mm) diameter solids.

2) Air Relief Valves: Provide air relief valves at high points in the force main to prevent air locking in accordance with AWWA M51. Provide vacuum relief valves, where required, to relieve negative pressures on force mains.

17. **Identification Tags and Plates:** Provide valves with tags or plates numbered and stamped for their usage. Use plates and tags of brass or nonferrous material and mounted or attached to the valve.

18. **Thrust Restraint:** Provide thrust restraint for force mains, valves and other features of the wastewater distribution system. Provide thrust restraint using restrained joints in accordance with pipe manufacturer's recommendations, AWWA C600 and if for fire service main, NFPA 24.

19. **Station Control System:** Provide alarms for all pumping and lift stations; at minimum provide alarms for high level, power failure, pump failure, unauthorized entry or any cause of station malfunction. Provide alarms as required by the pump manufacturer to obtain warranty. If required, provide a telemetry system in accordance with state sewer collection and treatment regulations and system owner's requirements to relay alarms to a facility that is manned 24 hours a day.

20. **Station Accessories:**

a. **Ventilation:** Provide covered wet wells with provisions for air displacement venting to the outside. Provide galvanized ASTM A 53/A 53M pipe with insect screening. Provide adequate ventilation for all pump stations.
b. **Metering:** Provide devices for measuring wastewater flow at all pumping stations. Provide indicating, totalizing and recording flow measurement at pumping stations with a 1200 gpm (76 l/s) or greater design peak hourly flow. For smaller stations, provide elapsed time meters in conjunction with pumping rate tests.
c. **Pipe and Valve Supports:** Use schedule 40 galvanized steel piping conforming to ASTM A 53/A 53M for pipe and valve supports. Provide either ANSI B16.3 or ANSI B16.11 galvanized threaded fittings.
d. **Miscellaneous Metals:** Use stainless steel bolts, nuts, washers, anchors, and supports for installation of equipment.

G3030 STORM SEWER

1. **Storm System Design and Construction**: Provide the new storm sewer system and connections to the existing storm sewer system in accordance with UFC 3-201-01, *Civil Engineering*; the utility provider's requirements; UFC 3-210-10, *Low Impact Development*; the state stormwater management laws and regulations; and applicable sustainability requirements; whichever is more stringent.

   The Contractor must make necessary adjustments to the drainage design in order to avoid disruption to existing utilities and to protect existing trees to remain.

   Confirm that the existing receiving system has adequate capacity to receive the additional stormwater flow generated by the project.

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

      1) Inspect for visible leaks in lines or structures.
      2) Inspect condition of grout in the interior joints of the structures.
      3) Inspect structure frames and covers for proper type and installation.
      4) Inspect to see if lines are free of debris.
      5) Inspect structure inverts.
      6) Check alignment and grade of gravity lines by laser or by introducing sufficient water into the line to verify the absence of sags, as directed by the Contracting Officer.
      7) Mirror test: Check each straight run of pipeline for gross deficiencies by holding a light in a structure; it must show a full circle of light through the pipeline when viewed from the adjoining end of the line.8) TV Inspection for Storm Sewer Under Pavements: Post-installation TV inspection will be performed on all segments of the installed system when the total footage of storm sewer lines installed in the contract is in excess of 300 feet. Complete the post-installation TV inspection to confirm that the completed lines are free of defects. For video recordings include an audio track recorded by the inspection technician during the actual inspection work describing the parameters of the line being inspected. The minimum information to be included is the pipe material, pipe size, starting and stopping manholes and descriptions of any features as they occur. Video recording playback must be at the same speed that it was recorded. Permanently label CDs / DVDs according to their contents; CDs / DVDs will become the property of the Government. Provide all TV inspections of storm sewer lines in accordance with the Pipeline Assessment and Certification Program as sponsored by the National Association

of Sewer Service Companies (NASSCO). Prior to initiating CCTV inspection, provide copies of PACP Certification of the operators that will be performing the work. Complete pipe segments and manhole work, including pipe penetrations, manhole benches, main line and manhole visual inspection, pressure testing, and deflection test on a section of line (manhole to manhole) prior to performing TV. Complete post-installation TV inspection in the presence of the Contracting Officer or his designated representative. The importance of accurate measurements is emphasized. The meter device must be accurate to one tenth of a foot. Utilize the full capabilities of the camera equipment to document the completion and the conformance of the work to the Contract Documents. Provide a full 360Ã‚Â° view of the pipe, joints and service connections. Move the camera through the line in either direction at a moderate rate, stopping when necessary to permit proper documentation of the sewer's condition. The maximum speed must be no greater than 30 feet per minute. Use manual wenches, power winches, TV cable and powered rewinds or other devices that do not obstruct the camera view or interfere with the proper documentation of the sewer conditions to move the camera through the sewer line. Once video recording has commenced, the recording must be continuous, without interruption, until the termination manhole is reached. Provide a color video showing the completed work. Prepare and submit Television Inspection Logs providing location of service connections along with the location of any discrepancies. Keep computer printed location records (Television Inspection Logs) and clearly show the location and orientation in relation to an adjacent manhole for each point observed during the TV inspection. Record features of significance such as locations and orientations of service connections, pipe deflections, leaks, rolled or dislodged gaskets, sags or bellies in the line, or wide joints. Document noted defects and lateral connections as color digital files and color hard copy prints. Photo logs must accompany each photo submitted. Prior to submission of the TV inspection video, Television Inspection Logs, and digital photographs to the Contracting Officer, review the submittal items to insure that they meet the quality criteria set forth in this specification. A copy of such video along with the Television Inspection Logs and Digital photographs must be supplied to the Contracting Officer within five (5) business days of completion of the video -inspection. In the event that the video, Television Inspection Logs or digital photographs are deemed of poor quality or substandard by the Contracting Officer, the videos, and / or Television Logs, or digital photographs will be returned and a re-inspection provided by the Contractor, at no additional cost to the Government.

3. **Piping:** Storm sewer piping 12 inches (300 mm) and larger in diameter shall be reinforced concrete, ductile iron or corrugated steel; PVC, corrugated aluminum, polyethylene and polypropylene pipe may only be used when written approval is received by the Government's Civil Reviewer or indicated in another part of the RFP. Subsurface drainage piping shall be perforated PVC or HDPE.

4. **Piping Materials:**
   a. PVC Pipe
      1) Piping and Fittings: ASTM D3034, SDR 35.
      2) Joints: ASTM D3212 and ASTM F477.
   b. Ductile Iron Pipe
      1) Piping: ASTM A746. Provide required Thickness Class based on design information and methods in ASTM A746.
      2) Fittings: AWWA C110 or AWWA C153.
      3) Joints: AWWA C111.
      4) Interior Coating: AWWA C104.
      5) Exterior Protection (if required): AWWA C105, polyethylene encasement.
   c. Reinforced Concrete Pipe:
      1) Circular Pipe: ASTM C76/C76M. Provide required Class based on design

information and methods in ASTM C76/C76M. Class III minimum.
2) Elliptical Pipe: ASTM C507/C507M. Provide required Class based on design information and methods in ASTM C76/C76M.
3) Joints:
a) ASTM C990/C990M butyl gaskets;
b) ASTM C 443/C 443M rubber O-ring joints; or c) AASHTO M 198, Type B preformed plastic gaskets.

d. Corrugated Aluminum Pipe:
1) Piping: ASTM B745/B745M.
2) Joints: Coupling bands conforming to ASTM B745/B745M.
3) Coating: Fully bituminous coated for all applications in accordance with ASTM A849. For applications where piping is part of a piped storm sewer system (not a culvert), provide pipe fully bituminous coated, invert (half) paved with concrete lining in accordance with ASTM A849.

e. Corrugated Steel Pipe:
1) Piping: ASTM A760/A760M.
2) Joints: Coupling bands conforming to ASTM A760/A760M.
3) Coating: Fully bituminous coated for all applications in accordance with ASTM A849. For applications where piping is part of a piped storm sewer system (not a culvert), provide pipe fully bituminous coated, invert (half) paved with concrete lining in accordance with ASTM A849.

f. Polyetheylene (PE) Pipe
1) Piping 12" to 60" and Fittings: ASTM 2648/F2648M and AASHTO M 294 Type S, corrugated.
2) Joints: ASTM F477 and ASTM D3212

g. Dual and Triple Wall Polypropylene (PP) Pipe
1) Piping 12" to 60" and Fittings: ASTM F2736, ASTM F2764/F2764M, ASTM F2881 and AASHTO M 330 Type S or D
2) Joints: ASTM F477 and ASTM D3212

h. Perforated PVC Pipe: ASTM D 2729.

i. Perforated PE Pipe
1) Piping and Fittings: AASHTO M 294, Type SP, corrugated.
2) Joints: AASHTO M 294, Soiltight.

5. **Installation:** Install piping in accordance with manufacturer's recommendations and the following standards:
a. PVC, PE and Dual and Triple Wall PP: ASTM D 2321. Do not use ASTM D 2321 Class IV or V materials for bedding, haunching or initial backfill materials.
b. Ductile Iron: AWWA C600.
c. Reinforced Concrete: ACPA 01-102 and 01-103.
d. Corrugated Aluminum: ASTM B 788/B 788M.
e. Corrugated Steel: ASTM A 798/A 798M.
f. Perforated PVC and Perforated PE: ASTM D 2321. Do not use ASTM D 2321 Class IV or V materials for bedding, haunching or initial backfill materials.

Provide nondetectable warning tape and a continuous length of tracer wire for the full length of each run of nonmetallic piping below grade. Warning tape to be color coded with warning and identification of utility type imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (utility type) LINE BELOW" or similar wording. Color to be green for sewer systems. Terminate tracer wire above grade at valve boxes and at exterior of building.

6. **Piping for Cleanouts: Materials**
a. Cast-Iron Soil Pipe for Cleanouts
1) Pipe: ASTM A 74, service.

2) Joints: ASTM C 564 compression-type rubber gaskets.
3) Exterior Protection (if required): AWWA C105, polyethylene encasement.

b. Installation: Install cast iron pipe and fittings in accordance with the recommendations of the pipe manufacturer.

7. **Storm Sewer Structures:** Provide all materials, equipment, labor, testing, and miscellaneous related items for the drainage structures in accordance with the following:
   a. Set structure rim elevations flush with finished surface of paved areas or 1 inch (25 mm) above finished grade in unpaved areas.
   b. Provide resilient connectors for making joints between manhole and pipes entering manhole in conformance with ASTM C 923/C 923M.
   c. Provide precast or cast-in-place concrete drainage structures, except cast-in-place concrete is required for airfield drainage structures, headwalls and gutters.

8. **Precast Concrete Inlets:** Provide work and materials in accordance with applicable requirements of the State Highway Specifications (SHS) and standards where the project is located.

9. **Cast-In-Place Concrete Drainage Structures:** Provide work and materials in accordance with drainage structures indicated in the State Highway Specifications (SHS) and standards where the project is located. For airfield drainage structures, provide work and materials in accordance with FAA ACA 150/5370-10B.

10. **Drainage Structure Frames And Covers:** Frame and cover for gratings shall be cast gray iron, ASTM A48/A48M, Class 35B; cast ductile iron, ASTM A536, Grade 65-45-12; or cast aluminum, ASTM B26/B26M, Alloy 356.OT6. Frame and cover must be designed to accommodate the imposed live loads. Stamp or cast the words "Storm Sewer" into covers so that it is plainly visible. For airfield drainage structures, fabricate frames and covers of standard commercial grade steel welded by qualified welders in accordance with AWS D1.1/D1.1M. Provide covers of rolled steel floor plate having an approved anti-slip surface. Steel frames and covers must be hot dipped galvanized after fabrication. At the contractor's option, ductile iron covers and frames may be used for airfield drainage structures if designed for a minimum proof load of 100,000 pounds (45,000 kg) in lieu of the steel frames and covers. Covers must be of the same material as the frames (i.e. ductile iron frame with ductile iron cover, galvanized steel frame with galvanized steel cover). Perform proof loading in accordance with ASTM A 48/A 48M. Physically stamp proof loads into the cover. Provide the Contracting Officer copies of previous proof load test results performed on the same frames and covers as proposed for this contract. Modify the top of the structure to accept the ductile iron structure in lieu of the steel structure indicated. The finished structure must be level and non-rocking, with the top flush with the surrounding pavement.

11. **Drainage Structure Steps:**
   a. Zinc-coated steel: 29 CFR 1910.27.
   b. Plastic or rubber coating pressure molded to steel: ASTM D 4101, copolymer polypropylene; or ASTM C 443/C 443M, except shore A durometer hardness shall be 70 plus or minus 5.
   c. Aluminum steps or rungs will not be permitted. Steps are not required in structures less than 4 feet (1.2 m) deep.

12. **Drainage Structure Construction:** Where a new structure is constructed on an existing line, remove existing pipe as necessary to construct the structure. Cut existing pipe so that pipe ends are approximately flush with the interior face of structure wall, but not protruding into the structure.

13. **Connections to Existing Structures:** Center pipe connections to existing structures on the structure. Holes for the new pipe must be of sufficient diameter to allow packing cement mortar around the entire periphery of the pipe but no larger than 1.5 times the diameter of the pipe. Cut the structure in a manner that will cause the least damage to the walls.

14. **Cleanouts:** Construct cleanouts of cast iron soil pipe and fittings; see paragraph 6 above.

15. **Lift Stations:** A stormwater pump station(s) will not be allowed.

16. **Culverts:** Culverts 12 inches (300 mm) and larger in diameter shall be reinforced concrete or corrugated steel; PVC, corrugated aluminum, polyethylene and polypropylene pipe may only be used when written approval is received by the Government's Civil Reviewer or indicated in another part of the RFP. See G303001, paragraphs above for material and installation requirements. Flared end sections must be the same material as pipe material. Provide erosion control in accordance with the State Erosion and Sedimentation Control Standards or EPA guidance where State Standards are unavailable.

17. **Headwalls:** Provide cast-in-place concrete headwalls in accordance with the State Highway Specification (SHS) and standards where the project is located.

18. **Erosion & Sediment Control Measures:** Refer to Section G10.

19. **Stormwater Management:**
    a. **Stormwater Collection And Storage:** Provide permanent stormwater management (i.e., detention and retention ponds, LID and other drainage features) to control stormwater runoff in accordance with UFC 3-201-01, *Civil Engineering*, UFC 3-210-10, *Low Impact Development*, FC 1-300-09N Navy and Marine Corps Design Procedures, State and local stormwater management Laws and Regulations and applicable project sustainability goals. Integrate permanent stormwater management features into the site design in accordance with UFC 3-201-01, *Civil Engineering*. Parking areas, roads, walks, courtyards, training areas and similar site features may not be used to detain or retain stormwater. Manage stormwater within detention or retention ponds and the LID features indicated in Part 3 of this RFP. Prevent upstream and downstream property damage.

20. **OIL/WATER SEPARATOR:** Provide an oil/water separator to remove free oil from oil-in-water mixtures originating from proposed facility operations. Provide grit protection upstream of the oil/water separator. Provide an oil/water separator utilizing coalescing media and conforming to the applicable guidelines of the American Petroleum Institute (API). Provide materials or a coating system which will protect the separator from the oil-in-water mixture, atmosphere, and in-situ soil conditions. Use a separator with a completely removable cover.

G3060 FUEL DISTRIBUTION

Gas Distribution System: Refer to Section D20 for requirements.

G40 SITE ELECTRICAL UTILITIES

G4010 ELECTRICAL DISTRIBUTION

1. **Electrical Utilities Design and Construction**: Site electrical utilities include all exterior electrical work, including the connection to the primary distribution system. This also includes telephone and cable television supplies.

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

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

3. **Substations**: When secondary unit substations are required, the Designer of Record must utilize UFGS Section 26 11 13, *Secondary Unit Substation*, and UFGS Section 26 23 00, *Low Voltage Switchgear*, or UFGS 26 24 13, *Switchboards*, for the project specification, and must submit the edited specification section as a part of the design submittal for the project.

4. **Transformers**: When transformers are required, the Designer of Record must utilize UFGS Section 26 12 19.10, *Three-Phase Pad Mounted Transformers*, UFGS Section 26 12 21, *Single-Phase Pad Mounted Transformers*, or UFGS Section 33 71 01, *Overhead Transmission and Distribution*, for the project specification, and must submit the edited specification section as a part of the design submittal for the project.

5. **Switches, Controls and Devices**: When switches or control devices are required, the Designer of Record must utilize UFGS Section 26 13 00, SF6 *Insulated Pad Mounted Switchgear*, or UFGS Section 33 71 01, *Overhead Transmission and Distribution*, for the project specification, and must submit the edited specification section as a part of the design submittal for the project.

G4020 EXTERIOR LIGHTING FIXTURES AND CONTROLS

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

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

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

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

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

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

G4030 SITE COMMUNICATION & SECURITY

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

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

Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

PART 5 – PRESCRIPTIVE SPECIFICATIONS

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

SECTION 01 31 23.13 20

ELECTRONIC CONSTRUCTION AND FACILITY SUPPORT CONTRACT MANAGEMENT SYSTEM
05/17

PART 1 GENERAL

1.1 CONTRACT ADMINISTRATION

Utilize the Naval Facilities Engineering Command's (NAVFAC's) Electronic Construction and Facility Support Contract Management System (eCMS) for the transfer, sharing and management of electronic technical submittals and documents. The web-based eCMS is the designated means of transferring technical documents between the Contractor and the Government. Paper media or e-mail submission, including originals or copies, of the documents identified in Table 1 are not permitted, except where eCMS is unavailable, non-functional or specifically requested in addition to electronic submission. When specifically requested to provide documents outside of eCMS, upload all final project documentation (e.g. documents that are signed and/or adjudicated by the Government) mentioned in Table 1 into the subject eCMS document management folders that are associated with that document type. Include the identification number of the document, type of document; the name/subject or title; and for daily reports the date (day of work) with format YYYY/MM/DDin the filename. For example for RFI’s 0011_RFI_Roof_Leaking.doc; For submittals 0032a_Submittals_Light_Fixture.pdf; For Daily Reports 0132_Daily_Report_20190504.xls. Contact the Contracting Officer's Representative (COR) regarding availability of eCMS training and reference materials.

1.2 USER PRIVILEGES

The Contractor will be provided access to eCMS. All technical submittals and documents must be transmitted to the Government via the COR. Project roles and system roles will be established to control each user's menu, application, and software privileges, including the ability to create, edit, or delete objects.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

List of Contractor's Personnel; G

1.4 SYSTEM REQUIREMENTS AND CONNECTIVITY

1.4.1 General

The eCMS requires a web-browser (platform-neutral) and Internet connection. Obtain from an approved vendor an External Certification Authority (ECA), Primary Key Infrastructure (PKI) certificate, or other similar digital identification to support two-factor authentication and access to eCMS. Provide and maintain computer hardware and software for

the eCMS access throughout the duration of the contract for all Contractor-designated users. Provide connectivity, speed, bandwidth, and access to the Internet to ensure adequate functionality. Neither upgrading of the Contractor's computer system nor delays associated from the usage of the eCMS will be justification or grounds for a time extension or cost adjustment to the Contract.

1.4.2 Contractor Personnel List

Within 20 calendar days of contract award, provide to the Contracting Officer a list of Contractor's personnel who will have the responsibility for the transfer, sharing and management of electronic design, technical submittals and documents and will require access to the eCMS. Project personnel roles to be filled in the eCMS include the Contractor's Project Manager, Designer of Record, Superintendent, Quality Control (QC) Manager, and Site Safety and Health Officer (SSHO). Personnel must be capable of electronic document management. Notify the COR immediately of any personnel changes to the project. The Contracting Officer reserves the right to perform a security check on all potential users. Provide the following information:

First Name
Last Name
E-mail Address
Office Address
Project Role (e.g. Project Manager, QC Manager, Superintendent)

1.4.3 Field Administration

Within 30 days of Contract Award, provide a tablet computer with a Common Access Card (CAC) reader at the job site for Government use only. The tablet computer must have a web-browser, built-in camera, and cellular data connectivity. Provide tablet computer with a rugged case suitable for use in a construction environment. The tablet computer must be fully charged and made available at all times for Government use to facilitate the input of construction data at the job site. The tablet will be given back to the contractor prior to leaving the jobsite for charging, maintaining and securing. After completion of the work, reset the tablet computer to factory default settings. The tablet computer remains the property of the Contractor and must be removed from the site. There are restrictions on use of WIFI on military bases. Cellular data connectivity and availability, and use of WIFI requires coordination with and approval by the Contracting Officer.

1.5 SECURITY CLASSIFICATION

In accordance with Department of Navy guidance, all military construction contract data are unclassified, unless specified otherwise by a properly designated Original Classification Authority (OCA) and in accordance with an established Security Classification Guide (SCG). Refer to the project's OCA when questions arise about the proper classification of information.

The eCMS and tablet computer must only be used for the transaction of unclassified information associated with construction projects. In conformance with the Freedom of Information Act (FOIA), Department of Defense Manual 5200.01-V4: DoD Information Security Program: Controlled Unclassified Information (CUI), and DoD requirements, any unclassified project documentation uploaded into the eCMS must be designated either "U

- UNCLASSIFIED" (U) or "FOUO - UNCLASSIFIED-FOR OFFICIAL USE ONLY" (FOUO).

1.6 ECMS UTILIZATION

Establish, maintain, and update data and documentation in the eCMS throughout the duration of the contract.

Personally Identifiable Information (PII) transmittal is not permitted in the eCMS.

1.6.1 Information Security Classification/Identification

The eCMS must be used for the transmittal of the following documents. This requirement supersedes conflicting requirements in other sections, however, submittal review times in Section 01 33 00 SUBMITTAL PROCEDURES remain applicable. Table 1 - Project Documentation Types provides the appropriate U and FOUO designations for various types of project documents. Construction documents requiring FOUO status must be marked accordingly. Apply the appropriate markings before any document is uploaded into eCMS. Markings are not required on U documents.

Table 1 also identifies which eCMS application is to be used in the transmittal of data (these are subject to change based on the latest software configuration). If a designated application is not functional within 4 hours of initial attempt, defer to the Submittal application and submit the required data as an uploaded portable document (e.g. PDF), word processor, spreadsheet, drawing, or other appropriate format. Hard copy or e-mail submission of these items is acceptable only if eCMS is documented to be not available or not functional or specifically requested in addition to electronic submission. After uploading documents to the Submittal application, transmit the submittals and attachments to the COR via the Transmittal application. For Submittals, select the following:

Preparation by = Contractor personnel assigned to prepare the submittal
Approval by = Contracting Officer Representative (COR)
Returned by = Design Lead/Manager
Forwarded to = Contractor project manager

Table 1 - Project Documentation Types

SUBJECT/NAME	CLASS	REMARKS	ECMS APPLICATION
As-Built Drawings	U	Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager	Submittals and Transmittals

SUBJECT/NAME	CLASS	REMARKS	ECMS APPLICATION
Building Information Modeling (BIM)	U	1. Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager 2. Design reviews will be performed in existing "Dr Checks"	Submittals and Transmittals
Construction Permits	U	Refer to rules of the issuing activity, state or jurisdiction	Submittals and Transmittals
Construction Schedules (Activities and Milestones)	U	After the schedule submittal is approved by the COR, import the schedule file into the scheduling application, and select "Approve" to establish a new schedule baseline	Submittals, Transmittals and Scheduling App
Construction Schedules (Cost-Loaded)	FOUO	After the schedule submittal is approved by the COR, import the schedule file into the scheduling application, and select "Approve" to establish a new schedule baseline	Submittals, Transmittals and Scheduling App
Construction Schedules (3-Week Lookahead)	U	Import the schedule file into the scheduling application, and select "Approve" to establish a new schedule baseline	Scheduling App
DD 1354 Transfer of Real Property	U		Submittals and Transmittals
Daily Production Reports	FOUO	Provide weather conditions, crew size, man-hours, equipment, and materials information	Daily Report
Daily Quality Control (QC) Reports	FOUO	Provide QC Phase, Definable Features of Work Identify visitors	Daily Report
Designs and Specifications	U	1. Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager 2. Design reviews will be performed in existing "Dr Checks"	Submittals and Transmittals

SUBJECT/NAME	CLASS	REMARKS	ECMS APPLICATION
Environmental Notice of Violation (NOV), Corrective Action Plan	U	Refer to rules of the issuing activity, state or jurisdiction	Submittals and Transmittals
Environmental Protection Plan (EPP)	FOUO		Submittals and Transmittals
Invoice (Supporting Documentation)	FOUO	Applies to supporting documentation only. Invoices are submitted in Wide-Area Workflow (WAWF)	Submittals and Transmittals
Jobsite Documentation, Bulletin Board, Labor Laws, SDS	U		Submittals and Transmittals
Meeting Minutes	FOUO		Meeting Minutes
Modification Documents	FOUO	Provide final modification documents for the project. Upload into "Modifications - RFPs	Document Management
Operations & Maintenance Support Information (OMSI/eOMSI), Facility Data Worksheet	U	1. Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager 2. Design reviews will be performed in existing "Dr Checks"	Submittals and Transmittals
Photographs	U	Subject to base/installation restrictions	Submittals and Transmittals
QCM Initial Phase Checklists	FOUO		Checklists (Site Management)
QCM Preparatory Phase Checklists	FOUO		Checklists (Site Management)
Quality Control Plans	FOUO		Submittals and Transmittals
QC Certifications	U		Submittals and Transmittals

SUBJECT/NAME	CLASS	REMARKS	ECMS APPLICATION
QC Punch List	U		Punch Lists (Testing Logs)
Red-Zone Checklist	U		Checklists (Site Management)
Rework Items List	FOUO		Punch Lists (Testing Logs)
Request for Information (RFI) Post-Award	FOUO		RFIs
Safety Plan	FOUO		Daily Report
Safety - Activity Hazard Analyses (AHA)	FOUO		Daily Report
Safety - Mishap Reports	FOUO		Daily Report
SCIF/SAPF Accreditation Support Documents	FOUO	Note: Some Construction Security plans may be classified as Secret. Classified information must not be uploaded into eCMS. Refer to the Site Security Manager, as applicable.	Submittals and Transmittals
Shop Drawings	U	Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager	Submittals and Transmittals
Storm Water Pollution Prevention (Notice of Intent - Notice of Termination)	U	Refer to rules of the issuing activity, state or jurisdiction	Submittals and Transmittals
Submittals and Submittal Log	U		Submittals and Transmittals
Testing Plans, Logs, and Reports	FOUO		Submittals and Transmittals
Training/Reference Materials	U		Submittals and Transmittals

SUBJECT/NAME	CLASS	REMARKS	ECMS APPLICATION
Training Records (Personnel)	FOUO		Submittals and Transmittals
Utility Outage/Tie-In Request/Approval	FOUO		Submittals and Transmittals
Warranties/BOD Letter	FOUO		Submittals and Transmittals
Quality Assurance Reports	FOUO		Checklists (Government initiated)
Non-Compliance Notices	FOUO		Non-Compliance Notices (Government initiated)
Other Government-prepared documents	FOUO		GOV ONLY
All Othere Documents	FOUO	Refer to FOIA guidelines and contact the FOIA official to determine whether exemptions exist	As applicable

1.6.2 Markings on FOUO documents

a. Only FOUO documents being electronically uploaded into the eCMS (.docx, .xlsx, .pptx, .pdf, .jpg, .zip, and others as appropriate), and associated paper documents described in the paragraph CONTRACT ADMINISTRATION require FOUO markings as indicated in the subparagraphs below.

b. FOUO documents that are originally created within the eCMS application using the web-based forms (RFIs, Daily Reports, and others as appropriate) will be automatically watermarked by the eCMS software, and these do not require additional markings.

c. FOUO documents must be marked "UNCLASSIFIED//FOR OFFICIAL USE ONLY" at the bottom of the outside of the front cover (if there is one), the title page, the first page, and the outside of the back cover (if there is one).

d. FOUO documents must be marked on the internal pages of the document as "UNCLASSIFIED//FOR OFFICIAL USE ONLY"' at top and bottom.

e. Where Installations require digital photographs to be designated FOUO, place the markings on the face of the photograph.

f. For visual documentation, other than photographs and audio documentation, mark with either visual or audio statements as

appropriate at both the beginning and end of the file.

1.7 QUALITY ASSURANCE

Requested Government response dates on Transmittals and Submittals must be in accordance with the terms and conditions of the Contract. Requesting response dates earlier than the required review and response time, without concurrence by the Government COR, may be cause for rejection.

Incomplete submittals will be rejected without further review and must be resubmitted. Required Government response dates for resubmittals must reflect the date of resubmittal, not the original submittal date.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

-- End of Section --

SECTION 01 32 17.00 20

COST-LOADED NETWORK ANALYSIS SCHEDULES (NAS)
11/23, CHG 1: 08/24

PART 1 GENERAL

1.1 DEFINITIONS

The cost-loaded Network Analysis Schedule (NAS) is a tool to manage the project, both for Contractor and Government activities. The NAS is also used to report progress, evaluate time extensions, and provide the basis for progress payments.

For consistency, when scheduling software terminology is used in this section, the terms in Primavera's scheduling programs are used.

1.2 SCHEDULE REQUIREMENTS PRIOR TO THE START OF WORK

1.2.1 Preliminary Scheduling Meeting

Before preparation of the Project Baseline Schedule, and prior to the start of work, meet with the Contracting Officer to discuss the proposed schedule and the requirements of this section. Propose projected data dates for monthly update schedules for the project and incorporate each monthly update submittal into submittal register. Discuss required forms, terminology, and submittal requirements of this section and other requirements related to schedule management for this contract. Use the NAVFAC-provided Preliminary Scheduling Meeting Guideline in the completion of the intended mutual understanding.

1.2.2 Project Baseline Schedule

1.2.2.1 Baseline NAS

Submit the Baseline NAS at the Post-Award Kickoff (PAK) Meeting or within 30 calendar days after contract award whichever occurs first. The Baseline schedule must include detailed design activities and a general approach to construction, including summary activities for required phasing and definable areas. Summary Construction activities must not exceed duration of 60 calendar days, unless approved otherwise by Contracting Officer. Data date must be set to contract award date and no progress recorded for any activity.

Only bonds and the required Preliminary Scheduling Meeting may be recorded as complete prior to acceptance of the Baseline NAS. The acceptance of a Baseline NAS is a condition precedent to:

a. The Contractor submitting the first design submittal.

b. Processing Contractor's invoices(s)other than that for the bonds.

1.2.2.2 Post-Award Kickoff (PAK) Meeting and Baseline NAS

Present the Draft Baseline NAS at the PAK Meeting. Be prepared to discuss the schedule logic emphasizing how the schedule satisfies the design

package requirements and incorporates the required government review periods for each design submittal.

1.2.2.3 Construction Baseline

Submit the detailed Construction Baseline NAS prior to the pre-final design submittal. The pre-final design submittal will not be reviewed until a Construction Baseline NAS is submitted.

The acceptance of the Construction Baseline NAS is a condition precedent to:

a. The contractor starting demolition work or construction stage(s) of the contract.

b. Processing Contractor's invoices for demolition or construction activities.

c. Review of any construction phase schedule updates.

Submittal of the Construction Baseline NAS must be the Contractor's certification that the submitted schedule meets the requirements of the Contract Documents, and represents the Contractor's plan on how the work will be accomplished. Provide all items listed in paragraph REQUIRED TABULAR REPORTS AND NATIVE P6 XER FILES with baseline NAS submittal.

1.3 WEEKLY LOOK AHEAD SCHEDULE

1.3.1 Weekly CQC Coordination and Production Meeting

Submit the first look ahead schedule 30 days after contract award and continue to submit weekly until contract completion.

Transmit the Weekly Look Ahead Schedule Submittal to the Contracting Officer on the first day of the current week that the look ahead schedule covers and at least one working day prior to Quality Control meetings or as agreed to by Contracting Officer. Contractor is required to provide all attendees at meetings that require discussion of the schedule.

1.3.2 Weekly Look Ahead Schedule Requirements

Prepare and issue a Three-Week Look Ahead schedule to provide a more detailed day-to-day plan of upcoming work identified on the Project Network Analysis Schedule. Requirements include:

a. For each Look Ahead schedule activity, identify parent NAS activity number(s). The parent NAS activity is the activity in the NAS that would incorporate the Look Ahead schedule activity requirement and scope of work.

b. Update schedule each week to show the planned work for the current and following three-week period. Also include previous week, as-built work, showing actual start and finish dates.

c. Include upcoming outages, closures, preparatory meetings, and initial meetings, testing and inspections.

d. Clearly identify longest path activities on the Weekly Look Ahead

Schedule. Include a key or legend that distinguishes longest path activities. Include all Longest Path activity NAS start/finish dates exceeded and occurring during this period.

e. Identify responsibility for each activity.

f. The detail work plans are to be bar chart type schedules, derived from but maintained separately from the Project NAS on an electronic spreadsheet program and printed on 11 by 17 inch sheets as directed by the Contracting Officer.

g. Activities must not exceed 5 working days in duration and have sufficient level of detail to assign crews, tools and equipment required to complete the work.

h. Lookahead activities are not limited to only onsite work. Include but not limited to submittal, offsite fabrication, and procurement activities if needed to ensure longest path is maintained. Include design activities and coordination when part of scope.

i. Upload Lookahead to eCMS as a submittal by the date and time required by contracting officer.

1.4 MONTHLY NETWORK ANALYSIS

Submittal of Monthly NAS is the Contractor's certification that the submitted schedule meets the requirements of the Contract Documents and represents the Contractor's plan on how the work will be accomplished. Provide all items listed in paragraph REQUIRED TABULAR REPORTS AND NATIVE P6 XER FILES with the monthly NAS submittal.

1.4.1 Monthly Network Analysis Updates

a. Regardless of whether an invoice is being submitted monthly, or no progress in the schedule occurred, an updated schedule (or with new data date) must be submitted monthly to the Government. The Monthly NAS update must be submitted within 10 calendar days of the data date.

b. Regardless of whether a baseline or other schedule is submitted and accepted, an updated schedule must be submitted monthly to the Government. Monthly updates submitted before the baseline being accepted will be considered as (interim and for information only) submittal.

c. Provide all items listed in paragraph REQUIRED TABULAR REPORTS AND NATIVE P6 XER FILES, with each monthly NAS update submittal.

d. Meet with Government representative(s) at monthly intervals to review and agree on the information presented in the updated project schedule. The submission of an accepted, updated schedule to the Government is a condition precedent to the processing of the Contractor's invoice.

e. Activity progress must incorporate as-built events as they occurred and correspond to records including but not limited to submittals and daily production and quality control reports.

f. Software Settings: Handle schedule calculations and Out-of-Sequence progress (if applicable) through Retained Logic, not Progress Override. Show all activity durations and float values in days. Show activity progress using Remaining Duration. Set default activity type to "Task Dependent".

g. Update schedule must reflect current Contract Completion Date and contract value in accordance with all conformed contract modifications issued prior to data date of NAS update.

1.4.2 As-Built Schedule

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

1.5 CORRESPONDENCE AND TEST REPORTS

Reference Schedule activity IDs that are being addressed in each correspondence (e.g., letters, Requests for Information (RFIs), e-mails, meeting minute items, Production and QC Daily Reports, material delivery tickets, photographs) and test report (e.g., concrete, soil compaction, weld, pressure).

1.6 ADDITIONAL SCHEDULING REQUIREMENTS

Other specification sections may include additional scheduling requirements, including systems to be inspected, tested and commissioned, and submittal procedures. Those schedule requirements must be incorporated into the NAS schedule.

1.7 SUBMITTALS

Government approval/acceptance is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Baseline NAS; G

Construction Baseline NAS; G

Designated Project Scheduler; G

SD-07 Certificates

Weekly Look Ahead Schedule

Monthly Network Analysis Updates; G

SD-11 Closeout Submittals

As-Built Schedule; G

1.8 SOFTWARE

Prepare and maintain project schedules using Primavera P6 software in a version compatible with Government's current version. Importing data into P6 using data conversion techniques or third party software is cause for rejection of the submitted schedule. Schedules with Performing Organizational Breakdown Structure (POBS) data is cause for rejection.

1.9 DESIGNATED PROJECT SCHEDULER

Within 30 calendar days of contract award, submit to the Contracting Officer for approval an individual who will serve as the Designated Project Scheduler. Include a copy of the candidate's resume with qualifications. The Contracting Officer may remove the Designated Project Scheduler, and require replacement, if the scheduler does not effectively fulfill their duties in accordance with the contract requirements. Payment request will not be processed without an approved Designated Project Scheduler.

1.9.1 Qualifications

The Designated Project Scheduler must have prepared and maintained at least three previous construction schedules, of similar size and complexity to this contract, using Primavera P6.

1.9.2 Duties

Duties of the Designated Project Scheduler include to be actively involved and be responsible for the following::

a. Prepare Baseline NAS.

b. Prepare monthly schedule updates.

c. Prepare tabular reports.

d. Prepare Time Impact Analysis (TIA) as necessary.

e. Provide certification that NAS and TIA submittals conform to the contract requirements.

f. Participate with the Prime Contractor and Government Representative in a monthly meeting at the job site in-person, and scheduled with sufficient time to support the Monthly Network Analysis Updates process, to discuss project status, schedule updates, critical activities, potential delays, and contract modifications impacting the schedule. Have a computer with P6 software available during the meeting.

g. Be present on the project site full-time during working hours.

1.10 NETWORK SYSTEM FORMAT

Prepare the schedule in accordance with the following Primavera P6 settings and parameters. Deviation from these settings and parameters, without prior consent of the Contracting Officer, is cause for rejection of schedule submission.

1.10.1 Schedule Activity Properties and Level of Detail

1.10.1.1 Activity Identification and Organization

a. Identify design and construction activities planned for the project and other activities that could impact project completion if delayed in the NAS.

b. Each activity must have a unique name.

c. Identify administrative type activity/milestones, including all pre-construction submittal and permit requirements prior to demolition or construction stage.

d. Include times for procurement, Contractor quality control and construction, acceptance testing and training in the schedule.

e. Include the Government approval time required for the submittals that require Government Approval prior to construction, as indicated in Section 01 33 00.05 20 CONSTRUCTION SUBMITTAL PROCEDURES.

f. Create separate activities for each Phase, Area, Floor Level and Location the activity is occurring.

g. Do not use construction category activity to represent non-work type reference (e.g., Serial Letter, Request for Information) in NAS. Place Non-work reference within the P6 activity details notebook.

Activity categories included in the schedule are specified below.

1.10.1.2 Activity Logic

a. With the exception of the Contract Award and Contract Completion Date (CCD) milestone activities, activity must not be open-ended; each activity must have at least one predecessor and at least one successor.

b. Activities must not have open start or open finish (dangling) logic.

c. Do not use lead or lag logic without Contracting Officer prior approval.

d. Minimize redundant logic ties.

e. Once an activity exists on the schedule it must not be deleted or renamed to change the scope of the activity and must not be removed from the schedule logic without approval from the Contracting Officer.

(1) While an activity cannot be deleted, where said activity is no longer applicable to the schedule, but must remain within the logic stream for historical record, change the activity original and remaining duration to zero and clearly label "(NO LONGER REQUIRED)" after the activity name. Actual finish date for activity that falls behind the data date. Redistribute accordingly any remaining budget associated with that activity, to other remaining appropriate activity.

(2) Document any such change in the activities' "Notebook," including a date and explanation for the change.

(3) The ID number for a "NO LONGER REQUIRED" activity must not be re-used for another activity.

1.10.1.3 Longest Path Activity Baseline Limitation

For P6 settings, critical activities are defined as being on the Longest Path. Longest Path (Critical) Activities must not make up more than 30 percent of all activity within the Construction Baseline Schedule.

1.10.1.4 Assigned Calendars

All NAS activity must be assigned calendars that reflect required and anticipated non-work days.

1.10.1.5 Activity Categories

1.10.1.5.1 Design Activities

Design activities must include design decision points and design submittal packages, including critical path submittals for Fast Tracked Phases. Review times for design development packages must be included in the schedule. Refer to Section 01 33 10.05 20 DESIGN SUBMITTAL PROCEDURES, for specific requirements.

1.10.1.5.2 Pre-construction Activities

Examples of pre-construction activities include, but are not limited to, bond approval, permits, pre-construction submittals and approvals. Include pre-construction activities that are required to be completed prior to the Contractor starting the demolition or construction stage of work.

1.10.1.5.3 Procurement Activities

Examples of procurement activities include, but are not limited to: Material/equipment submittal preparation, submittal and approval of material/equipment; material/equipment fabrication and delivery, and material/equipment on-site. As a minimum, separate procurement activities must be provided for critical items, long lead items, items requiring Government approval and material/equipment procurement for which payment will be requested in advance of installation. Show each delivery with relationship tie to the Construction Activity specifically for the delivery.

1.10.1.5.4 Government Activities

Government and other agency activities that could impact progress must be clearly identified. Government activities include, but are not limited to; Government approved submittal reviews, Government conducted inspections/tests, environmental permit approvals by State regulators, utility outages, Design Start, Construction Start (including Design/Construction Start for each Fast-Track Phase, and delivery of Government Furnished Material/Equipment.

1.10.1.5.5 Construction Quality Management (CQM) Activities

The Preparatory and Initial Phase meetings for each Definable Feature of Work identified in the Contractor's Quality Control Plan must be included in the Three-Week Look Ahead Schedule. Preparatory and Initial phase

meetings are not required in the NAS, but can be represented by a start milestone linked to successor parent Construction Activity. The Follow-up Phase must be represented by the Construction Activities themselves in the NAS.

1.10.1.5.6 Construction Activities

On-site construction activities that are the responsibility of the Contractor or Contractor's subcontractors must not have a duration in excess of 20 working days without prior approval by the Contracting Officer. Contractor activities must be driven by calendars that reflect Saturdays, Sundays and all Federal Holidays as non-work days, unless otherwise defined in this contract. Federal Holidays are as defined in 5 USC 6103.

1.10.1.5.7 Turnover and Closeout Activities

Include activities or milestones for items on the NAVFAC Red Zone Checklist/POAM that are applicable to this project. As a minimum, include required Contractor testing, required Government acceptance inspections on equipment, Pre-Final Inspection, Punch List Completion, Final Inspection and Acceptance. Add an unconstrained start milestone for the initial NAVFAC Red Zone - Facility Turnover Planning Meeting at approximately 75 percent construction contract completion or six months prior to Contract Completion Date (CCD), whichever is sooner. Include a separate NAVFAC Red Zone - Facility Turnover Planning Meeting Milestone for each phase if the contract requires construction to be completed in phases.

1.10.1.5.8 Testing of HVAC - DALT, TAB, and PVT Activities

Include in the baseline schedule, activities and milestones associated with Government acceptance of Duct Air Leakage Test (DALT), Testing, Adjusting, and Balancing (TAB) and Performance Verification Test (PVT) as required and in accordance with Section 23 05 93 TESTING, ADJUSTING AND BALANCING FOR HVAC and Section 23 09 00 INSTRUMENTATION AND CONTROL FOR HVAC.

a. Identify the general area or location(s) for Government Acceptance Testing of DALT, TAB and PVT.

b. Incorporate into the baseline schedule, time periods required for advance notification of work, and Government submittal review in accordance with Section 23 05 93 TESTING, ADJUSTING AND BALANCING FOR HVAC, paragraph DALT AND TAB SUBMITTAL AND WORK SCHEDULE.

c. Include the following as schedule activities or milestones:

(1) Pre-DALT/TAB/PVT Meeting

(2) TAB Design Review Report, Government review

(3) TAB Pre-Field Engineering Report, Government review

(4) DALT Field Work

(5) DALT Field Acceptance Testing

(6) Certified Final DALT Report, Government review

(7) Control Contractors PVT Plan, Government review

(8) Equipment Suppliers PVT Plan, Government review

(9) Season I TAB Field Work

(10) Season I Certified Final TAB Report, Government review

(11) Endurance Testing, Government review

(12) PVT Field Work

(13) PVT Report, Government review

(14) Season I TAB Field Acceptance Testing

(15) Season II TAB Field Work

(16) Season II Certified Final TAB Report, Government review

(17) Season II TAB Field Acceptance Testing

(18) Post-Occupancy Endurance Testing Government review

(19) Post-Occupancy PVT Field Work

1.10.1.6 Contract Milestones and Constraints

1.10.1.6.1 Project Start Date Milestones

Include as the first activity on the schedule a start milestone titled, "Contract Award", which must have a Mandatory Start constraint equal to the Contract Award Date.

1.10.1.6.1.1 Design Phase Completion Milestone

Include an unconstrained finish milestone on the schedule titled, "Design Phase Completion". Design Phase Completion is defined as the point in time when all design requirements are complete and approved. Duration for Government review and approval must be included as predecessor activities to Design Phase Completion.

1.10.1.6.1.2 Post-Award Kickoff (PAK) meeting Milestone

Include an unconstrained finish milestone on the schedule titled, "Post-Award Kickoff Meeting". The Post Award Kickoff Meeting may be a single day, or it may range over several days. The intent is to cover all PAK topics, including Partnering and Concept Design Workshop (if required) in one continuous session.

1.10.1.6.2 Preconstruction Submittals Finish Milestone

Include an unconstrained finish milestone on the schedule titled, "Preconstruction Submittals". This milestone is complete when all required preconstruction submittals have been reviewed and approved by the Government.

1.10.1.6.3 Contractor Mobilization Finish Milestone

Include an unconstrained finish milestone on the schedule titled, "Contractor Mobilization".

1.10.1.6.4 NAVFAC Red Zone - Facility Turnover Planning Meeting Milestones

See paragraph TURNOVER AND CLOSEOUT ACTIVITIES above.

1.10.1.6.5 Substantial Completion Milestone

Include an unconstrained finish milestone on the schedule titled "Substantial Completion." Substantial Completion is defined as the point in time the Government would consider the project ready for beneficial occupancy wherein by mutual agreement of the Government and Contractor, Government use of the facility is allowed while construction access continues in order to complete remaining items (e.g., punch list and other close out submittals). Include a separate Substantial Completion Milestone for each phase if the contract requires construction to be completed in phases.

1.10.1.6.6 DD-1354 Finish Milestone

Add unconstrained finish milestone, titled "DD-1354" and scheduled 30 calendar days prior to Substantial Completion, whenever a Form DD-1354 is required in accordance with Section 01 20 00 PRICE AND PAYMENT PROCEDURES. Include a separate DD-1354 Finish Milestone for each phase if the contract requires construction to be completed in phases.

1.10.1.6.7 Projected Completion Milestone

Include an unconstrained finish milestone on the schedule titled "Projected Completion." Projected Completion is defined as the point in time all contract requirements are complete and verified by the Government with a successful Final Inspection in accordance with Section 01 45 00 QUALITY CONTROL. This milestone must have the Contract Completion Date (CCD) milestone as its only successor.

1.10.1.6.8 Contract Completion Date (CCD) Milestone

Last schedule entry must be an unconstrained finish milestone titled "Contract Completion (CCD: DD-MM-YY)." DD-MM-YYYY is the current contract completion date at data date, day-month-year corresponding to P6 Must Finish By Date. NAS milestone updates of Project Completion finish date for longest path must reflect calculated float as positive or negative based on CCD. Calculation of schedule updates must be such that if the finish of the "Projected Completion" milestone falls after the contract completion date, then negative float is calculated on the longest path. If the finish of the "Projected Completion" milestone falls before the contract completion date, the float calculation must reflect positive float on the longest path.

1.10.1.6.9 Additional Milestones

Provide up to 5 additional milestones as required by Contracting Officer.

1.10.1.7 Work Breakdown Structure & Activity Code

At a minimum, establish a Work Breakdown Structure (WBS) and provide activity codes identified as follows:

1.10.1.7.1 Work Breakdown Structure (WBS)

Group all activities and milestones within appropriate WBS elements/levels including, at a minimum, the following:

a. Project Milestones:

(1) Management Milestones

(2) Project Administrative Meetings

(3) Permits

(4) Design Phase

(5) Submittals and Reviews

b. Pre-Construction Phase:

(1) Submittals and Reviews

(2) Procurement

(3) Mobilization

c. Construction Phase: Create multiple elements/levels in accordance with project specific definable features of work including in WBS descending order as follows:

(1) General Area

(a) Type of Work Item

1. Location

d. Project Closeout: Include activity items such as, but not limited to, Punchlist, Demobilization, O&M, As-built Drawings, Training, and As-built NAS.

e. Modifications: Create Conformed and Non-Conformed elements/levels under Modification WBS. Create multiple elements/levels as the project progresses identified by issue and Fragnet placed in Conformed for modifications issued prior data date, or Non-Conformed for issues not modified to contract prior data date.

f. Removed Activity: Activity is "removed" by remaining within logic sequence, eliminating duration and adding "(NO LONGER REQUIRED)" after Activity Name in Activity Table.

1.10.1.7.2 Responsibility Code

Use "RESP" for Activity Code Name. All activities in the project schedule must be identified with the resource for completing the task. Activities must not belong to more than one responsible party.

1.10.1.7.3 Activity Category Code

Use "CAT" for Activity Code Name for the following Project Level activity codes:

a. Assign "PROC" value to Procurement type activity

b. Assign "PRE-CON" value to Pre-construction activity

c. Assign "CONS" value to Construction type activity

d. Assign "TEST" value to dedicated testing type activities

e. Assign "CX" value to dedicated Commissioning type activities

f. Assign "CLOS" value to dedicated Close Out type activity

g. Assign "OTHR" to other activity not otherwise designated

h. Assign "DSGN" value to Design type activity

1.10.1.7.4 Drawing Code

Identify all activities in the project schedule with its respective Drawing Code. The Drawing Code is the Sheet Number on the primary project drawing which indicates work to be performed. If an activity does not have an applicable Drawing Code (e.g., Mobilize), the code must be "0000".

1.10.1.7.5 Additional Activity Codes

Provide up to an additional five activity codes as required by the Contracting Officer

1.10.1.8 Adverse Weather Lost Work Days

Use the National Oceanic and Atmospheric Administration's (NOAA) Summary of Monthly Normals report to obtain the historical average number of days each month with precipitation, using a nominal 30-year, greater than 0.10 inch precipitation amount parameter, as indicated on the Station Report for the NOAA location closest to the project site as the basis for establishing a "Weather Calendar" showing the number of anticipated non-workdays for each month due to adverse weather, in addition to Saturdays, Sundays and all Federal Holidays as non-work days.

MONTHLY ANTICIPATED ADVERSE WEATHER LOST WORK DAY											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2	2	2	2	2	2	2	2	2	2	2	2

Assign the Weather Calendar to any activity that could be impacted by adverse weather. The Contracting Officer will issue a modification in accordance with the contract clauses, giving the Contractor a time only extension for the difference of days between the anticipated and actual

adverse weather delay if the number of actual adverse weather delay days exceeds the number of days anticipated for the month in which the delay occurs and the adverse weather delayed activities are on the longest path to contract completion in the period when delay occurred. A lost workday due to weather conditions is defined as a day in which the Contractor cannot work at least 50 percent of the day on the impacted activity. Impacts resulting from adverse weather must be documented in Narrative Report for the month that it occurred.

Make changes to P6 project calendars to reflect as-built conditions where work occurred where originally anticipated as non-work days, and where work did not occur (lost work day).

1.10.1.9 Anticipated Restricted Delays

Unless otherwise noted or defined in Section 01 14 00 WORK RESTRICTIONS, allow in the schedule one lost workday for every two months of project duration for instances where base access is not permitted or where work areas are temporarily not accessible for security reasons which causes a delay in the work. Use Anticipated Restricted Delays as basis for establishing a "Security Calendar" showing the number of anticipated non-workdays for each month due to anticipated restrictions, in addition to anticipated adverse weather, Saturdays, Sundays and all Federal Holidays as non-work days. Assign the Security Calendar to any activity that could be impacted by restriction delays. The Contracting Officer will issue a modification in accordance with the contract clauses, giving the Contractor a time extension for the difference of days between the anticipated and actual lost work days if the number of actual restriction delay days exceeds the number of anticipated for the month in which the delay occurs and the restriction delayed activities are critical to contract completion. A lost workday due to restriction delay is defined as a day in which the Contractor cannot work at least 50 percent of the day on the impacted activity.

Impacts resulting from restriction delays must be documented in Narrative Report for the month that it occurred.

Make changes to P6 project calendars to reflect as-built conditions where work occurred where originally anticipated as non-work days, and where work did not occur (lost work day).

1.10.1.10 Cost Loading

The Project Network Analysis Schedule (NAS) must be cost-loaded and will provide the basis for progress payments. Earned Value Reports must be derived from and correspond to cost loaded NAS. Use the Critical Path Method (CPM) and the Precedence Diagram Method (PDM) to satisfy time and cost applications.

Sum of all costs assigned to activities must equal the current contract value as of the data date of the baseline or update schedule. Activity cost loading must be without front-end loading. Provide additional documentation if requested by the Contracting Officer.

1.10.1.10.1 Cost Loading Activities

a. Cost load construction activities. Define construction activities as on-site work activities that can be traced directly to the

construction, alteration, demolition, repair of a project facility, infrastructure, or sitework.

b. Assign costs for materials which payment will be requested in advance of installation, including their quantities, to their respective procurement activities that were approved by the Contracting Officer. Assign labor costs, including their quantities, for material and equipment paid for after installation to their respective construction activities.

c. Costs for mobilization will not be paid as individual pay items with the exception of batch plant set-up, mobilization of dredging equipment or other similar labor-intensive situations. If payment for mobilization costs are approved, assign costs for demobilization activities. The value of demobilization activities must not be less than 40 percent of the total costs for mobilization/demobilization activities. If not approved as a separate line item, evenly disperse over construction activities the costs for mobilization and demobilization.

d. The value of commissioning, testing, and closeout WBS section may not be less than 10 percent of the total costs for procurement and construction activities.

e. ALL activities assigned Government responsibility will have Zero Cost. No contractor cost should be assigned to an activity designated as a Government responsibility.

f. Do not include field overhead positions as individual cost loaded activities. Evenly disperse indirect costs (e.g., meetings, presentations, submittals, surveys, haul road or storage yard maintenance, dust control, security) and profit to construction activities assigned to the Construction Phase WBS level.

1.10.1.10.2 Partial Payment

Breakdown unit of measure and cost must be defined within P6 Activity Detail Expenses for partial payment of any cost loaded activity. Lump sum cost loaded activity will not be partially paid.

1.10.2 Schedule Software Settings and Restrictions

a. Activity Constraints: Date/time constraint(s), other than those required by the contract, are not 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 as described in paragraph REQUIRED TABULAR REPORTS.

b. Default Progress Data Disallowed: Actual Start is date work begins on activity with intent to pursue work to substantial completion. Actual Finish is date work is substantially complete to point where successor activity can begin. Actual dates on the CPM schedule must correspond with activity dates reported on the Contractor Quality Control and Production Reports.

c. At a minimum, include the following settings and parameters in P6 Schedule preparation:

(1) General: Define or establish Calendars and Activity Codes at the "Project" level, not the "Global" level.

(2) Admin Drop-Down Menu, Admin Preferences, Time Periods Tab:

(a) Set time periods for P6 to 8.0 Hours/Day, 40.0 Hours/Week, 172.0 Hours/Month and 2000.0 Hours/Year.

(b) Use assigned calendar to specify the number of work hours for each time period: Must be checked.

(3) Admin Drop-Down Menu, Admin Preferences, Earned Value Tab:

(a) Technique for computing performance percent complete: Use "Activity percent Complete"

(b) Technique for computing Estimate to Complete: Use "PF = 1".

(c) Earned Value Calculation: Use "Budgeted values with current dates".

(4) Project Level, Dates Tab:

(a) Set "Must Finish By" date to "Contract Completion Date", and set "Must Finish By" time to 05:00pm.

(5) Project Level, Defaults Tab:

(a) Duration Type: Set to "Fixed Duration & Units".

(b) Percent Complete Type: Set to "Physical".

(c) Activity Type: Set to "Task Dependent".

(d) Calendar: Set to "Standard 5 Day Workweek". Calendar must reflect Saturday, Sunday and all Federal holidays as non-work days. Alternative calendars may be used with Contracting Officer approval.

(6) Project Level, Calculations Tab:

(a) Default Price/Unit for activities without resource or role Price/Units: Set to "$1/h".

(b) Activity percent complete based on activity steps: Must be Checked.

(c) Link Budget and At Completion for not started activities: Must be Checked.

(d) Reset Remaining Duration and Units to Original: Must be Selected.

(e) Subtract Actual from At Completion: Must be Selected.

(f) Recalculate Actual units and Cost when duration percent complete changes: Must be Checked.

(g) Update units when costs change on resource assignments: Must be Unchecked.

(h) Link Actual to Date and Actual This Period Units and Cost: Must be Checked.

(7) Project Level, Settings Tab:

(a) Define Critical Activities: Check "Longest Path".

(8) Work Breakdown Structure Level, Earned Value Tab:

(a) Technique for Computing Performance Percent Complete: "Activity percent complete" is selected.

(b) Technique for Computing Estimate to Complete (ETC): "PF = 1" is selected.

1.10.3 Required Tabular Reports and Native P6 XER Files

Include the following reports with the Baseline, Monthly Update and any other required schedule submittals:

a. Time Scaled Logic Schedule

Provide formatted 11 by 17-inch Time-scaled Logic Schedule in color and landscape-oriented with each schedule submittal. Clearly show activities on the longest path setting Gantt chart longest path activity bars to red. Group activities by WBS and sort by finish date in ascending order. Include the following information in column form for each activity and include accompanying Gantt chart:

(1) Activity ID

(2) Activity Name

(3) Original Duration

(4) Remaining duration

(5) Physical Percent Complete

(6) Start Date

(7) Finish Date

(8) Total Float

(9) Project-level Calendar

b. Previous Monthly Update Comparison Time Scaled Logic Schedule (Submit with all Monthly Update Schedule Submittals.)

Provide formatted 11 by 17-inch Time-scaled Logic Schedule in color and landscape-oriented with each monthly update schedule submittal. Clearly show activities on the current month longest path setting Gantt chart longest path activities bars to red. Show previous month

activities as yellow bars and previous month milestones in yellow within Gantt chart. Sort by finish date in ascending order. Filter activities for longest path. Maintain and assign the accepted previous month update or the accepted baseline schedule for the first update submittal as the baseline and primary baseline in P6 before printing the schedule. Include the following information in column form for each activity and include accompanying Gantt chart:

(1) Activity ID

(2) Activity Name

(3) Original Duration

(4) Current Month Remaining Duration

(5) Current Month Start Date

(6) Previous Month Update Start Date (BL Project Start)

(7) Start Date Delta between Current Month and Previous Month (Variance - BL Project Start Date)

(8) Current Month Finish Date

(9) Previous Month Finish Date (BL Project Finish)

(10) Finish Date Delta between Current Month and Previous Month (Variance - BL Project Start Date)

(11) Current Month Total Float

c. P6 native XER file: Include the back-up native .xer program file compatible with the current Government version of Primavera P6. Each native schedule file must have a unique file name to include project name and data date using (yyyy-mm-dd) convention. Each native schedule must have a unique Project ID and Project Name.

d. Log Report: P6 Scheduling/Leveling Report.

e. Narrative Report: Identify and justify:

(1) Provide Project Summary Data in format below:

(a) Data Date _____

(b) Award Date: _____

(c) Original Project Duration: _____ days post Award Date

(d) Current Project Duration: _____ days post Award Date

(e) Time percent elapsed: _____ percent at data date

(f) Original CCD: _____

(g) Current CCD: _____ (thru MOD _____)

(h) Anticipated CCD: _____ (___ calendar days early/late)

(i) Original Contract Value: $_____

(j) Current Contract Value: $_____

(k) Invoiced Amount: $_____ (____ percent)

(l) Cost Growth: ____ percent

(m) Schedule Growth: ____ percent

(n) There are a total of _____ activities, _____ activities complete (____ percent), ____ activities in progress (____ percent), _____ activities not started (____ percent). Of the in progress and not started activities; ____ (____ percent) are on the longest path. The longest path has duration of _____ calendar days from data-date to anticipated project completion.

(2) Progress made in each area of the project;

(3) Longest Path;

(4) Date/time constraint(s), other than those required by the contract

(5) Listing of all changes made between the previous schedule and current updated schedule include: added or deleted activities, original and remaining durations for activities that have not started, logic (sequence constraint lag/lead), milestones, planned sequence of operations, longest path, calendars or calendar assignments, and cost loading;

(6) Any decrease in previously reported activity Earned Amount;

(7) Pending items and status thereof, including permits, changes orders, and time extensions;

(8) Status of Contract Completion Date and interim milestones;

(9) Status of Projected Completion Milestone and account of difference in calendar days between previous update Projected Completion Milestone

(10) Current and anticipated delays listing Activity Names and IDs for impacted activities(describe cause of delay and corrective actions(s) and mitigation measures to minimize);

(11) Description of current and potential future schedule problem areas.

(12) Identification of any weather and restricted lost time as compared to anticipated weather for the month and anticipated restricted days for which the update is submitted. Impacts resulting from adverse weather must be documented in tabular form showing the calendar month (or billing period) with the days on

which construction activity incurred Lost Work Days due to adverse weather. In narrative form, describe the adverse weather cause such as precipitation measurement, temperature, wind or other influencing factors, and why work was impacted. Describe the construction activity(s) that was (were) scheduled, impacted.

Each entry in the narrative report must cite the respective Activity ID and Activity Name, the date and reason for the change, and description of the change.

f. Earned Value Report: Derive from and correspond to P6 cost loaded schedule. List all activities having a budget amount cost loaded. Compile total earnings on the project from notice to proceed to current progress payment request. Show current budget, previous physical percent complete, to-date physical percent complete, previous earned value, to-date earned value, cost this period and cost to complete on the report for each activity.

g. Schedule Variance Control (SVC) Diagram: With each schedule submission, provide a SVC diagram showing 1) A Cash Flow Curve indicating planned project cost based on each of projected early and projected late activity finish dates and 2) one curve for Earned Value to-date. Revise Cash Flow Curves when the contract is modified, or as directed by the Contracting Officer Include a legend on report clearly indication 3 curves: early finish, late finish, and earned-value to date.

Use the following settings in Activity Usage Profile Options:

(1) In the Data section, under Display, the radio box for Cost must be selected.

(2) In the Data section, under Filter for Bars/Graphs, the checkbox for Total must be checked.

(3) In the Show Bars/Curves section:

(a) Under the By Date column, the checkboxes for Baseline, Actual and Remaining Late must be checked. The checkboxes for Budgeted and Remaining Early must be unchecked.

(b) Under the Cumulative column, the checkboxes for Baseline, Actual and Remaining Late must be checked. The checkboxes for Budgeted and Remaining Early must be unchecked.

(c) Set the color for Baseline to green.

(d) Set the color for Actual to blue.

(e) Set the color for Remaining Late to red.

(4) In the Show Earned Value Curves section, the checkboxes for Planned Value Cost, Earned Value Cost and Estimate at Completion must be unchecked.

h. Logic Diagram showing timescale from data date to 60 days after data date with filter for longest path. Leave Group By selection blank and

sort by finish date in ascending order.

i. Baseline or Monthly Update Checklist as applicable completed and certified by Qualified Scheduler. Baseline Project Schedule and Monthly Update Schedule Checklists can be found on the Whole Building Design Guide website at https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-01-32-17-00-20

j. Screen shot PDF of Primavera P6 Time Periods Settings referenced in paragraph SCHEDULE SOFTWARE SETTINGS AND RESTRICTIONS, list item c.(2): ADMIN DROP-DOWN MENU, ADMIN PREFERENCES, TIME PERIODS TAB

k. Screen shot PDF of Primavera P6 Earned Value Settings referenced in paragraph SCHEDULE SOFTWARE SETTINGS AND RESTRICTIONS, list item c.(3): ADMIN DROP-DOWN MENU, ADMIN PREFERENCES, EARNED VALUE TAB

l. Daily Reported Production Activity: Submit on a monthly basis, in electronic spreadsheet (format provided by the Government), summary of daily reported production activity for the reporting month in the update schedule. Use the following columns for reporting:

(1) Date

(2) Activity ID

(3) Work Description

(4) Contractor

(5) Billable Hours

m. HVAC/COMMISSIONING KTR Checklist. See Section 23 09 00 INSTRUMENTATION AND CONTROL FOR HVAC for checklist requirements. Complete checklist listing all items with baseline submittal. Complete checklist as required to complete project, submitting complete checklist in intermediately following monthly update submittal.

1.11 CONTRACT MODIFICATION

1.11.1 Time Impact Analysis (TIA)

Submit a Time Impact Analysis with each cost and time proposal for a proposed change. TIA must illustrate the influence of each change or delay on the Contract Completion Date or milestones. No time extensions will be granted nor delay damages paid unless a delay occurs which consumes all available Project Float, impacts the longest path, and extends the Projected Completion beyond the Contract Completion Date.

a. Each TIA must be in both narrative and schedule form. The narrative must:

1. Define the scope and conditions of the change;

2. Provide start and finish dates of impact;

3. Successor(s) and predecessor(s) activities to impact period;

4. Responsible party;

5. Describe how the impact originated;

6. How it impacts the schedule's longest path.

b. The schedule submission must consist of three native XER files:

(1) Fragnet used to define the scope of the changed condition

(2) Most recent accepted schedule update as of the time of the impact start date. Update this schedule to show all activity progress as of the time of the impact start date. The impact start date is identified as the time when an existing activity is impeded for either starting or finishing.

(3) The impacted schedule that has the Fragnet inserted in the updated schedule and the schedule "run" so that the new completion date is determined.

c. For claimed as-built project delay, the inserted Fragnet TIA method must be modified to account for as-built events known to occur after the data date of schedule update used. Updated schedules for periods following the impact start date will be used to evaluate how the project progressed (as-built) through the finish of impact. Impact to longest path must be determined for each following update period.

d. All TIAs must include any mitigation, and must determine the apportionment of the overall delay assignable to each individual delay. Apportionment must provide identification of delay type and classification of delay by compensable and non-compensable events. The associated narrative must clearly describe analysis methodology used, and the findings in a chronological listing beginning with the earliest delay event.

(1) Identify and classify types of delay defined as follows:

(a) Force majeure delay (e.g., weather delay): Any delay event caused by something or someone other than the Government or the Contractor, or the risk of which has not been assigned solely to the Government or the Contractor. If the force majeure delay is on the longest path, in absence of other types of concurrent delays, the Contractor is granted an extension of contract time, classified as a non-compensable event.

(b) A Contractor-delay: Any delay event caused by the Contractor, or the risk of which has been assigned solely to the Contractor. If the contractor-delay is on the longest path, in absence of other types of concurrent delays, Contractor is not granted extension of contract time, and classified as a non-compensable event. Where absent other types of delays, and having impact to project completion, Contractor must provide to Contracting Officer a Corrective Action Plan identifying plan to mitigate delay.

(c) A Government-delay: Any delay event caused by the Government,

or the risk of which has been assigned solely to the Government. If the Government-delay is on the longest path, in absence of other types of concurrent delays, the Contractor is granted an extension of contract time, and classified as a compensable event.

(2) Functional concurrency must be used to analyze concurrent delays, where: separate delay issues delay project completion, do not necessarily occur at same time, rather occur within same monthly schedule update period at minimum, or within same as-built period under review. If a combination of functionally concurrent delay types occurs, it is considered Concurrent Delay, which is defined in the following combinations:

(a) Government-delay concurrent with contractor-delay: excusable time extension, classified non-compensable event.

(b) Government-delay concurrent with force majeure delay: excusable time extension, classified non-compensable event.

(c) Contractor-delay concurrent with force majeure delay: excusable time extension, classified non-compensable event.

(3) Pacing delay reacting to another delay (parent delay) equally or more critical than paced activity must be identified prior to pacing. Contracting Officer will notify Contractor prior to pacing. Contractor must notify Contracting Officer prior to pacing. Notification must include identification of parent delay issue, estimated parent delay time period, paced activity(s) identity, and pacing reason(s). Pacing Concurrency is defined as follows:

(a) Government-delay concurrent with contractor-pacing: excusable time extension, classified compensable event.

(b) Contractor-delay concurrent with Government-pacing: inexcusable time extension, classified non-compensable event

e. Submit electronic file containing the narrative and the source schedule files used in the time impact analysis.

1.12 PROJECT FLOAT

Project Float is the length of time between the Contractor's Projected Completion Milestone and the Contract Completion Date. Project Float available in the schedule will not be for the exclusive use of either the Government or the Contractor.

The use of Resource Leveling is prohibited. Techniques used for the purpose of artificially adjusting activity durations to consume float and influence longest path are prohibited.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 35 26.05 20

GOVERNMENT SAFETY REQUIREMENTS FOR DESIGN-BUILD
12/15

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP A10.34	(2001; R 2012) Protection of the Public on or Adjacent to Construction Sites
ASSP A10.44	(2014) Control of Energy Sources (Lockout/Tagout) for Construction and Demolition Operations
ASSP A1264.1	(2017) Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Roof Openings; Stairs and Guardrail/Handrail Systems
ASSP Z244.1	(2016) The Control of Hazardous Energy Lockout, Tagout and Alternative Methods
ASSP Z359.0	(2012) Definitions and Nomenclature Used for Fall Protection and Fall Arrest
ASSP Z359.1	(2016) The Fall Protection Code
ASSP Z359.2	(2017) Minimum Requirements for a Comprehensive Managed Fall Protection Program
ASSP Z359.3	(2017) Safety Requirements for Lanyards and Positioning Lanyards
ASSP Z359.4	(2013) Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components
ASSP Z359.6	(2016) Specifications and Design Requirements for Active Fall Protection Systems
ASSP Z359.7	(2011) Qualification and Verification Testing of Fall Protection Products
ASSP Z359.11	(2014) Safety Requirements for Full Body Harnesses
ASSP Z359.12	(2009) Connecting Components for Personal Fall Arrest Systems

ASSP Z359.13	(2013) Personal Energy Absorbers and Energy Absorbing Lanyards
ASSP Z359.14	(2014) Safety Requirements for Self-Retracting Devices for Personal Fall Arrest and Rescue Systems
ASSP Z359.15	(2014) Safety Requirements for Single Anchor Lifelines and Fall Arresters for Personal Fall Arrest Systems

ASME INTERNATIONAL (ASME)

ASME B30.3	(2016) Tower Cranes
ASME B30.5	(2014) Mobile and Locomotive Cranes
ASME B30.8	(2015) Floating Cranes and Floating Derricks
ASME B30.9	(2014; INT Feb 2011 - Nov 2013) Slings
ASME B30.20	(2013; INT Oct 2010 - May 2012) Below-the-Hook Lifting Devices
ASME B30.22	(2016) Articulating Boom Cranes
ASME B30.26	(2015; INT Jun 2010 - Jun 2014) Rigging Hardware

ASTM INTERNATIONAL (ASTM)

ASTM F855	(2015) Standard Specifications for Temporary Protective Grounds to Be Used on De-energized Electric Power Lines and Equipment

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 1048	(2003) Guide for Protective Grounding of Power Lines
IEEE C2	(2017; Errata 1-2 2017; INT 1 2017) National Electrical Safety Code

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 1	(2018) Fire Code
NFPA 10	(2018; TIA 18-1) Standard for Portable Fire Extinguishers
NFPA 51B	(2014) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70	(2017; ERTA 1-2 2017; TIA 17-1; TIA 17-2; TIA 17-3; TIA 17-4; TIA 17-5; TIA 17-6; TIA 17-7; TIA 17-8; TIA 17-9; TIA 17-10;

	TIA 17-11; TIA 17-12; TIA 17-13; TIA 17-14; TIA 17-15; TIA 17-16; TIA 17-17) National Electrical Code
NFPA 70E	(2018; TIA 18-1; TIA 81-2) Standard for Electrical Safety in the Workplace
NFPA 241	(2013; Errata 2015) Standard for Safeguarding Construction, Alteration, and Demolition Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety and Health Requirements Manual

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

10 CFR 20	Standards for Protection Against Radiation
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1910.147	The Control of Hazardous Energy (Lock Out/Tag Out)
29 CFR 1910.333	Selection and Use of Work Practices
29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment
29 CFR 1915.89	Control of Hazardous Energy (Lockout/Tags-Plus)
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.16	Rules of Construction
29 CFR 1926.450	Scaffolds
29 CFR 1926.500	Fall Protection
29 CFR 1926.1400	Cranes and Derricks in Construction
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
CPL 2.100	(1995) Application of the Permit-Required Confined Spaces (PRCS) Standards, 29 CFR 1910.146

1.2 DEFINITIONS

1.2.1 Competent Person (CP)

The CP is a person designated in writing, who, through training, knowledge

and experience, is capable of identifying, evaluating, and addressing existing and predictable hazards in the working environment or working conditions that are dangerous to personnel, and who has authorization to take prompt corrective measures with regards to such hazards.

1.2.2 Competent Person, Confined Space

The CP, Confined Space, is a person meeting the competent person requirements as defined EM 385-1-1 Appendix Q, with thorough knowledge of OSHA's Confined Space Standard, 29 CFR 1910.146, and designated in writing to be responsible for the immediate supervision, implementation and monitoring of the confined space program, who through training, knowledge and experience in confined space entry is capable of identifying, evaluating and addressing existing and potential confined space hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.3 Competent Person, Cranes and Rigging

The CP, Cranes and Rigging, as defined in EM 385-1-1 Appendix Q, is a person meeting the competent person, who has been designated in writing to be responsible for the immediate supervision, implementation and monitoring of the Crane and Rigging Program, who through training, knowledge and experience in crane and rigging is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.4 Competent Person, Excavation/Trenching

A CP, Excavation/Trenching, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and 29 CFR 1926, who has been designated in writing to be responsible for the immediate supervision, implementation and monitoring of the excavation/trenching program, who through training, knowledge and experience in excavation/trenching is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.5 Competent Person, Fall Protection

The CP, Fall Protection, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and in accordance with ASSP Z359.0, who has been designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the fall protection program, who through training, knowledge and experience in fall protection and rescue systems and equipment, is capable of identifying, evaluating and addressing existing and potential fall hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.6 Competent Person, Scaffolding

The CP, Scaffolding is a person meeting the competent person requirements in EM 385-1-1 Appendix Q, and designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the scaffolding program. The CP for Scaffolding has enough training, knowledge and experience in scaffolding to correctly identify, evaluate and address existing and potential hazards and also has the authority to take prompt corrective measures with regard to these hazards. CP

qualifications must be documented and include experience on the specific scaffolding systems/types being used, assessment of the base material that the scaffold will be erected upon, load calculations for materials and personnel, and erection and dismantling. The CP for scaffolding must have a documented, minimum of 8-hours of scaffold training to include training on the specific type of scaffold being used (e.g. mast-climbing, adjustable, tubular frame), in accordance with EM 385-1-1 Section 22.B.02.

1.2.7 Competent Person (CP) Trainer

A competent person trainer as defined in EM 385-1-1 Appendix Q, who is qualified in the material presented, and who possesses a working knowledge of applicable technical regulations, standards, equipment and systems related to the subject matter on which they are training Competent Persons. A competent person trainer must be familiar with the typical hazards and the equipment used in the industry they are instructing. The training provided by the competent person trainer must be appropriate to that specific industry. The competent person trainer must evaluate the knowledge and skills of the competent persons as part of the training process.

1.2.8 High Risk Activities

High Risk Activities are activities that involve work at heights, crane and rigging, excavations and trenching, scaffolding, electrical work, and confined space entry.

1.2.9 High Visibility Accident

A High Visibility Accident is any mishap which may generate publicity or high visibility.

1.2.10 Load Handling Equipment (LHE)

LHE is a term used to describe cranes, hoists and all other hoisting equipment (hoisting equipment means equipment, including crane, derricks, hoists and power operated equipment used with rigging to raise, lower or horizontally move a load).

1.2.11 Medical Treatment

Medical Treatment is treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.

1.2.12 Near Miss

A Near Miss is a mishap resulting in no personal injury and zero property damage, but given a shift in time or position, damage or injury may have occurred (e.g., a worker falls off a scaffold and is not injured; a crane swings around to move the load and narrowly misses a parked vehicle).

1.2.13 Operating Envelope

The Operating Envelope is the area surrounding any crane or load handling equipment. Inside this "envelope" is the crane, the operator, riggers and crane walkers, other personnel involved in the operation, rigging gear between the hook, the load, the crane's supporting structure (i.e. ground

or rail), the load's rigging path, the lift and rigging procedure.

1.2.14 Qualified Person (QP)

The QP is a person designated in writing, who, by possession of a recognized degree, certificate, or professional standing, or extensive knowledge, training, and experience, has successfully demonstrated their ability to solve or resolve problems related to the subject matter, the work, or the project.

1.2.15 Qualified Person, Fall Protection (QP for FP)

A QP for FP is a person meeting the requirements of EM 385-1-1 Appendix Q, and ASSP Z359.0, with a recognized degree or professional certificate and with extensive knowledge, training and experience in the fall protection and rescue field who is capable of designing, analyzing, and evaluating and specifying fall protection and rescue systems.

1.2.16 Recordable Injuries or Illnesses

Recordable Injuries or Illnesses are any work-related injury or illness that results in:

a. Death, regardless of the time between the injury and death, or the length of the illness;

b. Days away from work (any time lost after day of injury/illness onset);

c. Restricted work;

d. Transfer to another job;

e. Medical treatment beyond first aid;

f. Loss of consciousness; or

g. A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (a) through (f) above.

1.2.17 USACE Property and Equipment

Interpret "USACE" property and equipment specified in USACE EM 385-1-1 as Government property and equipment.

1.2.18 Load Handling Equipment (LHE) Accident or Load Handling Equipment Mishap

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

failure results in damage to other components (e.g., dropped boom, dropped load, or roll over). Document any mishap that meets the criteria described in the Contractor Significant Incident Report (CSIR).

1.3 SUBMITTALS

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

SD-01 Preconstruction Submittals

APP - Pre-Design Submittal; G

APP - Pre-Construction Submittal; G

SD-06 Test Reports

Monthly Exposure Reports

Notifications and Reports

Accident Reports; G

LHE Inspection Reports

SD-07 Certificates

Crane Operators/Riggers

Standard Lift Plan; G

Critical Lift Plan ; G

Naval Architecture Analysis; G

Activity Hazard Analysis (AHA)

Confined Space Entry Permit

Hot Work Permit

Certificate of Compliance

License Certificates

Radiography Operation Planning Work Sheet; G

1.4 MONTHLY EXPOSURE REPORTS

Provide a Monthly Exposure Report and attach to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both Prime and subcontractor. Failure to submit the report may result in retention of up to 10 percent of the voucher.

1.5 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this contract, comply with the most recent edition of 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 govern.

1.6 SITE QUALIFICATIONS, DUTIES, AND MEETINGS

1.6.1 Personnel Qualifications

1.6.1.1 Site Safety and Health Officer (SSHO)

Provide an SSHO that meets the requirements of EM 385-1-1 Section 1. The SSHO must ensure that the requirements of 29 CFR 1926.16 are met for the project. Provide a Safety oversight team that includes a minimum of one (1) person at each project site to function as the Site Safety and Health Officer (SSHO). The SSHO or an equally-qualified Alternate SSHO must be at the work site at all times to implement and administer the Contractor's safety program and government-accepted Accident Prevention Plan. The SSHO and Alternate SSHO must have the required training, experience, and qualifications in accordance with EM 385-1-1 Section 01.A.17, and all associated sub-paragraphs.

If the SSHO is off-site for a period longer than 24 hours, an equally-qualified alternate SSHO must be provided and must fulfill the same roles and responsibilities as the primary SSHO. When the SSHO is temporarily (up to 24 hours) off-site, a Designated Representative (DR), as identified in the AHA may be used in lieu of an Alternate SSHO, and must be on the project site at all times when work is being performed. Note that the DR is a collateral duty safety position, with safety duties in addition to their full time occupation.

1.6.1.2 Contractor Quality Control (QC) Manager:

The Contractor Quality Control Manager can be the SSHO on this project.

1.6.1.3 Competent Person Qualifications

Provide Competent Persons in accordance with EM 385-1-1, Appendix Q and herein. Competent Persons for high risk activities include confined space, cranes and rigging, excavation/trenching, fall protection, and electrical work. The CP for these activities must be designated in writing, and meet the requirements for the specific activity (i.e. competent person, fall protection).

The Competent Person identified in the Contractor's Safety and Health Program and accepted Accident Prevention Plan, must be on-site at all times when the work that presents the hazards associated with their professional expertise is being performed. Provide the credentials of the Competent Persons(s) to the the Contracting Officer for information in consultation with the Safety Office.

1.6.1.3.1 Competent Person for Confined Space Entry

Provide a Confined Space (CP) Competent Person who meets the requirements of EM 385-1-1, Appendix Q, and herein. The CP for Confined Space Entry must supervise the entry into each confined space.

1.6.1.3.2 Competent Person for Scaffolding

Provide a Competent Person for Scaffolding who meets the requirements of EM 385-1-1, Section 22.B.02 and herein.

1.6.1.3.3 Competent Person for Fall Protection

Provide a Competent Person for Fall Protection who meets the requirements of EM 385-1-1, Section 21.C.04, 21.B.03, and herein.

1.6.1.4 Qualified Trainer Requirements

Individuals qualified to instruct the 40 hour contract safety awareness course, or portions thereof, must meet the definition of a Competent Person Trainer, and, at a minimum, possess a working knowledge of the following subject areas: EM 385-1-1, Electrical Standards, Lockout/Tagout, Fall Protection, Confined Space Entry for Construction; Excavation, Trenching and Soil Mechanics, and Scaffolds in accordance with 29 CFR 1926.450, Subpart L.

Instructors are required to:

a. Prepare class presentations that cover construction-related safety requirements.

b. Ensure that all attendees attend all sessions by using a class roster signed daily by each attendee. Maintain copies of the roster for at least five (5) years. This is a certification class and must be attended 100 percent. In cases of emergency where an attendee cannot make it to a session, the attendee can make it up in another class session for the same subject.

c. Update training course materials whenever an update of the EM 385-1-1 becomes available.

d. Provide a written exam of at least 50 questions. Students are required to answer 80 percent correctly to pass.

e. Request, review and incorporate student feedback into a continuous course improvement program.

1.6.1.5 Crane Operators/Riggers

Provide Operators meeting the requirements in EM 385-1-1, Section 15.B for Riggers and Section 16.B for Crane Operators. In addition, for mobile cranes with Original Equipment Manufacturer (OEM) rated capacities of 50,000 pounds or greater, designate crane operators qualified by a source that qualifies crane operators (i.e., union, a government agency, or an organization that tests and qualifies crane operators). Provide proof of current qualification.

1.6.2 Personnel Duties

1.6.2.1 Duties of the Site Safety and Health Officer (SSHO)

The SSHO must:

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

b. Conduct mishap investigations and complete required accident reports. Report mishaps and near misses.

c. Use OSHA's Form 300 to log work-related injuries and illnesses occurring on the project site for Prime Contractors and subcontractors. Post and maintain the Form 300 on the site Safety Bulletin Board.

d. Maintain applicable safety reference material on the job site.

e. Attend the pre-construction conference, pre-work meetings including preparatory meetings, and periodic in-progress meetings.

f. Review the APP and AHAs for compliance with EM 385-1-1, and approve, sign, implement and enforce them.

g. Establish a Safety and Occupational Health (SOH) Deficiency Tracking System that lists and monitors outstanding deficiencies until resolution.

h. Ensure subcontractor compliance with safety and health requirements.

i. Maintain a list of hazardous chemicals on site and their material Safety Data Sheets (SDS).

j. Maintain a weekly list of high hazard activities involving energy, equipment, excavation, entry into confined space, and elevation, and be prepared to discuss details during QC Meetings.

k. Provide and keep a record of site safety orientation and indoctrination for Contractor employees, subcontractor employees, and site visitors.

Superintendent, QC Manager, and SSHO are subject to dismissal if the above duties are not being effectively carried out. If Superintendent, QC Manager, or SSHO are dismissed, project work will be stopped and will not be allowed to resume until a suitable replacement is approved and the above duties are again being effectively carried out.

1.6.3 Meetings

1.6.3.1 PreConstruction Conference

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project must attend the Prework Conference. This includes the project superintendent, Site Safety and Occupational Health officer, quality control manager, or any other

assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

b. Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, and Government review of AHAs to preclude project delays.

c. Deficiencies in the submitted APP, identified during the Contracting Officer's review, must be corrected, and the APP re-submitted for review prior to the scheduling the Prework Conference. Work is not permitted to begin until an APP is established that is acceptable to the Contracting Officer.

1.6.3.2 Safety Meetings

Conduct safety meetings to review past activities, plan for new or changed operations, review pertinent aspects of appropriate AHA (by trade), establish safe working procedures for anticipated hazards, and provide pertinent Safety and Occupational Health (SOH) training and motivation. Conduct meetings at least once a month for all supervisors on the project location. The SSHO, supervisors, foremen, or CDSOs must conduct meetings at least once a week for the trade workers. Document meeting minutes to include the date, persons in attendance, subjects discussed, and names of individual(s) who conducted the meeting. Maintain documentation on-site and furnish copies to the Contracting Officer on request. Notify the Contracting Officer of all scheduled meetings 7 calendar days in advance.

1.7 ACCIDENT PREVENTION PLAN (APP)

1.7.1 Plans and Submissions

1.7.1.1 APP - Pre-Design Submittal

Provide a site-specific Accident Prevention Plan (APP), including Activity Hazard Analyses (AHA), in accordance with the US Army Corps of Engineers Safety and Health Manual EM 385-1-1 Appendix A, paragraph 3.k for the design team to follow during site visits and investigations. For subsequent visits, update the form if there are changes in the personnel who will be attending, or the tasks to be performed. Submit the APP for review and acceptance by the Government at least 15 calendar days prior to the start of the design field work. Field work may not begin until the pre-design APP is accepted by the Contracting Officer.

If the design scope includes borings or other subsurface investigations, as part of the APP identify the type of field investigation and verification techniques, such as visual, local utility locating service scanning and third party/subcontractor scanning, potholing, or hand digging within two feet of a known utility. Mark underground utilities before starting any ground-disturbing actions. Notify the Contracting Officer 15 days prior to the start of soil borings or sub-surface investigations.

Prior to the start of construction incorporate the Pre-Design APP into the

Pre-Construction APP so that one site specific APP exists for the project and submit to the Contracting Officer for acceptance

1.7.1.2 APP - Pre-Construction Submittal

A qualified person must prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of EM 385-1-1, Appendix A, and as supplemented herein. Cover all paragraph and subparagraph elements in EM 385-1-1, Appendix A. The APP must be job-specific and address any unusual or unique aspects of the project or activity for which it is written. The APP must interface with the Contractor's overall safety and health program referenced in the APP in the applicable APP element, and made site-specific. Describe the methods to evaluate past safety performance of potential subcontractors in the selection process. Also, describe innovative methods used to ensure and monitor safe work practices of subcontractors. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP must be signed by an officer of the firm (Prime Contractor senior person), the individual preparing the APP, the on-site superintendent, the designated SSHO, the Contractor Quality Control Manager, and any designated Certified Safety Professional (CSP) or Certified Health Physicist (CHP). The SSHO must provide and maintain the APP and a log of signatures by each subcontractor foreman, attesting that they have read and understand the APP, and make the APP and log available on-site to the Contracting Officer. If English is not the foreman's primary language, the Prime Contractor must provide an interpreter.

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP. Once reviewed and accepted by the Contracting Officer, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP is cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified. Continuously review and amend the APP, as necessary, throughout the life of the contract. Changes to the accepted APP must be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and Quality Control Manager. Incorporate unusual or high-hazard activities not identified in the original APP as they are discovered. Should any severe hazard exposure (i.e. imminent danger) become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate and remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ASSP A10.34), and the environment.

1.7.2 Names and Qualifications

Provide plans in accordance with the requirements outlined in Appendix A of EM 385-1-1, including the following:

a. Names and qualifications (resumes including education, training,

experience and certifications) of site safety and health personnel designated to perform work on this project to include the designated Site Safety and Health Officer and other competent and qualified personnel to be used. Specify the duties of each position.

b. Qualifications of competent and of qualified persons. As a minimum, designate and submit qualifications of competent persons for each of the following major areas: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; and personal protective equipment and clothing to include selection, use and maintenance.

1.7.3 Plans

Provide plans in the APP in accordance with the requirements outlined in Appendix A of EM 385-1-1, including the following:

1.7.3.1 Confined Space Entry Plan

Develop a confined or enclosed space entry plan in accordance with EM 385-1-1, applicable OSHA standards 29 CFR 1910, 29 CFR 1915, and 29 CFR 1926, OSHA Directive CPL 2.100, and any other federal, state and local regulatory requirements identified in this contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

1.7.3.2 Standard Lift Plan (SLP)

Plan lifts to avoid situations where the operator cannot maintain safe control of the lift. Prepare a written SLP in accordance with EM 385-1-1, Section 16.A.03, using Form 16-2 for every lift or series of lifts (if duty cycle or routine lifts are being performed). The SLP must be developed, reviewed and accepted by all personnel involved in the lift in conjunction with the associated AHA. Signature on the AHA constitutes acceptance of the plan. Maintain the SLP on the LHE for the current lift(s) being made. Maintain historical SLPs for a minimum of 3 months.

1.7.3.3 Critical Lift Plan - Crane or Load Handling Equipment

Provide a Critical Lift Plan as required by EM 385-1-1, Section 16.H.01, using Form 16-3. Critical lifts require detailed planning and additional or unusual safety precautions. Develop and submit a critical lift plan to the Contracting Officer 30 calendar days prior to critical lift. Comply with load testing requirements in accordance with EM 385-1-1, Section 16.F.03.

In addition to the requirements of EM 385-1-1, Section 16.H.02, the critical lift plan must include the following:

a. For lifts of personnel, demonstrate compliance with the requirements of 29 CFR 1926.1400 and EM 385-1-1, Section 16.T.

b. For barge mounted mobile cranes, provide a Naval Architecture Analysis and include an LHE Manufacturer's Floating Service Load Chart in

accordance with the criteria from the selected standard in EM 385-1-1, Section 16.L.02. The Floating Service Load Chart must provide a table of rated load versus boom angle and radius. The Floating Service Load Chart must also provide the maximum allowable machine list and trim associated with the tabular loads and radii provided. If the Manufacturer's Floating Service Load Chart is not available, a floating service load chart may be developed and provided by a qualified Registered Professional Engineer (RPE), competent in the field of floating cranes. The Load Chart must be in accordance with the criteria from the selected standard in EM 385-1-1, Section 16.L; provide a table of rated load versus boom angle and radius; provide the maximum allowable machine list and machine trim associated with the tabular loads and radii provided; and be stamped by a RPE qualified and competent in the field of floating cranes. The RPE, competent in the field of floating cranes must stamp and certify (sign) that the Naval Architectural Analysis (NAA) meets the requirements of EM 385-1-1, Section 16.L.03.

c. Multi-purpose machines, material handling equipment, and construction equipment used to lift loads that are suspended by rigging gear, require proof of authorization from the machine OEM that the machine is capable of making lifts of loads suspended by rigging equipment. Demonstrate that the operator is properly trained and that the equipment is properly configured to make such lifts and is equipped with a load chart.

1.7.3.4 Fall Protection and Prevention (FP&P) Plan

The plan must comply with the requirements of EM 385-1-1, Section 21.D and ASSP Z359.2, be site specific, and address all fall hazards in the work place and during different phases of construction. Address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 6 feet. A competent person or qualified person for fall protection must prepare and sign the plan documentation. Include fall protection and prevention systems, equipment and methods employed for every phase of work, roles and responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Review and revise, as necessary, the Fall Protection and Prevention Plan documentation as conditions change, but at a minimum every six months, for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. Keep and maintain the accepted Fall Protection and Prevention Plan documentation at the job site for the duration of the project. Include the Fall Protection and Prevention Plan documentation in the Accident Prevention Plan (APP).

1.7.3.5 Rescue and Evacuation Plan

Provide a Rescue and Evacuation Plan in accordance with EM 385-1-1 Section 21.N and ASSP Z359.2, and include in the FP&P Plan and as part of the APP. Include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility.

1.7.3.6 Hazardous Energy Control Program (HECP)

Develop a HECP in accordance with EM 385-1-1 Section 12, 29 CFR 1910.147, 29 CFR 1910.333, 29 CFR 1915.89, ASSP Z244.1, and ASSP A10.44. Submit

this HECP as part of the Accident Prevention Plan (APP). Conduct a preparatory meeting and inspection with all effected personnel to coordinate all HECP activities. Document this meeting and inspection in accordance with EM 385-1-1, Section 12.A.02. Ensure that each employee is familiar with and complies with these procedures.

1.7.3.7 Excavation Plan

Identify the safety and health aspects of excavation, and provide and prepare the plan in accordance with EM 385-1-1, Section 25.A and Section 31 00 00 EARTHWORK.

1.7.3.8 Occupant Protection Plan

Identify the safety and health aspects of lead-based paint removal, prepared in accordance with Section 02 83 00 LEAD REMEDIATION.

1.7.3.9 Asbestos Hazard Abatement Plan

Identify the safety and health aspects of asbestos work, and prepare in accordance with Section 02 82 00 ASBESTOS REMEDIATION.

1.7.3.10 Site Safety and Health Plan

Identify the safety and health aspects, and prepare in accordance with Section 01 35 29.13 HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES FOR CONTAMINATED SITES.

1.7.3.11 PCB Plan

Identify the safety and health aspects of Polychlorinated Biphenyls work, and prepare in accordance with Sections 02 84 33 REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCBs) and 02 61 23 REMOVAL AND DISPOSAL OF PCB CONTAMINATED SOILS.

1.7.3.12 Site Demolition Plan

Identify the safety and health aspects, and prepare in accordance with Section 02 41 00 DEMOLITION AND DECONSTRUCTION and referenced sources. Include engineering survey as applicable.

1.8 ACTIVITY HAZARD ANALYSIS (AHA)

Before beginning each activity, task or Definable Feature of Work (DFOW) involving a type of work presenting hazards not experienced in previous project operations, or where a new work crew or subcontractor is to perform the work, the Contractor(s) performing that work activity must prepare an AHA. AHAs must be developed by the Prime Contractor, subcontractor, or supplier performing the work, and provided for Prime Contractor review and approval before submitting to the Contracting Officer. AHAs must be signed by the SSHO, Superintendent, QC Manager and the subcontractor Foreman performing the work. Format the AHA in accordance with EM 385-1-1, Section 1 or as directed by the Contracting Officer. Submit the AHA for review at least 15 working days prior to the start of each activity task, or DFOW. The Government reserves the right to require the Contractor to revise and resubmit the AHA if it fails to effectively identify the work sequences, specific anticipated hazards, site conditions, equipment, materials, personnel and the control measures to be implemented.

AHAs must identify competent persons required for phases involving high risk activities, including confined entry, crane and rigging, excavations, trenching, electrical work, fall protection, and scaffolding.

1.8.1 AHA Management

Review the AHA list periodically (at least monthly) at the Contractor supervisory safety meeting, and update as necessary when procedures, scheduling, or hazards change. Use the AHA during daily inspections by the SSHO to ensure the implementation and effectiveness of the required safety and health controls for that work activity.

1.8.2 AHA Signature Log

Each employee performing work as part of an activity, task or DFOW must review the AHA for that work and sign a signature log specifically maintained for that AHA prior to starting work on that activity. The SSHO must maintain a signature log on site for every AHA. Provide employees whose primary language is other than English, with an interpreter to ensure a clear understanding of the AHA and its contents.

1.9 DISPLAY OF SAFETY INFORMATION

1.9.1 Safety Bulletin Board

Within one calendar day(s) after commencement of work, erect a safety bulletin board at the job site. Where size, duration, or logistics of project do not facilitate a bulletin board, an alternative method, acceptable to the Contracting Officer, that is accessible and includes all mandatory information for employee and visitor review, may be deemed as meeting the requirement for a bulletin board. Include and maintain information on safety bulletin board as required by EM 385-1-1, Section 01.A.06. Additional items required to be posted include:

a. Confined space entry permit.

b. Hot work permit.

1.9.2 Safety and Occupational Health (SOH) Deficiency Tracking System

Establish a SOH deficiency tracking system that lists and monitors the status of SOH deficiencies in chronological order. Use the tracking system to evaluate the effectiveness of the APP. A monthly evaluation of the data must be discussed in the QC or SOH meeting with everyone on the project. The list must be posted on the project bulletin board and updated daily, and provide the following information:

a. Date deficiency identified;

b. Description of deficiency;

c. Name of person responsible for correcting deficiency;

d. Projected resolution date;

e. Date actually resolved.

1.10 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in paragraph REFERENCES. Maintain applicable equipment manufacturer's manuals.

1.11 EMERGENCY MEDICAL TREATMENT

Contractors must arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.12 NOTIFICATIONS and REPORTS

1.12.1 Mishap Notification

Notify the Contracting Officer as soon as practical, but no more than twenty-four hours, after any mishaps, including recordable accidents, incidents, and near misses, as defined in EM 385-1-1 Appendix Q, any report of injury, illness, load handling equipment (LHE) or rigging mishaps, or any property damage. The Contractor is responsible for obtaining appropriate medical and emergency assistance and for notifying fire, law enforcement, and regulatory agencies. Immediate reporting is required for electrical mishaps, to include Arc Flash; shock; uncontrolled release of hazardous energy (includes electrical and non-electrical); load handling equipment or rigging; fall from height (any level other than same surface); and underwater diving. These mishaps must be investigated in depth to identify all causes and to recommend hazard control measures.

Within notification include Contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (for example, type of construction equipment used and PPE used). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted. Assist and cooperate fully with the Government's investigation(s) of any mishap.

1.12.2 Accident Reports

a. Conduct an accident investigation for recordable injuries and illnesses, property damage, and near misses as defined in EM 385-1-1, to establish the root cause(s) of the accident. Complete the applicable NAVFAC Contractor Incident Reporting System (CIRS), and electronically submit via the NAVFAC Enterprise Safety Applications Management System (ESAMS). The Contracting Officer will provide copies of any required or special forms.

b. Near Misses: For Navy Projects, complete the applicable documentation in NAVFAC Contractor Incident Reporting System (CIRS), and electronically submit via the NAVFAC Enterprise Safety Applications Management System (ESAMS). Near miss reports are considered positive and proactive Contractor safety management actions.

c. Conduct an accident investigation for any load handling equipment accident (including rigging gear accidents) to establish the root cause(s) of the accident. Complete the LHE Accident Report (Crane and Rigging Gear) form and provide the report to the Contracting Officer within 30 calendar days of the accident. Do not proceed with crane

operations until cause is determined and corrective actions have been implemented to the satisfaction of the Contracting Officer. The Contracting Officer will provide a blank copy of the accident report form.

1.12.3 LHE Inspection Reports

Submit LHE inspection reports required in accordance with EM 385-1-1 and as specified herein with Daily Reports of Inspections.

1.12.4 Certificate of Compliance and Pre-lift Plan/Checklist for LHE and Rigging

Provide a FORM 16-1 Certificate of Compliance for LHE entering an activity under this contract and in accordance with EM 385-1-1. Post certifications on the crane.

Develop a Standard Lift Plan (SLP) in accordance with EM 385-1-1, Section 16.H.03 using Form 16-2 Standard Pre-Lift Crane Plan/Checklist for each lift planned. Submit SLP to the Contracting Officer for approval within 15 calendar days in advance of planned lift.

1.13 HOT WORK

1.13.1 Permit and Personnel Requirements

Submit and obtain a written permit prior to performing "Hot Work" (i.e. welding or cutting) or operating other flame-producing/spark producing devices, from the Fire Division. A permit is required from the Explosives Safety Office for work in and around where explosives are processed, stored, or handled. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. Provide at least two 20 pound 4A:20 BC rated extinguishers for normal "Hot Work". The extinguishers must be current inspection tagged, and contain an approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch must be trained in accordance with NFPA 51B and remain on-site for a minimum of one hour after completion of the task or as specified on the hot work permit.

When starting work in the facility, require personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency Fire Division phone number. REPORT ANY FIRE, NO MATTER HOW SMALL, TO THE RESPONSIBLE FIRE DIVISION IMMEDIATELY.

1.13.2 Work Around Flammable Materials

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

Whenever these materials, except beryllium and chromium (VI), are encountered in indoor operations, local mechanical exhaust ventilation systems that are sufficient to reduce and maintain personal exposures to within acceptable limits must be used and maintained in accordance with manufacturer's instruction and supplemented by exceptions noted in EM 385-1-1, Section 06.H

1.14 RADIATION SAFETY REQUIREMENTS

Submit License Certificates, employee training records, and Leak Test Reports for radiation materials and equipment to the Contracting Officer and Radiation Safety Office (RSO), and Contracting Oversight Technician (COT) for all specialized and licensed material and equipment proposed for use on the construction project. Maintain on-site records whenever licensed radiological materials or ionizing equipment are on government property.

