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toc_template_final_design_workbook_12-10-14-use

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UFC 1-200-02 (7-Nov-2014) High Perf Sust Bldg Req

January 16, 2007

MEMORANDUM

From: PWC Code 600
To: _____

Subject: Utility Connection Permit Application

Ref: (a) PWCNORVA INSTRUCTION 11300.10F

Enclosed: (1) Utility Permit Connection Application
(2) Utility Permit Connection Instructions

1. In accordance with reference (a), Enclosures (1) and (2) are forwarded per your request for a utility connection. Please fill out the application completely according to the instructions. Submit the completed enclosure (2) and construction or design drawings and specifications to PWC Code 600 for review and approval.

2. If the application is acceptable, a permit will be issued by memo to the requesting activity. If the proposed utility work is not acceptable, the requestor will be notified of specific changes or additional information needed. Response time to the application is within 30 days. If actual construction of **permitted utility connections** differ from the approved application, **PWC Utilities must be notified of these changes**.

3. Digging permits are required prior to any excavation work being performed to allow for locating and marking existing utilities in the area. A digging permit must be requested by calling 445-8558 ext. 329. If a Utility Connection Permit (UCP) is required for work associated with the excavation, a digging permit will not be granted unless the requestor has been issued a UCP.

4. If there are any questions or if additional information is needed, please contact me at 445-8558 ext. 318.

Signature

UTILITY CONNECTION PERMIT APPLICATION
Navy Public Works Center, Utilities Department

SECTION A - GENERAL INFORMATION

1. Requesting Activity: _____

2. Point of Contact: _____ __Phone Number: _____

3. Project Location: _____

4. Type of Work: (Check all that apply.)
☐ New Construction ☐ Building Addition ☐ Renovation
☐ Demolition / Utility Disconnection ☐ Repair ☐ Utility Upgrade

5. Work will involve the following utilities: (Check all that apply.)
☐ Water ☐ Sewer ☐ Electric ☐ Steam ☐ Gas

6. Work to be performed by:
☐ ROICC Contract ☐ PWC Code 500 Maintenance
☐ PWC Contract ☐ PWC Utilities
☐ Other: _____

7. Contract Title: _____

Contract/J.O./Maximo Number: _____Drawing Number: _____

☐ NAVFAC ☐ PWC ☐ Design Activity ☐ Other_____

NOTE: Submit a complete set of drawings with the application. Include specifications if available.
SPECIFICATIONS INCLUDED: ☐ YES ☐ NO

8. Designed by:
Firm/Activity: _____

Point of Contact: _____ Phone: _____

9. Submitted by: (This is usually the EIC or AIC.)

Name: _____ Title: _____

Request Date: _____ Phone: _____

Signature: _____

Approval of this permit grants the above activity authority to make **only** these described changes to the utility distribution system owned by the PWC Utilities Department and to operate the above noted activity-owned portions of the system. **Please refer to PWCNORVA INSTRUCTION 11300.10F dated 22 JUL 1993 for clarification of ownership and boundaries of responsibility for these utilities.**

Enclosure (1)

SECTION B - WATER

PART A - DOMESTIC WATER SERVICE CONNECTIONS

Complete the following for all **domestic** water service connections to water distribution system lines.

1. Number of Domestic Water Service Connections

   (a) Number of **existing** service connections disconnected **from** water line _____

   (b) Number of **new** service connections connected **to** water line _____

2. List the following for all new **domestic** water service connections to water distribution system lines. See Instructions for clarification.

   (a) Pipe Size(s) _____

   (b) Pipe Material(s) _____

   (c) Pipe Class or Schedule _____

   (d) Required Capacity (in gpm) _____

   (e) Required Pressure (in psi) _____

   (f) Meter Size(s) _____

   (g) Meter Type(s) _____

   (h) Backflow Preventer (Yes/No) _____

PART B - FIRE PROTECTION (HIGH PRESSURE/NON-POTABLE) WATER SERVICE CONNECTIONS

Complete the following for all **fire protection (high pressure/non-potable)** water service connections to fire protection system lines.

1. Number of Fire Protection (High Pressure/Non-Potable) Water Service Connections

   (a) Number of **existing** service connections disconnected **from** fire protection line _____

   (b) Number of **new** service connections connected **to** fire protection line _____

Enclosure (1)

2. List the following for all new **fire protection (high pressure/non-potable)** water service connections to fire protection system lines. See Instructions for clarification.

(a) Pipe Size(s) _____

(b) Pipe Material(s) _____

(c) Pipe Class or Schedule _____

(d) Required Capacity (in gpm) _____

(e) Required Pressure (in psi) _____

(f) Backflow Preventer (Yes/No) _____

SECTION C - SANITARY SEWER

PART A - SANITARY SEWER LATERAL CONNECTIONS

Complete the following information for work involving **all sanitary sewer lateral** connections to sanitary sewer mains.

1. Number of Sanitary Sewer Laterals

(a) Number of **existing** laterals disconnected **from** sanitary sewer main _____

(b) Number of **new** laterals connected **to** sanitary sewer main _____

2. List the following for all new **sanitary sewer lateral** connections. See Instructions for clarification.

(a) Pipe Size(s) _____

(b) Pipe Material(s) _____

(c) Pipe Class or Schedule _____

(d) Total Added Design Capacity (GPM) _____

Enclosure (1)

3. Type of Discharge from New Sanitary Sewer Laterals

(a) Building Type: (Please check all that apply.)

☐ Office ☐ Residential Housing ☐ Recreational
☐ Warehouse ☐ Food Service ☐ Fuel Depot
☐ Commercial ☐ Barracks ☐ Training Facility
☐ Medical ☐ Industrial ☐ Aircraft Hangar
☐ Other (Specify.)_____

(b) Indicate below any of the operations occurring in the above buildings: (Please check all that apply. If none of these apply, check, N/A.)

☐ N/A
☐ Food Preparation Operations
☐ Photo Processing or X-Ray Operations
☐ Laboratory or Clinics
☐ Industrial Laundry or Dry Cleaning
☐ Printing Operations (other than copy machines for office use)
☐ Handling or Collecting Used Oils, Solvents, Degreasers, or Hazardous Wastes
☐ Grease Traps

PART B - SANITARY SEWER MAINS

Complete the following information for work involving all sanitary sewer **mains**.

1. Number of sanitary sewer manholes abandoned _____

2. Number of sanitary sewer manholes installed _____

3. Linear feet of sanitary sewer main abandoned _____

4. Linear feet of sanitary sewer main installed _____

5. List the following for all new **sanitary sewer mains**:

(a) Pipe Size(s) _____

(b) Pipe Material(s) _____

(c) Pipe Class or Schedule_____

Enclosure (1)

SECTION D - ELECTRIC

PART A - PRIMARY

If the work involves the primary, complete the following:

1. System Voltage: ☐ 34.5 KV ☐ 19.9KV ☐ 13.2 KV ☐ 11.5 KV ☐ 4.16 KV ☐ 2.4 KV ☐2.3 KV

TRANSFORMER:

2. Installation: ☐ New ☐ Upgrade Existing ☐ Repair

3. Type: ☐ Pad mount ☐ Unit Substation ☐ Pole mount ☐ Station

4. Primary BIL: ☐ 200 KV ☐150 KV ☐ 95 KV ☐ 60KV
   Secondary BIL: ☐ 150 KV ☐ 95 KV ☐60 KV ☐ 30 KV

5. Rating: _____KVA

6. Primary Connection: ☐ Live Front ☐ Dead Front

PRIMARY CONNECTION:

7. ☐ Overhead ☐ Underground

8. Conductor Size: _____ ☐ Copper ☐ Aluminum

9. Type: _____

10. Insulation Level: ☐ 133% ☐ 100%

11. Point of Connection to Utility: (Check all that apply.)

    ☐ Existing Distribution Switch ☐ Splice in Manhole ☐ Overhead Line Tap
    ☐ New Distribution Switch ☐ Other. (Specify.) _____

    Primary Circuit to be connected to (if known): _____

PART B - SECONDARY

If the work involves the secondary, complete the following:

12. Installation: ☐ New ☐ Upgrade (Load study required) ☐ Repair

13. Transformer Load Study Performed: ☐ Yes (Provide) ☐ No - Date expected_____

14. Watt-hour meter: Form_____

    Type: ☐ Transformer rated ☐ Self-contained

Enclosure (1)

SECTION E - STEAM

1. Purpose of new line/service: (Please check all that apply.)

   ☐ Building Heating ☐ Water Heating ☐ AC/Humidity Control
   ☐ Other (Specify)_____

2. Size of New Line_____

3. Size of Existing Line at Connection Point_____

4. Required Capacity (lbs/hr)_____

5. Required Pressure (psi)_____

6. Meter model/size: _____

SECTION F - NATURAL GAS

1. Size of New Line_____

2. Size of Existing Line at Connection Point_____

3. Pipe Material_____

4. Required Capacity_____

5. Required Service Pressure_____

6. Meter model/size: _____

Enclosure (1)

INSTRUCTIONS FOR COMPLETION OF A UTILITY CONNECTION PERMIT APPLICATION

All questions must be answered. DO NOT LEAVE BLANKS. If a question is not applicable, indicate so on the form. Instructions for answering the questions on the permit form are given below.

SECTION A - GENERAL INFORMATION

1. Enter the name of the activity having financial responsibility for the facility being served by the proposed utility work.

2. Enter the name and phone number of an activity point of contact responsible for the proposed utility work.

3. Enter the building number and name that is served by the proposed utility work.

4. Check the categories that correspond to the majority of the work. Abandonment of utilities should be considered demolition. Check all that apply.

5. Check each utility that is being altered, added, or upgraded. For each utility checked, please complete the appropriate section in the application. For telephone connections, please contact Activity Providing Telecommunications Service Department, Code N-36, NAVCTAMSLANT Norfolk at 322-2069

6. Indicate the activity performing the construction or responsible for the administration of the construction contract.

7. Indicate the project title. Enter the construction contract number or job order number that identifies the construction project. Enter the NAVFAC, PWC, and/or design activity drawing number. Indicate the type of drawing (e.g. NAVFAC, PWC, etc.) Attach all existing design drawings or sketches showing proposed work to the utility systems. Indicate if specifications are included.