Protect workers from radiation exposure in accordance with 10 CFR 20, ensuring any personnel exposures are maintained As Low As Reasonably Achievable.

1.14.1 Radiography Operation Planning Work Sheet

Submit a Gamma and X-Ray Radiography Operation Planning Work Sheet to Contracting Officer 14 days prior to commencement of operations involving radioactive materials or radiation generating devices. For portable machine sources of ionizing radiation, including moisture density and XRF, use and submit the Portable Gauge Operations Planning Worksheet instead. The Contracting Officer and COT will review the submitted worksheet and provide questions and comments.

Contractors must use primary dosimeters process by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory.

1.14.2 Site Access and Security

Coordinate site access and security requirements with the Contracting Officer and COT for all radiological materials and equipment containing ionizing radiation that are proposed for use on a government facility. For gamma radiography materials and equipment, a Government escort is required for any travels on the Installation. The Navy COT or authorized representative will meet the Contractor at a designated location outside the installation, ensure safety of the materials being transported, and will escort the Contractor to the job site and return upon completion of the work. For portable machine sources of ionizing radiation, including moisture density and XRF, the Navy COT or Government authorized representative will meet the Contractor at the job site.

Provide a copy of all calibration records, and utilization records to the COT for radiological operations performed on the site.

1.14.3 Loss or Release and Unplanned Personnel Exposure

Loss or release of radioactive materials, and unplanned personnel exposures must be reported immediately to the Contracting Officer, RSO, and Base Security Department Emergency Number.

1.14.4 Site Demarcation and Barricade

Properly demark and barricade an area surrounding radiological operations to preclude personnel entrance, in accordance with EM 385-1-1, Nuclear Regulatory Commission, and Applicable State regulations and license requirements, and in accordance with requirements established in the accepted Radiography Operation Planning Work Sheet.

Do not close or obstruct streets, walks, and other facilities occupied and

used by the Government without written permission from the Contracting Officer.

1.14.5 Security of Material and Equipment

Properly secure the radiological material and ionizing radiation equipment at all times, including keeping the devices in a properly marked and locked container, and secondarily locking the container to a secure point in the Contractor's vehicle or other approved storage location during transportation and while not in use. While in use, maintain a continuous visual observation on the radiological material and ionizing radiation equipment. In instances where radiography is scheduled near or adjacent to buildings or areas having limited access or one-way doors, make no assumptions as to building occupancy. Where necessary, the Contracting Officer will direct the Contractor to conduct an actual building entry, search, and alert. Where removal of personnel from such a building cannot be accomplished and it is otherwise safe to proceed with the radiography, position a fully instructed employee inside the building or area to prevent exiting while external radiographic operations are in process.

1.14.6 Transportation of Material

Comply with 49 CFR 173 for Transportation of Regulated Amounts of Radioactive Material. Notify Local Fire authorities and the site Radiation Safety officer (RSO) of any Radioactive Material use.

1.14.7 Schedule for Exposure or Unshielding

Actual exposure of the radiographic film or unshielding the source must not be initiated until after 5 p.m. on weekdays.

1.14.8 Transmitter Requirements

Adhere to the base policy concerning the use of transmitters, such as radios and cell phones. Obey Emissions control (EMCON) restrictions.

1.15 CONFINED SPACE ENTRY REQUIREMENTS.

Confined space entry must comply with Section 34 of EM 385-1-1, OSHA 29 CFR 1926, OSHA 29 CFR 1910, OSHA 29 CFR 1910.146, and OSHA Directive CPL 2.100. Any potential for a hazard in the confined space requires a permit system to be used.

1.15.1 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. Comply with EM 385-1-1, Section 34 for entry procedures. Hazards pertaining to the space must be reviewed with each employee during review of the AHA.

1.15.2 Forced Air Ventilation

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.

1.15.3 Sewer Wet Wells

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

1.15.4 Rescue Procedures and Coordination with Local Emergency Responders

Develop and implement an on-site rescue and recovery plan and procedures. The rescue plan must not rely on local emergency responders for rescue from a confined space.

1.16 DIVE SAFETY REQUIREMENTS

Develop a Dive Operations Plan, AHA, emergency management plan, and personnel list that includes qualifications, for each separate diving operation. Submit these documents to the District Dive Coordinator (DDC) for review and acceptance at least 15 working days prior to commencement of diving operations. These documents must be at the diving location at all times. Provide each of these documents as a part of the project file.

1.17 SEVERE STORM PLAN

In the event of a severe storm warning, the Contractor must:

a. Secure outside equipment and materials and place materials that could be damaged in protected areas.

b. Check surrounding area, including roof, for loose material, equipment, debris, and other objects that could be blown away or against existing facilities.

c. Ensure that temporary erosion controls are adequate.

PART 2 PRODUCTS

PART 3 EXECUTION

3.1 CONSTRUCTION AND OTHER WORK

Comply with EM 385-1-1, NFPA 70, NFPA 70E, NFPA 241, the APP, the AHA, Federal and State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard prevails.

PPE is governed in all areas by the nature of the work the employee is performing. Use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks. Safety glasses must be worn or carried/available on each person. Mandatory PPE includes:

a. Hard Hat

b. Long Pants

c. Appropriate Safety Shoes

d. Appropriate Class Reflective Vests

3.1.1 Worksite Communication

Employees working alone in a remote location or away from other workers must be provided an effective means of emergency communications (i.e., cellular phone, two-way radios, land-line telephones or other acceptable means). The selected communication must be readily available (easily within the immediate reach) of the employee and must be tested prior to the start of work to verify that it effectively operates in the area/environment. An employee check-in/check-out communication procedure must be developed to ensure employee safety.

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 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, and hexavalent chromium, are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials. Low mercury lamps used within fluorescent lighting fixtures are allowed as an exception without further Contracting Officer approval. Notify the Radiation Safety Officer (RSO) prior to excepted items of radioactive material and devices being brought on base.

3.1.3 Unforeseen Hazardous Material

Contract documents identify materials such as PCB, lead paint, and friable and non-friable asbestos and other OSHA regulated chemicals (i.e. 29 CFR Part 1910.1000). If material(s) that may be hazardous to human health upon disturbance are encountered during construction operations, 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 UTILITY OUTAGE REQUIREMENTS

Apply for utility outages at least 15 days in advance. At a minimum, the written request must include the location of the outage, utilities being affected, duration of outage, any necessary sketches, and a description of the means to fulfill energy isolation requirements in accordance with EM 385-1-1, Section 11.A.02 (Isolation). Some examples of energy isolation devices and procedures are highlighted in EM 385-1-1, Section 12.D. In accordance with EM 385-1-1, Section 12.A.01, where outages involve Government or Utility personnel, coordinate with the Government on all activities involving the control of hazardous energy.

These activities include, but are not limited to, a review of HECP and HEC procedures, as well as applicable Activity Hazard Analyses (AHAS). In accordance with EM 385-1-1, Section 11.A.02 and NFPA 70E, work on energized electrical circuits must not be performed without prior government authorization. Government permission is considered through the

permit process and submission of a detailed AHA. Energized work permits are considered only when de-energizing introduces additional or increased hazard or when de-energizing is infeasible.

3.3 OUTAGE COORDINATION MEETING

After the utility outage request is approved and prior to beginning work on the utility system requiring shut-down, conduct a pre-outage coordination meeting in accordance with EM 385-1-1, Section 12.A. This meeting must include the Prime Contractor, the Prime and subcontractors performing the work, the Contracting Officer, and the Installation Representative. All parties must fully coordinate HEC activities with one another. During the coordination meeting, all parties must discuss and coordinate on the scope of work, HEC procedures (specifically, the lock-out/tag-out procedures for worker and utility protection), the AHA, assurance of trade personnel qualifications, identification of competent persons, and compliance with HECP training in accordance with EM 385-1-1, Section 12.C. Clarify when personal protective equipment is required during switching operations, inspection, and verification.

3.4 CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

Provide and operate a Hazardous Energy Control Program (HECP) in accordance with EM 385-1-1 Section 12, 29 CFR 1910.333, 29 CFR 1915.89, ASSP A10.44, NFPA 70E, and paragraph HAZARDOUS ENERGY CONTROL PROGRAM (HECP).

3.4.1 Safety Preparatory Inspection Coordination Meeting with the Government or Utility

For electrical distribution equipment that is to be operated by Government or Utility personnel, the Prime Contractor and the subcontractor performing the work must attend the safety preparatory inspection coordination meeting, which will also be attended by the Contracting Officer's Representative, and required by EM 385-1-1, Section 12.A.02. The meeting will occur immediately preceding the start of work and following the completion of the outage coordination meeting. Both the safety preparatory inspection coordination meeting and the outage coordination meeting must occur prior to conducting the outage and commencing with lockout/tagout procedures.

3.4.2 Lockout/Tagout Isolation

Where the Government or Utility performs equipment isolation and lockout/tagout, the Contractor must place their own locks and tags on each energy-isolating device and proceed in accordance with the HECP. Before any work begins, both the Contractor and the Government or Utility must perform energy isolation verification testing while wearing required PPE detailed in the Contractor's AHA and required by EM 385-1-1, Sections 05.I and 11.B. Install personal protective grounds, with tags, to eliminate the potential for induced voltage in accordance with EM 385-1-1, Section 12.E.06.

3.4.3 Lockout/Tagout Removal

Upon completion of work, conduct lockout/tagout removal procedure in accordance with the HECP. In accordance with EM 385-1-1, Section 12.E.08, each lock and tag must be removed from each energy isolating device by the authorized individual or systems operator who applied the device. Provide

formal notification to the Government (by completing the Government form if provided by Contracting Officer's Representative), confirming that steps of de-energization and lockout/tagout removal procedure have been conducted and certified through inspection and verification. Government or Utility locks and tags used to support the Contractor's work will not be removed until the authorized Government employee receives the formal notification.

3.5 FALL PROTECTION PROGRAM

Establish a fall protection program, for the protection of all employees exposed to fall hazards. Within the program include company policy, identify roles and responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures in accordance with ASSP Z359.2 and EM 385-1-1, Sections 21.A and 21.D.

3.5.1 Training

Institute a fall protection training program. As part of the Fall Protection Program, provide training for each employee who might be exposed to fall hazards. Provide training by a competent person for fall protection in accordance with EM 385-1-1, Section 21.C. Document training and practical application of the competent person in accordance with EM 385-1-1, Section 21.C.04 and ASSP Z359.2 in the AHA.

3.5.2 Fall Protection Equipment and Systems

Enforce use of personal fall protection equipment and systems designated (to include fall arrest, restraint, and positioning) for each specific work activity in the Site Specific Fall Protection and Prevention Plan and AHA at all times when an employee is exposed to a fall hazard. Protect employees from fall hazards as specified in EM 385-1-1, Section 21.

Provide personal fall protection equipment, systems, subsystems, and components that comply with EM 385-1-1 Section 21.I, 29 CFR 1926.500 Subpart M,ASSP Z359.0, ASSP Z359.1, ASSP Z359.2, ASSP Z359.3, ASSP Z359.4, ASSP Z359.6, ASSP Z359.7, ASSP Z359.11, ASSP Z359.12, ASSP Z359.13, ASSP Z359.14, and ASSP Z359.15.

3.5.2.1 Additional Personal Fall Protection

In addition to the required fall protection systems, other protection such as safety skiffs, personal floatation devices, and life rings, are required when working above or next to water in accordance with EM 385-1-1, Sections 21.O through 21.O.06. Personal fall protection systems and equipment are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall protection systems are required when operating other equipment such as scissor lifts. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, travel, or while performing work.

3.5.2.2 Personal Fall Protection Harnesses

Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. The use of body belts is not acceptable. Harnesses must have a fall arrest

attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Snap hooks and carabiners must be self-closing and self-locking, capable of being opened only by at least two consecutive deliberate actions and have a minimum gate strength of 3,600 lbs in all directions. Use webbing, straps, and ropes made of synthetic fiber. The maximum free fall distance when using fall arrest equipment must not exceed 6 feet, unless the proper energy absorbing lanyard is used. Always take into consideration the total fall distance and any swinging of the worker (pendulum-like motion), that can occur during a fall, when attaching a person to a fall arrest system. All full body harnesses must be equipped with Suspension Trauma Preventers such as stirrups, relief steps, or similar in order to provide short-term relief from the effects of orthostatic intolerance in accordance with EM 385-1-1, Section 21.I.06.

3.5.3 Fall Protection for Roofing Work

Implement fall protection controls based on the type of roof being constructed and work being performed. Evaluate the roof area to be accessed for its structural integrity including weight-bearing capabilities for the projected loading.

a. Low Sloped Roofs:

(1) For work within 6 feet of an edge, on a roof having a slope less than or equal to 4:12 (vertical to horizontal), protect personnel from falling by use of personal fall arrest/restraint systems, guardrails, or safety nets. A safety monitoring system is not adequate fall protection and is not authorized. Provide in accordance with 29 CFR 1926.500.

(2) For work greater than 6 feet from an edge, erect and install warning lines in accordance with 29 CFR 1926.500 and EM 385-1-1, Section L.

b. Steep-Sloped Roofs: Work on a roof having a slope greater than 4:1 (vertical to horizontal) requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also applies to residential or housing type construction.

3.5.4 Horizontal Lifelines (HLL)

Provide HLL in accordance with EM 385-1-1, Section 21.I.08.d.2. Commercially manufactured horizontal lifelines (HLL) must be designed, installed, certified and used, under the supervision of a qualified person, for fall protection as part of a complete fall arrest system which maintains a safety factor of 2 (29 CFR 1926.500). The competent person for fall protection may (if deemed appropriate by the qualified person) supervise the assembly, disassembly, use and inspection of the HLL system under the direction of the qualified person. Locally manufactured HLLs are not acceptable unless they are custom designed for limited or site specific applications by a Registered Professional Engineer who is qualified in designing HLL systems.

3.5.5 Guardrails and Safety Nets

Design, install and use guardrails and safety nets in accordance with EM 385-1-1, Section 21.F.01 and 29 CFR 1926 Subpart M.

3.5.6 Rescue and Evacuation Plan and Procedures

When personal fall arrest systems are used, ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. Prepare a Rescue and Evacuation Plan and include a detailed discussion of the following: methods of rescue; methods of self-rescue or assisted-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. Include the Rescue and Evacuation Plan within the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP). The plan must comply with the requirements of EM 385-1-1, ASSP Z359.2, and ASSP Z359.4.

3.5.7 Fall Prevention During Design Phase

During design phase the Contractor must consider and eliminate fall hazards anticipated during the operation and maintenance evolutions of the facility. If it is not feasible to eliminate or prevent the need to work at heights with the subsequent exposure to fall hazards, control measures must be included in the design to protect personnel conducting maintenance work after completion of the project. In addition to the detailed requirements included in the provisions of this contract, the design work must incorporate the requirements of 29 CFR 1910 and ASSP Z359.0, ASSP Z359.1, ASSP Z359.2, ASSP Z359.3, ASSP Z359.4, ASSP A1264.1, and NFPA 1.

3.6 WORK PLATFORMS

3.6.1 Scaffolding

Provide employees with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Comply with the following requirements:

a. Scaffold platforms greater than 20 feet in height must be accessed by use of a scaffold stair system.

b. Ladders commonly provided by scaffold system manufacturers are prohibited for accessing scaffold platforms greater than 20 feet maximum in height.

c. An adequate gate is required.

d. Employees performing scaffold erection and dismantling must be qualified.

e. Scaffold must be capable of supporting at least four times the maximum intended load, and provide appropriate fall protection as delineated in the accepted fall protection and prevention plan.

f. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward.

g. Special care must be given to ensure scaffold systems are not overloaded.

h. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material are prohibited. The

first tie-in must be at the height equal to 4 times the width of the smallest dimension of the scaffold base.

i. Scaffolding other than suspended types must bear on base plates upon wood mudsills (2 in x 10 in x 8 in minimum) or other adequate firm foundation.

j. Scaffold or work platform erectors must have fall protection during the erection and dismantling of scaffolding or work platforms that are more than six feet.

k. Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

3.6.2 Elevated Aerial Work Platforms (AWPs)

Workers must be anchored to the basket or bucket in accordance with manufacturer's specifications and instructions (anchoring to the boom may only be used when allowed by the manufacturer and permitted by the CP). Lanyards used must be sufficiently short to prohibit worker from climbing out of basket. The climbing of rails is prohibited. Lanyards with built-in shock absorbers are acceptable. Self-retracting devices are not acceptable. Tying off to an adjacent pole or structure is not permitted unless a safe device for 100 percent tie-off is used for the transfer.

Use of AWPs must be operated, inspected, and maintained as specified in the operating manual for the equipment and delineated in the AHA. Operators of AWPs must be designated as qualified operators by the Prime Contractor. Maintain proof of qualifications on site for review and include in the AHA.

3.7 EQUIPMENT

3.7.1 Material Handling Equipment (MHE)

a. Material handling equipment such as forklifts must not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions. Material handling equipment fitted with personnel work platform attachments are prohibited from traveling or positioning while personnel are working on the platform.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions. Material Handling Equipment Operators must be trained in accordance with OSHA 29 CFR 1910, Subpart N.

c. Operators of forklifts or power industrial trucks must be licensed in accordance with OSHA.

3.7.2 Load Handling Equipment (LHE)

The following requirements apply. In exception, these requirements do not apply to commercial truck mounted and articulating boom cranes used solely to deliver material and supplies (not prefabricated components, structural steel, or components of a system-engineered metal building) where the lift consists of moving materials and supplies from a truck or trailer to the ground; to cranes installed on mechanical trucks that are used solely in

the repair of shred based equipment; to cranes that enter the activity, but are not used for lifting; nor to other machines not used to lift loads suspended by rigging equipment. However, LHE accidents occurring during such operations must be reported.

a. Equip cranes and derricks as specified in EM 385-1-1, Section 16.

b. Notify the Contracting Officer 15 working days in advance of any LHE entering the activity, in accordance with EM 385-1-1, Section 16.A.02, so that necessary quality assurance spot checks can be coordinated. Contractor's operator must remain with the crane during the spot check. Rigging gear must comply with OSHA, ASME B30.9 Standards safety standards.

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

d. Comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for construction tower cranes, ASME B30.8 for floating cranes and floating derricks, ASME B30.9 for slings, ASME B30.20 for below the hook lifting devices and ASME B30.26 for rigging hardware.

e. Under no circumstance must a Contractor make a lift at or above 90 percent of the cranes rated capacity in any configuration.

f. When operating in the vicinity of overhead transmission lines, operators and riggers must be alert to this special hazard and follow the requirements of EM 385-1-1 Section 11, and ASME B30.5 or ASME B30.22 as applicable.

g. Do not use crane suspended personnel work platforms (baskets) unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Do not lift personnel with a line hoist or friction crane. Additionally, submit a specific AHA for this work to the Contracting Officer. Ensure the activity and AHA are thoroughly reviewed by all involved personnel.

h. Inspect, maintain, and recharge portable fire extinguishers as specified in NFPA 10, Standard for Portable Fire Extinguishers.

i. All employees must keep clear of loads about to be lifted and of suspended loads.

j. Use cribbing when performing lifts on outriggers.

k. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.

l. A physical barricade must be positioned to prevent personnel access where accessible areas of the LHE's rotating superstructure poses a risk of striking, pinching or crushing personnel.

m. Maintain inspection records in accordance by EM 385-1-1, Section 16.D, including shift, monthly, and annual inspections, the signature of the

person performing the inspection, and the serial number or other identifier of the LHE that was inspected. Records must be available for review by the Contracting Officer.

n. Maintain written reports of operational and load testing in accordance with EM 385-1-1, Section 16.F, listing the load test procedures used along with any repairs or alterations performed on the LHE. Reports must be available for review by the Contracting Officer.

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

p. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. At wind speeds greater than 20 mph, the operator, rigger and lift supervisor must cease all crane operations, evaluate conditions and determine if the lift may proceed. Base the determination to proceed or not on wind calculations per the manufacturer and a reduction in LHE rated capacity if applicable. Include this maximum wind speed determination as part of the activity hazard analysis plan for that operation.

3.7.3 Machinery and Mechanized Equipment

a. Proof of qualifications for operator must be kept on the project site for review.

b. Manufacture specifications or owner's manual for the equipment must be on-site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA or USACE EM 385-1-1. Incorporate such additional safety precautions or requirements into the AHAs.

3.7.4 USE OF EXPLOSIVES

Explosives must not be used or brought to the project site without prior written approval from the Contracting Officer. Such approval does not relieve the Contractor of responsibility for injury to persons or for damage to property due to blasting operations.

Storage of explosives, when permitted on Government property, must be only where directed and in approved storage facilities. These facilities must be kept locked at all times except for inspection, delivery, and withdrawal of explosives.

3.8 EXCAVATIONS

Soil classification must be performed by a competent person in accordance with 29 CFR 1926 and EM 385-1-1.

3.8.1 Utility Locations

Provide a third party, independent, private utility locating company to positively identify underground utilities in the work area in addition to any station locating service and coordinated with the station utility department.

3.8.2 Utility Location Verification

Physically verify underground utility locations, including utility depth,

by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system.

3.8.3 Utilities Within and Under Concrete, Bituminous Asphalt, and Other Impervious Surfaces

Utilities located within and under concrete slabs or pier structures, bridges, parking areas, and the like, are extremely difficult to identify. Whenever contract work involves chipping, saw cutting, or core drilling through concrete, bituminous asphalt or other impervious surfaces, the existing utility location must be coordinated with station utility departments in addition to location and depth verification by a third party, independent, private locating company. The third party, independent, private locating company must locate utility depth by use of Ground Penetrating Radar (GPR), X-ray, bore scope, or ultrasound prior to the start of demolition and construction. Outages to isolate utility systems must be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the Contractor from meeting this requirement.

3.9 ELECTRICAL

Perform electrical work in accordance with EM 385-1-1, Appendix A, Sections 11 and 12.

3.9.1 Conduct of Electrical Work

As delineated in EM 385-1-1, electrical work is to be conducted in a de-energized state unless there is no alternative method for accomplishing the work. In those cases obtain an energized work permit from the Contracting Officer. The energized work permit application must be accompanied by the AHA and a summary of why the equipment/circuit needs to be worked energized. Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Attach temporary grounds 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 is 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 are permitted to enter. When work requires work near energized circuits as defined by NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves and electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA. Ensure that each employee is familiar with and complies with these procedures and 29 CFR 1910.147.

3.9.2 Qualifications

Electrical work must be performed by QP personnel with verifiable credentials who are familiar with applicable code requirements. Verifiable credentials consist of State, National and Local Certifications

or Licenses that a Master or Journeyman Electrician may hold, depending on work being performed, and must be identified in the appropriate AHA. Journeyman/Apprentice ratio must be in accordance with State, Local requirements applicable to where work is being performed.

3.9.3 Arc Flash

Conduct a hazard analysis/arc flash hazard analysis whenever work on or near energized parts greater than 50 volts is necessary, in accordance with NFPA 70E.

All personnel entering the identified arc flash protection boundary must be QPs and properly trained in NFPA 70E requirements and procedures. Unless permitted by NFPA 70E, no Unqualified Person is permitted to approach nearer than the Limited Approach Boundary of energized conductors and circuit parts. Training must be administered by an electrically qualified source and documented.

3.9.4 Grounding

Ground electrical circuits, equipment and enclosures in accordance with NFPA 70 and IEEE C2 to provide a permanent, continuous and effective path to ground unless otherwise noted by EM 385-1-1.

Check grounding circuits to ensure that the circuit between the ground and a grounded power conductor has a resistance low enough to permit sufficient current flow to allow the fuse or circuit breaker to interrupt the current.

3.9.5 Testing

Temporary electrical distribution systems and devices must be inspected, tested and found acceptable for Ground-Fault Circuit Interrupter (GFCI) protection, polarity, ground continuity, and ground resistance before initial use, before use after modification and at least monthly. Monthly inspections and tests must be maintained for each temporary electrical distribution system and signed by the electrical CP or QP.

-- End of Section --

Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

PART 6 - ATTACHMENTS

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

PART 6
ATTACHMENTS

ATTACHMENTS:

ATT 6.1	INDOOR SWIMMING POOL 1982 RECORD DRAWINGS
ATT 6.2	DAM NECK 530 ESPC I RECORD DRAWINGS
ATT 6.3	DAM NECK BLDG. 530 DDC AS BUILT RECORD DRAWINGS
ATT 6.4	EXISTING PHOTOGRAPHS
ATT 6.5	ROOF SPECIAL MAINTENANCE WARRANTY
ATT 6.6	EQUIPMENT INVENTORY FORM
ATT 6.7	OC-SOP-WA-14_REV_D_PREP-PAINT
ATT 6.8	EV CHECKLIST DN 530
ATT 6.9	LAYDOWN AREA DN 530
ATT 6.10	POOL DEHUMIDIFICATION UNIT LOCATION
ATT 6.11	MECHANICAL WASTE WATER DISPOSAL

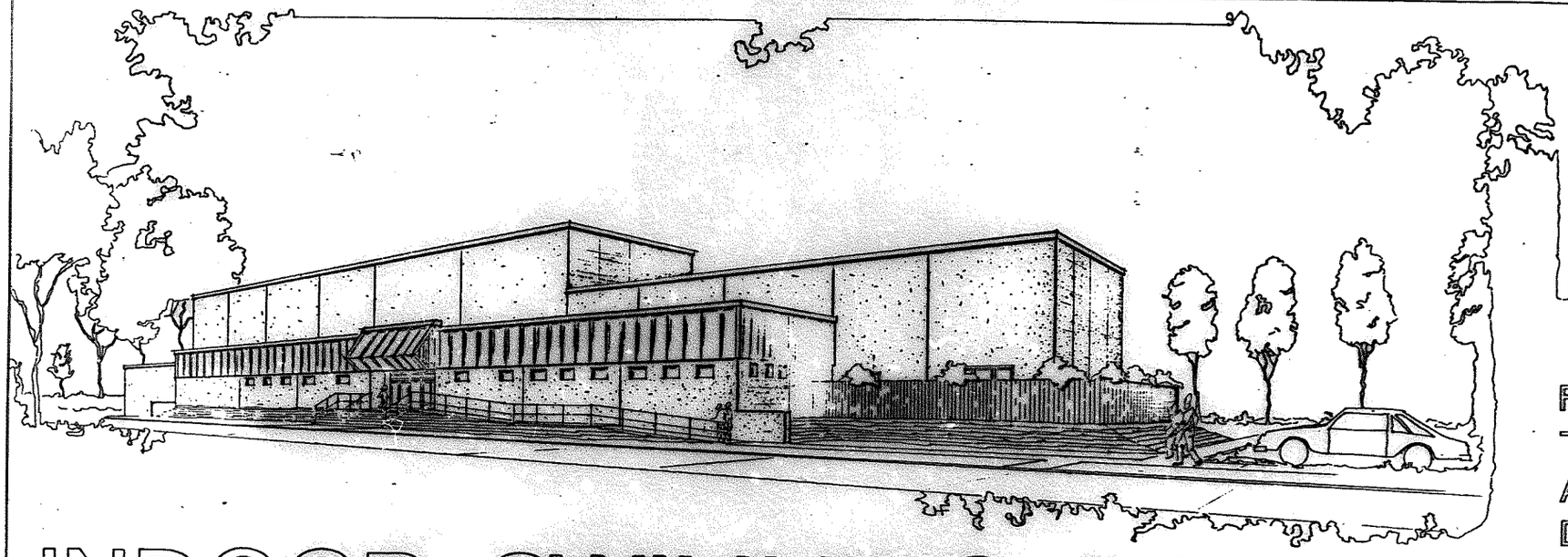
Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

ATTACHMENT 6.1 – Indoor Swimming Pool 1982 Record Drawings

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA



INDOOR SWIMMING POOL

FLEET COMBAT
TRAINING CENTER
ATLANTIC
DAM NECK
VIRGINIA BEACH
VIRGINIA

REVISIONS

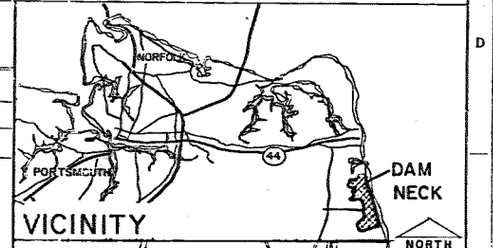
NO.	DESCRIPTION	DATE	APPROVED

NUMBER INDICATES SECTION — LETTER INDICATES ELEVATION OR DETAIL
SHEET NUMBER WHERE ELEVATION, SECTION OR DETAIL IS TAKEN — A3 | A5
A1, A2 — ADDITIONAL SHEET REFERENCES
SHEET NUMBER WHERE ELEVATION, SECTION OR DETAIL IS DRAWN

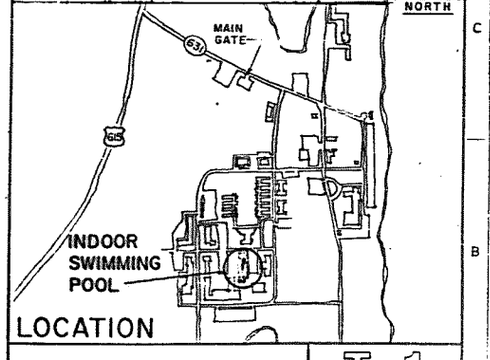
ELEVATION, SECTION OR DETAIL SYMBOL

DRAWING INDEX

SHEET	EFD	NAVFAC	TITLE
T-1	177310	4077310	TITLE SHEET
B-1	177311	4077311	BORINGS AND LOCATIONS
B-2	177312	4077312	BORINGS AND LOCATIONS
C-1	177313	4077313	SITE PLAN
SD-1	177314	4077314	STEAM DISTRIBUTION PLAN
SD-2	177315	4077315	STEAM LINE DETAIL
SD-3	177316	4077316	STEAM LINE DETAIL
A-1	177317	4077317	FLOOR PLAN
A-2	177318	4077318	SECTION AND ELEVATION
A-3	177319	4077319	SECTION AND ELEVATION
A-4	177320	4077320	ELEVATIONS
A-5	177321	4077321	WALL SECTIONS
A-6	177322	4077322	WALL SECTIONS AND DETAILS
A-7	177323	4077323	DETAILS
A-8	177324	4077324	PARTIAL PLAN AND DETAILS
A-9	177325	4077325	INTERIOR ELEVATIONS AND DETAILS
A-10	177326	4077326	FINISH AND COLOR SCHEDULES
A-11	177327	4077327	DOOR SCHEDULE AND DETAILS
A-12	177328	4077328	DOOR AND WINDOW DETAILS
A-13	177329	4077329	ROOF PLAN AND DETAILS
A-14	177330	4077330	REFLECTED CEILING PLAN
A-15	177331	4077331	POOL DETAILS
A-16	177332	4077332	STAIR AND PLATFORM DETAILS
S-1	177333	4077333	FOUNDATION AND PILE PLAN
S-2	177334	4077334	FLOOR PLAN
S-3	177335	4077335	PARTIAL PLAN AND SECTIONS
S-4	177336	4077336	SECTIONS
S-5	177337	4077337	SECTIONS
S-6	177338	4077338	SECTIONS AND DETAILS
S-7	177339	4077339	ROOF FRAMING PLAN
S-8	177340	4077340	BOTTOM CHORD BRACING
S-9	177341	4077341	TRUSS DETAILS
S-10	177342	4077342	FRAMING ELEVATIONS
S-11	177343	4077343	FRAMING ELEVATIONS AND DETAILS
S-12	177344	4077344	SECTIONS AND DETAILS
S-13	177345	4077345	CATWALK FRAMING AND DETAILS
P-1	177346	4077346	PLUMBING PLANS
P-2	177347	4077347	RISER DIAGRAMS
P-3	177348	4077348	POOL EQUIPMENT PLAN, SECTIONS
M-1	177349	4077349	MECH. FLOOR PLAN
M-2	177350	4077350	MECH. ROOM PLAN AND PIPING SCHEMATIC
M-3	177351	4077351	MECH. SECTIONS
M-4	177352	4077352	MECH. DETAILS
M-5	177353	4077353	MECH. SCHEDULES
M-6	177354	4077354	CONTROLS
E-1	177355	4077355	SITE PLAN
E-2	177356	4077356	LIGHTING PLAN
E-3	177357	4077357	POWER PLAN
E-4	177358	4077358	LEGEND, CWR RISER, EQUIP. RMS.
E-5	177359	4077359	SIGNAL PLAN, DIAGRAMS AND SCHEDULES
L-1	177360	4077360	LANDSCAPE PLAN & DETAILS
L-2	177361	4077361	LANDSCAPE FENCE DETAILS



VICINITY



LOCATION

T-1

EFD DWG. NO. 177310
JOB ORDER NO. 542F1144
DES. J.H. FREEMAN
DRWN. JF, JGM
TD
CHK. USBK
DD. MGR. ECL
DES. DIR. Lawrence
SATISFACTORY TO DATE
APPROVED DATE

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.
FLTCOMBATRACENLANT
DAM NECK, VIRGINIA BEACH, VA
INDOOR SWIMMING POOL
TITLE SHEET

SIZE	CODE IDENT NO.	NAVFAC DWG NO.
F	80091	4077310

SCALE: NONE — NAVFAC DWG NO. N62470-81-B-1144
DATE: 05-81-1144 — SHEET 1 OF —

Boring Nº 1

DEPTH	DESCRIPTION	BLOWS	MOISTURE CONT.
0.0	ASPHALT & GRAVEL TOP 6"		
	SAND, silty fine to medium, loose to medium dense, gray to brown, moist, trace organics (SM)	10	18.1%
		20	11.5%
	SAND, clayey fine and fine to medium, light brown, very moist (SC-CL)	12	15.6%
		12	23.4%
10.0	SAND, fine very loose to medium dense, light brown to gray, moist, trace clay (SP)	10	20.9%
15.0		3	14.7%
20.0		6	7.0%
	CLAY, fine sandy, stiff, gray, saturated trace to little silt (CL)		
25.0		8	
	SAND, clayey fine, medium dense, gray to brown, saturated (SC-SP)		
30.0		15	
	SAND, fine to coarse, medium dense to dense, brown to gray, moist to very moist, trace to little silt (SP-SM)		
35.0		37	20.4%
40.0		37	
	SAND, fine, loose, gray, saturated, trace silt (SP)		
45.0		6	
	SAND, fine to medium, medium dense, gray to brown, very moist, trace silt (SP)		
50.0		12	
55.0	SAND, silty fine to medium, loose to very dense, gray, very moist to saturated, trace marine shell fragments (SP-SM)	46	
60.0		24	20.4%
65.0		69	
70.0		86	
75.0		80	

BOTTOM OF BORING @ 75'
WATER LEVEL INFORMATION
NOTED ON RODS @ [illegible]
AT COMPLETION @ 8.0'
CAVE IN @ 8.0' UPON COMPLETION

Boring Nº 2

DESCRIPTION	BLOWS	MOISTURE CONT.
ASPHALT & GRAVEL TOP 6"		
SAND, silty fine to medium, loose to medium dense, brown, moist, trace organics (SM)	5	14.2%
	15	14.1%
SAND, fine to medium, loose, gray, very moist, silty, trace to little clay fragments (SM)	7	18.3%
SAND, clayey fine to medium, very loose to medium dense, light brown, very moist to saturated (SC-CL)	13	14.5%
	5	22.5%
CLAY, silty, very soft, gray, saturated (CH)		
	2	36.0%
SAND, fine and fine to medium loose to dense, gray to brown, very moist to saturated, trace to little silt (SP)	13	28.0%
	8	
	11	17.5%
	36	
	29	
	24	
SAND, fine to medium, medium dense gray, saturated, trace to little silt and marine shell fragments (SP)	22	
	25	
SAND, fine to medium, medium dense, gray, saturated, trace marine shell frag. (SP)	44	

BOTTOM OF BORING @ 60'
WATER LEVEL INFORMATION
NOTED ON RODS @ 8.0'

Boring Nº 3

DESCRIPTION	BLOWS	MOISTURE CONT.
ASPHALT & GRAVEL TOP 6"		
SAND, silty fine to medium, medium dense, tan to brown, moist, trace organics and fine gravel (SM)	15	12.0%
	20	13.1%
SAND, clayey fine to medium, loose light brown, moist to very moist (SC-CL)	9	19.8%
	7	19.4%
CLAY, silty, very soft, gray, saturated (CH)	1	37.3%
	2	34.9%
SAND, fine to medium, medium dense to dense, gray to brown, very moist to saturated, trace to little silt (SP)	13	32.7%
	17	
	15	
	19	
	35	
	46	
SAND, silty fine and fine to medium dense to very dense, gray, very moist to saturated, trace marine shell fragments (SP-SM)	59	17.6%
	33	
	47	

BOTTOM OF BORING @ 60'
WATER LEVEL INFORMATION:
NOTED ON RODS @ 7.5'
AT COMPLETION @ 7.0'
CAVE IN @ 7.0' UPON COMPLETION

Boring Nº 4

DESCRIPTION	BLOWS	MOISTURE CONT.
ASPHALT AND GRAVEL TOP 6"		
SAND, silty fine to coarse, med. dense, brown, moist, trace fine gravel, trace organics (SW-SM)	18	2.5%
SAND, clayey fine to medium, very loose to loose, light brown, moist to very moist (SC)	18	8.2%
	4	14.1%
CLAY, silty, very soft, gray, very moist, trace fine sand (CH)	7	14.5%
	1	35.7%
SAND, fine, medium dense, gray, saturated, trace silt (SP)	2	36.0%
SAND, fine to coarse, loose to medium dense, brown to gray saturated, trace silt (SP)	11	20.7%
	8	
	17	22.2%
	27	
SAND, silty fine to medium, medium dense to dense, brown to gray saturated, trace marine shell frag. (SM-SP)	15	
	31	
SAND, silty fine, dense, very moist to saturated, gray, trace marine shell fragments (SM-SP)	36	
	37	

BOTTOM OF BORING @ 60'
WATER LEVEL INFORMATION:
NOTED ON RODS @ 7.0'
AT COMPLETION @ 6.5'
CAVE IN @ 7.0' UPON COMPLETION

Boring Nº 5

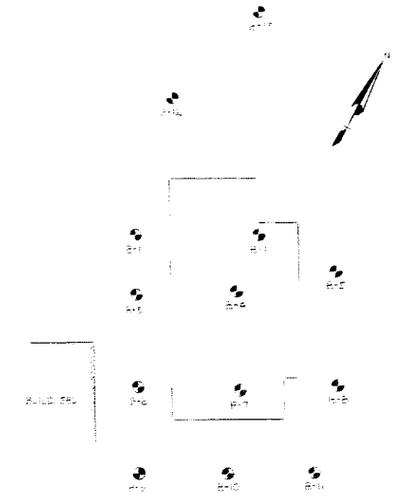
DESCRIPTION	BLOWS	MOISTURE CONT.
ASPHALT & GRAVEL TOP 6"		
SAND, silty fine to medium, loose to medium dense, brown to gray, moist, trace organics (fine gravel TOM)	10	12.4%
SAND, clayey fine and fine to medium, very loose to medium dense, light brown to gray, moist to very moist, trace organic material (SC-CL)	15	19.9%
	6	18.3%
	6	14.5%
CLAY, silty, very soft to soft, gray, saturated (CH)	2	22.6%
	3	40.5%
SAND, fine to medium, loose to medium dense, very moist to saturated, gray to brown, trace to little silt (SP)	14	16.3%
	7	14.6%
SAND, silty fine and fine to medium very dense, very moist to saturated, gray to brown (SP-SM)	18	
	59	
SAND, fine to coarse, dense, brown, very moist to saturated, trace silt and fine gravel (SW)	59	
	31	
SAND, silty fine to medium, loose gray, saturated, (SM)	6	
SAND, fine to medium, medium dense to dense, gray very moist to saturated, trace to little silt and marine shell fragments (SP)	27	
	31	14.1%
	44	
	37	

BOTTOM OF BORING @ 70'
WATER LEVEL INFORMATION
NOTED ON RODS @ 8.0'
AT COMPLETION @ 6.5'
CAVE IN @ 7.0' UPON COMPLETION

Boring Nº 6

DESCRIPTION	BLOWS	MOISTURE CONT.	DEPTH
ASPHALT & GRAVEL TOP 6"			
SAND, silty fine to medium, med. dense, brown, moist, trace organics (SM) / SILT, sandy, very stiff, gray, moist, trace to little organics (ML)	15	6.3%	
	17	15.9%	0.5
SAND, clayey fine to medium, moist to very moist, loose, light brown to gray (SC-CL)	9	4.7%	
	5	20.4%	
CLAY, silty, very soft, gray, very moist to saturated, trace to little fine sand (CH)	2	27.3%	10.0
	1	40.6%	15.0
SAND, clayey fine to medium, loose to medium dense, gray, saturated (SC-SP)	13	35.7%	20.0
	8		25.0
SAND, silty fine, dense, gray, very moist (SM)	57		30.0
SAND, fine to medium, loose to medium dense, gray, very moist to saturated, trace to little silt (SP)	6		35.0
	9		40.0
	16		45.0
SAND, fine to medium, medium dense to very dense, gray, very moist to saturated, trace to little silt and marine shell fragments (SP)	26		50.0
	48		55.0
	60		60.0
	56		65.0
	61		70.0
			75.0

BOTTOM OF BORING @ 70'
WATER LEVEL INFORMATION
NOTED ON RODS @ 2.5'
AT COMPLETION @ 10.0'
CAVE IN @ 18.0' UPON COMPLETION



BORING LOCATION PLAN
SCALE: 1" = 50'-0"

GENERAL NOTES:

1. BORINGS ADVANCED BY AUGERING
2. BLOWS COLUMN INDICATES DEPTH OF SAMPLE AND NUMBER OF BLOWS REQUIRED TO DRIVE A 2" O.D. SPLIT SPOON SAMPLER ONE FOOT INTO UNDISTURBED SOIL WITH A 140 LB. HAMMER FALLING 30" AS PER ASTM TEST DIRECTIONS
3. ALL DEPTHS AND LOCATIONS ARE APPROXIMATE
4. BORINGS DRILLED BY ATEL ASSOCIATES IN APRIL 1981
5. SP, SM, CL, MH, ETC. FROM UNIFIED SOIL CLASSIFICATION SYSTEM. DESCRIPTION OF SOIL IN ACCORDANCE W/ BURMISTER CLASSIFICATION ON BASIS OF VISUAL ESTIMATE BY DRILLER
6. SAMPLES ARE STORED AT LANTNAV-NAVFAC AND ARE AVAILABLE FOR INSPECTION

GRAPHIC SCALES

SCALE: 1" = 5'-0"

SCALE: 1" = 10'-0"

BORING LOGS
SCALE: 1" = [illegible]
VERTICAL

EFD DWG. NO.	1773
JOB ORDER NO.	5-22F ++
DES	
DRWN	[illegible]
T.S.	
CHK.	F.P. [illegible]
SR. NGR.	[illegible]
DES. DIR.	[illegible]
SATISFACTORY TO	DATE
APPROVED	DATE

[illegible] FOR EFD FOR COMPUTER NAVFAC

B-1

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.

F.E. COMBAT AGENT
CAMP PECK, VIRGINIA BEACH, VA

NAVY BANKING
FOD

BORING AND LOCATION PLAN

SIZE F	FSC 80091	4077311	
SCALE [illegible]	DATE 1-4-82	DATE 05-31-144	SHT 1 OF 52

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED

BORING Nº 7

DEPTH	DESCRIPTION	BLOWS	MOISTURE CONTENT
0.0	[illegible]	15	21.1%
	[illegible]		19.7%
5.0	Trace organic material [illegible]		
	SAND [illegible]	4	[illegible]
	[illegible]	2	17.1%
10.0	[illegible] gray, very moist to saturated, trace fine sand (CH)	2	21.1%
15.0		2	
20.0	[illegible]		22.7%
25.0	[illegible]		
30.0	[illegible] (SP-SM)		
35.0	[illegible]		
40.0	[illegible] shell fragments [illegible]	2	
45.0	[illegible]	2	
50.0	[illegible]	2	
55.0	[illegible]	2	
60.0	[illegible]	2	
65.0	BOTTOM OF BORING @ 60' WATER LEVEL INFORMATION NOTED ON RODS @ 7.0' AT COMPLETION @ 6.5' CAVED IN @ 7.5' UPON COMPLETION		
70.0			

BORING Nº 8

DEPTH	DESCRIPTION	BLOWS	MOISTURE CONTENT
0.0	Top 6" Asphalt and Gravel	2	2.7%
	SAND, fine to coarse, silty, medium dense, moist, brown, trace fine gravel (SW-SM)	4	16.2%
	SAND, silty fine and fine to medium sand, very loose to medium dense, brown to gray, moist to very moist (SM-ML)	4	20.1%
	CLAY, silty, very soft, gray, very moist to saturated, trace fine sand (CH)	6	15.4%
5.0		1	32.1%
10.0		2	49.7%
	SAND, fine to medium, very loose, gray, saturated, trace silt (SP)		
	SAND, fine to medium, loose to medium dense, red or brown to gray, very moist to saturated, trace silt (SP)	9	21.1%
15.0	Trace to little coarse sand this sample (SW-SP)	13	
	SAND, fine to medium, medium dense to dense, gray, saturated, trace to little medium shell frags. (SP-SM)	19	
20.0			
25.0		24	
30.0		13	
35.0		22	
40.0		12	
45.0		31	
50.0		31	
55.0	BOTTOM OF BORING @ 60' WATER LEVEL INFORMATION NOTED ON RODS @ 8.0' AT COMPLETION @ 6.0' CAVE IN @ 5.5' UPON COMPLETION		
60.0			
65.0			
70.0			

BORING Nº 9

DEPTH	DESCRIPTION	BLOWS	MOISTURE CONTENT
0.0	SAND, silty fine to med., med dense, light brown to brown, trace organics (SP-SM)	115	15.9%
	SILT, fine sandy, very stiff, brown to gray, moist to very moist, trace organics (ML)	17	22.5%
	SAND, fine to medium, clayey, very moist to saturated, brown to gray (SC-CL)	7	15.7%
	CLAY, silty, very soft, gray, very moist to saturated, trace to little fine sand (CL)	7	14.7%
5.0		2	34.0%
10.0		2	15.5%
	SAND, silty fine [illegible]		
	SAND, fine to medium, loose to medium dense, red or brown to gray, very moist to saturated (SP-SM)	10	25.9%
15.0		10	
		26	
	SAND, fine to medium, very loose to medium dense, gray, very moist to saturated, trace silt (SP)	5	
20.0		9	
	SAND, silty fine and fine to medium, medium dense to very dense, gray, very moist to very moist, trace to little shell fragments (SM-SP)	16	
25.0		17	
30.0		51	
35.0		49	
40.0	BOTTOM OF BORING @ 60' WATER LEVEL INFORMATION NOTED ON RODS @ 4.0' AT COMPLETION @ 10.0' CAVED IN @ 19.0' UPON COMPLETION		
45.0			
50.0			
55.0			
60.0			
65.0			
70.0			

BORING Nº 10

DEPTH	DESCRIPTION	BLOWS	MOISTURE CONTENT
0.0	Asphalt and Gravel Top 6"	20	15.7%
	SAND, silty fine to medium, medium dense, brown, moist, trace fine gravel (SM-SP)	23	19.7%
	SAND, clayey fine to medium, very loose to medium dense, light brown, very moist to saturated (SC-CL)	6	15.7%
	CLAY, silty, very soft, gray, saturated (CH)	11	17.5%
		1	28.1%
	SAND [illegible]	3	42.4%
		13	17.0%
15.0		15	22.1%
		14	
		22	
20.0		23	
		24	
	SAND, silty fine and fine to medium, medium dense to very dense, gray, very moist to saturated, trace to little shell fragments (SM-SP)	29	
25.0		45	
30.0		23	
35.0		52	
40.0		29	
45.0			
50.0			
55.0			
60.0			
65.0			
70.0			

BOTTOM OF BORING @ 7.0'
WATER LEVEL INFORMATION
NOTED ON RODS @ 8.0'
AT COMPLETION @ 7.0'
CAVED IN @ 7.5' UPON COMPLETION

BORING Nº 11

DEPTH	DESCRIPTION	BLOWS	MOISTURE CONTENT
0.0	Asphalt and Gravel Top 6"	19	12.6%
	SAND, clayey fine to medium, med dense, very moist, light brown (SC)	19	15.5%
	SAND, fine to med., silty, med dense, brown, moist, trace to little organics (SM)	10	16.5%
	SAND, clayey fine to medium, very loose to medium dense, light brown, very moist to saturated (SC)	5	15.5%
	SAND, fine to medium, very loose, gray, saturated, trace to little clay (SP)	4	16.5%
	CLAY, silty, very soft, gray, saturated, trace to little fine sand (CH)	2	52.4%
5.0		7	22.7%
	SAND, clayey fine and fine to medium, dense to medium dense, brown, moist, with clay lenses (SC)	5	
	SAND, fine to medium, medium dense, gray, very moist (SP)	17	
	SAND, silty fine and fine to medium, medium dense to very dense, gray, very moist to very moist, trace to little shell fragments (SM-SP)	17	
10.0		17	
		12	24.2%
		9	
		22	
15.0	BOTTOM OF BORING @ 6.0' WATER LEVEL INFORMATION: NOTED ON RODS @ 7.0' AT COMPLETION @ 6.5' CAVED IN @ 7.0' UPON COMPLETION	18	
20.0			
25.0			
30.0			
35.0			
40.0			
45.0			
50.0			
55.0			
60.0			
65.0			
70.0			

BORING Nº 12

DEPTH	DESCRIPTION	BLOWS	MOISTURE CONTENT
0.0	Top 6" Soil	16	10.7%
	*	19	12.4%
	**	19	12.4%
	***	2	14.2%
5.0	BOTTOM OF BORING @ 6.0'		
10.0			
15.0			
20.0			
25.0			
30.0			
35.0			
40.0			
45.0			
50.0			
55.0			
60.0			
65.0			
70.0			

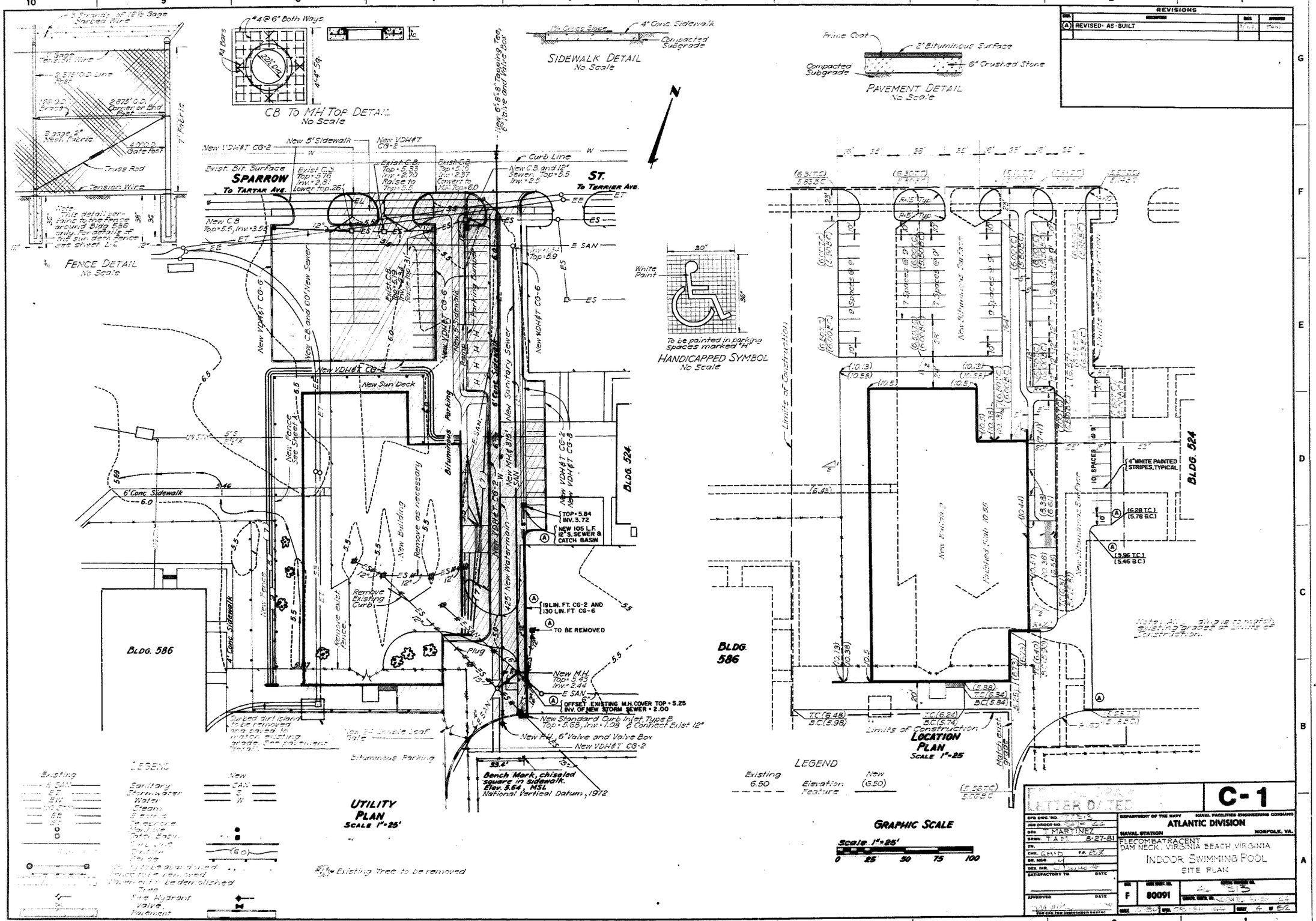
* SAND, [illegible] brown, [illegible] (SM)
** SAND, clayey fine [illegible] (SC)
*** SAND, fine to medium, [illegible] brown, red or gray, moist, trace to little clay (SP-SC)

BORING Nº 13

DEPTH	DESCRIPTION
0.0	SILT, fine sandy, very [illegible] brown, very moist to saturated, trace organics (ML)
5.0	BOTTOM OF BORING @ 6.0'
10.0	
15.0	* SAND, [illegible] brown, [illegible] moist to saturated, trace to little clay (SP-SC)
20.0	
25.0	
30.0	
35.0	
40.0	
45.0	
50.0	
55.0	
60.0	
65.0	
70.0	

EFD DRW. NO. 1732-C	DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND	B-2
JOB ORDER NO. 5422 GC	ATLANTIC DIVISION	
DES.	NAVAL STATION NORFOLK, VA.	
DRWN. DJK	E. BOOMER ENGINEERS, LAM BLVD VIRGINIA BEACH VA.	
TR. [illegible]	NOOR SWIMMING POOL	
CHK. FP. EDX	BORING AND LOCATION PLAN	
DR. MGR. [illegible]		
DES. DIR. [illegible]		
SATISFACTORY TO / DATE	SIZE F; SYM. 80091; DRAWING NO. 407732	
APPROVED / DATE	DRAWN 07-20; DATE 05-31-44; SHEET 2 OF 62	
FOR EFD FOR COMMANDER NAVFAC		

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED
A	REVISED AS-BUILT		



LETTER DATED

C-1

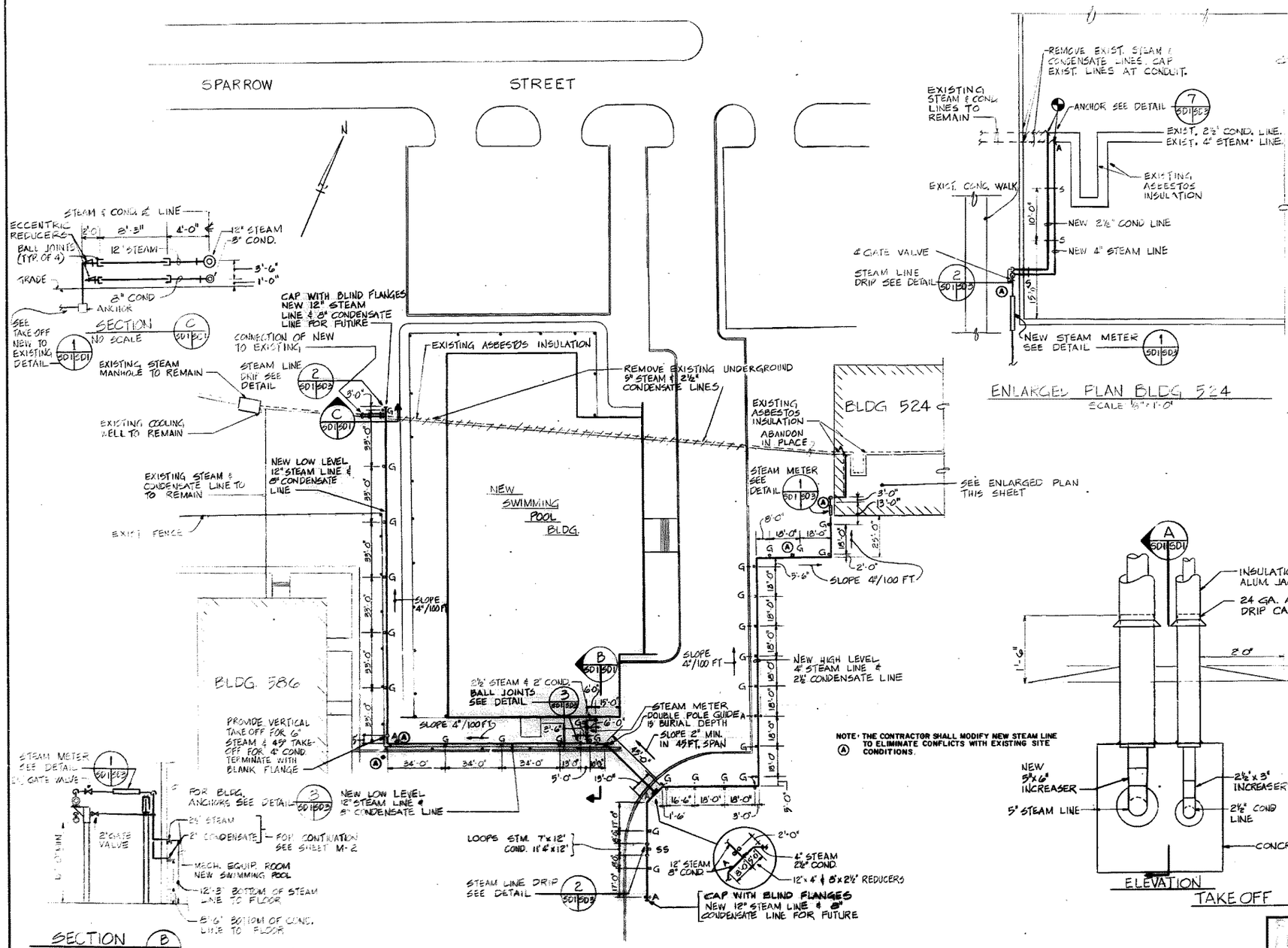
CFD DWG. NO.	7-7-81
JOB ORDER NO.	
DES.	T. MARTINEZ
DRWN.	T.A.M. 8-27-81
TR.	
CHK.	GMD FP. EOX
DR. NOR	
SOL. DIR.	
SATISFACTORY TO	DATE
APPROVED	DATE

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

ELECOMBATRACENT
DAM NECK, VIRGINIA BEACH VIRGINIA
INDOOR SWIMMING POOL
SITE PLAN

SIZE	IDENT. NO.	DRAWING NO.
F	80091	2-515

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED
A	REVISED: AS-BUILT	26 FEB 1981	

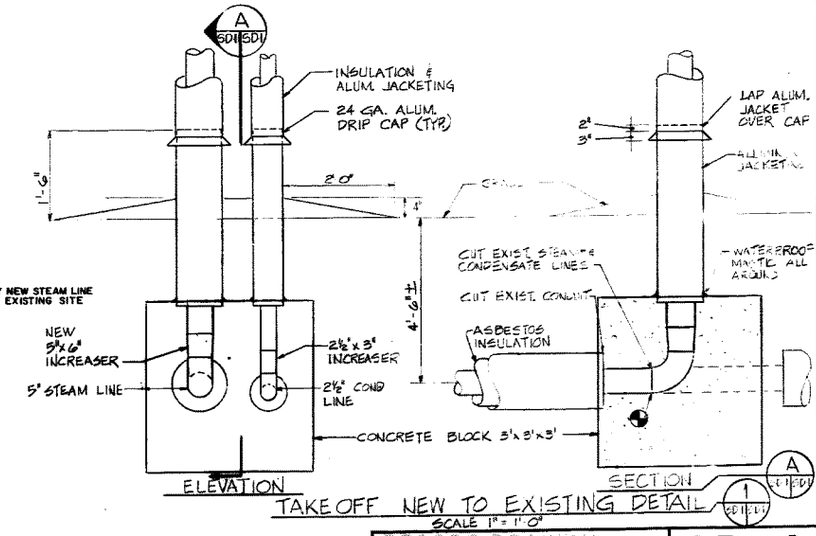


LEGEND

- NEW STEAM LINE AND CONDENSATE LINE
- REMOVE EXISTING STEAM AND CONDENSATE LINE
- EXISTING STEAM AND CONDENSATE LINE TO REMAIN
- (A) PILE ANCHOR SEE DETAIL 1 SD1 SD2
- (A) PILE GUIDE SEE DETAIL 2 SD1 SD2
- FLOOR SUPPORT SEE DETAIL 6 SD1 SD2
- FLOOR ANCHOR SEE DETAIL 7 SD1 SD2
- SPRING SUPPORT 5 FT. BURIAL DEPTH SEE DETAIL 3 SD1 SD2
- CONNECT NEW TO EXIST.

(A) NOTES:

1. ALL HIGH LEVEL PILE ANCHORS AND PILE GUIDES SHALL BE DRIVEN A MINIMUM DEPTH OF 15 FEET BELOW EXISTING GRADE.
2. ALL LOW LEVEL PILE ANCHORS AND PILE GUIDES SHALL BE DRIVEN A MINIMUM DEPTH OF 5 FEET BELOW EXISTING GRADE.



GRAPHIC SCALES

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

SCALE 1" = 1'-0"

SCALE 1" = 25'

RECORD DRAWING LETTER DATE

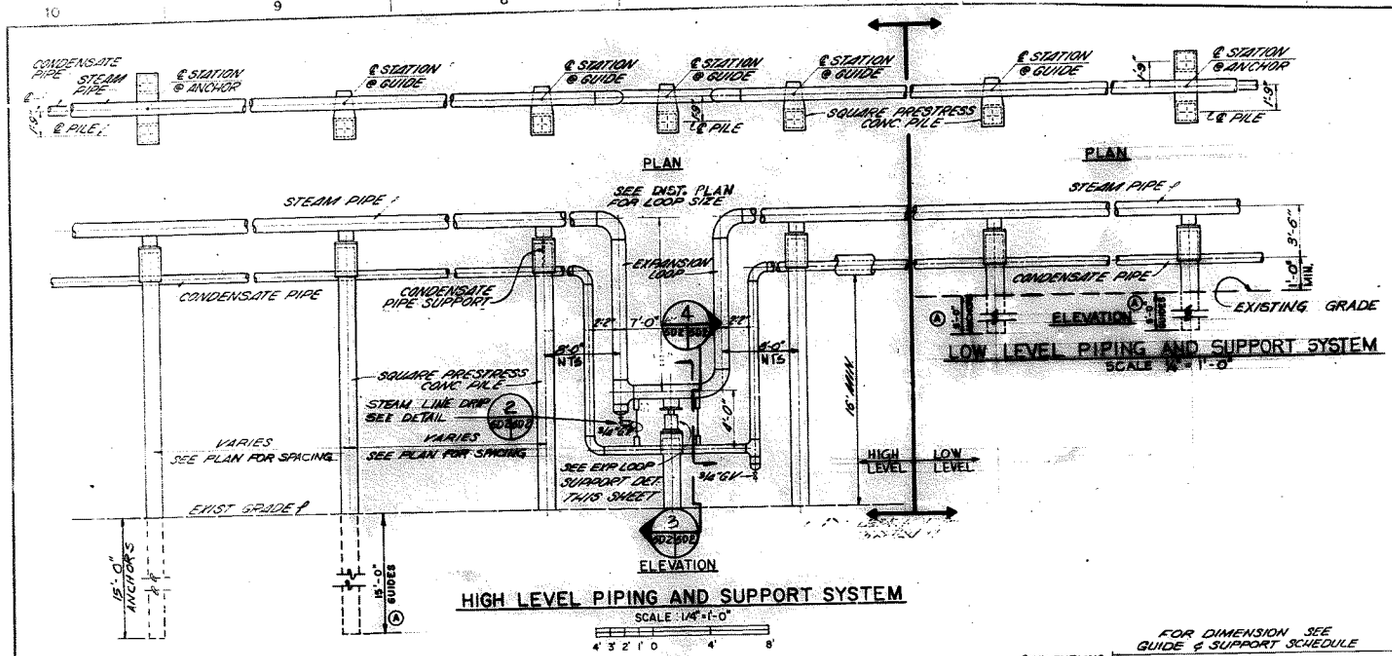
SD-1

EFD DWG. NO.	177314
JOB ORDER NO.	242F1144
DES.	BROWN
DRWN.	KERN
TR.	
CHK.	JTT
SR. NAV.	
DES. DIR.	
SATISFACTORY TO	DATE
APPROVED	DATE

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.
FLTCOMBATRACENLANT
DAM NECK, VIRGINIA BEACH, VA
INDOOR SWIMMING POOL
STEAM DISTRIBUTION PLAN

SIZE	CODE IDENT. NO.	SCALE DRWG. NO.
F	80091	4077314

NOTED | 05-81 1144 | SHEET 5 OF 26



REVISED: AS-BUILT

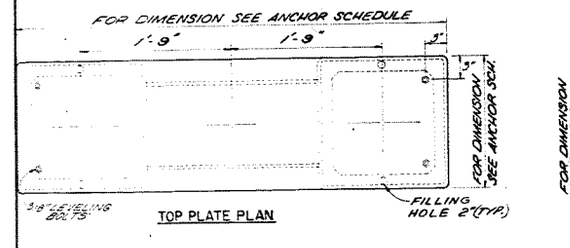
ANCHOR SCHEDULE FOR HIGH LEVEL PIPING & LOW LEVEL PIPING

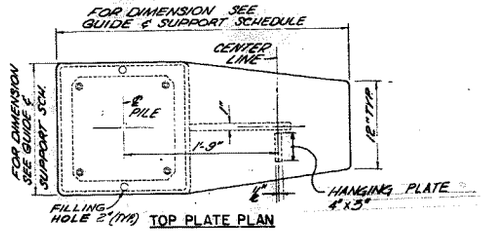
STEAM PIPE SIZE	STRUCTURAL TEE	STIFFENER PLATE	CONDENSATE PIPE SIZE	STRUCTURAL TEE	STIFFENER PLATE	PRESTRESS CONCRETE PILE	PILE CAP TOP PLATE	PILE CAP STEEL TUBE	ANCHOR BEAM
12"	WT 7x[illegible]x12" LG.	2½" TH	5"	WT 7x42x12" LG.	2-½" TH	14" SQ.	15"W x 60" LG x ⅝" TH	14" SQ. x ⅜" LG	16"x12"x26" LG.
4"	WT 7x25x12" LG.	—	2½"	WT 7x20x12" LG.	—	12" SQ.	16"W x 58" LG x ⅝" TH	14" SQ. x 22" LG	20"x12"x26" LG.
2½"	WT 6x53x12" LG.	—	1½"	WT 7x20x12" LG.	—	10" SQ.	16"W x 58" LG x ⅝" TH	14" SQ. x 22" LG	20"x12"x26" LG.

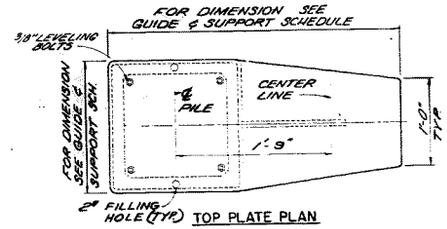
GUIDE AND SUPPORT SCHEDULE FOR HIGH LEVEL PIPING & LOW LEVEL PIPING

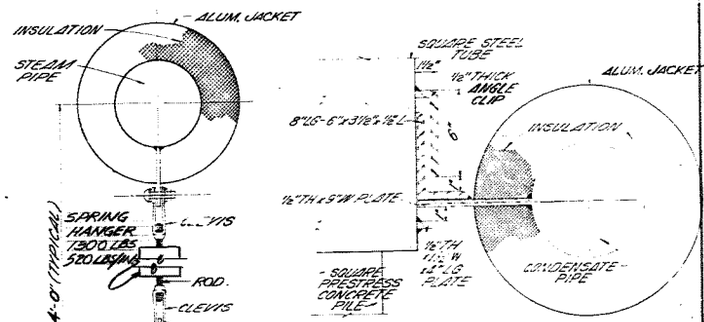
STEAM PIPE SIZE	STRUCTURAL TEE	STIFFENER PLATE	CONDENSATE PIPE SIZE	HANGING ROD	PRESTRESS CONCRETE PILE	PILE CAP TOP PLATE	PILE CAP STEEL TUBE
12"	WT 9x48x12" LG	2-½" TH	5"	⅞" ϕ	14" SQ.	16"W x 60" LG x ⅝" TH	18" SQ. x 32" LG
4"	WT 9x35x12" LG	2-½" TH.	2"	5/8" ϕ	12" SQ.	16"W x 58" LG x ⅝" TH	16" SQ. x 36" LG
2½"	WT 7x32x12" LG	—	2"	5/8" ϕ	12" SQ.	16"W x 58" LG x ⅝" TH	16" SQ. x 36" LG

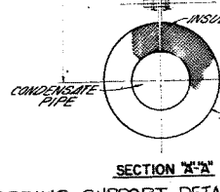
NOTES:
1. EXACT LENGTH OF TOP PLATES AND ANCHOR BEAMS SHALL BE DETERMINED IN THE FIELD AFTER THE PRECASTED CONCRETE PILES ARE IN PLACE.
2. ALL STEEL TUBE SHALL BE ½" THICK
3. WELDS TO BE MIN. SIZE AS REQ'D BY AISC (LATEST EDITION) UNLESS OTHERWISE NOTED.



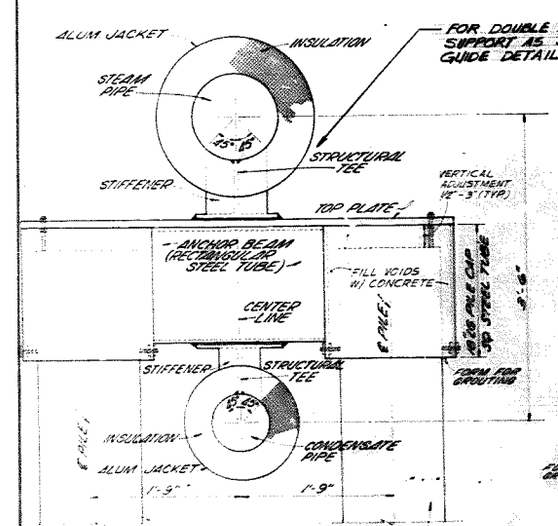


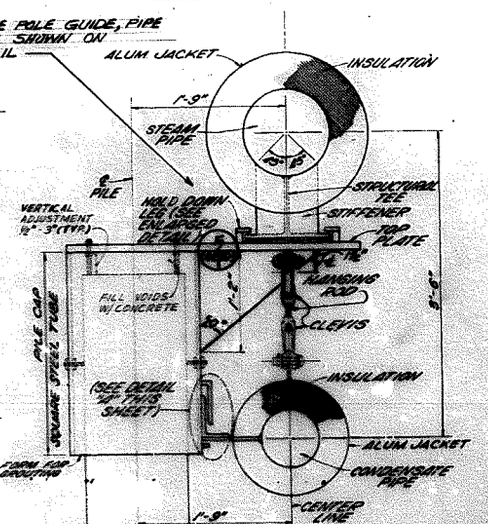


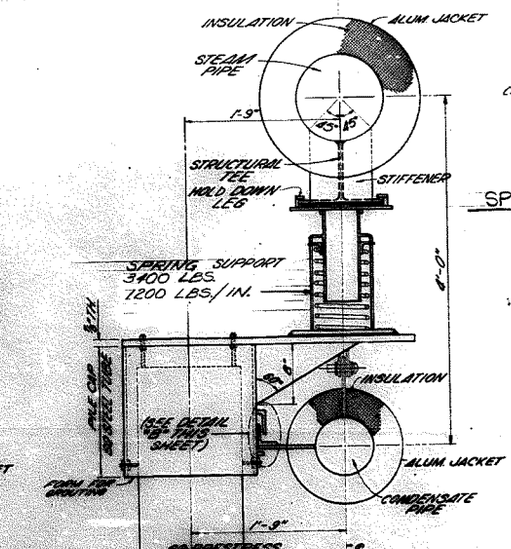


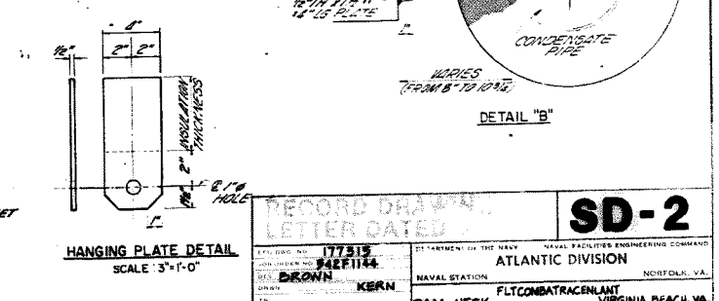


SPRING SUPPORT DETAIL 4 SD2502
SCALE 1½" = 1'-0"









HANGING PLATE DETAIL
SCALE 3" = 1'-0"

RECORD DRAWING LETTER DATED

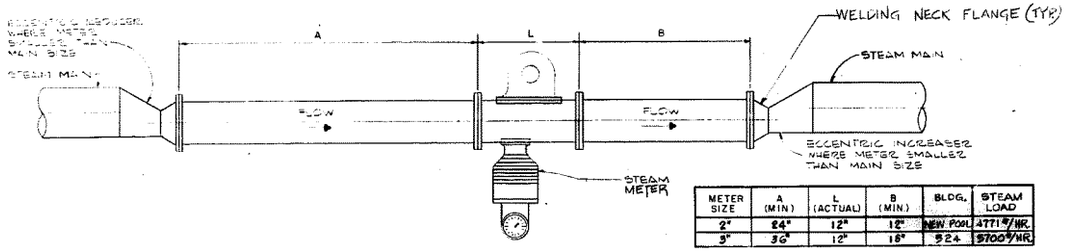
SD-2

FTL DWG. NO.	177315
JOB ORDER NO.	942F1144
DES.	BROWN
DRWN.	KERN
TR.	
CHK.	JTI
PL. MGR.	BOX
DES. DIR.	
SATISFACTORY TO	DATE
APPROVED	DATE

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.
FLTCOMBATRACENLANT
DAM NECK — VIRGINIA BEACH, VA.
INDOOR SWIMMING POOL
STEAM LINE DETAILS

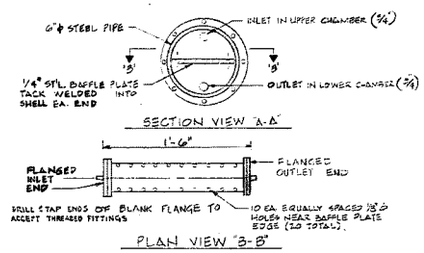
SIZE	CODE IDENT. NO.	DRAWING NO.
F	80091	4077315
SCALE NOTED	DATE 09-21-1144	CONTR. CODE NO. N62470-81-B-1144 SHEET 6 OF 52

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED

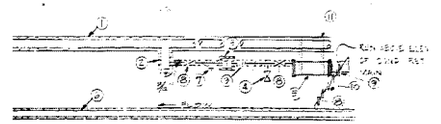


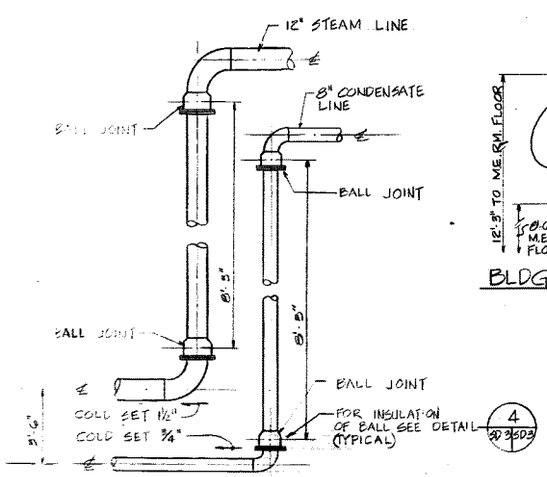
METER SIZE	A (MIN)	L (ACTUAL)	B (MIN)	BLDG.	STEAM LOAD
2"	24"	12"	12"	NEW POOL	4771#/HR.
3"	36"	12"	18"	524	5700#/HR.

TYPICAL INSTALLATION FOR STEAM METER DETAIL (1 / SD-1 SD3)
NO SCALE

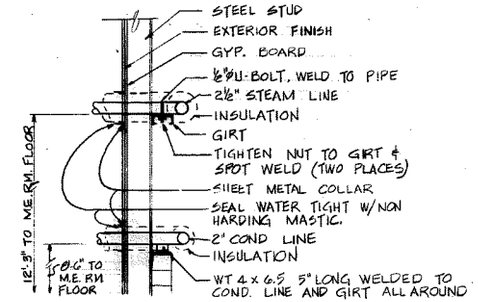


BAFFLE CHAMBER CONSTRUCTION
NO SCALE

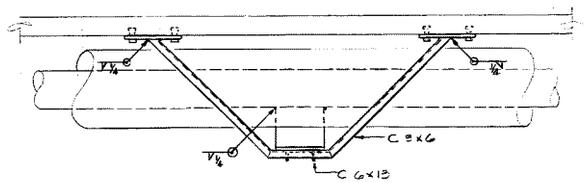




BALL JOINT RISER DETAIL (3 / SD-1 SD3)



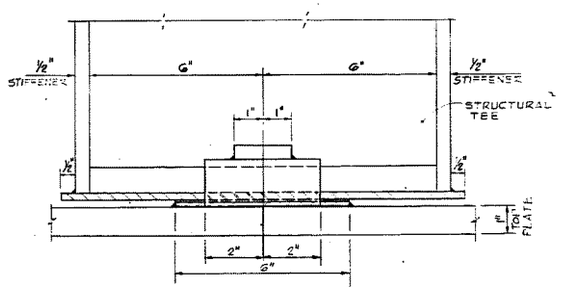
BLDG. ANCHOR DETAIL (8 / SD 1 SD3)
NO SCALE



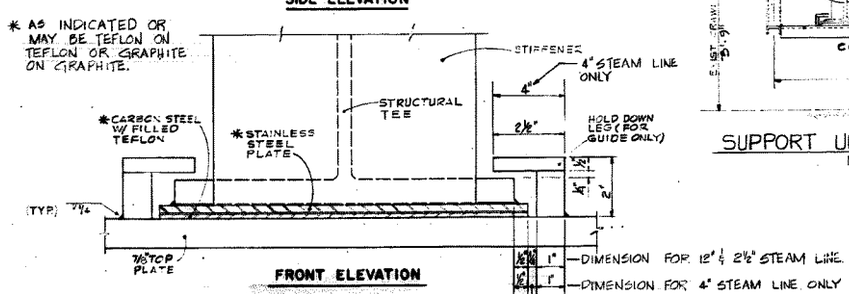
SECTION (A / SD3 SD3)
NO SCALE

NOTES:
1. INSULATED STEAM MAIN
2. FULL SIZE DRIP POCKET AS DEEP AS DESIGN PERMITS, BUT NOT LESS THAN 8".
3. INVERTED BUCKET TRAP W/ FORMED REMOVABLE INSULATION, 400 LBS/HR. @ 50 PSI P.D.
4. 1/2" TEST CONNECTION
5. CONDENSATE EXPANSION BAFFLE CHAMBER INSULATED.
6. INSULATED CONDENSATE RETURN PIPE.
7. FULL SIZE STRAINER W/ BLOWDOWN VALVE
8. GATE VALVE (3/4")
9. UNION (3/4")
10. CHECK VALVE (3/4")
11. STRAP TO STEAM LINE WITH STAINLESS STEEL STRAPS

HIGH PRESSURE STEAM CONDENSATE DRIP TO STEAM CONDENSATE SYSTEM (2 / SD 2 SD-1 SD3)

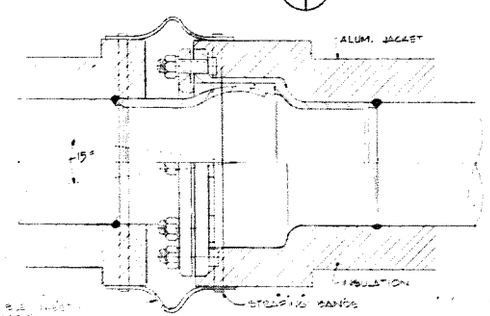


SIDE ELEVATION

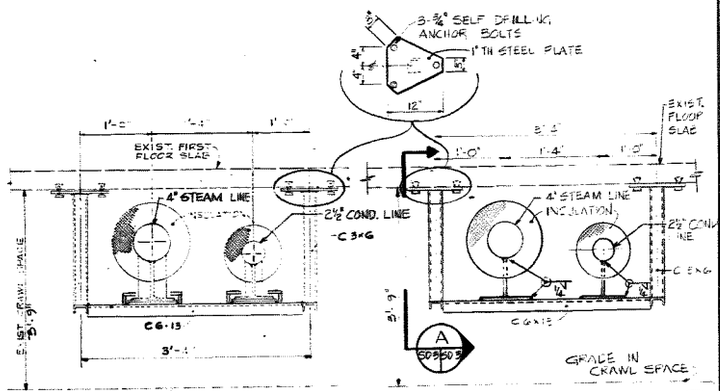


FRONT ELEVATION

GUIDE — TYPICAL TEFLON SLIDE DETAIL (5 / SD-3 SD3)
NO SCALE



BALL JOINT INSULATION DETAIL (4 / SD3 SD3)
NO SCALE



SUPPORT UNDER BLDG 524 (6 / SD 1 SD3)
NO SCALE

ANCHOR UNDER BLDG. 524 (7 / SD 1 SD3)
NO SCALE

SD-3

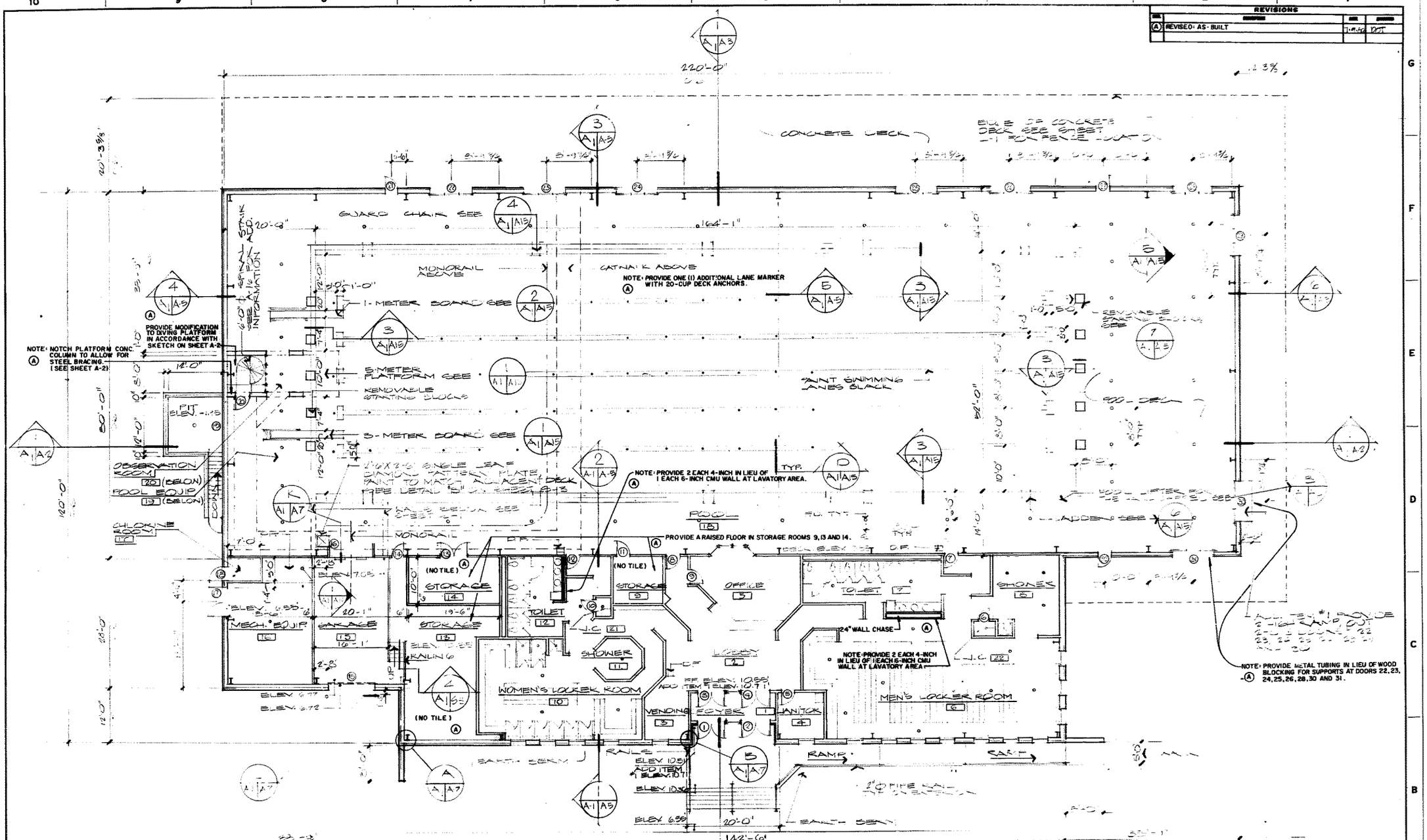
EFD DWG NO	177316
JOB ORDER NO	842F1144
DES	BROWN
DRWN	KERN
TR	
CHK	JTI
SR. MGR	
DES SUP	
SATISFACTORY TO	DATE
APPROVED	DATE

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.
FLTCOMBATRACENLANT
DAM NECK — VIRGINIA BEACH, VA.
INDOOR SWIMMING POOL
STEAM LINE DETAILS

SIZE F	80091	4077316
		N62470-81-B-1144

SCALE NOTED — SPEC. 03-81-1144 — SHEET 7 OF 52

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED
A	REVISED AS-BUILT	1-14-86	DOT



FLOOR PLAN

SCALE 1/8" = 1'-0"

NOTES:
EXTERIOR DIMENSIONS INDICATED (O.B.) ARE FROM OUTSIDE OF SIDING

SEE SHEET A-3 FOR 1/4" PLAN OF LOCKER ROOMS AND SUPPORT AREAS.

• - TYPICAL FLOOR DRAINS, SLOPE FLOOR & DECK TO DRAIN 1"

SEE SHEET A-6 FOR 1/4" PLANS OF 5' METAL FLAT FORM AND OBSERVATION ROOM #20

SEE SHEET 6-1 FOR PLAN OF ROOMS / AREAS BELOW POOL DECK.

INTERIOR PARTITIONS IN WOMEN'S & MEN'S LOCKER ROOMS EXTEND TO BOTTOM OF ROOF DECK.

NORTH

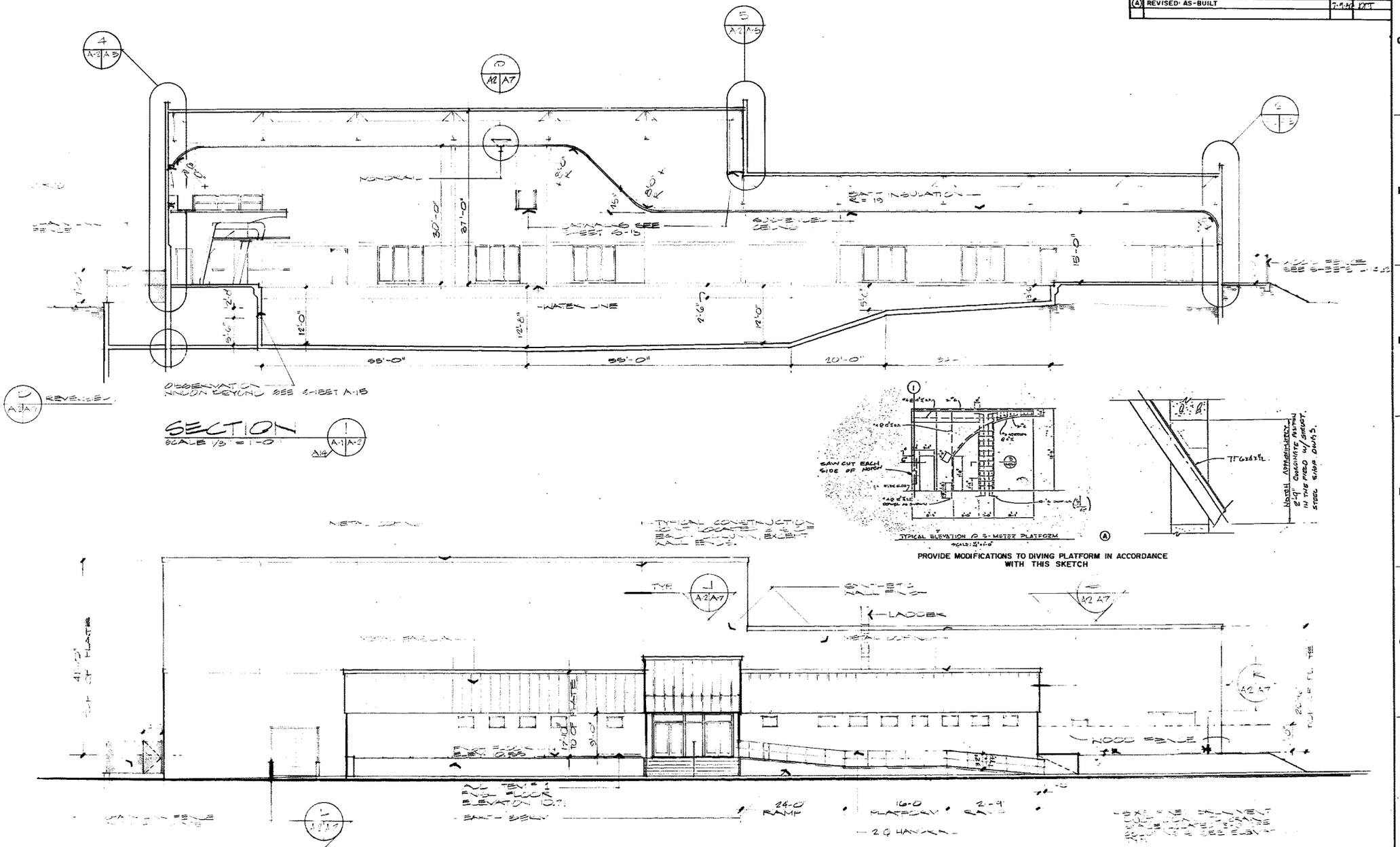
GRAPHIC SCALE

1/8" = 1'-0"

DFD DWG. NO.	3-17	DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING COMMAND
JOB ORDER NO.	5427 4C	ATLANTIC DIVISION	
DES.		NAVAL STATION	NORFOLK, VA.
DRWN.		FLEET TRAINING CENTER, LANT	
TR.		DAM NECK, VIRGINIA BEACH, VA	
CHK.	WBA	INDOOR SWIMMING POOL	
SR. INSP.		FLOOR PLAN	
DES. ENG.			
SATISFACTORY TO	DATE		
APPROVED	DATE		
		SIZE F	SHEET NO. 80091
			4077317
			1-2470-1-1-1144
			1-2470-1-1-1144
			5 of 52

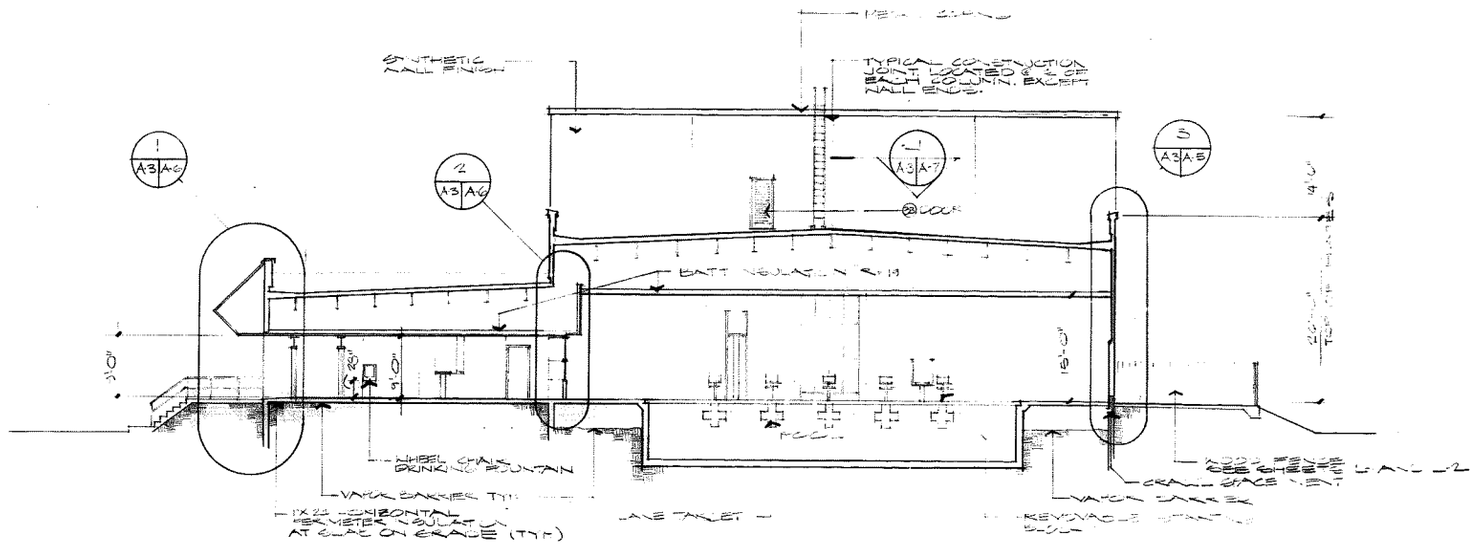
A-1

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED
(A)	REVISED AS-BUILT	7-9-82	KPT



DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND		A-2
ATLANTIC DIVISION		
NAVAL STATION	NORFOLK, VA.	
FLECOMBATRACENLANT DAM NECK VIRGINIA BEACH, VA		
INDOOR SWIMMING POOL		
SECTION AND ELEVATION		
F	80091	40773B
NOTED	3-31-1981	

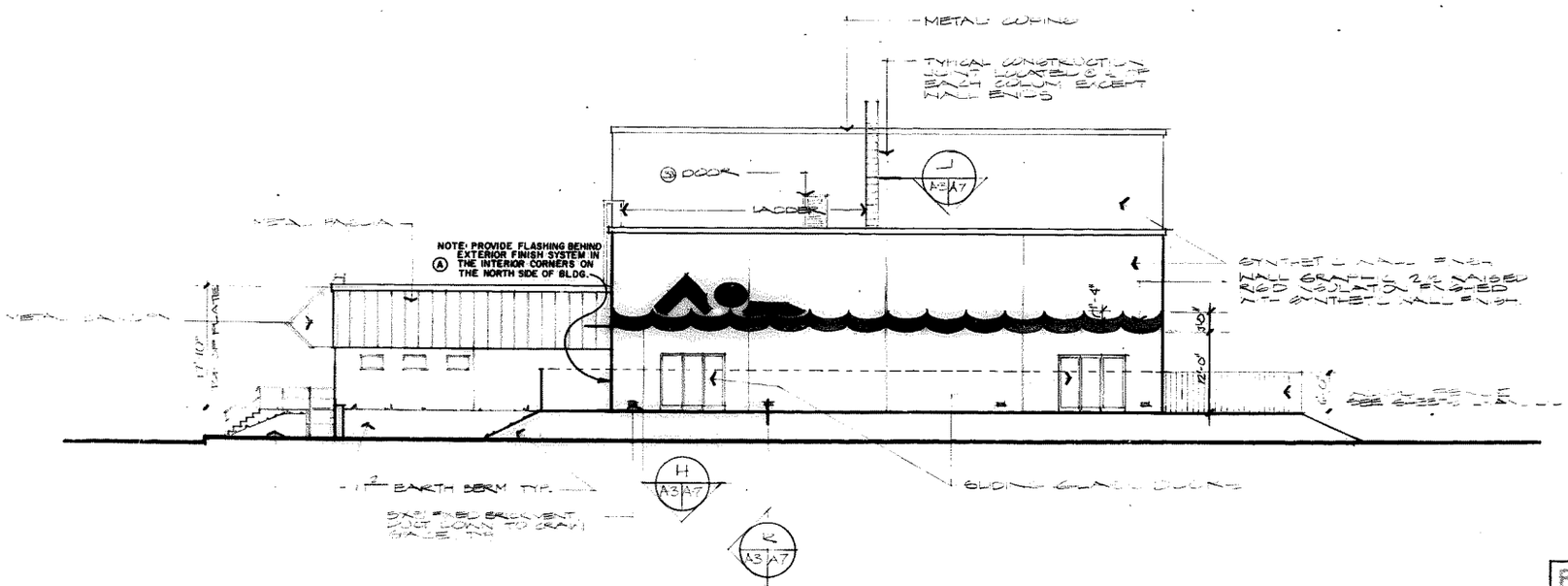
REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED
A	REVISED: AS-BUILT	7-8-80	RCT



SECTION

SCALE 1/8"=1'-0"

NOTE: ALL MODEL SCALE 1/2" VER. BUILT



NORTH ELEVATION

SCALE 1/8"=1'-0"

NOTE: VERTICAL DIMENSIONS ON SECTION AND ELEVATION ARE FROM FINISH SLAB. (ELEVATION: 10.53')

GRAPHIC SCALE

1/8"=1'-0" 5 0 5 10 15 20 25

RECORD DRAWING LETTER DATED

A-3

SPD DWG. NO.	17319
CEC DWG. NO.	5285-1
DES.	RCS
DRWN.	
TR.	
CHK.	WBA
DR. MGR.	PCL
DES. MGR.	
SATISFACTORY TO	DATE
APPROVED	DATE

FOR SPD FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

ATLANTIC DIVISION

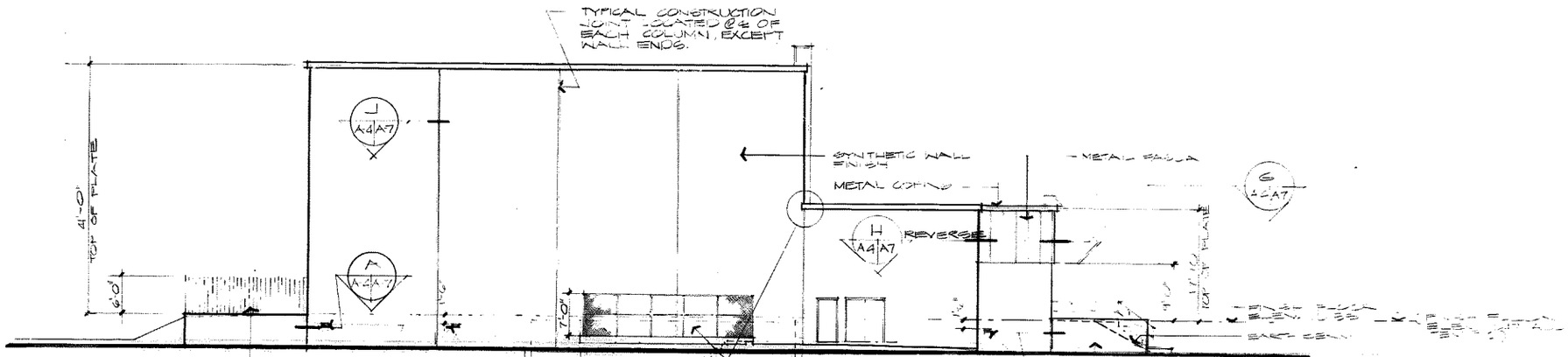
NAVAL STATION — NORFOLK, VA.