8. Enter the name of the organization, a point of contact, and a phone number for the party responsible for the design of the proposed work.

9. Enter the name, job title, application submission date, phone number, and signature of the EIC OR AIC completing the application.

SECTION B - WATER

PART A - DOMESTIC WATER SERVICE CONNECTIONS

1a. Enter the number of existing domestic water service connections **disconnected from** the PWC Code 600-owned water distribution system involved in the proposed work.

1b. Enter the number of new domestic water service connections **connected to** the PWC Code 600-owned water distribution system involved in the proposed work.

Enclosure (2)

2a. Indicate the size(s) of the water pipe to be tied into the domestic water distribution system.

2b. Indicate the type(s) of water pipe material to be tied into the domestic water distribution system (e.g. ductile iron, PVC, copper).

2c. Indicate the class of water pipe that is to be tied into the domestic water distribution system (e.g. Class 150, Class 250, Schedule 40, Schedule 80).

2d. Indicate the design capacity for all new domestic water service connections tying into Code 600-owned water lines.

2e. Indicate the design pressure for all new domestic water service connections tying into Code 600-owned water lines.

2f. Indicate the size(s) of the water meter to be installed.

2g. Indicate the type(s) of water meter to be installed (e.g. positive displacement, turbine, dual flow).

2h. Indicate whether a backflow prevention device is to be installed.

PART B - FIRE PROTECTION (HIGH PRESSURE/NON-POTABLE) WATER SERVICE CONNECTIONS

1a. Enter the number of existing fire protection (high pressure/non-potable) water service connections **disconnected** from the PWC Code 600-owned fire protection water distribution system involved in the proposed work.

1b. Enter the number of new fire protection (high pressure/non-potable) water service connections **connected** to the PWC Code 600-owned fire protection water distribution system involved in the proposed work.

2a. Indicate the size(s) of the water pipe to be tied into the fire protection (high pressure/non-potable) water distribution system.

2b. Indicate the type(s) of water pipe material to be tied into the fire protection (high pressure/non-potable) water distribution system (e.g. ductile iron, PVC, copper).

2c. Indicate the class of water pipe that is to be tied into the fire protection (high pressure/non-potable) water distribution system (e.g. Class 150, Class 250, Schedule 40, Schedule 80).

2d. Indicate the design capacity for all new fire protection (high pressure/non-potable) water service connections tying into Code 600-owned fire protection water lines.

2e. Indicate the design pressure for all new fire protection (high pressure/non-potable) water service connections tying into Code 600-owned fire protection water lines.

2f. Indicate whether a backflow prevention device is to be installed.

SECTION C - SEWER

PART A - SANITARY SEWER LATERAL CONNECTIONS

1a. Enter the number of existing sanitary sewer laterals **disconnected** from the PWC Code 600-owned sanitary sewer collection system involved in the proposed work.

1b. Enter the number of new sanitary sewer laterals **connected** to the PWC Code 600-owned sanitary sewer collection system involved in the proposed work.

2a. Indicate the size(s) of the sanitary sewer pipe to be tied into the sanitary sewer collection system.

2b. Indicate the type(s) of sanitary sewer pipe material to be tied into the sanitary sewer collection system (e.g. ductile iron, PVC).

2c. Indicate the class or schedule of sewer pipe that is to be tied into the sanitary sewer collection system (e.g. DR 35, DR 18, SDR 32.5, SDR 17).

2d. Indicate the design capacity for all new sewer laterals connected to code 600-owned sanitary sewer collection system.

3a. Check all building types that will be served by the proposed sanitary sewer connections. If there is a building type that applies and is not listed, check "Other" and indicate type of building.

3b. Check all choices that may discharge to the sanitary sewer through the proposed connections. If none of these apply, check "N/A."

PART B - SANITARY SEWER MAINS

1. Enter the number of sanitary sewer manholes abandoned in the proposed work.

2. Enter the number of sanitary sewer manholes installed in the proposed work.

3. Enter the quantity (in linear feet) of sanitary sewer main abandoned in the proposed work.

4. Enter the quantity (in linear feet) of sanitary sewer main installed in the proposed work.

5a. Indicate the size(s) of the sanitary sewer pipe to be used for the new sanitary sewer main.

5b. Indicate the type(s) of the sanitary sewer pipe material to be used for the new sanitary sewer main (e.g. ductile iron, PVC).

5c. Indicate the class of pipe that is to be used for the new sanitary sewer main (e.g. DR 35, DR 18, SDR 32.5, SDR 17).

Enclosure (2)

SECTION D - ELECTRIC

PART A - PRIMARY ELECTRICAL SYSTEM

Complete this section only when a new transformer is being installed or when an existing transformer is being upgraded, relocated or repaired.

1. Check the primary system to be added to or modified.

2. Indicate if the job is to install a new transformer or to upgrade or repair an existing transformer.

3. Indicate the type of transformer to be installed.

4. List the BILs for the primary and secondary side of the transformer.

5. Indicate the transformer rating in KVAs.

6. Indicate if primary connection will be live front or dead front.

7. Indicate if primary connection is overhead or underground.

8. Indicate the size of the conductors to be installed.

9. Indicate type of the conductors (e.g. ERP, XLP).

10. Check the insulation level of the conductors.

11. Indicate if the connection to the utility is to be a termination on an existing distribution switch, a primary cable splice in a manhole, a tap to an existing overhead circuit, or a new distribution switch. If the connection to the utility is by some means other than those listed, check other and indicate the proposed method. Indicate primary circuit to be tapped if known. Use PWC Utility Department circuit designations.

PART B - SECONDARY ELECTRICAL SYSTEM

12. Indicate if work is to install a new transformer and secondary load, or if work is to upgrade or repair an existing transformer due to a secondary load addition.

13. Indicate if a load study has been performed on the transformer that is having the secondary load increased. If yes, provide a copy of the study. If no, indicate when the study will be completed.

14. Indicate the watt-hour meter form and type to be provided.

Enclosure (2)

SECTION E - STEAM

1. Check all services to be supplied by the proposed connection.
2. Indicate the size of the new steam line.
3. Indicate the size of the existing steam line to which service is to be connected.
4. Indicate the design capacity for the system to be supplied by the new connection.
5. Indicate the design pressure of the system to be supplied by the new connection.
6. Indicate model and size of meter being installed.

SECTION F - NATURAL GAS

1. Indicate the pipe size of the new gas line.
2. Indicate the pipe size of the existing gas line to which service is to be connected.
3. Indicate the pipe material of the new gas line to which service is to be connected.
4. Indicate the design capacity for the system to be supplied by the new connection.
5. Indicate the required service pressure for the system to be supplied by the new connection.
6. Indicate meter model and size to be installed.

Enclosure (2)

THIS SHEET HAS BEEN INTENTIONALLY LEFT BLANK

REQUEST for GAS SERVICE

1

Date _____ Activity _____ UIC _____

Requestor Information

Requestor _____ Code _____

Telephone/DSN _____ Email address _____

Point of Contact _____ Telephone _____

2

Billing Information

Billing Address: _____
Command

Street _____ City _____ State _____ Zip _____

Paying Address: _____
Command

Street _____ City _____ State _____ Zip _____

3

Project Information

Project Name/Number _____ ☐ Govt. Owned ☐ Govt. Leased Required Date _____

Service Address / Bldg #: _____
Street

City _____ State _____ Zip _____

Scope Of Utility Work:

Utility Provider/ Address: _____
Provider

Street _____ City _____ State _____ Zip _____

Funding Available: ☐ Yes ☐ No Funding Source _____ Point of Contact _____

Telephone _____ Email address _____

THIS SHEET HAS BEEN INTENTIONALLY LEFT BLANK

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:		WORK ORDER NUMBER:
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		

**Use referenced notes where additional space required.

Air Quality	**PERMIT: Construction**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Air Quality	**PERMIT: Operating**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Air Quality	**PERMIT: Asbestos Demolition & Removal**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Air Quality	**PERMIT: Other**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:		WORK ORDER NUMBER:
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Water Pollution	**PERMIT: Wastewater Collection System**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Water Pollution	**PERMIT: Wastewater Pump Station**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency		
	Special Provisions and Requirements:		
Water Pollution	**PERMIT: Wastewater Treatment Plant**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Water Pollution	**PERMIT: Pretreatment, i.e. Oil/Water Separator**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:		WORK ORDER NUMBER:
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Water Pollution	**PERMIT: Septic System**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Water Pollution	**PERMIT: Erosion & Sediment Control**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Water Pollution	**PERMIT: Stormwater Management**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Water Pollution	**PERMIT: Other**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:		WORK ORDER NUMBER:
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Discharge Permit	**PERMIT: New or Increased Capacity NPDES**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Discharge Permit	**PERMIT: General NPDES (≥1 Acre Land Disturbance)**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Discharge Permit	**PERMIT: Other**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Drinking Water	**PERMIT: Water Distribution System**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:		WORK ORDER NUMBER:
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Drinking Water	**PERMIT: Water Treatment Plant**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Drinking Water	**PERMIT: Well Construction**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Drinking Water	**PERMIT: Underground Injection**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Drinking Water	**PERMIT: Other**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:		WORK ORDER NUMBER:
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Fuel Tanks	**PERMIT: Underground Storage Tank Construction**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Fuel Tanks	**PERMIT: Underground Storage Tank Operating**		
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Fuel Tanks	**PERMIT: Other**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions, and Requirements:		
Solid and Hazardous Waste	**PERMIT: Hazardous Waste Treatment, Storage, Disposal, Handling**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:		WORK ORDER NUMBER:
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Solid and Hazardous Waste	**PERMIT: Landfill**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Solid and Hazardous Waste	**PERMIT: Used Oil Collection Center, Aggregation Point, Transporter & Transfer Facility**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Solid and Hazardous Waste	**PERMIT: Other**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Coastal Management Permit	**PERMIT: Coastal Consistency Determination Authorization**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:		WORK ORDER NUMBER:
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Coastal Management Permit	**PERMIT: Coastal Barrier**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Coastal Management Permit	**PERMIT: Floodplain Management**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Coastal Management Permit	**PERMIT: Other**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	**PERMIT: Work in Navigable Waters**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:		WORK ORDER NUMBER:
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Other Permits	**PERMIT: Dredging**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	**PERMIT: Clearing**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	**PERMIT: Essential Fish Habitat Assessment Consultation**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	**PERMIT: Marine Mammal Protection Act**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:		WORK ORDER NUMBER:
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Other Permits	**PERMIT: Take Permits**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	**PERMIT: Work in Wetlands**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	**PERMIT: Digging Permit**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	**PERMIT: Traffic**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	PROJECT TITLE:		WORK ORDER NUMBER:
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Other Permits	**PERMIT: Airport Hazard/Airfield Safety Clearances**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	**PERMIT: Railroad Crossing**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	**PERMIT: Historic Preservation**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	**PERMIT: Noise Abatement**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