DAY VILLAGE, NORTH CAROLINA

INDOOR SWIMMING POOL

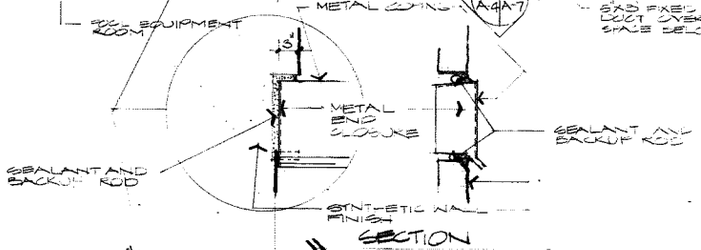
SIZE	CODE IDENT. NO.	DWG. NO.
F	80091	407319
SCALE	N62470-81-B-1149	
NOTED	DATE 28 SEP 1982	SHEET 10 OF 52

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED

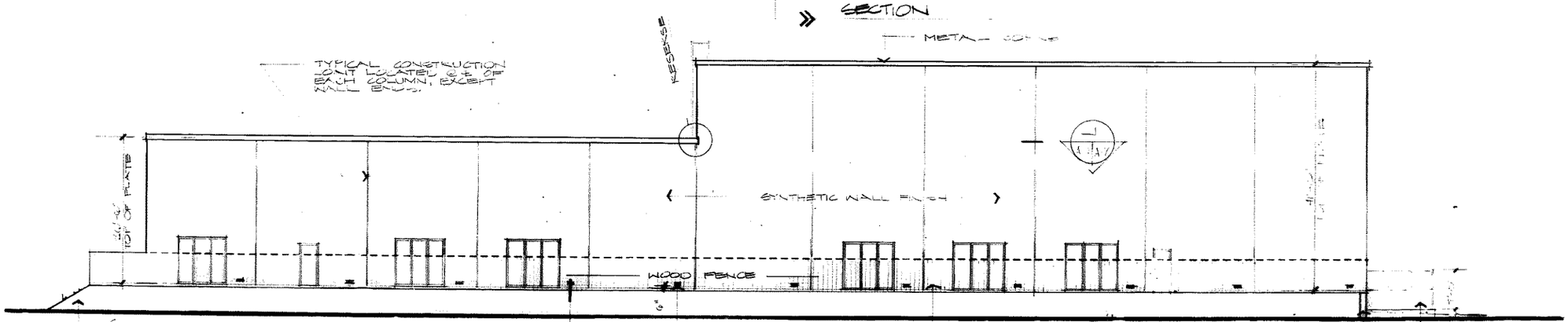


SOUTH ELEVATION

SCALE 1/8"=1'-0"



SECTION



WEST ELEVATION

SCALE 1/8"=1'-0"

NOTE: VERTICAL DIMENSIONS ON ELEVATIONS ARE FROM FINISH FLOOR (ELEVATION 10.55)

GRAPHIC SCALE

1/8"=1'-0" 5' 0 5' 10' 15' 20' 25'

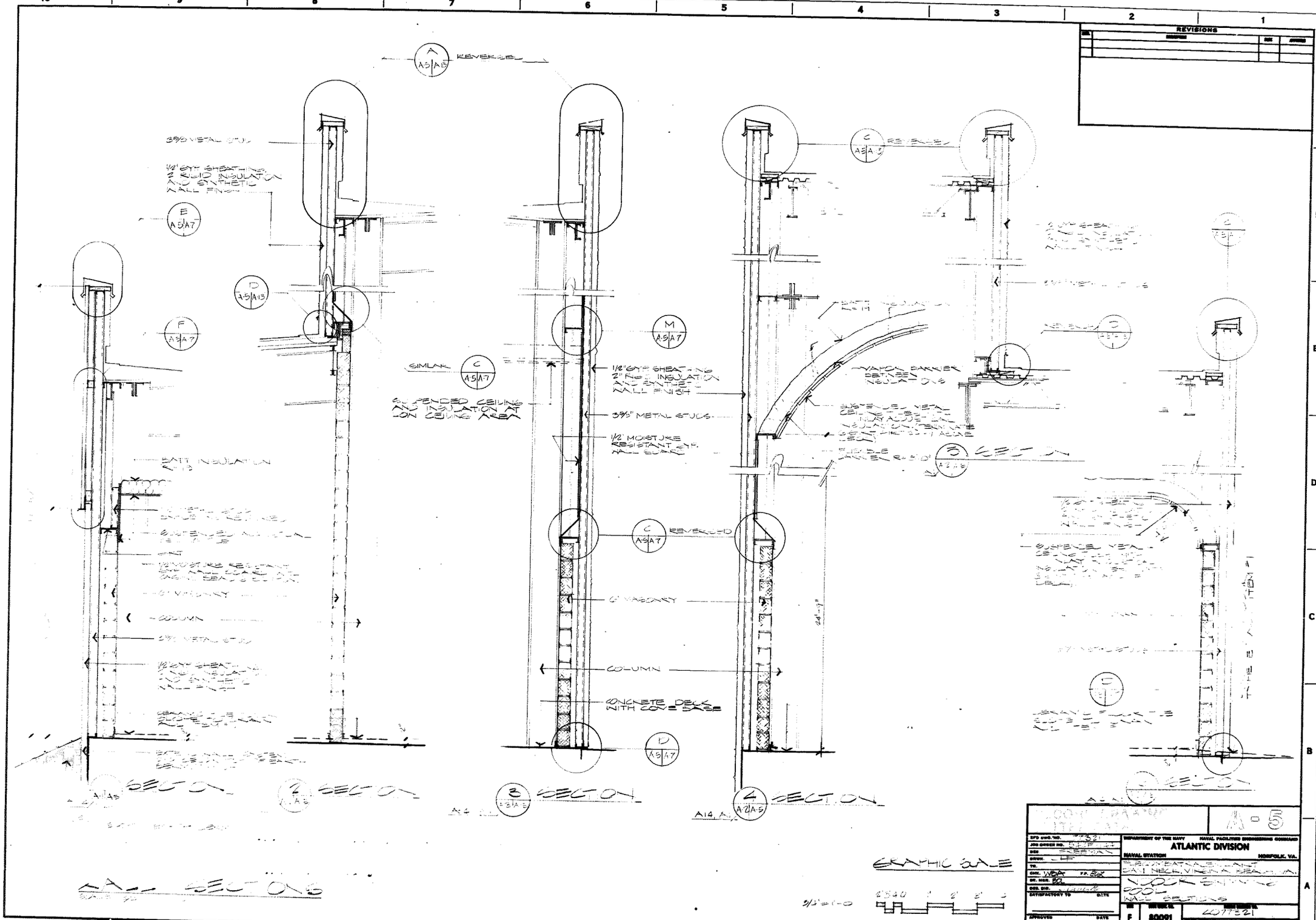
RECORD DRAWING LETTER DATED

DFD SEQ. NO.	4071320
JOB ORDER NO.	0422F1142
DES.	FREEMAN
DRWN.	
TR.	
CHK.	WOAF
SR. MGR.	
DES. SUP.	
SATISFACTORY TO	DATE
APPROVED	DATE

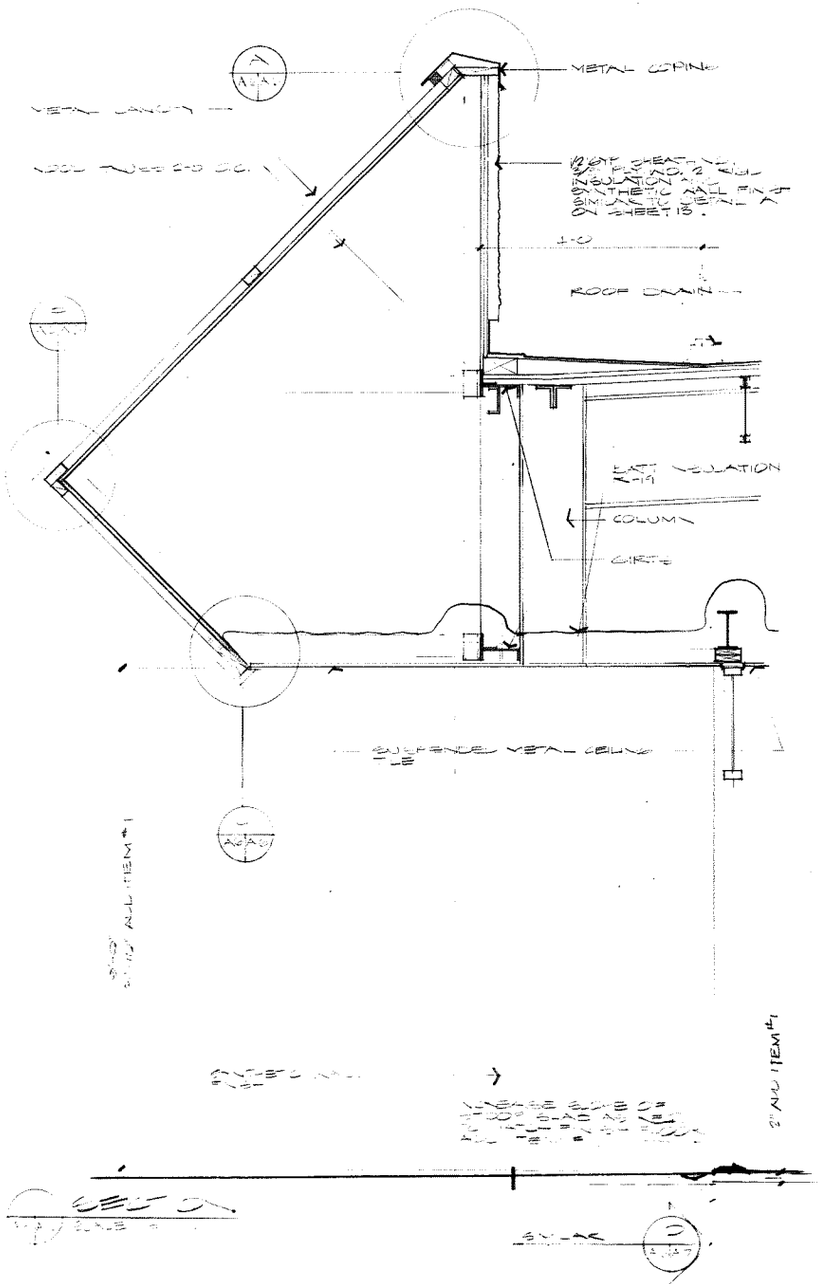
DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

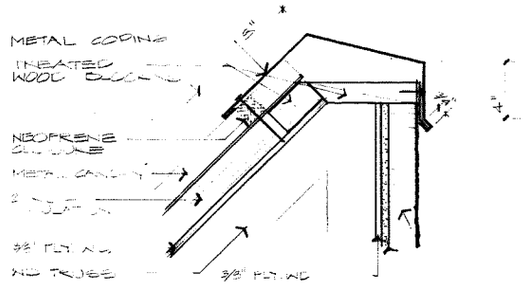
FLOOR ENTRY & FOOD ELEVATIONS

SIZE F	CODE IDENT. NO. 80091	DRAWING NO. 4071320
SCALE NOTED	DATE 05-31-1142	SHEET 11 OF 52

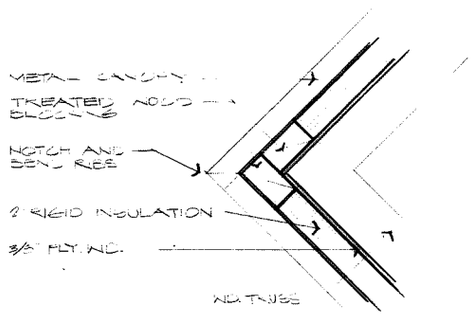

REVISIONS
KEVEKLED
3 5/8" METAL STUDS
1/2" GYP SHEATHING
2" RIGID INSULATION
WALL FINISH
SIMLAR
SUSPENDED CEILING
1/2" GYP SHEATHING
2" RIGID INSULATION
WALL FINISH
3 5/8" METAL STUDS
1/2" MOISTURE RESISTANT GYP.
WALL BOARD
VAPOR BARRIER
BETWEEN
WALL OVS
EXIT INSULATION
KEVEKLED
6" MASONRY
COLUMN
CONCRETE DECK
WITH COVE BASE
44'-7"
SECTION
SECTION
SECTION
SECTION
SECTION
SECTION
GRAPHIC SCALE
3/4" = 1'-0"
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION
NORFOLK, VA.
F
80091
NOTED
2 of 32

REVISIONS		
(X) REVISED - AS-BUILT		

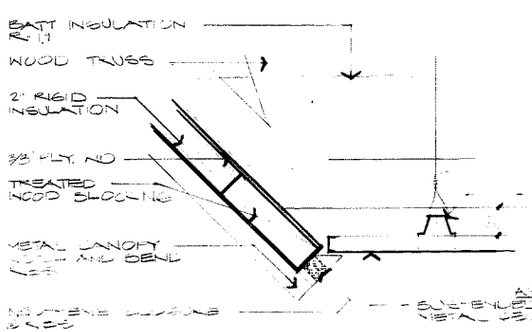




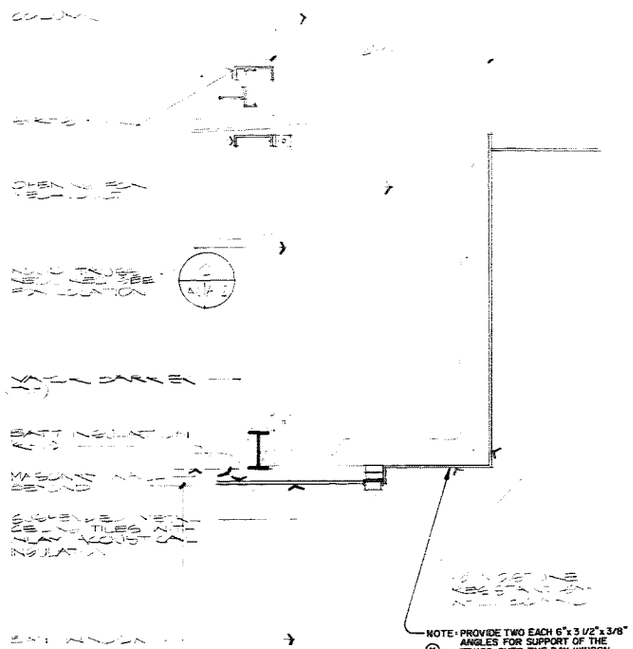
A DETAIL
SCALE 3"=1'-0

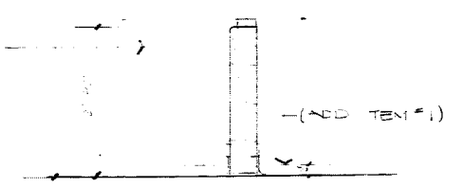


B DETAIL
SCALE 3"=1'-0



C DETAIL
SCALE 3"=1'-0





SECT 'A'
SCALE 3"=1'-0

GRAPHIC SCALES

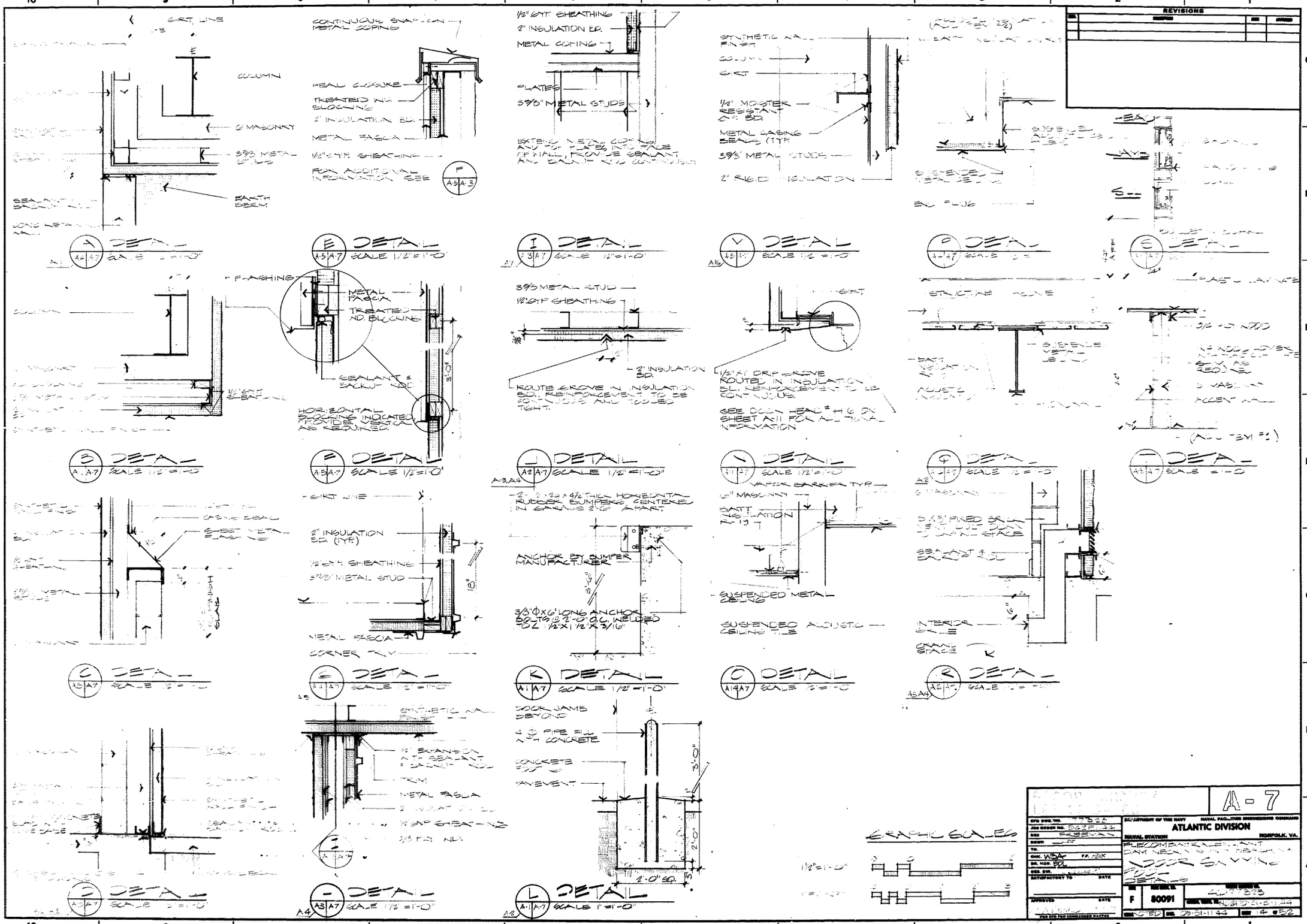
SPD DWG. NO.	
JOB ORDER NO.	
DES.	
DRWN.	
TR.	
CHK.	
SR. NOR. ENG.	
DES. DIR.	
SATISFACTORY TO	DATE
APPROVED	DATE

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

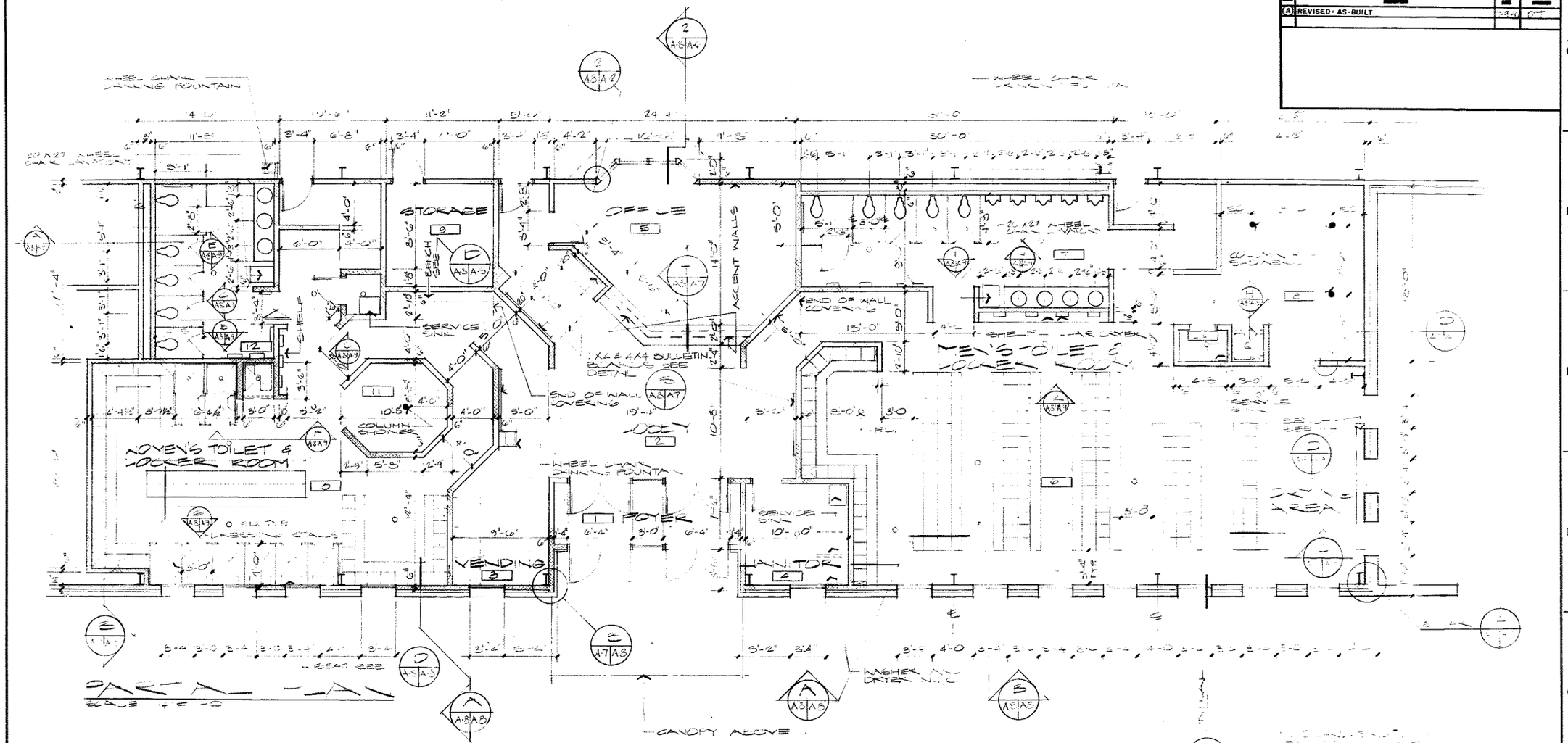
SIZE	IDENT. NO.	DRAWING NO.
F	80091	407522

SCALE: 3"=1'-0 | DATE: 25-11-124 | SHEET 3 OF 52

REVISIONS			
NO.	DESCRIPTION	DATE	APPROVED



REVISIONS			
		DATE	APPROVED
(A)	REVISED AS-BUILT	7-9-80	CT

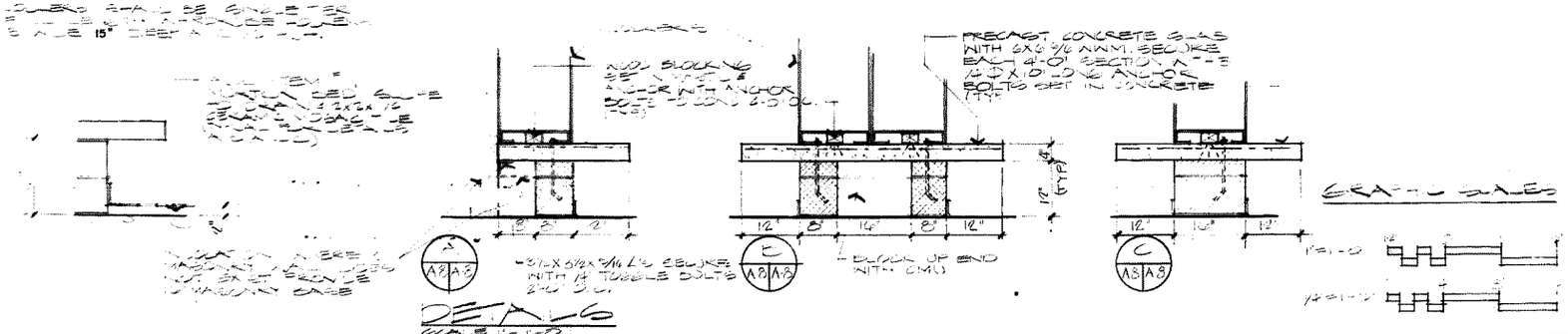


GENERAL NOTES

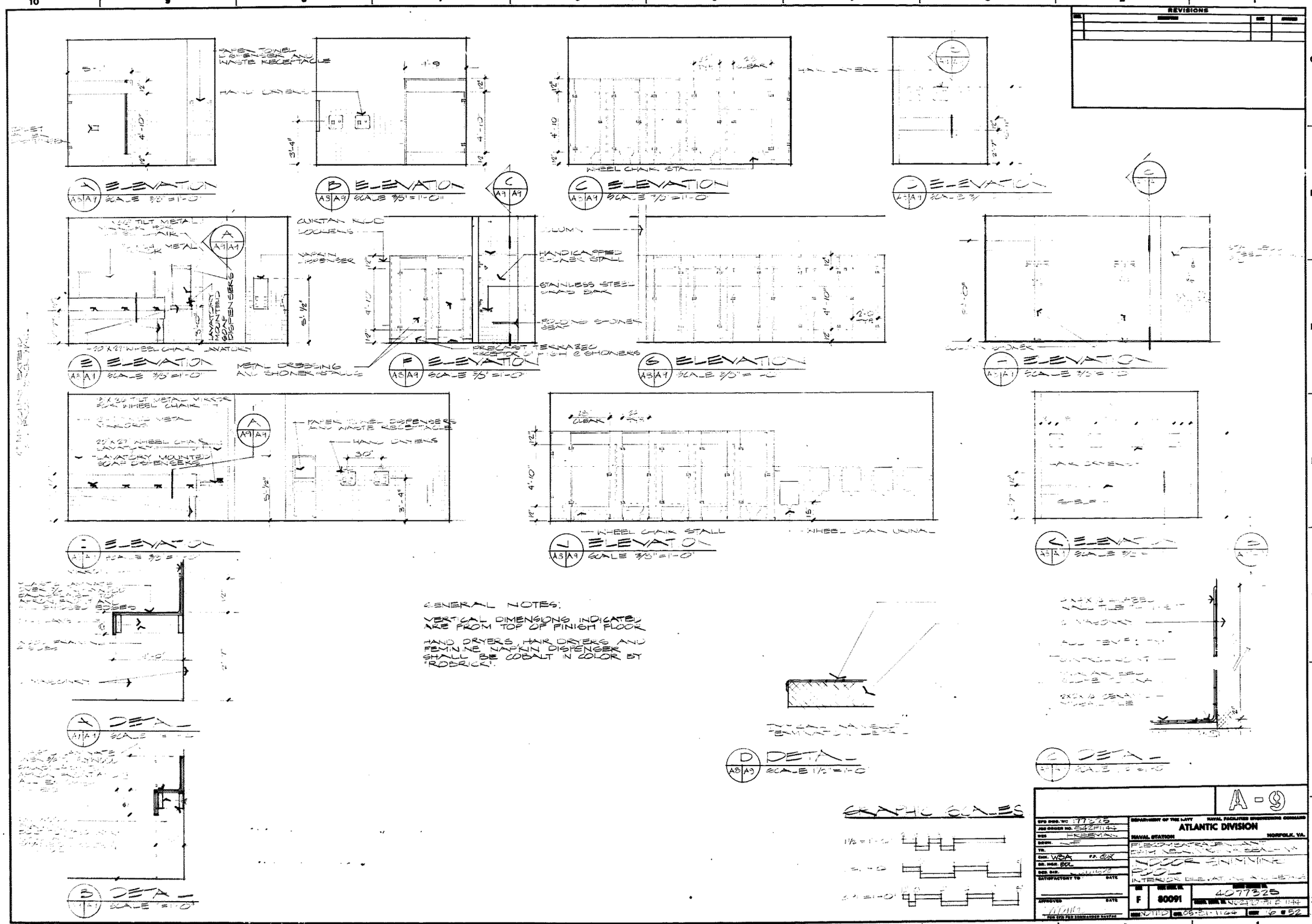
SEE FLOOR PLAN SHEET A-1 FOR

(A) COVED STALL SHALL BE CONCRETE

15" DEEP



DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING COMMAND		
ATLANTIC DIVISION			
NAVAL STATION	NORFOLK, VA.		
DRAWN: FREEMAN			
CHK. WSK	F.P. RUK		
DR. MGR. BCL			
SATISFACTORY TO	DATE		
APPROVED	DATE		
SIZE F	80091	40782	
SCALE: NOTED	DATE: 5-5-81	SHEET 15 OF 52	


REVISIONS
A ELEVATION
B ELEVATION
C ELEVATION
E ELEVATION
F ELEVATION
G ELEVATION
J ELEVATION
D DETAIL
GENERAL NOTES:
VERTICAL DIMENSIONS INDICATED ARE FROM TOP OF FINISH FLOOR
HAND DRYERS, HAIR DRYERS AND FEMININE NAPKIN DISPENSER SHALL BE COBALT IN COLOR BY "ROBRICK".
GRAPHIC SCALES
A-9
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION
NORFOLK, VA.
F
80091
4077325

FINISH SCHEDULE (A)

NOTE: CMT INDICATED IN BASE FOR ROOMS #8 & 11 ARE THIN-SET

ROOM NO.	ROOM NAME	FLOOR MAT.	FLOOR COLOR	BASE MAT.	BASE COLOR	WALLS MAT.	WALLS COLOR	WAINSCOT MAT.	WAINSCOT COLOR	CEILING MAT.	CEILING COLOR	CEIL. HT.	TRIM COLOR	DOOR COLOR	REMARKS
1	FOYER	VCT	V-526	CMT	CINNABAR	VNC	CC1204	—	—	SMT	OFF WHITE	9'-0"	78-34	78-34	ACCENT WALL COLOR CC1901
2	LOBBY	VCT	V-526	CMT	CINNABAR	VNC	CC1204	—	—	SMT	WHITE	9'-0"	78-34	78-34	
3	VENDING	VCT	V-526	CMT	CINNABAR	VNC	CC1204	—	—	SMT	WHITE	9'-0"	—	—	
4	JANITOR'S	VCT	V-526	CMT	CINNABAR	CMU 60	PAINT WHITE	—	—	SAT	OFF WHITE	8'-0"	78-34	78-34	
5	OFFICE	VCT	V-526	CMT	CINNABAR	VNC	CC1204	—	—	SMT	WHITE	9'-0"	78-34	78-34	ACCENT WALL COLOR CC1901
6	MEN'S LOCKER	EPC	77-76	CMT	COBALT	CMU 60	PAINT 77-72	—	—	SAT	OFF WHITE	10'-0"	77-78	77-10	
7	MEN'S TOILET	EPC	77-76	CMT	SALT & PEPPER	CMU	PAINT 79-53	CT	CK COBALT	SAT	OFF WHITE	10'-0"	—	—	WAINSCOT 4'-4" HT.
8	MEN'S SHOWER	CMT	COBALT	CT	SALT & PEPPER	CMU	PAINT 79-53	CT	SALT & PEPPER	MRSAT	OFF WHITE	10'-0"	—	—	WAINSCOT 5'-0" HT.
9	STORAGE	C	—	—	—	CMU	PAINT 77-09	—	—	SAT	OFF WHITE	10'-0"	—	—	
10	WOMEN'S LOCKER	EPC	77-76	CMT	WHITE	CMU 60	PAINT 78-19	—	—	SAT	OFF WHITE	10'-0"	70-09	77-78	
11	WOMEN'S SHOWER	CMT	COBALT	C.T.	SALT & PEPPER	CMU	PAINT 79-53	CT	SALT & PEPPER	MRSAT	OFF WHITE	10'-0"	—	—	WAINSCOT 5'-0" HT.
12	WOMEN'S TOILET	EPC	77-76	CMT	WHITE	CMU	PAINT 79-53	CT	SALT & PEPPER	SAT	OFF WHITE	10'-0"	—	—	WAINSCOT 4'-4" HT.
13	STORAGE	C	—	—	—	CMU 60	—	—	—	—	—	—	77-78	77-78	
14	STORAGE	C	—	—	—	CMU	—	—	—	—	—	—	77-78	77-78	
15	STORAGE	C	—	—	—	CMU 60	—	—	—	—	—	—	77-78	77-78	
16	MECH. EQUIP.	C	—	—	—	CMU 60	—	—	—	—	—	—	77-07	77-07	
17	STORAGE	C	—	—	—	CMU 60	—	—	—	SEE	OFF WHITE	9'-0"	77-07	77-07	
18	POOL	EPC	PAINT VARIES	C.M.T.	VARIES	CMU 60	VARIES	—	—	SMT	WHITE	VARIES	VARIES	VARIES	
19	POOL DECK	C	—	—	—	C	—	—	—	C	—	12'-0"	77-07	77-07	
20	RESERVATION	C	—	—	—	C	—	—	—	C	—	12'-0"	77-07	77-07	
21	JANITOR'S	C		CMT	COBALT	CMU	PAINT 78-19	—	—	SAT	OFF WHITE	8'-0"	77-78	77-72	
22	JANITOR'S	C		CMT	COBALT	CMU	PAINT 77-72	—	—	SAT	OFF WHITE	8'-0"	70-09	78-19	

COLOR SCHEDULE AND NOTES

GENERAL NOTES

PROVIDE INLAY ACOUSTICAL INSULATION ABOVE SMT IN ALL AREAS EXCEPT FOYER AND EXTERIOR @ CANOPY.

ADD ITEM #1 PROVIDE (CMT) CERAMIC MOSAIC FLOOR TILE IN THOSE AREAS INDICATED IN FINISH SCHEDULE ADD ITEM #1 BELOW

IF ADD ITEM #1 IS NOT PROVIDED EPOXY PAINT POOL DECK THE COLOR OF ADJACENT WALL SEE PLAN AND ELEVATION BELOW

EXTERIOR NOTES

SYNTHETIC WALL FINISH SHALL BE DRYVIT-PEARL ASH.

FASCIA SHALL BE MM STEEL-BRUSHED.

EXTERIOR METALS (LOPING, HANDRAILS LADDERS, LOUVERS #9, 7, 15, 19, 21, 27, 32 AND 33, WINDOWS AND WHEEL GUARD & AT DOOR #19 SHALL MATCH FASCIA, BRICK RED.

DOORS #1, 2, 3, 4, 22, 23, 24, 25, 26, 28, 29, 30 AND 31 SHALL BE BLACK WITH GRAY TINT GLASS.

INTERIOR NOTES

COLOR LETTERS REFERENCED FROM SCOTT PROFESSIONAL COLORS SELECTOR BOOK.

CERAMIC MOSAIC TILE AND CERAMIC TILE COLORS REFERENCED FROM AMERICAN OLEAN.

FOR COLOR PLACEMENT OF POOL TILES REFER TO PLAN BELOW.

DOORS IN POOL AREA SHALL BE THE SAME COLOR AS ADJACENT WALL.

EXPOSED METAL IN ALL ROOMS SHALL BE THE SAME COLOR AS ADJACENT WALL.

DOORS SHALL BE [illegible] BLUE

TOILET PARTITIONS SHALL BE [illegible] 192 ANTIQUE WHITE

PLASTIC LAMINATE SHALL BE FORMICA VARIEGATA - BLUE TEXTURED 6-2 CT IN ROOMS #6, 7, 10, & 12. MAUVE BROWN TEXTURED 6-2 CT IN ROOM # 2/3 (COUNTER)

SUSPENDED METAL CEILING TILE SHALL BE ST. ALAN ALUMINUM, PLANAR FOLYSPAN

POOL WALLS AND BOTTOM SHALL BE PAINTED 77-07 ACCENT AND SWIMMING LANES SHALL BE PAINTED DARK.

ALL WALLS IN ROOMS #6, 7, 5, 8, 9 & 12 SHALL BE PAINTED WITH EPOXY PAINTS

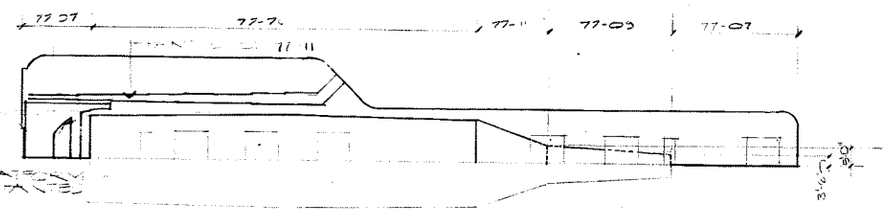
WALL INFORMATION THE COLOR REFERENCED IS ARIZONA FLEXIBLE TERRA COTTA, [illegible]

REVISIONS

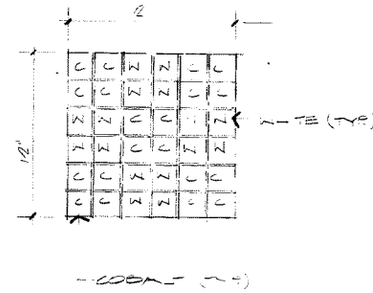
SYM.	DESCRIPTION	DATE	APPROVED
(A)	REVISED AS-BUILT	[illegible]	[illegible]

ABBREVIATIONS

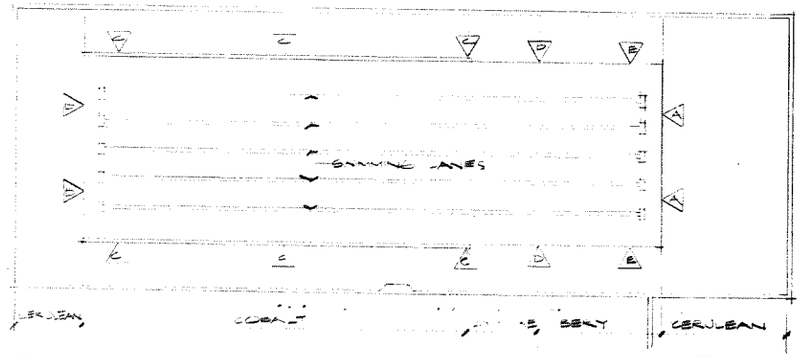
MECH	MECHANICAL
EQUIP	EQUIPMENT
GC	GYPSUM BOARD
VCT	VINYL COMPOSITION TILE
(A) EPC	EPOXY - PAINTED CONCRETE
CMT	CERAMIC MOSAIC TILE
C	CONCRETE
CC	[illegible]
CT	CERAMIC TILE
SMT	SUSPENDED METAL TILE
SAT	SUSPENDED ACOUSTICAL TILE
MRSAT	MOISTURE RESISTANT [illegible]
VNC	[illegible] WALL COVERING



ELEVATION (WEST SIDE; SOUTH, EAST SIDE SIMILAR, NORTH & SOUTH WALLS ALL BE 77-07)
NOT TO SCALE



TILE PATTERN
FOR ROOMS # 6, 7, & 12
NOT TO SCALE



PLAN
NOT TO SCALE

POOL MARKING SEE B A10 A15

FINISH SCHEDULE ADDITIVE #1

NOTE ROOM NO. AND NAMES NOT SHOWN INDICATES NO CHANGE

ROOM NO.	ROOM NAME	FLOOR MAT.	FLOOR COLOR	REMARKS
1	FOYER	CMT	CINNABAR	
2	LOBBY	CMT	CINNABAR	
3	VENDING	CMT	CINNABAR	
4	JANITOR'S	CMT	CINNABAR	
5	OFFICE	CMT	CINNABAR	
6	MEN'S LOCKER	CMT	PATTERN	SEE TILE PATTERN
7	MEN'S TOILET	CMT	PATTERN	SEE TILE PATTERN
8	MEN'S SHOWER	CMT	BAND	
9	WOMEN'S LOCKER	CMT	PATTERN	SEE TILE PATTERN
10	WOMEN'S SHOWER	CMT	COBALT	
11	WOMEN'S TOILET	CMT	PATTERN	SEE TILE PATTERN
13	POOL	CMT	VARIES	SEE PLAN
21	JANITOR'S	CMT	COBALT	
22	JANITOR'S	CMT	COBALT	

A-10

EFD DWG. NO.	77326
JOB ORDER NO.	312F144
DES	FREDRICKSON
DRWN.	JF
TR.	
CHK.	WDK
P.P.	BJK
SR. HGS	BDL
DES. SYS.	[illegible]
SATISFACTORY TO	DATE
APPROVED	DATE
FOR EFD FOR COMMANDER NAVFAC	

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.
P-8 CONSTRUCTION
CAN. NEW, [illegible] VIRGINIA BEACH, VA
POOL SWIMMING
FINISH AND COLOR SCHEDULES

CODE	SIZE	DWG. NO.
F	80091	4077326

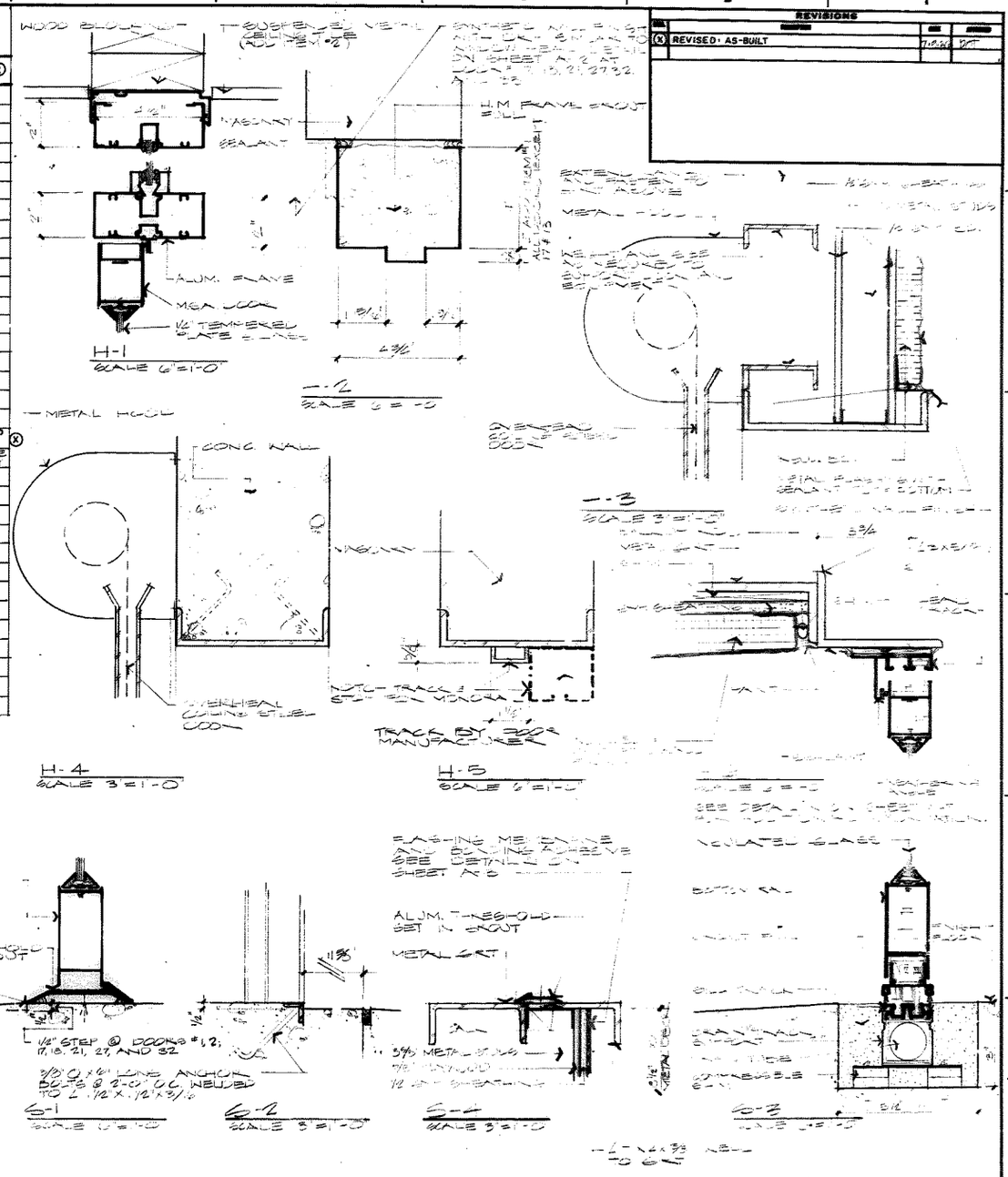
SCALE N/A | DATE 08-31-[illegible]44 | SHEET 1 OF 52

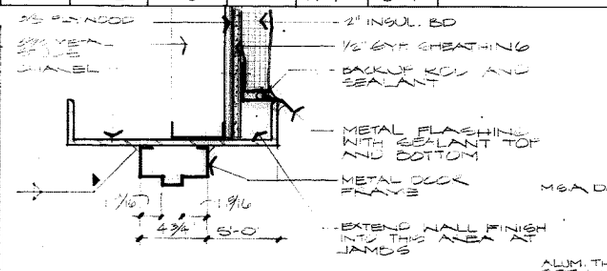
DOOR SCHEDULE

DOOR NUMBER	TYPE	MATL.	SIZE WIDTH	SIZE HEIGHT	SIZE THICK.	LOUVER	THRES	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	REMARKS
1 PK.	A	MGA.	3'-0"	7'-0"	1 3/4"		ALUM.	H-1	J-1	S-1	
2 PK.	A	MGA.	3'-0"	7'-0"	1 3/4"		ALUM.	H-1	J-1	S-1	
3 PK.	A	MGA.	3'-0"	7'-0"	1 3/4"		—	H-1	J-1	—	
4 PK.	A	MGA.	3'-0"	7'-0"	1 3/4"		—	H-1	J-1	—	
5	B	MTL.	3'-0	7'-0	1 3/4"	1.5 SF	—	H-2	J-2	—	
6	B	MTL.	2'-6"	7'-0"	1 3/4"		—	H-2	J-2	—	
7	B	MTL.	3'-0	7'-0"	1 3/4"		—	H-2	J-2	—	
8	B	MTL.	3'-0"	7'-0"	1 3/4"		—	H-2	J-2	—	
9	B	MTL.	3'-0"	7'-0"	1 3/4"		—	H-2	J-2	—	
10	B	MTL.	2'-6"	7'-0"	1 3/4"		—	H-2	J-2	—	
11	B	MTL.	3'-0"	7'-0"	1 3/4"		—	H-2	J-2	—	
12	B	MTL.	3'-0"	7'-0"	1 3/4"		—	H-2	J-2	—	
13 PK.	B	MTL.	3'-0"	7'-0"	1 3/4"		—	H-2	J-2	—	
14	B	MTL.	3'-0"	7'-0"	1 3/4"		—	H-2	J-2	—	
15	C	STEEL	10'-0"	10'-0"			MTL.	H-3	J-3	S-2	
16	D	MTL.	10'-0"	10'-0"	2 1/2"		—	H-5	J-5	—	
17 PK.	B	MTL.	3'-0"	7'-0"	1 3/4"	2.35 SF EA	ALUM.	H-2	J-2	S-1	
18	B	MTL.	3'-0"	7'-0"	1 3/4"	1.5 SF	ALUM.	H-2	J-2	S-1	
19	C	STEEL	8'-0"	8'-0"			MTL.	H-4	J-4	S-2	PROVIDE MOTOR OPERATOR AND INTERIOR AND EXTERIOR CONTROLS INCLUDING CONTROL CIRCUITS FOR OVERHEAD DOOR NO. 4
20	B	MTL.	3'-0"	7'-0"	1 3/4"		—	H-2	J-2	—	WALL IN DETAILS SHALL BE CONC. IN LIEU OF MASONRY
21	B	MTL.	3'-0"	7'-0"	1 3/4"		ALUM.	H-2	J-2	S-1	
22	E	MGA.	9'-0"	*8'-0"	1 3/4"		ALUM.	H-6	J-6	S-3	*7'-10" ADD ITEM #1
23	E	MGA.	9'-0"	*8'-0"	1 3/4"		ALUM.	H-6	J-6	S-3	*7'-10" ADD ITEM #1
24	E	MGA.	9'-0"	*8'-0"	1 3/4"		ALUM.	H-6	J-6	S-3	*7'-10" ADD ITEM #1
25	E	MGA.	9'-0"	*8'-0"	1 3/4"		ALUM.	H-6	J-6	S-3	
26	E	MGA.	9'-0"	*8'-0"	1 3/4"		ALUM.	H-6	J-6	S-3	*7'-10" ADD ITEM #1
27	B	MTL.	3'-0"	7'-0"	1 3/4"		ALUM.	H-2	J-2	S-1	*7'-10" ADD ITEM #1
28	E	MGA.	9'-0"	*8'-0"	1 3/4"		ALUM.	H-6	J-6	S-3	*7'-10" ADD ITEM #1
29	E	MGA.	9'-0"	*8'-0"	1 3/4"		ALUM.	H-6	J-6	S-3	*7'-10" ADD ITEM #1
30	E	MGA.	9'-0"	*8'-0"	1 3/4"		ALUM.	H-6	J-6	S-3	*7'-10" ADD ITEM #1
31	E	MGA.	9'-0"	*8'-0"	1 3/4"		ALUM.	H-6	J-6	S-3	*7'-10" ADD ITEM #1
32	B	MTL.	3'-0"	7'-0"	1 3/4"		ALUM.	H-2	J-2	S-1	
33	B	MTL.	3'-0"	7'-0"	1 3/4"	FULL	ALUM.	H-7	H-7	S-4	

LEGEND

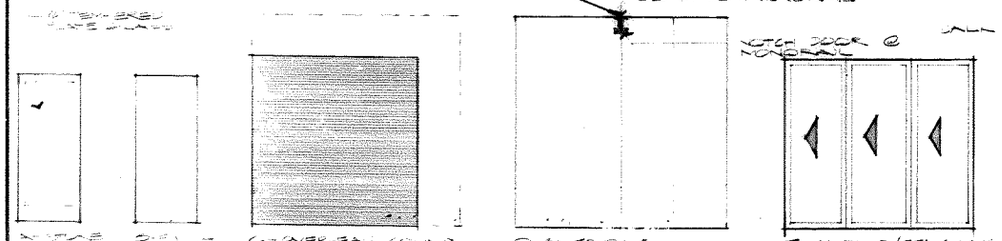
ALUM.	ALUMINUM
[illegible]	[illegible]
MTL.	METAL
[illegible]	[illegible]
[illegible]	NEW JAMB STILE ALUMINUM
O.H.	OVERHEAD DOORS
[illegible]	[illegible]
[illegible]	THRESHOLD





H-7 (JAMB SIMILAR)
SCALE 3"=1'-0"

NOTE: PROVIDE EXTENSIONS TO THE GARAGE DOOR FROM THE TOP OF THE FRAME TO THE CHANNEL ABOVE FOR ADDED SUPPORT.



DOOR TYPES

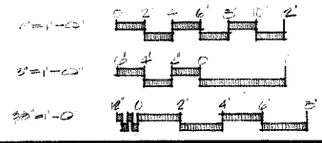
SCALE 3/8" = 1'-0"

NOTE

SEE SHEET A-12 FOR DOOR JAMB DETAILS AND DOOR TYPE 'E' STACKING PLAN

'E' TYPE DOOR BY 'KANNEER'

GRAPHIC SCALES



REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED
X	REVISED: AS-BUILT	7-8-82	PT

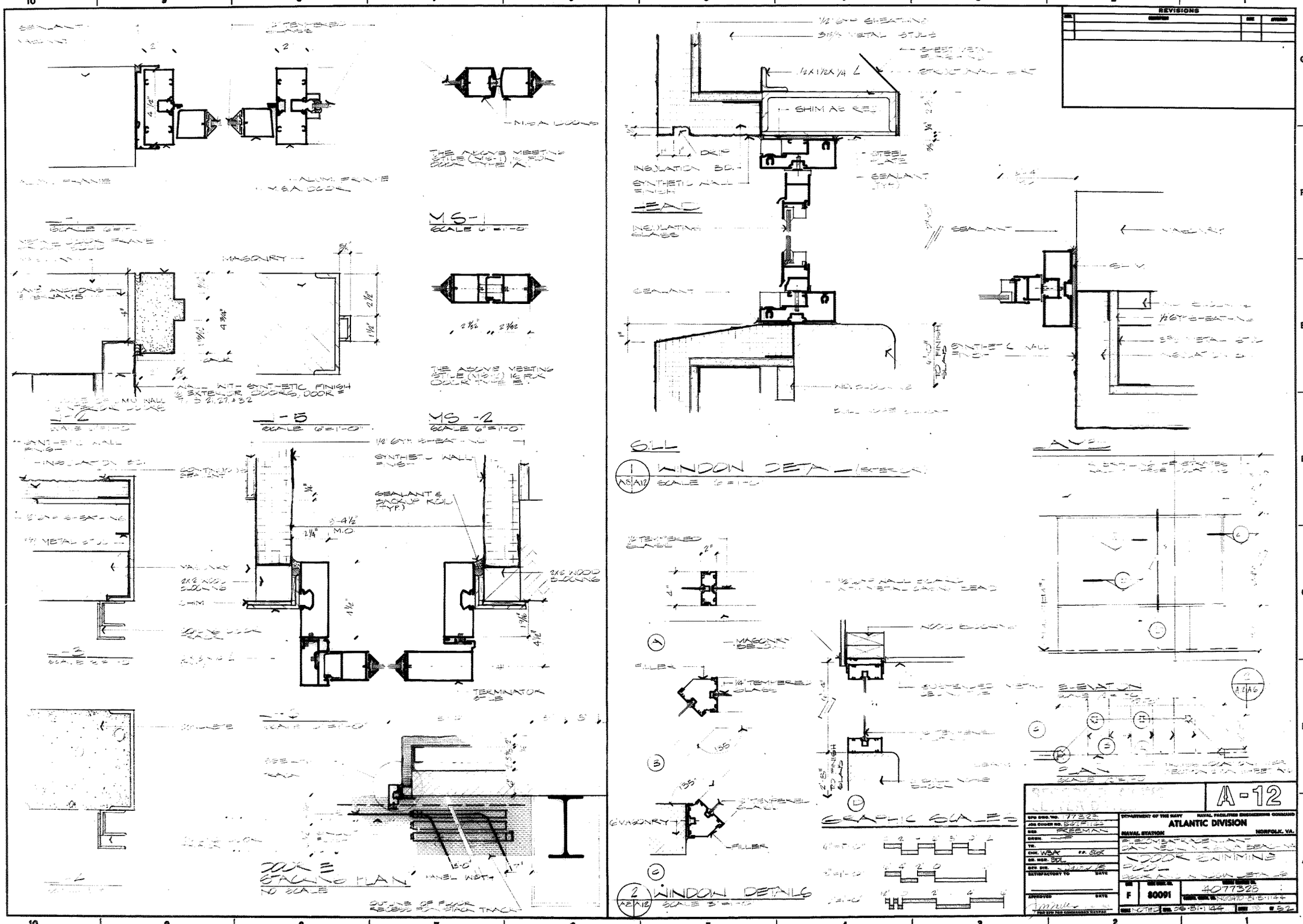
RECORD DRAWING
LETTER DATED

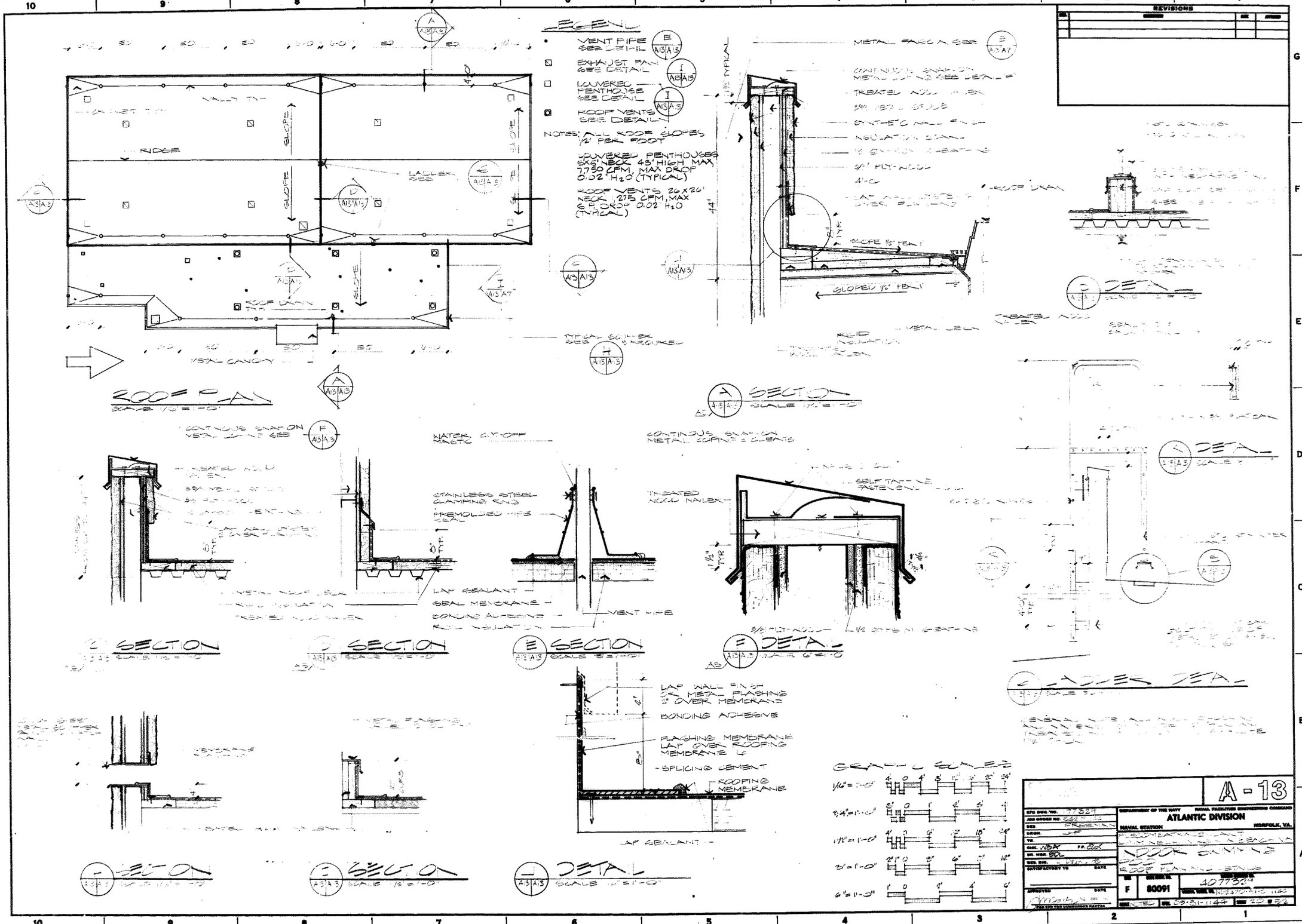
A-11

CFD SYS. NO. 77327
JOB ORDER NO. 542 P1144
DES. FREEMAN
DRWN.
TR.
CHK. WEAR
WR. REF. 80
SUB. DR.
SATISFACTORY TO DATE
APPROVED DATE
FOR THE CHIEF, CIVIL ENGINEERING DIVISION

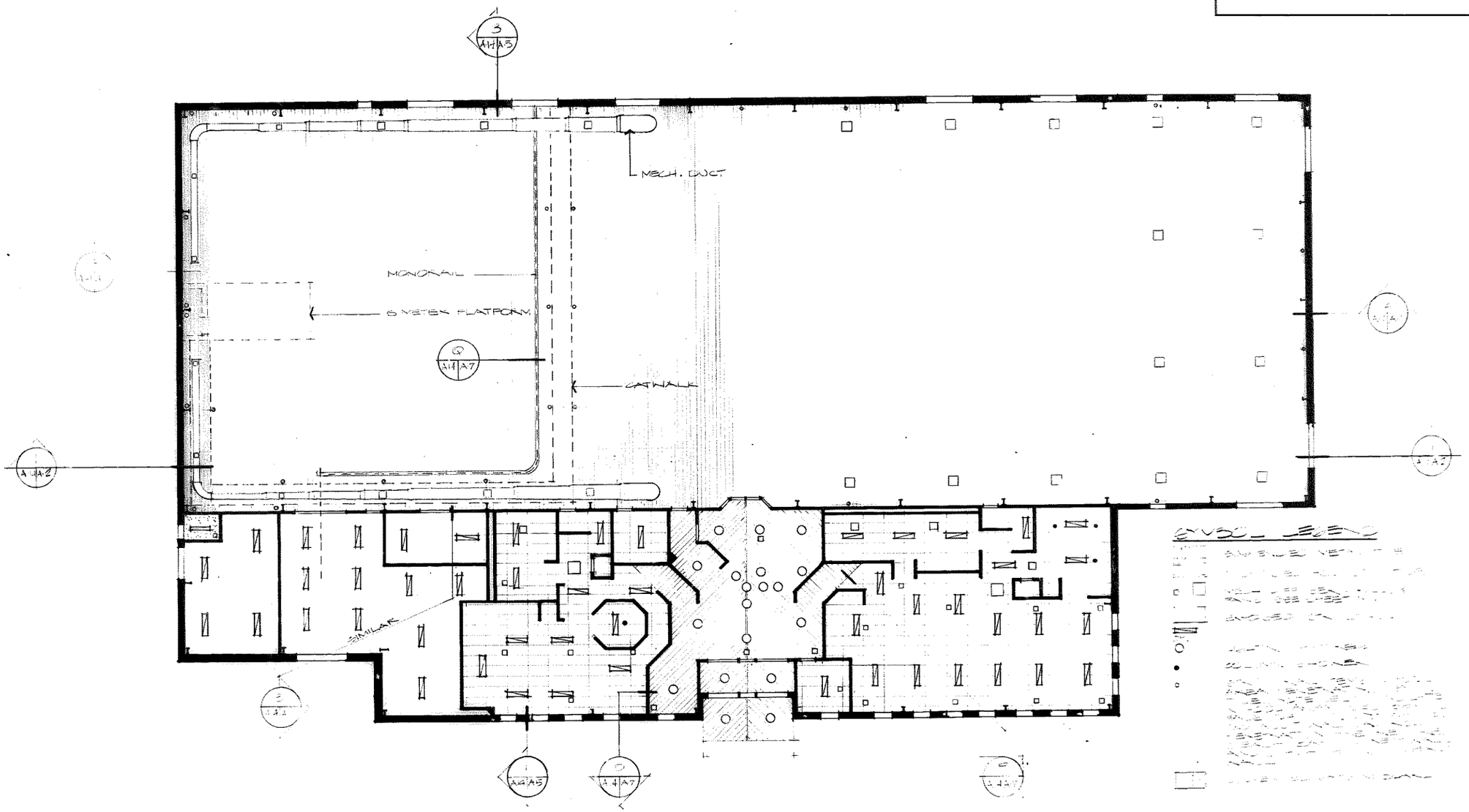
DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION — ATLANTIC DIVISION — NORFOLK, VA.
[illegible] COMBAT SYSTEMS [illegible]
[illegible] GARAGE
DOOR SCHEDULE
[illegible]

F | 60091 | 4077327
NOTED | 06-30-1142 | 15 of 52


REVISIONS
SILL
WINDOW DETAIL
SCALE 6"=1'-0"
HEAD
SCALE 6"=1'-0"
DOOR FRAMING PLAN
NO SCALE
WINDOW DETAILS
SCALE 3"=1'-0"
GRAPHIC SCALES
A-12
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NORFOLK, VA.
NAVAL STATION
DOOR FRAMING
F
80091
4077326


REVISIONS
KEYNOTES
VENT PIPE SEE DETAIL
EXHAUST FAN SEE DETAIL
LOUVERED PENTHOUSE SEE DETAIL
ROOF VENTS SEE DETAIL
NOTES: ALL ROOF SLOPES 1/2" PER FOOT
LOUVERED PENTHOUSES 5'x5' NECK 45" HIGH MAX 7,750 CFM, MAX DROP 0.02" H2O (TYPICAL)
ROOF VENTS 26x26" NECK 275 CFM, MAX 6" DROP 0.02 H2O (TYPICAL)
RIDGE
VALLEY
SLOPE
LADDER SEE
ROOF DRAIN TYP.
METAL CANOPY
ROOF PLAN
SCALE 1/8" = 1'-0"
SLOPED 1/2" PER FT
SECTION
SCALE 1/4" = 1'-0"
CONTINUOUS SNAP-ON METAL COPING SEE
WATER CUT-OFF MASTIC
CONTINUOUS SNAP-ON METAL COPING & CLEATS
STAINLESS STEEL CLAMPING RING
THERMOPLASTIC PIPE SEAL
TREATED WOOD NAILER
LAP SEALANT
SEAL MEMBRANE
BONDING ADHESIVE
VENT PIPE
SELF TAPPING FASTENERS
DETAIL
SCALE 1/2" = 1'-0"
LAP WALL FLASH ON METAL FLASHING 2" OVER MEMBRANE
BONDING ADHESIVE
FLASHING MEMBRANE LAP OVER ROOFING MEMBRANE 6"
SPLICING CEMENT
ROOFING MEMBRANE
LAP SEALANT
SCALE 1/16" = 1'-0"
SCALE 3/4" = 1'-0"
SCALE 1 1/2" = 1'-0"
SCALE 3" = 1'-0"
SCALE 6" = 1'-0"
A-13
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION
NORFOLK, VA.
DOCK OFFICE
ROOF PLAN AND DETAILS
F
80091
40773-24
09-21-1944
22 of 32

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



REFLECTED CEILING PLAN

SCALE 1/8" = 1'-0"

NORTH

GRAPHIC SCALE

SCALE 1/8" = 1'-0"

EFD DWG. NO.	1330
JOB ORDER NO.	[illegible]
SCS	[illegible]
DRWN	[illegible]
TR.	[illegible]
CHK.	WBX
SR. MGR.	BCL
SCS SUP.	[illegible]
SATISFACTORY TO	DATE
APPROVED	DATE
FOR EFD FOR COMMANDER NAVFAC	

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

ATLANTIC DIVISION

NAVAL STATION — NORFOLK, VA.

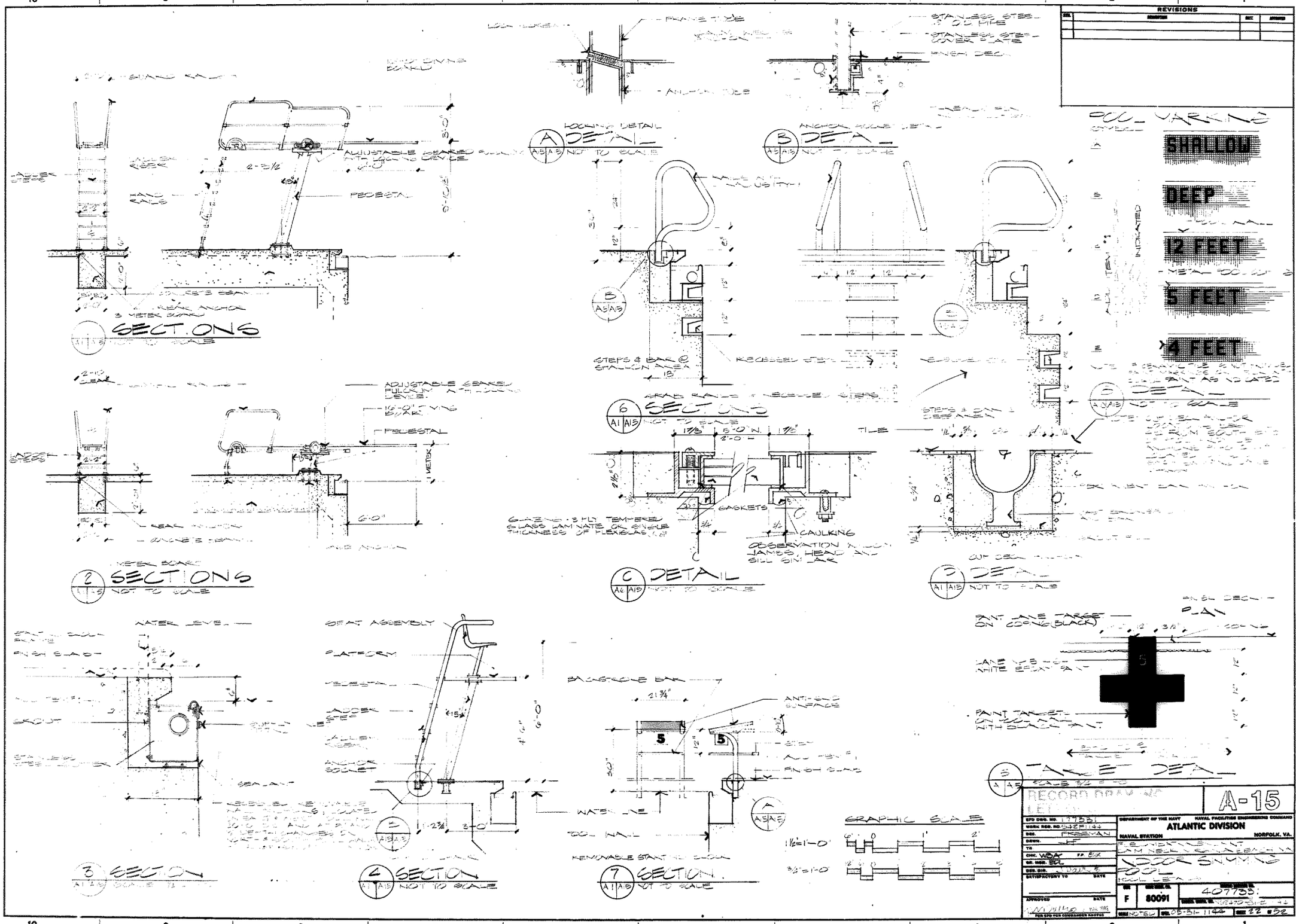
[illegible] ENCLOSURE

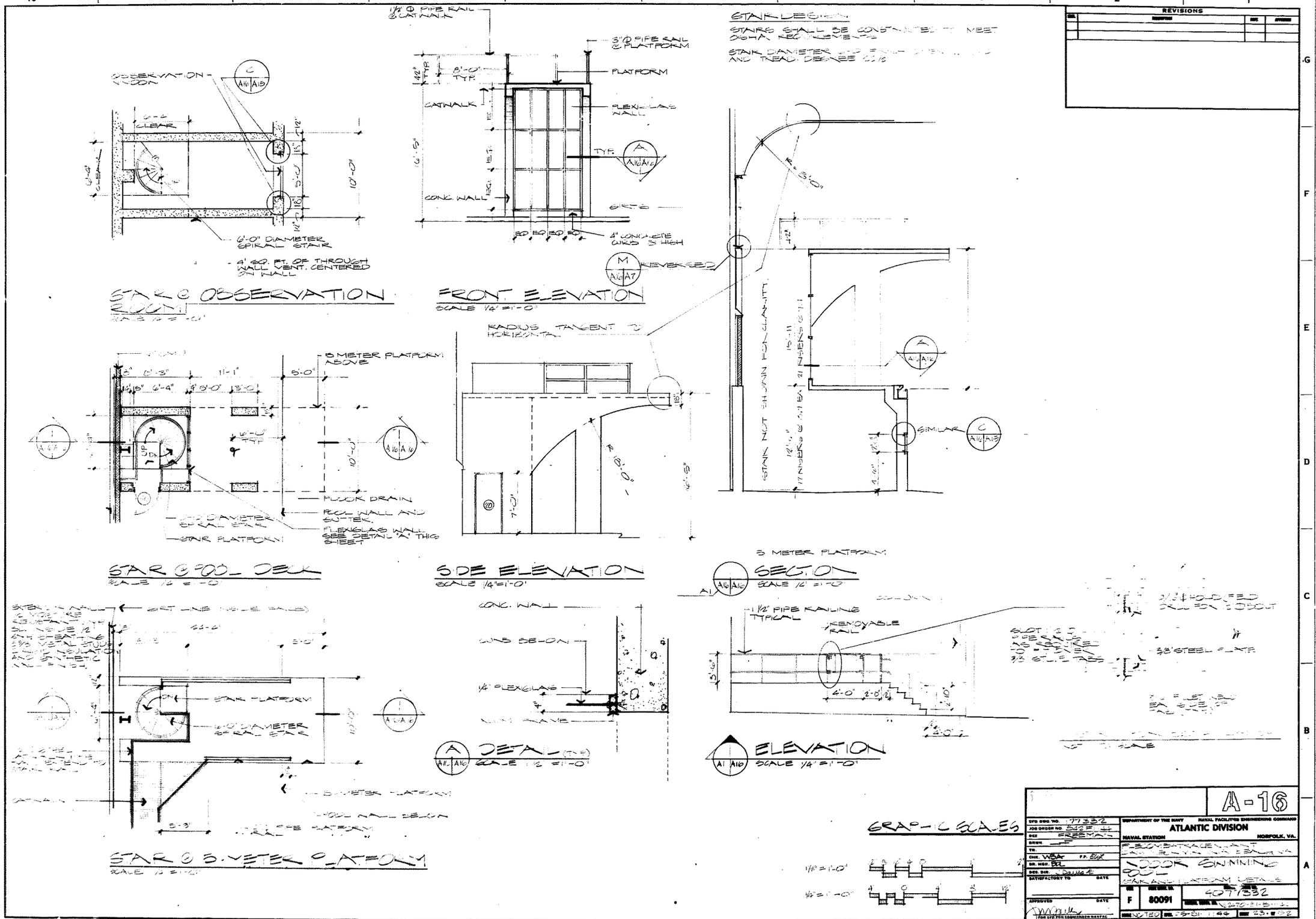
[illegible] SWIMMING POOL

REFLECTED CEILING PLAN

A-14

SIZE F	FACILITY NO. 80091	CONTRACT NO. [illegible]
SCALE 1/8" = 1'-0"	DATE [illegible]	SHEET [illegible] OF 52

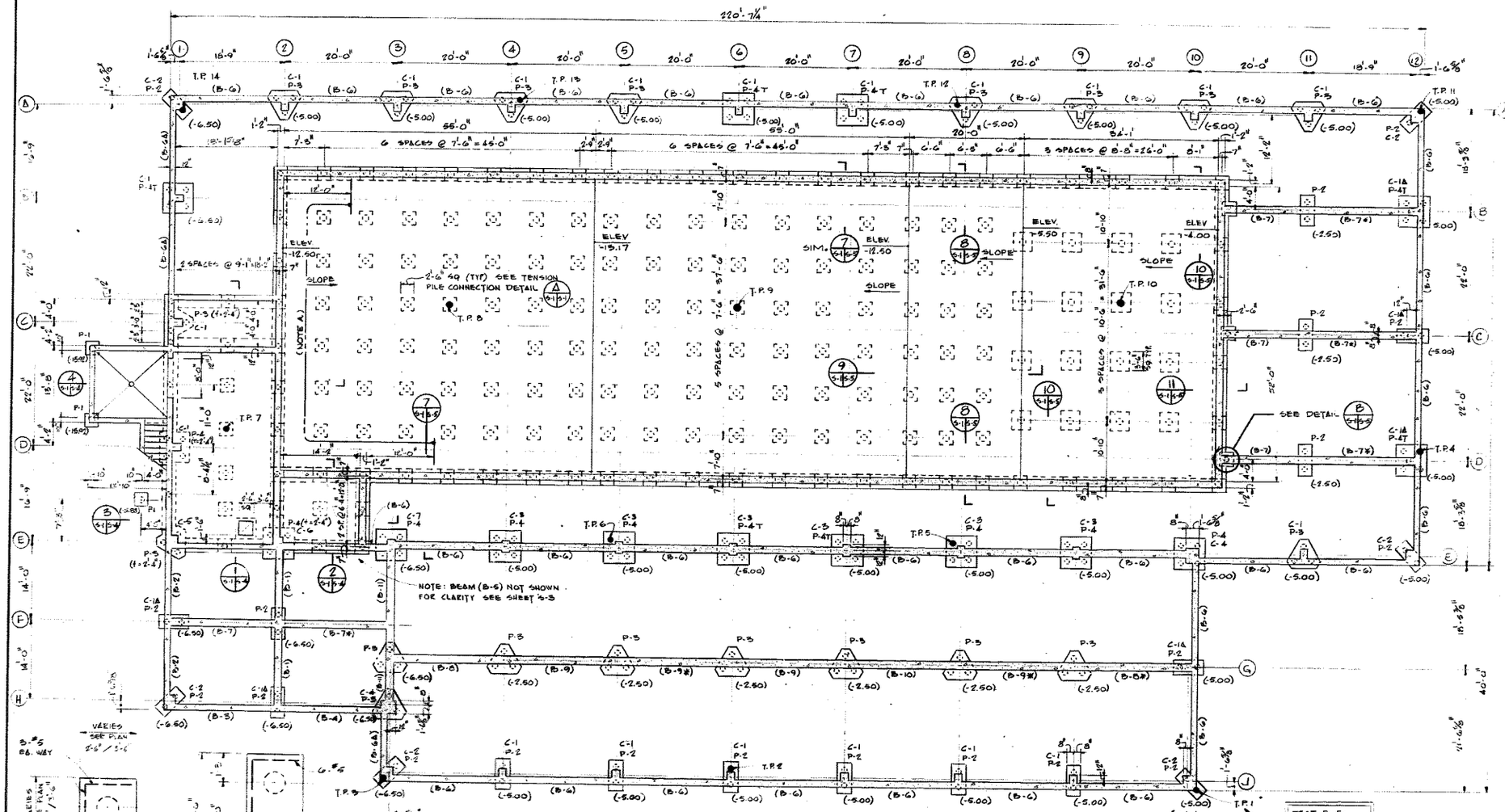

REVISIONS
SECTIONS
NOT TO SCALE
DETAIL
NOT TO SCALE
SHALLOW
DEEP
12 FEET
5 FEET
4 FEET
ADJUSTABLE GASKET
PEDESTAL
LADDER
GASKETS
CAULKING
GLASS: 3 PLY TEMPERED GLASS LAMINATE OR SINGLE THICKNESS OF PLEXIGLAS
SEAT ASSEMBLY
PLATFORM
BACKSTOP BAR
WATER LINE
POOL WALL
REMOVABLE STANTON BLOCK
GRAPHIC SCALE
1½"=1'-0"
3/4"=1'-0"
LANE DETAIL
SCALE 3/4"=1'-0"
A-15
RECORD DRAWING
ATLANTIC DIVISION
NAVAL STATION
NORFOLK, VA.
DIVING POOL
F
80091
407755
22 of 32


REVISIONS
STAIR DESIGN
STAIRS SHALL BE CONSTRUCTED TO MEET OSHA REQUIREMENTS
STAIR DIAMETER AND RISER HEIGHT AND TREAD DEPTH
OBSERVATION ROOM
6'-0" CLEAR
6'-0" DIAMETER SPIRAL STAIR
4' SQ. FT. OF THROUGH WALL VENT. CENTERED 5TH WALL
STAIR @ OBSERVATION ROOM
SCALE 1/2" = 1'-0"
1 1/2" Ø PIPE RAIL @ CATWALK
3" Ø PIPE RAIL @ PLATFORM
PLATFORM
CATWALK
FLEXIGLAS WALL
CONC. WALL
4" CONCRETE CURB 3" HIGH
REVERSED
FRONT ELEVATION
SCALE 1/4" = 1'-0"
RADIUS TANGENT TO HORIZONTAL
STAIR NOT SHOWN FOR CLARITY
SIMILAR
5 METER PLATFORM ABOVE
FLOOR DRAIN
POOL WALL AND GUTTER
6'-0" DIAMETER SPIRAL STAIR
FLEXIGLAS WALL SEE DETAIL 'A' THIS SHEET
STAIR PLATFORM
STAIR @ POOL DECK
SCALE 1/2" = 1'-0"
SIDE ELEVATION
SCALE 1/4" = 1'-0"
5 METER PLATFORM
SECTION
SCALE 1/4" = 1'-0"
CONC. WALL
WOOD BE-ON
1/4" PLEXIGLAS
DETAIL
SCALE 1/2" = 1'-0"
1 1/2" PIPE RAILING TYPICAL
REMOVABLE RAIL
ELEVATION
SCALE 1/4" = 1'-0"
3/8" STEEL PLATE
STAIR PLATFORM
6'-0" DIAMETER SPIRAL STAIR
5 METER PLATFORM
POOL WALL BELOW
STAIR @ 5 METER PLATFORM
SCALE 1/2" = 1'-0"
GRAPHIC SCALES
1/8" = 1'-0"
1/2" = 1'-0"
A-16
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION
NORFOLK, VA.
POOL SWIMMING
STAIR AND PLATFORM DETAILS
F
80091
4077332
SCALE: 1/2" = 1'-0"
DATE: 5-31-1994
APPROVED
DATE
FOR USE FOR COMMANDER NAVFAC

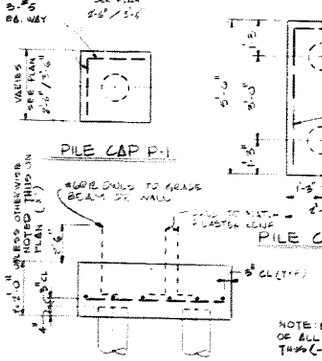
REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED
(X)	REVISED - AS-BUILT	3/6/84	WSB

NOTE A: HORIZONTAL REINF. FOR POOL WALLS THIS AREA IS #5@12 EACH FACE (IN LIEU OF #4@12)

NOTES:
1. SEE SHEET S-2 FOR SECTIONS AND DETAILS
2. ALL BEAMS [illegible]
3. SEE S-2 SHEET [illegible] FOR [illegible] DETAILS.



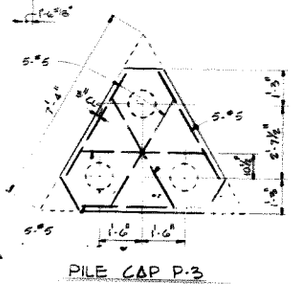
FOUNDATION PLAN
SCALE: 1/8" = 1'-0"



PILE CAP P-1

PILE CAP P-2

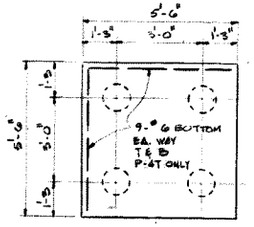
TYPICAL ELEVATION



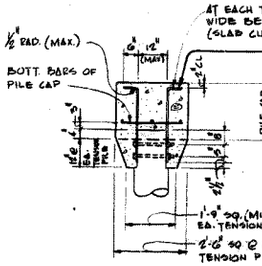
NOTE: ELEVATION OF TOP OF ALL PILE CAPS SHOWN THUS (-) ON PLAN

PILE CAP P-3

PILE CAP DETAILS
SCALE: 1/2" = 1'-0"



PILE CAP P-4
PILE CAP P-4T (TENSION)



AT EACH TENSION PILE ATTACH 2-½" THICK x 3" WIDE BENT R'S USING 2-1¼" Φ THRU BOLTS (SLAB CUT PILES AS REQ'D TO FIT BENT R'S

(X) NOTE: ALL TENSION PILE CONNECTORS TO BE WITHIN 2" OF ALL FINISH FLOORS.

NOTE: ALL PILES WITH CUTOFF ELEVATIONS BELOW -10.50 SHALL BE TENSION PILES. OTHERS ARE NOTED THUS "T" ON PLAN.

TENSION PILE CONNECTION DETAIL

GRAPHIC SCALES
1/8" = 1'-0"
1/2" = 1'-0"

S-1

SPS DWG. NO.	177333
NAVFAC REG. NO.	5422-1144
DES.	W.E. BLUTZ P.E.
DRWN.	J.D. FRYE
TR.	
CHK.	[illegible] P.E. P.E.
DIV. MGR.	[illegible] P.E.
DES. DIV.	J. [illegible]
SATISFACTORY TO	DATE
APPROVED	DATE
	19
FOR CO. FOR COMMANDER NAVFAC	

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.
FLECOMBATRACENT
DAM NECK, VIRGINIA BEACH, VA.

INDOOR SWIMMING POOL
FOUNDATION & PILE PLAN

SIZE	CODE IDENT. NO.	DRAWING NO.
F	80091	4077333

SCALE: 1/2" = 1'-0" | DATE: 05-81-144 | SHEET 24 OF 52

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED

TOP OF FDN ELEV -5.50

RETAINING WALL

220'-7¼"

6" CONC SLAB

8" CONC SLAB

164'-1"

110'-0"

55'-0"

55'-0"

20'-0"

54'-1"

34'-1"

SEE SHEETS A-16 & S-6 FOR PLATFORM FRAMING PLANS & SECTIONS

SEE PARTIAL PLAN SHEET S-3

RETAINING WALL TOP OF FDN ELEV -4.00

SLOPE

TOP OF FDN ELEV -5.50

RETAINING WALL

NOTE: TOP OF FINISHED FLOOR ADDITIVE SEE ITEM NO 2 SHOWN THUS (———) ON STRUCT DWGS

TOP OF WALL ELEV 0.00

TOP OF FDN ELEV VARIES SEE PLAN

SEE SHEET C-1 FOR ELEVATION OF FINISHED GRADE

SCALE ⅜"=1'-0"

NOTE: INCREASE SLOPE OF STOOP SLAB AS REQD TO MATCH FINISHED FLOOR ADDITIVE SEE ITEM NO 2

SEE SHEET C-1 FOR ELEV OF FINISHED GRADE

6 TREADS @ 11" = 4'-7"

10'-2"

6 x 6 - W2.9 x W2.9 WWF

SLOPE 1½"

ELEV 0.00

ELEV VARIES

VAPOR BARRIER

4" POROUS FILL

2"x4

#6@12

SECTION 1

SCALE ⅜"=1'-0"

#4 DWLS @ 10

6 x 6 - W2.9 x W2.9 WWF

ELEV 0.00

#4 DWLS @ 10

1½" x 5" KEY

#4@10

2x4

SECTION 2

SCALE: ⅜"=1'-0"

FLOOR PLAN

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

GRAPHIC SCALES

1/8"=1'-0" 6' 0' 6' 10' 15' 20' 25' 30' 35'

3/8"=1'-0" 1' 0' 1' 2' 3' 4' 5' 6' 7' 8' 9' 10'

S-2

EFD DWG. NO.	1-7334
WORK REQ. NO.	5421144
DES.	W. BIXLER P.E.
DRWN.	J. D. FRYE
TR.	
CHK.	
DR. MGR.	
DES. DIV.	
SATISFACTORY TO	DATE
APPROVED	DATE

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

ATLANTIC DIVISION

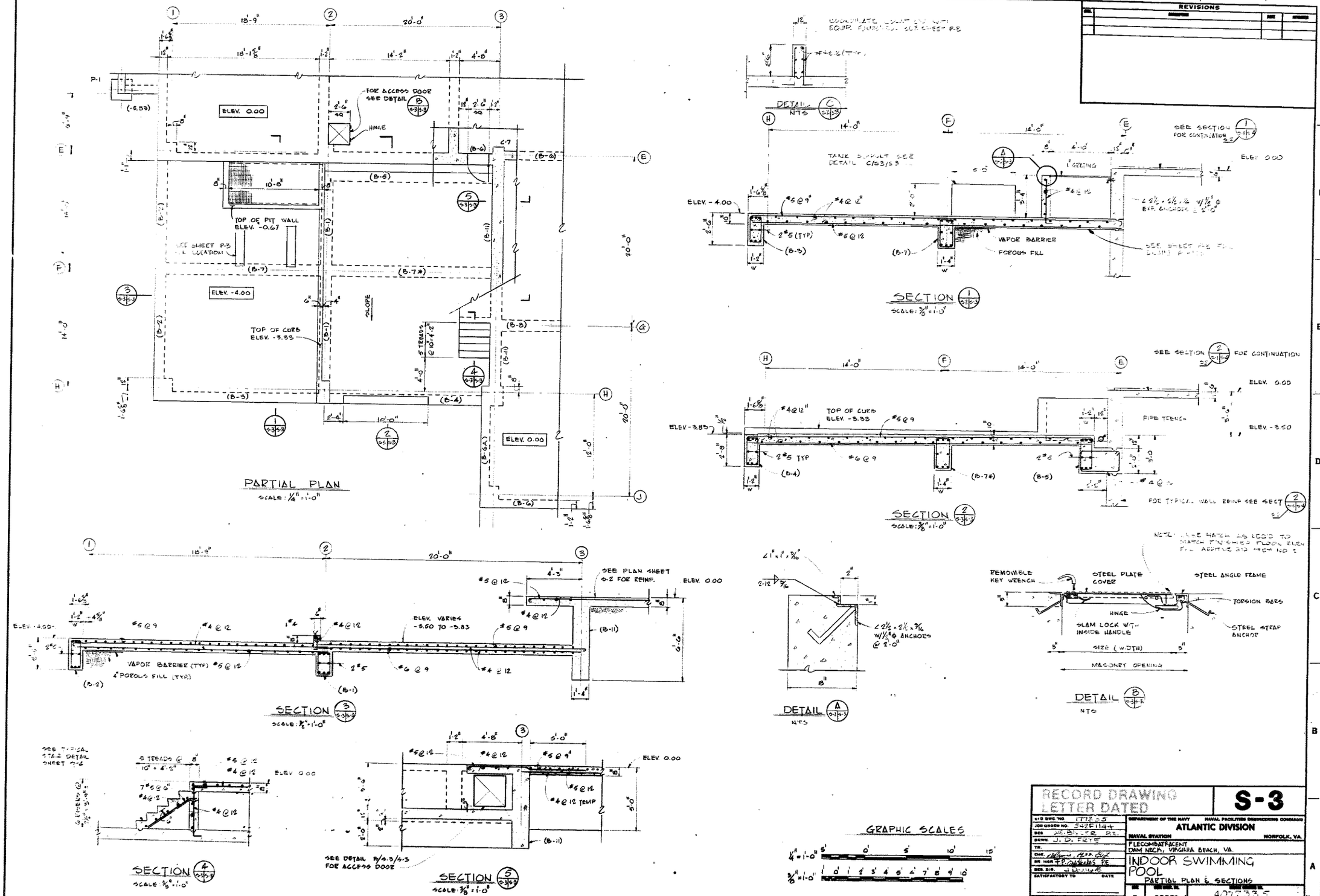
NAVAL STATION — NORFOLK, VA.

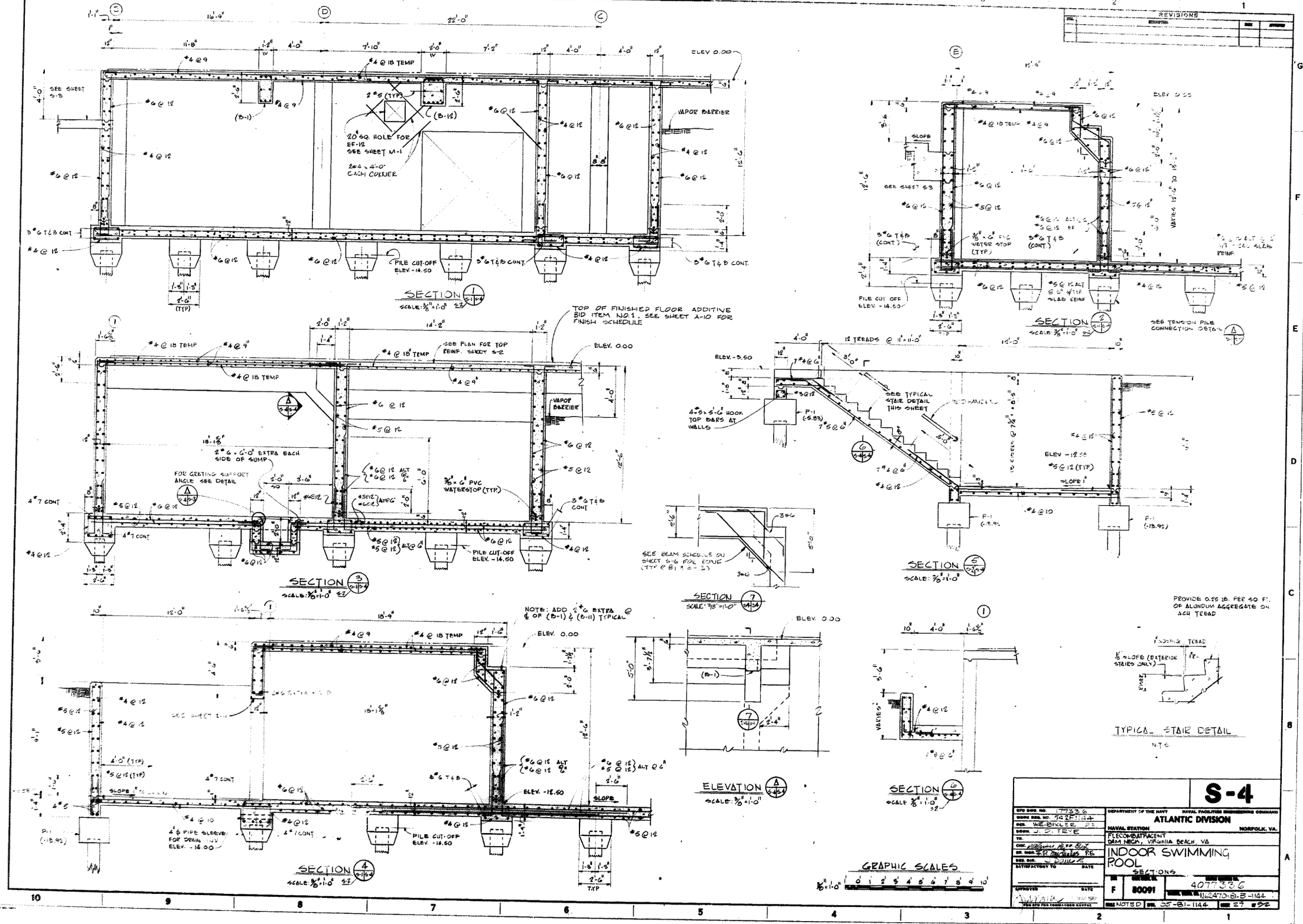
FLECOMBATAGENT
DAM NECK, VIRGINIA BEACH, VA

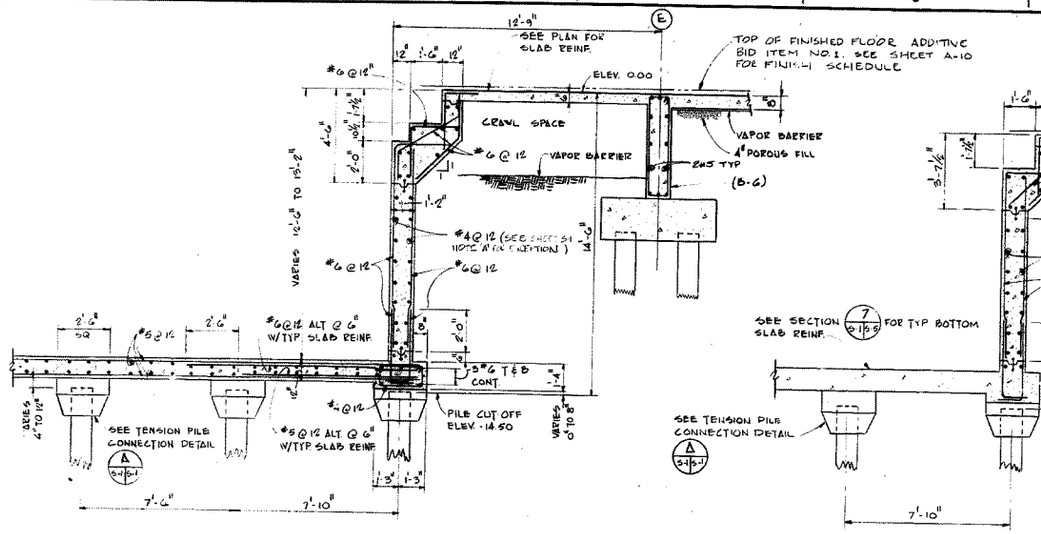
INDOOR SWIMMING POOL

FLOOR PLAN

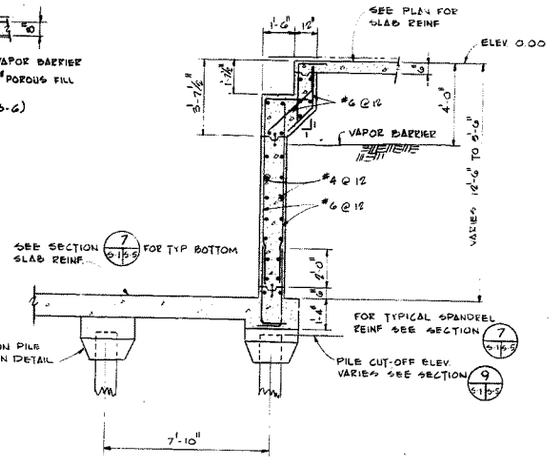
SIZE	F	80091	4077334
SCALE	NOTED	DWG. 05-81-1142	SHT. 25 OF 82


PARTIAL PLAN
SCALE: 1/4" = 1'-0"
ELEV. 0.00
ELEV. -4.00
FOR ACCESS DOOR SEE DETAIL B
HINGE
TOP OF PIT WALL ELEV. -0.67
TOP OF CURB ELEV. -3.83
SLOPE
5 TREADS @ 0'-4 1/2"
SEE SHEET P-3 FOR LOCATION
SEE SECTION 1 FOR CONTINUATION
TANK SUPPORT SEE DETAIL C/S3/5.3
1" GRTING
ELEV. -4.00
#5 @ 9"
#4 @ 12"
2#5 (TYP)
#5 @ 12
VAPOR BARRIER
POROUS FILL
SECTION 1
SCALE: 3/8" = 1'-0"
SEE SECTION 2 FOR CONTINUATION
TOP OF CURB ELEV. -3.83
#5 @ 9
ELEV. -3.85
2#5 TYP
#6 @ 9
FIRE TRENCH
ELEV. 0.00
ELEV. -3.50
FOR TYPICAL WALL REINF SEE SECT 2
SECTION 2
SCALE: 3/8" = 1'-0"
SEE PLAN SHEET S-2 FOR REINF.
ELEV. 0.00
ELEV. VARIES -3.50 TO -3.83
VAPOR BARRIER (TYP)
4" POROUS FILL (TYP)
SECTION 3
SCALE: 3/8" = 1'-0"
DETAIL A
NTS
REMOVABLE KEY WRENCH
STEEL PLATE COVER
STEEL ANGLE FRAME
TORSION BARS
HINGE
SLAM LOCK W/ INSIDE HANDLE
STEEL STEAP ANCHOR
SIZE (WIDTH)
MASONRY OPENING
DETAIL B
NTS
SEE TYPICAL STAIR DETAIL SHEET S-6
5 TREADS @ 8"
ELEV. 0.00
SECTION 4
SCALE: 3/8" = 1'-0"
SEE DETAIL B/S-3/S-3 FOR ACCESS DOOR
#4 @ 12 TEMP
SECTION 5
SCALE: 3/8" = 1'-0"
GRAPHIC SCALES
1/4" = 1'-0"
3/8" = 1'-0"
REVISIONS
RECORD DRAWING LETTER DATED
S-3
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION
NORFOLK, VA.
FLECOMBATFORCE
DAM NECK, VIRGINIA BEACH, VA.
INDOOR SWIMMING POOL
PARTIAL PLAN & SECTIONS
F
80091
4077335
NOTED
05-81-1144

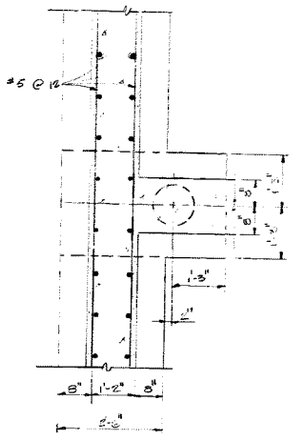

SECTION 1
SCALE: 3/8"=1'-0"
SECTION 2
SCALE: 3/8"=1'-0"
SECTION 3
SCALE: 3/8"=1'-0"
SECTION 4
SCALE: 3/8"=1'-0"
SECTION 5
SCALE: 3/8"=1'-0"
SECTION 7
SCALE: 3/8"=1'-0"
ELEVATION
SCALE: 3/8"=1'-0"
SECTION 6
SCALE: 3/8"=1'-0"
TYPICAL STAIR DETAIL
N.T.S.
GRAPHIC SCALES
REVISIONS
S-4
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION
NORFOLK, VA.
FLECOMBATFACENT
DAM NECK, VIRGINIA BEACH, VA
INDOOR SWIMMING POOL
SECTIONS
F
80091
4077336
NCEL NOTED
25-81-1144
27 of 32



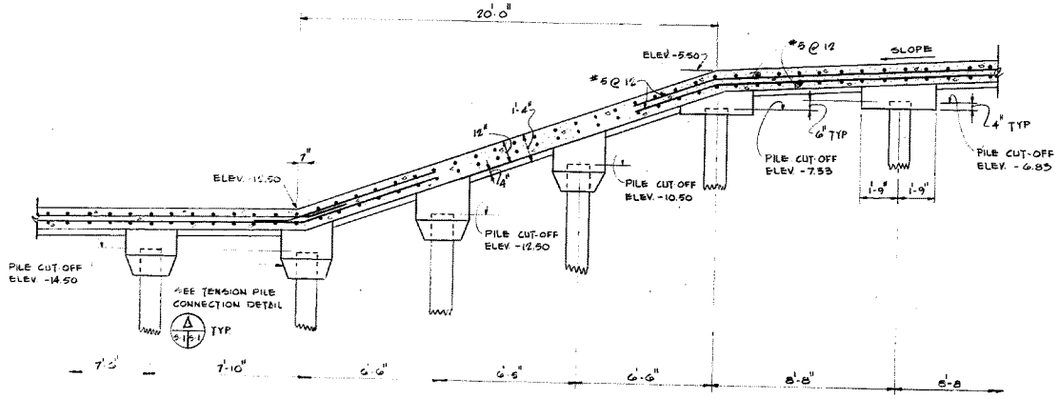
SECTION 7/S-1 & S-5
SCALE: 3/8" = 1'-0"



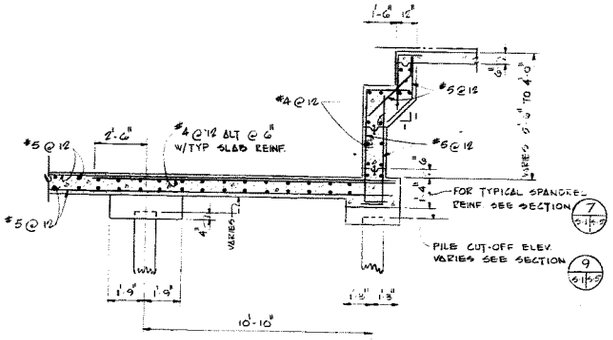
SECTION 8/S-1 & S-5
SCALE: 3/8" = 1'-0"



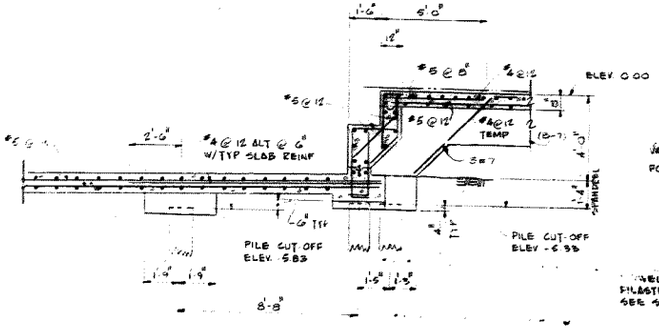
DETAIL B/S-1 & S-5
SCALE: 3/4" = 1'-0"



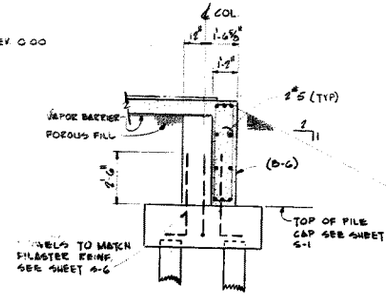
SECTION 9/S-1 & S-5
SCALE: 3/8" = 1'-0"



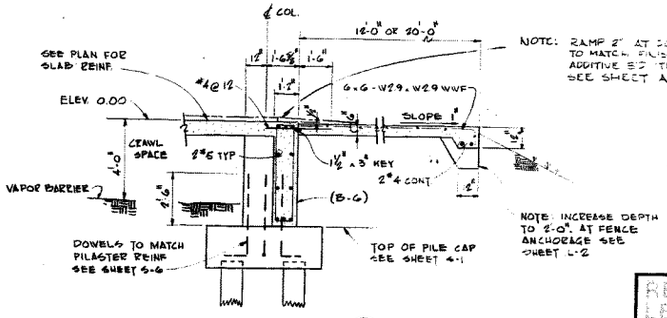
SECTION 10/S-1 & S-5
SCALE: 3/8" = 1'-0"



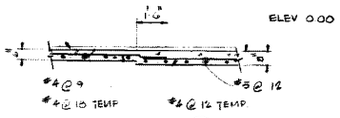
SECTION 11/S-1 & S-5
SCALE: 3/8" = 1'-0"



SECTION 12/S-1 & S-5
SCALE: 3/8" = 1'-0"



SECTION 13/S-1 & S-5
SCALE: 3/8" = 1'-0"



SECTION 14/S-1 & S-5
SCALE: 3/8" = 1'-0"

GRAPHIC SCALES
3/8" = 1'-0"
3/4" = 1'-0"

REVISIONS

SYM.	DESCRIPTION	DATE	APPROVED

RECORD DRAWING LETTER DATED

S-5

EFD DWG. NO. 1773337
JOB ORDER NO. 52EF1142
DES. W. E. BICKLER P.E.
DRWN. J. D. FRYE
TR.
CHK. A. Dickinson, Mech. Eng.
BR. MGR. F. P. Nicholas P.E.
DES. DIR. J. W. Miller P.E.
SATISFACTORY TO DATE
APPROVED DATE
FOR EFD FOR COMMANDER (NAVFAC)

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.
MECHANICAL ADJACENT
DAM NECK, VIRGINIA BEACH, VA.

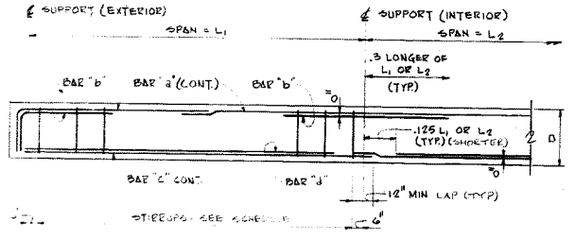
INDOOR SWIMMING POOL
SECTIONS

SIZE F — IDENT. NO. 80091 — DRAWING NO. 4071337
NOTED — SPEC. NO. 05-81-1144 — SHEET 28 OF 52

BEAM SCHEDULE

MK	W x D	TOP BARS (LEFT) a	TOP BARS (LEFT) b	BOTTOM BARS c	BOTTOM BARS d	TOP BARS (RIGHT) a	TOP BARS (RIGHT) b	STIRRUPS *4 TYP
B-1	14" x 30"	3#6	–	3#7	–	3#6	–	CONT. @ 12"
B-2	14" x 30"	3#6	–	3#6	–	3#6	–	CONT. @ 12"
B-3	14" x 30"	3#6	–	3#6	–	3#6	2#5	CONT. @ 12"
B-4	14" x 32"	3#6	2#5	3#6	2#5	3#6	–	CONT. @ 12"
B-5	14" x 36"	3#7	–	3#7	–	3#7	–	CONT. @ 12"
B-6	14" x 60"	3#7	–	3#7	–	3#7	–	CONT. @ 12"
B-6A	14" x 78"	3#7	–	3#7	–	3#7	–	CONT. @ 12"
B-7	16" x 30"	3#7	–	3#7	–	3#7	2#6	CONT. @ 12"
B-8	16" x 30"	3#7	–	3#7	2#7	3#7	2#8	CONT. @ 12"
B-9	16" x 30"	3#7	2#8	3#7	–	3#7	2#7	CONT. @ 12"
B-10	16" x 30"	3#7	2#7	3#7	–	3#7	2#7	CONT. @ 12"
B-11	16" x 78"	3#7	–	3#7	–	3#7	–	CONT. @ 12"
B-12	24" x 30"	5#6	–	5#6	–	5#6	–	CONT. @ 12"

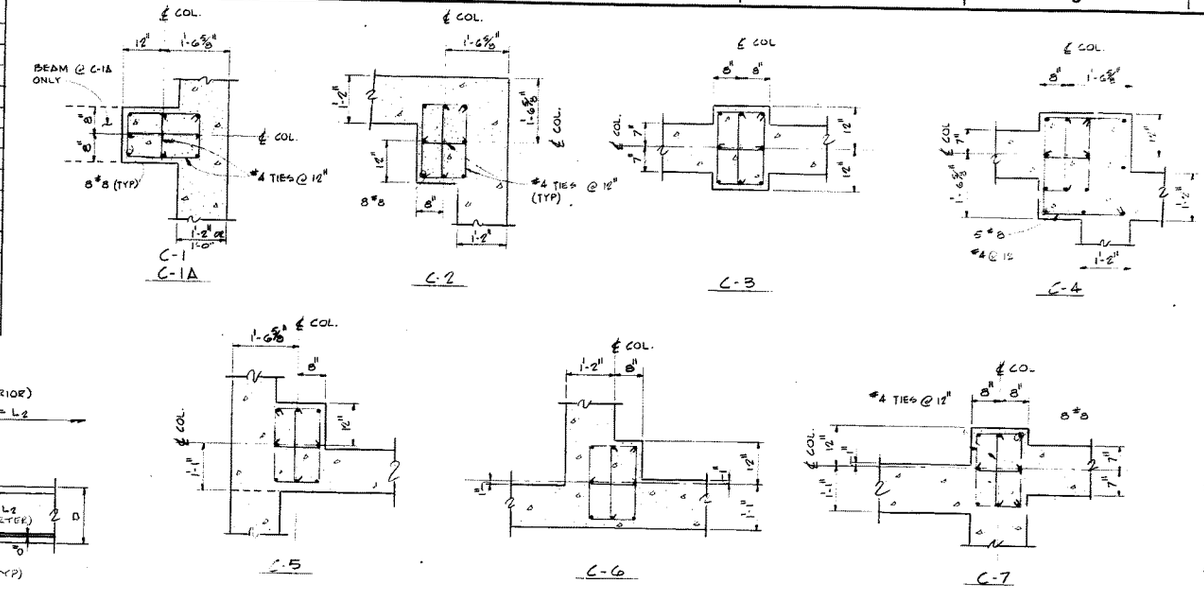
* DENOTES BEAM REINFORCEMENT OPPOSITE HAND
SEE PLAN ON SHEET S-1, S-2 & S-3



TYPICAL ELEVATION

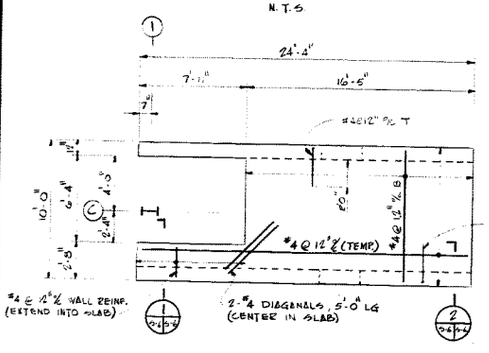
GRADE BEAM DETAILS

N.T.S



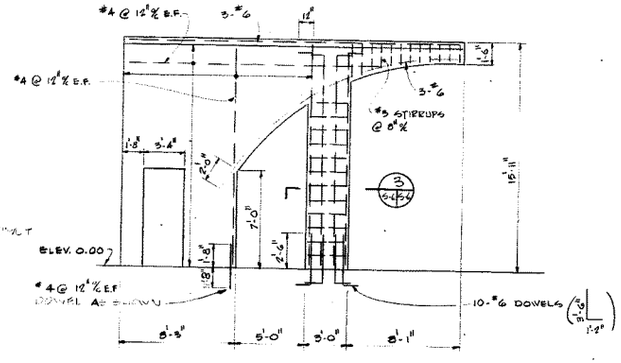
PILASTER DETAILS

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



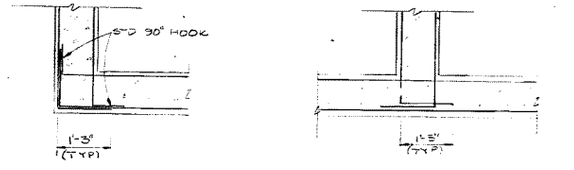
FRAMING PLAN @ 5-METER PLATFORM

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



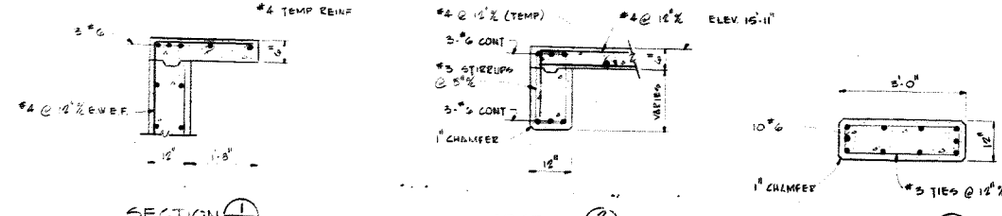
TYPICAL ELEVATION @ 5-METER PLATFORM

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



TYP. WALL & BEAM INTERSECTION DETAIL

NTS



SECTION 1 (2-4&5-4)
SCALE: 3/4" = 1'-0"

SECTION 2 (2-4&5-4)
SCALE: 3/4" = 1'-0"

SECTION 3 (2-4&5-4)
SCALE: 3/4" = 1'-0"

GENERAL NOTES:

1. LIVE LOADS

ROOF	20 psf
POOL DECK	100 psf
TOILET & LOCKER	75 psf
FOYER & LOBBY	100 psf
GENERAL STORAGE	100 psf
MECHANICAL ROOMS	100 psf
GARAGE UNIFORM LOAD	150 psf
WHEEL LOAD	12,000 pounds
CATWALKS	100 psf
WIND	115 mph
SEISMIC	ZONE 1
MONORAIL CAPACITY	5 tons

2. MATERIALS

CONCRETE	f'c = 4000 psi
REINFORCING	fy = 60000 psi
STRUCTURAL STEEL	ASTM A-36
STEEL JOISTS	H-SERIES
HIGH STRENGTH BOLTS	ASTM A325
OTHER BOLTS & ANCHORS	ASTM A307
WELDS	E70XX
WELDED WIRE FABRIC	ASTM A-185
CONCRETE MASONRY UNITS	f'm = 1350 psi

3. DESIGN AND CONSTRUCTION SHALL CONFORM TO THE LATEST SPECIFICATIONS OF THE FOLLOWING:

GENERAL - NAVFAC DM-2, DM-7, P-355
CONCRETE - ACI 318
STRUCTURAL STEEL - AISC
STEEL HOISTS - SJI
METAL DECK - STEEL DECK INSTITUTE

4. BUILDING SHALL BE FOUNDED ON TREATED TIMBER PILES OF 30 TON CAPACITY. BID LENGTH SHALL BE 39 FEET.

5. METAL ROOF DECK SHALL BE WIDE RIB TYPE B, 1 1/2" DEEP, 22 GAGE, MIN. I = 0.17 in⁴/ft., MIN. S = 0.20 in³/ft. ATTACH ROOF DECK AS FOLLOWS FOR 2'-0" WIDE SHEET:

   A. 3-5/8"Ø PUDDLE WELDS AT TRANSVERSE SUPPORTS AND SHEET ENDS.
   B. BOTTOM PUNCH (OR 1" BEAD WELD) SEAMS AT 2'-0" CTRS AT UNSUPPORTED EDGES.
   C. 5/8"Ø PUDDLE WELDS AT 2'-6" CTRS ON CONTINUOUSLY SUPPORTED SHEET EDGES.

6. STEEL GRATING SHALL HAVE 1" X 3/16" BEARING BARS AT 1 3/16" O.C. GRATING SHALL BE END BANDED.

7. EXCEPT AS OTHERWISE INDICATED MINIMUM PROTECTION FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

CONCRETE SURFACES EXPOSED TO SOIL:	1 1/2" FOR SLABS 2" FOR WALLS 3" FOR FOOTINGS
CONCRETE SURFACES EXPOSED TO WEATHER:	1 1/2" FOR SLABS 1 1/2" FOR WALLS
CONCRETE SURFACES EXPOSED TO WATER:	2" FOR SLABS 2" FOR WALLS
INTERIOR CONCRETE SURFACES:	3/4" FOR SLABS 3/4" FOR WALLS 1 1/2" FOR BEAMS & COLUMNS

8. ALL REINFORCEMENT SHALL BE MADE CONTINUOUS BY LAPPING BARS OR BY PROVIDING DOWELS. ALL BARS AT SPLICES SHALL BE LAPPED A MINIMUM OF 40 BAR DIAMETERS BUT NOT LESS THAN 24 INCHES. SEE TYPICAL WALL AND BEAM INTERSECTION DETAIL.

9. STRUCTURAL ELEVATIONS ARE RELATIVE TO TOP OF CONCRETE POOL DECK HIGH POINT AT ELEVATION 10.55 REFERENCED ELEVATION 0.00.

10. COORDINATE STRUCTURAL DRAWINGS WITH MECHANICAL AND ELECTRICAL DRAWINGS FOR SIZE AND LOCATION OF OPENINGS AND SLEEVES.

11. FRAME ALL ROOF OPENINGS WITH L3 X 3 X 1/4. OPENING SIZE TO SUIT EQUIPMENT FURNISHED.

12. PROVIDE CONCRETE MASONRY UNIT LINTELS OVER OPENINGS IN MASONRY WALLS. LINTELS SHALL BE SAME WIDTH AS WALL AND SHALL BEAR A MINIMUM OF EIGHT INCHES AT EACH END. DEPTH AND REINFORCING SHALL BE:

   A. FOR SPANS LESS THAN OR EQUAL TO 4'-0", DEPTH = 7 5/8", 2 #5 BARS BOTTOM.
   D. FOR SPANS GREATER THAN 4'-0", DEPTH = 15 5/8", 2 #5 BARS BOTTOM

REVISIONS

SYM	DESCRIPTION	DATE	APPROVED

GRAPHIC SCALES

1/4" = 1'-0" 5' 0' 5' 10' 15'
3/4" = 1'-0" 1' 6" 0' 1' 2' 3' 4' 5' 6'

RECORD DRAWING LETTER CODE

S-6

CVN DWG. NO.	177938
JOB ORDER NO.	542E1144
DES.	W.E. BIXLER P.E.
DRAWN	J.D. FRYE
TR.	
CHK.	
DR. MGR.	R.P. NICHOLAS P.E.
DES. DIR.	
SATISFACTORY TO	DATE
APPROVED	DATE

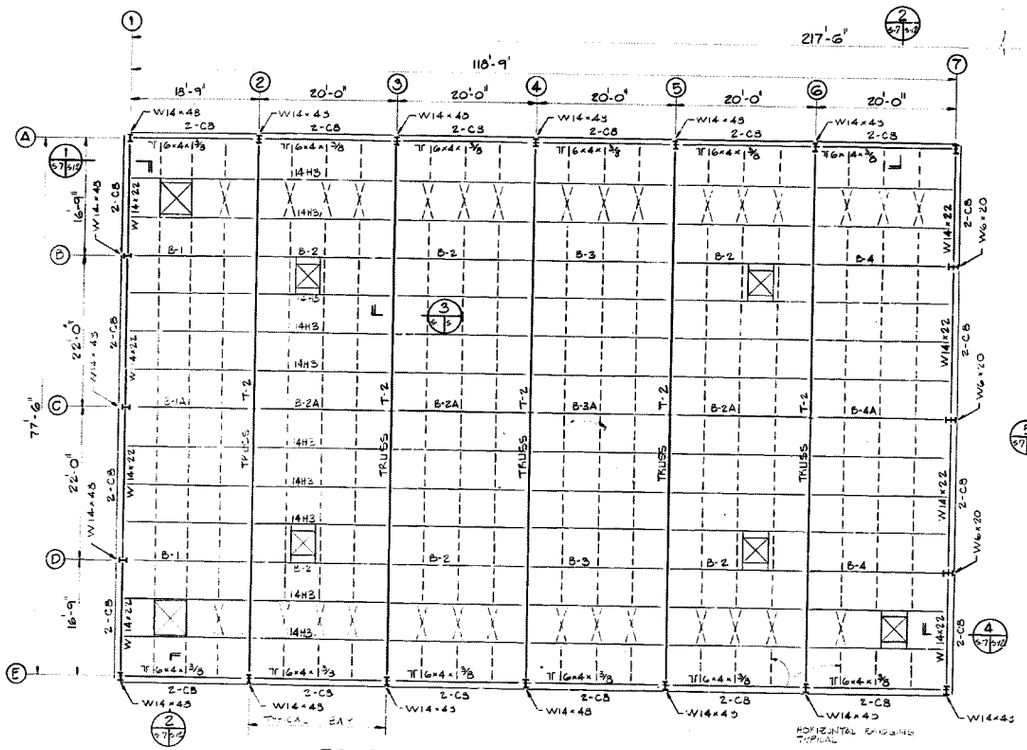
DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.
FLECOMSTAFACENT
DAM NECK, VIRGINIA BEACH, VA.

INDOOR SWIMMING POOL
SECTIONS & DETAILS

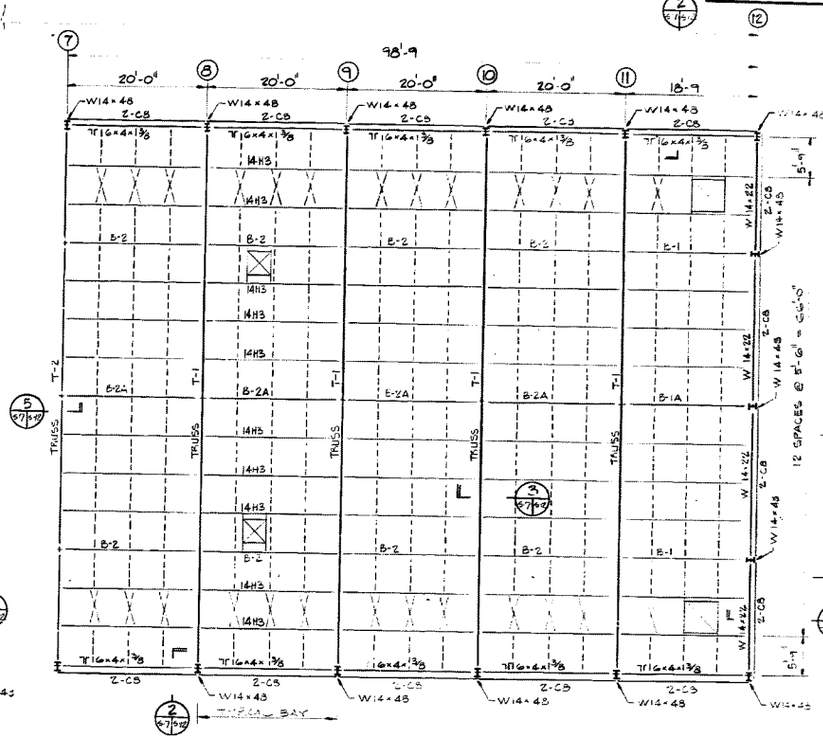
SIZE	CODE IDENT NO.	SHEET NO.
F	80091	4077938

NAVFAC ENGINEERING DIV. NO. N62470-81-B-1144
SCALE NOTED SPEC. 05-81-1144 SHEET 29 OF 52

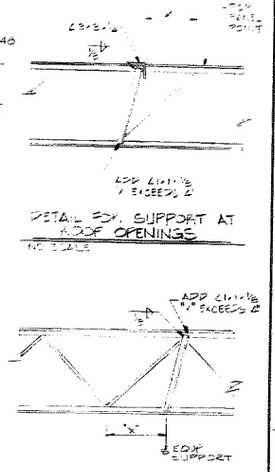
FOR EFD FOR COMMANDER NAVFAC

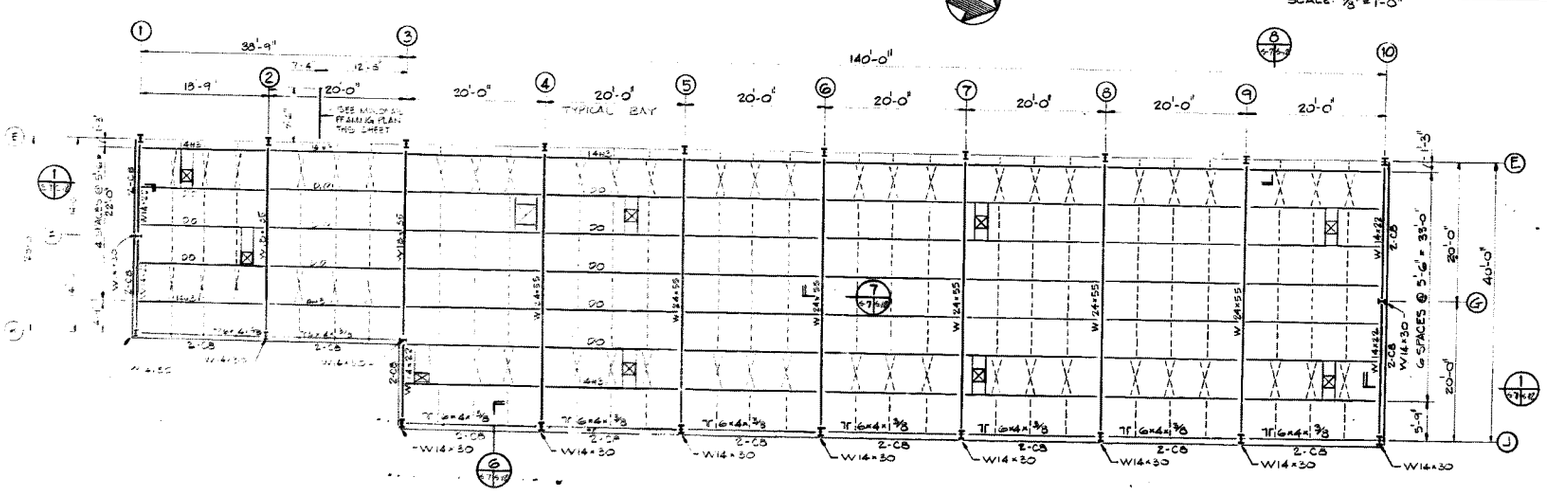


ROOF FRAMING PLAN (HIGH LEVEL)
SCALE: 1/8" = 1'-0"

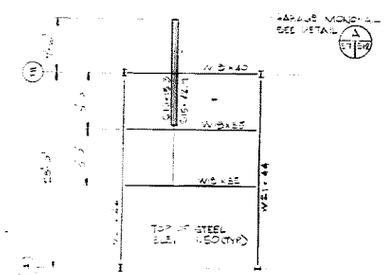


ROOF FRAMING PLAN (LOWER LEVEL)
SCALE: 1/8" = 1'-0"





ROOF FRAMING PLAN (ADMIN & LOCKER)
SCALE: 1/8" = 1'-0"



MONORAIL FRAMING PLAN
SCALE: 1/8" = 1'-0"

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

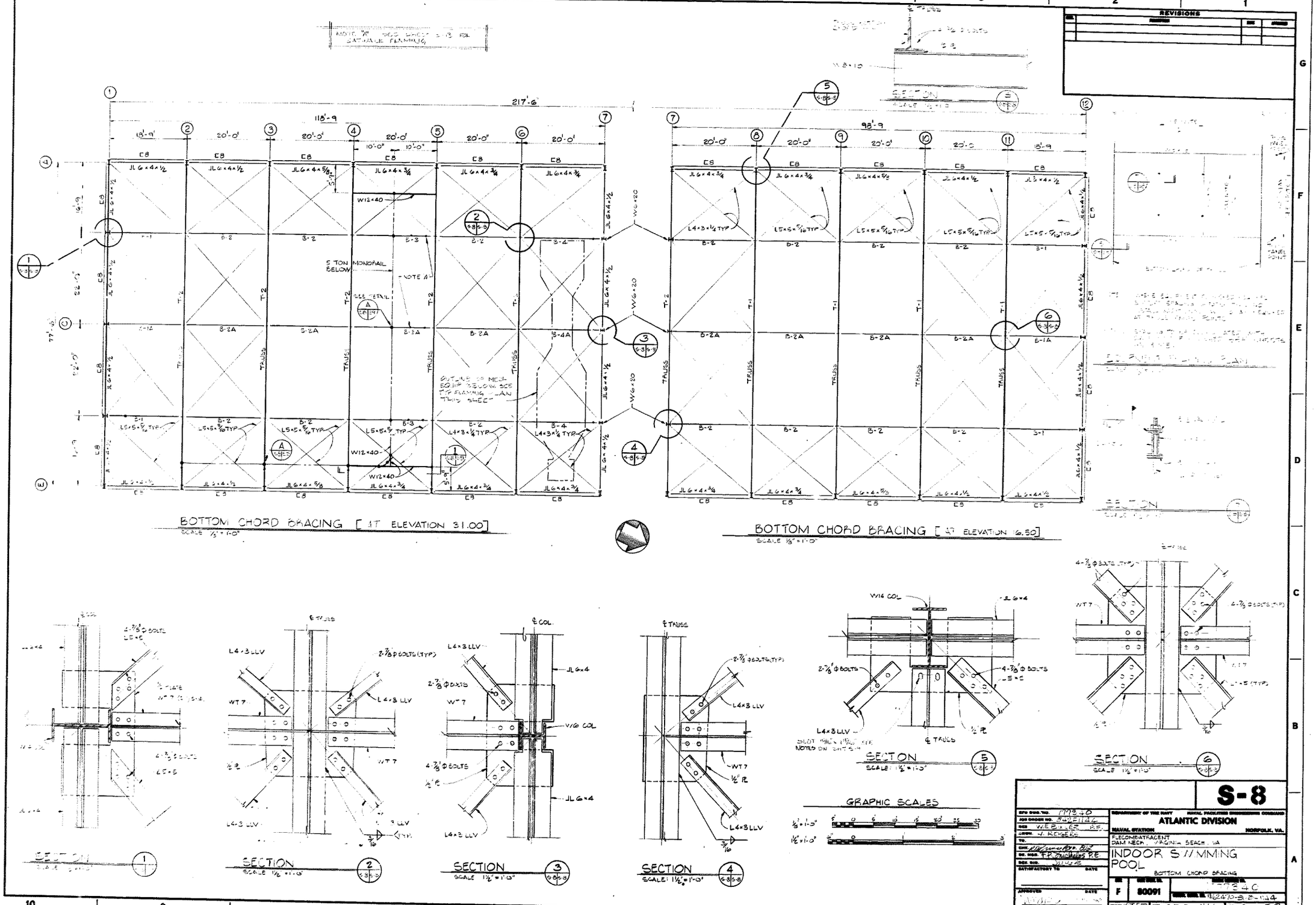
REVISIONS

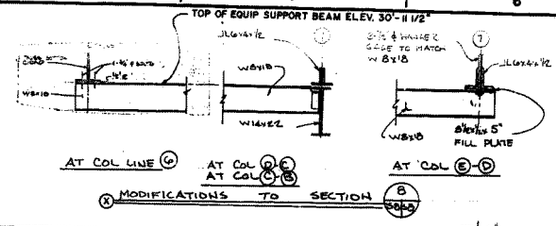
SYM.	DESCRIPTION	DATE	APPROVED

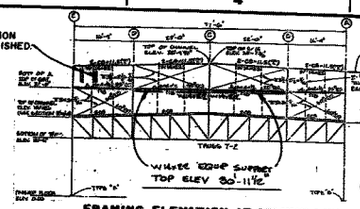
PC NO. DRAWING LETTER DATED

S-7

SPD DWG. NO. 1773339	DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
WORK REQ. NO. 542E1144	ATLANTIC DIVISION
DES. W. BILLER P.E.	NAVAL STATION — NORFOLK, VA.
DRWN. J. ROGERS	FLECOMBATRACENT
TR.	DEM NECH. VIRGINIA BEACH, VA
CHK.	INDOOR SWIMMING POOL
DES. DIR.	ROOF FRAMING PLANS
DIV/BRANCH/SECTION DATE	
APPROVED DATE	F 80091 — 4077339
	NOTED — 05-81-1144 — 30 #82


REVISIONS
217'-6"
118'-9"
98'-9"
5 TON MONORAIL BELOW
NOTE A
SEE DETAIL
OUTLINE OF MECH. EQUIP. BELOW. SEE TOP FRAMING PLAN THIS SHEET
BOTTOM CHORD BRACING [AT ELEVATION 31.00]
SCALE 1/8" = 1'-0"
BOTTOM CHORD BRACING [AT ELEVATION 16.50]
SCALE 1/8" = 1'-0"
SECTION 1
SECTION 2
SCALE 1½" = 1'-0"
SECTION 3
SCALE 1½" = 1'-0"
SECTION 4
SCALE: 1½" = 1'-0"
SECTION 5
SCALE: 1½" = 1'-0"
SECTION 6
SCALE 1½" = 1'-0"
GRAPHIC SCALES
S-8
ATLANTIC DIVISION
NAVAL STATION
NORFOLK, VA.
FLECHMATRACENT
DAM NECK, VIRGINIA BEACH, VA
INDOOR SWIMMING POOL
BOTTOM CHORD BRACING
F
80091
NOTED





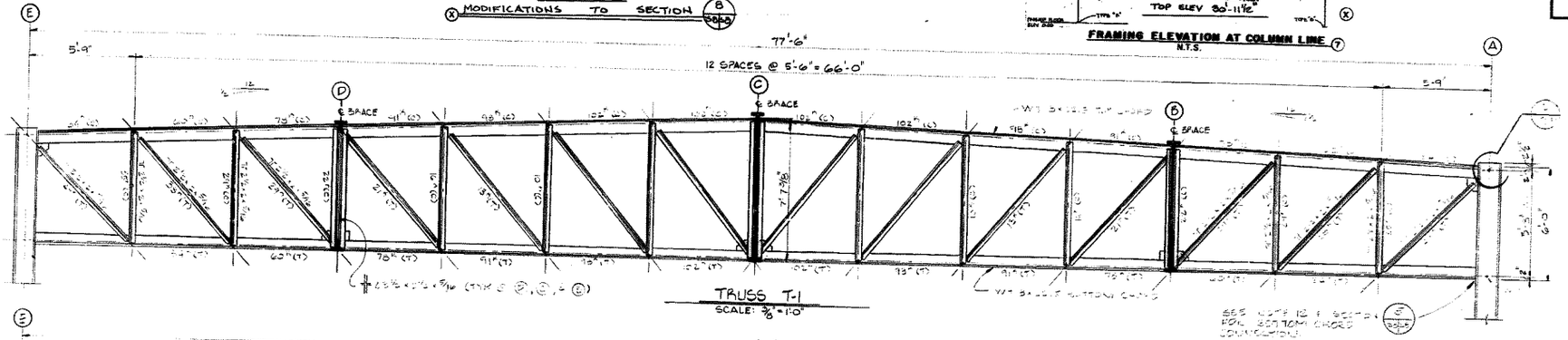
NOTE: ATTACH 2-1/2"ϕ HANGERS TO W14 X 22 ABOVE USING DETAIL SIMILAR TO THAT ON

FRAMING ELEVATION AT COLUMN LINE 7
N.T.S.

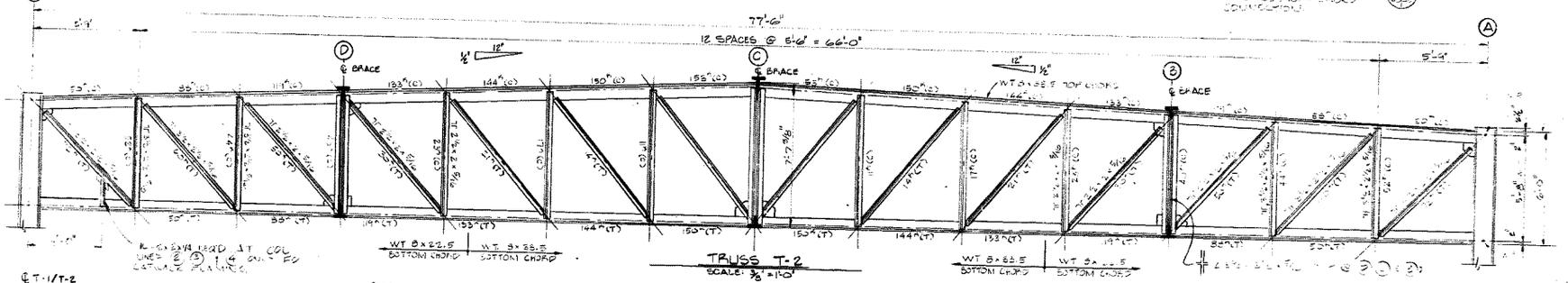
REVISIONS		
REVISED: AS-BUILT		

TRUSS AND BRACING NOTES

1. SEE SHEET S-6 FOR GENERAL NOTES
2. ALL VERTICAL AND DIAGONAL MEMBERS SHALL BE MINIMUM L 2 x 2 x 1/4.
3. WELD VERTICAL AND DIAGONAL MEMBERS TO CHORDS FOR 10KIP AXIAL LOAD MINIMUM.
4. ALL DOUBLE ANGLES SHALL HAVE LONG LEG BACK TO BACK.
5. WHEREVER SUFFICIENT WELD CANNOT BE PLACED ON TRUSS CHORDS, GUSSET PLATES SHALL BE PROVIDED AS NECESSARY. WELD GUSSETS TO TEES WITH FULL PENETRATION WELDS.
6. PROVIDE INTERMITTENT FILLER PLATES AS REQUIRED FOR DOUBLE ANGLES IN ACCORDANCE WITH SECTION 1.18.2.4 OF AISC SPECIFICATIONS.
7. UNLESS OTHERWISE INDICATED ALL SHOP CONNECTIONS SHALL BE WELDED. FIELD AND SHOP CONNECTIONS SHALL CONFORM TO SECTION 1.15 OF AISC SPECIFICATION WHERE APPLICABLE.
8. PROVIDE 1/2" GUSSETS AND INTERMITTENT FILLER PLATES FOR ALL COLUMN BRACING CONNECTIONS.
9. UNLESS OTHERWISE INDICATED, FIELD CONNECTIONS SHALL BE MADE WITH 7/8 ϕ H.S. BOLTS. USE 2 BOLTS MINIMUM AT EACH CONNECTION.
10. SHOP SPLICE TOP AND BOTTOM CHORDS WITH FULL PENETRATION WELDS WHERE REQUIRED. EACH TRUSS SHALL HAVE NO MORE THAN 2 SPLICES PER CHORD.
11. PERFORM NON-DESTRUCTIVE TESTING ON A TOTAL OF 10 BOTTOM CHORD SPLICE WELDS AND 10 GUSSET PLATE TO TRUSS CHORD WELDS. LOCATION OF TESTS TO BE AS DIRECTED BY OICC.
12. THE TRUSS BOTTOM CHORD TO COLUMN CONNECTION SHALL CARRY NO DEAD LOAD. TO ACHIEVE THIS, THE BOLTS SHALL BE LEFT HAND TIGHTENED UNTIL FULL ROOF DEAD LOAD IS APPLIED, AT WHICH TIME THEY SHALL BE TIGHTENED TO PROOF LOAD.

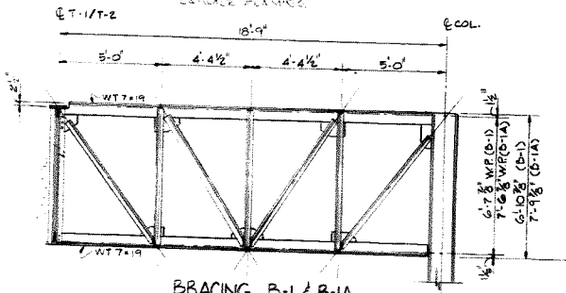


TRUSS T-1
SCALE: 3/8" = 1'-0"

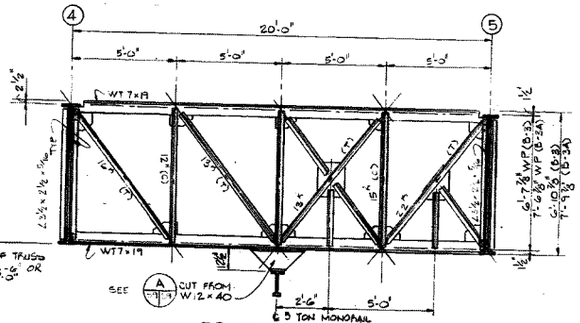


TRUSS T-2
SCALE: 3/8" = 1'-0"

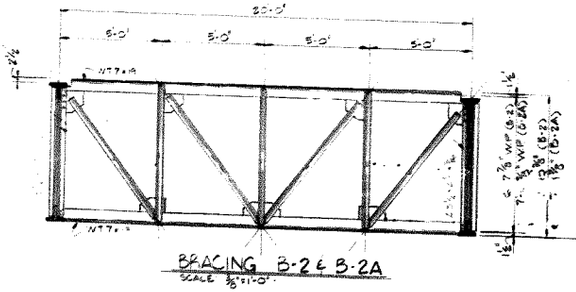
NOTE: THE CONTRACTOR SHALL PROVIDE ADDITIONAL SUPPORTS AT COLUMN LINE 7 FOR SUPPORT OF AIR HANDLING UNITS. (SEE DETAILS TOP OF THIS SHEET).



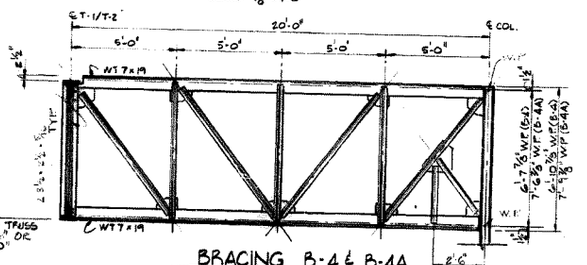
BRACING B-1 & B-1A
SCALE 3/8" = 1'-0"



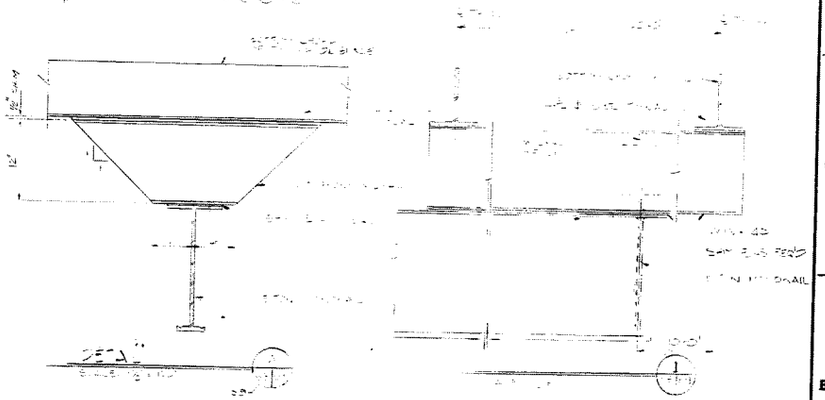
BRACING B-3 & B-3A
SCALE: 3/8" = 1'-0"

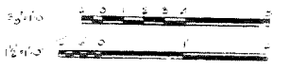


BRACING B-2 & B-2A
SCALE 3/8" = 1'-0"



BRACING B-4 & B-4A
SCALE: 3/8" = 1'-0"



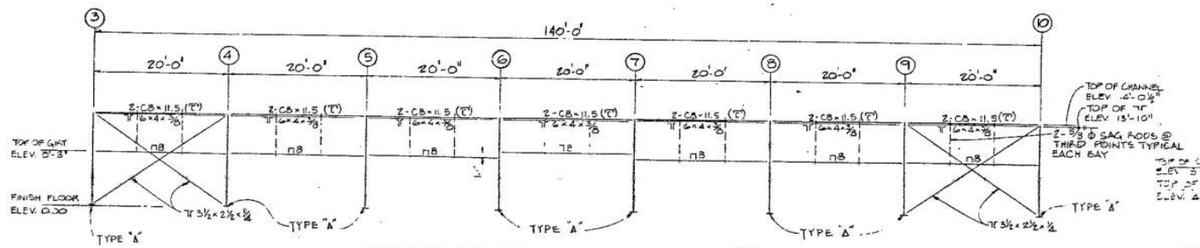


DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING COMMAND	**S-9**	
ATLANTIC DIVISION			
NAVAL STATION	NORFOLK, VA.		
FLEET COMBAT AGENT DAM NECK, VIRGINIA BEACH, VA			
INDOOR SWIMMING POOL			
F	80091	1077341	
NOTED	05-81-1144	N62470-81-B-1144	32 of 52

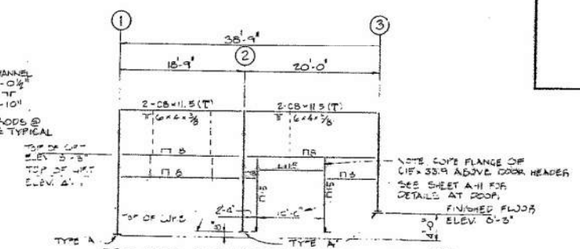
FRAMING ELEVATION AT COLUMN LINE Ⓐ
SCALE: 1/8" = 1'-0"
FRAMING ELEVATION AT COLUMN LINE Ⓔ
SCALE: 1/8" = 1'-0"
FRAMING ELEVATION AT COLUMN LINE ①
SCALE: 1/8" = 1'-0"
FRAMING ELEVATION AT COLUMN LINE ⑫
SCALE: 1/8" = 1'-0"
GRAPHIC SCALE
1/8"=1'-0"
NOTES.
1. ALL GIRTS C8x 2.75 UNLESS OTHERWISE NOTED
2. ALL UNEQUAL LEGS ANGLES TO BE INSTALLED WITH LONG VERTICAL (LLV)
REVISIONS
S-10
ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION NORFOLK, VA.
FLECOMBE TRACKENT DAM NECK VIRGINIA BEACH, VA
INDOOR SWIMMING POOL
FRAMING ELEVATIONS
4077342
80091
NOTED
05-81-1144
33 of 42

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED
(X)	REVISED AS-BUILT	3/6/86	WCED

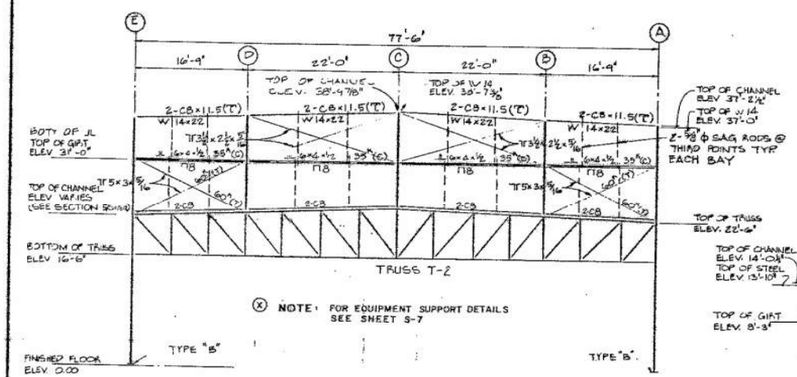
NOTES:
1. SEE NOTES ON SHEET S-10



FRAMING ELEVATION @ COLUMN LINE (J)
SCALE: 1/8" = 1'-0"



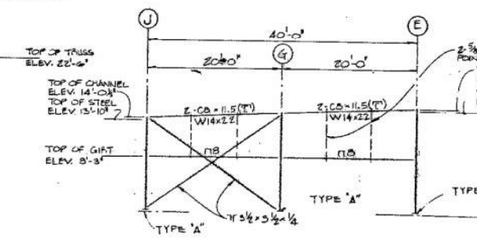
FRAMING ELEVATION @ COL LINE (H)
SCALE: 1/8" = 1'-0"



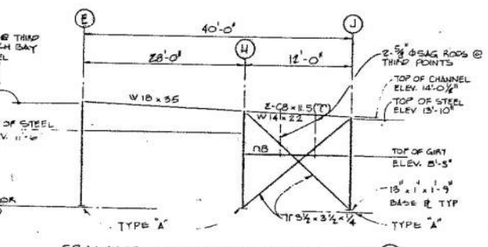
TRUSS T-2

(X) NOTE: FOR EQUIPMENT SUPPORT DETAILS SEE SHEET S-7

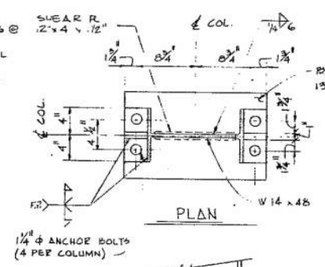
FRAMING ELEVATION @ COLUMN LINE (7)
SCALE: 1/8" = 1'-0"



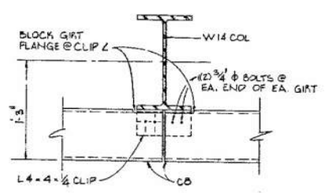
FRAMING ELEVATION @ COL LINE (10)
SCALE: 1/8" = 1'-0"



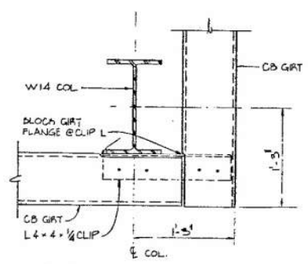
FRAMING ELEVATION @ COL LINE (3)
SCALE: 1/8" = 1'-0"



PLAN

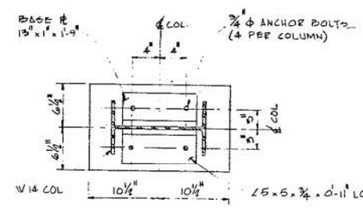


INTERMEDIATE CONNECTION



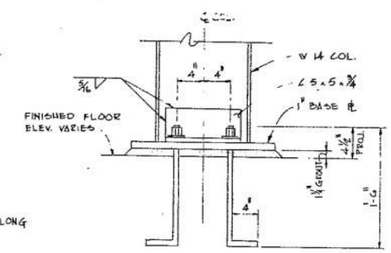
CORNER CONNECTION

TYPICAL GIRT - COLUMN CONNECTIONS
SCALE: 1½" = 1'-0"

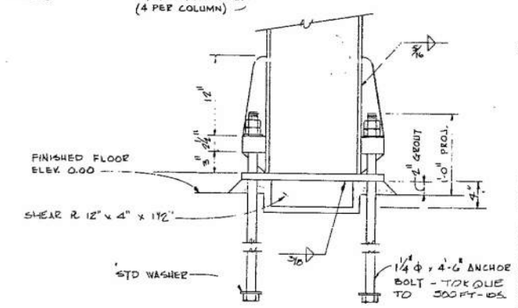


PLAN

TYPE "A"



ELEVATION



ELEVATION

TYPE "B"

COLUMN BASE DETAILS
SCALE: 1½" = 1'-0"

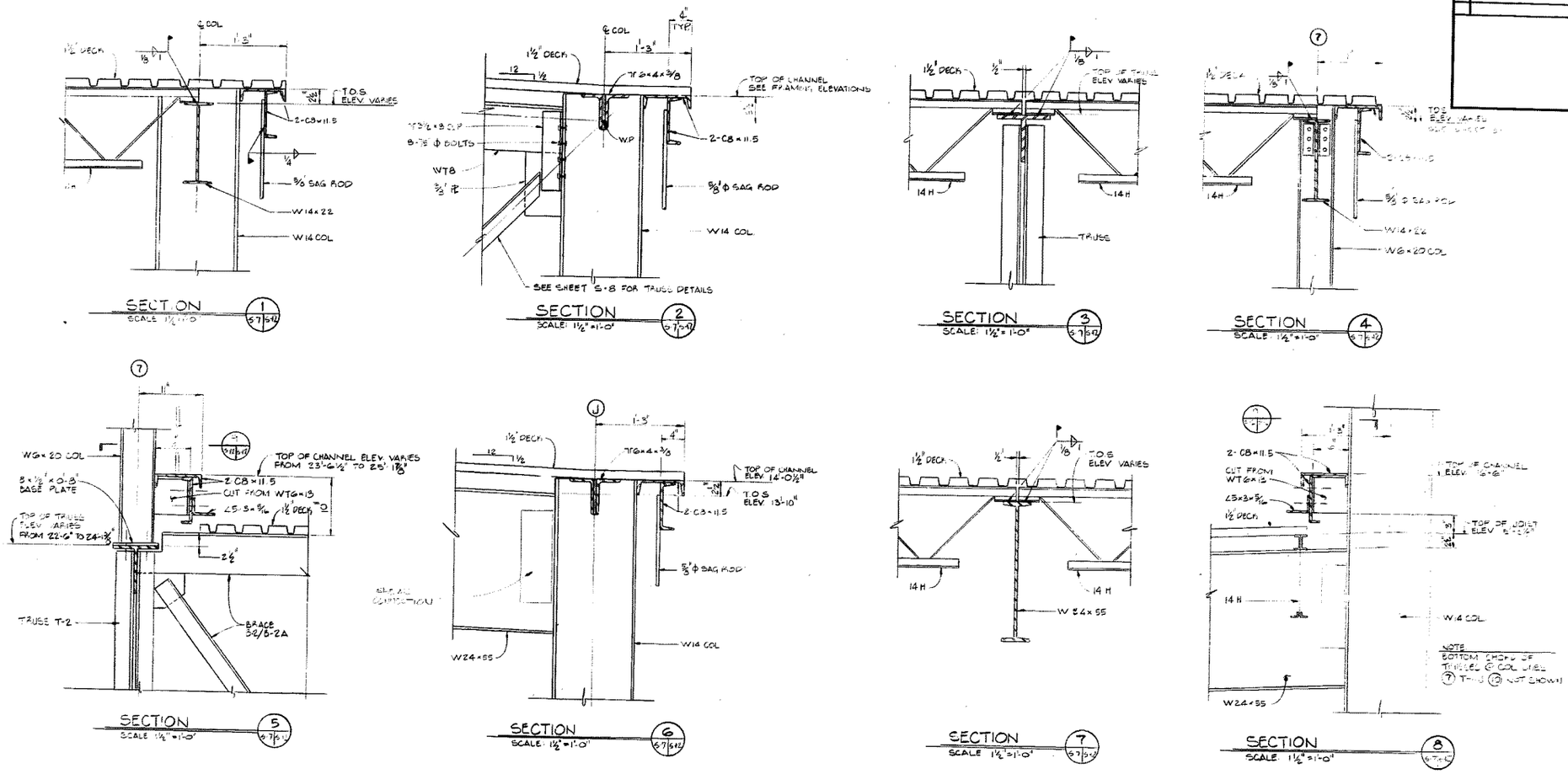
S-11

EFD DWG. NO. 177343
JOB ORDER NO. 54FF144
DSN. WEBNER P.E.
DRWN. J. ROGERS
TR.
CHK. [illegible]
BR. MGR. F.P. MURDAUGH P.E.
DES. DIR. [illegible]
SATISFACTORY TO DATE
APPROVED DATE
FOR STD FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.
FLECOMBATRACENT
DAM NECK VIRGINIA BEACH, VA
INDOOR SWIMMING POOL
FRAMING ELEVATIONS & DETAILS

SIZE	CODE IDENT. NO.	NAVFAC DRAWING NO.
F	80091	4077343
DRAWN VOTED	DATE 05-81-1144	SHEET 34 OF 82

CONTR. NO. N62470-81-B-1144



REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED

S-12

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

FLECOMBATFRACENT
PAM NECK, VIRGINIA BEACH, VA

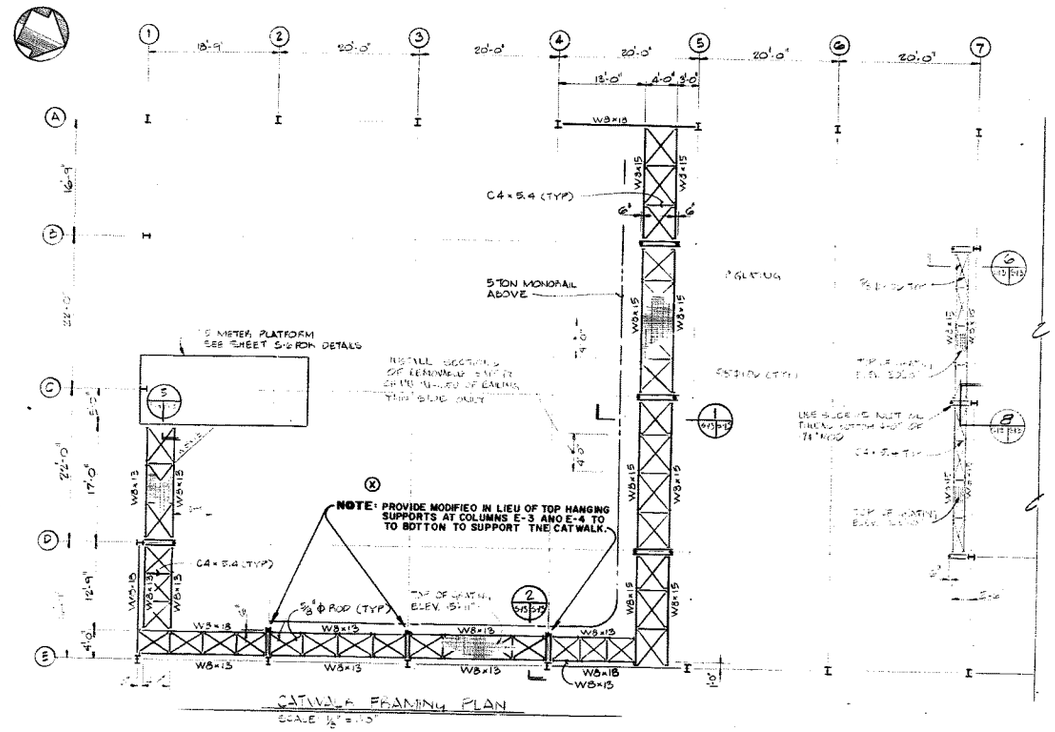
INDOOR SWIMMING POOL

SECTIONS & DETAILS

CFD DWG. NO.	177344
JOB CHARGE NO.	542511-4
DSR	WEBELER P.E.
DRWN	J. ROGERS
CHK.	
DR. MGR.	P. BRINKLEY P.E.
DES. DIR.	
SATISFACTORY TO	DATE
APPROVED	DATE

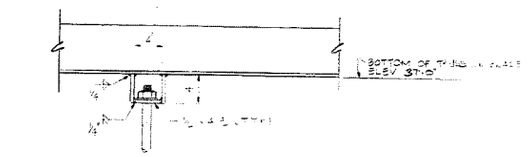
SIZE F — REVISION NO. 80091 — CFD DWG. NO. 4077344 — CONTRACT WORK NO. N62470-81-B-1114 — NOTED — DWG. 05-81-1114 — SHEET 35 OF 52

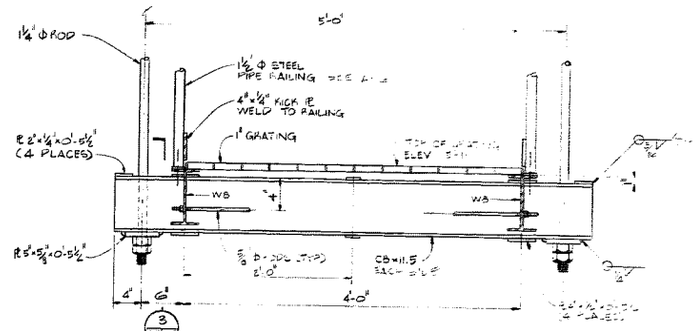
REVISIONS			
	REVISED - AS-BUILT		



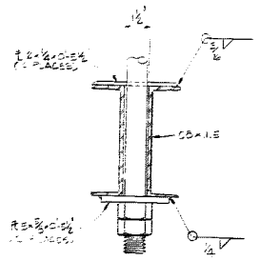
CATWALK FRAMING PLAN
SCALE 1/4" = 1'-0"

NOTE: DELETE THE REQUIREMENT FOR SHOP PAINTING OF THE CAT WALK GRATING IN ROOM 18.

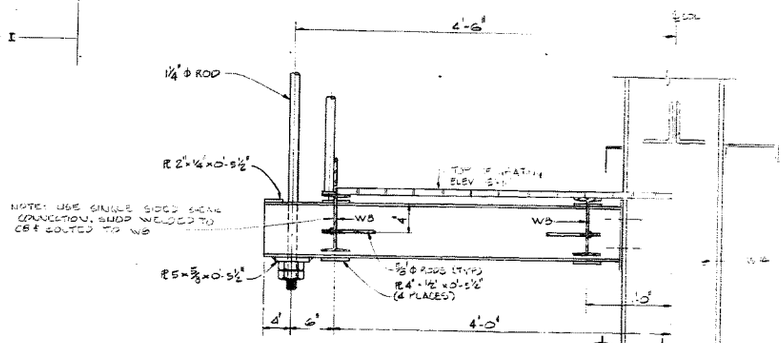




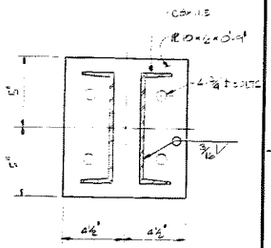
SECTION
SCALE: 1 1/2" = 1'-0"



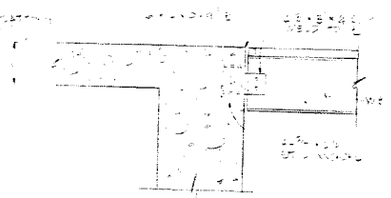
SECTION
SCALE 3" = 1'-0"



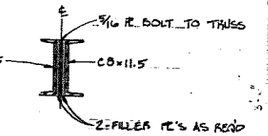
SECTION
SCALE: 1 1/2" = 1'-0"



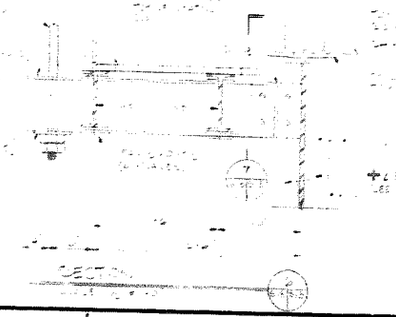
SECTION
SCALE 3" = 1'-0"



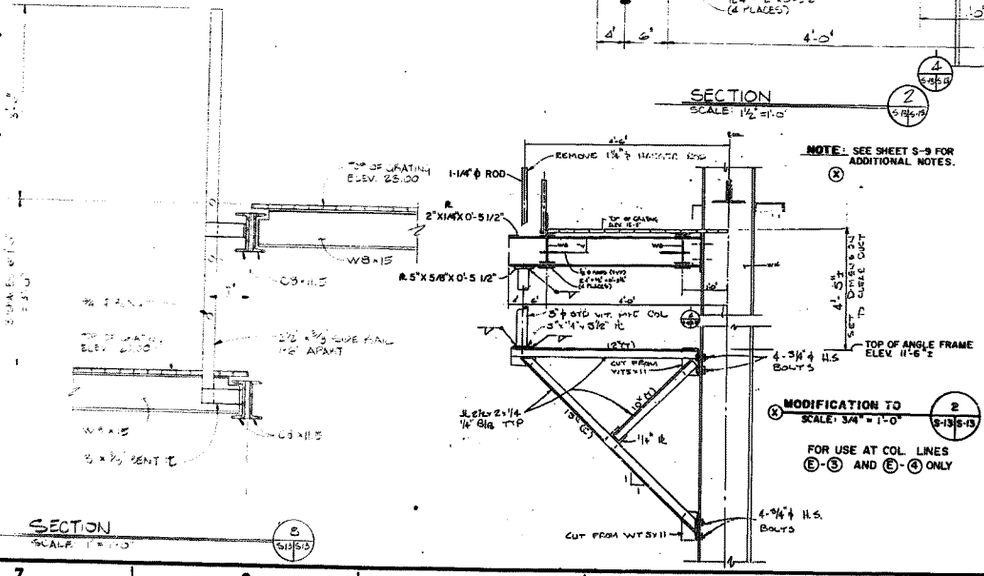
SECTION



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



SECTION

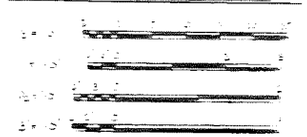


NOTE: SEE SHEET S-9 FOR ADDITIONAL NOTES.

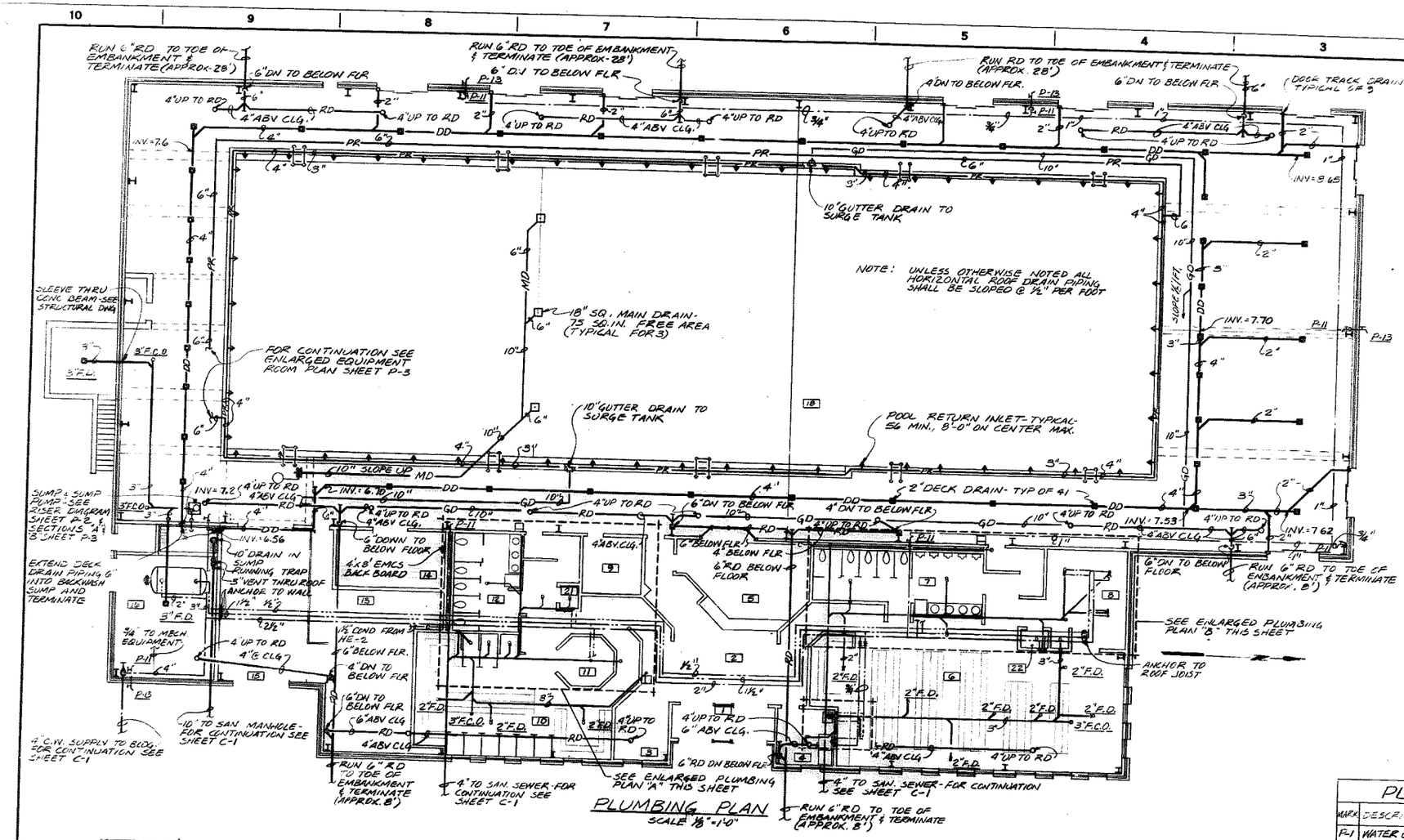
MODIFICATION TO
SCALE: 3/4" = 1'-0"

FOR USE AT COL. LINES (E)-(3) AND (E)-(4) ONLY

SECTION
SCALE: 1" = 1'-0"



EFD DWG. NO. 177345	DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND	S-13	
JOB ORDER NO. 542 E1144	ATLANTIC DIVISION		
DES. W. BUTLER P.E.	NAVAL STATION NORFOLK, VA.		
DRWN. J. ROGERS	PLECOM DEPARTMENT		
CHK.	DAM NECK, VIRGINIA BEACH, VA.		
DR. MGR.	INDOOR SWIMMING POOL		
DES. DIR.	CATWALK FRAMING & DETAILS		
SATISFACTORY TO / DATE	F 80091	4077345	
APPROVED / DATE	NOT E D	05-81-1144	36 of 52



PLUMBING PLAN

SCALE 1/8" = 1'-0"

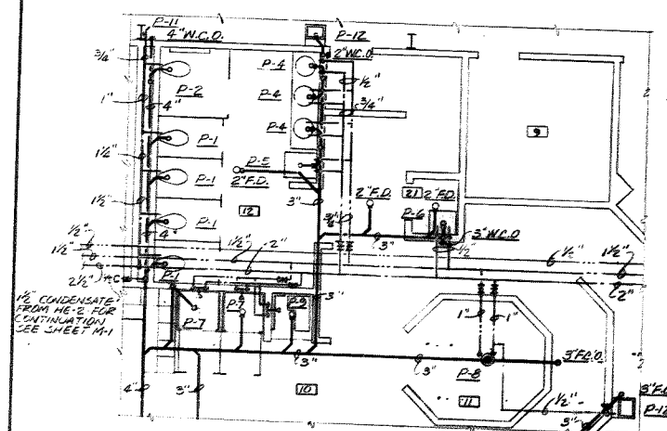
PLUMBING LEGEND

- COLD WATER PIPING
- HOT WATER PIPING
- HOT WATER RECIRCULATING PIPING
- SAN. THRU, WASTE PIPING
- VENT PIPING
- DD — DECK DRAIN PIPING
- RD — ROOF DRAIN PIPING
- MD — MAIN DRAIN PIPING
- PR — POOL WATER RETURN PIPING
- PS — PUMP SUCTION PIPING
- PD — PUMP DISCHARGE PIPING
- BW — BACK WASH (POOL DILUTE) PIPING
- PW — POOL WATER HEATER PIPING
- GD — GUTTER DRAIN PIPING
- BUTTERFLY VALVE
- BUTTERFLY VALVE W/ THROTTLE STOP
- FLOW MEASURING FITTING
- BALANCING VALVE W/GAGE TAPPINGS
- GATE VALVE
- CHECK VALVE
- RELIEF VALVE
- UNION
- THERMOMETER
- F.C.O. FLOOR CLEAN OUT
- W.C.O. WALL CLEAN OUT
- F.D. FLOOR DRAIN (TRAPPED)
- VTR VENT THRU ROOF
- C — CONDENSATE DRAIN PIPING
- DECK DRAIN (NO TRAP)
- PIPE SLEEVE
- LEAK PLATE
- DIRECTION OF FLOW

PLUMBING FIXTURE SCHEDULE

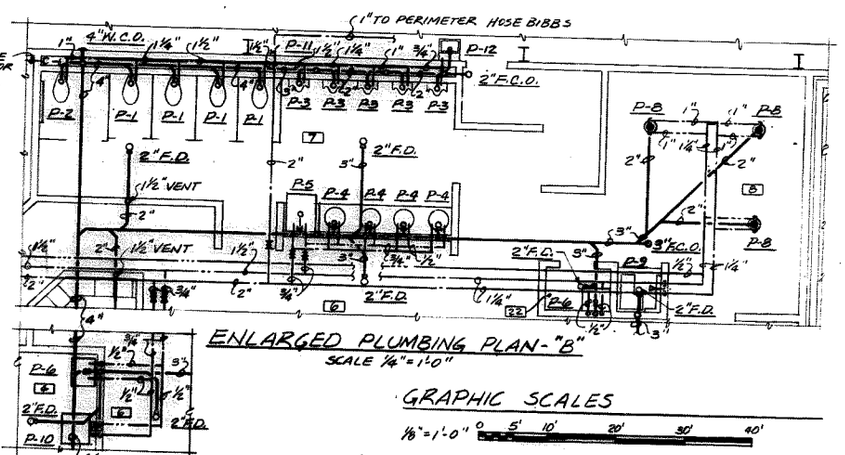
MARK	DESCRIPTION	CONNECTIONS C.W.	CONNECTIONS H.W.	CONNECTIONS W.	CONNECTIONS V.	REMARKS
P-1	WATER CLOSET	1"	–	4"	2"	FLUSH VALVE
P-2	WATER CLOSET (HANDICAPPED)	1"	–	4"	2"	FLUSH VALVE
P-3	URINAL	3/4"	–	2"	1 1/2"	FLUSH VALVE
P-4	LAVATORY	1/2"	1/2"	1 1/2"	1 1/2"	RIM MOUNTED
P-5	LAVATORY (HANDICAPPED)	1/2"	1/2"	1 1/2"	1 1/2"	WALL MOUNTED
P-6	SERVICE SINK	1/2"	1/2"	3"	1 1/2"	
P-7	SHOWER (STALL)	1/2"	1/2"	2"	1 1/2"	2" FLOOR DRAIN
P-8	SHOWER (MULTI-HEAD)	1"	1"	2"	1 1/2"	*
P-9	SHOWER (HANDICAPPED)	1/2"	1/2"	2"	1 1/2"	2" FLOOR DRAIN
P-10	WASHING MACHINE	1/2"	1/2"	2"	1 1/2"	SURFACE MTD. ENCL.
P-11	HOSE BIBB	3/4"	–	–	–	W/ VACUUM BREAKER
P-12	ELEC. WATER COOLER	1/2"	–	2"	1 1/2"	
P-13	FREEZE-PROOF HOSE BIBB	3/4"	–	–	–	W/ VACUUM BREAKER

* COLUMN TYPE SHOWER WITH BASE DRAIN. VENT UP THRU COLUMN AND HW & C.W. CONNECTIONS FROM TOP



ENLARGED PLUMBING PLAN "A"

SCALE 1/4" = 1'-0"



ENLARGED PLUMBING PLAN-"B"

SCALE 1/4" = 1'-0"

GRAPHIC SCALES

1/8" = 1'-0" 0 5' 10' 20' 30' 40'

1/4" = 1'-0" 0 1' 2' 3' 4' 5' 10' 15' 20'

REVISIONS

SYM.	DESCRIPTION	DATE	APPROVED

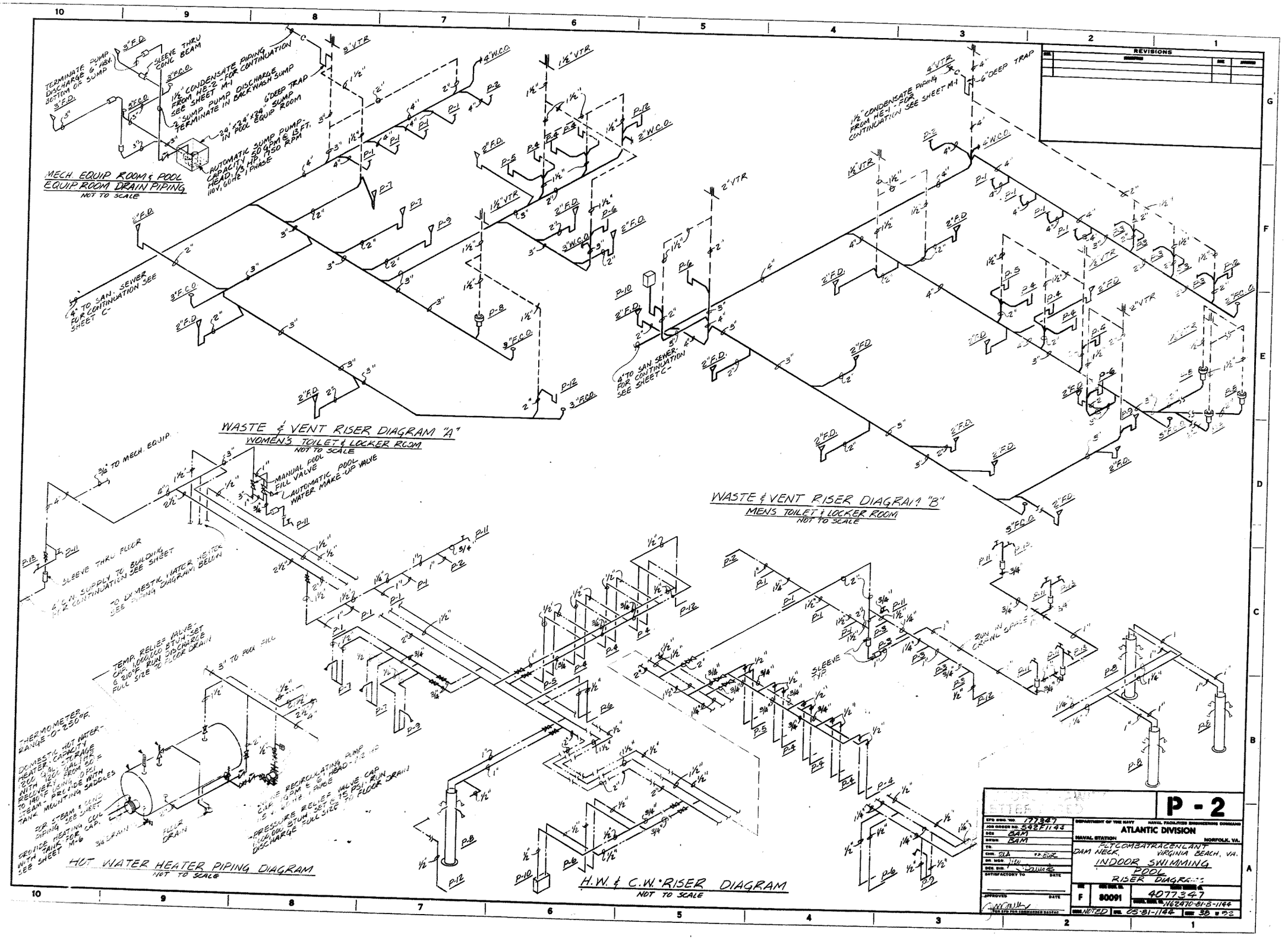
RECORD DRAWING AFTER DATED

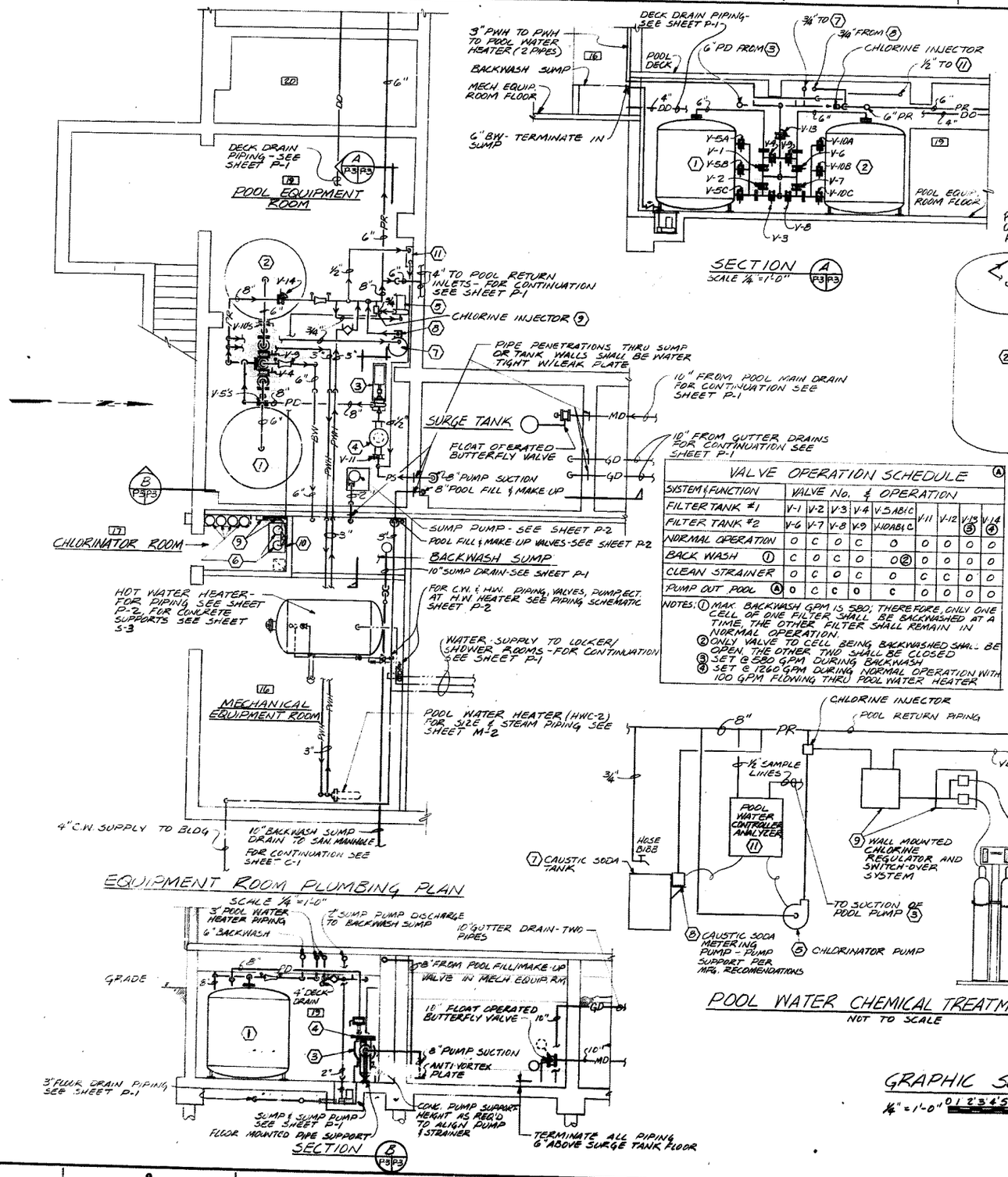
P-1

CFD DWG. NO. 177346
JOB ORDER NO. 24-2F1144
DES. DAM
DRWN. DAM
TR.
CHK. PLA FD. SUZ
SR. MGR. JW
DES. DIR. DEAN-0-46
SATISFACTORY TO DATE
APPROVED DATE
FOR CFD FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.
FLTCOMBATRACENLANT
DAM NECK VIRGINIA BEACH, VA.
INDOOR SWIMMING POOL
PLUMBING PLANS

SIZE F | CODE IDENT. NO. 80091 | DRAWING NO. 4077346
NAVFAC ENGINEER NO. N62470-81-B-1144
SCALE NOTED | DATE 05-81-1144 | SHEET 37 OF 52


MECH EQUIP ROOM & POOL EQUIP ROOM DRAIN PIPING
NOT TO SCALE
TERMINATE PUMP DISCHARGE 6" ABV. BOTTOM OF SUMP
SLEEVE THRU CONC BEAM
1½" CONDENSATE PIPING FROM HE-2 - FOR CONTINUATION SEE SHEET M-1
SUMP PUMP DISCHARGE TERMINATE IN BACKWASH SUMP
6" DEEP TRAP
24"x24"x24" SUMP IN POOL EQUIP ROOM
AUTOMATIC SUMP PUMP - CAPACITY 50 GPM @ 15 FT. HEAD, 1/3 HP, 1750 RPM 110V, 60HZ 1 PHASE
4" TO SAN. SEWER FOR CONTINUATION SEE SHEET C
WASTE & VENT RISER DIAGRAM "A"
WOMEN'S TOILET & LOCKER ROOM
NOT TO SCALE
1½" CONDENSATE PIPING FROM HE-1 - FOR CONTINUATION SEE SHEET M-1
6" DEEP TRAP
4" TO SAN. SEWER FOR CONTINUATION SEE SHEET C
WASTE & VENT RISER DIAGRAM "B"
MENS TOILET & LOCKER ROOM
NOT TO SCALE
3/4" TO MECH. EQUIP.
MANUAL POOL FILL VALVE
AUTOMATIC POOL WATER MAKE-UP VALVE
SLEEVE THRU FLOOR
4" C.W. SUPPLY TO BUILDING FOR CONTINUATION SEE SHEET
TO DOMESTIC WATER HEATER SEE PIPING DIAGRAM BELOW
TEMP. RELIEF VALVE CAP. 100,000 BTU/HR SET 6 GPM RUN DISCHARGE FULL SIZE TO FLOOR DRAIN
3" TO POOL FILL
THERMOMETER RANGE - 0 - 250°F.
DOMESTIC HOT WATER HEATER, CAPACITY 200 GAL. STORAGE 200 GAL. FROM 50°F TO 180°F USING 50 PSI STEAM - PROVIDE WITH TANK MOUNTING SADDLES
FOR STEAM & COND. PIPING SEE SHEET
GRUNDFOS RECIRCULATING PUMP 1 GPM @ 6' HEAD - 1/8 HP
PRESSURE RELIEF VALVE CAP. 15 GPM SET @ 75 PSI. RUN DISCHARGE FULL SIZE TO FLOOR DRAIN
DRAIN
FILL
HOT WATER HEATER PIPING DIAGRAM
NOT TO SCALE
H.W. & C.W. RISER DIAGRAM
NOT TO SCALE
SLEEVE TYP.
RUN IN CONC. SLAB
REVISIONS
P - 2
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.
FLTCOMBATRACENLANT
DAM NECK, VIRGINIA BEACH, VA.
INDOOR SWIMMING POOL
RISER DIAGRAMS
177347
542F1143
BAM
BAM
4077347
80091
F
N62470-81-B-1144
05-81-1144
NOTED



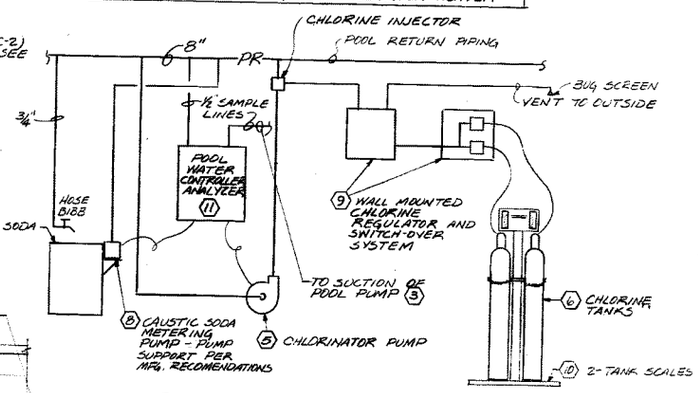
REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED
A	REVISED - AS - BUILT		

VALVE OPERATION SCHEDULE (A)

SYSTEM & FUNCTION	VALVE No. & OPERATION								
FILTER TANK #1	V-1	V-2	V-3	V-4	V-5 A,B,C	V-11	V-12	V-13 (3)	V-14 (4)
FILTER TANK #2	V-6	V-7	V-8	V-9	V-10 A,B,C				
NORMAL OPERATION	O	C	O	C	O	O	O	O	O
BACK WASH (1)	C	O	C	O	O (2)	O	O	O	O
CLEAN STRAINER	O	C	O	C	O	C	C	O	O
PUMP OUT POOL (A)	O	C	C	O	C	O	O	O	O

NOTES: (1) MAX. BACKWASH GPM IS 580; THEREFORE, ONLY ONE CELL OF ONE FILTER SHALL BE BACKWASHED AT A TIME. THE OTHER FILTER SHALL REMAIN IN NORMAL OPERATION.
(2) ONLY VALVE TO CELL BEING BACKWASHED SHALL BE OPEN. THE OTHER TWO SHALL BE CLOSED
(3) SET @ 580 GPM DURING BACKWASH
(4) SET @ 1260 GPM DURING NORMAL OPERATION WITH 100 GPM FLOWING THRU POOL WATER HEATER

(A) NOTE: THE CONTRACTOR SHALL PROVIDE A VERTICAL, MULTI-CELL, ALL SAND, PRESSURE TYPE FILTER.



POOL EQUIPMENT SCHEDULE

(1) POOL FILTERS - MULTI-CELL TYPE - CAPACITY OF EACH TO FILTER 580 GPM W/ MAX. FILTER RATE OF 5.85 GPM PER SQ. FT. OF FILTER MEDIA. MAX. BACKWASH RATE OF A SINGLE CELL IS 580 GPM W/ MAX. FILTER RATE OF 15 GPM PER SQ. FT. OF FILTER MEDIA. MAX. INITIAL (CLEAN) FILTER PRESS. DROP IS 3 PSI. MAX TANK DIA 84".

(3) POOL PUMP - END SUCTION CENTRIFUGAL TYPE - CAPACITY TO SUPPLIED GPM @ 51 FT. HD (22 PSI) MAX. 1750 RPM. MAX. HP 30 #3 NEMA STARTER.

(4) POOL PUMP STRAINER - BASKET TYPE - SIZE FOR 8" PIPE W/ FLANGE CONNECTION. MAX. 1 PSI PRESS. DROP @ 1260 GPM. STRAINER BASKET SHALL HAVE 1/8" DIA HOLES MAX. W/ 1/2 OPEN AREA.

(5) CHLORINATOR PUMP CENTRIFUGAL TYPE - MIN. CAPACITY OF 20 GPM @ 40 PSI. 3500 RPM. 1/2 HP, #6 NEMA STARTER

(6) CHLORINE CYLINDER - 150 LBS APPROX. 12 1/2" DIA. x 46" HIGH. 6 REQ'D.

(7) CAUSTIC SODA TANK - 50 GAL CAPACITY MIN. (VERTICAL TYPE)

(8) CAUSTIC SODA PUMP - METERING TYPE - MAX. CAPACITY 60 GAL PER DAY @ 100 PSI 1/20 HP, #00 NEMA STARTER

(9) CHLORINE REGULATOR WITH AUTOMATIC CHANGE OVER - WALL MOUNTED. CAPACITY - 100 LBS OF CHLORINE PER DAY

(10) SCALE - FLOOR MOUNTED TWO CYLINDER SCALE W/ TWO PLATFORMS ON A SINGLE BASE, SEPARATE DIALS, AND CYLINDER CHAINS.

(11) POOL WATER CONTROLLER ANALYZER - WALL MOUNTED. MOUNT 4'-6" ABOVE FLOOR

GRAPHIC SCALES

1/4" = 1'-0" 0 1' 2' 3' 4' 5' 10' 15' 20'

P - 3

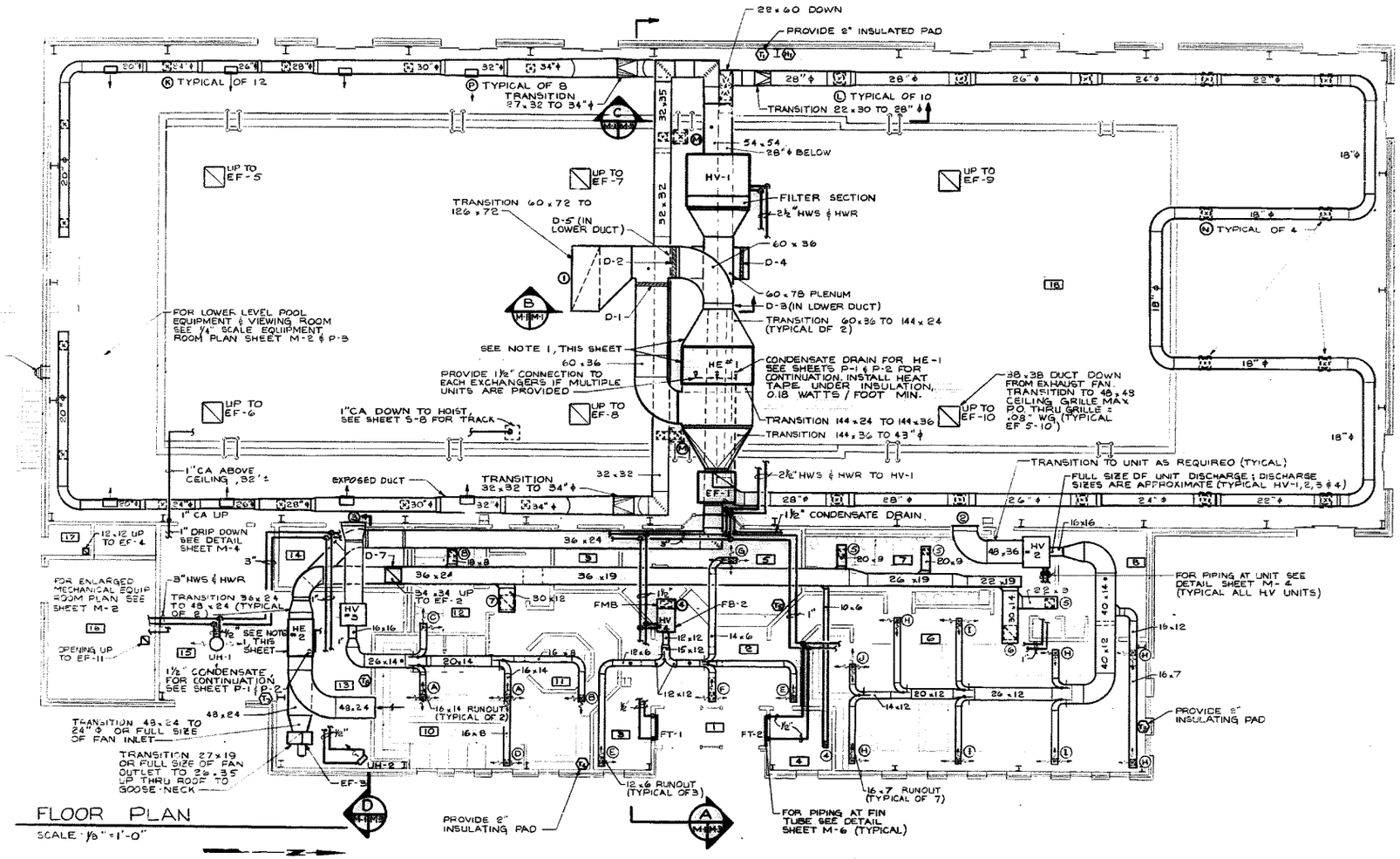
EFD DWG NO.	177348
JOB ORDER NO.	562F1144
DWG.	W.O. 81165 JK.PC
DRWN.	GAM
TR.	
CHK.	RLA
DR. MGR.	JHU
DES. DIR.	
SATISFACTORY TO	DATE
IMPROVED	DATE

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.
FLT COMBATRACENLANT DAM NECK, VIRGINIA BEACH, VA.
INDOOR SWIMMING POOL
POOL EQUIP. PLAN, SECTIONS

SIZE	IDENT NO.	DRAWING NO.
F	80091	4077348

NOTED — CS-81-1144 — SHEET 39 OF 52

REVISIONS			
NO.	DESCRIPTION	DATE	APPROVED



FLOOR PLAN

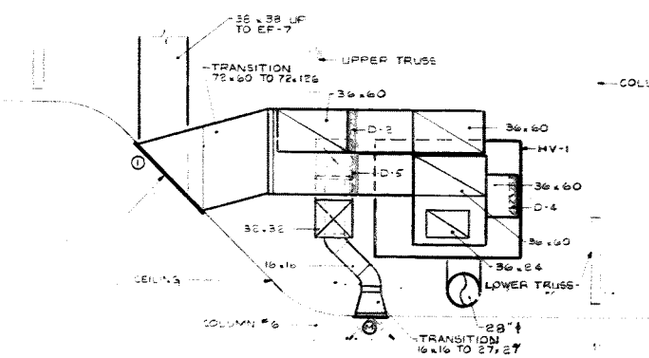
SCALE: 1/8" = 1'-0"

LEGEND

HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
SCFM	FREE AIR CFM
	UNION
	GATE VALVE
	RELIEF VALVE
	CHECK VALVE
	STRAINER
	CONTROL VALVE
	FLOW CONTROL BALANCING VALVE W/ TAPS
	PRESSURE GAUGE
	THERMOMETER
	DUCT TEST PORT
	HIGH PRESSURE STEAM (100 PSI)
	MEDIUM PRESSURE STEAM (25 PSI)
—C—	PUMP CONDENSATE (PC)
—V—	VENT
FB	FACE AND BYPASS DAMPERS
MBH	BTU/HR x 10^3
FMB	FILTER MIXING BOX
CA	COMPRESSED AIR
OA	OUTSIDE AIR
IB	INVERTED BUCKET

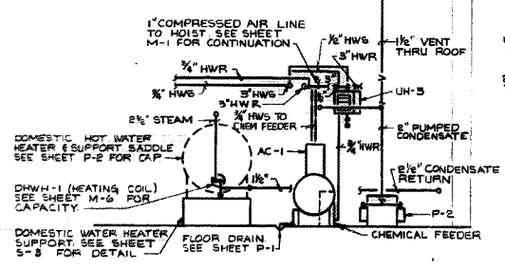
NOTES

1. HEAT EXCHANGERS, DUCT LOCATIONS AND CONNECTION SIZES ARE BASED ON ONE HEAT EXCHANGER MANUFACTURER. ALTERNATE HEAT EXCHANGER CONFIGURATIONS (INCLUDING PACKAGE UNITS) AND RESULTANT DUCT CHANGES MAY BE PROVIDED UPON RECEIPT OF APPROVED SHOP DRAWING. SHOP DRAWING SHALL CLEARLY INDICATE MODIFICATIONS REQUIRED INCLUDING SUPPORTS, DUCT SIZES, DAMPER LOCATIONS, ETC., AND AT NO ADDITIONAL COST TO THE GOVERNMENT.
2. FOR SCHEDULES SEE SHEET M-6
3. FOR EMCS BACK BOARD LOCATION SEE SHEETS E-3 & P-1.



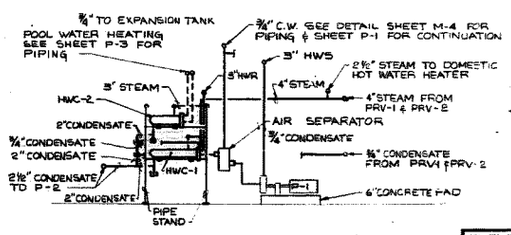
SECTION

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



SECTION

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



SECTION

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

GRAPHIC SCALES

1/8" = 1'-0" 12" 0 2' 4' 6' 8' 10'

1/4" = 1'-0" 12" 0 2' 4' 6' 8'

RECORD DRAWING AS BUILT DATED

M-1

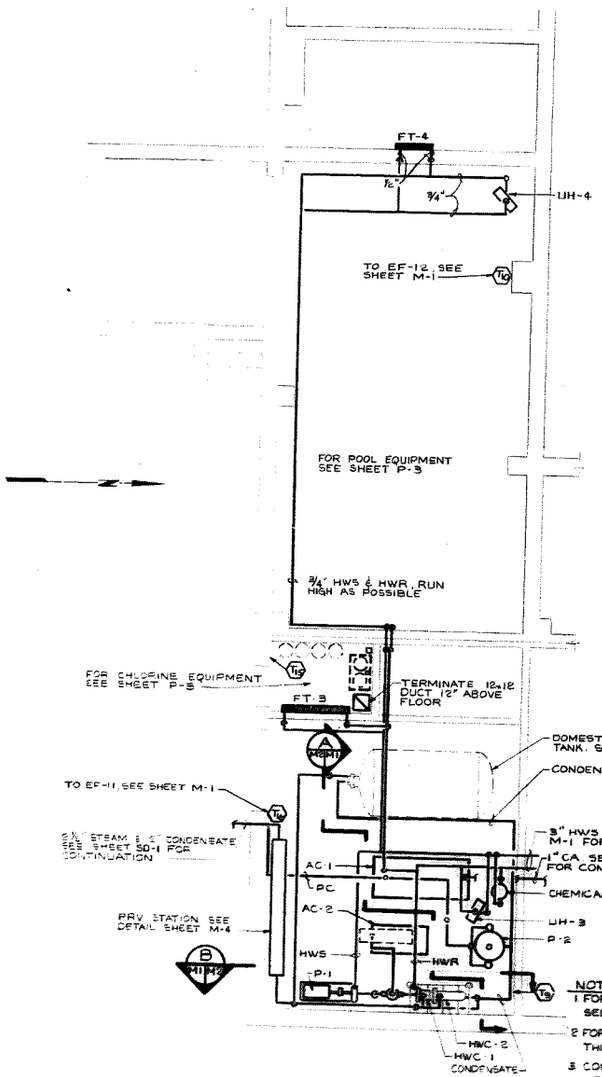
EFD DWG. NO.	177349
JOB ORDER NO.	542F1144
DES.	ENGLE-BOGGS
DRWN.	M. JENKINS
CHK.	JTR
DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION	ATLANTIC DIVISION
	NORFOLK, VA.

FLT COMBATRACENLANT
CAM NECK VIRGINIA BEACH, VA.