PERMITS RECORD OF DECISION (PROD)

PERMIT REQUIRED (Check Box)	**PROJECT TITLE:**		**WORK ORDER NUMBER:**
	LOCATION:		
	GOVERNMENT PROJECT MANAGER:		
Other Permits	**PERMIT: Endangered/Species/Critical Habitat**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		
Other Permits	**PERMIT: Other**	Date Obtained:	Date Closed:
☐	Basis of Decision (Yes/No):**		
	Issuing Agency:		
	Special Provisions and Requirements:**		

_____ _____

Prepared by: *Date*

COMNAVREG MIDLANT INSTRUCTION_____

From: Commander, Navy Region, Mid-Atlantic

Subj: POST CONSTRUCTION STORMWATER RUNOFF MANAGEMENT INSTRUCTION

Ref: (a) 4 VAC 50-60 – Virginia Stormwater Management Program (VSMP) Permit Regulations For Small Municipal Separate Storm Sewer Systems (Effective 1 Jan 05)
(b) Virginia Stormwater Management Handbook
(c) COMNAVREG MIDLANT Erosion and Sediment Control Instruction
(d) Unified Facilities Criteria; Low Impact Development Manual

1. Purpose. To require minimum post-construction stormwater best management practices at installations and annexes under the purview of Commander, Navy Region, Mid-Atlantic (COMNAVREG MIDLANT) and located in the Hampton Roads area. This instruction applies to all development and redevelopment activities greater than or equal to one acre in size. The instruction also applies to land development activities that are smaller than one acre if the activities are part of a larger common plan of development. In cases where the Regional Environmental Water Program Manager determines that a project less than one acre in size will have a significant water quality impact, the instruction may also apply. This instruction seeks to maintain compliance with state and federal environmental regulations through the following objectives:

a. Require that the after-development runoff from land development and redevelopment activities is maintained as nearly as practicable to the pre-development runoff characteristics in order to reduce flooding, siltation, stream bank erosion, and property damage;

b. Establish minimum design criteria for the protection of properties and aquatic resources downstream from land development and redevelopment activities to prevent damages due to increases in volume, velocity, frequency, duration, and peak flow rate of stormwater runoff;

c. Establish minimum design criteria for measures to minimize non-point source pollution from stormwater runoff, which would otherwise degrade water quality;

d. Establish provisions for the long-term maintenance of stormwater management control devices and other techniques specified to manage the quality and quantity of runoff; and

e. Establish administrative procedures for the submission, review, approval, and disapproval of stormwater plans, and the inspection of approved projects.

2. Definitions

a. Average Land Cover Condition - A measure of the average amount of impervious surfaces within a facility.

FACILITY	AVERAGE LAND COVER
Naval Station, Norfolk (including NSA and SDA)	42.2%
Naval Amphibious Base, Little Creek	34.1%
Saint Juliens Creek Annex	37.7%
Scott Center Annex	41.3%
Saint Helena Annex	78.7%
Southgate Annex	74.3%
Naval Weapons Station, Yorktown	20.4%
Cheatham Annex	24%
Yorktown Fuels	16%
Craney Island	28.5%
Naval Air Station, Oceana	28.8%
Dam Neck Annex	24.6%
Naval Auxiliary Landing Field, Fentress	18.7%
Northwest Annex	16.6%
Lafayette River Annex	42%

b. Best Management Practice (BMP) - The use of structural or non-structural practices that are designed to reduce stormwater runoff pollutant loads, discharge volumes, and/or peak flow discharge rates.

c. Erosion and Sediment Control Plan - A document that is designed to minimize the erosion and sediment runoff at a site during land disturbing activities.

d. Flooding - A volume of water that is too great to be confined within the banks or walls of the stream, water body or conveyance system, and that overflows onto adjacent lands, causing or threatening damage.

e. Hotspot - An area where land use or activities generate highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater.

f. Hydrologic Soil Group (HSG) - A Natural Resource Conservation Service classification system in which soils are categorized into four runoff potential groups. The groups range from A soils, with high permeability and little runoff production, to D soils, which have low permeability rates and produce higher runoff.