INDOOR SWIMMING POOL

PLAN & SECTION

SIZE F	CODE IDENT NO. 80091	4077349
		No. 470-81-B-1144
NOTED	05-81-1144	40 of 52

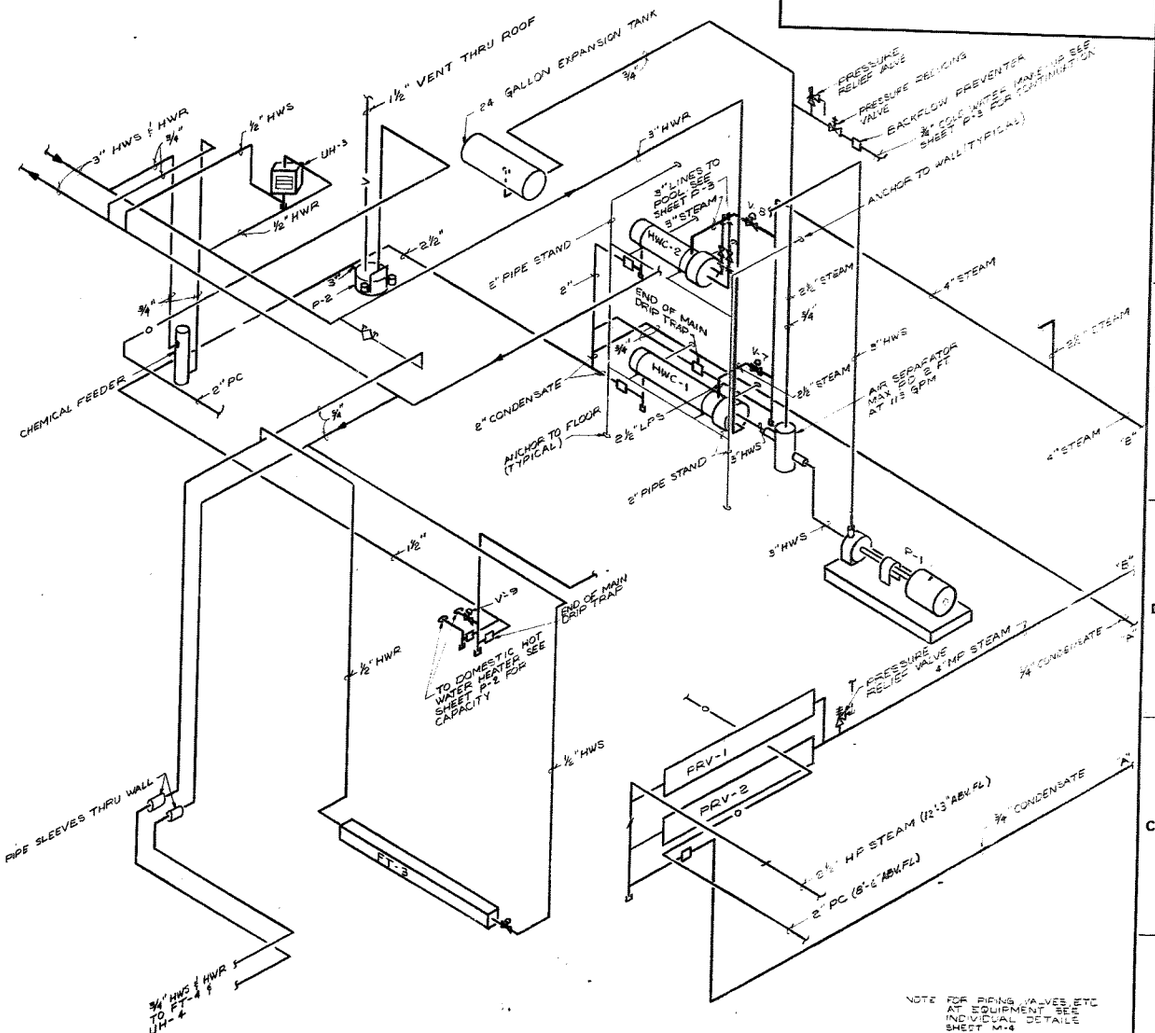


MECHANICAL EQUIPMENT ROOM PLAN

SCHALE: ¼"=1'-0"

NOTES:

1. FOR EQUIPMENT CAPACITIES SEE SHEET M-6
2. FOR PIPE SIZES SEE SCHEDULE THIS SHEET
3. COMPRESSED AIR PIPING FOR HOIST SHALL BE IN ACCORDANCE WITH HOIST MANUFACTURER, 1" SUPPLY MINIMUM
4. FOR EXHAUST FAN LOCATIONS SEE SHEET M-1



NOTE: FOR PIPING, VALVES, ETC AT EQUIPMENT SEE INDIVIDUAL DETAILS SHEET M-4

HEATING PIPING SCHEMATIC IN MECHANICAL EQUIPMENT ROOM

NOT TO SCALE

GRAPHIC SCALE

¼"=1'-0" 10" 0 5' 10' 15'

REVISIONS

SYM.	DESCRIPTION	DATE	APPROVED

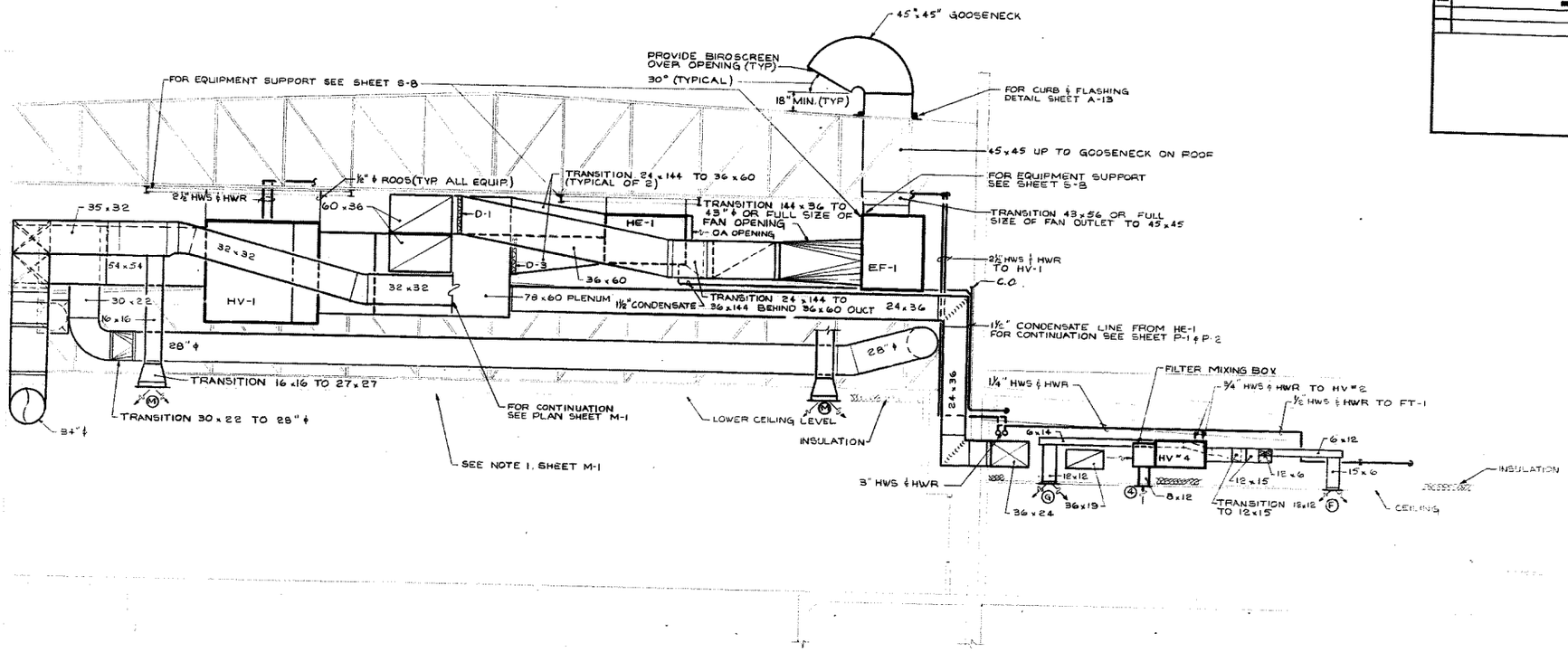
M-2

EFD DWG. NO. 177350
JOB ORDER NO. 5 42 F1144
CTR ENGLE - BOGGS
DRWN. M. JENKINS
TR.
CHK. JTT FP. RZ
SR. NGR. [illegible]
DES. DIR. [illegible]
SATISFACTORY TO DATE
APPROVED DATE
[illegible]
FOR USE FOR COMMANDER NAVFAC

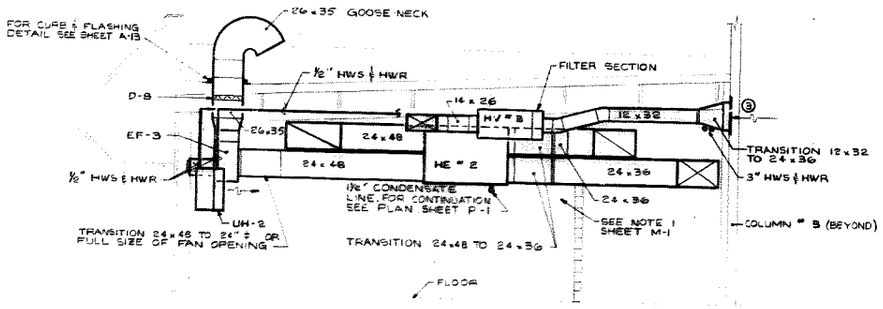
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.
FLT COMBAT RACENLANT
OAM NECK VIRGINIA BEACH, VA
INDOOR SWIMMING POOL

SIZE F
CODE IDENT. NO. 80091
DWG. NO. 4077350
CONTR. ORDER NO. N62470-81-B-1144
SCALE NOTED
SER. 05-81-1144
SHEET 41 OF 52

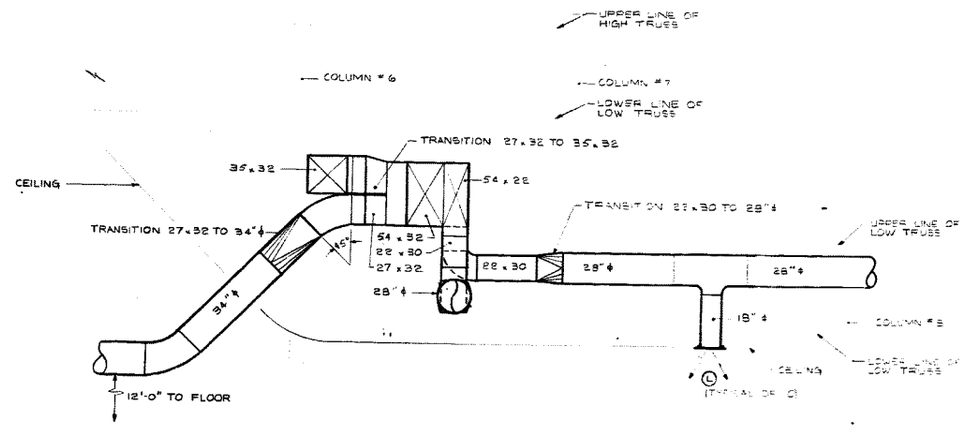
REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



SECTION A (M1-M3)
SCALE: ¼" = 1'-0"



SECTION D (M1-M3)
SCALE: ¼" = 1'-0"



SECTION C (M1-M3)
SCALE: ¼" = 1'-0"

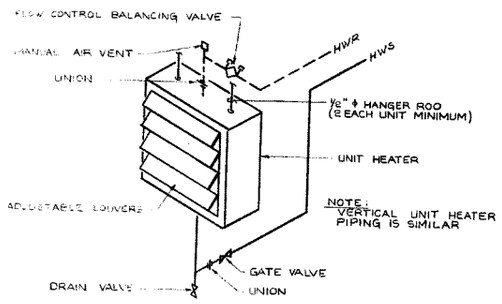
GRAPHIC SCALE
¼" = 1'-0"
1' 0 2' 4' 6' 8' 10'

M-3

OPD DWG. NO. 177351	DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
JOB ORDER NO. 542F1144	ATLANTIC DIVISION
DES. ENGLE-BOGGS	NAVAL STATION NORFOLK, VA.
DRWN. M. JENKINS	FLTCOMBATRACENLANT
TR.	CAM NECK VIRGINIA BEACH, VA
CHK. JTI FP.	INDOOR SWIMMING POOL
DR. MGR.	SECTIONS
DES. SUP.	
SATISFACTORY TO DATE	
APPROVED DATE	
PER CDR, NAVFAC ENGINEERING COMMAND	

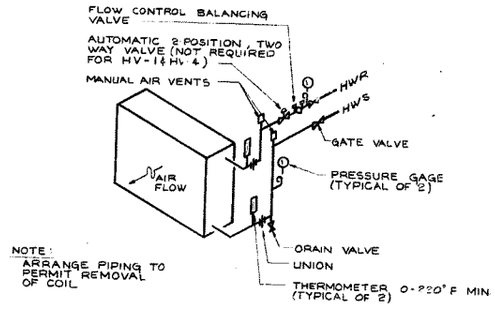
SIZE F	CODE IDENT. NO. 80091	DWG. NO. 4077351
	NAVFAC DWG. NO. N62470-81-6-1144	
NOTED	SPEC. 05-81-1144	SHEET 42 OF 52

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



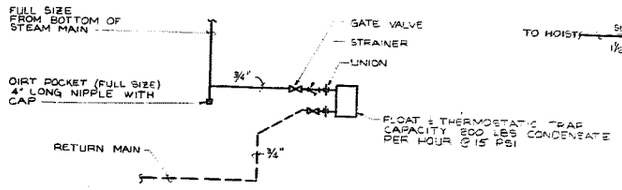
HORIZONTAL UNIT HEATER PIPING DETAIL

NOT TO SCALE



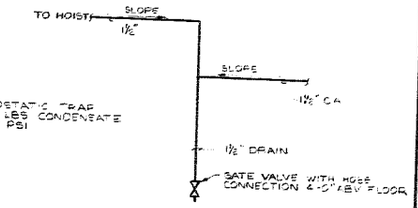
HOT WATER COIL PIPING DETAL (HV UNITS)

NOT TO SCALE



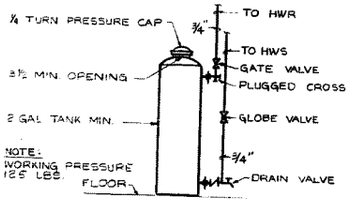
MED. PRESSURE END OF MAIN DRIP DETAIL

NOT TO SCALE



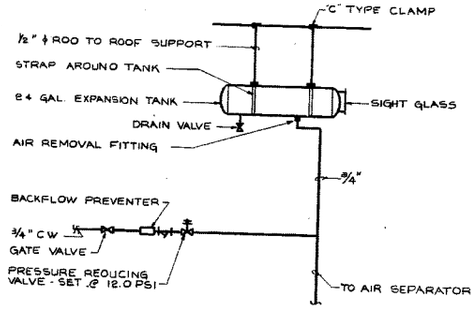
COMPRESSED AIR DRIP DETAIL

NOT TO SCALE



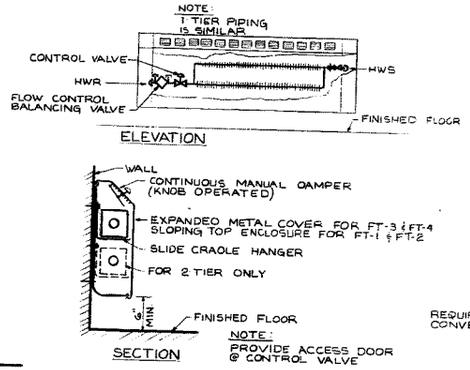
SHOT FEEDER DETAIL

NOT TO SCALE



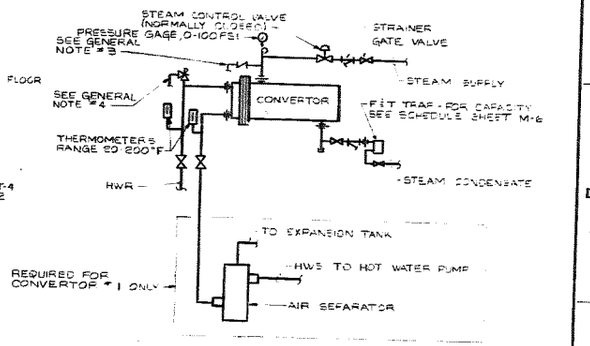
EXPANSION TANK DETAIL

NOT TO SCALE



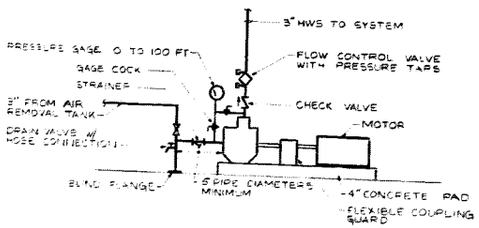
FIN TUBE RADIATION DETAIL

NOT TO SCALE



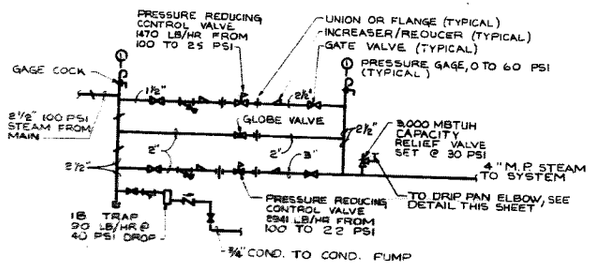
STEAM CONVERTOR PIPING DETAIL

NOT TO SCALE



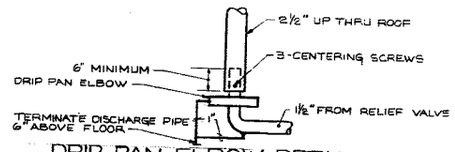
HOT WATER PUMP DETAIL

NOT TO SCALE



PRESSURE REDUCING STATION

NOT TO SCALE

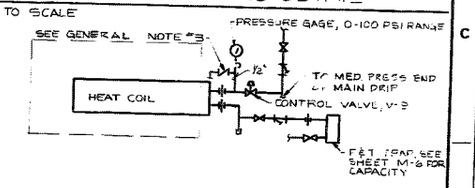


DRIP PAN ELBOW DETAIL

NOT TO SCALE

GENERAL NOTES:

1. MAXIMUM WATER PRESSURE DROP FOR ALL FLOW CONTROL BALANCING VALVES SHALL BE 3 FT WHEN OPEN FULLY AT REQUIRED FLOW
2. FOR CONTROL VALVE CAPACITY AND PRESSURE DROP SEE SCHEDULE SHEET M-6
3. ½" 45° SWING CHECK OR LIFT CHECK VALVE VACUUM BREAKER MOUNTED HORIZONTAL, TERMINATE DISCHARGE PIPE 6" ABOVE FLOOR
4. 1,000,000 BTUH CAPACITY RELIEF VALVE SET @ 30 PSI, TERMINATE 1" DISCHARGE PIPE 6" ABOVE FLOOR

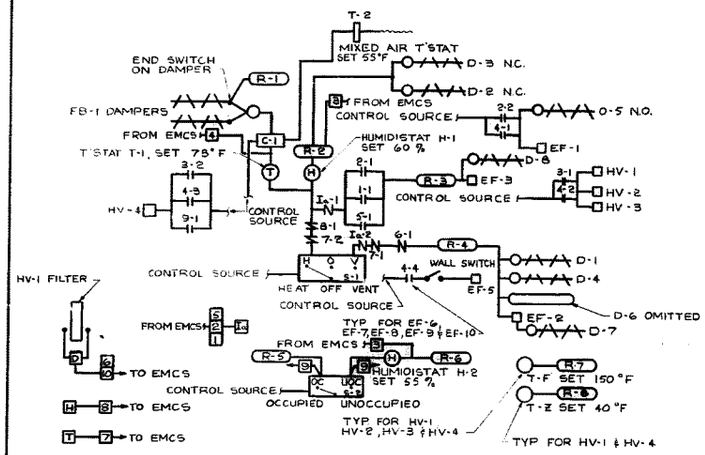


DOMESTIC HOT WATER HEATING COIL PIPING DETAIL

NOT TO SCALE

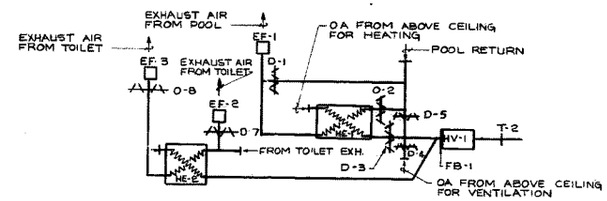
M - 4

DPD DWG. NO. 177352	DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
JOB ORDER NO. 542F1144	ATLANTIC DIVISION
DES. ENGLE - BOGGS	NAVAL STATION — NORFOLK, VA.
DRWN. M. JENKINS	FLTCOMBATRACENLANT
TR.	OAM NECK — VIRGINIA BEACH, VA.
CHK. JTT	INDOOR SWIMMING POOL
SR. NGR.	DETAILS
DES. DIR.	
SATISFACTORY TO — DATE	
APPROVED — DATE	
SIZE F	80091
FORM DWG. NO. 407 52	
CONT. DWG. NO. N62470-81-B-1144	
SCALE NOTED	DWG. 05-81-1144
SHEET 45 OF 52	



HV-1

NOT TO SCALE

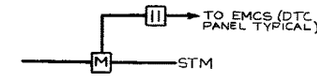


HV-1 CONTROL SCHEMATIC

NOT TO SCALE

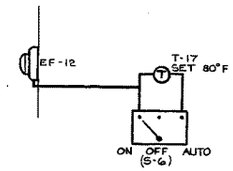
EMCS FUNCTION SCHEDULE								
	ITEM	NO	HV-1	HV-2,3 & 4	HWC-1 & PUMP	HWC-2	OHWH-1 & PUMP	STEAM METER
EQUIP. ON/OFF	TIME SCHEDULE OPERATION	1	•	•(1)	•		•	
	DUTY CYCLE (ON/OFF) OPERATION	2	•	•(1)	•		•	
EQUIP. OPERATION	OUTSIDE AIR CONTROL FOR HUMIDITY	3	•					
	HEAT/VENT RESET OR OPTIMIZATION	4	•	•	•	•	•	
	START/STOP OPTIMIZATION	5	•	•	•		•	
MONITORING	MAINT. RUN TIME & REPORTS	6	•					
	WATER/SPACE TEMPERATURE	7	•	•	•	•	•	
	SPACE HUMIDITY	8	•					
	SWITCH POSITION	9	•					
	FILTER MAINTENACE	10	•					
	METERING	11						•

(1) INTERLOCKED W/HV-1



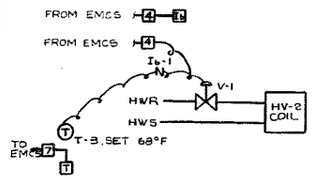
STEAM METER

NOT TO SCALE



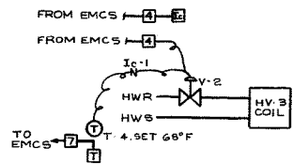
EXHAUST FAN -12

NOT TO SCALE



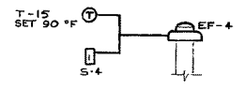
HV-2

NOT TO SCALE



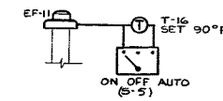
HV-3

NOT TO SCALE



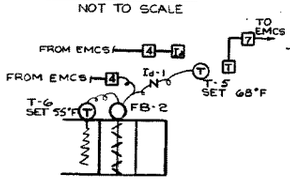
EXHAUST FAN - 4

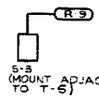
NOT TO SCALE



EXHAUST FAN - 11

NOT TO SCALE



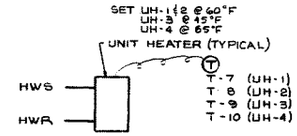


HV-4

NOT TO SCALE

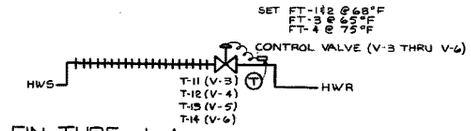
EMCS LEGEND

- LOCAL CONTROL INTERRUPTION INTERFACE
- DIFFERENTIAL PRESSURE SWITCH
- TEMPERATURE SENSOR (SPACE)
- TEMPERATURE SENSOR (PIPE/WATER)
- DTC — DATA TERMINAL CABINET (EMCS SIGNAL TERMINATION)
- NUMBER IF FUNCTION SCHEDULE
- NORMALLY OPEN CONTROL
- NORMALLY CLOSED CONTROL
- (R-1) — RELAY OR CONTROL SOURCE
- 1-1 — RELAY NUMBER - CONTROL NUMBER
- HUMIDISTAT



UNIT HEATERS 1-4

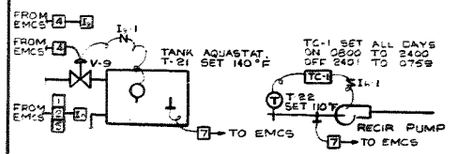
NOT TO SCALE



FIN TUBE 1-4

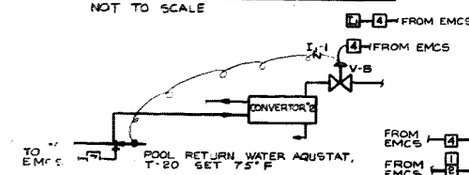
NOT TO SCALE

RESET SCHEDULE	
O.A. TEMP	WATER TEMP
25 °F	180 °F
75 °F	80 °F



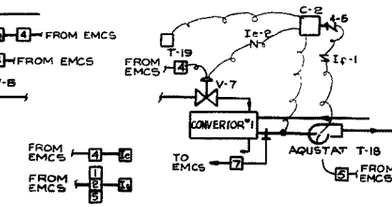
DOMESTIC HOT WATER HEATER

NOT TO SCALE



HOT WATER CONVERTOR #2

NOT TO SCALE



HOT WATER CONVERTOR #1

NOT TO SCALE

M-5

EFD DWG. NO. 177353
JOB ORDER NO. 54EF1144
DWG. ENGLE-BOGGS
DRWN. M. JENKINS
TR.
CHK. JTT
DR. MGR.
DES. DIR.
SATISFACTORY TO DATE
APPROVED DATE
FOR EFD FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.
FLT COMBATRACENLANT
DAM NECK VIRGINIA BEACH, VA.
INDOOR SWIMMING POOL
CONTROL DIAGRAMS

SIZE F
CODE IDENT NO. 80091
407/353
N62470-81-B-1144
SCALE NOTED
DWG. 05-81-1144
SHEET 44 OF 52

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED
A	REVISED - AS-BUILT	7/84	

HEAT EXCHANGER SCHEDULE

MARK	SUPPLY AIR CFM	SUPPLY AIR P.D. (IN. H_2O)	SUPPLY AIR ENT AIR TEMP (DB)	SUPPLY AIR LVG AIR TEMP (DB)	EXHAUST AIR CFM	EXHAUST AIR P.D. (IN. H_2O)	EXHAUST AIR ENT AIR TEMP (DB)	EXHAUST AIR ENT AIR TEMP (WB)	COND. (GPH)
HE-1	24,150	1.15	22°F	56.5°F	24,150	1.15	75°F	60°F	40
HE-2	7,650	1.05	22°F	53.4°F	8,370	1.25	70°F	56.5°F	10

EXHAUST FAN SCHEDULE

MARK	MAX. CFM	MIN CFM	STATIC PRESS. (IN. H_2O)	MAX HP	DRIVE	REMARKS
EF-1	24,150	24,150	2.0	15	BELT	5 7 8
EF-2	8,450	8,370	0.3	1½	BELT OR DIRECT	1 2 8
EF-3	8,450	8,370	1.6	5	BELT OR DIRECT	2 7 8
EF-4	400	350	0.125	1/16	BELT OR DIRECT	1 2 3 4
EF-5-10	11,800	11,200	0.125	1½	BELT OR DIRECT	1 2 8
EF-11	1,320	1,280	0.125	1/6	BELT OR DIRECT	1 2 4
EF-12	1,100	1,005	0.125	1/8	BELT OR DIRECT	2 4 6

REMARKS

1. ROOF MOUNTED CENTRIFUGAL
2. IF BELT DRIVE, MIN. CFM TO BE PROVIDED
3. TO BE ACID RESISTANT CONSTRUCTION
4. WALL SWITCH AND THERMOSTATICALLY ACTUATED
5. USE NON-OVERLOADING FAN
6. WALL MOUNTED CENTRIFUGAL
7. CENTRIFUGAL UTILITY FAN
8. STARTERS PROVIDED W/ MOTOR STARTER PANEL

(A) NOTES:

a. DELETE THE REQUIREMENT TO PROVIDE BACK-DRAFT DAMPERS FOR EF-1, EF-2, AND EF-3, AND THE 24 X 48 ALUMINUM PANELS FOR DIFFUSE. 3 A, B, C, D, H, I, AND J.

b. PROVIDE MOTORIZED DAMPERS FOR EF-4 THROUGH EF-10.

DESIGN TEMPERATURES

ROOM NUMBER	ROOM DESCRIPTION	SUMMER	WINTER °F	WINTER % RH
18	POOL ENCLOSURE	VENT	78	60
6,7,8	MENS SHOWER /LOCKER	VENT	70	65
4	JANITORS CLOSET	VENT	60	-
2,3,5	ADMIN AREA	VENT	68	60
10,11,12	WOMANS SHOWER/LOCKER	VENT	70	65
9	STORAGE	VENT	60	-
14	STORAGE	VENT	60	-
13,15	GARAGE	VENT	60	-
16	MECH. EQUIP	VENT	45	-
17	CHLORINE ROOM	VENT	65	-
19	OBSERVATION	VENT	75	-
20	POOL EQUIPMENT	VENT	65	-

NOTE:

OUTSIDE WINTER TEMPERATURE 22°F DB

FIN TUBE RADIATION SCHEDULE

MARK	MIN HEAT (MBH)	MIN LENGTH (FEET)	APPROX GPM	COVER TYPE	REMARKS
FT-1,2	8	4	0.8	SLOPING TOP	1 4
FT-3	9.2	5	0.9	EXPANDED METAL	1 3 4
FT-4	4.8	2	0.5	EXPANDED METAL	1 3

REMARKS:

1. 180°F EWT, 65°F EAT
2. NON-FERROUS CABINET & FINS
3. 1 TIER
4. 2 TIER

DIFFUSER & REGISTER SCHEDULE (SUPPLY)

MARK	TYPE	NECK SIZE	CFM	MAX. STATIC PRESS. DROP	BLOW	REMARKS
A	SUPPLY DIFFUSER	15 x 15	530	.06	4 WAY	1 2
B		15 x 15	530	.06	2 WAY CORNER	1 2
C		12 x 12	505	.10	2 WAY CORNER	1 2
D		12 x 12	505	.10	2 WAY	1 2
E		6 x 12	225	.03	2 WAY CORNER	3
F		6 x 12	310	.10	3 WAY	3
G		12 x 12	260	.05	4 WAY	3
H		15 x 15	475	.05	2 WAY	1 2
I		15 x 15	475	.05	3 WAY	1 2
J		15 x 15	450	.05	4 WAY	1 2
K		18 x 18	675	.05	3 WAY	2
L		18 x 18	843	.12	3 WAY	2 3
M		27 x 27	1518	.05	4 WAY	2 3
N		18 x 18	843	.12	4 WAY	2 3
P	SUPPLY REGISTER	22 x 18	1108	.09	HORIZONTAL	2

REMARKS

1. DIFFUSERS SHALL BE SUITABLE FOR MOUNTING IN 24 x 48 LAY-IN TILE CEILING SYSTEM
2. CORROSION RESISTANT (NON-FERROUS)
3. DIFFUSERS MANUFACTURED FOR USE WITH CEILING DESIGN MAY BE SUBMITTED.

GRILLE & REGISTER SCHEDULE (RETURN)

MARK	TYPE	NECK SIZE	CFM	MAX. STATIC PRESS. DROP	REMARKS
1	RETURN GRILLE	72 x 126	24,150	.05	1 2
2	RETURN REGISTER	48 x 36	4,250	.05	1
3		36 x 24	2,600	.05	1
4		12 x 8	220	.03	
5	RETURN GRILLE	18 x 20	1,000	.05	1
6		28 x 36	2,150	.04	1
7		28 x 36	2,250	.04	1
8		16 x 22	750	.03	1

REMARKS:

1. CORROSION RESISTANT
2. FIXED BLADES @ 45°

HEATING & VENTILATING UNIT SCHEDULE

MARK	TOTAL CFM	EXT. STATIC PRESS (IN. H_2O)	TOTAL STATIC PRESS (IN. H_2O)	MIN O.A. (CFM)	MIN. MBH	MAXIMUM COIL P.D. (IN. H_2O)	GPM	MAXIMUM WATER P.D. (FT. H_2O)	ENT. WATER TEMP (°F)	MAX. FACE VEL. (FPM)	MAX HP	REMARKS
HV-1	31,800	1.84	2.22	31,800	1144	0.27	80	2.2	180	725	20	1 3 6 3
HV-2	4,250	0.27	0.43	4	21	0.13	5.4	0.5	180	700	2	3 5 4
HV-3	2,600	0.25	0.40	4	15	0.12	5.4	0.5	180	700	¾	3 5 4
HV-4	1,020	0.20	0.40	800	56	0.15	14.9	1.0	180	700	¼	2 5 6 7

* DOES NOT INCLUDE COILS, FACE DAMPER, OR FILTER

REMARKS:

1. NON OVERLOADING FAN. FACE & BYPASS DAMPERS REQUIRED
2. PROVIDE WITH FILTER MIXING BOX WITH MANUAL DAMPERS
3. PROVIDE FILTER SECTION
4. ALL AIR FROM ROOM 18
5. STARTERS PROVIDED W/ MOTOR STARTER PANEL
6. OUTSIDE AIR FROM ABOVE CEILINGS
7. PROVIDE FACE AND BYPASS DAMPERS

STEAM HOT WATER HEATER SCHEDULE

MARK	TYPE	FUNCTION	CAPACITY MBH	ENT. H_2O TEMP (°F)	GPM	MAX. PRESS. DROP (FT.)	STEAM PRESS.	TRAP CAPACITY (LBS) & PRESS. DROP (PSI)
HWC-1	CONVERTOR	HEATING HOT WATER	1,307	156.9	113	1	15	3,500 @ 2
HWC-2	CONVERTOR	POOL WATER HEATER	1,600	50	100	1	15	4,000 @ 2
DHWH-1	HEAT COIL *	DOMESTIC HOT WATER	905	50	20.1	2	15	2,400 @ 2

* SHALL BE PROVIDED WITH TANK, SEE SHEET P-2 FOR TANK CAPACITY

PUMP SCHEDULE

MARK	TYPE	GPM	HEAD (FT)	MAX. RPM	REMARKS
P-1	END SUCTION	113	45	1750	2 3
P-2	DUPLEX CONDENSATE	22.5	115.5	1750	1 3

REMARKS

1. EACH PUMP TO HAVE 22.5 GPM CAPACITY, MAX 2 HP EACH, 50 GAL. RECEIVER
2. BASE MOUNTED, COUPLING GUARD, MAX 2 HP
3. 480 V, 3 Ø, NEMA STARTER SIZE 00

AIR COMPRESSOR SCHEDULE

MARK	FUNCTION	SCFM (MIN)	PRESSURE	RECEIVER (GAL MIN.)	MAX HP	NEMA STARTER
AC-1	HOIST	90	150 PSI	200 *	25	
AC-2	CONTROLS (IF REQUIRED)	TO MATCH SYSTEM PROVIDED			½	

* PROVIDE AUTO DRAIN TRAP, PIPE TO FLOOR DRAIN

UNIT HEATER SCHEDULE

MARK	MIN HEAT (MBH)	TYPE	ENT WATER TEMP (°F)	ENT. AIR TEMP (°F)	GPM	MAX HP	REMARKS
UH-1	11	VERT. DISC	180	60	0.9	1/24	2 3
UH-2	11	HORIZ. DISC	180	60	0.9	1/20	1 3
UH-3	4		180	60	0.6	1/24	1 3
UH-4	15		180	60	1.6	1/20	1 3

REMARKS:

1. MIN. MOUNTING HEIGHT = 7'-0" TO BOTTOM OF UNIT
2. MIN. MOUNTING HEIGHT = 10'-0" TO BOTTOM OF UNIT
3. MAXIMUM WATER PRESSURE DROP 2.0 FEET

CONTROL VALVE SCHEDULE

MARK	TYPE	FUNCTION*	LOCATION	GPM	#/HR	MAX PD
V-1	WATER	2W, 2P	HV-2	5.4	—	20 FT
V-2			HV-3	5.4	—	15 FT
V-3			FT-1	0.8	—	14 FT
V-4			FT-2	0.8	—	14 FT
V-5			FT-3	0.9	—	15 FT
V-6			FT-4	0.5	—	14 FT
V-7	STEAM	2W, MOD	HWC-1		1400	10 PSI
V-8			HWC-2		1713	
V-9			DHWC-1		1045	

* 2W, 2P IS 2 WAY, 2 POSITION
2W, MOD IS 2 WAY, MODULATING

M - 6

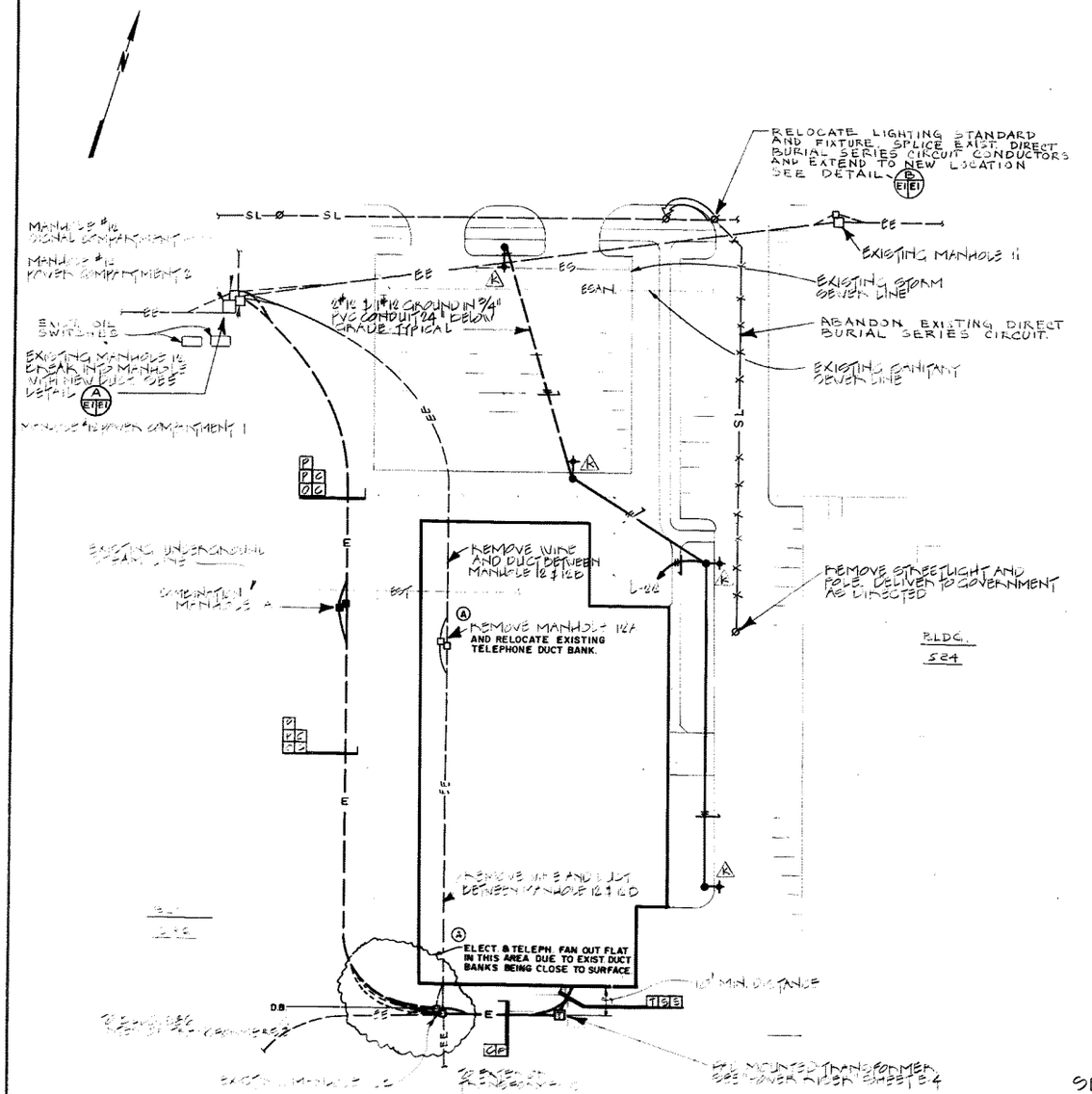
EFD DWG NO. 177354
JOB ORDER NO. 542F1144
DES. ENGLE
DRWN. M. JENKINS
CHK. JTT
DES. MGR. JW
DES. DIR. Charles
SATISFACTORY TO DATE
APPROVED DATE
CHIEF, CIVIL ENGINEERING DIVISION

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.

SCHEDULES

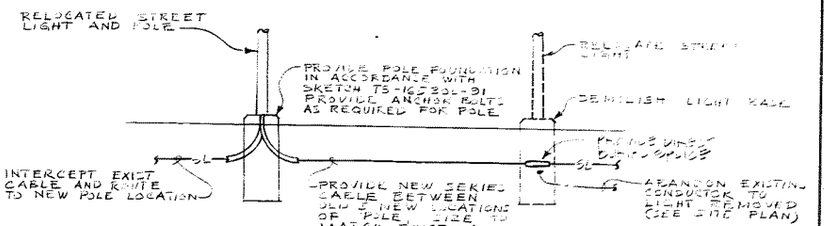
SIZE F | CODE IDENT NO. 80091 | DRAWING NO. 4077354
SCALE: NTS | DATE 1-81 | SHEET 45 OF 52

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED
(A)	REVISED: AS-BUILT	7-25-81	[illegible]



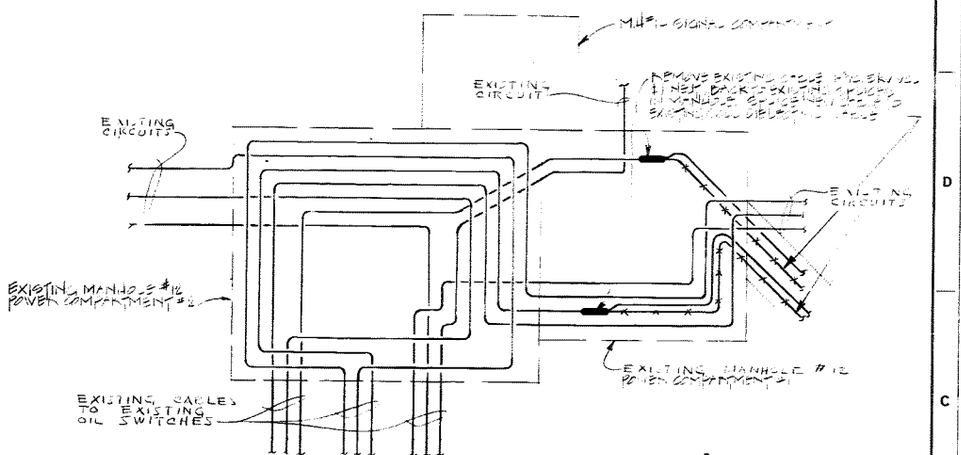
SITE PLAN

SCALE: 1" = 25'



DETAIL B

NO SCALE



A - CABLE ROUTING & CONNECTION DIAGRAM - MANHOLE #12

NO SCALE

NOTE: EXISTING SERVICES NOT AFFECTED BY THIS CONSTRUCTION (EXCEPT AS SHOWN)

SEE GENERAL NOTES & LEGEND, SHEET E-4

GRAPHIC SCALE:

1" = 25' 0 10' 20' 30' 40' 50' 100'

E - 1

EFD DWG NO	177355
JOB ORDER NO	E87P1144
DES	J.M. WOOLRIDGE
DRWN	R.A.E. ST. J.J.C.
TR	
CHK	F.P. DIX
SR. MGR	(Acting) Hayden W.
DES DIR	[illegible]
SATISFACTORY TO	DATE
APPROVED	DATE

FOR EFD FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

ATLANTIC DIVISION

NAVAL STATION — NORFOLK, VA.

FLECOMEATMCENT
CAMP ELLIOTT, VIRGINIA BEACH, VIRGINIA

INDOOR SWIMMING POOL

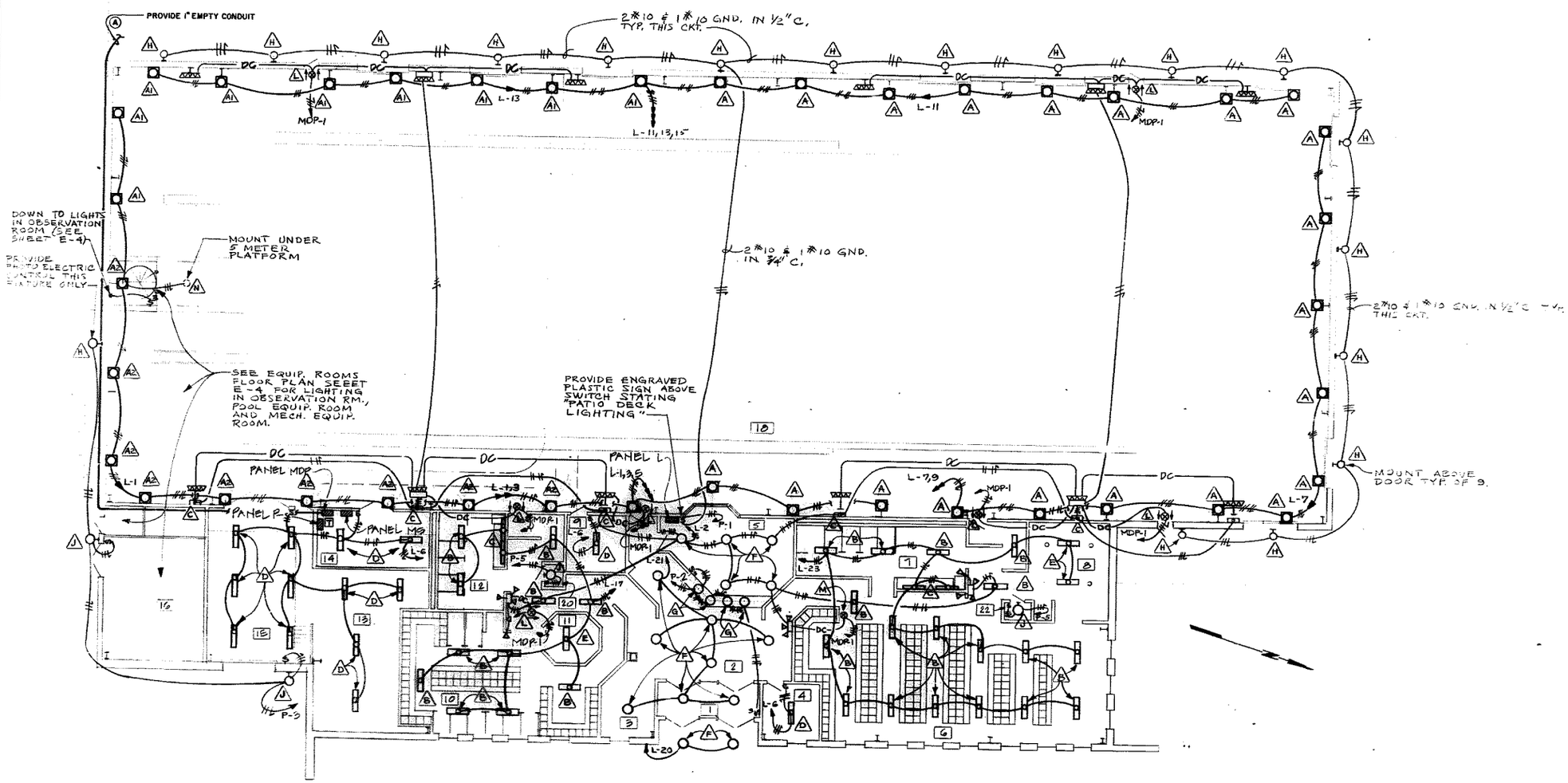
SITE PLAN

SIZE	CODE IDENT. NO.	DRAWING NO.
F	80091	4077355

CONTR. IDENT. NO. N62470-81-C-1144

SCALE 1" = 25' | DATE 05-21-1144 | SHEET 46 OF 52

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED
A	REVISED: AS-BUILT	7-11-11	



LIGHTING PLAN

SCALE 1/8" = 1'-0"

1/8" = 1'-0" 5' 0 5' 10' 15' 20'

GRAPHIC SCALE

RECORD DRAWING LETTER DATED

E-2

TFD DWG. NO.	177356
JOB ORDER NO.	542F1144
DES	J. M. WOODRUFF
DRWN.	J.M.W & J.J.C.
TP.	
CHK.	
SR. MGR.	
DES. DIR.	
SATISFACTORY TO	DATE
APPROVED	DATE

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

ATLANTIC DIVISION

NAVAL STATION — NORFOLK, VA.

FLECOMBATRACENT
DAM NECK, VIRGINIA BEACH, VIRGINIA

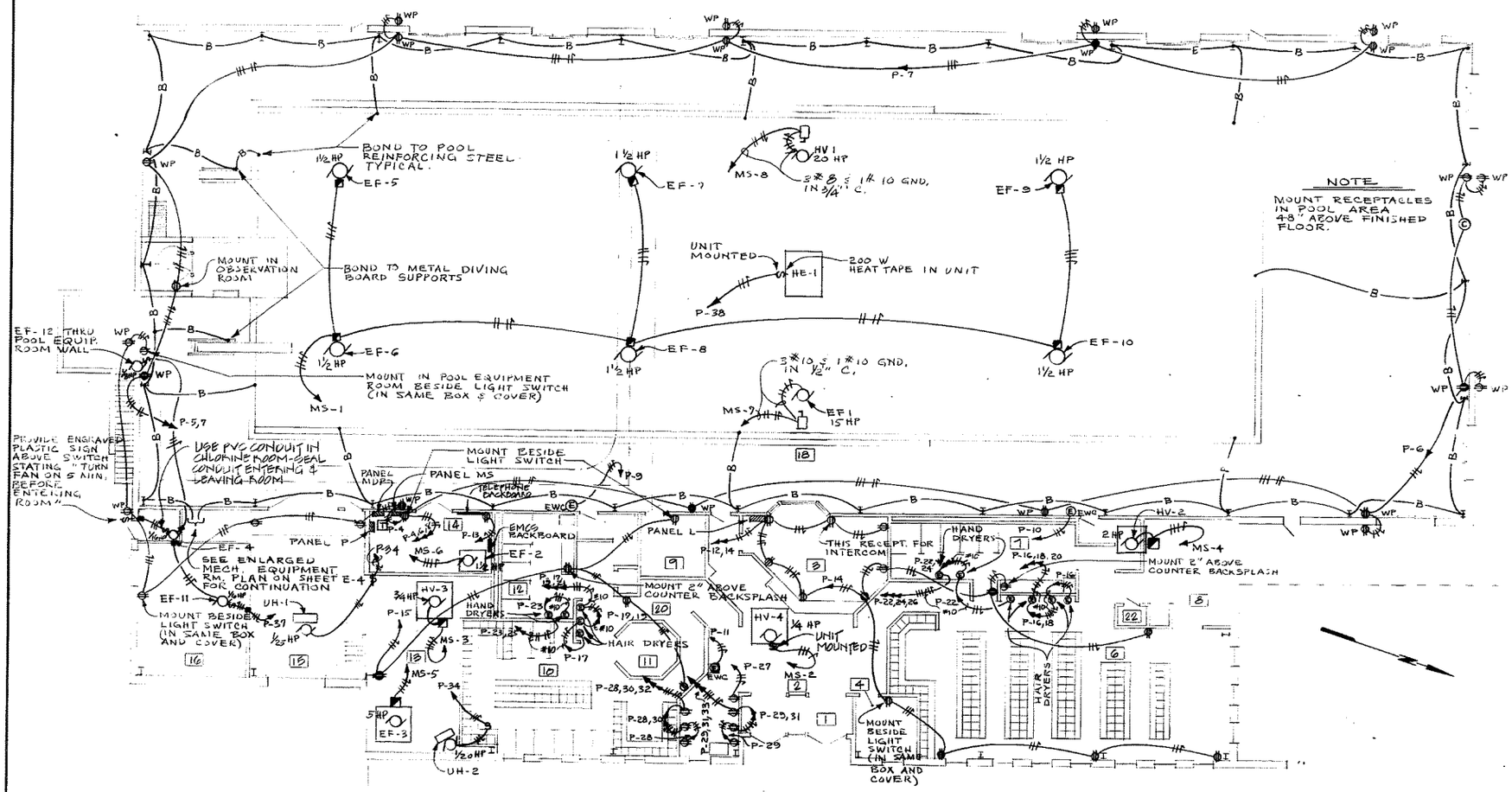
INDOOR SWIMMING POOL
LIGHTING PLAN

SIZE	CODE IDENT. NO.	DRAWING NO.
F	80091	4077356

CONTRACT NO. N62470-81-B-1144

SCALE | SYM. 05-81-1144 | SHEET 47 OF 52

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



POWER PLAN

SCALE 1/8" = 1'-0"

1/8" = 1'-0" 0' 5' 10' 15' 20'

GRAPHIC SCALE

RECORD DRAWING LETTER DATED

E-3

EFD DWG. NO.	177357
JOB ORDER NO.	542F1144
DES.	J. M. WOODRUFF
DRAN.	J. J. COPES
TR.	
CHK.	
DR. MGR.	
DES. DIR.	
SATISFACTORY TO	DATE
APPROVED	DATE

FOR EFD FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

ATLANTIC DIVISION

NAVAL STATION — NORFOLK, VA.

FLECOMBATRACENT
DAM NECK, VIRGINIA BEACH, VIRGINIA

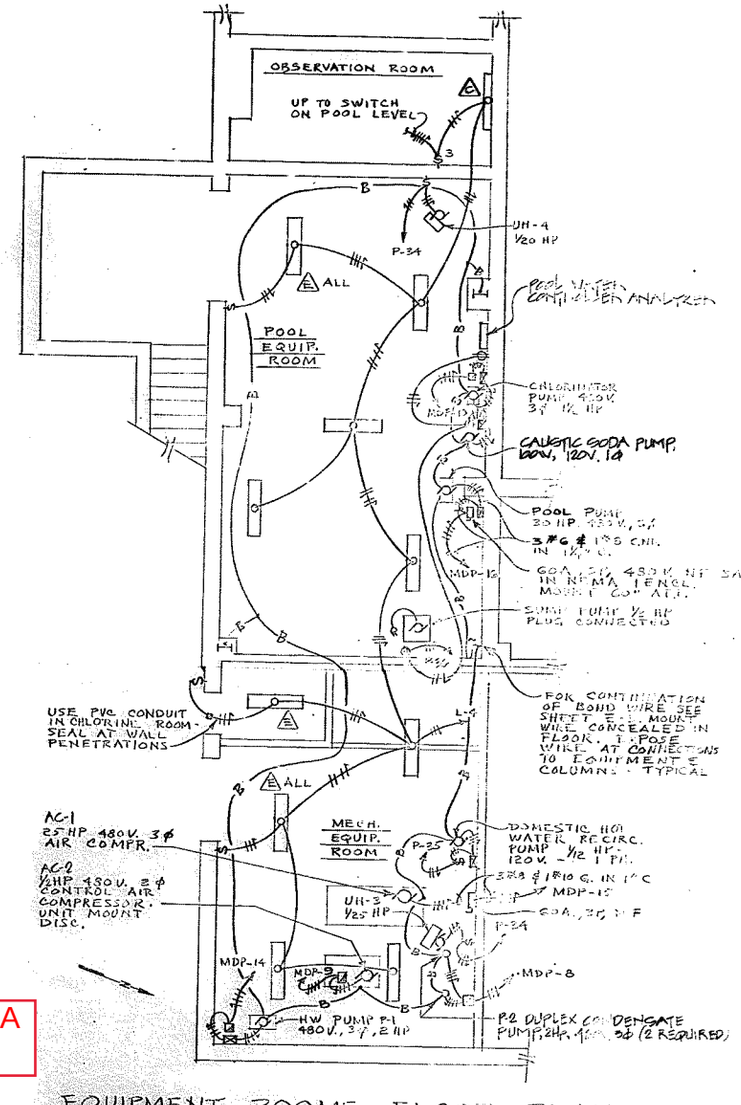
INDOOR SWIMMING POOL

POWER PLAN

SYM. F	80091	407735
		NG2470-81-B-1144
SCALE	DATE 05-81-1144	SHEET 48 of 52

LEGEND

- LIGHTING FIXTURES
- EXIT LIGHTING FIXTURE
- EMERGENCY LIGHTING FIXTURE (ELF) MOUNT 7' AFF - CONNECT TO NORMAL LIGHTING CIRCUIT AHEAD OF LOCAL SWITCHING
- REMOTE LIGHTING HEAD(S) FOR ELF SINGLE OR MULTIPLE (HEAD TO MATCH ELF ATTACHED HEAD) MOUNT 7' AFF
- EXTERIOR FIXTURE ON POLE
- S_3 TOGGLE SWITCH - SUBSCRIPT "3" INDICATES 3-WAY
- DUPLEX RECEPTACLE
- GROUND FAULT INTERRUPTER FEED-THRU TYPE DUPLEX RECEPTACLE
- MOTOR CONNECTION "HV" INDICATES HEAT/VENTILATE UNIT "EF" INDICATES EXHAUST FAN "P" INDICATES PUMP SUBSCRIPT INDICATES HORSEPOWER
- (E) EQUIPMENT CONNECTION - VERIFY HEIGHT REQUIREMENT
- CONDUIT & WIRING CROSSMARKS INDICATE # OF WIRES IF OTHER THAN 2 (⏚) INDICATES GROUND WIRE
- HOME RUN
- MAGNETIC MOTOR STARTER PROVIDED W/EQUIPMENT
- MANUAL MOTOR STARTER 1P 120V IN NEMA 1 ENCL. WALL MOUNTED U.O.N. (UNIT MOUNT ON EXHAUST FANS) - USE AS DISCONNECT SW
- MANUAL MOTOR STARTER 10 HP 3P 480V IN NEMA 1 ENCL. UNIT MOUNTED U.O.N. USE AS DISCONNECT SW
- DISCONNECT SWITCH 30A 3P 480V 20HP RATED NON-FUSED IN NEMA 1 ENCL. UNIT MOUNTED U.O.N.
- PANEL BOARD
- (T) TRANSFORMER
- P|S|O|C CONCRETE ENCASED DUCT SECTION (4" DUCTS) P = HIGH VOLTAGE CABLE IN DUCT S = SECONDARY VOLTAGE CABLE IN DUCT O = SPARE DUCT C = TELEPHONE (DUCT ONLY)
- —EE— EXISTING ELECTRIC DUCT BANK
- —E— ELECTRIC DUCT BANK
- —B— #8 SOLID COPPER BONDING CONDUCTOR - RUN BELOW SLAB
- —DC— 2 #1D DC CONDUCTORS IN 1/2" C
- —SL— EXISTING STREET LIGHTING CIRCUIT
- —x—SL—x— REMOVE EXIST. STREET LIGHTING WIRING
- U.O.N. UNLESS OTHERWISE NOTED
- AFF ABOVE FINISHED FLOOR
- EWC ELECTRIC WATER COOLER
- WP WEATHER-PROOF
- MCB MAIN CIRCUIT BREAKER
- MLO MAIN LUGS ONLY
- KAIC x1000 AMPERES INTERRUPTING CAPACITY
- CLOCK OUTLET - MOUNT 10' AFF
- TELEPHONE OUTLET
- MICROPHONE OUTLET
- CEILING MOUNTED PUBLIC ADDRESS SPEAKER
- UNDERWATER PUBLIC ADDRESS SPEAKER - MOUNT SPEAKER IN POOL SIDEWALL BELOW WATER PER MFG RECOMMENDATIONS
- OUTSIDE PUBLIC ADDRESS SPEAKER - WALL MOUNT 8' AFF



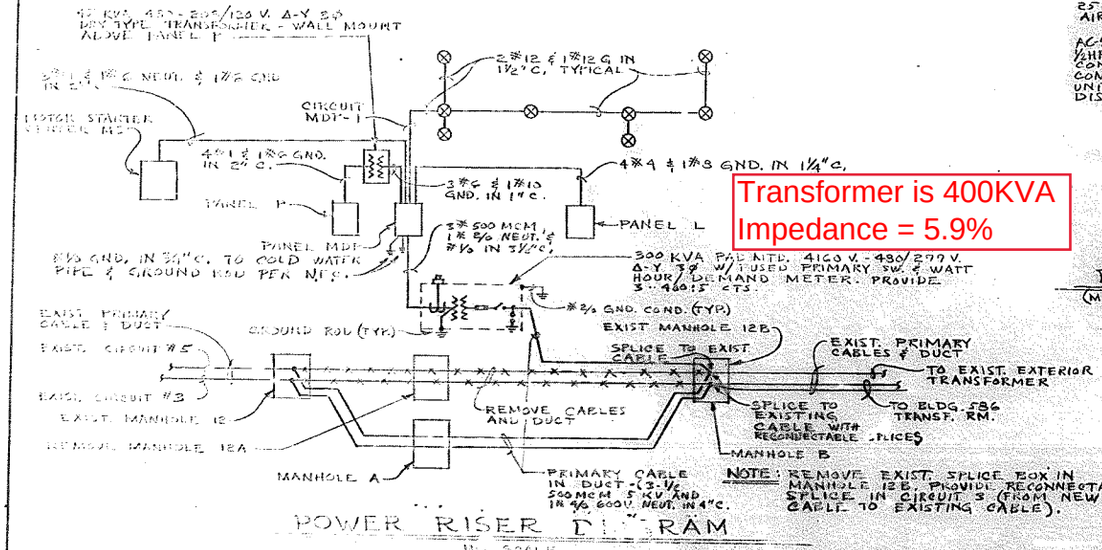
EQUIPMENT ROOMS FLOOR PLAN
(MECHANICAL ROOM, POOL EQUIP. ROOM, OBSERVATION ROOM)
SCALE 1/4" = 1'-0"

GENERAL NOTES

1. SEE SHEET E-4 FOR LEGEND.
2. ALL ITEMS SHOWN ARE NEW AND SHALL BE PROVIDED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
3. ALL WORK SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. PROVIDE BONDING IN ACCORDANCE WITH ARTICLE 680-22 (MAJOR PORTIONS OF THE BONDING ARE SHOWN ON THE PLANS). BOND ALL UNDERWATER AUDIO SPEAKER SHELLS TO THE BONDING CONDUCTOR WITH 1 #8 SOLID COPPER CONDUCTOR.
4. PROVIDE 3P ASTRONOMIC DIAL TIME SWITCH WITH 15 HR RESERVE POWER SPRING. RECESS MOUNT ABOVE PANEL L TO CONTROL EXTERIOR LIGHTING.
5. ALL UNDERGROUND DUCT SHALL BE 4".

REVISIONS

SYM.	DESCRIPTION	DATE	APPROVED



NOTE: REMOVE EXIST. SPLICE BOX IN MANHOLE 12B. PROVIDE RECONNECTABLE "Y" SPLICE IN CIRCUIT 3 (FROM NEW CABLE TO EXISTING CABLE).

POWER RISER DIAGRAM
NO SCALE

Transformer is 400KVA
Impedance = 5.9%

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

E-4

E/O DWG NO	1 1 3 5 8
JOB ORDER NO	542 F 1144
DR.	J.M. WOODRUFF
DRAWN	J.J. COPPS/TREY
CHK	F.P. E.K.
ER MGR	
DES DIR	
SATISFACTORY TO	DATE
APPROVED	DATE

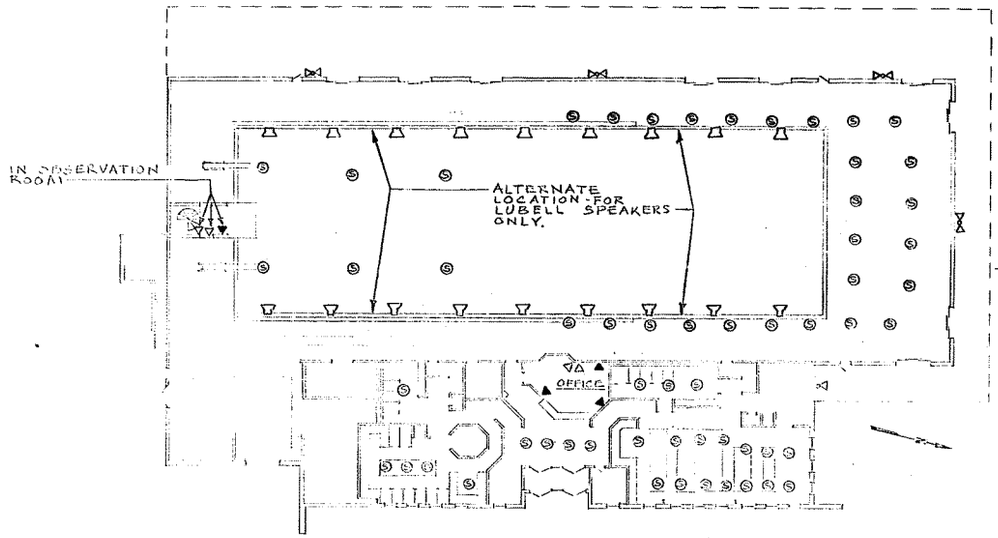
DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

FLECOMDATRACENT
DAM NECK, VIRGINIA BEACH, VIRGINIA
INDOOR SWIMMING POOL
LEGEND, POWER RISER, EQUIPMENT ROOMS

SIZE	CODE IDENT NO.	DRAWING NO.
F	80091	4 0 1 1 3 5 8

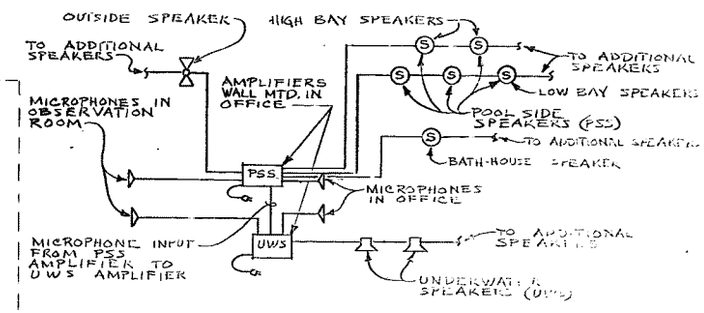
CONTR. DRWG. NO. N.42472-81-D-1144
GRAPHIC SYS. 05-31-1144 SHEET 49 OF 52

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



SIGNAL PLAN

SCALE 1/16" = 1'-0"



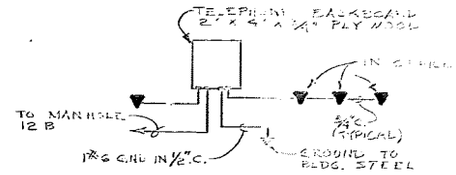
SOUND SYSTEM RISER DIAGRAM

NO SCALE

NOTES:

1- PROVIDE WIRING IN CONDUIT PER MANUFACTURERS RECOMMENDATION.

2- SIZE CONDUIT BASED ON WIRING PROVIDED.



TELEPHONE RISER DIAGRAM

NO SCALE

LIGHTING FIXTURE SCHEDULE

FIXTURE SYMBOL	STYLE & TYPE SEE SPECS FOR MANUF. SKETCH NO. OR SEE DETAIL	NUMBER & TYPE OF LAMPS	VOLTS	MOUNTING	REMARKS
A	NL-24 TYPE B	1-400W 40000K METAL HALIDE 1-250W HPS	277	SURFACE WALL	BOTTOM OF FIXTURE 10'-0" AFF U.O.N. SEE NOTE 1.
A1	NL-24 TYPE B	1-400W 40000K METAL HALIDE 1-250W HPS	277	SURFACE WALL	BOTTOM OF FIXTURE 20'-0" AFF. SEE NOTE 1.
A2	NL-24 TYPE B	1-400W 40000K METAL HALIDE 1-250W HPS	277	SURFACE WALL	BOTTOM OF FIXTURE 25' AFF. SEE NOTE 1.
B	NL-2 TYPE B	2-F40LW/RS	277	SURFACE CLG	
C	NL-4 TYPE C	2-F40LW/RS	277	SURFACE WALL 2" ABOVE MIRROR	U.O.N. SEE NOTE 4.
D	NL-6 TYPE A	2-F40LW/RS	277	SURFACE CLG	
E	NL-8 TYPE A	2-F40LW/RS	277	SURFACE CLG	
F	NL-27 TYPE A	1-70W HPS	277	RECESS CLG	PROVIDE "DAMP" UL LABEL ON EXTERIOR FIXTURES.
G	NL-42	1-75EA30	120	SEMI-RECESS CLG	EXPOSED PORTION OF FIXTURE SHALL BE FINISHED SAME AS CLG VICE FINISH SHOWN ON SKETCH.
H	NL-26	1-18W LPS	120	SURFACE WALL	MOUNT 7'-0" ABOVE GRADE U.O.N.
J	NL-45 TYPE A	1-60W INC.	120	SURFACE WALL	MOUNT 7'-0" ABOVE GRADE.
K	TS-16550-1	1-400W HPS	480	POLE MTD 30" ABOVE GRADE	SET POLE PER SKETCH TS-16550-90 TYPE 2.
L	NL-48 TYPE B	2-20W LONG LIFE 2-5W	277 12 DC	END WALL MTD 7' AFF	ARROWS AS INDICATED DOUBLE FACE
M	NL-48 TYPE B	2-20W LONG LIFE 2-5W	277 12	BACK WALL MTD 7'AFF	SINGLE FACE
N	NL-47 TYPE B	1-35W HPS	277 DC	SURFACE CEILING	

NOTES:
1. ON-OFF SWITCHES ARE NOT PERMITTED IN FIXTURES. PROVIDE COMPUTER PRINT OUT OF MAINTAINED FOOT CANDLES (MF=.7) PROVIDED BY FIXTURES ASSUMING CAVITY REFLECTANCES OF 80%, 50%, 20% - MINIMUM AVERAGE = 35FC. MINIMUM = 20FC. MAXIMUM = 75FC (CALCULATIONS BASED ON STERNER INLITE FIXTURE)
2. ALL FLUORESCENT LAMPS SHALL BE 55 WATT 3050 LUMEN TYPE.
3. ALL FLUORESCENT BALLASTS SHALL BE ENERGY SAVING TYPE.
4. MOUNT FIXTURE ON WALL AT CEILING IN OBSERVATION RM.

PANELBOARD SCHEDULES

PANEL MDP — 400 A. M.C.B., 3Ø, 4W, 480/277V, SURFACE MOUNTED

CKT NO.	BREAKER AMPS	POLES	KAIC	WIRE SIZE	LOAD (AMPS) ØA	ØB	ØC	LOAD DESCRIPTION
1	20	1	14	12	1.1			EXIT LTS
2	20	1	14	--	--			SPARE
3	20	1	14	--		--		SPARE
4	20	1	14	--		--		SPARE
5	20	1	14	--			--	SPARE
6	20	1	14	--			--	SPARE
7	100	3	--	--	--	--	--	SPACE ONLY
8	15	3	14	12	6.8	6.8	6.8	CONDENSATE PUMPS
9	15	3	14	12	3.4	3.4	3.4	CONTROL AIR COMP.
10	15	3	14	12	2.6	2.6	2.6	CHLORINATOR PUMP
11	30	3	14	4	45.9	48.9	45.9	PANEL L
12	125	3	14	1	81	78.6	78.6	PANEL MS
13	50	3	14	6	31.2	25	27.8	PANEL P
14	15	3	14	12	3.4	3.4	3.4	H. W. CIRC. PUMP
15	60	3	14	8	34	34	34	AIR COMP.
16	80	3	14	6	40	40	40	POOL CIRC. PUMP

PANEL MS — 225 M.L.O., 3Ø, 4W, 480/277V, SURFACE MOUNTED MOTOR STARTER PANEL

CKT NO.	BREAKER AMPS	POLES	KAIC	STARTER SIZE*	WIRE SIZE	LOAD (AMPS) ØA	ØB	ØC	LOAD DESCRIPTION
1	50	3	14	2	12	15.6	15.6	15.6	EF-5 THRU EF-10
2	15	1	14	00	12	2.4	--	--	HV-4 **
3	15	3	14	00	12	1.4	1.4	1.4	HV-3
4	15	3	14	0	12	3.4	3.4	3.4	HV-2
5	15	3	14	0	12	7.6	7.6	7.6	EF-3
6	15	3	14	00	12	2.6	2.6	2.6	EF-2
7	50	3	14	2	10	21	21	21	EF-1
8	50	3	14	2	8	27	27	27	HV-1

* PROVIDE MAIN CONTACTS, AUXILIARY CONTACTS AND CONTROL VOLTAGES AS REQUIRED BY MOTOR CHARACTERISTICS AND CONTROL SCHEME REQUIRED

** PROVIDE 1 KVA 277-120V DRY TYPE TRANSFORMER ATTACHED TO PANEL FOR THIS CIRCUIT. PROVIDE 10A FUSE AND HOLDER AT SECONDARY OF TRANSFORMER. HV-4 RATED FOR 120V OPERATION.

PANELBOARD SCHEDULE

PANEL P — 125A, M.C.B., 3Ø, 4W, 208/120V, SURFACE MOUNTED

CKT NO.	BREAKER AMPS	POLES	KAIC	WIRE SIZE	LOAD (AMPS) ØA	ØB	ØC	LOAD DESCRIPTION
1	20	1	10	12	5.3			EXT. LT
2	20	1	10	12	3.5			COUNTER/JAN. LTS
3	20	1	10	12		1.3		EXT. LT
4	20	1	10	12		12		POOL REC
5	20	1	10	12			10.5	POOL REC
6	20	1	10	12			7.5	POOL REC
7	20	1	10	12	6			POOL REC
8	20	1	10	12	7.5			POOL REC
9	20	1	10	12		7.5		WATER COOLER
10	20	1	10	12		7.5		WATER COOLER
11	20	1	10	12			7.5	WATER COOLER
12	20	1	10	12			7.5	ADMIN REC
13	20	1	10	12	1.5			TEL. REC
14	20	1	10	12	13.5			MENS REC
15	20	1	10	12		7.5		WOMENS REC
16	25	1	10	10		20		HAIR DRYER
17	25	1	10	10			20	HAIR DRYER
18	25	1	10	10			20	HAIR DRYER
19	25	1	10	10	20			HAIR DRYER
20	25	1	10	10	20			HAIR DRYER
21	25	1	10	10		20		HAIR DRYER
22	25	1	10	10		20		HAIR DRYER
23	25	1	10	10			20	HAND DRYER
24	25	1	10	10			20	HAND DRYER
25	25	1	10	10	20			HAND DRYER
26	25	1	10	10	20			HAND DRYER
27	20	1	10	12		1.5		SNACK MACH.
28	20	1	10	12		1.5		SNACK MACH.
29	20	1	10	12			1.5	SNACK MACH.
30	20	1	10	12			1.5	SNACK MACH.
31	20	1	10	12	1.5			SNACK MACH.
32	20	1	10	12	1.5			SNACK MACH.
33	20	1	10	--		1.5		SNACK MACH.
34	20	1	10	12		10		HW-1, 2, 3, & 4
35	20	1	10	12			4	HWH RECIRC.
36	20	1	10	12			5.8	SUMP PUMP, PH PUMP
37	20	1	10	12	11			EF-9, 11, 12
38	20	1	10	12	1.7			HE-1
39	20	1	10	--		--		SPARE
40	20	1	10	--		--		SPARE
41	20	1	10	--			--	SPARE
42	20	1	10	--			--	SPARE

PANELBOARD SCHEDULE

PANEL L — 100A, M.L.O., 3Ø, 4W, 480/277V, FLUSH MOUNTED

CKT NO.	BREAKER AMPS	POLES	KAIC	WIRE SIZE	LOAD (AMPS) ØA	ØB	ØC	LOAD DESCRIPTION
1	20	1	14	12	13.5			POOL LTS
2	20	1	14	12	4.7			OFFICE LTS *
3	20	1	14	12		13.5		POOL LTS
4	20	1	14	12		3.6		MECH/FILTER LTS
5	20	1	14	12			13.5	POOL LTS
6	20	1	14	12			5.0	STOR. LTS
7	20	1	14	12	13.5			POOL LTS
8	20	1	14	—	--			SPARE
9	20	1	14	12		13.5		POOL LTS
10	20	1	14	—		--		SPARE
11	20	1	14	12			13.5	POOL LTS
12	20	1	14	—			--	SPARE
13	20	1	14	12	13.5			POOL LTS
14	20	1	14	—	--			SPARE
15	20	1	14	12		13.5		POOL LTS
16	20	1	14	—		--		SPARE
17	20	1	14	12			4.7	WOMENS LTS
18	20	1	14	—			--	SPARE
19	20	1	14	—	--			SPARE
20	20	1	14	12	.7			FRONT LTS **
21	20	1	14	12		2.8		FOYER LTS
22	20	2	14	12		4	4	PARKING LTS **
23	20	1	14	12			7.2	MENS LTS

* PROVIDE HANDLE LOCK

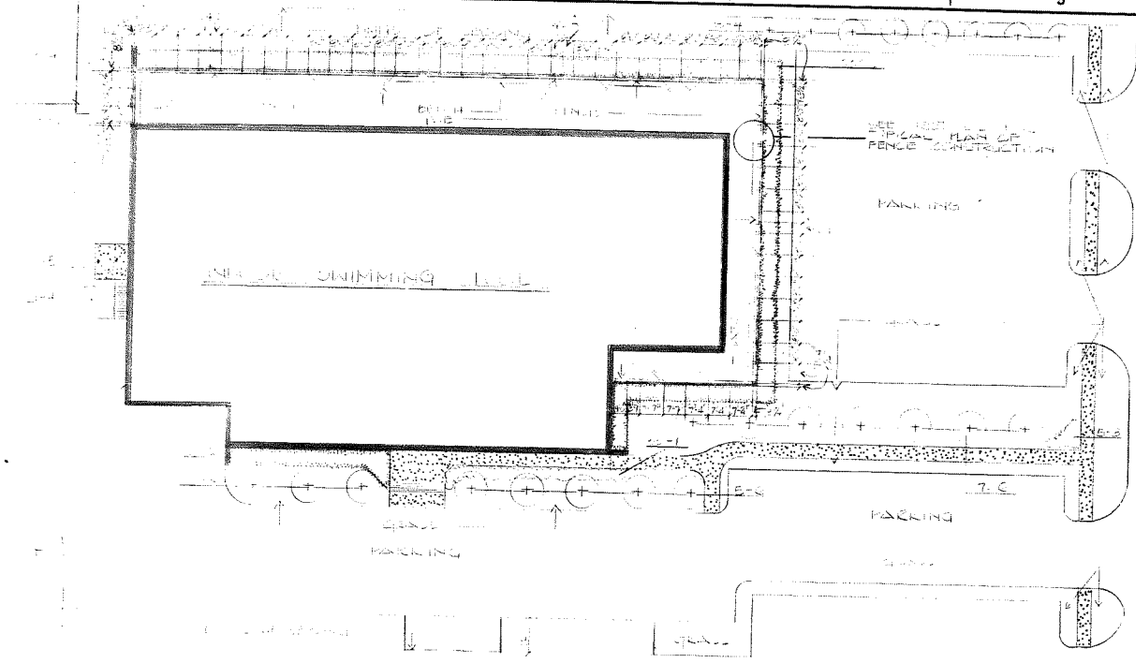
** VIA TIME SWITCH. SEE NOTE 4.

GRAPHIC SCALE

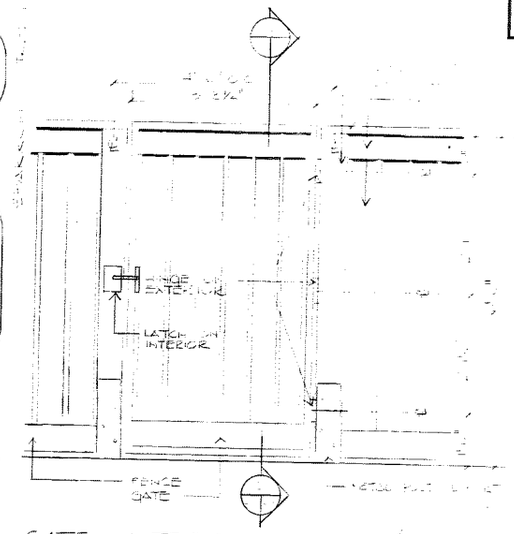
1/16" = 1'-0" 0 5' 10' 20' 30' 40' 50' 60'

E - 5

LFD DWG. NO. 177359	DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ARCHITECT 542-1143	ATLANTIC DIVISION
DR. J.M. WOODRUFF	NAVAL STATION — NORFOLK, VA.
DRAWN J.J. COPES/PMEL	FLECOMBATMENT DAM NECK, VIRGINIA BEACH, VIRGINIA
CHK.	INDOOR SWIMMING POOL
EN ENGR.	SIGNAL PLAN, DIAGRAMS, SCHEDULES
DES DIR.	
SATISFACTORY TO — DATE	
APPROVED — DATE	
CODE F	80091
CONTR. DWG. NO. 4077359	
CONTR. SPEC. NO. N62470-81-D-1144	
DWG. GRAPHIC SPEC. 05-81-144	SHEET 50 OF 52

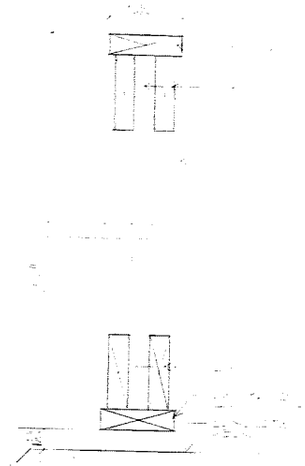


LANDSCAPE PLAN



GATE - INTERIOR ELEVATION

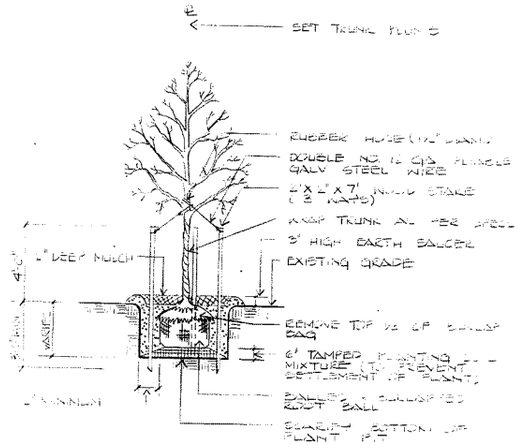
SCALE 1" = 1'-0"



SECTION

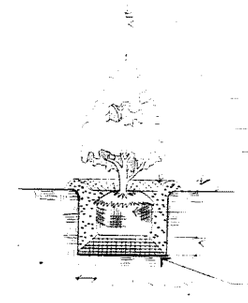
PLANT LIST

NAME	AT	SIZE	PLAN	REMARKS
[illegible]	[illegible]	[illegible]	30	
[illegible]	[illegible]	[illegible]	8	
[illegible]	[illegible]	[illegible]	[illegible]	PLANT [illegible] STAGGER THE [illegible]
[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	



TREE PLANTING DETAIL

NOT TO SCALE



GRAPHIC SCALES

1" = 1'-0"

3/8" = 1'-0"

1" = 20'

REVISIONS

SYM.	DESCRIPTION	DATE	APPROVED

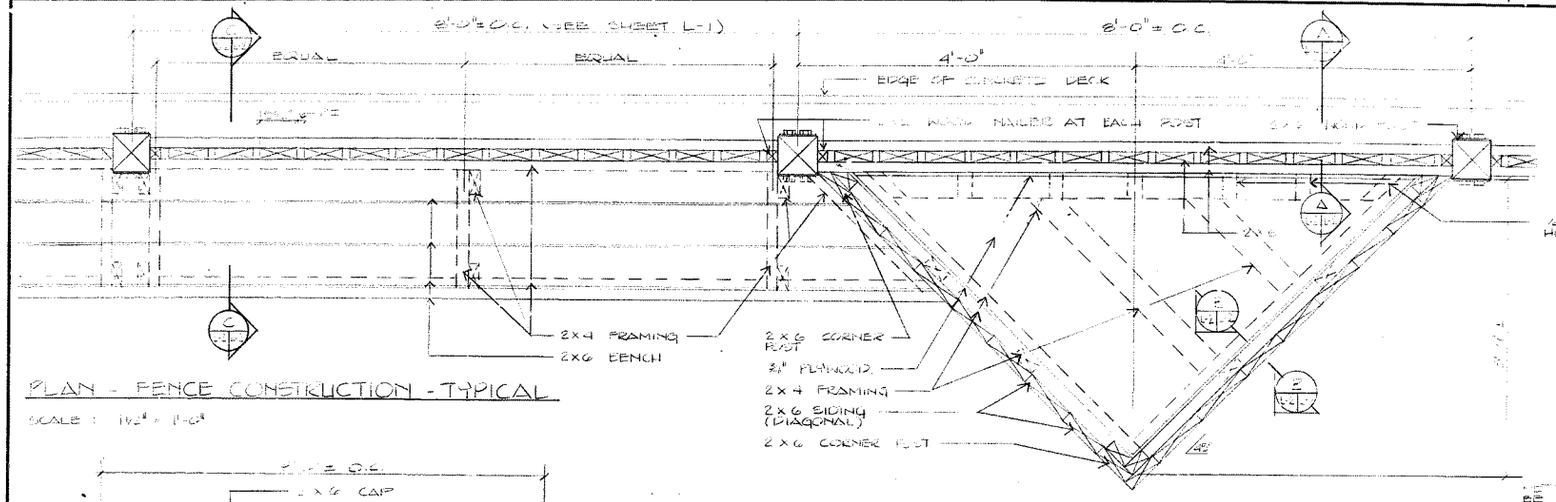
EFD DWG. NO. 77850
JOB ORDER NO.
DES.
DRWN.
TR.
CHK.
SR. NGR.
SEC. DIR.
SATISFACTORY TO DATE
APPROVED DATE
FOR CAPT. FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.

PUBLIC WORKS ATLANTIC ENGINEERING
[illegible]
INDUSTRIAL [illegible]
[illegible]

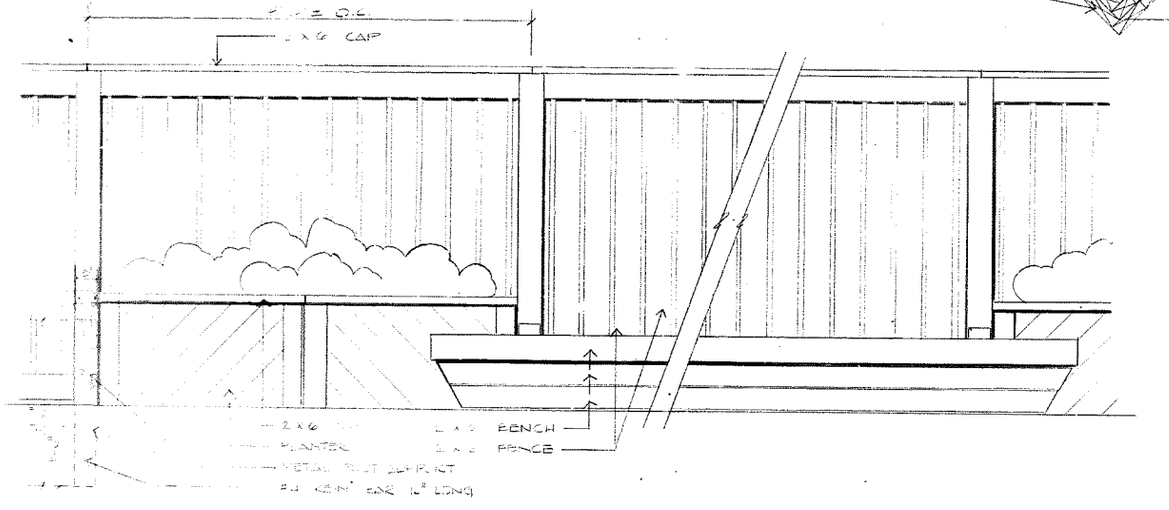
SIZE	NAVFAC DWG. NO.	NAVFAC DWG. NO.
F	80091	4577360

SCALE [illegible] DATE [illegible] SHEET 5 OF 32



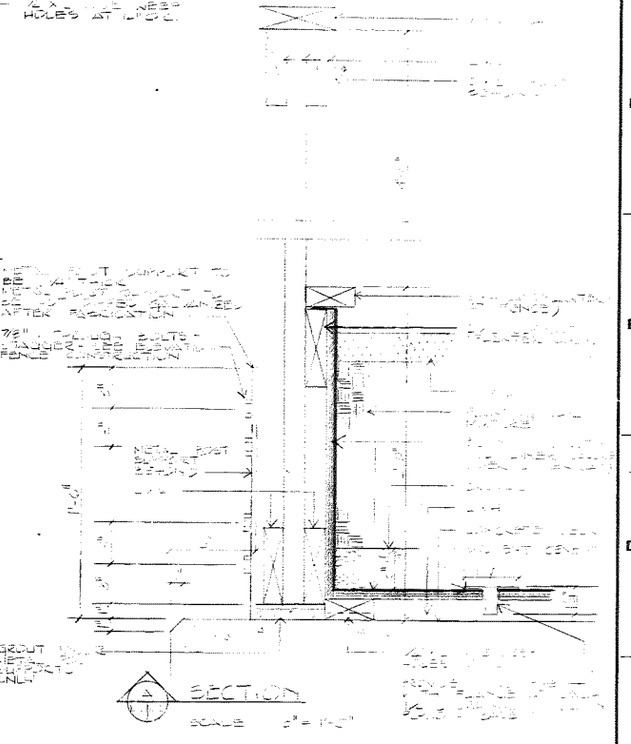
PLAN - FENCE CONSTRUCTION - TYPICAL

SCALE : 1½" = 1'-0"



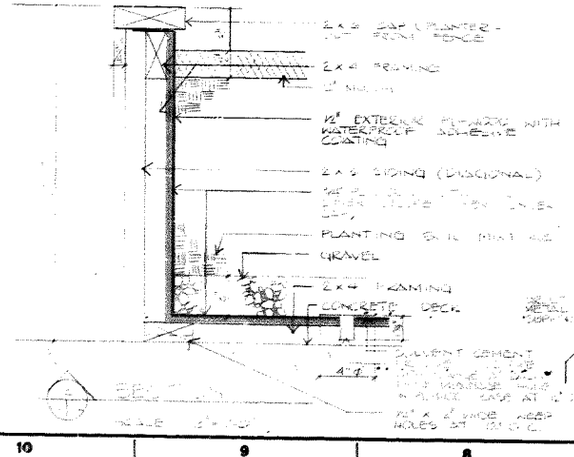
ELEVATION - FENCE CONSTRUCTION

SCALE : 1" = 1½"



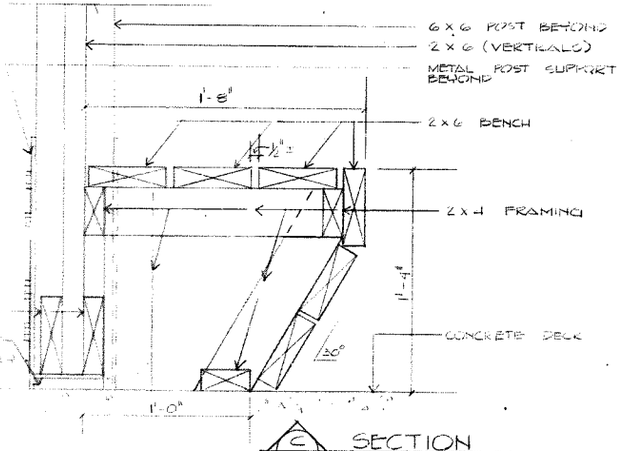
SECTION

SCALE : 3" = 1'-0"



SECTION

SCALE : 3" = 1'-0"



SECTION

SCALE : 3" = 1'-0"

GRAPHIC SCALES

1" = 1'-0"

1½" = 1'-0"

3" = 1'-0"

REVISIONS

NO.	DESCRIPTION	DATE	APPROVED

RECORD DRAWING
LETTER DATED

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.

FLECOMSTRACENLANT
CAMP SEVEN VIRGINIA BEACH, VA.
INDOOR SWIMMING POOL
LANDSCAPE - FENCE DETAIL

F	80091

407736-1

SHEET 52 of 52

Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

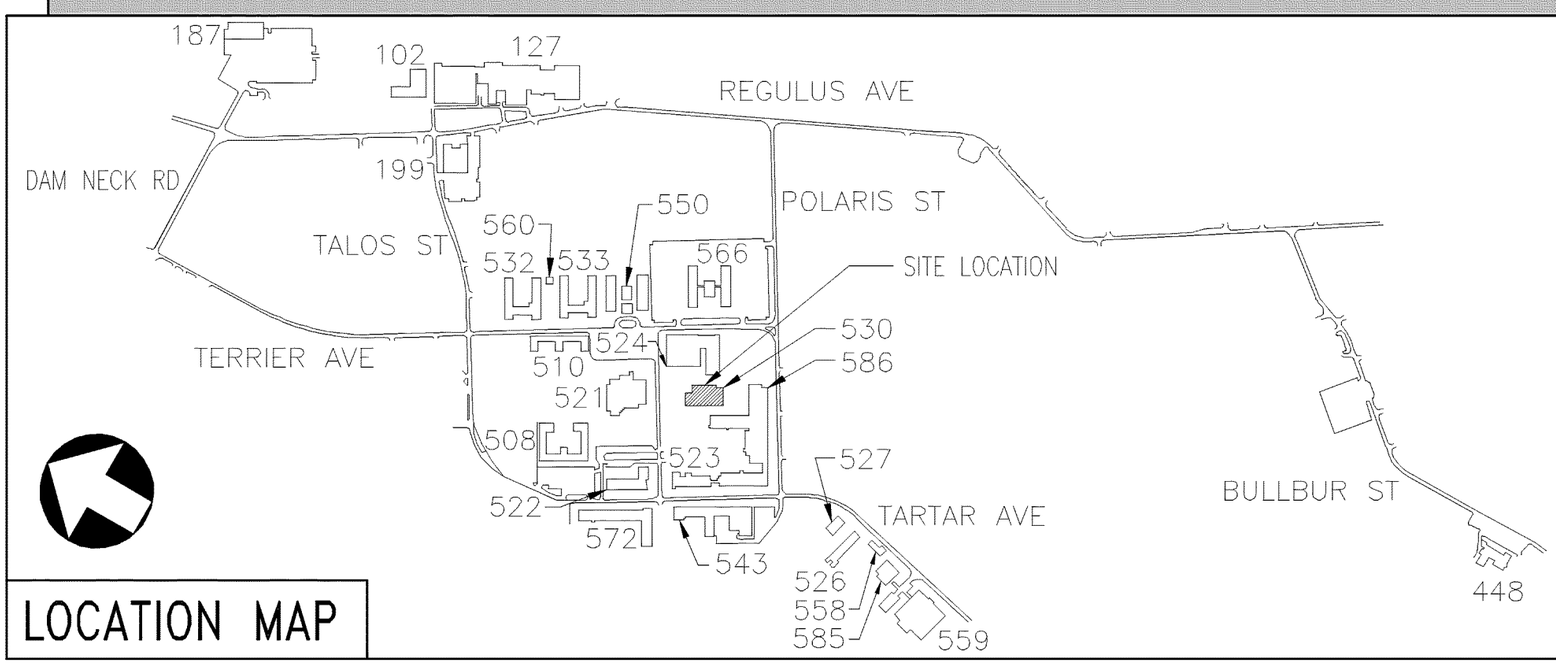
ATTACHMENT 6.2 – Dam Neck 530 ESPC I Record Drawings

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

BOILER INSTALLATION
BUILDING 530
FOR
DAM NECK BASE
VIRGINIA BEACH, VIRGINIA

PACE COLLABORATIVE, P.C.
MECHANICAL / ELECTRICAL ENGINEERS

PRIORITY DESIGNATION
• SEE TITLE BLOCK FOR PRIORITY.
1. MUST BE COMPLETE AND FULLY OPERATIONAL BY JULY 1, 2007.
2. MUST BE COMPLETE AND FULLY OPERATIONAL BY JULY 1, 2007.
3. MUST BE COMPLETE AND FULLY OPERATIONAL BY OCTOBER 1, 2007.



LOCATION MAP

COMMONWEALTH OF VIRGINIA
JOHN M. NEWELL
No. 035329
PROFESSIONAL ENGINEER

RECORD DRAWING

DAM NECK ESPC - BOILER INSTALLATION

TITLE SHEET - BLDG 530 PRIORITY 1

DES.: RAL	PACE COLLABORATIVE MECHANICAL ELECTRICAL ENGINEERS	1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-499-7229 - FAX 757-391-6003	DATE: 09-30-08
DR.: NSRL			SHEET: T1
CK.: JMN			PACE JOB # 6280.3

GENERAL NOTES

DEMOLITION

EXISTINC HVAC PIPINC, DUCTWORK, AND EQUIPMENT SHOWN IS BASED ON EXISTING PLANS AND FIELD OBSERVATION WITHOUT DEMOLITION. AFTER DEMOLITION, ANY CLARIEICATION REQUIRED TO DETERMINE SCOPE OF WORK SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

THE CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY FAMILIARIZE HIMSELE WITH THE EXISTING CONDITIONS PRIOR TO BID.

DRAWINGS DO NOT SHOW EVERY EXISTING PIPE, CONDUIT, DUCT, ETC. CONTRACTOR SHALL TAKE CARE TO REMOVE ONLY ITEMS REQUIRED TO BE REMOVED AND VERIEY PIPES, DUCTS, ETC. BEFORE REMOVAL.

REMOVAL OF ITEMS SHALL INCLUDE ASSOCIATED HANGERS, ANCHOR BOLTS AND OTHER APPURTENANCES. WHERE SUCH REMOVAL RESULTS IN OPEN HOLES, VOIDS OR EXPOSURE OE DAMAGED SURFACES, THE CONTRACTOR SHALL BE RESPONSIBLE EOR REPAIRING AND FINISHING THE SURFACE TO MATCH ADJACENT CONDITIONS.

BUILDING IS TO REMAIN OCCUPIED DURING CONSTRUCTION. REMOVAL OR SHUT-DOWN OF EQUIPMENT THAT AFEECTS ANY OCCUPIED AREA'S AIR CONDITIONING OR HEATINC SHALL ONLY BE DONE AS APPROVED OR TEMPORARY AIR CONDITIONING OR HEATING SHALL BE PROVIDED AT CONTRACTOR'S EXPENSE. THIS MAY REQUIRE NIGHT AND WEEKEND WORK TO KEEP BUILDING IN OPERATION.

ALL MATERIALS REMOVED UNDER DEMOLITION, NOT TO BE RELOCATED OR DESIGNATED TO BE TURNED OVER TO THE OWNER, SHALL BECOME THE PROPERTY OF THE CONTRACTOR, UNLESS OTHERWISE NOTED, AND SHALL BE REMOVED COMPLETELY EROM THE SITE.

GENERAL ITEMS

CENERAL NOTES ON THIS DRAWING ARE APPLICABLE TO EACH HVAC DRAWING OE THIS SET. SEE EACH DRAWING FOR SPECIFIC NOTES APPLICABLE TO THAT DRAWING.

COORDINATE THAT EXISTINC OUTSIDE AIR INTAKE OPENINGS FOR VENTILATION AIR ARE LOCATED AT LEAST 10 FEET MEASURED IN ANY DIRECTION FROM ANY NEW FLUES, VENTS, GAS METERS, OR GAS REGULATORS UNLESS TOP OF SUCH INTAKE OPENING IS 2 FEET BELOW ANY OF THE LISTED ITEMS.

CORRECT SETTING ON BALANCING EITTINGS SHALL BE PERMANENTLY MARKED.