g. Impervious Cover - A surface composed of any material that significantly impedes or prevents natural infiltration of water into soil. Impervious surfaces include, but are not limited to, roofs, buildings, streets, parking areas, and any concrete, asphalt, or compacted gravel surface.

h. Infiltration - The process of stormwater percolating into the subsoil.

i. Jurisdictional Wetland - An area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation, these wetlands receive regulatory review by the U. S. Army Corps of Engineers (ACOE), the Virginia Department of Environmental Quality (VDEQ), and local wetland boards.

j. Larger Common Plan of Development - Multiple separate and distinct construction activities that are planned to occur under one plan that can be linked together through documentation. For example, projects listed on the same 1391, NEPA documentation, design, contract, or Coastal Consistency Determination.

k. Linear Development Project - A land development project that is linear in nature such as, but not limited to, (i) the construction of electric and telephone utility lines, and natural gas pipelines; (ii) construction of tracks, rights-of-way, bridges, communication facilities and other related structures of a railroad company; and (iii) highway construction projects.

l. Non-point Source (NPS) Pollution - Pollution from any source other than from any discernible, confined, and discrete conveyances, and shall include, but not be limited to, pollutants from agricultural, silvicultural, mining, construction, subsurface disposal, and urban runoff sources.

m. Non-point Source Pollutant Runoff Load or Pollutant Discharge - The average amount of a particular pollutant measured in pounds per year, delivered in a diffuse manner by stormwater runoff.

n. Percent Impervious - The impervious area within the site divided by the total area of the site multiplied by 100.

o. Post-development - Conditions that reasonably may be expected or anticipated to exist after completion of the land development activity on a specific site or tract of land.

p. Pre-development - Conditions that exist at the time that plans for the land development of a tract of land are approved by the plan approving authority. Where phased development or plan approval occurs (preliminary grading, roads, utilities, etc.), the existing conditions at the time *prior to* the first item being approved or permitted shall establish pre-development conditions.

q. Redevelopment - The process of developing land that is or has been previously developed.

r. Runoff or Stormwater Runoff - That portion of precipitation that is discharged across the land surface or through conveyances to one or more waterways.

s. Site - The parcel of land being developed, or a designated planning area in which the land development project is located.

t. State Waters - All waters on the surface and under the ground wholly or partially within or bordering the Commonwealth or within its jurisdiction.

u. Stormwater Management Facility - A device that controls stormwater runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release, and the velocity of flow.

v. Stormwater Management Plan or Plan - A document containing material for describing how existing runoff characteristics will be affected by a land development project

and methods for complying with the requirements of the Stormwater Management Program.

w. Water Quality Volume (WQV) - The volume equal to the first one-half inch of runoff multiplied by the impervious surface of the land development project.

x. Watershed - A defined land area drained by a river, stream, drainage ways or system of connecting rivers, streams, or drainage ways such that all surface water within the area flows through a single outlet.

3. Guidance. The criteria and information, including specifications and standards, of the Virginia Stormwater Handbook will be used for the proper implementation of this instruction. The Handbook includes a list of acceptable stormwater treatment practices, including the specific design criteria for each. All references to the Virginia Stormwater Management Handbook are presumed to be the "latest edition" as defined on the Virginia Department of Conservation and Recreation website (www.dcr.state.va.us). The Low Impact Development Techniques identified in the Unified Facilities Criteria; Low Impact Development Manual may also be used as a source of alternative BMPs to manage and treat stormwater runoff.

4. Policy. The following criteria must be addressed for stormwater management:

a. Land development and redevelopment projects greater than or equal to one acre in size or projects that are part of a larger common plan of development; must be evaluated in accordance with the water quality Performance-based or Technology-based criteria listed below. If a stormwater management BMP is required for a project, then the appropriate Stormwater Management Plans must be prepared and submitted in accordance with Section 5.

(1) Performance-Based Criteria. For land development, the calculated post-development non-point source pollutant runoff load must be compared to the calculated pre-development load based upon the average land cover condition (see average land cover definition). A BMP must be designed, constructed and maintained to achieve the target pollutant removal efficiencies specified in Table 1 to effectively reduce the pollutant load to the required level based upon the following four applicable land development situations for which the performance criteria apply:

(a) Situation 1 consists of land development where the existing percent impervious cover is less than or equal to the average land cover condition (see definition 2.a) and the proposed improvements will create a total percent impervious cover which is less than the average land cover condition (see definition 2.a).

Requirement: No reduction in the after-development pollutant discharge is required.

(b) Situation 2 consists of land development where the existing percent impervious cover is less than or equal to the average land cover condition (see definition 2.a) and the proposed improvements will create a total percent impervious cover which is greater than the average land cover condition (see definition 2.a).

Requirement: The pollutant discharge after development must not exceed the existing pollutant discharge based on the average land cover condition.

(c) Situation 3 consists of land development where the existing percent impervious cover is greater than the average land cover condition (see definition 2.a).