OVERHEAD PIPING IN SPACES WITHOUT HUNC CEILINGS SHALL BE RUN AS CLOSE TO ROOF DECK AS PRACTICAL, AS CLOSE TO PARALLEL JOISTS AS POSSIBLE AND ABOVE LIGHTING EIXTURES TO CONCEAL PIPING.

THE DIAMETER OF THE SUPPLY PIPE AT ANY GAS EIRED EQUIPMENT SHALL NOT BE OE A SMALLER SIZE THAN THE INLET CONNECTION TO THE EQUIPMENT.

COORDINATE LOCATION AND INSTALLATION OE EQUIPMENT WITH OTHER TRADES.

PROVIDE STANDARD EMERGENCY CUT-OEE SWITCH FOR EACH GAS BURNER NEAR THE BOILER ROOM OR EQUIPMENT ROOM DOOR.

DO NOT SCALE DRAWINGS FOR EXACT LOCATIONS OF DOORS, WINDOWS, ETC.

PIPINC FLUES AND COMBUSTION AIR INTAKES EXTENDINC THROUGH EXTERIOR WALLS AND ROOF SHALL BE FLASHED AND COUNTER ELASHED IN A WEATHERPROOF MANNER.

VALVES AND SPECIALTIES SHALL BE LINE SIZE EXCEPT EOR CONTROL VALVES OR UNLESS NOTED OTHERWISE.

EXTEND DRAIN LINES TO NEAREST ELOOR DRAIN OR AS INDICATED. ROUTING SHALL NOT INTEREERE WITH PASSAGEWAYS AND MAINTENANCE. SLOPE CONDENSATE DRAIN PIPING AT 1/4" PER EOOT.

PIPING INSULATION SHALL BE RUN CONTINUOUSLY THROUGH NON-RATED FLOORS, WALLS, ROOE AND PARTITIONS, UNLESS OTHERWISE INDICATED.

NO PIPING SHALL BE SMALLER THAN 3/4" UNLESS OTHERWISE NOTED.

EOR PIPE SIZES NOT INDICATED ON PLANS, SEE EQUIPMENT CONNECTION DETAILS, ELOW DIACRAMS AND RISER DIACRAMS AND PIPE SIZING SCHEDULE.

RELIEF VALVE PIPING SHALL BE EXTENDED TO THE NEAREST FLOOR DRAIN.

EOR LOCATION OF MOTOR STARTERS, SEE ELECTRICAL DRAWINGS.

PROVIDE UNION OR FLANGED CONNECTIONS AT EACH PIECE OF EQUIPMENT AND ON BOTH SIDES ON CONTROL VALVES AND PRESSURE RECULATING VALVES. PROVIDE SHUT-OFF VALVES ON BOTH SIDES OF AUTOMATIC VALVES.

FLOOR MOUNTED EQUIPMENT IN THE MECHANICAL ROOMS SHALL BE LOCATED ON 6" THICK CONCRETE HOUSEKEEPING PADS UNLESS OTHERWISE INDICATED.

PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE SPECIFICATIONS. ADDITIONAL SUPPORTS OR HANGERS SHALL BE ADJACENT TO ELBOWS, TO PREVENT WEIGHT OF PIPINC BEINC PLACED ON THE EQUIPMENT.

LOCATE AND SIZE CONCRETE PADS AND CURBS FOR MECHANICAL EQUIPMENT IN ACCORDANCE WITH ACTUAL EQUIPMENT PURCHASED.

HOT WATER PIPING

PROVIDE MINIMUM PITCH SUFFICIENT TO INSURE ADEQUATE VENTING AND DRAINAGE.

PROVIDE MANUAL AIR VENTS AT HIGH POINTS OF SYSTEM.

PROVIDE 1/2" DRAIN VALVES AND CAPPED CONNECTIONS AT LOW POINTS IN PIPING SYSTEMS EOR DRAINING.

STEAM PIPING

PITCH STEAM AND GRAVITY CONDENSATE PIPING, MINIMUM 1" IN 40' IN DIRECTION OE FLOW, UNLESS OTHERWISE INDICATED.

STEAM MAINS SHALL PITCH DOWN IN DIRECTION OF ELOW A MINIMUM OE 1" IN 40'.

CONDENSATE RETURN MAINS SHALL PITCH DOWN IN DIRECTION OE FLOW A MINIMUM OF 1" IN 20'.

DO NOT LIFT LOW PRESSURE CONDENSATE.

SHEET METAL

LOUVER SIZES ARE INDICATED IN SQUARE EEET OF NET FREE AREA. EOR DIMENSIONS OF LOUVERS, SEE ARCHITECTURAL DRAWINGS.

MAINTENANCE

UNITS SHALL BE STALLED SO THAT THE MANUEACTURER'S RECOMMENDED MAINTENANCE CLEARANCES ARE OBSERVED.

RECORD DRAWING

DAM NECK ESPC - BOILER INSTALLATION

MECHANICAL GENERAL NOTES

DES.: RAL	PACE COLLABORATIVE MECHANICAL ELECTRICAL ENGINEERS	1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-499-7229 - FAX 757-301-6063	DATE: 03-14-07
DR.: MTF			SHEET: MG1
CK.: JMN			PACE JOB # 6280

LEGEND and ABBREVIATIONS

1	DEMOLITION NOTE DESIGNATION
1	NEW WORK NOTE DESIGNATION
1	PHOTO NOTE DESIGNATION
	POINT OF CONNECTION NEW TO EXISTING
	POINT OF DEMOLITION LIMIT
B-1	BOILER DESIGNATION
DHW-1	DOMESTIC BOILER DESIGNATION
EF-1	EXHAUST FAN DESIGNATION
LV-1	LOUVER DESIGNATION
P-1	PUMP DESIGNATION
DL	DOOR LOUVER
	PIPE TURNING UP
	PIPE TURNING DOWN
G	NATURAL GAS
HPS	HIGH PRESSURE STEAM PIPING
HWS	HOT WATER SUPPLY PIPING
HWR	HOT WATER RETURN PIPING
LPS	LOW PRESSURE STEAM PIPING
LPC	LOW PRESSURE CONDENSATE
PC	PUMPED CONDENSATE PIPING
	DOMESTIC COLD WATER (C.W.)
	DOMESTIC HOT WATER (H.W.)
T	TEMPERATURE SENSOR
	THERMOMETER
	CIRCULATING PUMP

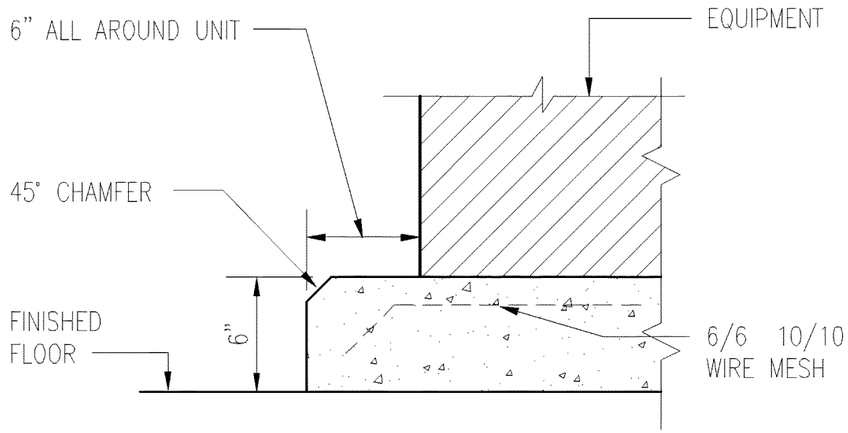
A.F.F.	ABOVE FINISHED FLOOR
APPROX.	APPROXIMATELY
BHP	BOILER HORSE POWER
BLDG	BUILDING
CFH	CUBIC FEET PER HOUR
DHW	DOMESTIC HOT WATER
EWT	ENTERING WATER TEMPERATURE
ETR	EXISTING TO REMAIN
FT	FEET
GPM	GALLONS PER MINUTE
HD	HEAD
HP	HORSEPOWER
KW	KILOWATT
LBS/HR	POUNDS PER HOUR
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	1000 BRITISH THERMAL UNITS PER HOUR
MIN	MINIMUM
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
PRS	PRESSURE REDUCING STATION
PSI	POUNDS PER SQUARE INCH
(TYP.)	TYPICAL
WG	WATER GAUGE
U.O.N.	UNLESS OTHERWISE NOTED
Ø	PHASE/DIAMETER
°F	DEGREE FAHRENHEIT

RECORD DRAWING

DAM NECK ESPC – BOILER INSTALLATION

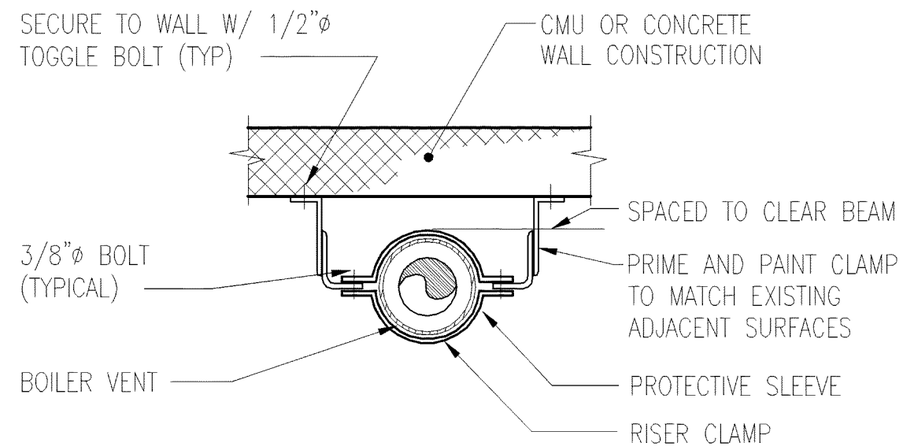
MECHANICAL LEGEND AND ABBREVIATIONS

DES.: RAL	PACE COLLABORATIVE MECHANICAL ELECTRICAL ENGINEERING	1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-490-7229 - FAX 757-301-6063	DATE: 03-14-07
DR.: MTF			SHEET: MG2
CK.: JMN			PACE JOB # 6280



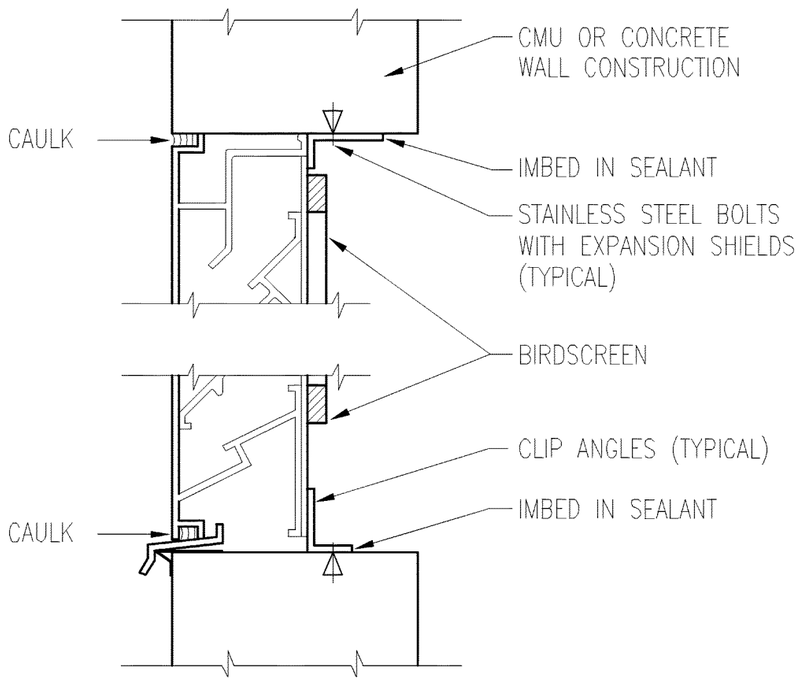
CONCRETE PAD DETAIL – INTERIOR

NO SCALE



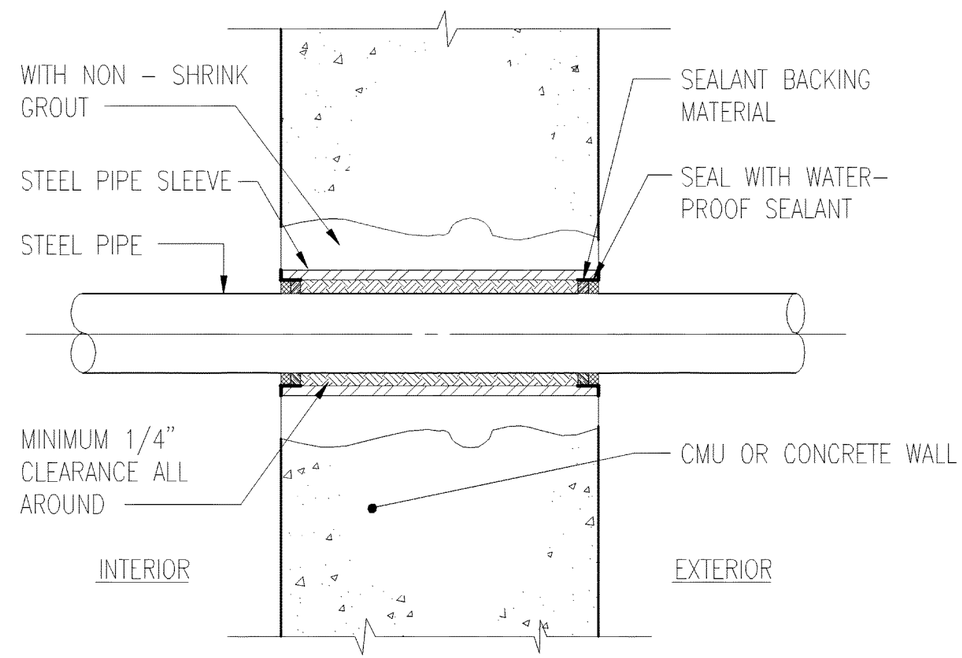
DUCT SUPPORT ON EXTERIOR WALL(VERTICAL)

NO SCALE



TYPICAL LOUVER DETAIL

NO SCALE

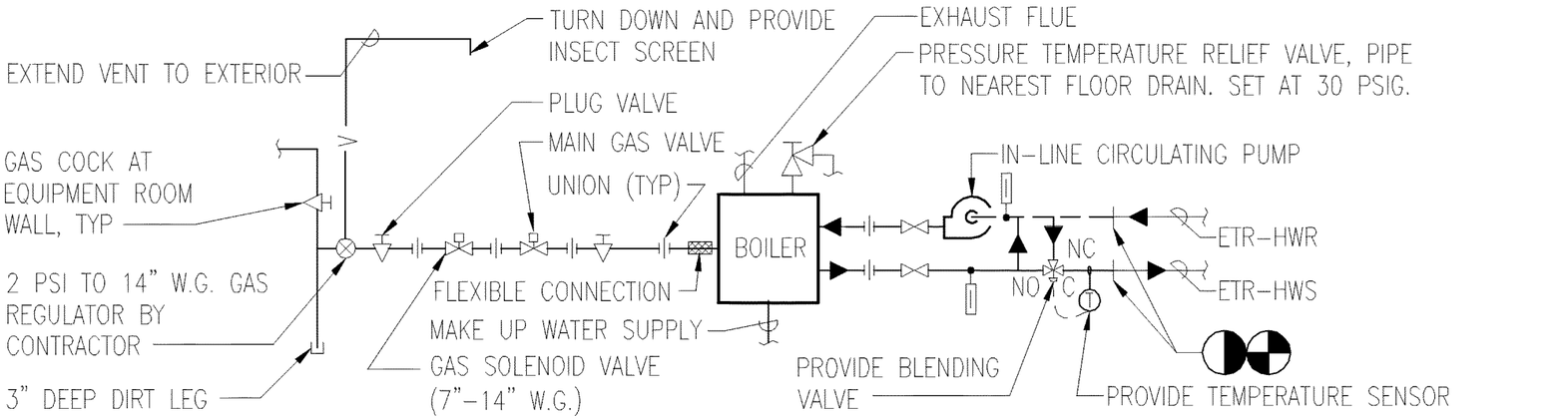


LOW TEMPERATURE VENT PENETRATION OF EXTERIOR WALL

NO SCALE

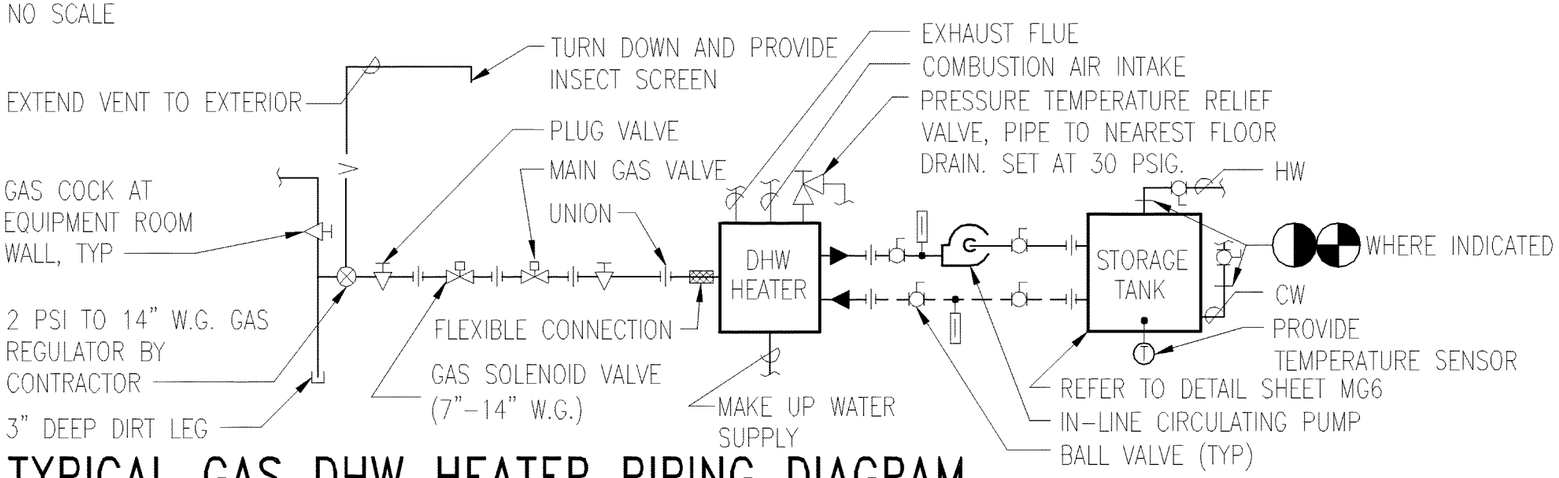
RECORD DRAWING

DAM NECK ESPC – BOILER INSTALLATION		
MECHANICAL DETAILS		
DES.: RAL DR.: MTF CK.: JMN	PACE COLLABORATIVE MECHANICAL ELECTRICAL ENGINEERS 1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-490-7229 - FAX 757-201-6063	DATE: 03-14-07 SHEET: MG3 PACE JOB # 5280



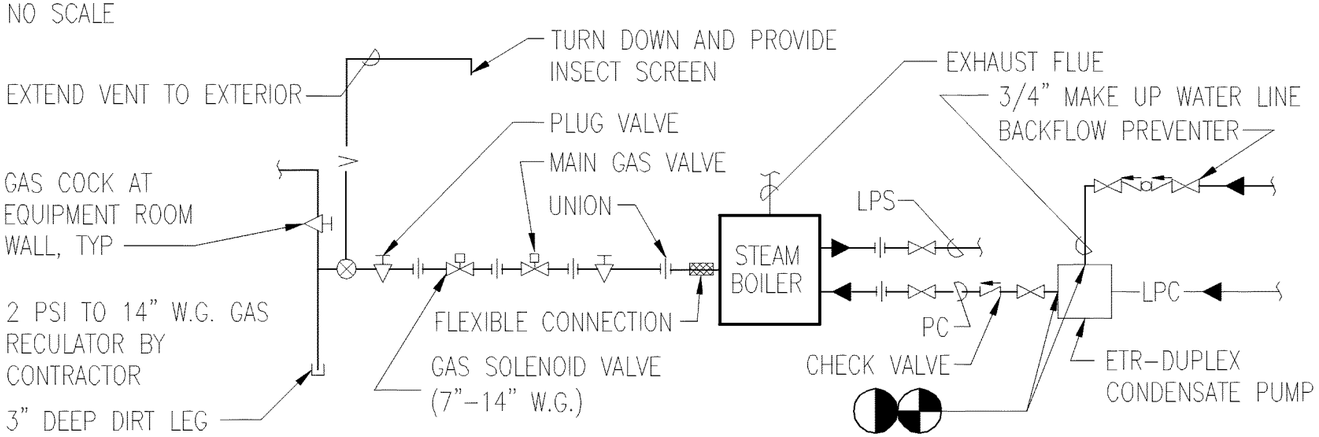
TYPICAL GAS NON-CONDENSING HEATING HOT WATER PIPING DIAGRAM

NO SCALE



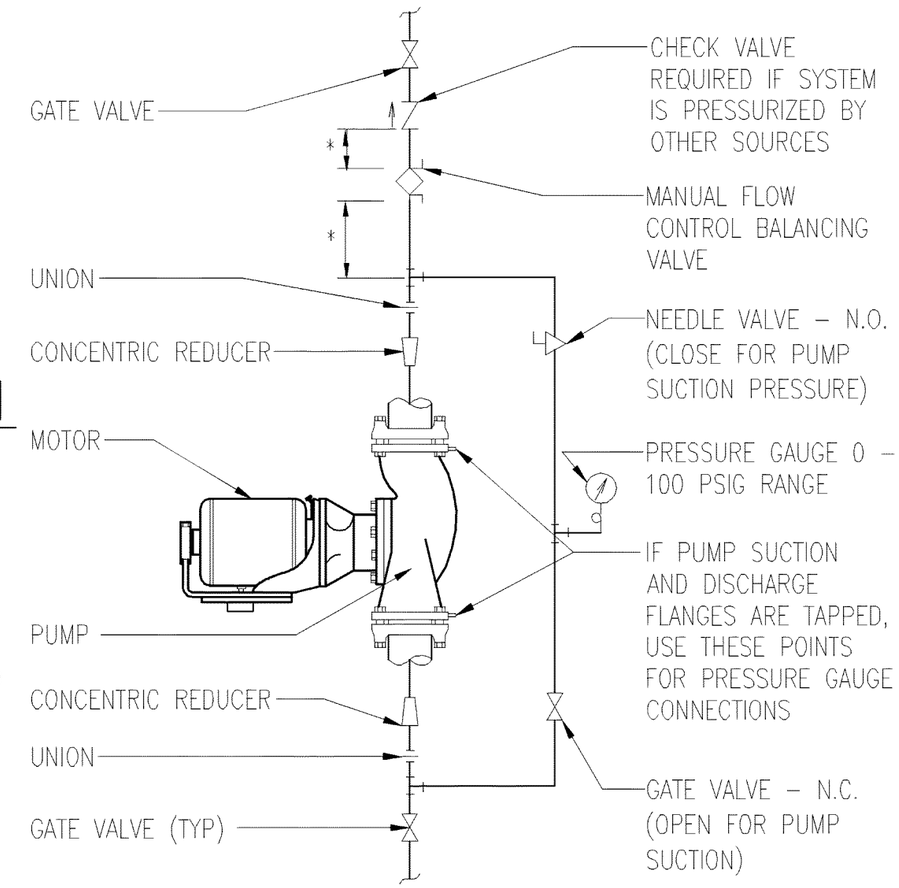
TYPICAL GAS DHW HEATER PIPING DIAGRAM

NO SCALE



TYPICAL GAS STEAM BOILER (0-15 PSIG) PIPING DIAGRAM

NO SCALE



* STRAIGHT LENGTHS OF UNOBSTRUCTED PIPE WITHOUT INLINE APPURTENANCES SHALL BE INSTALLED UP / DOWNSTREAM OF FLOW CONTROL BALANCING VALVE PER MANUFACTURER'S INSTALLATION INSTRUCTIONS

IN-LINE CENTRIFUGAL PUMP DETAIL

NO SCALE

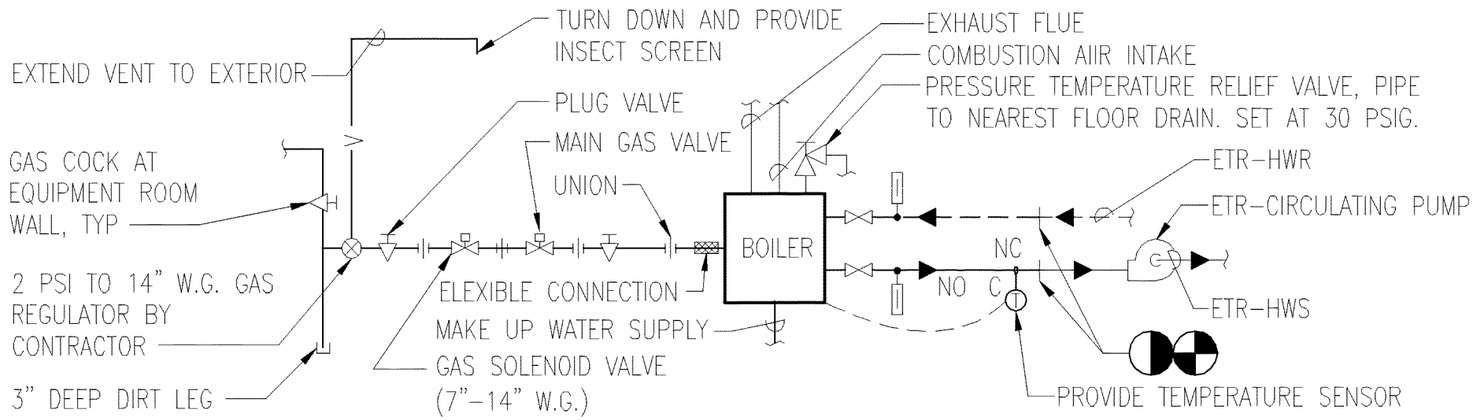
PIPING DIAGRAM NOTE (TYP FOR 3):
PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS AND DRAIN VALVES AT LOW POINTS.

RECORD DRAWING

DAM NECK ESPC - BOILER INSTALLATION

MECHANICAL DETAILS

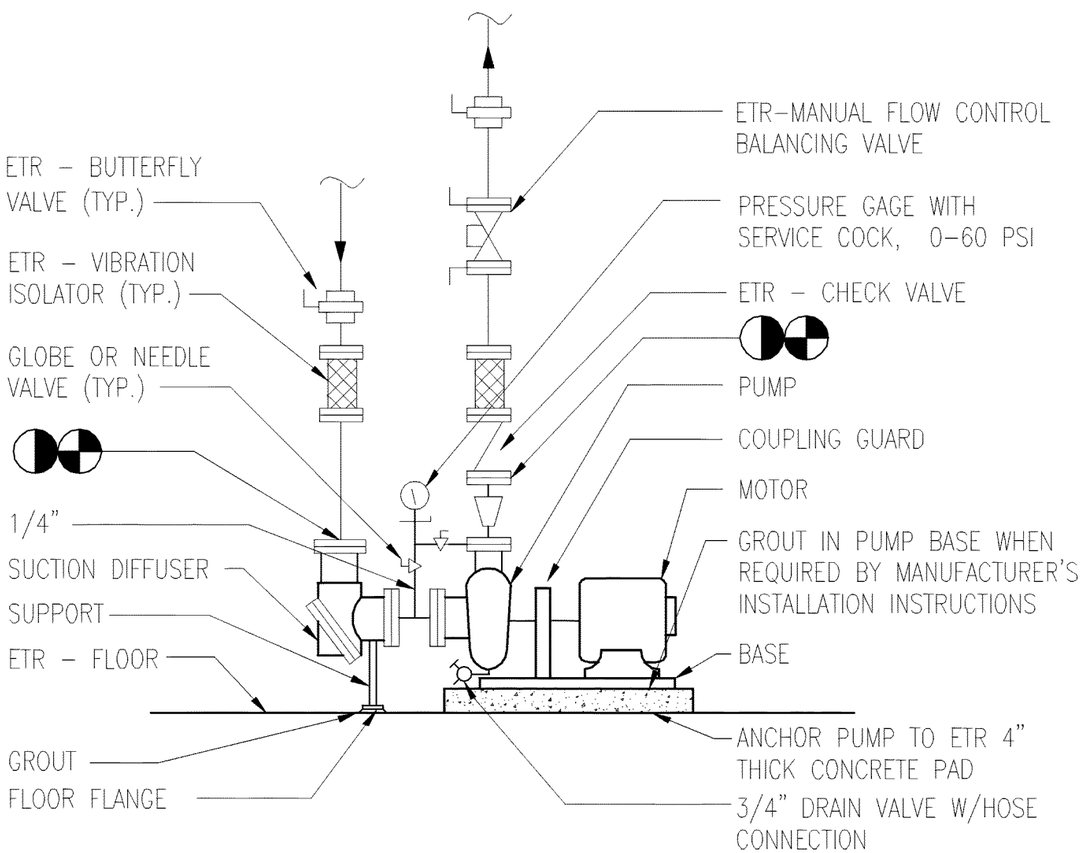
DES.: RAL	PACE COLLABORATIVE MECHANICAL ELECTRICAL PLUMBING	1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-499-7228 - FAX 757-301-6003	DATE: 03-14-07
DR.: MTF			SHEET: MG4
CK.: JMN			PACE JOB # 5280



NOTE:
PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS AND DRAIN VALVES AT LOW POINTS.

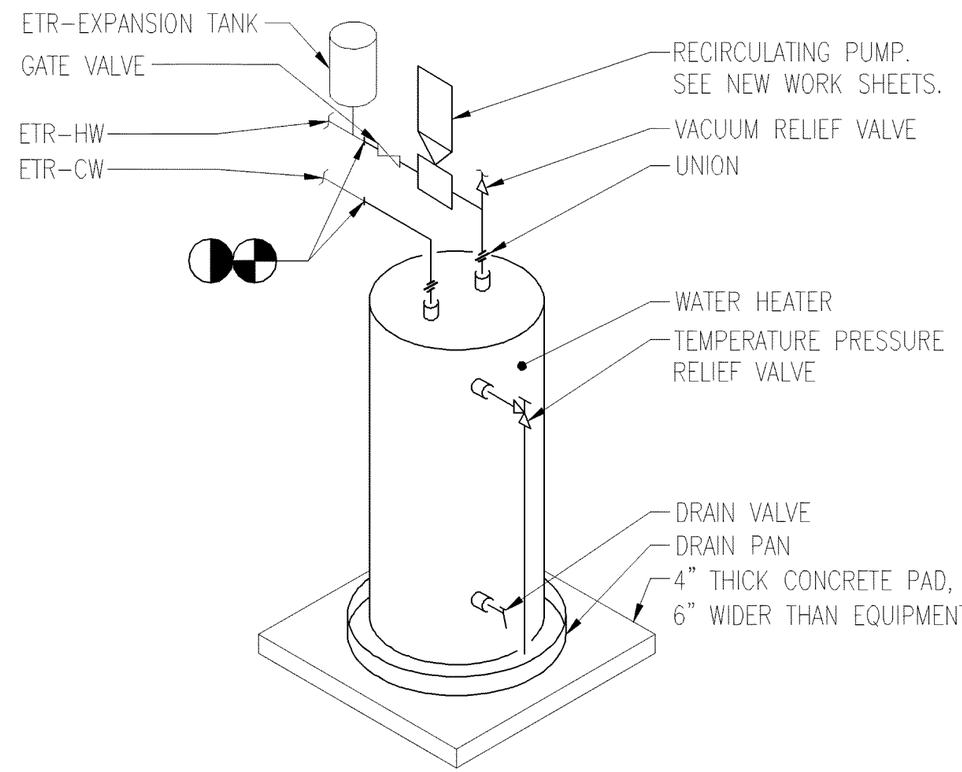
TYPICAL CONDENSING GAS HEATING HOT WATER PIPING DIAGRAM

NO SCALE



BASE MOUNTED CENTRIFUGAL PUMP DETAIL

NO SCALE

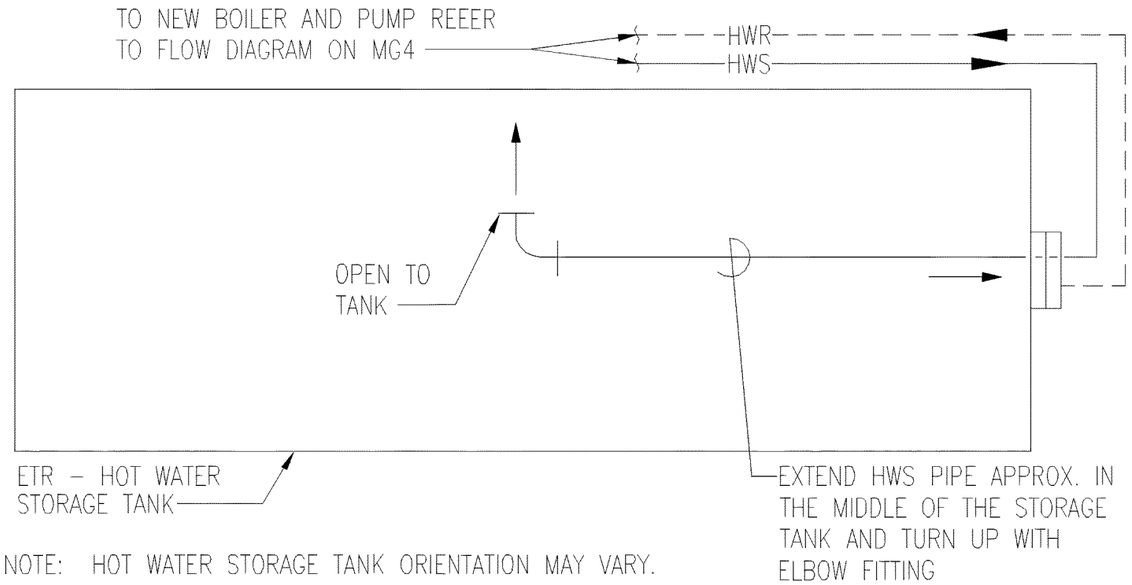


ELECTRIC DOMESTIC HOT WATER DETAIL

NOT TO SCALE

RECORD DRAWING

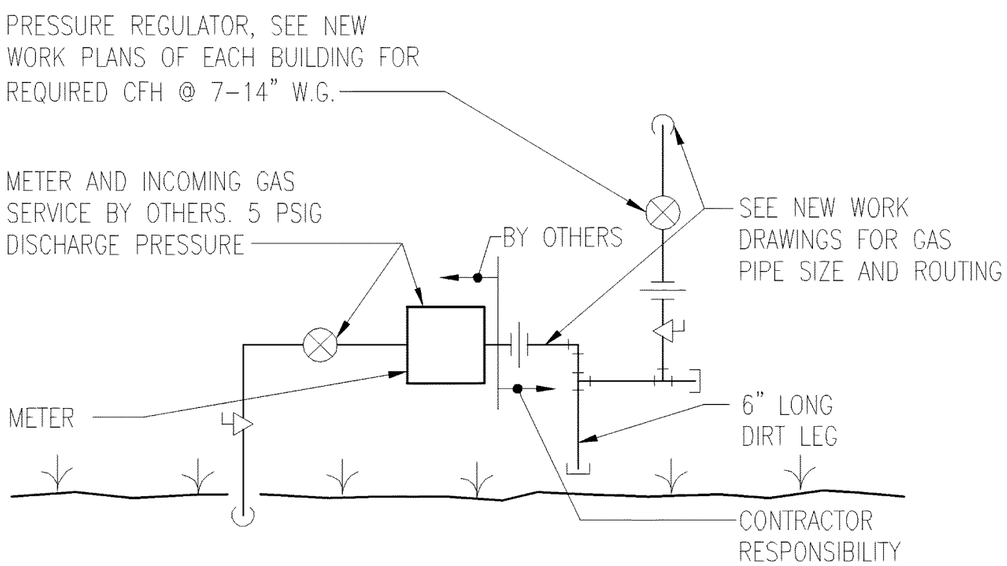
DAM NECK ESPC - BOILER INSTALLATION			
MECHANICAL DETAILS			
DES.: RAL	PACE COLLABORATIVE MECHANICAL ELECTRICAL PLUMBING 1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-499-7228 - FAX 757-301-6063	DATE: 03-14-07	
DR.: MTF		SHEET: MG5	
CK.: JMN		PACE JOB # 5280	



NOTE: HOT WATER STORAGE TANK ORIENTATION MAY VARY.

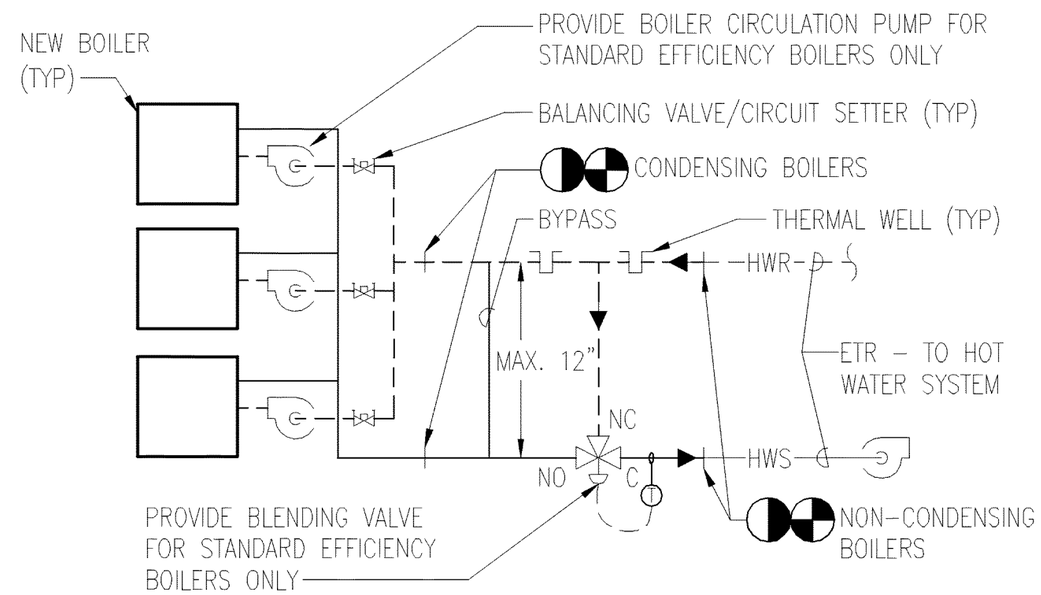
EXTENSION OF DISCHARGE PIPING FOR EXISTING HOT WATER STORAGE TANK

NO SCALE



GAS METER PIPING DIAGRAM

NO SCALE



TYPICAL MULTIPLE HW BOILER PIPING DIAGRAM

NO SCALE

RECORD DRAWING

DAM NECK ESPC – BOILER INSTALLATION			
MECHANICAL DETAILS			
DES.: RAL	PACE COLLABORATIVE MECHANICAL ELECTRICAL ENGINEERING	1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-490-7229 - FAX 757-201-6003	DATE: 03–14–07
DR.: MTF			SHEET: MG6
CK.: JMN			PACE JOB # 6280

OFCI BOILER SCHEDULE

TAG	LOCATION	TYPE	EFFICIENCY	FUEL	FIRING RATE (CFH)	INPUT (MBH)	OUTPUT (MBH)	BHP	GPM	STORAGE CAP. (GAL)	LBS/HR	LWT (°F)	EWT (°F)	ELEC RQMTS VOLTS	ELEC RQMTS PHASE	VENT LENGTH (FT)	NOTES
DHW-9	530	Condensing	93%	NG	905	905	841.7	25.1	16.8	SEE NOTES	N/A	140	40	120	1	20	2, 4, 5
B-19	530	Steam	85%	NG	1600	1600	1360.0	40.6	136.0	N/A	1401.8	N/A	N/A	120	1	20	3, 4, 6
B-20	530	Standard	85%	NG	1307	1307	1111.0	33.2	111.1	N/A	N/A	180	160	120	1	20	1, 4

NOTES:

1) PROVIDE HOT WATER BOILER WITH NATURAL GAS BURNER, MAINTENANCE ACCESS PANELS, SINGLE SIDE ACCESS, FLAME OBSERVATION, INTERMITTENT ELECTRONIC SPARK IGNITION, PRE AND POST PURGE, AND FLAME SAFEGUARD.
2) PROVIDE CONDENSING GAS FIRED BOILER WITH INTERMITTENT ELECTRONIC SPARK IGNITION, FLAME OBSERVATION, FLAME SAFE GUARD, PRE AND POST PURGE, AND MODULATION GAS TRAIN. PROVIDE COMBUSTION AIR ASSIST FAN IF REQUIRED BY MANUFACTURER.
3) PROVIDE LOW PRESSURE (15 PSIG) STEAM BOILER WITH ELECTRONIC INTERMITTENT SPARK IGNITION, FLAME OBSERVATION, FLAME SAFE GUARD PRE AND POST PURGE, MODULATING GAS TRAIN, AND MANUFACTURER'S BOILER SAFETY CONTROLS AND TRIM.
4) PROVIDE COMBUSTION AIR AND VENT MATERIALS COMPLETE. VENT LENGTH INDICATED IS NOT INCLUSIVE OF COMBUSTION AIR INTAKE AND SHOULD BE DOUBLED FOR CONDENSING UNITS.
5) EXISTING STORAGE TANK WILL BE REUSED. PROVIDE MANUFACTURER'S STANDARD PUMP AND CONTROL SYSTEM WITH FIELD INSTALLED CONTROLS.
6) PROVIDE STEAM BOILER CAPABLE OF SIDEWALL VENTING.

PUMP SCHEDULE

TAG NO.	BUILDING NO.	BOILER NO.	TYPE	GPM	HEAD (FT)	MOTOR H.P.	MOTOR VOLTAGE/PHASE	RPM	REMARKS
P-9	530	B-20	IN-LINE	111.1	10	1.0	120/1	1150	SEE NOTES

NOTES:

1. PROVIDE NON-OVERLOADING MOTOR SELECTION.

2. PROVIDE WITH MOTOR STARTER SIZED IN ACCORDANCE WITH NEMA RECOMMENDATIONS.

RECORD DRAWING

DAM NECK ESPC - BOILER INSTALLATION

MECHANICAL SCHEDULES

DES.: RAL
DR.: SDR
CK.: JMN

PACE COLLABORATIVE MECHANICAL ELECTRICAL ENGINEERS
1277 PERIMETER PKWY. - VIRGINIA BEACH, VA.
757-490-7229 - FAX 757-301-6063

DATE: 09-30-08
SHEET: MG7
PACE JOB # 6280

MECHANICAL SPECIFICATIONS

PART 1 – GENERAL

1.1 THE SCOPE OF THE WORK INCLUDES FURNISHING AND INSTALLING A FIRST CLASS WORKING MECHANICAL SYSTEM, TESTED AND READY FOR OPERATION, COMPLETE WITH LABOR, MATERIALS, APPARATUS, TRANSPORTATION AND TOOLS REQUIRED FOR THE INSTALLATION IN CONFORMANCE WITH DRAWINGS AND THESE SPECIFICATIONS.

1.2 ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH APPLICABLE CODES AND ORDINANCES.

1.3 THE CONTRACTOR SHALL GIVE ALL NOTICES, ARRANGE ALL INSPECTIONS, AND FULLY COORDINATE WITH THE ROICC.

1.4 THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID TO DETERMINE THE EXTENT OF THE WORK. LACK OF KNOWLEDGE OF EXISTING CONDITIONS WILL NOT BE CONSIDERED A BASIS FOR CHANGE ORDERS. PRIOR TO ORDERING EQUIPMENT, VERIFY THAT EQUIPMENT TO BE PROVIDED UNDER THIS CONTRACT IS ACCEPTABLE, CAN FIT INTO BLDG. AND ROOM. EXPENSE INCURRED BY THE CONTRACTOR, WHICH IN THE ENGINEER'S OPINION COULD HAVE BEEN AVOIDED BY THIS STEP, SHALL NOT BE A BASIS FOR CHANGE ORDERS.

1.5 THE CONTRACTOR SHALL DELIVFR AND INSTALL THE MECHANICAL MATERIALS AND EQUIPMENT COVERED BY THE PLANS AND SPECIFICATIONS TO THE OWNER COMPLETE AND IN FIRST CLASS CONDITION IN EVERY RESPECT. HE SHALL GUARANTEE THAT THE MATERIALS, EQUIPMENT AND WORKMANSHIP PROVIDED BY HIM SHALL BE ENTIRELY FREE FROM DEFECTS, AND THAT HE WILL REPAIR AND REPLACE AT HIS OWN EXPENSE AS MAY BE DIRECTED BY THE OWNER, ANY MATERIAL, EQUIPMENT OR WORKMANSHIP IN WHICH DEFECTS MAY DEVELOP. PROVIDE A WRITTEN WARRANTY FOR A PERIOD OF 12 MONTHS AGAINST DEFECTIVE WORKMANSHIP AND MATERIAL AFTER FINAL ACCEPTANCE AT NO ADDITIONAL COST TO THE OWNER.

1.6 FURNISH CERTIFIED RECORD OF WELDING QUALIFICATION TEST FOR EACH WELDER AND WELDING OPERATOR PRIOR TO BEGINNING WELDING OPERATIONS.

1.7 SUBMIT SIX COMPLETE COPIES OF MATERIAL AND EQUIPMENT SHOP DRAWINGS, TO THE ENGINEER, BEARING THE CONTRACTOR'S STAMP OF APPROVAL, PROPOSED FOR INSTALLATION, SHOP DRAWINGS SHALL SPECIFICALLY NOTE CAPACITIES AND IDENTIFY CONSTRUCTION AND MODELS FOR REVIEW: INCOMPLETE SUBMITTALS SHALL NOT BE REVIEWED.

1.8 SCOPE OF WORK INCLUDES REMOVAL OF EXISTING STEAM SYSTEMS; AND PARTIAL HOT WATER, LOW PRESSURE STEAM, DOMESTIC HOT WATER SYSTEM PIPING, MODIFICATION OF PIPING, AND PROVISION OF BOILERS; PUMPS; HOT WATER, STEAM, AND DOMESTIC HOT WATER SYSTEMS; CONTROLS; AND RELATED WORK.

PART 2 – PRODUCTS

2.1 DOMESTIC WATER HEATERS (NATURAL GAS)
REFER TO BOILER SCHEDULES. THE MAJORITY OF THE BOILER EQUIPMENT WILL BE FURNISHED BY TRANE AND INSTALLED BY THE CONTRACTOR. SEVERAL SMALL DOMESTIC WATER HEATERS SHALL BE PROVIDED BY THE CONTRACTOR AS SCHEDULED.

A. FURNISH AND INSTALL A UL LISTED AGA CERTIFIED, ENERGY EFFICIENT PER ASHRAE 90–A, GAS FIRED WATER HEATER OF TYPE, SIZE AND CAPACITY INDICATED. AS MANUFACTURED BY BRADFORD WHITE, STATE, A.O. SMITH OR APPROVED EQUAL. CAPACITY AS INDICATED ON THE DRAWINGS.

B. HEATER SHALL HAVE HEAVY STEEL JACKET, GLASS–LINED TANK, HEAVY DENSITY INSULATION, ADJUSTABLE THERMOSTAT WITH OVERLOAD PROTECTION AND MANUAL RESET, RELIEF VALVE TAPPING, AND MAGNESIUM ANODE. THANK SHALL BE TESTED AT 300 PSI WITH A WORKING PRESSURE OF 150 PSI. PROVIDE APPROVED TEMPERATURE AND PRESSURE RELIEF VALVE PIPED TO FLOOR DRAIN.

C. HEATER SHALL BE COVERED BY A 5 YEAR LIMITED WARRANTY AGAINST TANK FAILURE.

D. FURNISH AND INSTALL A DRAIN PAN UNDER WATER HEATER. DRAIN PAN SHALL BE NOT LESS THAN 1–1/2" DEEP AND SHALL BE OF SUFFICIENT SIZE AND SHAPE TO RECEIVE ALL DRIPPING OR CONDENSATE FROM THE TANK OR WATER HEATER. THE PAN SHALL BE DRAINED BY AN INDIRECT WASTE PIPE HAVING A MINIMUM DIAMETER OF 1 INCH OR THE OUTLET DIAMETER OF THE REQUIRED RELIEF VALVE WHICHEVER IS LARCER. THE PAN DRAIN SHALL EXTEND FULL SIZE AND TERMINATE OVER A SUITABLY LOCATED INDIRECT WASTE RECEPTOR, FLOOR DRAIN OR EXTEND TO THE EXTERIOR OF THE BUILDING AND TERMINATE NOT LESS THAN 6 INCHES NOR MORE THAN 24 INCHES ABOVE FINISHED GRADE.

2.2 DOMESTIC WATER HEATERS (ELECTRIC)
REFER TO BOILER SCHEDULES. THE MAJORITY OF THE BOILER EQUIPMENT WILL BE FURNISHED BY TRANE AND INSTALLED BY THE CONTRACTOR. SEVERAL SMALL DOMESTIC WATER HEATERS SHALL BE PROVIDED BY THE CONTRACTOR AS SCHEDULED.

A. STORAGE TANK TYPE: UL 174, ELECTRIC WATER HEATERS, GLASS–LINED STEEL TANKS, HIGH EFFICIENCY TYPE INSULATED WITH POLYURETHANE FOAM INSULATION, REPLACEABLE ANODES, CONFORMING TO ASHRAE 90A REQUIREMENTS, WITH ADJUSTABLE RANGE THERMOSTAT TO ALLOW HOT WATER SETTINGS BETWEEN 110 AND 160 DEGREES F OF SIZE AND CAPACITY AS SHOWN ON THE DRAWINGS, AS MANUFACTURED BY STATE OR APPROVED EQUAL. PROVIDE POSTED OPERATING INSTRUCTIONS FOR WATER HEATERS.

B. FURNISH AND INSTALL A DRAIN PAN UNDER WATER HEATER. DRAIN PAN SHALL BE NOT LESS THAN 1–1/2" DEEP AND SHALL BE OF SUFFICIENT SIZE AND SHAPE TO RECEIVE ALL DRIPPING OR CONDENSATE FROM THE TANK OR WATER HEATER. THE PAN SHALL BE DRAINED BY AN INDIRECT WASTE PIPE HAVING A MINIMUM DIAMETER OF 1 INCH OR THE OUTLET DIAMETER OF THE REQUIRED RELIEF VALVE WHICHEVER IS LARGER. THE PAN DRAIN SHALL EXTEND FULL SIZE AND TERMINATE OVER A SUITABLY LOCATED INDIRECT WASTE RECEPTOR, FLOOR DRAIN OR EXTEND TO THE EXTERIOR OF THE BUILDING AND TERMINATE NOT LESS THAN 6 INCHES NOT MORE THAN 24 INCHES ABOVE FINISHED GRADE.

RECORD DRAWING

DAM NECK ESPC – BOILER INSTALLATION

MECHANICAL SPECIFICATIONS

DES.: RAL	PACE COLLABORATIVE MECHANICAL ELECTRICAL ENGINEERS	1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-490-7229 - FAX 757-201-6063	DATE: 03-14-07
DR.: SDR			SHEET: MS1
CK.: JMN			

PACE JOB # 5280

MECHANICAL SPECIFICATIONS

PART 2 – PRODUCTS (CONTINUED)

2.3 PIPING

A. HEATING HOT WATER: ASTM A53, A120, STANDARD WEIGHT, BLACK. ASTM A234 BUTT–WELD FITTINGS (SIZES 2 1/2" AND LARGER); ANSI B16.4 MALLEABLE IRON THREADED FITTINGS (SIZES 2" AND SMALLER). FLANGES SHALL BE ASTM A105 CLASS 150 RAISED FACE, BUTT–WELD.

B. DOMESTIC HOT WATER PIPING : ASTM B88 TYPE "L" HARD COPPER TUBING; ANSI B16.22 CAST OR WROUGHT COPPER SOLDER FITTINGS WITH ASTM B32 TYPE 95–5 SOLDER.

C. STEAM PIPING: ASTM A53, A120 STANDARD WEIGHT, BLACK. ASTM A234 BUTT–WELD FITTINGS (SIZES 2 1/2" AND LARGER); ANSI B16.4 MALLEABLE IRON THREADED FITTINGS (SIZES 2" AND SMALLER). FLANGES SHALL BE ASTM A105 CLASS 150 RAISED FACE, BUTT–WELD.

D. STEAM CONDENSATE PIPING: ASTM A53, A120, SCHEDULE 80, BLACK. ASTM A234 BUTT–WELD FITTINGS (SIZES 2 1/2" AND LARGER); ANSI B16.4 MALLEABLE IRON THREADED FITTINGS (SIZES 2" AND SMALLER). FLANGES SHALL BE ASTM A105 CLASS 150 RAISED FACE, BUTT–WELD.

2.4 DESIGN OF PIPE SUPPORTING ELEMENTS SHALL BE IN ACCORD WITH ANSI B31.1. STEEL HANGERS SHALL BE FABRICATED IN ACCORD WITH THE REQUIREMENTS OF MSS SP–58. THE SELECTION AND APPLICATION OF PIPE HANGERS AND SUPPORTS SHALL BE IN ACCORD WITH MSS SP–69. STEEL ANGLES, CHANNELS, AND PLATE SHALL BE IN ACCORD WITH ASTM A36.

2.5 VALVES

A. BUTTERFLY: CAST IRON BODY, BRONZE DISC, RESILIENT REPLACEABLE LINER SEAT, TAPPED LUG BODY, CLASS 150. PROVIDE WITH LEVER LOCK HANDLE W/MEMORY STOP. MUELLER MODEL 56–ANK.

B. BALANCING: COMBINATION BALANCING AND SHUT–OFF TYPE (2" LINE SIZE AND SMALLER), BRASS CONSTRUCTION, 200 LB. WWP WITH QUICK CONNECTOR PRESSURE TAPS. PROVIDE WITH MEMORY STOP. METERING STATION (LINE SIZES 2 1/2" AND GREATER), CLAMP ON CAST IRON CONSTRUCTION, BRONZE BALL VALVE WITH BUILT–IN CHECK VALVES AND GASKETED CAPS.

C. GATE VALVES: BRONZE, 200 LB. WWP, NON–RISING STEM, INSIDE SGREW, DOUBLE WEDGE OR DISC, SCREWED ENDS. IRON BODY, CLASS 150, BRONZE TRIM, RISING STEM, O.S.&Y., SOLID WEDGE FLANGED ENDS. MILWAUKEE FIG. F–2885 (WATER), FIG. F–2894 (STEAM).

D. GLOBE VALVES: BRONZE, 200 LB. WWP, RISING STEM, INSIDE SCREW, RENEWABLE COMPOSITION DISC, SCREWED ENDS. MILWAUKEE FIG. 592.

E. CHECK VALVES: IRON BODY, CLASS 150, BRONZE TRIM, SWING DISC, RENEWABLE DISC AND SEAT, FLANGED ENDS. IRON BODY, CLASS 150, BRONZE TRIM, SPRING LOADED, RENEWABLE COMPOSITION DISC, FLANGED ENDS, MUELLER.

F. DRAIN VALVES: BRONZE, 200 LB. WWP, GOMPRESSION STOP WITH NIPPLE AND GAP OR HOSE THREAD.

G. STRAINERS: (WATER) MUELLER MODEL 761, 0.57" PERFORATIONS; (STEAM) MUELLER MODEL 761, 3/64" PERFORATIONS.

2.6 INSULATION

A. PROVIDE 1 1/2" THICK MOLDED FIBERGLASS INSULATION, 4.0 PCF, K = 0.25 @ 75 DEGREES F WITH SELF–SEALING LAP AND VAPOR BARRIER ON CHILLED WATER AND STEAM PIPING; PROVIDE PRE–INSULATED 25/50 FIRE–RATED PVC FITTINGS; SEAL ALL FITTINGS TO KEEP VAPOR BARRIER INTACT.

B. FINISH FITTINGS WITH 2 COATINGS OF SEALFAS COATING.

C. INSULATION ON STEAM CONDENSATE LINES SHALL BE SAME MATERIAL, 1" THICKNESS.

2.7 VIBRATION ISOLATION:

A. PROVIDE VIBRATION ISOLATION HANGERS, COMBINATION SPRING AND FIBERGLASS PAD, FOR IN–LINE PUMPS AND ADJACENT PIPING (ALL PIPING IN MECHANICAL ROOM), 1.00" MIN. STATIC DEFLEGTION.

2.8 PUMP

A. IN–LINE PUMP: CAST IRON CASING, SPLIT VOLUTE, SINGLE OR DOUBLE SUCTION, RATED FOR GREATER OF 150 PSI OR 1.25 TIMES ACTUAL WORKING DISCHARGE PRESSURE, RENEWABLE BRONZE WEARING RINGS, FLANGED SUCTION AND DISCHARGE. BRONZE IMPELLER, FULLY ENGLOSED, KEYED TO SHAFT. HIGH GRADE ALLOY STEEL SHAFT WITH STAINLESS STEEL SHAFT SLEEVES. OIL LUBRICATED ROLLER BEARINGS OR BALL BEARINGS WITH OIL RESERVOIRS. PROVIDE OIL SEAL AND INTEGRAL DIRT AND WATER SEAL AT EACH END OF RESERVOIR. CARBON SEALS ROTATING AGAINST A STATIONARY CERAMIC SEAT. MOTOR SHALL BE HIGH EFFICIENCY, OPEN DRIP PROOF. BELL & GOSSETT SERIES 60.

2.9 THERMOMETERS SHALL BE WEKSLER MODEL AA–5H–9; PRESSURE GAGES SHALL BE WEKSLER MODEL EA 13 W/SYPHON.

2.10 LOUVERS SHALL BEAR AMCA SEAL AND RATED IN AGCORDANGE WITH AMCA 500 AND 511. LOUVER SHALL HAVE A MINIMUM 35% FREE AREA. GONSTRUCTION SHALL BE ALUMINUM ALLOY WITH ANODIZED FINISH FRAMES AND BLADES WITH 0.5 INCH MESH ALUMINUM BIRD SCREEN MOUNTED IN EXTRUDED FRAME. FRAME SHALL MATCH AND FIT EXISTING OPENING.

2.11 DIELECTRIC FITTINGS SHALL BE USED WHERE COPPER PIPE IS CONNECTED TO DISSIMILAR METAL.

RECORD DRAWING

DAM NECK ESPC – BOILER INSTALLATION			
MECHANICAL SPECIFICATIONS			
DES.: RAL	PACE COLLABORATIVE MECHANICAL ELECTRICAL SUBMERGE	1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-499-7228 - FAX 757-301-6003	DATE: 03–14–07
DR.: SDR			SHEET: MS2
CK.: JMN			PACE JOB # 6280

MECHANICAL SPECIFICATIONS

PART 3 – EXECUTION

3.1 COORDINATE WORK CLOSELY WITH OTHER TRADES AND DAM NECK BASE PERSONNEL.

3.2 INSTALL INSULATION AFTER TESTING IS COMPLETE.

3.3 THE EXACT LOCATION OF PIPES WILL BE DETERMINED BY THE CONTRACTOR AETER THE WORKING PLANS ARE MADE TO AVOID INTERFERENCE WITH EXISTING DUCTS, LIGHTING FIXTURES AND PIPING.

3.4 THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR, AND BE REQUIRED TO MAKE GOOD AT HIS OWN EXPENSE, ANY AND ALL DAMAGES TO ANY WORK OR MATERIALS IN PLACE ON THE PREMISES, OR INCLUDED IN THIS CONTRACT, DURING THE EXECUTION OF HIS CONTRACT. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN–UP OF OCCUPIED SPACE AT THE COMPLETION OE EACH WORK PERIOD, COMPLETING CLEAN–UP IN TIME TO NOT CAUSE INTERFERENCE WITH KITCHEN OPERATION.

3.5 PROVIDE ALL MATERIALS, TOOLS, LABOR, AND OTHER RELATED ITEMS TO COMPLETE ALL WORK, INCLUDING CONNECTIONS TO ALL EQUIPMENT IN ACCORDANCE WITH THE BOCA BASIC MECHANICAL CODES.

3.6 BEFORE FINAL ACCEPTANCE OF THE WORK, TEST EACH SYSTEM AS IN SERVICE TO DEMONSTRATE COMPLIANCE WITH TESTING AS SPECIFIED IN THE BOCA BASIC MECHANICAL CODE.

3.7 WIRING AND ELECTRICAL EQUIPMENT FROM SOURCE UP TO AND INCLUDING JUNCTION BOX OR CIRCUIT BREAKER SHALL BE BY ELECTRICAL CONTRACTOR. POWER WIRING FROM JUNCTION BOX, DISCONNECT SWITCH OR CIRCUIT BREAKER INCLUDING CONTROL WIRING AND FINAL CONNECTIONS SHALL BE BY MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL PROVIDE INDIVIDUAL COMPONENT FUSIBLE PROTECTION FOR EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S NAMEPLATE.

3.8 EQUIPMENT WHICH IS REQUIRED BY CODE OR IS SPECIFIED TO HAVE UL OR SIMILAR LISTING, SHALL BE INSTALLED AS REQUIRED TO MEET THAT LISTING.

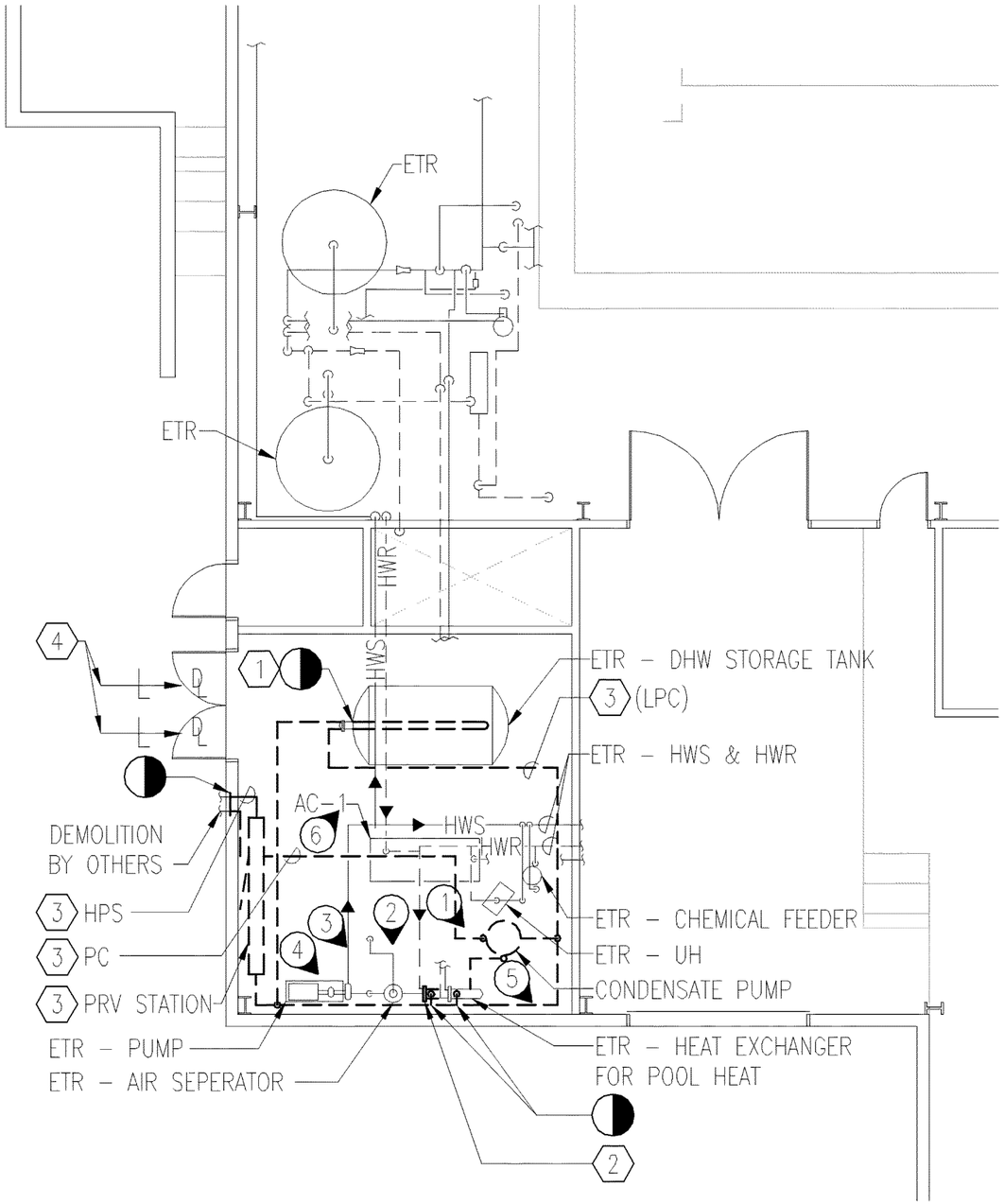
3.9 BALANCE PIPING SYSTEMS RELATED TO SCOPE OF WORK. BALANCE REPORTS SHALL BE FURNISHED TO THE ENGINEER FOR REVIEW AND APPROVAL. REPORT FORMAT AND PROCEDURE SHALL BE IN ACCORDANCE WITH AABC OR NEEB REQUIREMENTS.

3.10 ALL WATER PIPING SHALL BE STERILIZED IN ACCORDANCE WITH THE AMERICAN WATER WORKS ASSOCIATION, AWWA C651, AND AS REQUIRED BY THE LOCAL HEALTH BOARD.

3.11 BEFORE FINAL ACCEPTANCE OF THE WORK, TEST EACH SYSTEM AS IN SERVICE TO DEMONSTRATE COMPLIANCE WITH TESTING AS SPECIFIED IN THE 2003 INTERNATIONAL PLUMBING CODE.

RECORD DRAWING

DAM NECK ESPC – BOILER INSTALLATION			
MECHANICAL SPECIFICATIONS			
DES.: RAL	PACE COLLABORATIVE MECHANICAL ELECTRICAL ENGINEERS	1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-499-7220 - FAX 757-301-6003	DATE: 03–14–07
DR.: SDR			SHEET: MS3
CK.: JMN			PACE JOB # 5280



MECHANICAL DEMOLITION PLAN – BLDG. 530

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

DEMOLITION NOTES

(1) GENERAL NOTES ON MG1 APPLY TO DEMOLITION WORK. REFER TO MG1 FOR ADDITIONAL GENERAL NOTES.

⟨1⟩ REMOVE STEAM TO DHW HEAT EXCHANGER FROM DHW TANK. REMOVE STEAM AND CONDENSATE PIPING INSULATION AND HANGERS COMPLETE. DHW TANK TO BE REUSED AS DHW STORAGE TANK. REFER TO PHOTO SHEETS FOR POINTS OF DEMOLITION. (PRIORITY 1)

⟨2⟩ REMOVE STEAM TO HEATING HOT WATER HEAT EXCHANGER, SUPPORTS, MOUNTINGS, AND ASSOCIATED PIPING, INSULATION, HANGERS AND SUPPORTS COMPLETE. REFER TO PHOTO SHEETS FOR POINTS OF DEMOLITION. (PRIORITY 2)

⟨3⟩ REMOVE HPS, PC, PRESSURE REDUCING STATION, LPS, LPC, INSULATION, HANGERS AND SUPPORTS COMPLETE.

⟨4⟩ REMOVE EXISTING DOOR LOUVERS AND SUPPORTS COMPLETE.

RECORD DRAWING

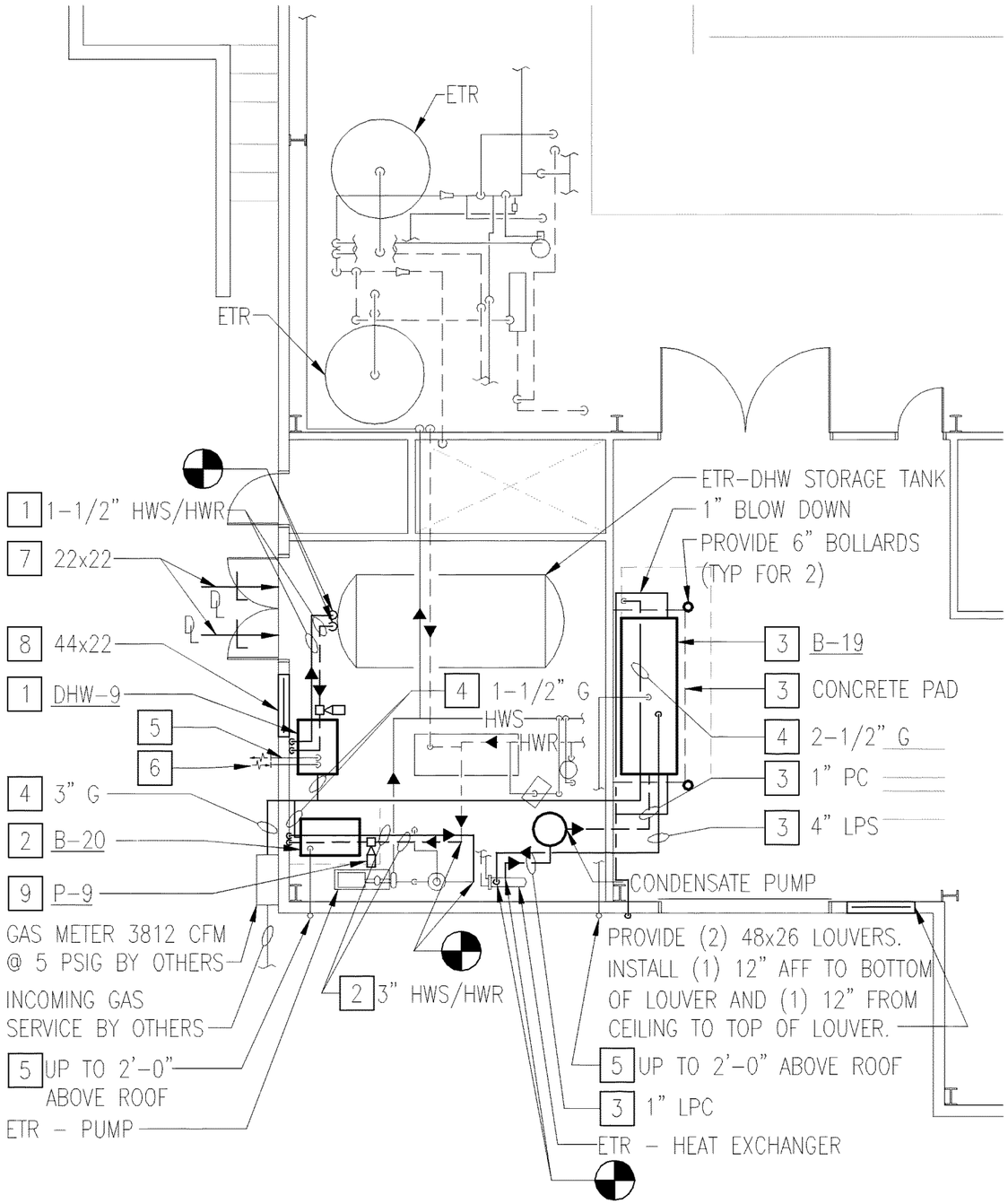
GRAPHICS SCALE

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

DAM NECK ESPC – BOILER INSTALLATION

MECHANICAL DEMOLITION PLAN – BLDG. 530

DES.: RAL	PACE COLLABORATIVE MECHANICAL ELECTRICAL ENGINEERING	1277 PERIMETER PKWY. - VIRGINIA BEACH, VA 757-499-7229 - FAX 757-391-9089	DATE: 09-30-08
DR.: MTF			SHEET: MD1
CK.: JMN			PACE JOB # 5280



MECHANICAL NEW WORK - BLDG. 530

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

NEW WORK NOTES

(1) GENERAL NOTES ON MG1 APPLY TO NEW WORK. REFER TO MG1 FOR ADDITIONAL GENERAL NOTES.

1. INSTALL OFCI DHW BOILER COMPLETE. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES. PROVIDE PIPING, CIRCULATION PUMP, INSULATION, VALVE WORK, HANGERS, AND SUPPORTS COMPLETE AND CONNECT TO EXISTING STORAGE TANK. SEE DETAILS FOR CONNECTIONS TO EXISTING STORAGE TANK. PROVIDE CONCRETE PAD. (PRIORITY 1)

2. INSTALL OFCI HOT WATER BOILER COMPLETE. PROVIDE PIPING, INSULATION, HANGERS, SUPPORTS, VALVE WORK, AND FITTINGS COMPLETE TO CONNECT TO EXISTINC HW SYSTEM. PROVIDE CONCRETE PAD. (PRIORITY 1)

3. INSTALL OFCI STEAM BOILER COMPLETE. PROVIDE STEAM AND CONDENSATE PIPING, INSULATION, HANGERS, SUPPORTS AND VALVE WORK COMPLETE. PROVIDE CONCRETE PAD. (PRIORITY 1)

4. PROVIDE NATURAL GAS PIPING, HANGERS, AND SUPPORTS COMPLETE.

5. INSTALL OFCI BOILER VENT, HANGERS, AND SUPPORTS COMPLETE PER MANUFACTURER'S RECOMMENDATIONS. ROUTE VENT AS CLOSE TO CEILING AS POSSIBLE. TERMINATE EXHAUST A MINIMUM OF 2'-0" ABOVE THE ROOF AND 10'-0" HORIZONTALLY FROM ANY INTAKE VENT.

6. INSTALL OFCI BOILER COMBUSTION AIR VENT, HANGERS, AND SUPPORTS COMPLETE PER MANUFACTURER'S RECOMMENDATIONS. ROUTE VENT AS CLOSE TO CEILING AS POSSIBLE. TERMINATE INTAKE A MINIMUM OF 2'-0" BELOW ANY EXHAUST VENT.

7. PROVIDE DOOR LOUVERS FOR BOILER COMBUSTION AIR. INSTALL 12" AFF TO BOTTOM OF DOOR LOUVER. SIZE AS INDICATED.

8. PROVIDE HIGH SIDE WALL LOUVER FOR BOILER COMBUSTION AIR. INSTALL 12" FROM CEILING TO TOP OF LOUVER. SIZE AS INDICATED.

9. PROVIDE 3-WAY HW RESET VALVE, INLINE PUMP AND 3" HWS/HWR PIPING HANGERS AND SUPPORTS COMPLETE. REFER TO DETAILS. RESET VALVE NOT SHOWN FOR CLARITY.

RECORD DRAWING

GRAPHICS SCALE

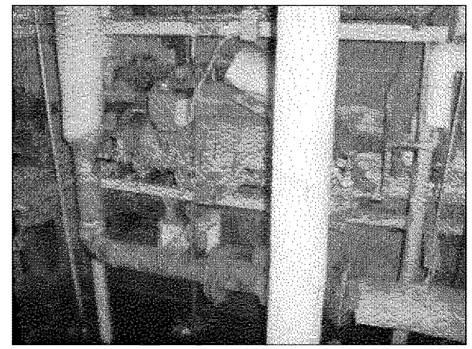
1/8" = 1'-0" 5' 0' 5' 10' 20'

DAM NECK ESPC - BOILER INSTALLATION

MECHANICAL NEW WORK - BLDG. 530

DES.: RAL	PACE COLLABORATIVE MECHANICAL ELECTRICAL ENGINEERS	1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-499-7229 - FAX 757-321-6003	DATE: 09-30-08
DR.: MTF			SHEET: MN1
CK.: JMN			PACE JOB # 6280

1 BLDG. 530
NOT TO SCALE



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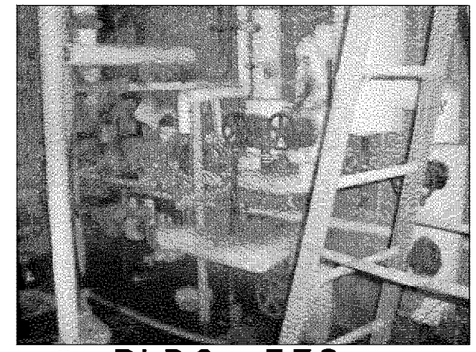

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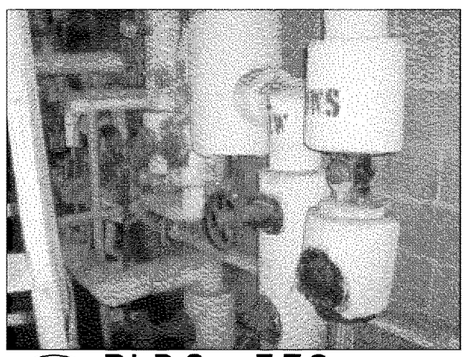

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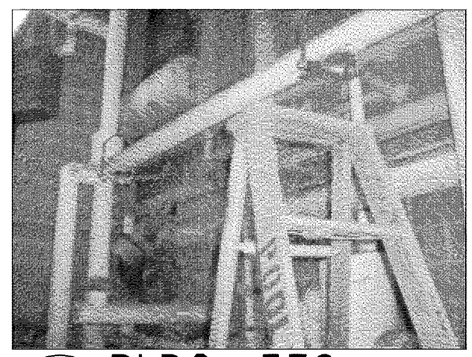

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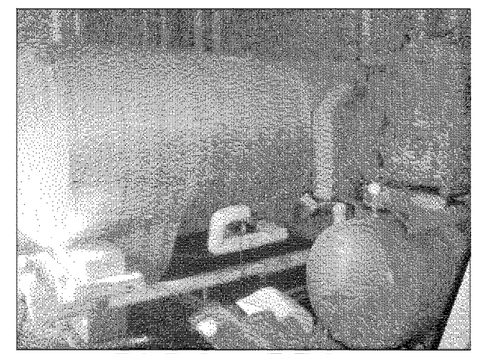


6 BLDG. 530
NOT TO SCALE

RECORD DRAWING

DAM NECK ESPC – BOILER INSTALLATION			
MECHANICAL PHOTOS			
DES.: RAL	PACE COLLABORATIVE MECHANICAL ELECTRICAL ENGINEERS	1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-499-7229 - FAX 757-391-6003	DATE: 09-30-08
DR.: MTF			SHEET: MP1
CK.: JMN			PACE JOB # 5280

ELECTRICAL DEMOLITION NOTES

GENERAL: DEMOLITION DRAWINGS ARE BASED ON EXISTING PLANS AND FIELD INVESTIGATION PRIOR TO DEMOLITION. VISIT THE EXISTING BUILDING PRIOR TO BID IN ORDER TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND IN ORDER TO AVOID CONFLICTS.

DASHED ITEMS: ALL ITEMS SHOWN DASHED ON DEMOLITION PLANS ARE EXISTING AND SHALL BE REMOVED.

SOLID ITEMS: ALL ITEMS SHOWN SOLID ON DEMOLITION PLANS ARE EXISTING TO REMAIN.

CIRCUITING TO REMAIN: EXISTING CIRCUITING TO REMAIN SHALL BE REROUTED OR RECONNECTED, AS REQUIRED, WHERE AFFECTED BY NEW WORK IN ORDER TO MAINTAIN CONTINUITY OF THE CIRCUIT.

EXISTING CONDUIT: ALL EXISTING CONDUITS AND WIRING THAT WILL NOT BE REUSED SHALL BE REMOVED WHERE THEY WILL BE EXPOSED UPON COMPLETION OF NEW WORK. EXISTING CONDUIT TO REMAIN CONCEALED IN WALLS SHALL BE ABANDONED. EXISTING CONDUIT TO REMAIN BELOW FLOOR SLAB SHALL BE CUT OFF ONE INCH BELOW ROUGH FLOOR AND GROUTED FLUSH. ALL EXISTING WIRING IN CONDUITS TO BE ABANDONED SHALL BE DISCONNECTED FROM POWER SOURCE AND REMOVED.

REPAIR DAMAGE: EXERCISE CARE IN REMOVAL OF DEMOLITION ITEMS. REPAIR, AT NO ADDITIONAL COST TO THE OWNER, ANY DAMAGE CAUSED TO EXISTING CONSTRUCTION AND/OR EQUIPMENT TO REMAIN.

ASSOCIATED APPURTENANCES: REMOVE ALL ELECTRICAL APPURTENANCES (DISCONNECTS, STARTERS, WIRING, CONDUIT, ETC.) ASSOCIATED WITH EQUIPMENT TO BE REMOVED BY OTHERS.

KNOCKOUT PLUGS AND COVERS: ALL CONDUIT REMOVED SHALL BE REMOVED IN ITS ENTIRETY, INCLUDING FITTINGS, MOUNTING DEVICES, MOUNTING HARDWARE, ETC. PROVIDE CONDUIT PLUGS AND BLANKS FOR ALL OPENINGS CREATED BY THE REMOVAL OF CONDUIT. PROVIDE BLANK COVER PLATES FOR ALL OPENED OUTLET BOXES CREATED BY THE REMOVAL OF EQUIPMENT AND/OR DEVICES.

DEMOLISHED MATERIALS: ALL MATERIALS REMOVED UNDER DEMOLITION, NOT TO BE RELOCATED OR DESIGNATED TO BE TURNED OVER TO THE OWNER, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED COMPLETELY FROM THE SITE.

SCHEDULE OUTAGES: ALL WORK AND ALL POWER OUTAGES IN THE EXISTING BUILDING SHALL BE SCHEDULED AT TIMES CONVENIENT TO OWNER.

NOTIFICATION: NOTIFY THE OWNER PRIOR TO TURNING OFF ANY CIRCUITS.

GENERAL ELECTRICAL NOTES

GENERAL: UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL WORK SHOWN ON ELECTRICAL DRAWINGS IS NEW WORK TO BE PROVIDED UNDER THIS CONTRACT.

COORDINATION: COORDINATE AND COOPERATE WITH ALL TRADES ON THE PROJECT.

AS-BUILT DRAWINGS: SECURE AN EXTRA SET OF ELECTRICAL DRAWINGS TO BE KEPT ON SITE AND MARK, DAILY, THE DRAWINGS IN RED AS THE PROJECT PROGRESSES IN ORDER TO KEEP AN ACCURATE RECORD OF ALL DEVIATIONS BETWEEN THE WORK SHOWN ON THE DRAWINGS AND THE WORK WHICH IS ACTUALLY INSTALLED. THESE MARKED DRAWINGS SHALL REFLECT ANY AND ALL CHANGES AND REVISIONS TO THE ORIGINAL DESIGN WHICH EXISTS IN THE COMPLETED WORK. DELIVER THE MARKED DRAWINGS TO THE ENGINEER AT PROJECT CLOSE-OUT.

TESTS: TEST ALL WIRING FOR CONTINUITY AND GROUNDS BEFORE CONNECTING ANY FIXTURES OR DEVICES. PERFORM INSULATION RESISTANCE TESTS ON ALL WIRING #8 OR LARGER TO INSURE THAT ALL PORTIONS ARE FREE FROM SHORT-CIRCUITS AND GROUNDS.

INSPECTIONS: ARRANGE ALL NECESSARY INSPECTIONS. DELIVER ALL REQUIRED INSPECTION CERTIFICATES TO THE OWNER.

GROUNDING: PROVIDE GROUNDING IN ACCORDANCE WITH THE NEC INCLUDING EQUIPMENT FRAMES CONDUITS, SWITCHES, CONTROLLERS, WIRE-WAYS, NEUTRAL CONDUCTORS, AND OTHER EQUIPMENT. PROVIDE A GROUNDING CONDUCTOR IN ALL POWER CONDUITS.

LABELS: PROVIDE LABELS FOR ALL PANELBOARDS, CABINETS, SAFETY SWITCHES, MOTOR-DISCONNECT SWITCHES, AND MOTOR CONTROLLERS. LABELS SHALL BE MACHINE ENGRAVED, LAMINATED PLASTIC, PERMANENTLY ATTACHED WITH SELF-TAPPING SCREWS OR RIVETS. DO NOT USE SELF-ADHESIVE LABELS.

J-BOX LABELING: LABEL ALL JUNCTION BOXES WITH PERMANENT MARKER IDENTIFYING CIRCUIT NUMBER AND PANELBOARD OF CIRCUITS WITHIN.

PANEL DIRECTORY: PROVIDE MODIFIED TYPEWRITTEN PANELBOARD DIRECTORY CARD IN EACH PANELBOARD WITH CIRCUIT LOAD INFORMATION AND ROOM NUMBER CLEARLY IDENTIFIED.

MOTOR COORDINATION: MOTORS, MOTOR STARTERS, CONTROLLERS, INTEGRAL DISCONNECT SWITCHES, AND CONTACTORS SHALL BE PROVIDED WITH THEIR RESPECTIVE PIECES OF EQUIPMENT BY THE EQUIPMENT SUPPLIER. COMMUNICATE WITH THE TRADES PROVIDING THE EQUIPMENT, VERIFYING ALL REQUIREMENTS, PROVIDE ALL ELECTRICAL CONNECTIONS REQUIRED THEREIN, AND INSTALL MOTOR STARTERS.

MOTOR DISCONNECTS: ALL MOTORS SHALL HAVE DISCONNECTING MEANS.

MOTOR FUSE PROTECTION: WHERE FUSE PROTECTION IS SPECIFICALLY REQUIRED BY THE EQUIPMENT MANUFACTURER, PROVIDE FUSED SWITCHES IN LIEU OF NON-FUSED SWITCHES OR IN LIEU OF ENCLOSED CIRCUIT BREAKERS, OR OTHER DEVICES INDICATED.

CONNECTION DETAILS: SECURE APPROVED SHOP DRAWINGS SHOWING WIRING DIAGRAMS, ROUGH-IN AND HOOK UP DETAILS FROM OTHER INVOLVED CONTRACTORS FOR EQUIPMENT WHICH MUST BE CONNECTED ELECTRICALLY.

CONNECTION DETAILS: MECHANICAL EQUIPMENT WILL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. THE LOCATIONS SHOWN ON THE ELECTRICAL DRAWINGS ARE APPROXIMATE. COORDINATE WITH THE MECHANICAL CONTRACTOR TO DETERMINE THE EXACT LOCATION OF EACH PIECE OF EQUIPMENT AND DETERMINE THE EXACT ROUGH-IN AND CONNECTION REQUIREMENTS.

WORKING CLEARANCE: COORDINATE FINAL LOCATIONS OF ELECTRICAL EQUIPMENT WITH MECHANICAL DUCTWORK, PIPING ETC. AND ASSURE WORKING CLEARANCE REQUIRED BY N.E.C. WILL BE MET.

STARTER MOUNTING: WHERE AN INDIVIDUALLY MOUNTED SAFETY SWITCH, STARTER OR CIRCUIT BREAKER IS SHOWN ADJACENT TO ITS RESPECTIVE LOAD AND NOT MOUNTED ON A WALL, PROVIDE ALL SUPPORTS, BRACKETS, ANCHORING, ETC. NECESSARY TO PROPERLY SUPPORT THE DEVICE.

MOUNTING HEIGHTS: MOUNTING HEIGHTS INDICATED ARE FROM THE FINISHED FLOOR TO THE CENTERLINE OF THE WIRING DEVICE UNLESS OTHERWISE NOTED.

FIRE PROOFING: FOR ANY WALL OR FLOOR PENETRATIONS THROUGH FIRE-RATED STRUCTURES PROVIDE FIRE-PROOFING TO SEAL ALL THE PENETRATIONS AFTER THE CONDUIT HAS BEEN INSTALLED. FIRE PROOFING FOR PENETRATIONS SHALL BE UL APPROVED PER THE PENETRATION MADE IN ORDER TO MAINTAIN FIRE-RATED INTEGRITY OF THE STRUCTURE.

CLEAN UP: ON PROJECT CLOSE-OUT CLEAN ALL ELECTRICAL DEVICES, LIGHTING FIXTURES, LAMPS AND LENSES, AND REMOVE ALL PAINT SPATTERS FROM DEVICES, FIXTURES AND PLATES. REPLACE ALL INOPERATIVE LAMPS.

ELECTRICAL LEGEND

POWER

(E)	EQUIPMENT CONNECTION
(J)	JUNCTION BOX
	MOTOR CONNECTION
SM	MOTOR RATED SWITCH WITH THERMAL OVERLOADS (SIZE AS REQUIRED) 20A, 120V, UON, MOUNTED WITHIN SITE OF MOTOR.
	SAFETY SWITCH, 60A-3P, FU @ 30A, 3R SWITCH RATING NUMBER OF POLES FUSE RATING (NF INDICATES NON-FUSED) NEMA ENCLOSURE IF OTHER THAN NEMA 1
⊠	MAGNETIC MOTOR STARTER, MOUNT WITHIN SITE OF MOTOR 5'-0" AFF MAX, UON.
	ELECTRICAL PANELBOARD (AS NOTED)
AND	ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR AND 1 #12 GROUNDING CONDUCTOR IN 1/2" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 1/2" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.

GENERAL

1	NEW WORK NOTE SYMBOL
1	DEMOLITION NOTE SYMBOL

ABBREVIATIONS

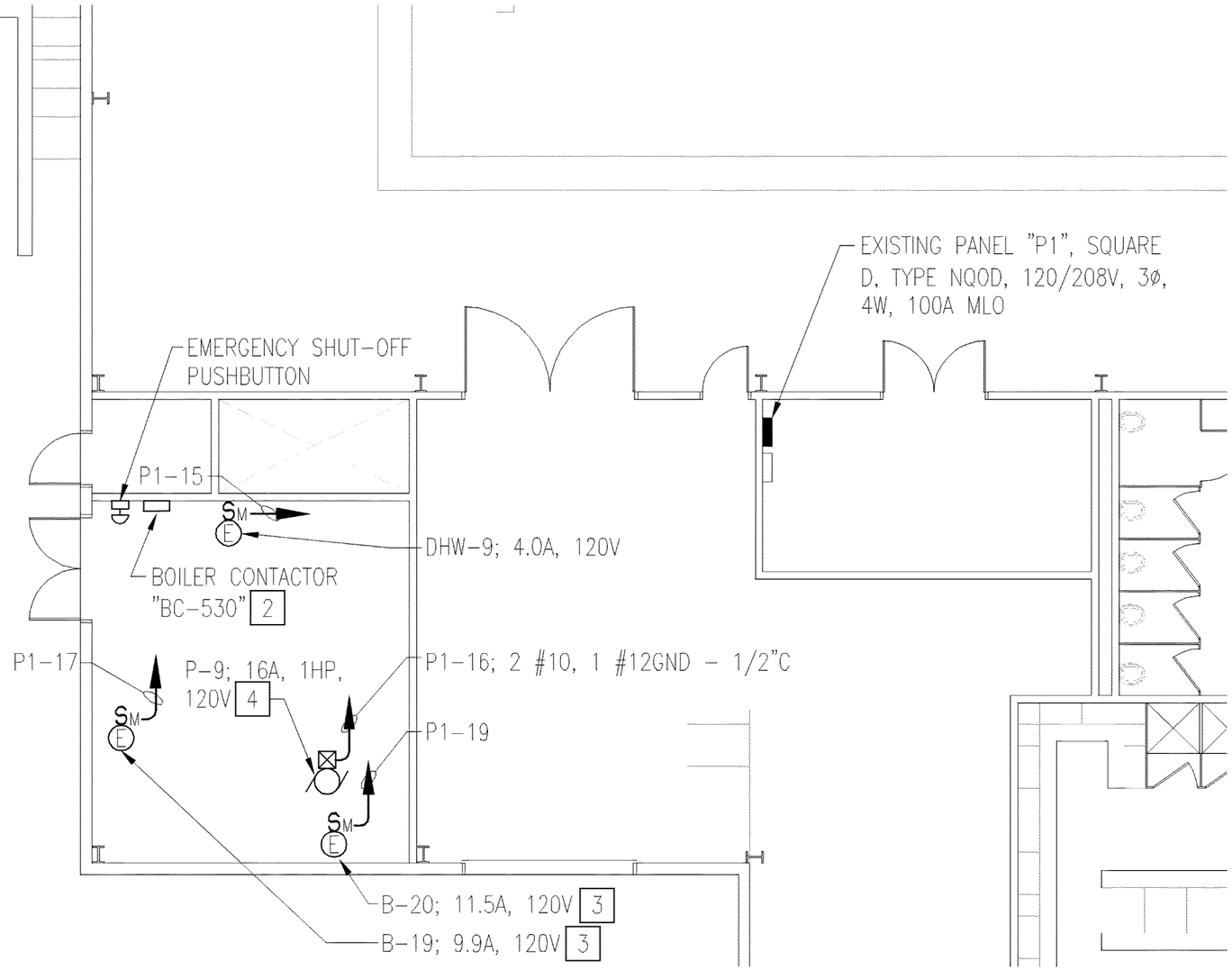
A	AMPERE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
C	CONDUIT
CKT	CIRCUIT
CB	CIRCUIT BREAKER
EQUIP	EQUIPMENT
ETR	EXISTING TO REMAIN
EXIST	EXISTING
FHP	FRACTIONAL AC HORSEPOWER
FLA	FULL LOAD AMPS
GND	GROUND
KW	KILO-WATTS
MFR	MANUFACTURER
MLO	MAIN LUGS ONLY
MTD	MOUNTED
NEC	NATIONAL ELECTRICAL CODE
NF	NON-FUSED
NTS	NOT TO SCALE
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
P	POLE
PNL	PANEL
ϕ	PHASE
REQ'D	REQUIRED
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VOLT(S)

RECORD DRAWING

DAM NECK ESPC - BOILER INSTALLATION

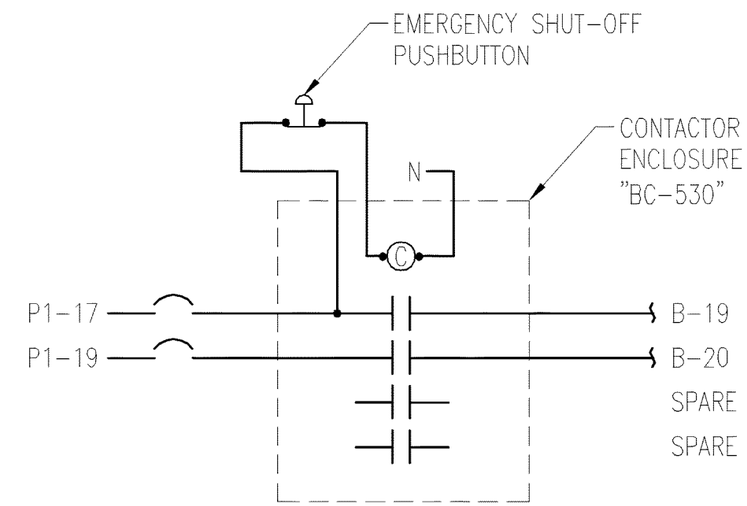
ELECTRICAL LEGEND, ABBREVIATIONS, AND NOTES

DES.: TJW	PACE COLLABORATIVE MECHANICAL ELECTRICAL ENGINEERS	1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-490-7229 - FAX 757-301-6063	DATE: 09-30-08
DR.: BAB			SHEET: E1
CK.: JSB			PACE JOB # 6280



ELECTRICAL NEW WORK PLAN - BLDG. 530

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



BOILER CONTACTOR WIRING DIAGRAM

NO SCALE

NEW WORK NOTES (THIS SHEET)

1. PROVIDE AND INSTALL CIRCUIT BREAKERS IN EXISTING SPACES AT PANEL "P1" AS FOLLOWS:
   - (1) 20A-1P, DHW-9
   - (1) 20A-1P, B-19
   - (1) 20A-1P, B-20
   - (1) 30A-1P, (P-9)
2. PROVIDE 4-POLE CONTACTOR WITH 120VAC COIL, NEMA 3R ENCLOSURE. CONTACTS SHALL BE FULLY RATED AT 20A.
3. HOMERUN VIA CONTACTOR "BC-530"
4. COORDINATE CONNECTION AND CONTROL OF PUMP WITH MECHANICAL EQUIPMENT.

RECORD DRAWING

GRAPHICS SCALE

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

DAM NECK ESPC - BOILER INSTALLATION

ELECTRICAL NEW WORK PLAN - BLDG. 530

DES.: TJW	PACE COLLABORATIVE MECHANICAL ELECTRICAL ENGINEERS 1277 PERIMETER PKWY. - VIRGINIA BEACH, VA. 757-499-7229 - FAX 757-321-6003	DATE: 09-30-08
DR.: BAB		SHEET: E2
CK.: JSB		PACE JOB # 5280

Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

ATTACHMENT 6.3 – Dam Neck Bldg. 530 DDC As Built Record Drawings

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

AUTOMATIC TEMPERATURE CONTROL SYSTEM FOR

DAM NECK ANNEX

BLDG. 530

Bucher Hall/Natatorium

VIRGINIA BEACH, VA

TRANE®

AS BUILT
9/16/08

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FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
TITLE PAGE

NO.	REVISION	DATE:	BY:
3			
2			
1			

SALESPERSON:	DESIGNED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

PROJECT:
DAM NECK ANNEX
BLDG. 530
6/16/08

DAMUTH TRANE
1100 CAVALIER BLVD.
CHESAPEAKE, VA 23323
757-558-0200

PROJECT NUM.
07.1385L

DRAWING NUM.
1

INDEX OF CONTROL SYSTEM DRAWINGS				
DRAWING NUMBER	DRAWING TITLE	REVISION LEVEL	REVISION DATE	COMMENTS
1	TITLE PAGE			
2	DRAWING INDEX			
3	GENERAL NOTES			
4	GENERAL NOTES 2			
5	BCU COMM RISER	MISC REVISIONS	4/21/2009	
6	DNA BLDG 530 BMTX - 8 WIRING DETAIL	MISC REVISIONS	4/21/2009	
7	BOILER B-19 (BLDG. 530) FLOW	MISC REVISIONS	4/21/2009	
8	BOILER B-20 (BLDG. 530) FLOW	MISC REVISIONS	4/21/2009	
9	DNA BLDG 530 BOILER B-19, B-20 MP581- BOILER WIRING DETAIL			
10	HEATING/VENTILATING UNIT H&V-1FLOW DIAGRAM			
11	HEATING/VENTILATING UNIT H&V-2 FLOW DIAGRAM			
12	530 H&V UNIT-01,02 MP581- 2 WIRING DETAIL 2			
13	HEATING/VENTILATING UNIT H&V-4 FLOW DIAGRAM			
14	530 H&V UNIT-04 MP581- 3 WIRING DETAIL			
15	HEATING/VENTILATING UNIT H&V-3 FLOW DIAGRAM			
16	530 H&V UNIT-03 MP581- 4 WIRING DETAIL			
17	VALVE SCHEDULE			
18	DETAIL SHEET # 1			
19	DETAIL SHEET # 2			
20	SEQUENCE OF OPERATION			

AS BUILT
9/16/08

TRANE

FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
DRAWING INDEX

NO.	REVISION	DATE:	BY:
3			
2			
1			

SALESPERSON:	ENGINEERED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

PROJECT:
DAM NECK ANNEX
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Symbol Legend

AFS AIR FLOW STATION	AFS AIR FLOW STATION, FAN MOUNTED	ALM ALARM, BELL	ALM ALARM, STROBE
ALM ALARM, PIEZIO	BLENDER, AIR	BURNER, FUEL-FIRED DIRECT	COIL, COAXIAL
C / C COIL, CHW, DX, HW, STEAM, ETC.	CONTROL POINT	CS OR CSR CS - CURRENT SENSOR ~ CSR - CURRENT SENSOR W/RELAY	D DAMPER, OPPOSED OR PARALLEL
D TRAQ DAMPER	DA ACTUATOR, DAMPER	DPS SENSOR, DIFFERENTIAL PRESSURE	DPS, DPT AIR DIFFERENTIAL SWITCH OR SENSOR
H L DPT, DPS DIFFERENTIAL PRESSURE SWITCH OR SENSOR	EXCHANGER, FUEL FIRE HEAT	EXCHANGER, FLUID HEAT	FAN OR PUMP
FAN, ROOF TOP	FILTER, AIR	FILTER, AIR BAG	FILTER, AIR HEPA
FILTER, AIR ROLL	FLT SWITCH, FLOAT	FS FIRESTAT	FS SENSOR, FLOW
HEATER, ELECTRIC DUCT	HDW SENSOR, ROOM STATIC PRESSURE	HDW TUBE, STATIC PRESSURE	HE, TEH SENSOR, DUCT HUMIDITY AND TEMPERATURE
HE, TEH SENSOR, HUMIDITY OR TEMPERATURE AND HUMIDITY	IAQ SENSOR, INDOOR AIR QUALITY	IRQ SENSOR, INDOOR AIR QUALITY (CO2)	LLT THERMOSTAT, LOW LIMIT
MS STARTER, MOTOR	OCC SENSOR, OCCUPANCY	PT TRANSMITTER, PRESSURE	R RELAY
R RELAY, SOCKET	RB SENSOR, OUTDOOR PRESSURE	RST SWITCH, RESET STATION	SD DETECTOR, SMOKE
SEQ SEQUENCER	SW ON OFF SWITCH	SOL SOLENOID, AIR	SW SWITCH, BUTTON
T THERMOSTAT, WALL	TC COMPOUND, THERMAL	TE SENSOR, AVERAGING TEMPERATURE	TE SENSOR, STRAP ON TEMPERATURE
SW AUTO HOT COOL SWITCH, ROTARY	TE SENSOR, TEMPERATURE	TE SENSOR, ZONE	TMR TIMER, ELECTRONIC WALL
TMR TIMER, WALL	TW WELL, THERMAL	TX TRANSFORMER	UV LIGHT, ULTRAVIOLET
VAL VALVE, 2-WAY COIL	VAL VALVE, 3-WAY COIL	VAL VALVE, DUCT HUMIDIFIER	VFD VARIABLE FREQUENCY DRIVE

Wiring Notes

ELECTRICAL CONTRACTOR FOR TRANE:

1. REFER TO DEVICE INSTALLATION MANUALS FOR SPECIFIC WIRING REQUIREMENTS.
2. FIELD WIRING MUST BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE, STATE AND LOCAL BUILDING CODES, AND DIVISION 16 OF SPECIFICATIONS.
3. TAG ALL CONTROL WIRING AT EACH END OF THE CABLE OR WIRE PER TAGS SHOWN IN ATTACHED DRAWINGS.
4. AVOID OVER TIGHTENING CABLE TIES AND OTHER FORMS OF CABLE WRAPS. THIS CAN DAMAGE THE WIRES INSIDE THE CABLES.
5. DO NOT CABLE TIE TO INSULATED WATER, STEAM OR OTHER LINES.
6. IN OPEN PLENUMS, AVOID RUNNING WIRE NEAR LIGHTING BALLASTS, ESPECIALLY THOSE USING 277 VAC.
7. DO NOT RUN FIELD DEVICE AND COMMUNICATIONS WIRING IN SAME CONDUIT WITH WIRING CARRYING VOLTAGE GREATER THAN 30 VOLTS.
8. ALL PANELS AND FIELD DEVICES LISTED IN THIS DOCUMENT ARE TO BE INSTALLED BY CONTROLS ELECTRICAL SUB-CONTRACTOR UNLESS OTHERWISE NOTED ON DRAWINGS.
9. MOUNT ALL ROOM SENSORS/SWITCHES AS SHOWN ON THE CONSTRUCTION DOCUMENTS, UNLESS OTHERWISE DIRECTED IN WRITING BY THE OWNER/ENGINEER.
10. FLEXIBLE CONDUIT IS NOT TO EXCEED 24" IN LENGTH.
11. CONTROL PANELS ARE NOT TO BE USED AS JUNCTION BOXES OR RACEWAYS. WIRING THAT DOES NOT TERMINATE IN A CONTROL PANEL IS NOT TO BE RUN WITHIN THE PANEL.
12. BINARY INPUT LIMITS: 1000 FEET (300 METERS).
13. 0~10 VDC ANALOG INPUT LIMITS: 300 FEET (100 METERS).
14. 0~20 MA ANALOG INPUT LIMITS: 1000 FEET (300 METERS).
15. VARIABLE RESISTANCE ANALOG INPUT LIMITS: 300 FEET (100 METERS).
16. ANALOG OUTPUT LIMITS: 1000 FEET (300 METERS)
17. BINARY OUTPUT LIMITS: 1000 FEET (300 METERS)
18. WIRING POWER FROM THE AC OUT TERMINALS TO POWER ANALOG INPUT DEVICES WILL CAUSE IMMEDIATE CONTROLLER FAILURE IF INPUT DEVICE USES HALF-WAVE RECTIFICATION. WHEN UNSURE, USE A SEPARATE POWER SUPPLY FOR DEVICE.
19. **COMM 3 AND COMM 4** COMMUNICATION LINK WIRING MUST BE SHIELDED, TWISTED PAIR, 18 AWG MINIMUM, STRANDED, TINNED COPPER CONDUCTORS. SHIELD MUST BE CONTINUOUS THROUGHOUT, ISOLATED FROM OTHER CONDUCTORS OR GROUND, AND GROUNDED AT BCU ONLY. MAXIMUM CAPACITANCE BETWEEN CONDUCTORS IS 25 PICOFARADS PER FOOT. MAXIMUM DISTANCE IS 5000 FEET.
    - UNDER CERTAIN CONDITIONS, A TERMINATION RESISTOR NEEDS TO BE PLACED ON THE LAST DEVICE ON A COMM 3 COMMUNICATION LINK.

CONFIG	WIRE LENGTH	RESISTANCE	RESISTOR PLACEMENT
DAISY CHAIN	0-800 ft	270-330 Ω	ON THE LAST DEVICE OF LINK
	800-2500 ft	NOT REQUIRED	N/A
	>2,500 ft	100 Ω	ON THE LAST DEVICE OF LINK
BRANCH	ANY LENGTH	270-330 Ω (IF NEEDED)	ON THE DEVICES AT THE END OF EACH BRANCH

20. **COMM 5/LONTALK** COMMUNICATION LINK WIRING (INCLUDING EX2):
    - 22 AWG LEVEL 4 UNSHIELDED COMMUNICATION CABLE RECOMMENDED FOR COMM 5 INSTALLATIONS. MAXIMUM CAPACITANCE BETWEEN CONDUCTORS IS 17 PICOFARADS PER FOOT.
    - SHIELDED LEVEL 4 CABLE IS RECOMMENDED FOR THE COMM 5 TRACKER AND FOR ALL COMMUNICATION WIRING ON THE VARITRAC CCP.
    - COMM 5 LINK LIMITS: 4500 FEET (1,400 METERS), 60 DEVICES MAXIMUM (WITHOUT REPEATER).
    - EX2 LINK LIMIT: 1000 FEET (778 METERS).
    - CCP III LINK LIMIT: 3500 FEET (1,090 METERS).
    - TERMINATION RESISTORS ARE REQUIRED:
      ~ 105 OHMS, 1%, ¼ WATT AT EACH END FOR LEVEL 4 WIRE.
      ~ 82 OHMS, 1%, ¼ WATT AT EACH END FOR 18 AWG SHIELDED (PURPLE) WIRE.
    - COMM 5 TOPOLOGY MUST BE DAISY CHAINED.
    - ONE REPEATER (ONLY ONE PER COMM 5 LINK) CAN BE USED FOR AN ADDITIONAL 4500 FEET (1,400 METERS), 60 DEVICES.
    - DO NOT RUN COMM 5 CABLE ALONGSIDE OR IN THE SAME CONDUIT AS 24 VAC POWER. THIS INCLUDES THE CONDUCTORS RUNNING FROM TRIAC-TYPE OUTPUTS.
    - KEEP COMM 5 POLARITY CONSISTENT THROUGHOUT THE SITE.
    - MAKE SURE THAT THE 24 VAC POWER SUPPLIES ARE CONSISTENT IN HOW THEY ARE GROUNDED. AVOID SHARING 24 VAC BETWEEN COMM 5 CONTROLLERS.
    - USE ONLY ONE TYPE OF COMMUNICATION WIRE—DO NOT MIX WIRE. IN THE EVENT OF AN EXISTING JOB THAT USED 18 AWG WIRE, CONTINUE USING THE SAME WIRE AFTER PRIOR APPROVAL FROM THE PROJECT MANAGER.
21. **ETHERNET LAN COMMUNICTION** MAXIMUM DISTANCE IS 295 FEET (90 METERS) PLUS 33 FEET (10 METERS) FOR PATCH CABLES.

MECHANICAL CONTRACTOR:

1. DAMPERS ARE TO BE INSTALLED BY SHEET METAL CONTRACTOR UNLESS OTHERWISE NOTED.
2. CONTROL VALVES AND ACCESSORIES INSTALLED DIRECTLY INTO PIPING (SENSOR WELLS, THREADOLETS, ETC.) ARE TO BE INSTALLED BY MECHANICAL CONTRACTOR.

AS BUILT
9/16/08

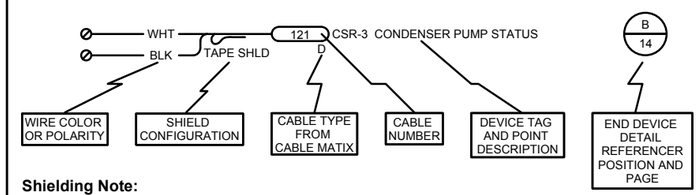
Cable Matrix

CT	DESCRIPTION	TRANE PART NO*	WIRE COLORS
A	18/2 TWIST SHLD PURPLE COMM CABLE	W181P-2028X	WHT, BLK
B	18/2 TWIST SHLD NON-PLEN WHT COMM CABLE	W181P-2051RIB	WHT, BLK
C	22/2 TWIST NON-SHLD LEVEL 4 BLU COMM CABLE	W221P-2001YB	WHT, BLK
D	18/2 TWIST SHLD PLEN WHT CABLE	W181P-2040RIB	WHT, BLK
E	18/3 TWIST SHLD PLEN WHT CABLE	W183C-2058RIB	WHT, BLK, RED
F	18/4 TWIST SHLD PLEN WHT CABLE	W184C-2059	WHT, BLK, RED, GRN
G	22/3 TWIST SHLD PLEN BLU CABLE	W223C-2060XB	WHT, BLK, RED
H	22/4 TWIST SHLD PLEN WHT CABLE		
I	22/5 TWIST SHLD PLEN WHT CABLE		
J	1 PAIR # 14 THHN STRANDED IN CONDUIT		
K	18/5 THERMOSTAT PLEN CABLE		WHT, BLK, RED, GRN, BLU
L	ETHERNET RG58 THINNET PLEN CABLE	WRG58-2711	
M	ETHERNET CAT-5 PLEN CABLE	W244P2175CB	
O	18/8 TWIST SHLD PLEN WHT CABLE	W188C-2030	WHT, BLK, RED, ORN, YEL, GRN, BLU, BRN
P	22/2 TWIST SHLD PLEN ORANGE COMM CABLE		WHT, BLK
Q	16/2 COND SOLID RED SMOKE DETECTOR CABLE		WHT, BLK

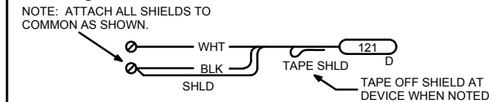
* When ordering cable specify jacket color. Part numbers are subject to change without notice.

Cable Matrix Notes:
Keep all communication link wiring in a daisy chain configuration. All cable wiring must be Trane recommended wiring, especially communication cables. Contact Trane for recommended cables and specifications.

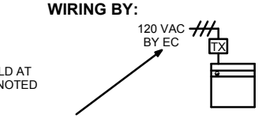
Cable Information Shapes:
Each cable connection has a CIS which provides some or all of the information indicated below:



Shielding Note:
NOTE: ATTACH ALL SHIELDS TO COMMON AS SHOWN.

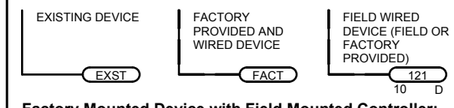


WIRING BY:

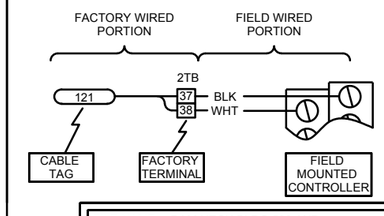


EC - ELECTRICAL CONTRACTOR
ESC - ELECTRICAL SUBCONTRACTOR
OTHERS
TRANE
EXIST - EXISTING POWER

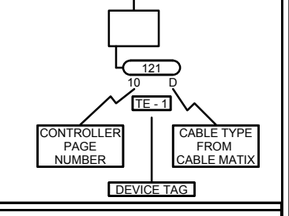
Field, Factory And Existing Device Note:



Factory Mounted Device with Field Mounted Controller:



Flow Devices:



FILE NAME: DAM NECK BLDG 530.AXD			
DRAWING TITLE: GENERAL NOTES	3		
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	NO.	REVISION	DATE: / BY:
	SALESPERSON:	ENGINEERED BY:	CHECKED BY:
	MN	C. P. ELLIS/BD	LM
PROJECT: DAM NECK ANNEX BLDG. 530 6/16/08	DAMUTH TRANE 1100 CAVALIER BLVD. CHESAPEAKE, VA 23323 757-558-0200		PROJECT NUM. 07.1385L DRAWING NUM. 3

Abbreviations

ACU - AIR CONDITIONING UNIT
ADDR - ADDRESS
AFMS - AIR FLOW MONITORING STATION
AHU - AIR HANDLING UNIT
AIP - ANALOG INPUT POINT
AOP - ANALOG OUTPUT POINT
ATC - AUTOMATIC TEMPERATURE CONTROLS
ATS - AVERAGING TEMPERATURE SENSOR
AV - AIR VALVE
BCU - BUILDING CONTROL UNIT
BCHA - BLOWER COIL AIR HANDLING UNIT
BIP - BINARY INPUT POINT
BOP - BINARY OUTPUT POINT
C - COMMON
CUH - CABINET UNIT HEATER
CU - CONDENSING UNIT
CH2 - CHILLED WATER
CHWS - CHILLED WATER SUPPLY
CHWR - CHILLED WATER RETURN
CRAC - COMPUTER ROOM AIR CONDITIONING
CT - COOLING TOWER
CWS - CONDENSER WATER SUPPLY
CWR - CONDENSER WATER RETURN
COND - CONDENSER
CR - CONTROL RELAY
CS - CURRENT SWITCH
DTS - DISCHARGE TEMP SENSOR
DPS - DIFFERENTIAL PRESSURE SWITCH
DPT - DIFFERENTIAL PRESSURE TRANSDUCER
DA - DAMPER ACTUATOR
EA - EXHAUST AIR
EF - EXHAUST FAN
EH - ELECTRIC HEATER
EWT - ENTERING WATER TEMPERATURE
FCU - FAN COIL UNIT
FM - FLOW METER
FZ - FREEZESTAT
FS - FLOW SWITCH
HW - HOT WATER
HWS - HOT WATER SUPPLY
HWR - HOT WATER RETURN
IFB - INTEGRAL FACE AND BYPASS
IGV - INLET GUIDE VANES
INT - INTERNAL
IU - INDOOR UNIT
K - RELAY
LCD - LIQUID CRYSTAL DISPLAY
LLT - LOW LIMIT
MCC - MOTOR CONTROL CENTER
NC - NORMALLY CLOSED
NO - NORMALLY OPEN
OATS - OUTSIDE AIR TEMP SENSOR
OU - OUTDOOR UNIT
P - PUMP
PS - POWER SUPPLY
QC - QUICK CONNECTOR
PT# - PART NUMBER
R - RELAY
RAF - RETURN AIR FAN
RTU - ROOFTOP UNIT
RVU - ROOFTOP VENTILATION UNIT
SAF - SUPPLY AIR FAN
SD - SMOKE DETECTOR
SS - SPACE SENSOR
S/S - START/STOP
ST - STATUS
SW - SWITCH
T - TRANSFORMER
TB - TERMINAL BLOCK
TS - TEMPERATURE SENSOR
UCM - UNIT CONTROL MODULE
UH - UNIT HEATER
UI - UNIVERSAL INPUT
UV - UNIT VENTILATOR
V - VALVE
VA - VOLT-AMP
VAC - VOLTS ALTERNATING CURRENT
VAV - VARIABLE AIR VOLUME
VDC - VOLTS DIRECT CURRENT
VFD - VARIABLE FREQUENCY DRIVE
WSHP- WATER SOURCE HEAT PUMP

Miscellaneous Notes

TRACER SUMMIT BCU

32 DEGREES F TO 122 DEGREES F

10-90% RELATIVE HUMIDITY, NON-CONDENSING

120VAC, 50/60 HZ, 1 PHASE

2.0 AMP MAXIMUM

BUILDING CONTROL PANELS MUST BE POWERED BY A CIRCUIT DESIGNATED FOR CONTROL PANELS ONLY. APPROPRIATE BREAKER SIZE TO BE DETERMINED AND PROVIDED BY INSTALLING ATC CONTRACTOR.

THE BCU REQUIRES 3-WIRE SERVICE WITH A NORMAL VOLTAGE OF 115 VAC (50 OR 60 CYCLE) EXPECTED. VOLTAGE FLUCTUATIONS CAN NOT EXCEED + OR - 10% (103 VAC - 127 VAC). THE BCU AUTOMATICALLY DETECTS WHETHER THE VOLTAGE IS 50 OR 60 CYCLE. IT IS RECOMMENDED THAT 14 AWG WIRE AND METAL CONDUIT BE USED. AC POWER WIRING MUST NOT BE RUN IN THE SAME CONDUIT WITH INPUT OR OUTPUT WIRING. ALL WIRING MUST COMPLY WITH NATIONAL AND LOCAL ELECTRICAL CODES.

CAUTION: RUNNING INPUT/OUTPUT WIRE IN THE SAME CONDUIT OR WIRE BUNDLE WITH ANY AC POWER WIRES COULD CAUSE THE TRACER TO MALFUNCTION DUE TO ELECTRICAL NOISE.

COMMMUNICATION LINKS - WIRING REQUIREMENTS

COMMUNICATION LINK TO BE INSTALLED IN A DAISY CHAIN CONFIGURATION AS INDICATED IN RISER DIAGRAMS. FOR MORE INFORMATION, REFER TO THE TRACER SUMMIT INSTALLATION MANUAL.

CHANGES MAY BE MADE IN THE ORDER IN WHICH DEVICES ARE CONNECTED TO THE LINK. HOWEVER, DRAWINGS SHOULD BE AS-BUILT BY THE INSTALLING ATC CONTRACTOR TO REFLECT ANY CHANGES.

COMMUNICATION WIRE SHALL BE CONTINUOUS W/O SPLICES. IF A FIELD SPLICE IS UNAVOIDABLE, IT MUST BE IN A METALLIC BOX, WITH SOLDERED CONNECTIONS. ALL FIELD COMMUNICATION SPLICES MUST BE COORDINATED WITH TRANE BAS, AND LOCATION MUST BE INDICATED ON AS-BUILT DRAWINGS.

CONSISTENT WIRING POLARITY MUST BE MAINTAINED BETWEEN DEVICES.

PANEL LOCATION

INSTALL THE BCU INDOORS IN A CORROSIVE-FREE, CLEAN ENVIRONMENT. WHEN CHOOSING A LOCATION FOR PANEL PLACEMENT, CONSIDER BOTH SECURITY AND CONTROL WIRE LENGTHS. ACCESS TO THE BCU SHOULD BE LIMITED ONLY TO OPERATING AND/OR SERVICE PERSONNEL.

TO PREVENT POSSIBLE CONTROL MALFUNCTIONS CAUSED BY INTERFERENCE, DO NOT INSTALL THE BCU NEAR HIGH-POWER RADIO SIGNALS, ELECTRICAL SWITCHING GEAR, POWER BUSES, LARGE MOTORS, OR OTHER SOURCES OF ELECTRICAL NOISE.

RADIO FREQUENCY INTERFERENCE

THE MANUFACTURER OF THIS EQUIPMENT IS NOT RESPONSIBLE FOR ANY RADIO AND/OR TELEVISION INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS OR REVISIONS TO THIS EQUIPMENT. IT IS THE RESPONSIBILITY OF THE USER TO CORRECT ANY INTERFERENCE.

INSTALLATION OF SENSORS

ALL WIRES ATTACHED TO SENSORS WILL BE AIR SEALED IN THEIR CONDUITS OR IN THE WALL TO STOP AIR TRANSMITTED FROM OTHER AREAS AFFECTING SENSOR READINGS.

OUTDOOR AIR SENSORS - INSTALLING ATC CONTRACTOR SHALL COORDINATE EXACT LOCATION WITH TRANE PROJECT TECHNICIAN. OUTSIDE AIR TEMPERATURE SENSOR TO BE INSTALLED ON NORTH WALL, AWAY FROM DIRECT SUNLIGHT, AWAY FROM EXHAUST HOODS, AIR INTAKES AND OTHER AREAS THAT MAY AFFECT TEMPERATURE READINGS.

IMMERSION TEMPERATURE SENSORS - THERMAL GREASE HONEYWELL PT# 107408 OR EQUAL MUST BE FIELD INSERTED IN WELL BEFORE SENSOR IS INSTALLED.

WALL MOUNTED SENSORS AND THERMOSTATS - INSTALLING ATC CONTRACTOR SHALL COORDINATE LOCATION OF WALL MOUNTED DEVICES WITH THE ARCHITECTURAL DRAWINGS TO AVOID CONFLICTS WITH CABINETS, BOOKCASES, ETC. INSTALLING ATC CONTRACTOR SHALL INSULATE BEHIND ALL WALL MOUNTED SENSORS. INSTALLING ATC CONTRACTOR SHALL LABEL THE WALL MOUNTED PORTION OF THE SPACE SENSOR WITH THE VAV/AHU/RTU TAG AND VAV ADDRESS.

IDENTIFICATION OF HARDWIRE AND WIRING

ALL WIRING AND CABLING, INCLUDING THAT WITHIN FACTORY-FABRICATED PANELS WILL BE LABELED AT EACH END WITHIN 2" OF TERMINATION WITH A CABLE IDENTIFIER AND OTHER DESCRIPTIVE INFORMATION.

PERMANENTLY LABEL OR CODE EACH POINT OF FIELD TERMINAL STRIPS TO SHOW THE INSTRUMENT OR ITEM SERVED.
IDENTIFY CONTROL PANELS WITH THE FOLLOWING INFORMATION LOCATED ON THE INSIDE COVER:
PANEL TYPE/#
ADDR. #
POWER CKT. #

Miscellaneous Notes

GENERAL WORKMANSHIP

INSTALL EQUIPMENT, PIPING, WIRING/CONDUIT PARALLEL TO BUILDING LINES (I.E. HORIZONTAL, VERTICAL, AND PARALLEL TO WALLS) WHENEVER POSSIBLE.

PROVIDE SUFFICIENT SLACK AND FLEXIBLE CONNECTIONS TO ALLOW FOR VIBRATION OF PIPING AND EQUIPMENT.

INSTALL ALL EQUIPMENT IN READILY ACCESSIBLE LOCATION AS DEFINED BY CHAPTER 1 ARTICLE 100 PART A OF THE NEC. CONTROL PANELS WILL BE ATTACHED TO STRUCTURAL WALLS UNLESS MOUNTED IN EQUIPMENT ENCLOSURE SPECIFICALLY DESIGNED FOR THAT PURPOSE. PANELS WILL BE MOUNTED TO ALLOW FOR UNOBSTRUCTED ACCESS FOR SERVICE.

VERIFY INTEGRITY OF ALL WIRING TO ENSURE CONTINUITY AND FREEDOM FROM SHORTS AND GROUNDS.

ALL EQUIPMENT, INSTALLATION, AND WIRING WILL COMPLY WITH ACCEPTABLE INDUSTRY SPECIFICATIONS AND STANDARDS OF PERFORMANCE, RELIABILITY, AND COMPATIBILITY WILL BE EXECUTED IN STRICT ADHERENCE TO LOCAL CODES AND STANDARD PRACTICES.

WIRING

ALL CONTROL AND INTERLOCK WIRING WILL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC) AND APPLICABLE STATE AND LOCAL CODES, AS WELL AS DIVISION 16 SPECIFICATIONS. WHERE THE REQUIREMENTS OF THIS SECTION DIFFER FROM THOSE IN DIVISION 16, THE REQUIREMENTS OF THIS SECTION WILL TAKE PRECEDENCE.

WHERE CLASS 2 WIRES ARE IN CONCEALED AND ACCESSIBLE LOCATION INCLUDING CEILING RETURN AIR PLENUMS, APPROVED CABLES NOT IN RACEWAY MAY BE USED PROVIDED THAT:
1) CIRCUITS MEET NEC CLASS 2 (CURRENT-LIMITED) REQUIREMENTS. (LOW-VOLTAGE POWER CIRCUITS WILL BE SUB-FUSED WHEN REQUIRED TO MEET CLASS 2 CURRENT-LIMIT)
2) ALL CABLES WILL BE UL LISTED FOR APPLICATION, I.E. CABLES USED IN CEILING PLENUMS WILL BE UL LISTED SPECIFICALLY FOR THAT PURPOSE.

DO NOT BUNDLE OR INSTALL NEC CLASS 2 LOW VOLTAGE WIRING (30 VOLT MAXIMUM) IN CONDUIT CONTAINING HIGHER VOLTAGE WIRING. BOXES AND PANELS CONTAINING HIGH VOLTAGE MAY NOT BE USED FOR LOW VOLTAGE WIRING EXCEPT FOR THE PURPOSE OF INTERFACING THE TWO (E.G. RELAYS AND TRANSFORMERS).

WHERE CLASS 2 WIRING IS RUN EXPOSED, WIRING WILL BE RUN PARALLEL ALONG A SURFACE OR PERPENDICULAR TO IT, AND BUNDLED, USING APPROVED WIRE TIES AT NO GREATER THAN 3M (10FT) INTERVALS. SUCH BUNDLED CABLE WILL BE FASTENED TO THE STRUCTURE, USING SPECIFIED FASTENERS, AT 1.5M (5FT) INTERVALS OR MORE OFTEN TO ACHIEVE A NEAT AND WORKMAN LIKE RESULT.

ALL WIRE-TO-DEVICE CONNECTIONS WILL BE MADE AT A TERMINAL BLOCK OR TERMINAL STRIP. ALL WIRE-TO-WIRE CONNECTIONS WILL BE AT A TERMINAL BLOCK, OR WITH AN APPROVED CONNECTOR. ALL WIRING WITHIN ENCLOSURES WILL BE NEATLY BUNDLED AND ANCHORED TO PERMIT ACCESS AND PREVENT RESTRICTION TO DEVICES AND TERMINALS.

MAXIMUM ALLOWABLE VOLTAGE FOR CONTROL WIRING WILL BE 120V. ALL WIRING WILL BE INSTALLED AS CONTINUOUS LENGTHS, WHERE POSSIBLE. IF A FIELD SPLICE IS REQUIRED, IT MUST BE IN AN APPROVED JUNCTION BOX OR OTHER APPROVED PROTECTIVE DEVICE WITH SOLDERED
CONNECTIONS. ALL FIELD SPLICES MUST BE COORDINATED WITH TRANE BAS, AND LOCATION MUST BE INDICATED ON AS-BUILT DRAWINGS.

INSTALL PLENUM WIRING IN SLEEVES WHERE IT PASSES THROUGH WALLS AND FLOORS. MAINTAIN FIRE RATING AT ALL PENETRATIONS IN ACCORDANCE WITH OTHER SECTIONS OF THIS SPECIFICATION AND LOCAL CODES.

SIZE OF CONDUIT AND SIZE AND TYPE OF WIRE WILL BE THE DESIGN RESPONSIBILITY OF THE INSTALLING ATC CONTRACTOR, IN KEEPING WITH THE SPECIFICATIONS, MANUFACTURER'S RECOMMENDATION AND NEC.

CONTROL AND STATUS RELAYS ARE TO BE LOCATED IN DESIGNATED ENCLOSURES ONLY. THESE RELAYS MAY ALSO BE LOCATED WITHIN PACKAGED EQUIPMENT CONTROL PANEL ENCLOSURES.

FOLLOW MANUFACTURER'S INSTALLATION RECOMMENDATIONS FOR ALL COMMUNICATION AND NETWORK CABLING. NETWORK OR COMMUNICATION CABLING WILL BE RUN SEPARATELY FROM OTHER WIRING.

ADHERE TO DIVISION 16 REQUIREMENTS FOR INSTALLATION OF RACEWAY.

FLEXIBLE METAL CONDUITS AND LIQUID-TIGHT, FLEXIBLE METAL CONDUITS WILL NOT EXCEED 3' IN LENGTH AND WILL BE SUPPORTED AT EACH END. FLEXIBLE METAL CONDUIT LESS THAN ½" ELECTRICAL TRADE SIZE WILL NOT BE ACCEPTABLE. (IN AREAS EXPOSED TO MOISTURE, INCLUDING CHILLER AND BOILER ROOMS, LIQUID-TIGHT, FLEXIBLE METAL CONDUITS WILL BE USED.)

ANALOG INPUT WIRE MUST BE 18 GA. SHIELDED, TWISTED PAIR. CUT BACK AND TAPE SHIELD AT THE SENSOR. GROUND THE SHIELD AT THE CONTROLLER.

WIRING LABELS

AFFIX PLASTIC LABELS ON EACH STARTER AND EQUIPMENT AUTOMATICALLY CONTROLLED THROUGH THE CONTROL SYSTEM. LABEL WILL INDICATE THE FOLLOWING:
"CAUTION - THIS EQUIPMENT IS OPERATING UNDER AUTOMATIC CONTROL AND MAY START AT ANY TIME WITHOUT WARNING."

Miscellaneous Notes

GENERAL COMMENTS

THIS SHEET IS INTENDED AS A GENERAL GUIDE AND NOTES ARE GENERAL TO ALL TRANE TRACER PRODUCTS AND CONTROLLERS. BE SURE TO REVIEW THE APPROPRIATE INSTALLATION MANUAL FOR THE SPECIFIC EQUIPMENT PRIOR TO INSTALLATION FOR ADDITIONAL REQUIREMENTS.

THIS DRAWING PACKAGE IS INTENDED AS A GENERAL INSTALLATION GUIDELINE AND IS SUPERSEDED BY ALL PROJECT CONSTRUCTION DOCUMENTS.

INSTALLING ATC CONTRACTOR SHALL PROVIDE PILOT RELAYS, TRANSFORMERS, AND ETHERNET HUB ENCLOSURES, UNLESS OTHERWISE INDICATED. RELAYS SHALL BE SIZED BASED ON COIL AND CONTACT REQUIREMENTS. REFER TO MECHANICAL SCHEDULES TO CONFIRM POWER RATING OF RELAY CONTACT FOR MOTOR HORSEPOWER. DEDICATED TRANSFORMERS WITH CIRCUIT BREAKER RESET PUSHBUTTONS SHALL BE PROVIDED FOR EACH DDC CONTROLLER.

INSTALLING ATC CONTRACTOR MUST PROVIDE DEDICATED 120VAC CONTROL POWER CIRCUITS AS REQUIRED TO POWER DDC CONTROLLERS AND CONTROL DEVICES, UNLESS SPECIFIED OTHERWISE. CONTROL POWER CIRCUITS MUST MEET NEC CLASS 1 WIRING REQUIREMENTS AND HAVE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED. INSTALLING ATC CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR TO IDENTIFY PANEL CIRCUITS AVAILABLE FOR CONTROL SYSTEMS.

SCOPE CLARIFICATIONS

EXISTING OPERATOR WORKSTATIONS AND SOFTWARE WILL NOT BE SUPPORTED NOR UPGRADED.

NO TELEPHONE MODEMS WILL BE INSTALLED.

PUSH BUTTON OVERRIDES ARE NOT TIME ACCUMULATIVE. DIGITAL OUTPUTS HAVE NO RUNTIMES AND ARE NOT TIME ACCUMULATIVE.

NO ENERGY DATA RECORDING DEVICES ARE INPUT INTO THE DDC CONTROLS.

VFD'S ARE NOT PASSWORD SELECTABLE, NO SPARE PARTS WILL BE PROVIDED. HAND OFF AUTO SWITCHES MAY BE ELECTRONIC WITH LOGIC, BACNET COMMUNICATION.

NO AIR QUALITY SENSOR USED.

NO HUMIDISTAT AND HUMIDITY TRANSMITTERS USED.

NO AIRFLOW MEASURING STATIONS USED EXCEPT AS SPECIFIED BY DAMUTH TRANE.

NO STEAM METERS USED.

CONTROL WIRES MAY BE 18-22 AWG WITHOUT DRAIN AND SHIELD IF SPECIFIED BY TRANE, EXTERNAL SURGE PROTECTION ON COMMUNICATIONS, INPUTS\OUTPUTS AND POWER TRANSMISSION WIRES ARE NOT REQUIRED AS SPECIFIED BY TRANE.

RE-UTILIZE CONTROLS POWER AND WIRING WHERE APPLICABLE.

FIRE AND SMOKE PROTECTION DEVICES ON EXISTING EQUIPMENT WILL BE RE-USED, NO ADDITIONAL DEVICES WILL BE PROVIDED ON EXISTING EQUIPMENT. FIRE PROTECTION IS BY OTHERS.

OPERATIONAL SOFTWARE APPLICATION TEST LOOPS ARE NOT REQUIRED.
TRAINING BEFORE PVT NOT REQUIRED.

AS BUILT
9/16/08

TRANE

FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
GENERAL NOTES 2

NO.	REVISION	DATE:	BY:
3			
2			
1			

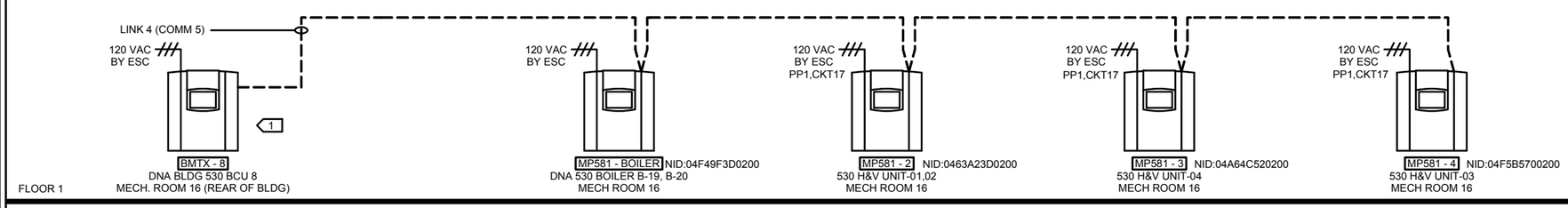
SALESPERSON:	ENGINEERED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

PROJECT:
DAM NECK ANNEX
BLDG. 530
6/16/08

DAMUTH TRANE
1100 CAVALIER BLVD.
CHESAPEAKE, VA 23323
757-558-0200

PROJECT NUM.
07.1385L

DRAWING NUM.
4



AS BUILT
9/16/08

1 INSTALL 105 OHM TERMINATION RESISTOR AT THE BEGINNING AND AT THE END OF THE COMM 5 LINK.

TRANE

FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
BCU COMM RISER

NO.	REVISION	DATE:	BY:
3			
2			
1	MISC REVISIONS	4/21/2009	BLD

SALESPERSON:	ENGINEERED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

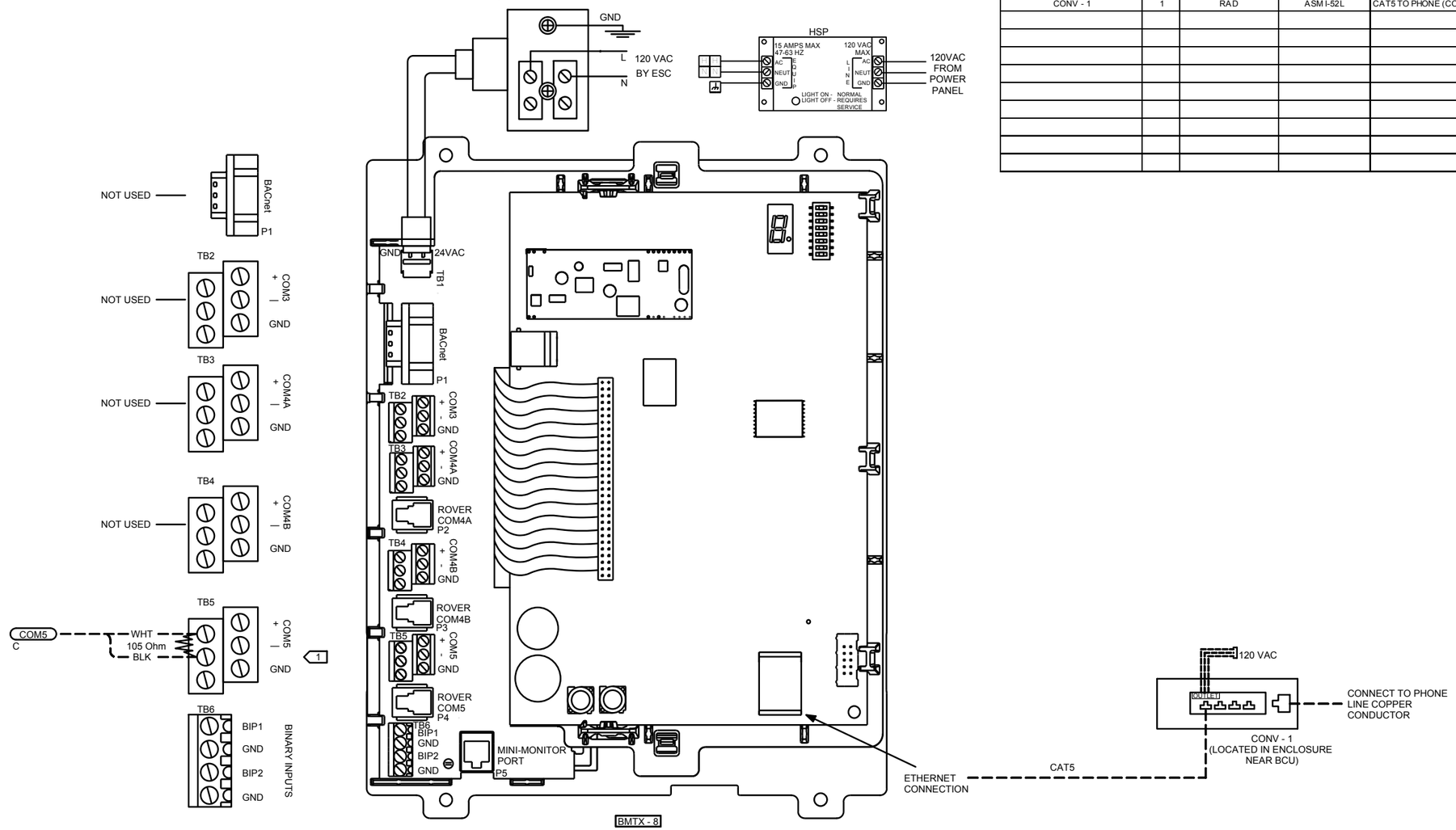
PROJECT:
DAM NECK ANNEX
BLDG. 530
6/16/08

DAMUTH TRANE
1100 CAVALIER BLVD.
CHESAPEAKE, VA 23323
757-558-0200

PROJECT NUM.
07.1385L

DRAWING NUM.
5

TYPICAL FOR 1
(DNA BLDG 530 BCU 8)



BMTX - 8
SYSTEM
CONTROLLED:
DNA BLDG 530 BCU 8

LOCATION:
MECH. ROOM 16 (REAR OF BLDG)

BILL OF MATERIALS				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
BMTX - 8	1	TRANE	BMTX001AAB011	BCU, 120V, W/DISPLAY AND MODEM
HSP - 1	1	KELE	HSP-121BTRU	INLINE SURGE PROTECTOR
CONV - 1	1	RAD	ASMI-52L	CAT5 TO PHONE (COPPER) CONDUCTOR

NOTES:

1. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC) STATE AND LOCAL REQUIREMENTS.
2. SHIELDED WIRE GROUNDED TO TRACER SUMMIT END ONLY.
3. ATC CONTRACTOR MUST PROVIDE A DEDICATED 120 VAC CONTROL POWER CIRCUIT, 60Hz, 3 AMPS. PROVIDE NEC CLASS 1 WIRING WITH DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED BY OTHERS. PANEL AND CIRCUIT NUMBER MUST BE NOTED FOR AS-BUILT DRAWINGS TO CUSTOMER.
4. COMMUNICATION LINK TO BE INSTALLED IN A DAISY CHAIN CONFIGURATION AS SHOWN. FOR MORE INFORMATION, CONSULT THE TRACER SUMMIT INSTALLATION MANUAL.
5. RELAYS, TRANSFORMERS, TERMINATION RESISTORS, AND ETHERNET HUB/SWITCH ENCLOSURES PROVIDED AND INSTALLED BY INSTALLING ATC CONTRACTOR.
6. DEVICE MOUNTING LOCATION AND HEIGHT MUST BE VERIFIED WITH OWNER OR JOB SITE COORDINATOR PRIOR TO INSTALLATION. LOCATION MUST BE NOTED BY INSTALLING CONTRACTOR FOR AS-BUILT DRAWINGS TO CUSTOMER.
7. SEE GENERAL NOTES PAGE FOR COMM LINK WIRING REQUIREMENTS. COMM 5 LINK MUST HAVE A 105 OHM RESISTOR (PROVIDED BY INSTALLING ATC CONTRACTOR) TERMINATED AT EACH END OF LINK.

COMM LINK WIRING NOTES:

SEE DRAWING LEGEND PAGE AND / OR BMTX INSTALLATION MANUAL FOR COMM LINK WIRING REQUIREMENTS

1 INSTALL TERMINATION RESISTOR AT THE BEGINNING AND AT THE END OF THIS LINK.

INPUT WIRING NOTES:

IF SHIELD IS USED AS A SHIELD TERMINATE AT THE COMMON TERMINAL ON THE CONTROLLER AND TAPE BACK. CUT AND TAPE AT THE END DEVICE.

WHEN WIRING A BINARY INPUT: CONNECT THE SHIELD WIRE TO A COMMON TERMINAL AT THE TERMINATION BOARD AND TAPE IT BACK AT THE OUTPUT DEVICE.

AS BUILT
9/16/08

TRANE

FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
DNA BLDG 530 BMTX - 8 WIRING DETAIL

NO.	REVISION	DATE:	BY:
3			
2			
1	MISC REVISIONS	4/21/2009	BLD

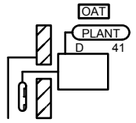
SALESPERSON:	ENGINEERED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

PROJECT:
DAM NECK ANNEX
BLDG. 530
6/16/08

DAMUTH TRANE
1100 CAVALIER BLVD.
CHESAPEAKE, VA 23323
757-558-0200

PROJECT NUM.
07.1385L

DRAWING NUM.
6

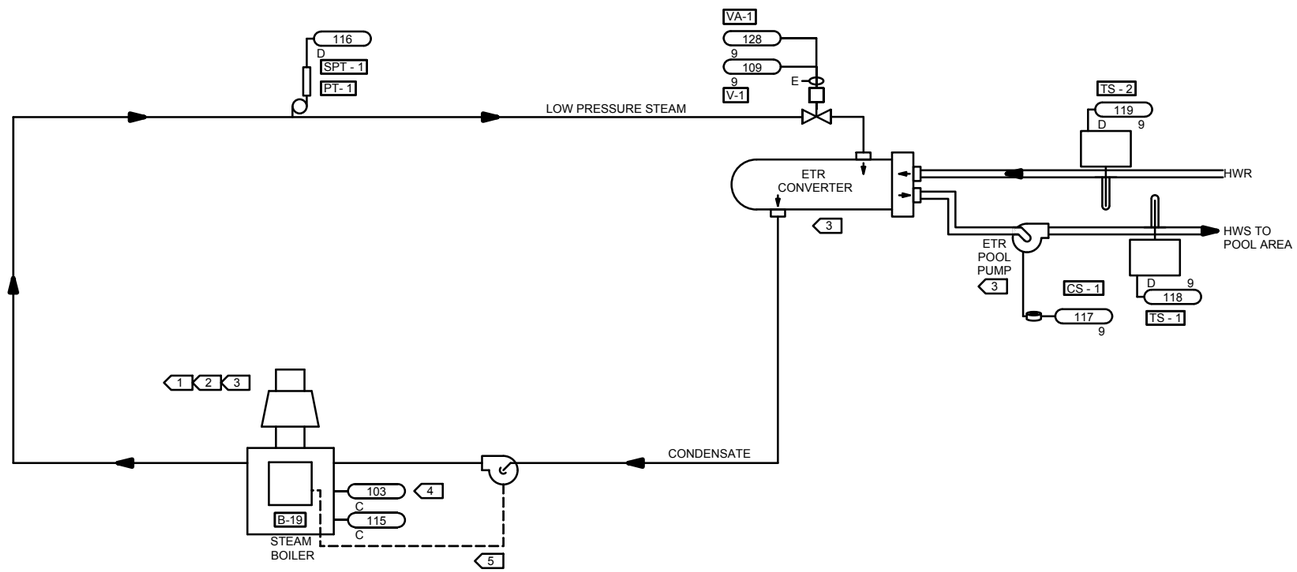


OUTSIDE AIR TEMPERATURE
COMMUNICATED FROM CENTRAL PLANT

HOT WATER SYSTEM - BLDG. 530

(BOILER B-19)

BILL OF MATERIALS				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
V-1	1	BELIMO	SEE VALVE SCHEDULE	2-WAY STEAM VALVE
CS - 1	1	KELE	CS1150A-LED	CSR SOLID CORE 1/0 35 VAC/DC NO
PT- 1	1	KELE	PT	STEAM PIGTAIL SYPHON
SPT - 1	1	KELE	PSS2-30-G	STEAM PRESS SENSOR
TS - 1, TS - 2	2	KELE	ST-W24-XH	IMMERSION TEMP SENSOR



1 FACTORY PROVIDED BOILER DEVICES:
ENABLE / DISABLE RELAY
GENERAL ALARM CONTACT
LOW WATER CUTOFF (FACTORY MOUNTED AND WIRED)
HIGH LIMIT CONTROL (FACTORY MOUNTED AND WIRED)

2 FIELD VERIFY TO ENSURE NO MOTORIZED DAMPERS ARE INSTALLED FOR COMBUSTION AIR. IF SO, INTERLOCK MOTORIZED DAMPERS TO BOILER BURNER.

3 ACTUAL INSTALLATION MAY BE DIFFERENT FROM WHAT IS SHOWN. FIELD VERIFY ARRANGEMENTS AND PROVIDE ACCURATE AS-BUILT INFORMATION. CONTACT BAS PROJECT MANAGER AS REQUIRED FOR CLARIFICATION OF ANY EXISTING OR NEW INSTALLATIONS.

4 THE DDC BOILER ENABLE/DISABLE WILL INITIATE THE BOILER'S AUTO MODE. WHEN ENABLED, THE MANUFACTURER'S BOILER CONTROLLER WILL PROVIDE THE ACTUAL CONTROL OF THE SYSTEM.

5 INTERLOCK WIRING FOR CONDENSATE PUMP AND/OR MAKE-UP WATER VALVE (IF PROVIDED), TO BE WIRED BY OTHERS.

AS BUILT
9/16/08

DRAWING REFERENCE NOTE:
CONTROLS ENGINEERING BASED ON INFORMATION SHOWN ON MECHANICAL PLANS ISSUED BY:
PACE COLLABORATIVE, P.C.
DATED: 3/09/07
PACE JOB NO.: 6280
"DAM NECK ESPC - BOILER INSTALLATION BLDG. 530"

TRANE

FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
BOILER B-19 (BLDG. 530) FLOW

NO.	REVISION	DATE:	BY:
3			
2			
1	MISC REVISIONS	4/21/2009	BLD

SALESPERSON:	ENGINEERED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

PROJECT:
DAM NECK ANNEX
BLDG. 530
6/16/08

DAMUTH TRANE
1100 CAVALIER BLVD.
CHESAPEAKE, VA 23323
757-558-0200

PROJECT NUM.
07.1385L

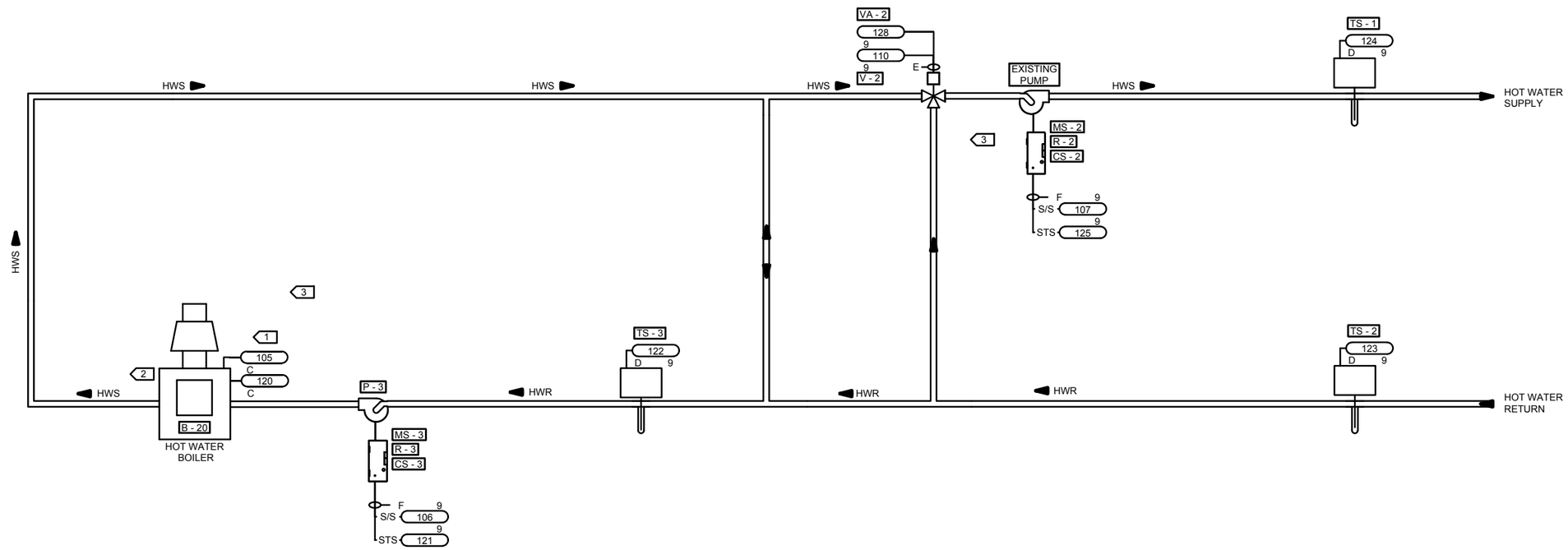
DRAWING NUM.
7

HOT WATER SYSTEM - BLDG. 530

(BOILER B-20)

BILL OF MATERIALS				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
V - 2	1	BELIMO	SEE VALVE SCHEDULE	3-WAY VALVE
CS - 2, CS - 3	2	KELE	CS1150A-LED	CSR SOLID CORE 1/ 135 VAC/DC NO
R - 2, R - 3	2	KELE	RH2B-ULAC24V	RLY W/LIGHT 24VAC SP#0909BVC
TS - 3, TS - 2, TS - 1	3	KELE	ST-W24-XH	IMMERSION TEMP SENSOR

(F) = FACTORY MOUNTED, (SW) = FACTORY PROVIDED: SHIPPED LOOSE
(IC) = PROVIDED BY INSTALLING CONTRACTOR, ALL OTHERS PROVIDED BY DAMUTH BAS



1 FACTORY PROVIDED BOILER DEVICES:
ENABLE / DISABLE RELAY
GENERAL ALARM CONTACT
LOW WATER CUTOFF (FACTORY MOUNTED AND WIRED)
FLOW SWITCH (FACTORY MOUNTED AND WIRED)
HIGH TEMPERATURE LIMIT (FACTORY MOUNTED AND WIRED)

2 BOILER VENTS ARE INDICATED ON DRAWINGS. FIELD VERIFY TO ENSURE NO MOTORIZED DAMPERS ARE INSTALLED FOR COMBUSTION AIR. IF SO, INTERLOCK MOTORIZED DAMPERS TO BOILER BURNER.

3 ACTUAL INSTALLATION MAY BE DIFFERENT FROM WHAT IS SHOWN. FIELD VERIFY ARRANGEMENTS AND PROVIDE ACCURATE AS-BUILT INFORMATION. CONTACT BAS PROJECT MANAGER AS REQUIRED FOR CLARIFICATION OF ANY EXISTING OR NEW INSTALLATIONS.

DRAWING REFERENCE NOTE:
CONTROLS ENGINEERING BASED ON INFORMATION SHOWN ON MECHANICAL PLANS ISSUED BY:
PACE COLLABORATIVE, P.C.
DATED: 3/9/07
PACE JOB NO.: 6280
"DAM NECK ESPC - BOILER INSTALLATION BLDG. 530"

AS BUILT
9/16/08

TRANE

FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
BOILER B-20 (BLDG. 530) FLOW

NO.	REVISION	DATE:	BY:
3			
2			
1	MISC REVISIONS	4/21/2009	BLD

SALESPERSON:	ENGINEERED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

PROJECT:
DAM NECK ANNEX
BLDG. 530
6/16/08

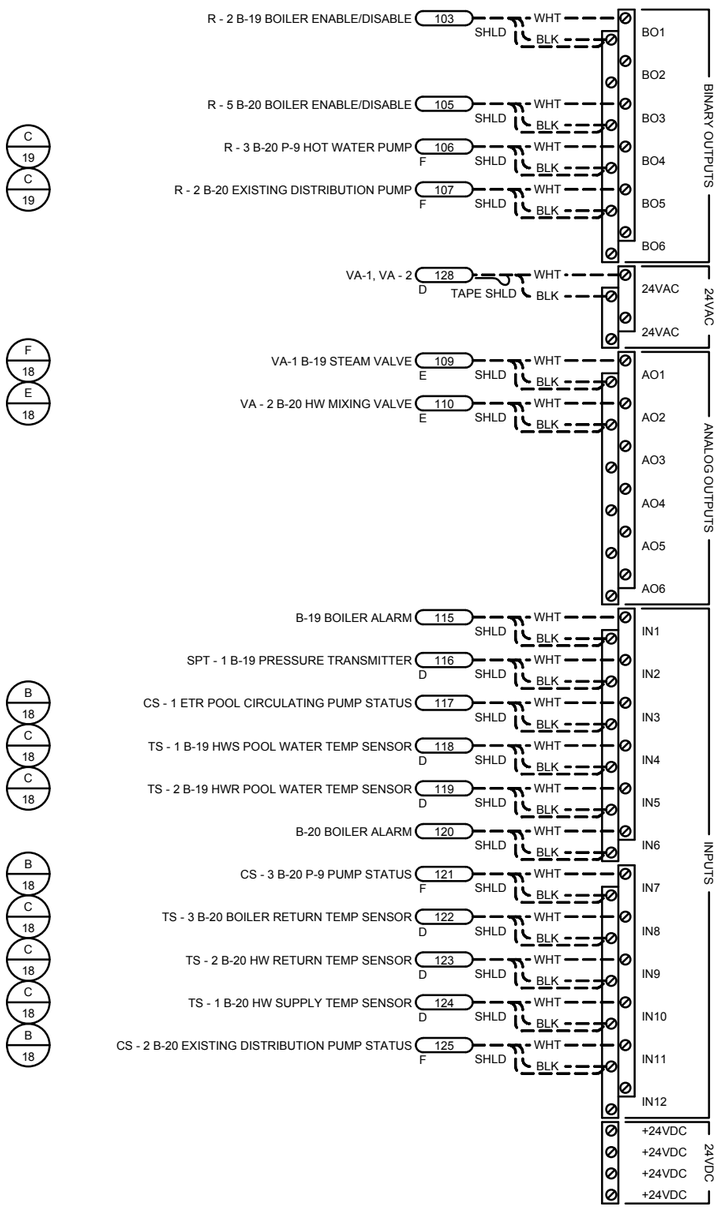
DAMUTH TRANE
1100 CAVALIER BLVD.
CHESAPEAKE, VA 23323
757-558-0200

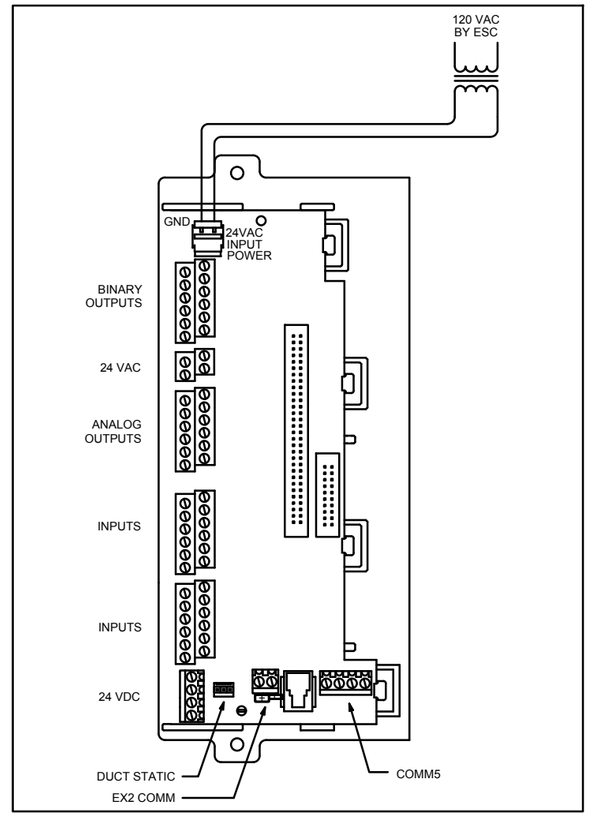
PROJECT NUM.
07.1385L

DRAWING NUM.
8

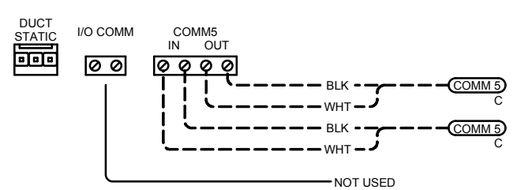
TYPICAL FOR 1
(DNA 530 BOILER B-19, B-20)

BILL OF MATERIALS				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
MP581 - BOILER	1	TRANE	BMTM000AAC01	MP581 FULL ENCLOSURE, WITH DISPLAY 120V





MP581 - BOILER
SYSTEM CONTROLLED:
DNA 530 BOILER B-19, B-20
LOCATION:
MECH ROOM 16



AS BUILT
9/16/08

TRANE

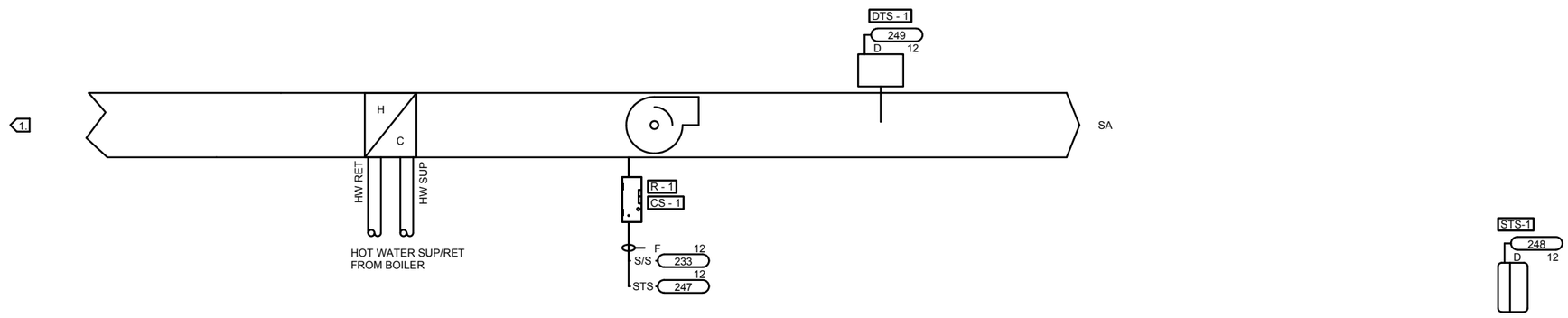
FILE NAME: DAM NECK BLDG 530.AXD			
DRAWING TITLE: DNA BLDG 530 BOILER B-19, B-20 MP581 - BOILER WIRING DETAIL	3		
	2		
	1		
	NO.	REVISION	DATE: BY:
	SALESPERSON:	ENGINEERED BY:	CHECKED BY:
	MN	C. P. ELLIS/BD	LM
PROJECT: DAM NECK ANNEX BLDG. 530 6/16/08	DAMUTH TRANE 1100 CAVALIER BLVD. CHESAPEAKE, VA 23323 757-558-0200		PROJECT NUM. 07.1385L
			DRAWING NUM. 9

BILL OF MATERIALS				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
DTS - 1	1	TRANE	4190-1133	SENSOR TEMP 6 IN. DUCT/IMM THERM
STS-1	1	TRANE	4190-1087	SENSOR TEMP ZONE
CS - 1	1	KELE	CS1150A-LED	CSR SOLID CORE ¼ 135 VAC/DC NO
R - 1	1	KELE	RH2B-ULAC24V	RLY W/LIGHT 24VAC SP# 0909BVC (IC)

(F) = FACTORY MOUNTED, (SW) = FACTORY PROVIDED: SHIPPED LOOSE
(IC) = PROVIDED BY INSTALLING CONTRACTOR, ALL OTHERS PROVIDED BY DAMUTH BAS

H&V-1

(SERVES POOL ROOM)



1. EXISTING HEATING & VENTILATION UNITS:
UNIT CONFIGURATION SHOWN IS NOT COMPLETE.
ONLY POINTS CONTROLLED BY TRANE DDC SYSTEM
ARE INDICATED ON THE FLOW DIAGRAM.

PLEASE NOTE THAT THE UNIT IS NOT CURRENTLY
OPERATING TO THE ORIGINAL DESIGN PARAMETERS.
ALSO, NOTE THAT OUTSIDE AIR IS FILTRATED INTO
BUILDING BY MEANS OF EXISTING ROOFTOP EXHAUST
FANS USING MANUAL CONTROL.

AS BUILT
9/16/08

TRANE

FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
HEATING/VENTILATING UNIT H&V-1
FLOW DIAGRAM

NO.	REVISION	DATE:	BY:
3			
2			
1			

SALESPERSON:	ENGINEERED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

PROJECT:
DAM NECK ANNEX
BLDG. 530
6/16/08

DAMUTH TRANE
1100 CAVALIER BLVD.
CHESAPEAKE, VA 23323
757-558-0200

PROJECT NUM.
07.1385L

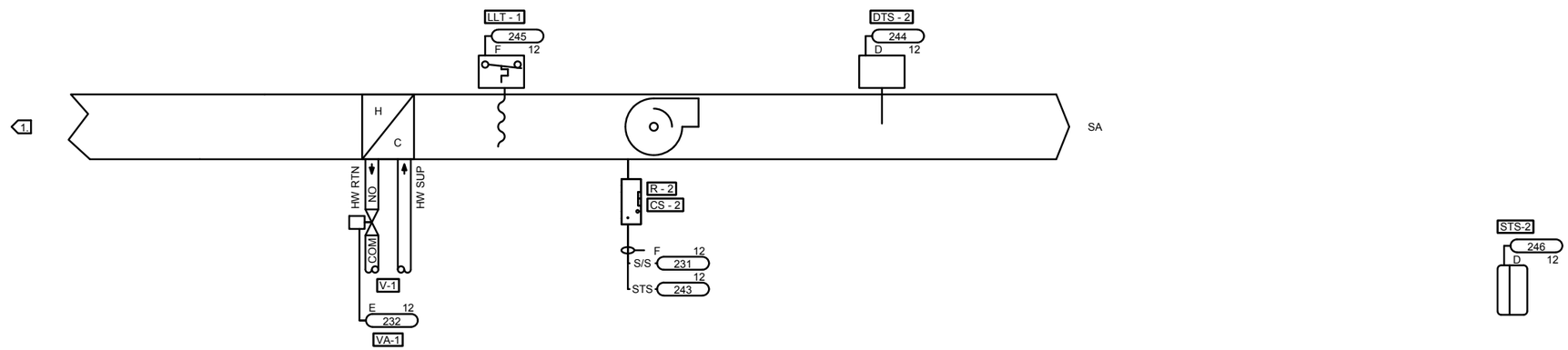
DRAWING NUM.
10

BILL OF MATERIALS				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
DTS - 2	1	TRANE	4190 1133	SENSOR TEMP 6 IN. DUCT/IMM THERM
STS-2	1	TRANE	4190-1087	SENSOR TEMP ZONE
V-1	1			VALVE - AHU 2-WAY SEP ACT
CS - 2	1	KELE	CS1150A-LED	CSR SOLID CORE 1/135 VAC/DC NO
LLT - 1	1	KELE	A70HA-1C	THERMOSTAT LOW TEMP MAN RESET 20FT.
R - 2	1	KELE	RH2B-ULAC24V	RLY W/LIGHT 24VAC SP# 0909BVC (IC)

(F) = FACTORY MOUNTED, (SW) = FACTORY PROVIDED: SHIPPED LOOSE
(IC) = PROVIDED BY INSTALLING CONTRACTOR, ALL OTHERS PROVIDED BY DAMUTH BAS

H&V - 2

(SERVES MEN'S LOCKER ROOM)



1 EXISTING HEATING & VENTILATION UNITS:
UNIT CONFIGURATION SHOWN IS NOT COMPLETE. ONLY POINTS CONTROLLED BY TRANE DDC SYSTEM ARE INDICATED ON THE FLOW DIAGRAM.

PLEASE NOTE THAT THE UNIT IS NOT CURRENTLY OPERATING TO THE ORIGINAL DESIGN PARAMETERS. ALSO, NOTE THAT OUTSIDE AIR IS FILTRATED INTO BUILDING BY MEANS OF EXISTING ROOFTOP EXHAUST FANS USING MANUAL CONTROL.

AS BUILT
9/16/08

TRANE

FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
HEATING/VENTILATING UNIT H&V-2
FLOW DIAGRAM

NO.	REVISION	DATE:	BY:
3			
2			
1			

SALESPERSON:	ENGINEERED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

PROJECT:
DAM NECK ANNEX
BLDG. 530
6/16/08

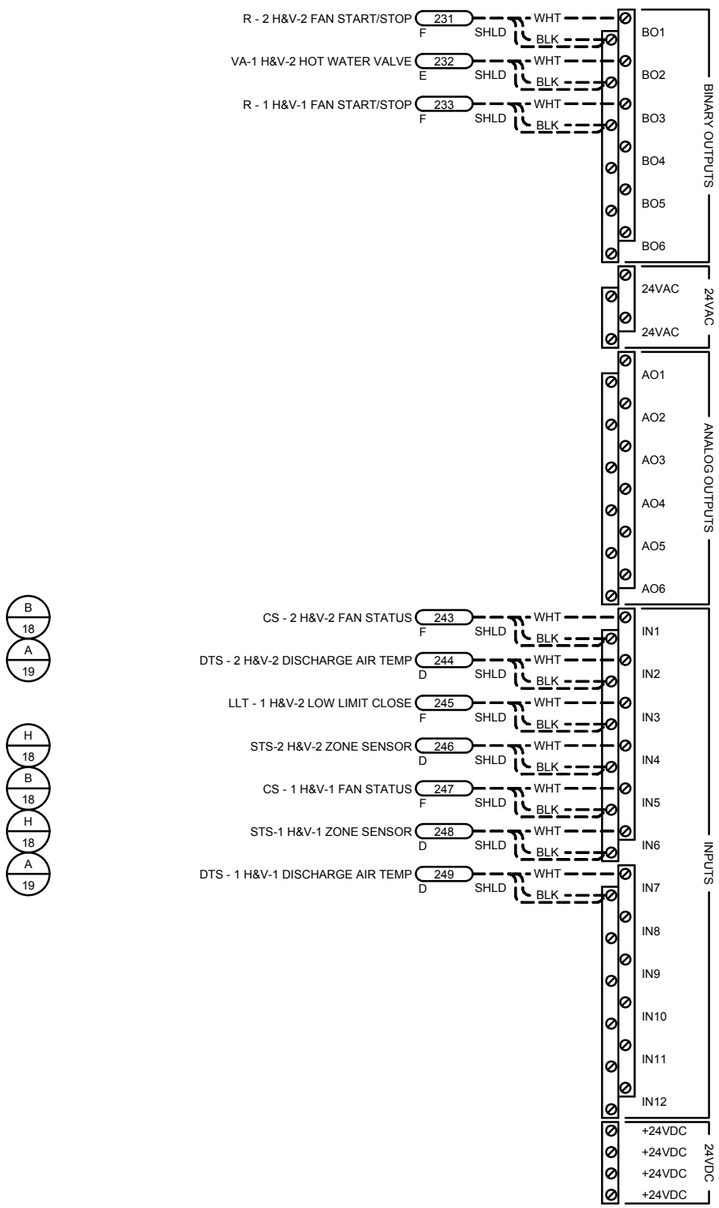
DAMUTH TRANE
1100 CAVALIER BLVD.
CHESAPEAKE, VA 23323
757-558-0200

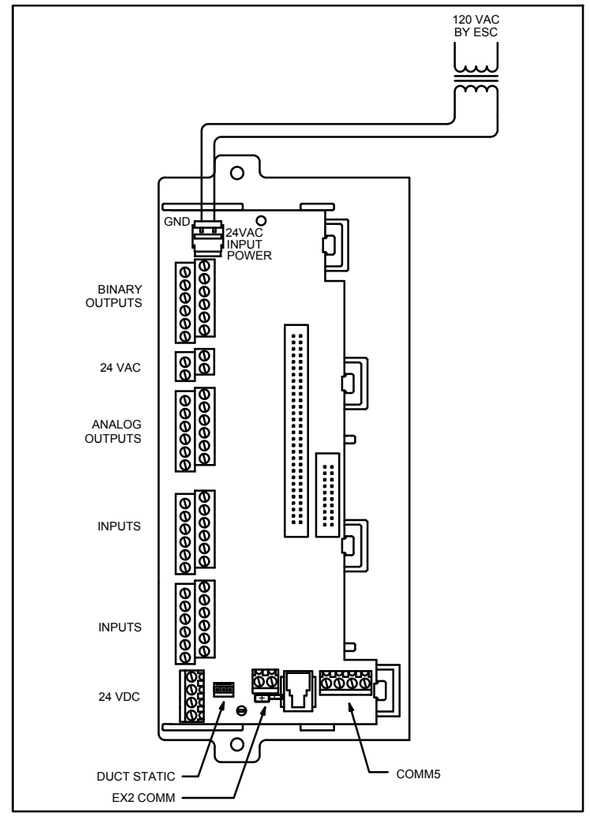
PROJECT NUM.
07.1385L

DRAWING NUM.
11

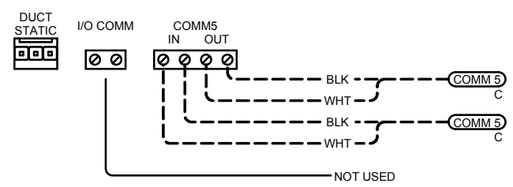
TYPICAL FOR 1
(530 H&V UNIT-01,02)

BILL OF MATERIALS				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
MP581-2	1	TRANE	BMTM000AAC01	MP581 FULL ENCLOSURE, WITH DISPLAY 120V





MP581 - 2
SYSTEM CONTROLLED:
530 H&V UNIT-01,02
LOCATION:
MECH ROOM 16



AS BUILT
9/16/08

TRANE

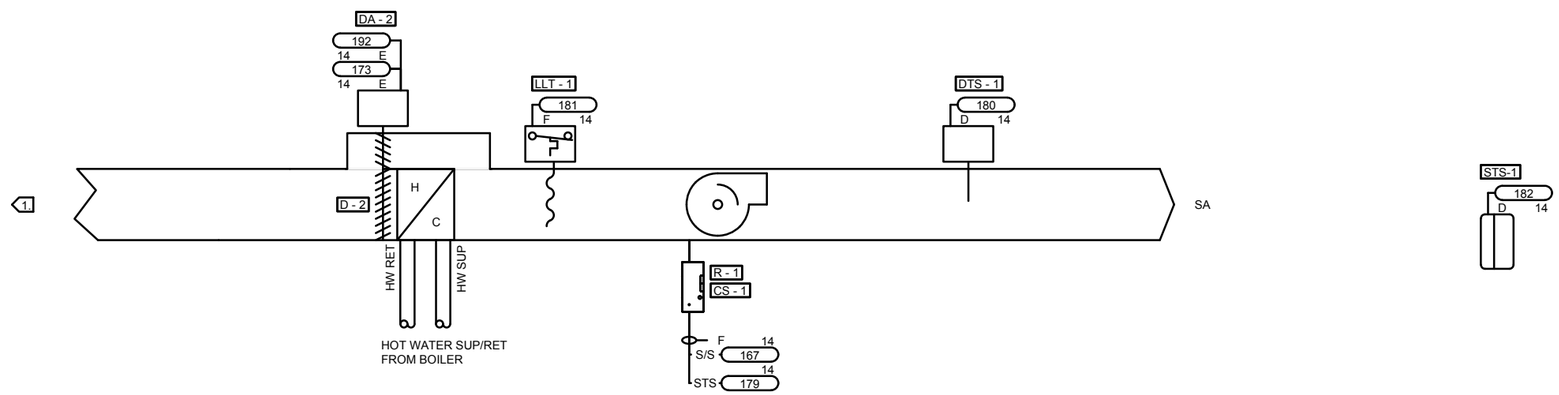
FILE NAME: DAM NECK BLDG 530.AXD			
DRAWING TITLE: 530 H&V UNIT-01,02 MP581 - 2 WIRING DETAIL 2	3		
	2		
	1		
	NO.	REVISION	DATE: / BY:
	SALESPERSON:	ENGINEERED BY:	CHECKED BY:
	MN	C. P. ELLIS/BD	LM
PROJECT: DAM NECK ANNEX BLDG. 530 6/16/08	DAMUTH TRANE 1100 CAVALIER BLVD. CHESAPEAKE, VA 23323 757-558-0200		PROJECT NUM. 07.1385L
			DRAWING NUM. 12

BILL OF MATERIALS				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
DTS - 1	1	TRANE	4190-1133	SENSOR TEMP 6 IN. DUCT/IMM THERM
STS-1	1	TRANE	4190-1087	SENSOR TEMP ZONE
DA - 2	1	BELIMO	NF24-SR US	ACT VDC, PROPORTIONAL
CS - 1	1	KELE	CS1150A-LED	CSR SOLID CORE 1/135 VAC/DC NO
LLT - 1	1	KELE	A70HA-1C	THERMOSTAT LOW TEMP MAN RESET 20FT.
R - 1	1	KELE	RH2B-ULAC24V	RLY W/LIGHT 24VAC SP#0909BVC (IC)

(F) = FACTORY MOUNTED, (SW) = FACTORY PROVIDED: SHIPPED LOOSE
(IC) = PROVIDED BY INSTALLING CONTRACTOR, ALL OTHERS PROVIDED BY DAMUTH BAS

H&V - 4

(SERVES FRONT OFFICE ROOM)



1. EXISTING HEATING & VENTILATION UNITS:
UNIT CONFIGURATION SHOWN IS NOT COMPLETE.
ONLY POINTS CONTROLLED BY TRANE DDC SYSTEM
ARE INDICATED ON THE FLOW DIAGRAM.

PLEASE NOTE THAT THE UNIT IS NOT CURRENTLY
OPERATING TO THE ORIGINAL DESIGN PARAMETERS.
ALSO, NOTE THAT OUTSIDE AIR IS FILTRATED INTO
BUILDING BY MEANS OF EXISTING ROOFTOP EXHAUST
FANS USING MANUAL CONTROL.

AS BUILT
9/16/08

TRANE

FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
HEATING/VENTILATING UNIT H&V-4
FLOW DIAGRAM

NO.	REVISION	DATE:	BY:
3			
2			
1			

SALESPERSON:	ENGINEERED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

PROJECT:
DAM NECK ANNEX
BLDG. 530
6/16/08

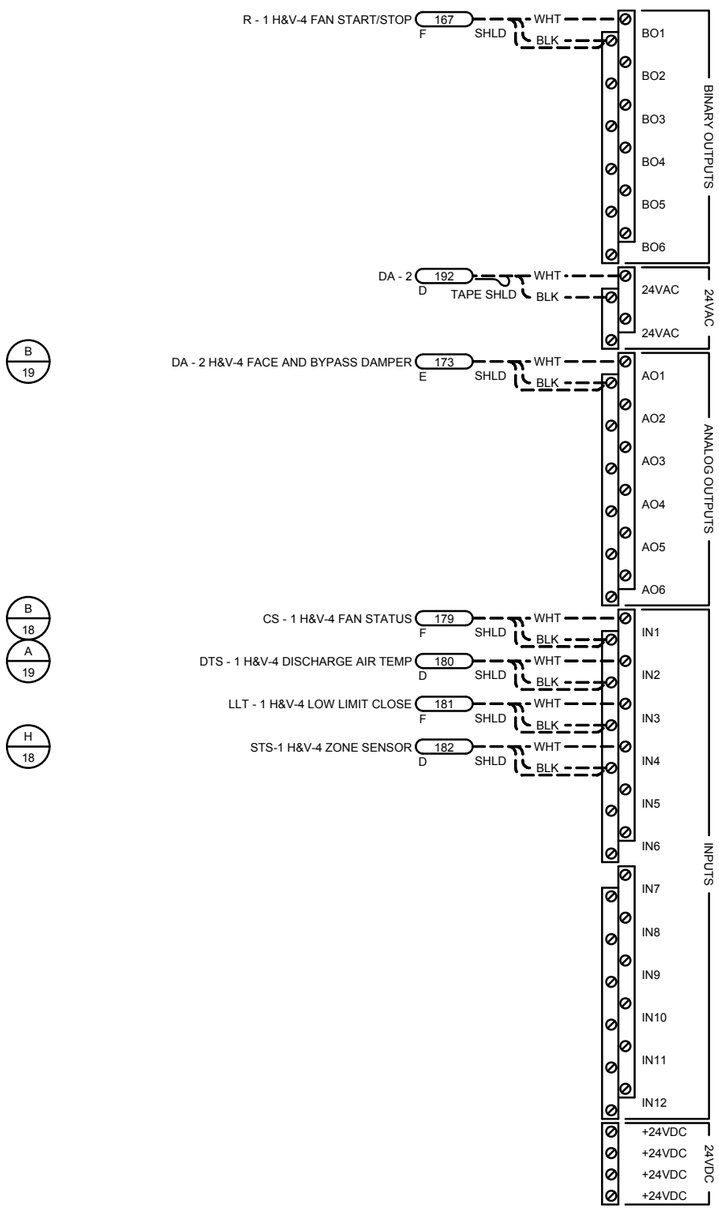
DAMUTH TRANE
1100 CAVALIER BLVD.
CHESAPEAKE, VA 23323
757-558-0200

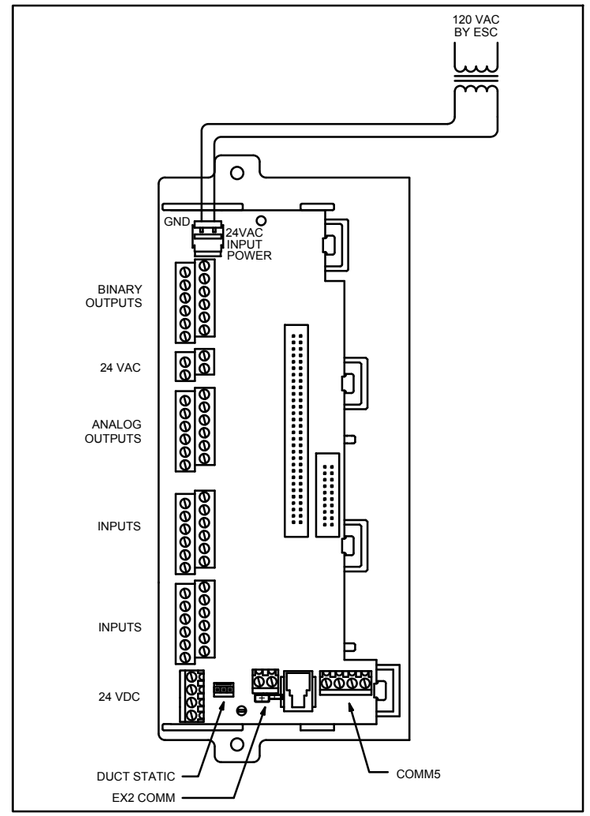
PROJECT NUM.
07.1385L

DRAWING NUM.
13

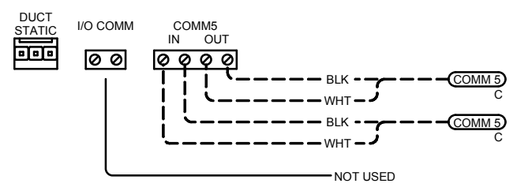
TYPICAL FOR 1
(530 H&V UNIT-04)

BILL OF MATERIALS				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
MP581-3	1	TRANE	BMTM000AAC01	MP581 FULL ENCLOSURE, WITH DISPLAY 120V





MP581 - 3
SYSTEM CONTROLLED:
530 H&V UNIT-04
LOCATION:
MECH ROOM 16



AS BUILT
9/16/08

TRANE

FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
530 H&V UNIT-04 MP581 - 3 WIRING DETAIL

NO.	REVISION	DATE:	BY:
3			
2			
1			

SALESPERSON:	ENGINEERED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

PROJECT:
DAM NECK ANNEX
BLDG. 530
6/16/08

DAMUTH TRANE
1100 CAVALIER BLVD.
CHESAPEAKE, VA 23323
757-558-0200

PROJECT NUM.
07.1385L

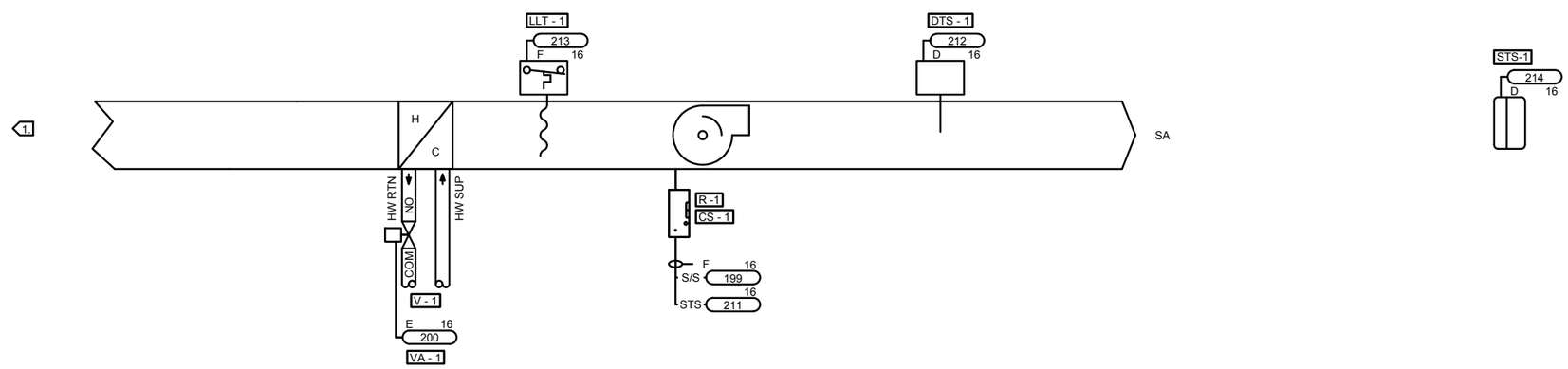
DRAWING NUM.
14

BILL OF MATERIALS				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
DTS - 1	1	TRANE	4 1901133	SENSOR TEMP 6 IN. DUCT/IMM THERM
STS-1	1	TRANE	4 190-1087	SENSOR TEMP ZONE
V - 1	1			VALVE - AHU 2-WAY SEP ACT
CS - 1	1	KELE	CS1150A-LED	CSR SOLID CORE 1/135 VAC/DC NO
LLT - 1	1	KELE	A70HA-1C	THERMOSTAT LOW TEMP MAN RESET 20FT.
R -1	1	KELE	RH2B-ULAC24V	RLY W/LIGHT 24VAC SP#0909BVC (IC)

(F) = FACTORY MOUNTED, (SW) = FACTORY PROVIDED: SHIPPED LOOSE
(IC) = PROVIDED BY INSTALLING CONTRACTOR, ALL OTHERS PROVIDED BY DAMUTH BAS

H&V - 3

(SERVES MEN'S LOCKER ROOM)



1. EXISTING HEATING & VENTILATION UNITS:
UNIT CONFIGURATION SHOWN IS NOT COMPLETE.
ONLY POINTS CONTROLLED BY TRANE DDC SYSTEM
ARE INDICATED ON THE FLOW DIAGRAM.

PLEASE NOTE THAT THE UNIT IS NOT CURRENTLY
OPERATING TO THE ORIGINAL DESIGN PARAMETERS.
ALSO, NOTE THAT OUTSIDE AIR IS FILTRATED INTO
BUILDING BY MEANS OF EXISTING ROOFTOP EXHAUST
FANS USING MANUAL CONTROL.

AS BUILT
9/16/08

TRANE

FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
HEATING/VENTILATING UNIT H&V-3
FLOW DIAGRAM

NO.	REVISION	DATE:	BY:
3			
2			
1			

SALESPERSON:	ENGINEERED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

PROJECT:
DAM NECK ANNEX
BLDG. 530
6/16/08

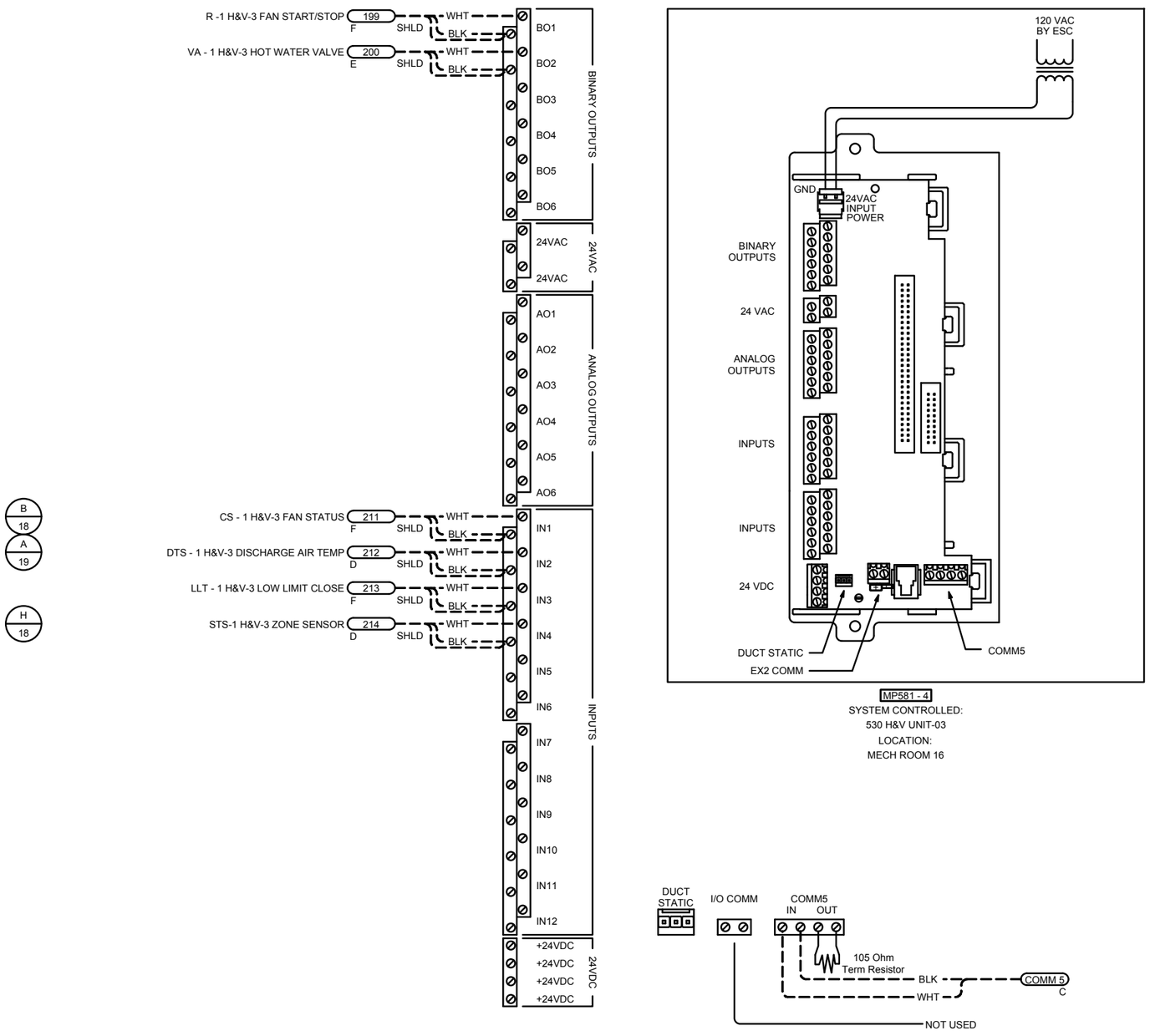
DAMUTH TRANE
1100 CAVALIER BLVD.
CHESAPEAKE, VA 23323
757-558-0200

PROJECT NUM.
07.1385L

DRAWING NUM.
15

TYPICAL FOR 1
(530 H&V UNIT-03)

BILL OF MATERIALS				
TAG	QTY	VENDOR	PART NO	DESCRIPTION
MP581-4	1	TRANE	BMTM000AAC01	MP581 FULL ENCLOSURE, WITH DISPLAY 120V



AS BUILT 9/16/08

TRANE

FILE NAME: DAM NECK BLDG 530.AXD			
DRAWING TITLE: 530 H&V UNIT-03 MP581 - 4 WIRING DETAIL	3		
	2		
	1		
	NO.	REVISION	DATE: BY:
SALESPERSON: MN	ENGINEERED BY: C. P. ELLIS/BD	CHECKED BY: LM	
PROJECT: DAM NECK ANNEX BLDG. 530 6/16/08	DAMUTH TRANE 1100 CAVALIER BLVD. CHESAPEAKE, VA 23323 757-558-0200	PROJECT NUM. 07.1385L	DRAWING NUM. 16

VALVE SCHEDULE - BLDG. 530

TAG NO.	PIPE SIZE	VALVE SERVICE	VALVE MFG/MODEL	SIZE (in.)	VALVE TYPE	RATED CV	FLOW GPM	DELTA-P (psi)
B-19 HX	2	STEAM	BELIMO / G250S + NVF24-MFT-E (V-10001)	2	2-WAY, PROPORTIONAL VALVE; NC,FC	40	(FLOWRATE INFO NOT AVAILABLE)	
B-20	3	MIXING	BELIMO / F765HS + GMX24-MFTX1+A01+X20 US	2 1/2	3-WAY, PROPORTIONAL	75	111.1	2.2

AS BUILT
9/16/08

TRANE

FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
VALVE SCHEDULE

NO.	REVISION	DATE:	BY:
3			
2			
1			

SALESPERSON:	ENGINEERED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

PROJECT:
DAM NECK ANNEX

BLDG. 530

6/16/08

DAMUTH TRANE
1100 CAVALIER BLVD.
CHESAPEAKE, VA 23323
757-558-0200

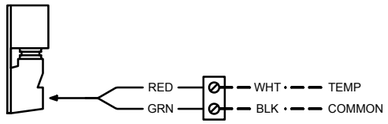
PROJECT NUM.
07.1385L

DRAWING NUM.
17

SENSOR OUTDOOR AIR TEMP THERM

TRANE

4190-1101

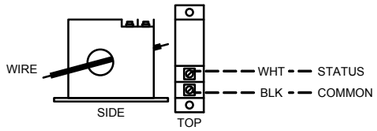


A

SWITCH CURRENT SOLID CORE 1/135 VAC/DC W/LED

KELE

CS1150A-LED

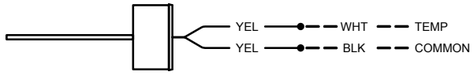


B

SENSOR TEMP IMMERSION 10K THERM, ENCL

KELE

ST-W24-XH

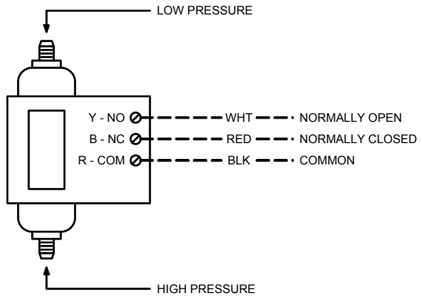


C

DIFFERENTIAL PRESSURE WATER FLOW SWITCH

TRANE

4190-5005

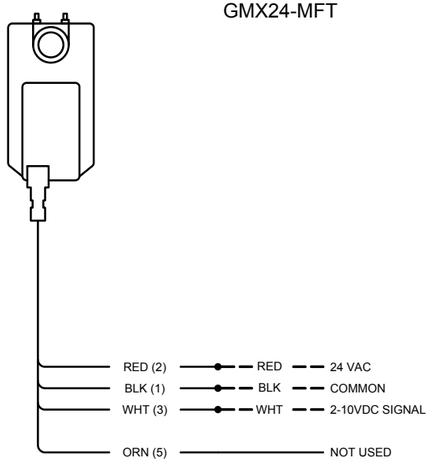


D

ACTUATORS PROGRAMMABLE

BELIMO

GMX24-MFT

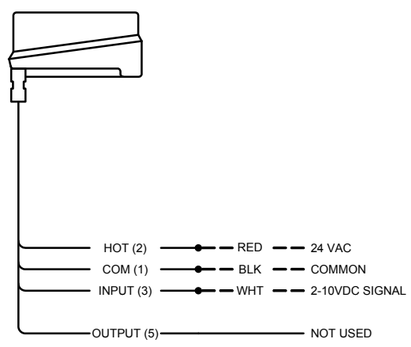


E

ACTUATORS PROGRAMMABLE

BELIMO

NVF24-MFT US

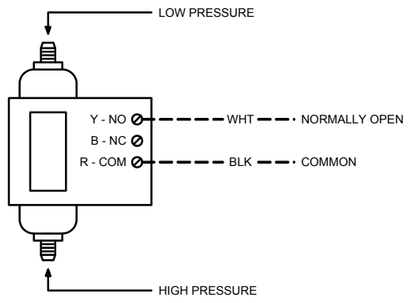


F

DIFFERENTIAL PRESSURE WATER FLOW SWITCH

TRANE

4190-5005

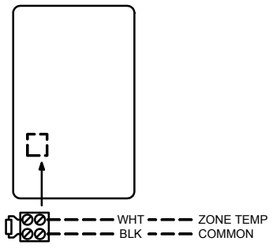


G

SENSOR TEMP ZONE THERM

TRANE

4190-1087



H

AS BUILT
9/16/08

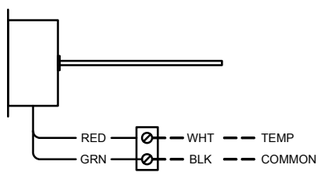
TRANE

FILE NAME: DAM NECK BLDG 530.AXD			
DRAWING TITLE: DETAIL SHEET #1	3		
	2		
	1		
	NO.	REVISION	DATE: BY:
	SALESPERSON:	ENGINEERED BY:	CHECKED BY:
	MN	C. P. ELLIS/BD	LM
PROJECT: DAM NECK ANNEX BLDG. 530 6/16/08	DAMUTH TRANE 1100 CAVALIER BLVD. CHESAPEAKE, VA 23323 757-558-0200		PROJECT NUM. 07.1385L
			DRAWING NUM. 18

SENSOR TEMP 6" DUCT/IMM THERM

TRANE

41901133

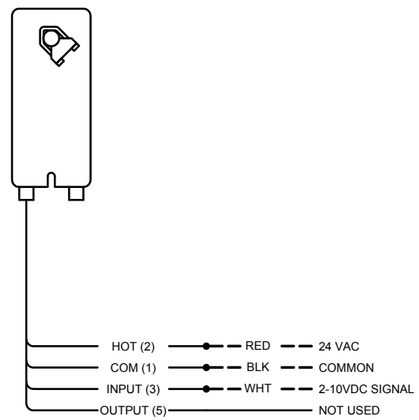


A

ACTUATORS MOD, 24VAC/DC, 60 IN-LB

BELIMO

NF24-SR US

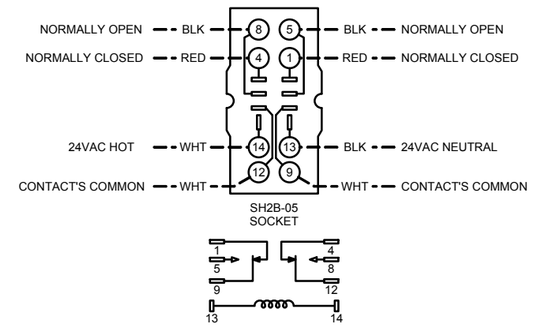


B

DPDT SOCKET RELAY, 24VAC, 10A RES, LED

KELE

RH2B-ULAC24V



C

AS BUILT
9/16/08

TRANE

FILE NAME: DAM NECK BLDG 530.AXD			
DRAWING TITLE: DETAIL SHEET #2	3		
	2		
	1		
	NO.	REVISION	DATE: BY:
	SALESPERSON:	ENGINEERED BY:	CHECKED BY:
	MN	C. P. ELLIS/BD	LM
PROJECT: DAM NECK ANNEX BLDG. 530 6/16/08	DAMUTH TRANE 1100 CAVALIER BLVD. CHESAPEAKE, VA 23323 757-558-0200		PROJECT NUM. 07.1385L
			DRAWING NUM. 19

HOT WATER SYSTEM - STANDARD BOILERS - B-20

ON A FALL IN OUTSIDE AIR TEMPERATURE TO THE SETPOINT OF THE DDC CONTROLLER OR WHEN HEAT IS REQUIRED, THE DDC CONTROLLER WILL ENERGIZE DISTRIBUTION HOT WATER PUMP AND ENABLE EACH BOILER AND ITS ASSOCIATED HOT WATER PUMP. THE DDC SYSTEM WILL RESET THE HEATING WATER SUPPLY TEMPERATURE INVERSELY WITH RESPECT TO OUTSIDE AIR TEMPERATURE BY CONTROLLING THE POSITION OF THE 3-WAY RESET CONTROL VALVE. THE RESET SCHEDULE IS AS FOLLOWS:

OUTSIDE AIR TEMP.	HOT WATER TEMP.
50 DEG-F	160 DEG-F
20 DEG-F	180 DEG-F

THE 3-WAY RESET CONTROL VALVE WILL ALSO BE USED AS A LOW LIMIT TO NOT ALLOW FLOW FROM THE SECONDARY SYSTEM UNTIL THE MINIMUM RETURN TEMPERATURE OF 140 DEG-F TO THE BOILER IS REACHED.

THE DDC CONTROLLER WILL MONITOR FOR BOILER ALARMS.

STEAM BOILERS - B-19

ON A FALL IN OUTSIDE AIR TEMPERATURE TO THE SETPOINT OF THE DDC CONTROLLER OR WHEN STEAM IS REQUIRED, THE DDC CONTROLLER SHALL ENERGIZE THE BOILER. THE BOILER MANUFACTURER'S CONTROLLER WILL OPERATE AS NECESSARY TO MAINTAIN STEAM PRESSURE SETPOINT.

THE DDC CONTROLLER WILL MONITOR FOR BOILER ALARMS. THE DDC BOILER ENABLE/DISABLE WILL INITIATE THE BOILER'S AUTO MODE.

BLDG. 530 POOL WATER HEATING CONTROL:

ON A FALL IN POOL WATER RETURN TEMPERATURE BELOW AN ADJUSTABLE SETPOINT, THE POOL HEATING SYSTEM WILL BE ENABLED. THE DDC CONTROLLER WILL ENABLE THE BOILER AND STEAM CONVERTER CONTROL AND ENERGIZE THE HOT WATER PUMP. THE BOILER MANUFACTURER'S CONTROLLER WILL OPERATE AS NECESSARY TO MAINTAIN STEAM PRESSURE SETPOINT.

ON A FALL IN POOL WATER SUPPLY TEMPERATURE BELOW AN ADJUSTABLE SETPOINT, THE EXISTING EPT STEAM VALVE WILL MODULATE OPEN. THE POOL WATER SUPPLY SETPOINT WILL BE INVERSELY RESET WITH POOL RETURN WATER TEMPERATURE.

THE RESET SCHEDULE IS AS FOLLOWS:

POOL WATER RETURN TEMP.	POOL WATER SUPPLY TEMP.
75 DEG-F	120 DEG-F
85 DEG-F	100 DEG-F

ON A RISE IN POOL WATER SUPPLY TEMPERATURE ABOVE THE SETPOINT, THE POOL HEATING SYSTEM WILL BE DISABLED. WHENEVER THE HOT WATER PUMP IS DE-ENERGIZED, THE CONVERTER STEAM VALVE WILL CLOSE.

THE DDC CONTROLLER WILL MONITOR FOR BOILER ALARMS. THE DDC BOILER ENABLE/DISABLE WILL INITIATE THE BOILER'S AUTO MODE.