Requirement: The pollutant discharge after development must not exceed (i) the pollutant discharge based on existing conditions less 10 percent or (ii) the pollutant discharge based on the average land cover condition (see definition 2.a), whichever is greater.

(d) Situation 4 consists of land development where the existing percent impervious cover is served by an existing stormwater management BMP that addresses water quality.

Requirement: The pollutant discharge after development must not exceed the existing pollutant discharge based on the existing percent impervious cover while served by the existing BMP. The existing BMP must be shown to have been designed and constructed in accordance with proper design standards and specifications, and to be in proper functioning condition.

(2) Technology-Based Criteria. For land development, the post-development stormwater runoff from the impervious cover must be treated by an appropriate BMP as required by the post-developed condition percent impervious cover as specified in

Table 1. The selected BMP must be designed, constructed, and maintained to perform at the target pollutant removal efficiency specified in Table 1. Design standards and specifications for the BMPs in Table 1, which meet the required target pollutant removal efficiency, must be consistent with those provided in the Virginia Stormwater Management Handbook.

TABLE 1*

WATER QUALITY BMP	TARGET PHOSPHORUS REMOVAL EFFICIENCY	PERCENT IMPERVIOUS COVER
Vegetated filter strip	10%	16-21%
Grassed swale	15%	
Constructed wetlands	30%	22-37%
Extended detention (2 x WQ Vol)	35%	
Retention basin I (3 x WQ Vol)	40%	
Bioretention basin	50%	38-66%
Bioretention filter	50%	
Extended detention-enhanced	50%	
Retention basin II (4 x WQ Vol)	50%	
Infiltration (1x WQ Vol)	50%	
Sand filter	65%	67-100%
Infiltration (2 x WQ Vol)	65%	
Retention basin III (4 x WQ Vol with aquatic bench)	65%	

*Innovative or alternative BMPs not included in this table may be allowed at the discretion of the Regional Environmental Water Program Manager. Innovative or alternate BMPs not included in this table which target appropriate non-point source pollution other than phosphorous (such as petroleum, hydrocarbons, sediment, etc.) may be allowed at the discretion of the Regional Environmental Water Program Manager. BMPs that have the potential to cause Bird Air Strike Hazards (BASH) will not be allowed in the vicinity of runways or taxiways. If a decision must be made between two BMPs, preference will be given to the BMP that is less costly and maintenance intensive.

b. General Requirements

(1) Stormwater runoff generated from regulated land development and redevelopment projects must not be discharged into a jurisdictional wetland or local water body without adequate treatment. Where such discharges are proposed, the

impact of the proposal on wetland functions must be assessed using an acceptable method. In no case shall the impact on functions be any less than allowed by the ACOE or the VDEQ.

(2) Stormwater discharges to critical areas with sensitive resources (i.e., shellfish beds, swimming beaches, water supply reservoirs) may be subject to additional criteria, or may need to utilize or restrict certain stormwater management practices.

(3) Stormwater discharges from land uses or activities with higher potential pollutant loadings, known as "hotspots," may require the use of specific structural BMPs and pollution prevention practices.

(4) All stormwater management practices must be designed for a 24-hour duration; a 2-year design storm is required for a discharge to a natural channel and a 10-year design storm is required for a discharge to a manmade channel. Pre-development and post-development runoff rates must be verified by calculations that are consistent with good engineering practices.

(5) For purposes of computing runoff, all pervious lands at the site must be assumed to be in good condition (if the lands are pastures, lawns, or parks) prior to development, with good cover (if the lands are woods), or with conservation treatment (if the lands are cultivated), regardless of conditions existing at the time of computation.

(6) Construction of stormwater management facilities or modifications to channels must comply with all applicable laws and regulations, including all necessary permits, such as ACOE and VDEQ Wetland Permits, Virginia Department of Conservation and Recreation Virginia Stormwater Management Program Permits, etc.

(7) Impounding structures that are not covered by the Impounding Structure Regulations (4VAC 50-20) must be engineered for structural integrity and designed according to the 100-year storm event.

(8) Pre-development and post-development runoff rates must be verified by calculations that are consistent with good engineering practices.

(9) Outflows from a stormwater management facility must be discharged to an adequate channel.

(10) Natural channel characteristics must be preserved to the maximum extent practicable.

(11) Use of Non-Structural BMPs are encouraged to reduce the amount of stormwater runoff that must be managed. This will help to minimize the reliance on structural practices, which require ongoing maintenance in order to be effective.

(12) Runoff from parking lots must be treated to remove oil, grease, and sediment before it enters receiving waters.

(13) The use of natural drainage systems and vegetated buffer zones as open space and conservation areas shall be encouraged.

(14) Stormwater management BMPs for a site must be chosen based on the physical conditions of the site. Designers must consult the Virginia Stormwater Management Handbook for guidance on the factors that determine site design feasibility when selecting a stormwater management BMP.

(15) All stormwater management practices must be designed to allow for the maximum removal of pollutants and reduction in flow velocities. The Virginia Stormwater Management Handbook provides detailed guidance on the requirements for conveyance for each of the approved stormwater management practices.