HEATING AND VENTILATING UNITS 1-4

H&V-1:
START BOILER BASED ON HEATING REQUIREMENT OF SPACE TEMPERATURE, IF SPACE IS LESS THAN 68.0 F, START BOILER. STOP BOILER WHEN SPACE TEMPERATURE IS GREATER THAN 70.0 F.

H&V-2 AND 3;
ENERGIZE HEATING VALVE BASED ON HEATING REQUIREMENT OF SPACE TEMPERATURE, IF SPACE IS LESS THAN 68.0 F, OPEN VALVE. CLOSE VALVE WHEN SPACE TEMPERATURE IS GREATER THAN 70.0 F.

H&V-4:
CONTROL FACE AND BYPASS DAMPER BASED ON HEATING REQUIREMENT OF SPACE TEMPERATURE. CONTROL FACE AND BYPASS DAMPER TO MAINTAIN 70.0 F.

AS BUILT
9/16/08

TRANE

FILE NAME: DAM NECK BLDG 530.AXD

DRAWING TITLE:
SEQUENCE OF OPERATION

NO.	REVISION	DATE:	BY:
3			
2			
1			

SALESPERSON:	ENGINEERED BY:	CHECKED BY:
MN	C. P. ELLIS/BD	LM

PROJECT:
DAM NECK ANNEX
BLDG. 530
6/16/08

DAMUTH TRANE
1100 CAVALIER BLVD.
CHESAPEAKE, VA 23323
757-558-0200

PROJECT NUM.
07.1385L

DRAWING NUM.
20

Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

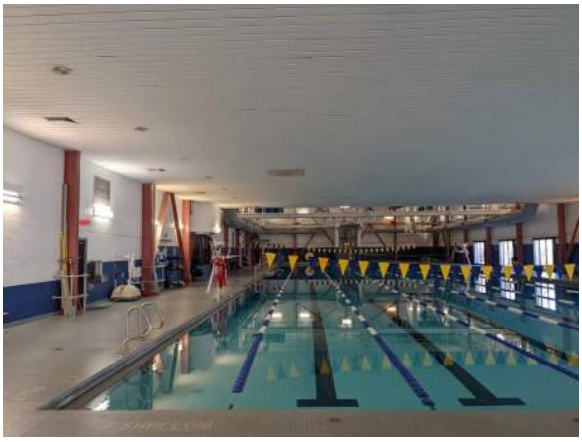
eProjects WO#: 1862885

ATTACHMENT 6.4 – Existing Photographs

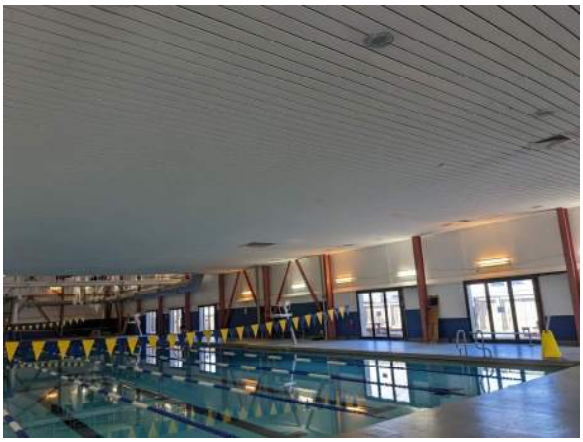
BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

ATTACHMENT 2 – EXISTING PHOTOGRAPHS

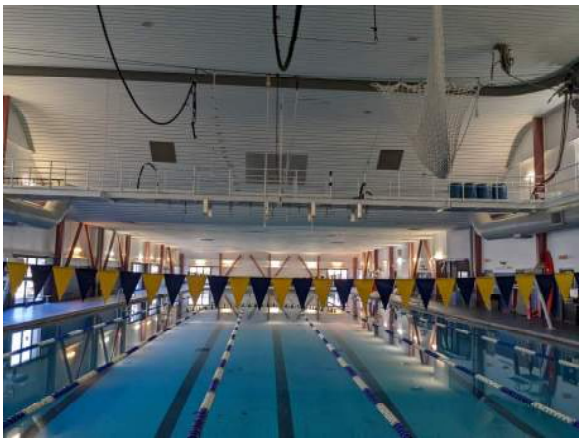
6. Pool – Facing Shallow End



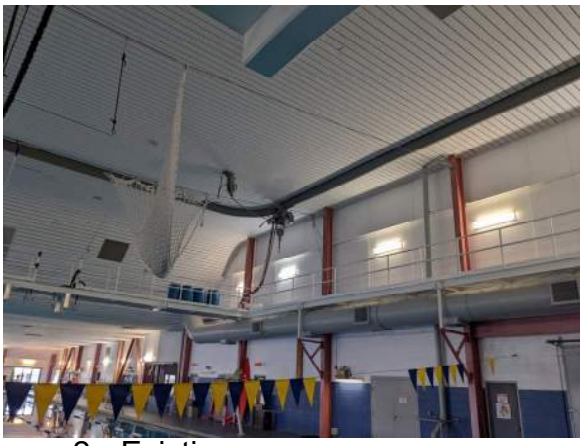
5. Pool – Length from shallow end looking towards deep end.



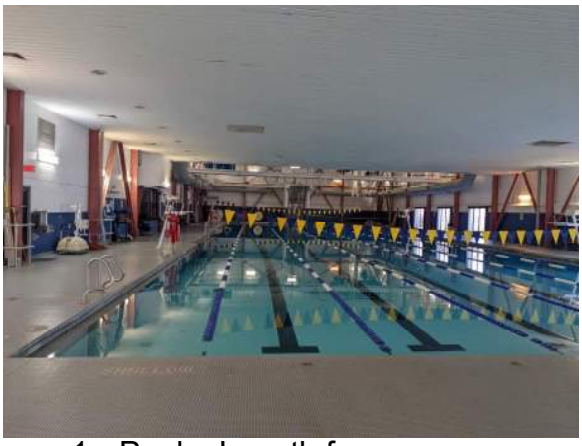
4. Pool – Shallow End



3. Pool – Length from deep end looking towards shallow end.



2. Existing ceiling/catwalk/mechanical bulkhead.

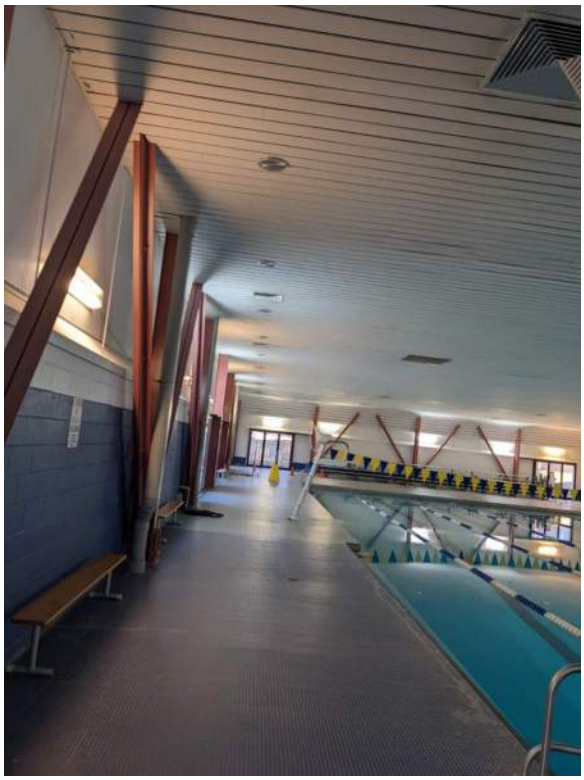


1. Pool – Length from shallow end looking deep.

11. Existing ceiling at shallow end.

9. Existing ceiling mechanical bulkhead transition to lower level.

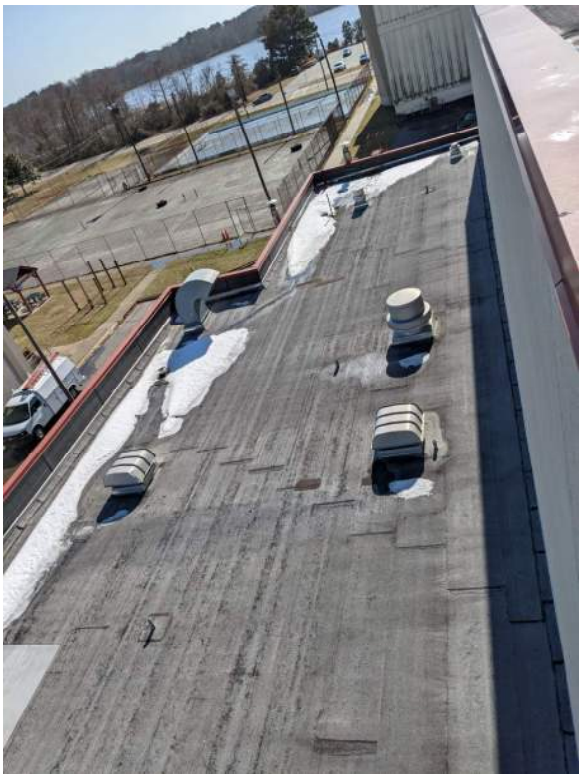
8. Existing floor hatch



10. Existing ceiling at exterior wall.

7. Existing sliding doors.

16. Roof – Lower Level



15. Roof – Lower Level

14. Roof – Middle Level

13. Roof – Middle Level

12. Roof – Middle Level

21. Existing rooftop louver

20. Existing rooftop mechanical exhaust vent

19. Existing mechanical room door/threshold at middle level roof

18. Existing door/threshold at mechanical room

17. Existing Mechanical room

Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

ATTACHMENT 6.5 – Roof Special Maintenance Warranty

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

Part 6 – SPECIAL MAINTENANCE WARRANTY AGREEMENT

Special Maintenance Warranty Agreement (10 Years)
(This Special Maintenance Warranty Agreement is provided in addition to the manufacturer's standard 20 year NDL" No-Dollar-Limit" Warranty)

This **Special Maintenance Agreement (10 Years**) is made and entered into as of the ____ day of _____, 20_____ (the "Effective Date"), by and between _____ **("Manufacturer"),** Inc., and **("Owner")** as indicated below.

A. WHEREAS Owner intends to install a roof comprised of certain ("Manufacturer") roofing materials on the building located at _____(the "Building/Base Location"), which will be covered under a ("Manufacturer") Roof/Membrane Guarantee provided all of ("Manufacturer")'s standard requirements for guarantee issuance are met (the "Guarantee"):

1. Owner: _____
2. Owner Address: _____
3. Building Number/Base Location: _____
4. Building Address: _____
5. Area of Work: _____
6. Acceptance Date: _____
7. Special Maintenance Warranty Period (Years): **10 years**
8. Special Maintenance Warranty Start Date and Expiration Date: _____

B. AND WHEREAS ("Manufacturer") and the Owner would like to enter into this separate Special Maintenance Agreement in connection with the Building, which is in addition to and in no way alters or modifies the terms and conditions of any Guarantee issued in connection with the Building;

C. NOW THEREFORE, the Parties agree as follows:

1. During the term of this Agreement, ("Manufacturer") will perform the following services (the "Services") for Building on a **semiannual basis (minimum of one (1) site inspection visit every six (6) months shall be provided during the Special Maintenance Agreement period**):

    a. Conduct a visual inspection of the entire roof.
    b. Dispose of any debris at drains/scuppers and tighten clamping ring bolts as necessary.
    c. Remove and dispose of any rooftop debris (i.e., leaves, loose granules, trash, etc.)
    d. Cut and remove any loose sealant at membrane termination edges and reseal as necessary.

e. Patch blisters up to 1% of the total roof area, or a maximum of 100 square feet, whichever is greater.
f. Repair up to 10 occurrences of fishmouths or open laps.
g. Provide a detailed photo report of each inspection documenting the roofing conditions and any Services performed to the Government Facilities Maintenance Specialist Department – **ATTN: Requirements Department Branch Head, at NAS Oceana, 953 Hornet Drive, Building 820, Room 118, Virginia Beach, VA. 23460.**

2. ("Manufacturer")'s provision of the Services is subject to Owner (a) providing access to the Building as ("Manufacturer") reasonably requests; (b) taking all actions, excluding the Services but including, without limitation, following generally accepted good roof maintenance practices and guidelines and all repair and maintenance guidelines provided, or made available, by ("Manufacturer") for ("Manufacturer") guaranteed roofs, to keep the roof area of the Building and the roofing materials on the Building in good working order.

3. This Agreement shall commence on the date of guarantee issuance of any Guarantee issued by ("Manufacturer") in connection with the Building, and, unless earlier terminated as provided herein, shall remain in full force and effect for 10 years (the "Term"). If the other party commits a material breach of this Agreement, the non-breaching party may terminate this Agreement, in whole or in part, by giving the other party thirty (30) days prior written notice of termination thereof; provided, however, that such termination will not be effective if the other party has cured the breach prior to the expiration of such thirty (30) day notice period. Additionally, and notwithstanding the foregoing, ("Manufacturer") may terminate this Agreement, without cost or penalty, immediately upon written notice to Owner if Owner (a) fails to perform any of its obligations set forth in Section 2; (b) repairs or replaces the ("Manufacturer") roof materials at the Building with roof materials that are not manufactured by ("Manufacturer"); or (c) installs roof materials at the Building in place of or over the existing ("Manufacturer") roof materials that are not manufactured by ("Manufacturer").

4. Disclaimers; Limitation of Liability.

   a. For avoidance of doubt, ("Manufacturer") makes no warranties of any kind with respect to the ("Manufacturer") roof materials on the Building as part of this Agreement. Except as set forth in the Guarantee, if any, with respect to such roof materials, ("Manufacturer") makes no other warranties, express or implied, with respect to such roof materials, including, but not limited to, any warranty of merchantability or fitness for a particular purpose, and ("Manufacturer") hereby disclaims any other such warranties. ("Manufacturer") shall have no obligation or liability of any kind with respect to the ("Manufacturer") roof materials other than as described in the Guarantee, if any, and ("Manufacturer") hereby expressly disclaims any other such obligations or liability.

   b. THE SERVICES AND ALL REPORTS AND OTHER MATERIALS PROVIDED IN CONNECTION THEREWITH (COLLECTIVELY, THE "DELIVERABLES") ARE PROVIDED "AS IS" AND WITH ALL FAULTS, AND ("MANUFACTURER") HEREBY DISCLAIMS ALL WARRANTIES WITH RESPECT TO THE SERVICES AND DELIVERABLES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ("MANUFACTURER") DOES NOT WARRANT THAT THE SERVICES OR DELIVERABLES WILL MEET OWNER'S REQUIREMENTS IN ANY RESPECT OR THAT DEFECTS WITH THE SERVICES OR DELIVERABLES

CAN OR WILL BE CORRECTED. OWNER UNDERSTANDS AND ACKNOWLEDGES THAT OWNER IS SOLELY RESPONSIBLE FOR ANY DECISIONS OWNER MAKES BASED ON A DELIVERABLE. OWNER FURTHER UNDERSTANDS AND ACKNOWLEDGES THAT THE ENTIRE RISK AS TO THE SERVICES AND DELIVERABLES IS WITH OWNER. SHOULD THE SERVICES OR DELIVERABLES PROVE DEFECTIVE, ("MANUFACTURER")'S ONLY RESPONSIBILITY AND LIABILITY, AND OWNER'S SOLE AND EXCLUSIVE REMEDY, SHALL BE FOR ("MANUFACTURER") TO USE COMMERCIALLY REASONABLE EFFORTS TO CORRECT SUCH DEFECT.

c. TO THE MAXIMUM EXTENT PERMITTED BY LAW, IN ADDITION TO THE WARRANTY AND OTHER DISCLAIMERS IN THIS AGREEMENT, IN NO EVENT SHALL (I) ("MANUFACTURER") OR ANY OF ITS AFFILIATES BE LIABLE TO OWNER OR ANY OTHER PARTY FOR ANY INDIRECT, SPECIAL, PUNITIVE, EXEMPLARY OR CONSEQUENTIAL DAMAGES, LOST REVENUE OR LOST PROFITS ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT, THE SERVICES OR THE DELIVERABLES, EVEN IF ("MANUFACTURER") AND ITS AFFILIATES HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES; (II) THE TOTAL AGGREGATE LIABILITY OF ("MANUFACTURER") AND ITS AFFILIATES FOR DAMAGES OR ALLEGED DAMAGES ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT, THE SERVICES AND THE DELIVERABLES EXCEED THE LESSER OF (X) THE FEES ACTUALLY PAID BY OWNER HEREUNDER; OR (Y) $50,000. THE LIMITATIONS OF LIABILITY SET FORTH IN THIS SECTION SHALL APPLY REGARDLESS OF THE FORM OF ACTION, WHETHER BASED ON BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR ANY OTHER LEGAL THEORY. To the extent that ("Manufacturer") may not, as a matter of applicable law, disclaim any warranty or limit or exclude any liability as set forth in this Agreement, the scope and duration of such warranty and the extent of ("Manufacturer")'s and its affiliates' liability shall be the minimum permitted under such applicable law.

5. This Agreement constitutes the sole and only agreement of the parties and supersedes any prior understandings or written or oral agreements between the parties with respect to the subject matter of this Agreement. For the avoidance of doubt, this Agreement does not supersede any Guarantee that may be in effect with respect to the ("Manufacturer") roof materials on the Building. The validity, interpretation, performance and enforcement of this Agreement shall be governed by the laws of the State of New York without giving effect to its conflict of laws provisions (except Section 5-1401 of the New York General Obligations Law). All notices required or desired to be sent to either party in connection with this Agreement shall be in writing and sent by first class mail, postage prepaid or by next-day courier. Notice shall be effective on the fifth (5th) business day after mailing or on the first (1st) day after the date of sending via next-day courier. All such notices to either party shall be delivered at the following addresses (or at such other address for a party as shall be specified in a notice given in accordance with this Section): if to ("Manufacturer"), to ("Manufacturer"), Inc., _____, Attention: President, with a copy to ("Manufacturer")'s General Counsel at _____and if to Owner, to the address listed on the first page of this Agreement. Any modification to this Agreement shall not be effective unless contained in writing signed by both parties. No waiver by a party shall be effective unless in writing and signed by the party against whom enforcement of such waiver is sought. If any provision of this Agreement is held invalid or unenforceable in any jurisdiction, such invalidity or unenforceability shall not affect the validity or enforceability of the remainder of this Agreement. Owner shall not

assign or transfer this Agreement, either in whole or in part, whether by operation of law or otherwise, without the prior written consent of (“Manufacturer”), and any such purported assignment or transfer shall be of no force or effect. The terms of Sections 4 and 5 and Owner’s obligation to pay all fees due hereunder shall survive the termination of this Agreement for any reason or its expiration. This Agreement may be executed in multiple counterparts, each of which shall be deemed to be an original and of equal force and effect, but all of which taken together shall constitute one and the same instrument. Delivery of an executed counterpart of a signature page to this Agreement by facsimile or other electronic means shall be effective as delivery of a manually executed counterpart of this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the Effective Date.

(“MANUFACTURER”), INC.

[OWNER]

By:

By:

Name:

Name:

Title:

Title:

END OF SPECIAL MAINTENANCE WARRANTY AGREEMENT

Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

ATTACHMENT 6.6 – EQUIPMENT INVENTORY FORM

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

EQUIPMENT INVENTORY FORM

BUILDING: _____

LOCATION: _____

DESCRIPTION: _____

MANUFACTURER: _____

MODEL NUMBER: _____

SERIAL NUMBER: _____

CHECK ONE

ADD TO INVENTORY: ☐ **REMOVE FROM INVENTORY:** ☐

ASSET #

DATE REQUESTED: _____

REQUESTER: (PLEASE PRINT) _____

SIGNATURE: _____

DATE ADDED TO/REMOVED FROM INVENTORY: _____

INVENTORY CHANGE BY: (PLEASE PRINT) _____

SIGNATURE: _____

ONCE PROCESSED SIGN AND RETURN TO REQUESTOR.

Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

ATTACHMENT 6.7 – OC-SOP-WA-14_REV_D_PREP-PAINT

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

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DOCUMENT NO.:

OC-DN-FN-SOP-WA-14

TITLE:

Surface Preparation and Painting Standard Operating Procedure (SOP)

CONTENTS

1. PURPOSE **2**
2. REFERENCES: **2**
3. APPLICABILITY: **2**
4. ACTION: **2**
5. POINTS OF CONTACT: **4**
6. REQUEST FORM FOR DISCHARGE TO SANITARY SEWER: **5**
7. QUICK REFERENCE GUIDE FOR PROCEDURE **6**

DOCUMENT OWNER: PWD Oceana Water Program Manager	AUTHORIZED BY: Installation Environmental Program Director

REV. NO.	EFFECTIVE DATE	DESCRIPTION OF REVISION
	8/1/2023	ORIGINAL ISSUE
A	2/15/2024	CONTACT INFORMATION REMOVED AND REPLACED WITH TITLES

From: PWD Oceana Environmental Program Director

To: NAS Oceana, Dam Neck Annex & NALF Fentress Personnel

Subj.: Standard Operating Procedure (SOP) - Surface Preparation and Painting

1. **Purpose:**
   This SOP details the operational requirements for surface preparation and painting in order to comply with State and local Water and Waste regulations.

2. **References:**
   - Virginia Pollutant Discharge Elimination System (VPDES) Industrial Stormwater Discharge Permit
   - Hampton Roads Sanitation District (HRSD) Industrial Wastewater Discharge Regulations
   - Resource Conservation and Recovery Act (RCRA) and the Virginia Hazardous Waste Management Regulations

3. **Applicability:**
   This SOP is applicable to all personnel who perform surface preparation, to include using water to remove paint from structures, buildings and tanks, and painting at all installations listed above. In order to ensure compliance with environmental requirements, tenants, federal contractors, and operators are responsible for understanding and implementing this SOP. This SOP replaces OC-SOP-WA-14 for NAS Oceana, DN-SOP-WA-04 for Dam Neck Annex, and FN-SOP-WA-05 for NALF Fentress.

4. **Action:**
   It is recommended that only hand scraping is used to prepare walls or other surfaces for painting as there are more stringent environmental restrictions when using wet prep.

   Contact PWD Oceana Hazardous Waste Manager prior to work start for coordination of proposed testing method(s) and disposal requirements for waste generated in these processes. Contact information available from Environmental and should be issued with the SOP at the time of request.

   FOR WATER BLASTING OPERATION:
   All wastewater and solids from paint removal activities must be collected and contained. All solids from paint removal activities must be collected and contained separately from the wastewater. Solids must be filtered in line prior to containment. Solids must be tested to determine route of disposal. The solids will either be disposed of as a solid waste or as a hazardous waste. To coordinate solids sampling and disposal methods, contact the PWD Oceana Hazardous Waste Media Manager.

   The wastewater can be tested to determine if it can be discharged to the sanitary sewer system. **At no time may wastewater be discharged to the storm sewer system.**

   In order to get approval to discharge the wastewater to the sanitary sewer the following steps shall be taken:

- A representative sample of the wastewater must be collected and analyzed using an approved wastewater method. HRSD will determine the parameters necessary to be tested prior to discharge approval based on information provided on the discharge request form.
- Provide sampling results, along with the total amount of wastewater that needs to be disposed of, and a description of the process that generated the wastewater to the PWD Oceana Wastewater Media Manager. The Wastewater Media Manager will request permission from HRSD to discharge the wastewater to the sanitary sewer system and provide a response to the request. Installation personnel or contractors shall not contact HRSD directly for approval. Discharge request form provided in Enclosure 1.
- If the request to discharge is not approved, then other arrangements for disposal must be made. **The wastewater may not be discharged to the storm sewer system.**

FOR DRY SCRAPING, SANDING, OR BLASTING OPERATION:

- Storm drains in the vicinity or immediately downstream must also be protected or covered. Gutter buddies or drop inlet socks can be used to protect storm conveyance structures.
- Operation must minimize dust particles released into the air. This can be accomplished by the use of filters/bags on hand sanding equipment or barriers if particle blasting.
- To prevent the discharge of paint chips to the environment, the work areas must be contained using hanging plastic barriers, tarps, or shrouds.
- Ensure drop cloths are in place to keep chips away from soil surfaces, and that any particulates landing on drop cloths are collected prior to removal.
- Ensure all areas/tarps are cleaned at the end of each day and before each rain event to ensure no paint chips are carried to the storm system.
- Paint chips and residues must be captured and sampled to determine disposal route.
- For paint chips/debris generated, management and disposal must be determined by the PWD Oceana Hazardous Waste Media Manager.

FOR PAINTING OPERATION:

- Keep lids on paint cans when not in use. If lid has tabs, all tabs must be turned down for can to be considered closed.
- Keep bags/containers of solvent rags closed unless adding or removing rags.
- Do not air dry brushes, rags, or rollers used with solvent or non-latex paint.
- Management and disposal of these brushes, rags, and rollers must be determined by PWD Oceana Hazardous Waste Media Manager.
- Remove all excess liquid (containerize as appropriate) and place wet items in closed container or bag for waste disposal.
- Items used with latex paint may be disposed of if considered empty by the Resource Conservation and Recovery Act (RCRA). RCRA empty metal paint cans that contain latex paint may be recycled as scrap metal, recyclable plastic, or disposed of as solid waste. A paint container is considered RCRA empty if:

  - all residues in the container must have been removed using practices commonly employed for emptying that container. Pouring, pumping, draining and wiping are commonly used methods for emptying containers.
  - Up to one inch of waste may remain in an empty container <u>only if</u> it cannot be removed by normal means. If extraordinary means are necessary to remove the waste to lower the contents down to a depth of less than one inch they must be employed per RCRA regulations.
  - If determining the depth of the liquid is not possible, a container of less than or equal to (≤) 119 gallons that contains less than 3% by weight of the total capacity of the container is considered RCRA empty. For a container greater than (>)119 gallons, no more than 0.3% by weight of the total capacity of the container must remain to be considered RCRA empty.
- Tarps/drop cloths must be used in areas where painting is occurring, as well as in areas where paint is being transferred. All spills onto tarps must be wiped up immediately.

ALL spills regardless of volume to ground or storm system must be cleaned up immediately and reported to the Regional Dispatch Center (RDC) at (757) 433-9111. Storm drains in the vicinity or immediately downstream must be protected or covered.

Do not engage in exterior painting during inclement weather, high winds or during times when inclement weather is anticipated before painted surfaces dry. To ensure effectiveness of containment, minimize the work surface being painted or removing paint.

For any questions regarding this process or this SOP, contact the PWD Oceana Wastewater Media Manager.

5. Points of Contact:

A current list of Environmental Contacts should be issued with this SOP. If no list is provided, please request a contact list from the Environmental Department.

Enclosure 1: Request to Discharge Data Form

REQUEST TO DISCHARGE TO SANITARY SEWER

Note: Analysis of wastewater will be required by HRSD as part of the discharge approval process. Specific sampling parameters will be determined on a case-by-case basis, depending on the nature of the wastewater being generated.

Date Requested: _____

Installation Where Wastewater Was/Will be Generated:
_____

Building and/or Location Wastewater Was/Will be Generated:
_____

Planned Discharge Location of Wastewater:
_____

Activity Generating the Wastewater (provide SDS's of any product known to be included in the wastewater):
_____
_____
_____
_____

Will This be a One-Time Discharge, or a Routine Discharge?
_____

If this is a Routine Discharge, Projected Schedule (Time period and Frequency):
_____

Approximate Volume of Wastewater (Gallons):_____

Requestor Name and Position:_____
_____

Requestor Contact Information: _____
_____

Failure to obtain approval prior to discharging industrial wastewater will result in a Notice of Violation of the base-wide Sanitary Sewer Permit. This violation may be accompanied by a penalty of up to $37,500 per day and/or revocation of the base permit to discharge.

****

For Media Manager Records Only:

HRSD Contact Date:_____ Approval/Denial Date: _____

Discharge Date: _____

Enclosure 2: Quick Reference Guide

OC-DN-FN-SOP-WA-14 QUICK REFERENCE GUIDE

The Quick Reference Guide is not a substitute for reading and understanding the SOP, but a tool to use in addition to the SOP. Any questions or concerns please contact the appropriate person in the Contact List attached.

OPERATION	REQUIREMENTS
WATER BLASTING OPERATIONS	• All solids must be collected and contained separate from the wastewater. • Solids must be filtered in line following containment. • Solids must be tested to determine route of disposal. Contact PWD Hazardous Waste Manager to coordinate. • Wastewater requires testing to determine if it can be discharged to the sanitary sewer. Fill out attached form and contact PWD Wastewater Manager to coordinate. • **At no time may wastewater be discharged to the storm water system.** • Wastewater may not be discharged to the sanitary sewer without permission from HRSD.
DRY SCRAPING, SANDING, OR BLASTING	• Operation must minimize dust particles released into the air. Use of filters/bags on hand sanding equipment or barriers if particle blasting. • Paint chips and residues must be captured and test to determine disposal. Contact PWD Hazardous Waste Manager to coordinate. • Work areas must be contained using hanging plastic barriers, tarps, or shrouds. • Gutter buddies/drop in inlet socks to protect storm conveyance structures. • Drop cloths to keep paint chips away from soil, and particles are collected prior to removal. • Ensure all drop cloths are cleaned at the end of each day or prior to a rain event to keep chips from storm drain.
PAINTING	• Keep lids on paint cans when not in use. If lid has tabs, all tabs must be turned down. • Bags of solvent rags must be closed unless adding or removing rags. • Do not dry air brushes, rags, or rollers used with solvent or non-latex paint. • Management and disposal of brushes, rags, and rollers must be determined by PWD Hazardous Waste Manager. • Items used with latex paint may be disposed of if RCRA empty. <u>See SOP details for definition of RCRA empty.</u> • Tarps/drop cloths must be used in areas where painting is occurring and in paint transfer areas. • All spills onto tarps must be wiped up immediately. • **All spills regardless of volume to ground or storm system must be cleaned up immediately and reported to regional dispatch center (RDC) at (757) 433-9111.** • Storm drains in the vicinity or immediately downstream must be protected or covered.

Last Updated: 2/15/2024

NAS OCEANA/NALF FENTRESS/DAM NECK ANNEX
ENVIRONMENTAL POINTS OF CONTACTS

ALL SPILLS MUST BE REPORTED	**Regional Dispatch Center (RDC)**	**(757) 433-9111**

TITLE	NAME	PHONE #	EMAIL
Installation Environmental Program Director (IEPD)	Andrea Arredondo	(757) 433-3437	Andrea.s.arredondo.civ@us.navy.mil
Lead EPS: Oceana and NALF Fentress	Jerry Jackson	(757) 433-5402	jerry.h.jackson.civ@us.navy.mil
EPS: Dam Neck Annex	Cenen Camerino	(757) 433-3439	cenen.r.camerino.civ@us.navy.mil
Natural Resources: Biological Science Tech	Mark Edwards	(757)433-2719	mark.l.edwards2.civ@us.navy.mil

PROGRAM	NAME	PHONE #	EMAIL
Regional Dispatch Center	**RDC**	**(757) 433-9111**	
Asbestos Program	Allan Talavera	(757) 477-0661	allan.b.talavera.civ@us.navy.mil
Air Compliance	Cole Martin	(757) 641-5040	cole.e.martin4.civ@us.navy.mil
Authorize Use List (AUL) – Hazardous Materials	Cole Martin	(757) 641-5040	cole.e.martin4.civ@us.navy.mil
Coastal Zone Management Act (CZMA)	Tara Fisher	(757) 433-3443	tara.g.fisher2.civ@us.navy.mil
Coastal Zone Management Act (CZMA) – Natural Resources	Michael Wright	(757) 433-3461	michael.f.wright43.civ@us.navy.mil
Cultural Resources	Katie Lantzas-Olson	(757) 433-8989	catherine.a.lantzas-olson.civ@us.navy.mil
Drinking Water	Dawn Friedrichs	(757) 433-3434	dawn.m.friedrichs.civ@us.navy.mil

Last Updated: 2/15/2024

PROGRAM	NAME	PHONE #	EMAIL
Emergency Planning and Community Right to Know (EPCRA)	Cole Martin	(757) 641-5040	cole.e.martin4.civ@us.navy.mil
EV Services – oils and waste pick-up, and sampling requests	EV Service Desk	(757) 341-0460	
Environmental Management System (EMS)	Dawn Friedrichs	(757) 433-3434	dawn.m.friedrichs.civ@us.navy.mil
Natural Resources: Wetlands, Marine Mammals, Avian, BASH	Michael Wright	(757)433-3461	michael.f.wright43.civ@us.navy.mil
Natural Resources: Pest Mgmt., Forestry, Recreational Programs	Doug Lynde-Shultz	(757)635-5436	douglas.h.lyndeshultz.civ@us.navy.mil
National Environmental Policy Act (NEPA)	Katie Lantzas-Olson	(757) 433-8989	catherine.a.lantzas-olson.civ@us.navy.mil
Radon	Cole Martin	(757) 641-5040	cole.e.martin4.civ@us.navy.mil
Restoration	Jillian Wheeler	(757) 341-0485	jillian.wheeler.civ@us.navy.mil
Recycling Center	Theresa Arnold	(757) 708-6774	theresa.j.arnold.naf@us.navy.mil
Stormwater/MS4	Tara Fisher	(757) 433-3443	tara.g.fisher2.civ@us.navy.mil
Spills Management	Jerry Jackson	(757) 433-5402	jerry.h.jackson.civ@us.navy.mil
Tanks/POL	Tara Fisher	(757) 433-3443	tara.g.fisher2.civ@us.navy.mil
Waste – Solid and Hazardous	Cole Martin	(757) 641-5040	cole.e.martin4.civ@us.navy.mil
Wastewater	Dawn Friedrichs	(757) 433-3434	dawn.m.friedrichs.civ@us.navy.mil
Unexploded Ordinance (UXO)	Jillian Wheeler	(757) 341-0485	jillian.wheeler.civ@us.navy.mil
Uniform National Discharge Standards (UNDS)	Tara Fisher	(757) 433-3443	tara.g.fisher2.civ@us.navy.mil

Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

ATTACHMENT 6.8 – EV Checklist DN 530

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

Navy Region Mid-Atlantic Environmental Checklist

Step 1: REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS

This Environmental Checklist (EC) is utilized to determine the environmental constraints and requirements associated with a proposed project or activity, and serves as the environmental impact analysis required for application of a Categorical Exclusions(s) (CATEX) under the National Environmental Policy Act (NEPA), or a decision that a higher level of analysis is required via an Environmental Assessment (EA) or Environmental Impact Statement (EIS).

Instructions: The Project Proponent shall utilize the GRX and review all applicable overlays identifying environmental requirements (cultural resources, wetlands, environmental restoration sites, etc.) to respond to the questions in the EC. The process timeline for ECs varies depending upon the regulatory consultations that may be required and can be addressed by an installations's NEPA program manager.

GENERAL PROJECT INFORMATION

1. Activity Requesting:	CNIC
2. Activity POC / Phone / email:	Alok Anil/ 757.994.5732/ alok.anil.ctr@us.navy.mil
3. Name of Project/Action:	DN - 530 Building Repairs
4. Project Number (if any):	1722474 / 1863880 EV
5. Project Installation Location:	NAS Oceana, VA
5a. Annex or Special Area (if applicable):	N/A
6. Project Type:	Other
7. Project Phase:	Design
8. Purpose of this Review?	NEPA Determination (required prior to Site Approval, award, and implementation of an action)
9. Description of the Project:	This project includes replacement of roofing, mechanical systems, interior gypsum board wall, interior and exterior doors, partial roof metal deck, masonry infill and interior painting. Project also includes pool resurfacing and cleaning of pool deck.
10. Why is this project needed?	Roofing is failing, mechanical systems are obsolete and exterior and interior doors are corroded.
11. Project Design/Construction Process:	Design-Build
12. Award/Construction/Action Start Date (MM/YYYY) - Select the earliest	10/2025
13. Is this project related to any other past or future project? If so, please describe.	No

PLANNING QUESTIONS: If any of the answers are yes, or activities associated with impacts are identified, please discuss in the project description, question 9, above.

14. Total Project Area - Include clear zones, laydown areas, utility corridors, and pavement, etc.	25,000	Square Feet
15. Ground Disturbing Activities? (Excavation, grading, demolition, site work, laydown areas, temporary soil stockpiling, utility work, borings, etc.) ***Response Required***	No	
16. How will Storm Water be managed in the long-term (post-construction)?	Existing outfalls or drainage ditches will be used	
17. How will Sanitary Sewage (wastewater) be managed in the long-term?	No Wastewater will be generated	

18. How will industrial Wastewater (washwater, blowdown, etc) be managed in the long term?	Disposed of as liquid waste
19. Will there be actions conducted in an area under an Agriculture outlease?	No actions will occur in farmland
20. Will there be actions conducted in the water and/or wetlands (maintenance or new dredging, placement of fill, new pilings, pile driving or extraction, etc.)?	No actions will occur in the water or wetlands
21. If the project involves dredging, will the dredge spoil require characterization prior to disposal?	No
22. Is the site within a floodplain that will experience increased flooding over the lifespan of the project/ activity? (See EO 11988 - Is there a need for the design to add 2-3' of freeboard above the base flood elevation or other accommodations to address the potential for flooding over the lifespan of the project?)	No
DESIGN RELATED QUESTIONS: If any of the answers are yes, or activities associated with impacts are identified, please discuss in the project description, question 9, above.	
23. Any utility connections to be installed, abandoned, relocated, or replaced? (fuel lines, water, sewer, stormwater, electric, cable)	NO
24. Will the project involve vegetation clearing?	NO
25. Will trees, greater than 3" in diameter, be removed?	NO
26. Will emission-generating equipment be utilized during construction (bulldozer, backhoe, fuel-burning equipment, generators, refrigerant containing equipment, etc.)?	NO
27. Will the project remove, install or utilize an oil or petroleum storage container that is equal to or greater than 55 gallons? (Includes but not limited to: fixed or portable storage tanks, drums, base tanks for emergency generators, cooking oil containers, or hydraulic reservoirs)	NO
28. Will the project remove or install an Oil Water Separator?	NO
29. Will the project relocate excavated material at the Installation? ***Response Required***	NO
30. Will the construction/repair/maintenance actions generate hazardous waste by-products (lead paint chips, asbestos, PCBs, solvents, effluent, etc.)?	UNSURE
31. Will groundwater be encountered during the project or activity?	NO
32. Will the construction/repair actions require de-watering?	NO
33. Is the project located in or within 100 feet of surface water or wetlands? If yes, include details on the site map.	NO
34. Is the project location within a historic building or sensitive archaeological area? If yes, include details on the site map.	NO
35. Will there be actions to impact or modify existing or new waterworks systems (pipes, valves, faucets, storage tanks, backflow preventers, water meters, potable building plumbing or wells)?	NO
36. Is the project site a Munitions Response Site - active or historic range?	NO
37. Is the project located in an environmental restoration site?	NO
OPERATIONAL RELATED QUESTIONS: If any of the answers are yes, or activities associated with impacts are identified, please discuss in the project description, question 9, above.	

38. Will emission-generating equipment be installed (ex. paint booth, emergency generators, boiler/furnace/HW heater, abrasive blast booth, parts washer, woodworking shop)?	NO
39. Will there be any new processes or maintenance activities conducted?	NO
40. Does the project include asphalt paving?	NO

ADDITIONAL COMMENTS AND INFORMATION

Type here: NA

Same	Feb 27, 2025
Checklist Preparer, phone number and e-mail (if Same as Question #2 - Type "Same")	Date

☒ **EV NEPA Program Managers Only - Continue to Step 2**

Step 2: SUMMARY OF ENVIRONMENTAL REQUIREMENTS

EXPIRATION: This Environmental Checklist (EC) is valid only so long as the action's scope/activity or the relevant environmental regulatory requirements remain unchanged. Action proponents are responsible for ensuring that this EC remains valid before implementation of an action. It is recommended the EC be revalidated by the Installation Environmental Program once a year throughout the planning, design, and implementation of an action.

Name of Project:	DN - 530 Building Repairs
Project Number:	1722474 / 1863880 EV
NEPA File Name:	DN-530 Building Repairs 1863880

PLANNING REQUIREMENTS (Issues That Can Effect the Project's Timeline, Cost or Site Location)

Environmental Aspect		Environmental Requirement	Project Impacts
Threatened, Endangered Species	NO		
Impacts to Marine Mammals	NO		
Impacts to Essential Fish Habitat	NO		
Migratory Bird Treaty Act (MBTA) - Vegetation Clearing	NO		
Wetland Impacts	NO		
Navigable Water Impacts	NO		
Floodplain Impacts	NO		
Agriculture Outlease	NO		
Tree Mitigation	NO		
Coastal Zone Mgmt Act	NO		

Cultural Resources	NO		
Possible Air Emission Source	NO		
Construction Emissions	NO		
Installation Restoration	NO		
Petroleum Contamination	NO		
Polluted Groundwater or Soil	NO		
NOSSA Requirement	NO		
DESIGN REQUIREMENTS (Issues To Be Addressed In Design Phase)			
Cultural Resources	NO		
StormWater Best Mgmt Practice	NO		
Erosion & Sediment Control	NO		
State StormWater Mgmt Permit	NO		
De-watering, Wastewater Mgmt	NO		
Beach & Dune Management	NO		
Spill Preventative Measures	NO		
Vapor Mitigation Systems	NO		
OPERATIONAL REQUIREMENTS (Issues To Be Addressed Prior To Use)			
New Industrial Process	NO		
New Waste Generating Activity	NO		
National EV Policy Act (NEPA) CATEX Applicable?	YES	Can't award contracts or undertake actions until the NEPA process is complete.	CATEX reviews 1-6 months, EAs 12 months, EIS 24 months.

ADDITIONAL REQUIREMENTS OR EV PROGRAM MANAGER COMMENTS			Please send updated plans for review to the Media Managers at the following stages
EV Program Manager		**Comments/Requirements**	**Stage**
Environmental Compliance			
Tanks	Comments:	No adverse petroleum tank issues are expected with this proposed work. Please contact the NAS Oceana Tanks/POL Program Manager below. POC Tara Fisher, (757) 433-3443, tara.g.fisher2.civ@us.navy.mil	
Air	Comments:	Temporary generators being used for projects must complete and submit a Temporary Generator Notification to the EV Air Program Manager at least 20 days prior to being brought on site, as well as after they are removed. Meets projected values of a low scale project shown with attached Record of Non-Applicability (RONA) that details the action is below the de-minimis threshold levels of the General Conformity evaluation. POC: Chase Main, (757) 433-2589, chase.l.main.civ@us.navy.mil	
Petroleum, Oils & Lubricants (POL)	Comments:	If petroleum-contaminated soils or groundwater are encountered, please contact the NAS Oceana Tanks/POL Program Manager. Report all spills to the Regional Dispatch Center (RDC) immediately at (757) 433-9111; and notify EV of any spill that enters the stormwater or sanitary system, as these events require notification to the regulator within 24 hrs of discovery. POC Tara Fisher, (757) 433-3443, tara.g.fisher2.civ@us.navy.mil	
Hazardous Waste	Comments:	In the event HW generation is expected, contact installation environmental office (757-433-3438) prior to work start for waste determination and disposal method/requirements. All HW must be properly stored and managed in an accumulation area approved by the installation environmental office. HW must be disposed of at an authorized, permitted facility. All disposal of hazardous or contaminated waste must be manifested and signed by a representative from NAVFAC MIDLANT Environmental Services. POC: Cole Martin, cole.e.martin4.civ@us.navy.mil, (757)433-3438	
	Comments:	WW: No impact as written SW: Ensure all appropriate best-management practices (BMPs) are implemented before, during and after construction activities, to prevent pollutants from entering the stormwater system (ie. sediment, fuel, fluids from equipment, construction debris, trash, paint, solvents, concrete waste, other). BMPs include but are not limited to: silt fencing, drain blockers/gutter buddies/filter socks, check dams, silt bags for filtering any groundwater encountered, post-construction stabilization/ seeding and other measures. Please adhere to the attached guidance for draining of the swimming	

Wastewater/Stormwater		pool, as this project involves resurfacing of the pool. Coordinate with PWD Oceana EV office prior to discharge of pool water. Report all spills to the RDC at (757) 433-9111; and notify EV immediately of any spill that enters the storm system/ditches, as these events require notification to the regulatory authority within 24 hours of discovery. POC Tara Fisher, (757) 433-3443, tara.g.fisher2.civ@us.navy.mil	
Drinking Water	Comments:	No impact to drinking water as written	
Municipal Separate Storm Sewer Systems (MS4)	Comments:	The proposed project involves land disturbance less than 10,000 square feet; therefore, NO construction general permit is required. Additionally, Erosion & Sediment Control and Stormwater Pollution Prevention Plans are NOT required. The project operator(s) must always utilize best management practices to ensure materials (sediment, construction debris, fuel, oil, mechanical fluids, paints, solvents, trash, other) associated with this activity DO NOT have the potential of becoming a pollutant in stormwater runoff. If applying any approved chemicals, ensure all drains (storm or sewer) are covered and best management practices are implemented to contain any spills and prevent them from making their way into any drains. A spill kit should be made available, in the case of any equipment malfunction, failure of hydraulic lines, fuel lines, or other illicit discharges. No discharges to the sanitary sewer system, storm system or surface waters are permitted without prior coordination with and approval from the Water Program Manager. Report all spills to the RDC at (757) 433-9111; and notify EV immediately of any spill that enters the storm system or sanitary sewer system, as these events require notifications to the regulatory authorities within 24 hours of discovery. POC: Logan Miller Logan.s.miller22.civ@us.navy.mil / 757-433-8989	
Environmental Planning & Conservation			
Wetlands & Waters of the US	Comments:	For laydown areas and any other outdoor work areas, appropriate erosion and sediment control should be utilized to avoid contamination into adjacent wetlands, waterways, ditches, and other stormwater systems. No equipment nor materials shall be utilized nor stored in wetlands or waterways without proper permits. Note stormwater drains and ditches adjacent to project work zone connect to waters of the U.S. that are considered linear wetlands and protected under the Clean Water Act. Inappropriate erosion and sediment control that results in a release of material into an upland section of ditch that then runs into wetland/waters of the US is considered fill of wetlands and subject to the issuance of a notice of violation under the CWA. POC for applicable BMPs and regulatory compliance requirements: Ben Olenick, PWD Oceana Wetlands Program Manager, benjamin.r.olenick.civ@us.navy.mil, 757-433-3439	
Essential Fish Habitat, Marine Mammals & T & E Species	Comments:	A no effects determination is being made and recorded via this EC review. Project as described is not anticipated to impact Essential Fish, Marine Mammal, or Threatened & Endangered Species. ========== POC for applicable BMPs and regulatory compliance requirements: Michael Wright, PWD Oceana Natural Resources (NR) Program Manager, michael.f.wright@navy.mil, 757-433-3461.	

Forestry/Ag.	Comments:	Equipment and materials should be cleaned of soil, vegetation, and debris prior to and after coming to the installation. If you encounter wildlife that appears to be sick, injured, nesting, or will not leave the work area, do not disturb. POC Douglas H Lynde Shultz 757-635-5436 or 757-433-2151	
Terrestrial Threatened & Endangered Species	Comments:	Several protected species occur on the installation or within the influence of the installation actions (e.g., air space, etc.). Particular species of concern include several bat, and an insect species. ========== The Navy has made a No Effect determination for protected species associated with the site location. Attached is the USFWS Consultation Official Species List, and no effects determination letter for bats. Provide copies of these materials to individuals working on the site. Navy determination was made based on the following assumptions: project does not propose tree or milkweed impacts; project does not install or alter exterior lighting; project noise is not anticipated to exceed that of the existing ambient noise on the installation; project is impacting routinely mowed vegetation and manmade material surfaces; project does not propose the use of pesticides; project does not install a water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant); project does not involve prescribed fire; project does not construct wind turbines; project does not involve drilling (e.g., directional boring) or blasting; and project does not impact bridges or culverts. If project SOW changes are made that change any of the above assumptions, contact the below POC to obtain additional requirements and updated consultations. If any protected species are observed on the project site stop work on the site where the animal is located and contact the below POC immediately for further guidance. Particular species of concern anticipated potentially occurring on the project site are bats and birds (for birds, it is only if they have active nests/nest w eggs or hatchlings, on site). ========== POC for applicable BMPs and regulatory compliance requirements: Michael Wright, PWD Oceana Natural Resources (NR) Program Manager, michael.f.wright@navy.mil, 757-433-3461.	15-35%
	Comments:	Due to proximity to aircraft air space and helicopter landing sites, avoid creating Bird/Animal Aircraft Hazard (BASH) issues: Ensure equipment and housing does not have unsecured holes that lead to the inside from the outside. Holes/ventilation should be secured with mesh or other appropriate material to exclude wildlife from entry. For planning purposes, some species of bats can enter through holes as small as 6mm. Avoid nature based roofing systems (e.g., gravel or "living" roofs) that could attract colonial nesting birds. Any storage structures or laydown area materials should be housed in a way to minimize its attraction to wildlife that could pose a Bird/Animal Aircraft Strike Hazard (BASH) on the installation. Areas of Mounded materials (soils, pipes, etc.) are very inviting to nesting, perching and/or feeding birds and to rodents which also attract larger animals to the area (prey/predator relationship). Storage areas that capture water	15-35%

BASH		may create mosquito breeding areas that attract wildlife to the site for feeding (take measures to avoid mosquito breeding). Areas of disturbed or seeded soil may also attract wildlife. Slit/hydro-seeding of seed or planting of plugs is preferred to minimize seed loss and attraction of wildlife into airspace. All outdoor trash receptacles (particularly those where food based trash is disposed) on site must be secured (lids/doors closed) at all times to avoid the attraction of wildlife to the site. ========== POCs for applicable BMPs and regulatory compliance requirements: Michael Wright, PWD Oceana Natural Resources (NR) Program Manager, michael.f.wright@navy.mil, 757-433-3461; and Doug Lynde Shultz, PWD Oceana Natural Resources (NR) Specialist, douglas.lyndeshultz1@navy.mil, 757-635-5436.	
BAGEPA/MBTA	Comments:	It is illegal to possess, harm or take a migratory bird or part there of without regulatory permit authorizations (inclusive of animal, active nest, eggs, and/or parts there of). Nesting birds could be present on the project site and associated laydown area. Do not harm or remove active nests. If an active nest is located maintain a 25ft no work buffer around the nest until the birds have fledged the nest. Contact the below POC for further guidance and action if an active nest (nest with eggs or hatchlings present) is present on the project site or if an injured bird is found on the project site. ========== As of Mar 2024, there are no known active eagle nests within 660ft of the project site. Eagles begin establishing nests in the fall, incubate eggs over winter, and fledge young in the spring. Next eagle nest activity survey is scheduled to occur Mar/Apr 2025. If an active nest establishes within 660ft of the project site regulatory consultations and permits may be needed. ========== Osprey nests may occur on site. Osprey are protected, do not mess with nests. Recommend that if a nest is present on site (e.g., on light, power pole, tower, etc.) a minimum 8ft buffer from the edge of the nest be established on the ground to establish a worker safety buffer from potential falling nest debris and bird excrement. Osprey nesting season is Apr-Sep. Do not touch an active nest (nest with eggs or hatchlings). Sticks and debris may be removed as long as there are no eggs or hatchlings present. ========== POC for applicable BMPs and regulatory compliance requirements: Michael Wright, PWD Oceana Natural Resources (NR) Program Manager, michael.f.wright@navy.mil, 757-433-3461.	15-35%
		Equipment should be clean prior to arriving on base to avoid introduction of new or spread of existing non-native invasive species to the base/location. After working at this site, equipment should also be cleaned prior to working in any other location/site on or off base. Reference materials: <https://www.acq.osd.mil/eie/afpmb/docs/techguides/tg31.pdf>; <https://www.invasivespeciesinfo.gov/take-action>; <https://www.fs.usda.gov/t-d/pubs/pdf/05511203.pdf>; <https://www.usbr.gov/lc/region/g2000/envdocs/EquipmentInspectionandCleaningManual2021.pdf>; etc. On base soil/sludge/organic material removed from any projects on base should be disposed of appropriately off base. Materials on base should not be relocated anywhere on base beyond its originating	15-35%

Invasive Species	Comments:	location. Soil/hay/sand/plants/mulch/etc. brought on base for this project should be certified clean (contaminate and noxious weed free). At this time USDA has noxious weed certification processes associated with hay, mulch, plants, and some sizes of gravel. https://naisma.org/programs/weed-free-products/ If project damages Navy property that requires revegetation, utilize native vegetation and ensure the source materials a certified noxious weed free. See landscaping comments for more information. ========== POC for applicable BMPs and regulatory compliance requirements: Doug Lynde Shultz, PWD Oceana Natural Resources (NR) Specialist, douglas.lyndeshultz1@navy.mil, 757-635-5436.	
Landscaping	Comments:	If equipment maneuvering at project site, laydown area, or associated transit result in damage to vegetation/soil (e.g., rutting), the damage to vegetation/landscaping will require grading and replanting to bring back to "original" conditions. ONLY Native Species should be utilized. The installation is located within the Coastal Plains (C) of VA and as such species native to this zone should be utilized for vegetation/landscaping activities on base. The installation's Official Source for native status is through a combined use of <http://vaplantatlas.org/> and the book "Flora of Virginia," 2013. The installation also utilizes the USDA website, <http://plants.usda.gov/java/>, to determine wildlife value and potential Bird/Animal Aircraft Strike Hazard (BASH) concern levels. UFC 3-201-02 sections 2-6.5 and 2-6.6 address associated requirements. The current interpretation of this UFC is that the species must both be native to the state of Virginia and adapted to the region proposed for planting (in this case the coastal plains). Avoid use of erosion control or seed/plant protection devices that could entrap or entangle wildlife (e.g., netting material). When selecting vegetation for planting, take into account the plant's maximum canopy size to minimize and avoid potential impacts to adjacent buildings/structures, roadways, and walkways. This canopy size also corresponds with the bulk of the associated root mass area for the plant. Any vegetation planting lists should be submitted to the installation Natural Resources Manager for final approvals. (CAUTION: EXISTING PLANTS FOUND ON BASE, PLANTS IDENTIFIED in the INSTALLATION APPERANCE PLAN, or PLANTS IDENTIFIED in the LOW IMPACT DEVELOPMENT PLAN may NOT be Native Species. Select Only Native Species.) A list of previously approved plant species is available upon request. ========== POC for applicable BMPs and regulatory compliance requirements: Michael Wright, PWD Oceana Natural Resources (NR) Program Manager, michael.f.wright@navy.mil, 757-433-3461.	15-35%
Chesapeake Bay Preservation Act	Comments:	Not applicable.	
Hunting and Fishing	Comments:	No impact to recreation programs as written.	

Dunes	Comments:	Not applicable.	
Additional Natural Resources	Comments:	Do not approach wildlife, do not try to touch or relocate wildlife, DO NOT KILL wildlife. For on base wildlife emergency issues, contact the Installation Command Duty Officer (CDO) and they will contact Installation Natural Resources staff to address the wildlife concern (animals only, not plants). Feeding, harboring, harassment, collecting, killing, and/or releasing of animals/wildlife (this also includes feral animals) and plants on the installation is prohibited without obtaining authorized permits. Precautions should be taken to prevent negative impacts from coming in contact with wildlife. This base is known to have poisonous plants (i.e., poison ivy), venomous snakes (i.e., copperhead and cottonmouth), bees/wasps/hornets, ticks, mosquitoes, rabid animals, etc. ========== POCs for applicable BMPs and regulatory compliance requirements: Michael Wright, PWD Oceana Natural Resources (NR) Program Manager, michael.f.wright@navy.mil, 757-433-3461; and Doug Lynde Shultz, PWD Oceana Natural Resources (NR) Specialist, douglas.lyndeshultz1@navy.mil, 757-635-5436.	15-35%
CZMA	Comments:	No ESA species or primary dune impacts are anticipated.	15-35%
Cultural Resources	Comments:	The new condensate pump enclosure will be located within the building's privacy fence and will not disrupt the SLGMS Historic District viewshed, therefore, no impact to Cultural Resources and no consultation needed. If the scope of the project changes, please notify the Cultural Resources Manager to determine if Section 106 consultation is needed. In the event of unanticipated discovery of any of the following; Human remains, grave markers, bone, arrow heads, ceramic or architectural materials, stop work and notify POC verbally and in writing. Benjamin Olenick 757-433-3439	
Environmental Restoration			
Environmental Restoration	Comments:	No concerns as written	
Other			
Other	Comments:		
NEPA	Comments:	For the subject Environmental Checklist and any applicable Categorical Exclusion (CATEX) to remain valid, all Environmental Media/Program Manager comments documented in this Checklist must be followed and incorporated into activities, project designs/specifications, and contract awards. A documented NEPA decision [i.e., signed Record of Categorical Exclusion (RCE), Finding of No Significant Impact (FONSI), or Record of Decision (ROD)] must be completed prior to undertaking any action or award of any contract. Failure to follow these requirements subjects the installation to unnecessary risk for environmental violations, repeat or additional regulatory consultations/permits, and schedule and cost overruns.	

STEP 3: NEPA PROGRAM MANAGER RECOMMENDATION

☒ Based on information found in Steps 1 and 2 of this document, I find that the project or activity does not meet any of the extraordinary circumstances found in the Navy☒ NEPA Implementing Regulation, 32 CFR 775, and that the proposed action/project meets the criteria for application of:

Reset

CATEX: 14

CATEX: 35

CATEX:

☐ Based on information found in Steps 1 and 2 of this document, I find that the project or activity meets one or more extraordinary circumstances found in the Navy☒ NEPA Implementing Regulation, 32 CFR 775and will have potentially significant environmental impacts, preventing the application of a CATEX. At a minimum, an Environmental Assessment is necessary unless impacts will clearly be significant, in which case an Environmental Impact Statement (EIS) will be required. My recommendation for higher level NEPA analysis will be forwarded up my installation chain-of-command, and will be shared with the COMNAVREG MIDLANT Environmental Planning Office and Counsel.

Signature	Date
ARREDONDO.ANDREA.SUE.1110384862 Digitally signed by ARREDONDO.ANDREA.SUE.1110384862 Date: 2025.03.27 13:08:32 -04'00'	03/27/2025

STEP 4: COMMANDING OFFICER OR DELEGATED PUBLIC WORKS OFFICER DETERMINATION OF CATEGORICAL EXCLUSION (CATEX) APPLICABILITY AND RECORD OF CATEGORICAL EXCLUSION (RCE)

I have previously reviewed the 27 August 2012 CNRMA Guidance for Implementing Categorical Exclusions Under the National Environmental Policy Act and the information within the attached Environmental Checklist supporting the use of this RCE. I find that the CATEX(s) identified below are applicable for the proposed project or activity and that even the presence of one or more of the extraordinary circumstances found in the Navy☒ NEPA Implementing Regulation, 32 CFR 775, would not result in environmentally significant impacts that would preclude the use of the identified CATEX(s). I acknowledge that, should the scope or applicable environmental laws or regulations that would affect the subject project or activity change, this RCE will no longer be valid and that a new Environmental Checklist shall be submitted for compliance with NEPA.

I will ensure that this signed RCE will be retained locally for six years and that a copy will be forwarded to the installation NEPA Program Manager, COMNAVREG MIDLANT Environmental Planning Office, and NRMA office of General Counsel.

CATEX 14:	Alterations of and additions to existing buildings, facilities, and systems (e.g., structures, roads, runways, vessels, aircraft, or equipment) when the environmental effects will remain substantially the same and the use is consistent with applicable regulations;
CATEX 35:	Acquisition, installation, modernization, repair, or operation of utility (including, but not limited to, water, sewer, and electrical) and communication systems (including, but not limited to, data processing cable and similar electronic equipment) that use existing rights of way, easements, distribution systems, and facilities;

Signature	Date
MILKOWSKI.MATTHEW.RONALD.1258251373 Digitally signed by MILKOWSKI.MATTHEW.RONALD.1258251373 Date: 2025.03.27 17:17:57 -04'00'	03/27/2025

STEP 5: Additional Comments/Revalidation (if required)

Comments or Revalidation:			
Signature		Date	

Estimated Emissions

Facility: NASO, DNA, NALF **Project Description:** Low Scale Project **Prepared by:** Chase Main **Date:**

Color Key: Calculation Blocks | Data Input Cells | Assumptions | Document formatted to fit on 2 legal size sheets when printed.

Construction Equipment & Vehicles (assume diesel for all equipment)	Units	Days	Hrs/ day	Total Hours	Horsepower (hp)	Load Factor (%)	Emission Factor (grams/hp-hour)[1]							Emission Rate (tons)								(mmBTU) Diesel Consump[4]
							VOC	NOx	CO	$PM_{2.5}$	PM10	SO_2	CO2[2]	VOC	NOx	CO	$PM_{2.5}$	PM10	SO_2	Pb[3]	CO2	
Backhoe/Loader	1	66	8	528	107	59	2.04	11.00	2.71	1.27	1.27	0.03	662.28	0.07	0.40	0.10	0.05	0.05	0.00	5.13E-07	24.31	144
Bulldozer	1	66	8	528	166	59	2.04	11.00	2.28	1.27	1.27	0.03	662.28	0.12	0.63	0.13	0.07	0.07	0.00	7.96E-07	37.72	223
Compactor	1	66	8	528	232	53	2.04	11.00	2.90	1.27	1.27	0.03	662.28	0.15	0.79	0.21	0.09	0.09	0.00	9.99E-07	47.35	312
Compressor	1	66	8	528	181	43	2.04	11.00	2.90	1.27	1.27	0.03	662.28	0.09	0.50	0.13	0.06	0.06	0.00	6.32E-07	29.97	243
Crane	1	66	8	528	285	43	2.04	11.00	2.90	1.27	1.27	0.03	662.28	0.15	0.78	0.21	0.09	0.09	0.00	9.96E-07	47.20	383
Excavator	1	66	8	528	265	53	2.04	11.00	2.90	1.27	1.27	0.03	662.28	0.17	0.90	0.24	0.10	0.10	0.00	1.14E-06	54.09	356
Forklifts/Skid Steer Loader	1	66	8	528	73	59	2.04	11.00	2.71	1.27	1.27	0.03	662.28	0.05	0.28	0.07	0.03	0.03	0.00	3.50E-07	16.59	98
Front End Loader	1	66	8	528	107	21	2.04	11.00	2.71	1.27	1.27	0.03	662.28	0.03	0.14	0.04	0.02	0.02	0.00	1.83E-07	8.65	144
Grader	1	66	8	528	407	58	2.04	11.00	1.54	1.27	1.27	0.03	662.28	0.28	1.51	0.21	0.17	0.17	0.00	1.92E-06	90.91	547
Paver - Asphalt	1	66	8	528	142	58	2.04	11.00	2.90	1.27	1.27	0.03	662.28	0.10	0.53	0.14	0.06	0.06	0.00	6.69E-07	31.72	191
Roller	1	66	8	528	232	58	2.04	11.00	2.90	1.27	1.27	0.03	662.28	0.16	0.86	0.23	0.10	0.10	0.00	1.09E-06	51.82	312
Other diesel equipment	1	66	8	528	50	58	2.04	11.00	2.90	1.27	1.27	0.03	662.28	0.03	0.19	0.05	0.02	0.02	0.00	2.36E-07	11.17	67
Trencher	1	66	8	528	97	58	2.04	11.00	2.90	1.27	1.27	0.03	662.28	0.07	0.36	0.09	0.04	0.04	0.00	4.57E-07	21.67	130
Truck, Concrete Pump	1	66	8	528	410	21	2.04	11.00	6.42	1.27	1.27	0.03	662.28	0.10	0.55	0.32	0.06	0.06	0.00	6.99E-07	33.16	551
Truck, Concrete	1	66	8	528	430	21	2.04	11.00	6.42	1.27	1.27	0.03	662.28	0.11	0.58	0.34	0.07	0.07	0.00	7.34E-07	34.78	578
Truck, Delivery or Water	1	66	8	528	240	21	2.04	11.00	6.42	1.27	1.27	0.03	662.28	0.06	0.32	0.19	0.04	0.04	0.00	4.09E-07	19.41	322
Truck, Dump	1	66	8	528	410	21	2.04	11.00	6.42	1.27	1.27	0.03	662.28	0.10	0.55	0.32	0.06	0.06	0.00	6.99E-07	33.16	551
Worst Case	0	0	0	0	430	59	2.04	11.00	6.42	1.27	1.27	0.03	662.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00	0
Total Construction Equipment (if specifics are unknown use a worst case estimate of number of equipment)														**1.83**	**9.86**	**3.00**	**1.14**	**1.14**	**0.03**	**1.25E-05**	**594**	**5150**

[1]Santa Barbara County APCE Form 24 Tables 1-3 Construction Equipment EF (Tier 0 Uncontrolled except SOx adjusted for ULSD

[2]C02 EFs from JLOTS EA; CO2e formula from 40 CFR 98; 1 lb = 454 g; 1 ton = 0.907 metric ton; GWP CH4=25, N2O=298

[3]0.000011 Lead emissions SAROAD 12128 (PM Profile 6219) Wt fraction of PM/PM2.5/PM10 (22 off-road diesel vehicle exhaust)

[4] 1 hp = 2,544.43 btu/hr

G	g/MMBTU[2]		TPY	TPY	MT/Yr	MT/Yr	MT/Yr	MT/Yr
H	CH4	N2O	CH4	N2O	CO2	CH4	N2O	CO2e[2]
G	3.00	0.60	0.02	0.00	538.46	0.02	0.00	540

Fugitive Dust Emissions	Disturb acres	days of disturbance	PM10[5] Tonacre/mo	Total PM10 TPY	Total PM2.5 TPY
Construction Activities	0.75	66	0.42	**0.69**	**0.10**

[5]Estimating Particulate Matter Emissions From Construction Operations', Midwest Research Institute 9/99, Kansas City, Missouri
PM10 Emission Factor for worse case conditions (page 4-12)
Assume PM2.5 = 15% of PM10 (page 5-14)

Facility Painting Emissions	Facility SF	VOC lb/1000 SF[6]	**VOC TPY**
Construction Activities	2500	25.1	**0.03**

[6]Santa Barbara County APCE Form 24 Table 2 (Latex Paint)

CALCULATE EMISSIONS BELOW (BOILERS AND ENGINES) ONLY IF UNITS BEING CONSTRUCTED WILL NOT HAVE A NEW SOURCE REVIEW PERMIT

Estimated Emissions

Sum of NG Boilers	NG Use	Operating	Emission Factor (lb/MMSCF)[7]									Emission Rate (tons/year)								
(MMBTU/HR)	MMscf/yr	(Hr/Yr)	VOC	NOx	CO	$PM_{2.5/10}$	PM_{COND}	PM_{total}	SO_2	lead	CO2	VOC	NOx	CO	$PM_{2.5/10}$	PM_{COND}	PM_{total}	SO_2	lead	CO2
0	0.00	*0*	5.5	100	84	5.7	1.9	7.6	0.6	0.0005	120,000	0.00	0.00	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00

Sum of #2 Oil Boilers	Oil Use	Operating	Emission Factor (lb/kgal)[7]									Emission Rate (tons/year)								
(MMBTU/HR)	(kgal/Yr)	(Hr/Yr)	VOC	NOx	CO	$PM_{2.5/10}$	PM_{COND}	PM_{total}	SO_2	lead	CO2	VOC	NOx	CO	$PM_{2.5/10}$	PM_{COND}	PM_{total}	SO_2	lead	CO2
1.5	5.67	*528*	0.6	20	5	2	1.3	3.3	28.4	0	22,300	0.00	0.06	0.01	0.01	0.00	0.01	0.08	0.00	63.26

[7] AP-42 CH1 (7/98); for oil assume 0.2% sulfur

[8]CO2 EF and CO2e formula from 40 CFR 98; 1 lb = 454 g; 1 ton = 0.907 metric ton; GWP CH4=25, N2O=298

1020 NG HHV (Btu/scf)

139600 #2 Oil HHV (BTU/gal)

G	g/MMBTU[2]		TPY	TPY	MT/Yr	MT/Yr	MT/Yr	MT/Yr
H	CH4	N2O	CH4	N2O	CO2	CH4	N2O	CO2e[8]
G	3.00	0.60	0.00	0.00	57.37	0.00	0.00	58

EMISSION FACTORS

Sum of NG engines		Operating	VOC	NOx	CO	$PM_{2.5/10}$	PM_{COND}	PM_{total}	SO_2	lead	CO2	Emission Rate (tons/year)								
kW[9]	hp	(Hr/Yr)	g/bhp-hr[10]			lb/MMBtu[11]						VOC	NOx	CO	$PM_{2.5/10}$	PM_{COND}	PM_{total}	SO_2	lead	CO2
0	0	*0*	1	2	4	9.50E-03	9.91E-03	2.89E-02	5.88E-04	0	110									
NG NSPS JJJJ; 4 stroke rich burn SCC 2-02-002-53			lb/hp-hr[10]			lb/hp-hr[11]														
			2.20E-03	4.41E-03	8.81E-03	2.42E-05	2.52E-05	7.36E-05	1.50E-06	0.00E+00	2.80E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Sum of ULSD engines		Operating	lb/hp-hr									Emission Rate (tons/year)								
kW[9]	hp	(Hr/Yr)	VOC	NOx	CO	$PM_{2.5/10}$	PM_{COND}	PM_{total}	SO_2	lead	CO2	VOC	NOx	CO	$PM_{2.5/10}$	PM_{COND}	PM_{total}	SO_2	lead	CO2
75	101	*528*	2.51E-03	0.031	6.68E-03	2.20E-03	0	2.20E-03	2.05E-03	0	1.15	0.07	0.82	0.18	0.06	0.00	0.06	0.05	0.00	30.54

industrial diesel SCC 2-02-001-02

Emission Factors: NG NOx, CO, VOC from 4J; all else are AP-42. Oil assumes 0.0015% sulfur

[9]convert if necessary using 1 hP = 0.7457 kW

Calculations used for NG

1020 NG HHV (Btu/scf)

[10]EF (lb/hp-hr) = (NSPS JJJJ g/bhp-hr) / (454 g/lb)

139600 #2 Oil HHV (BTU/gal)

[11]EF (lb/hp-hr) = (EF AP-42 lb/MMBTU) * 2545/1000000

1 hP = 2545 Btu/hr

G	g/MMBTU[2]		TPY	TPY	MT/Yr	MT/Yr	MT/Yr	MT/Yr
H	CH4	N2O	CH4	N2O	CO2	CH4	N2O	CO2e[8]
G	3.00	0.60	0.00	0.00	27.70	0.00	0.00	28

PROJECT RELATED AIR EMISSIONS

Annual Emissions	TPY							MT/Yr
	VOC	NO_x	CO	$PM_{2.5}$	PM10	SO_2	Pb	CO_{2e}
Construction equip/veh	1.83	9.86	3.00	1.14	1.14	0.03	1.3E-05	540
Construction fugitive dust	N/A	N/A	N/A	0.10	0.69	N/A	N/A	0
Construction painting	0.03	N/A	N/A	N/A	N/A	N/A	N/A	0
Stationary Equipment[13]	0.07	0.88	0.19	0.06	0.06	0.13	0.0E+00	85
Total Net Emissions	1.93	10.74	3.20	1.31	1.90	0.16	1.3E-05	625
De Minimis Level[14]	*100*	*100*	*100*	*100*	*100*	*100*	*25*	25,000
Is Project < De Minimis?	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**

[13]Stationary Equipment is only required to be calculated if it does NOT require NSR permiting.

[14]From table; if attainment leave blank; orphan areas use threshold corresponding to revoked 1997 ozone attainment status

DE-MINIMIS THRESHOLD LEVELS - TONS PER YEAR (TPY)

OTR = ozone transport region

Pollutant or Precursor	Non-Attainment Area (NAA) TPY	Maintenance Area TPY
Ozone (O_3) via VOC or NOx	50 Serious; 25 Severe ; 10 Extreme 100 Other NAA (outside OTR) 50 Other NAA (inside OTR) - VOC 100 Other NAA (inside OTR) - NOx	100 Ozone (NOx) 100 Ozone (VOC) outside OTR 50 Ozone (VOC) Inside OTR
CO, SO_2, or NO_2	100 All NAAs	100
PM10	100 Moderate; 70 Serious	100
PM2.5; PM2.5 Precursors (SO_2, NOx[15], VOC[16] or NH_3[16])	100 (each pollutant or precursor)	100 (ea pollutant or precursor)
LEAD (Pb)	25 ALL NAAs	25

[15] Unless determined by EPA and the State not to be a significant precursor

[16] If determined by either EPA or the State to be significant precursors

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694

In Reply Refer To: 03/26/2025 21:54:21 UTC
Project Code: 2025-0074787
Project Name: NAS Oceana Dam Neck Annex, Bldg 530 Repairs

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

PROJECT SUMMARY

Project Code: 2025-0074787

Project Name: NAS Oceana Dam Neck Annex, Bldg 530 Repairs

Project Type: Military Operations

Project Description: Project is located at building 530 on Naval Air Station (NAS) Oceana in Virginia Beach, VA. This project includes replacement of roofing, mechanical systems, interior gypsum board wall, interior and exterior doors, partial roof metal deck, masonry infill and interior painting. Project also includes pool resurfacing and cleaning of pool deck.

Project will not be directional boring. No trees or shrubs will be impacted. No exterior lighting alterations are proposed.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@36.774496400000004,-75.96258228664055,14z

Counties: Virginia Beach County, Virginia

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

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1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.

3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper

Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

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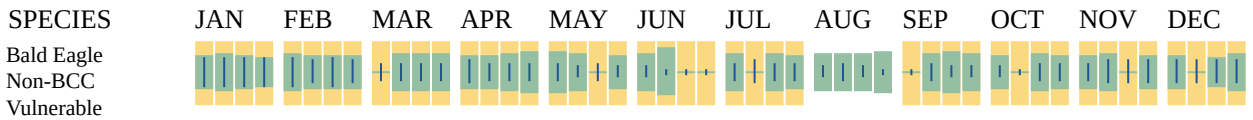
probability of presence breeding season survey effort no data



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory

birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Kestrel *Falco sparverius paulus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9587	Breeds Apr 1 to Aug 31
American Oystercatcher *Haematopus palliatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Black Skimmer *Rynchops niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Brown-headed Nuthatch *Sitta pusilla* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9427	Breeds Mar 1 to Jul 15
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Chuck-will's-widow *Antrostomus carolinensis* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9604	Breeds May 10 to Jul 10

NAME	BREEDING SEASON
Coastal (waynes) Black-throated Green Warbler *Setophaga virens waynei* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11879	Breeds May 1 to Aug 15
Grasshopper Sparrow *Ammodramus savannarum perpallidus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8329	Breeds Jun 1 to Aug 20
Gull-billed Tern *Gelochelidon nilotica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9501	Breeds May 1 to Jul 31
Least Tern *Sternula antillarum antillarum* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/11919	Breeds Apr 25 to Sep 5
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Marbled Godwit *Limosa fedoa* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Painted Bunting *Passerina ciris* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9511	Breeds Apr 25 to Aug 15
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere
Prairie Warbler *Setophaga discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9513	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9439	Breeds Apr 1 to Jul 31

NAME	BREEDING SEASON
Purple Sandpiper *Calidris maritima* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9574	Breeds elsewhere
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Ruddy Turnstone *Arenaria interpres morinella* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/10633	Breeds elsewhere
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9478	Breeds elsewhere
Saltmarsh Sparrow *Ammospiza caudacuta* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9719	Breeds May 15 to Sep 5
Semipalmated Sandpiper *Calidris pusilla* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9603	Breeds elsewhere
Short-billed Dowitcher *Limnodromus griseus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Swallow-tailed Kite *Elanoides forficatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8938	Breeds Mar 10 to Jun 30
Whimbrel *Numenius phaeopus hudsonicus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11991	Breeds elsewhere
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10669	Breeds Apr 20 to Aug 5

NAME	BREEDING SEASON
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9431	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

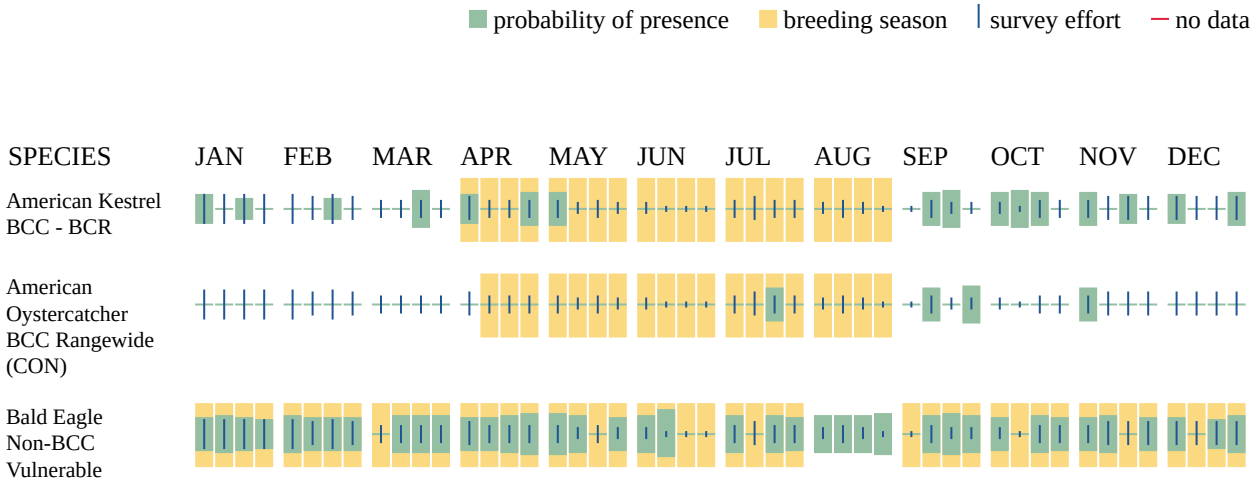
Probability of Presence (■)

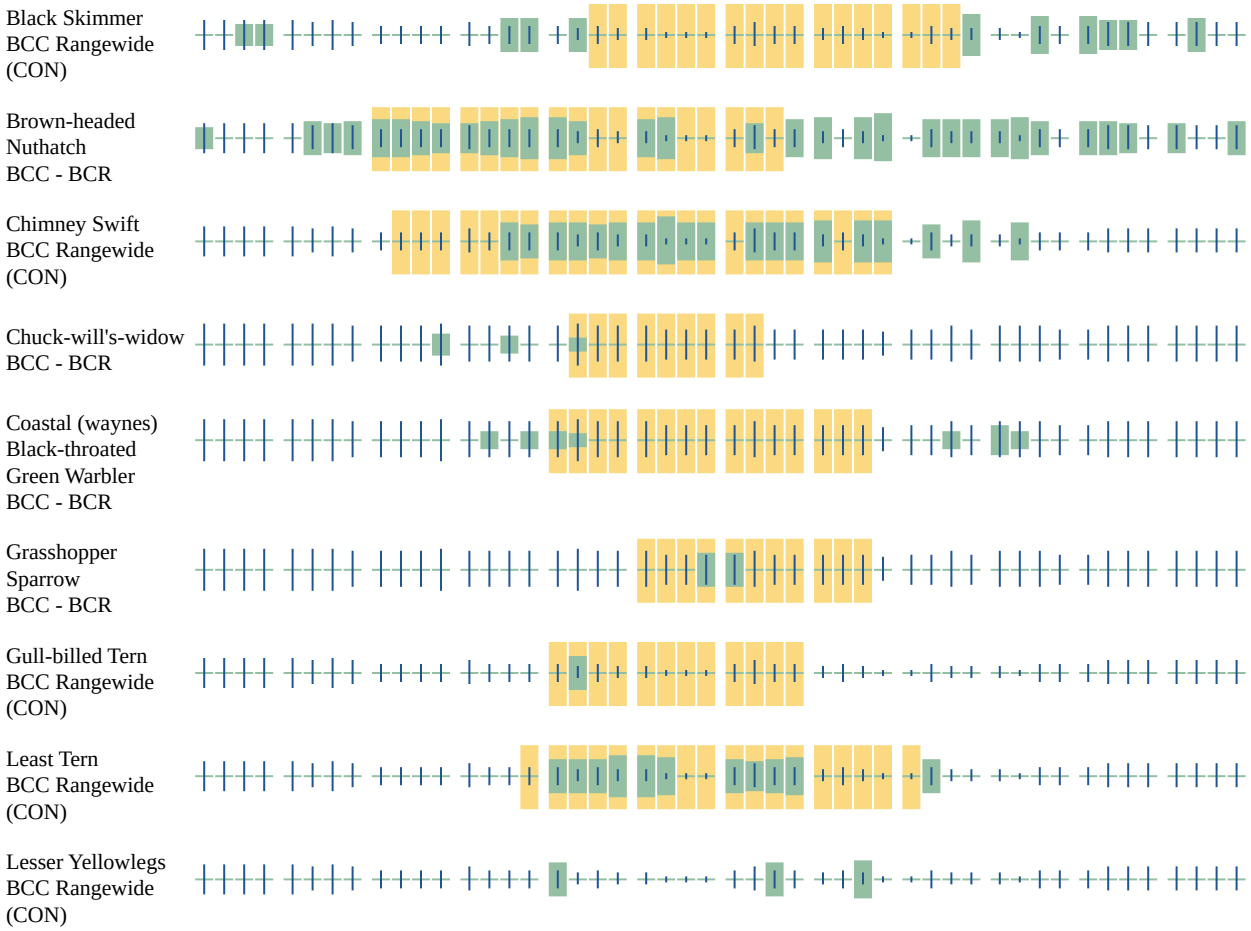
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

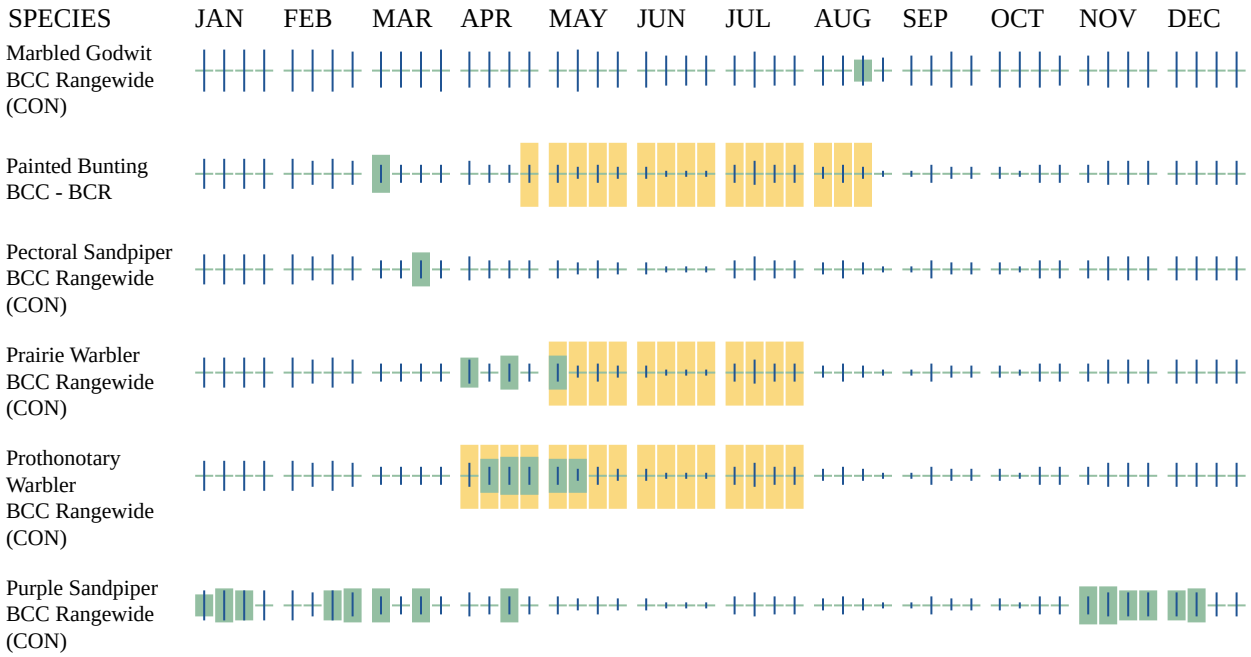
Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.




Black Skimmer BCC Rangewide (CON)
Brown-headed Nuthatch BCC - BCR
Chimney Swift BCC Rangewide (CON)
Chuck-will's-widow BCC - BCR
Coastal (waynes) Black-throated Green Warbler BCC - BCR
Grasshopper Sparrow BCC - BCR
Gull-billed Tern BCC Rangewide (CON)
Least Tern BCC Rangewide (CON)
Lesser Yellowlegs BCC Rangewide (CON)


SPECIES
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Marbled Godwit BCC Rangewide (CON)
Painted Bunting BCC - BCR
Pectoral Sandpiper BCC Rangewide (CON)
Prairie Warbler BCC Rangewide (CON)
Prothonotary Warbler BCC Rangewide (CON)
Purple Sandpiper BCC Rangewide (CON)

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

IPAC USER CONTACT INFORMATION

Agency:	Department of Defense
Name:	Michael Wright
Address:	NAS Oceana, 953 Hornet Dr.
Address Line 2:	Bldg. 820, Suite 206D
City:	Virginia Beach
State:	VA
Zip:	23460
Email	michael.f.wright@navy.mil
Phone:	7574333461

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694

In Reply Refer To: 03/26/2025 21:58:13 UTC
Project code: 2025-0074787
Project Name: NAS Oceana Dam Neck Annex, Bldg 530 Repairs

Federal Nexus: yes
Federal Action Agency (if applicable): Department of Defense

Subject: Record of project representative's no effect determination for 'NAS Oceana Dam Neck Annex, Bldg 530 Repairs'

Dear Michael Wright:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on March 26, 2025, for 'NAS Oceana Dam Neck Annex, Bldg 530 Repairs' (here forward, Project). This project has been assigned Project Code 2025-0074787 and all future correspondence should clearly reference this number. **Please carefully review this letter.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the **Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key (Dkey)**, invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid.***

Determination for the Northern Long-Eared Bat and/or Tricolored Bat

Based upon your IPaC submission and a standing analysis, your project has reached the following effect determinations:

Species	Listing Status	Determination
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered	No effect

Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered	No effect

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action *may affect* a listed species. Tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can *confer* under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate.

To make a no effect determination, the full scope of the proposed project implementation (action) should not have any effects (either positive or negative), to a federally listed species or designated critical habitat. Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (See § 402.17).

Under Section 7 of the ESA, if a federal action agency makes a no effect determination, no consultation with the Service is required (ESA §7). If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required except when the Service concurs, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat [50 CFR §402.02, 50 CFR§402.13].

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination key for the northern long-eared bat and tricolored bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Proposed Threatened

You may coordinate with our Office to determine whether the Action may affect the animal species listed above and, if so, how they may be affected.

Next Steps

If there are no updates on listed species, no further consultation/coordination for this project is required with respect to the species covered by this key. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions

occurs, additional coordination with the Service should take place to ensure compliance with the Act.

If you have any questions regarding this letter or need further assistance, please contact the Virginia Ecological Services Field Office and reference Project Code 2025-0074787 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

NAS Oceana Dam Neck Annex, Bldg 530 Repairs

2. Description

The following description was provided for the project 'NAS Oceana Dam Neck Annex, Bldg 530 Repairs':

> Project is located at building 530 on Naval Air Station (NAS) Oceana in Virginia Beach, VA. This project includes replacement of roofing, mechanical systems, interior gypsum board wall, interior and exterior doors, partial roof metal deck, masonry infill and interior painting. Project also includes pool resurfacing and cleaning of pool deck.
>
> Project will not be directional boring. No trees or shrubs will be impacted. No exterior lighting alterations are proposed.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@36.774496400000004,-75.96258228664055,14z

DETERMINATION KEY RESULT

Based on the information you provided, you have determined that the Proposed Action will have no effect on the species covered by this determination key. Therefore, no consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required for those species.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   Yes

4. Your project overlaps with an area where northern long-eared bats or tricolored bats may be present and roosting in trees year-round.

   Do you understand that your project may impact bats roosting in trees at any time during the year?

   Yes

5. Does any component of the action involve leasing, construction or operation of wind turbines? Answer 'yes' if the activities considered are conducted with the intention of gathering survey information to inform the leasing, construction, or operation of wind turbines.

   Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

6. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

7. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   No

8. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   Yes

9. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No

10. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

    No

11. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

12. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

    No

13. Will the action cause effects to a bridge?

    Note: Covered bridges should be considered as bridges in this question.

    No

14. Will the action result in effects to a culvert or tunnel at any time of year?

    No

15. Are trees present within 1000 feet of the action area?

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

16. Does the action include the intentional exclusion of bats from a building or structure?

    Note: Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats or tricolored bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local Ecological Services Field Office to help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures.

    No

17. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    No

18. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

19. Will the action include or cause any construction or other activity that is reasonably certain to increase average daily traffic permanently or temporarily on one or more existing roads?

    Note: For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    No

20. Will the action include or cause any construction or other activity that is reasonably certain to increase the number of travel lanes on an existing thoroughfare?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

21. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

    Note: For information regarding NSF/ANSI 60 please visit https://www.nsf.org/knowledge-library/nsf-ansi-standard-60-drinking-water-treatment-chemicals-health-effects

    No

22. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    No

23. Will the action include drilling or blasting?

    No

24. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use)?

    No

25. Will the proposed action involve the use of herbicides or other pesticides other than herbicides (e.g., fungicides, insecticides, or rodenticides)?

    No

26. Will the action include or cause activities that are reasonably certain to cause chronic or intense nighttime noise (above current levels of ambient noise in the area) in suitable summer habitat for the northern long-eared bat or tricolored bat during the active season?

    Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time. Sources of chronic or intense noise that could cause adverse effects to bats may include, but are not limited to: road traffic; trains; aircraft; industrial activities; gas compressor stations; loud music; crowds; oil and gas extraction; construction; and mining.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

27. Does the action include, or is it reasonably certain to cause, the use of permanent or temporary artificial lighting within 1000 feet of suitable northern long-eared bat or tricolored bat roosting habitat?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

28. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

    No

29. Will the proposed action result in the use of prescribed fire?

    Note: If the prescribed fire action includes other activities than application of fire (e.g., tree cutting, fire line preparation) please consider impacts from those activities within the previous representative questions in the key. This set of questions only considers impacts from flame and smoke.

    No

30. Does the action area intersect the northern long-eared bat species list area?

    Automatically answered
    Yes

31. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats?

    Automatically answered
    No

32. [Semantic] Is the action area located within 150 feet of a documented northern long-eared bat roost site?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

33. Your project overlaps with an area where northern long-eared bats may be present and roosting in trees year-round.

    Is suitable northern long-eared bat habitat present within 1000 feet of project activities?

    Yes

34. Does the action area intersect the tricolored bat species list area?

    Automatically answered
    Yes

35. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

36. Your project overlaps with an area where tricolored bats may be present and roosting in trees year-round.

    Is suitable tricolored bat habitat present within 1000 feet of project activities? Note: If there are trees within the action area that may provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (*Tillandsia usneoides*), clusters of dead pine needles of large live pines) answer "Yes." Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

37. Do you have any documents that you want to include with this submission?

    No

PROJECT QUESTIONNAIRE

IPAC USER CONTACT INFORMATION

Agency:	Department of Defense
Name:	Michael Wright
Address:	NAS Oceana, 953 Hornet Dr.
Address Line 2:	Bldg. 820, Suite 206D
City:	Virginia Beach
State:	VA
Zip:	23460
Email	michael.f.wright@navy.mil
Phone:	7574333461

TEMPORARY GENERATOR NOTIFICATION
Submit Form to Environmental (EV) 20 Calendar Days Prior to Bringing On-Site
Fax 757-433-2719 or Email to chase.L.main.civ@us.navy.mil

This section to be completed prior to unit being brought on-site ***– send to EV at fax or email above***	
BLDG:	**ACTIVITY/SQUADRON:**
PROJECT THIS GENERATOR IS SUPPORTING:	
POC AND PHONE/EMAIL:	
DATE GENERATOR TO BE BROUGHT ON SITE:	
DATE GENERATOR ESTIMATED TO BE TAKEN OFF SITE:	
GENERATOR DESCRIPTION (MAKE & MODEL):	
GENERATOR HP AND kW:	
GENERATOR FUEL TYPE AND TANK SIZE:	

This section to be completed once unit is taken off-site ***– send to EV at fax or email above***
DATE GENERATOR TAKEN OFF-SITE:
GENERATOR TOTAL NUMBERS OF HOURS OF USE **(E.G. 2 hours 45 mins, 5 hours, 20.5 hours, etc.):**

STOP HERE (EV TO COMPLETE)
DATE DEQ NOTIFIED **per 9VAC5-80-1105.B.13**

NOTES:

Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

ATTACHMENT 6.9 – Laydown Area DN 530

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

LAYDOWN AREA LOCATION

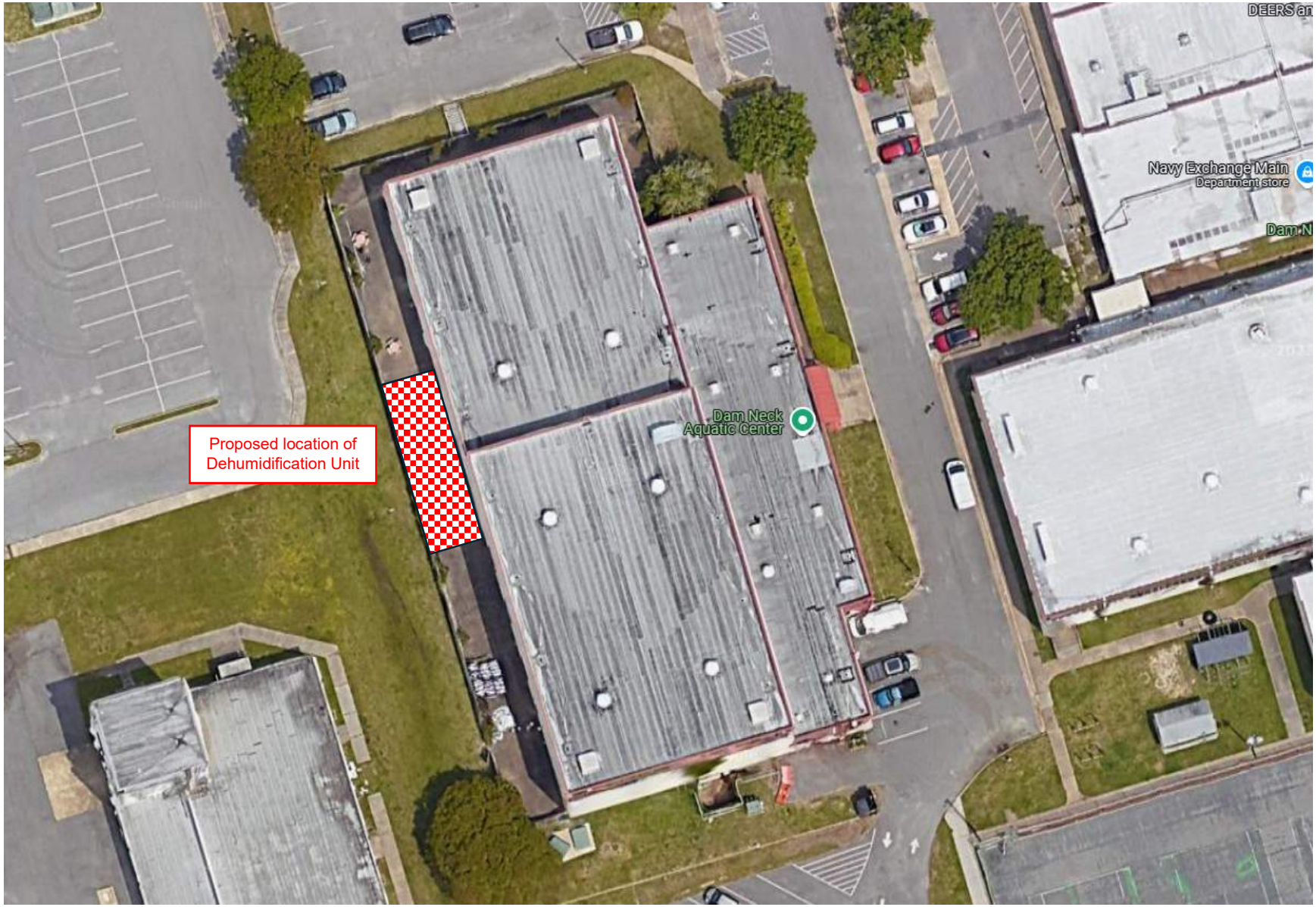
Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

ATTACHMENT 6.10 – Pool Dehumidification Unit Location

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA



Dam Neck Building 530 – Proposed Location of Dehumidification Unit

Naval Facilities Engineering Systems Command
NAVFAC MID-ATLANTIC

Engineering Department

eProjects WO#: 1862885

ATTACHMENT 6.11 – Mechanical Waste Water Disposal

BUILDING 530 – BUILDING REPAIRS
NAS OCEANA, DAM NECK ANNEX
VIRGINIA BEACH, VIRGINIA

MECHANICAL WASTE WATER DISPOSAL

In cases where Mechanical Equipment will be disconnected/connected or demolished, the Contractor(s) must utilize existing isolation valves (if available and usable/pressure holding) and other types of non-destructive system isolation to minimize the volume of potable, make-up, condenser, cooling and/or heating water drained from these systems.

1. All water drained from the HVAC systems is considered waste water. This waste water must be captured and containerized for disposal off Government property in accordance with all applicable federal, state and local regulations. The waste water from this project will be from, but not limited to, the following systems:

   - Heating Systems
   - Make-up water
   - Condenser Water System

2. This wastewater **must not** be discharged to storm.

3. This wastewater **must not** be discharged to sanitary sewer **without** written approval.

4. At Contractor risk, the Contractor may submit a "Request to Discharge to HRSD" for approval to discharge to sanitary. This "Request to Discharge to HRSD" must include the following:

   - Estimated volume (gallons) of proposed discharge

   - Safety Data Sheets (SDS) for any chemicals that have been added to the system (if this is an existing system and SDS are not available, state "existing system - SDS data not available" in the request.

   - Source of the wastewater (condenser water system, make-up water system, water treatment system, etc.)

   - Once the "Request to Discharge to HRSD" is received, NAS Oceana NAVFAC Environmental Department will coordinate with HRSD to obtain the required sampling parameters and forward this direction to the contractor.

   - Once the contractor provides the sampling of the containerized wastewater per HRSD requirements, submit the sample results to NAS Oceana NAVFAC Environmental Department and NAS Oceana NAVFAC Environmental Department will submit the sampling results to HRSD for approval or denial for discharge to sanitary sewer.

   - All correspondence between the contractor and the Government shall be processed thru the Contracting Officer.

   - Refer to additional requirements relative to this process as indicated in the NAVY REGION MID-ATLANTIC ENVIRONMENTAL CHECKLIST included in the PART 6 ATTACHEMNTS section of this RFP.

5. Waste Water Program Manager POC: Cole Martin (757) 433-3438

POOL WASTE WATER DISPOSAL

In cases where pool is drained, this water is considered waste water. Upon approval of PWD Oceana Environmental, this water may be drained to sanitary sewer.

1. This wastewater **must not** be discharged to storm.

2. This wastewater **must not** be discharged to sanitary sewer **without** written approval.

3. To obtain approval, the Contractor may submit a "Request to Discharge to HRSD" for approval to discharge to sanitary. This "Request to Discharge to HRSD" must include the following:

   - Estimated volume (gallons) of proposed discharge

   - Safety Data Sheets (SDS) for any chemicals that have been added to the system (if this is an existing system and SDS are not available, state "existing system - SDS data not available" in the request.

   - Source of the wastewater (condenser water system, make-up water system, water treatment system, etc.)

   - Once the "Request to Discharge to HRSD" is received, NAS Oceana NAVFAC Environmental Department will coordinate with HRSD to obtain the required sampling parameters and forward this direction to the contractor.

   - Once the contractor provides the sampling of the containerized wastewater per HRSD requirements, submit the sample results to NAS Oceana NAVFAC Environmental Department and NAS Oceana NAVFAC Environmental Department will submit the sampling results to HRSD for approval or denial for discharge to sanitary sewer.

   - All correspondence between the contractor and the Government shall be processed thru the Contracting Officer.

4. Refer to additional requirements relative to this process as indicated in the NAVY REGION MID-ATLANTIC ENVIRONMENTAL CHECKLIST included in the PART 6 ATTACHEMNTS section of this RFP.

5. Waste Water Program Manager POC: Cole Martin (757) 433-3438