(16) Stormwater infiltration practices, or practices having an infiltration component, as specified in the Virginia Stormwater Management Handbook, are prohibited, even with pretreatment, in the following circumstances:

(a) Where stormwater is generated from highly contaminated source areas known as “hotspots”.

(b) Where stormwater is carried in a conveyance system that also carries contaminated, non-stormwater discharges.

(17) Prior to design, the Regional Environmental Group should be consulted to determine if the project will be subject to additional stormwater design requirements.

c. Stream Channel Erosion. To protect stream channels from degradation, specific channel protection criteria must be provided as prescribed in the Virginia Stormwater Management Handbook and Virginia Erosion and Sediment Control Handbook.

(1) Properties and receiving waterways downstream of any land development project must be protected from erosion and damage due to increases in volume, velocity and frequency of peak flow rate of stormwater runoff in accordance with Standard 19 of the Erosion and Sediment Control Instruction.

d. Flooding. The calculations for determining peak flows as found in the Virginia Stormwater Management Handbook must be used for sizing all stormwater management practices.

(1) Downstream properties and waterways must be protected from damages from localized flooding due to increases in volume, velocity, and peak flow rate of stormwater runoff in accordance with the minimum design standards set out in this subsection.

(2) The 10-year post-developed peak rate of runoff from the development site must not exceed the 10-year pre-developed peak rate of runoff.

(3) Linear development projects shall not be required to control post-developed stormwater runoff for flooding.

5. Stormwater Management Plans. A stormwater management plan must be developed for each project to ensure adequate planning for the management of stormwater runoff. The plan must be written in accordance with the criteria established in this section.

Work cannot commence until the plan has been reviewed and approved by the appropriate Regional Environmental Group Water Program Manager.

a. Stormwater Management Plan. The stormwater management plan must be submitted for approval at or before the time of the 90 percent design submittal. For design-build projects, Regional Water Program Manager must approve the plan prior to construction. The stormwater management plan must include the following information:

(1) Contact Information. The name, address, and telephone number of the Assistant Resident Officer in Charge of Construction (AROICC) and Project Manager.

(2) A map (or maps) indicating the location of existing and proposed buildings, roads, parking areas, utilities, structural stormwater management and sediment control facilities.

The map(s) will also clearly show pre-construction and post-construction land cover (pervious and impervious) with a tabulation of the percentage of surface area to be changed; drainage patterns; locations of utilities, roads and easements; the limits of clearing and grading; a written description of the site plan; and justification of proposed changes in natural conditions may also be required.

(3) A written or graphic inventory of the natural resources environmentally sensitive features at the site and surrounding area that provide particular opportunities or constraints for development.

(4) A description of proposed, post-construction stormwater management measures including sufficient engineering analysis to show that the proposed stormwater management measures control runoff from the site in compliance with this instruction and the specifications of the Virginia Stormwater Management Handbook.

(5) Calculations. Hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in this instruction (24-hour duration, 2-year or 10-year). Such calculations must include (i) description of the design storm frequency, intensity and duration, (ii) time of concentration, (iii) Soil Curve Numbers or runoff coefficients, (iv) peak runoff rates and total runoff volumes for each watershed area, (v) infiltration rates, where applicable, (vi) culvert capacities, (vii) flow velocities, (viii) data on the increase in rate and volume of runoff for the specified design storms, and (ix) documentation of sources for all computation methods and field test results.

(6) Maintenance Plan. The design and planning of all stormwater management facilities must include detailed maintenance procedures to ensure their continued function. These plans will identify the parts or components of a stormwater management BMP that need to be maintained and the equipment and skills or training necessary to maintain them. Estimates for annual maintenance costs and frequency must also be included.

(7) Landscaping Plan. The plan must include a detailed landscaping plan describing the woody and herbaceous vegetative stabilization and management techniques to be used within and adjacent to the stormwater BMP. The landscaping plan must also describe how vegetation should be maintained. This plan must be prepared by a qualified individual familiar with the selection of emergent and upland vegetation appropriate for the selected BMP.

6. Maintenance Inspection and Repair of Stormwater Facilities. All stormwater management facilities must undergo inspections to document maintenance and repair needs and ensure compliance with the requirements of this instruction and accomplishment of its purposes. These needs may include: removal of silt, litter, and other debris from all catch basins, inlets, and drainage pipes; grass cutting and vegetation removal; necessary replacement of landscape vegetation; and any repair or replacement of structural features.

At a minimum, a stormwater management facility must be inspected on an annual basis by the Regional Environmental Group Water Program Manager. In the event that the stormwater management facility has not been maintained and/or becomes a danger to public safety or public health, the Regional Environmental Group Water Program Manager shall notify the Public Works Office, Facilities Maintenance Specialist responsible for the site maintenance. The notice will specify the measures needed to comply with the plan and must specify the time within which such measures must be completed.

7. Waivers. Every applicant must provide for stormwater management as required by this instruction, unless a written request is filed to waive this requirement. Requests to waive the stormwater management requirements must be submitted to the Regional Environmental Group Water Program Manager for approval.

The minimum requirements for stormwater management may be waived in whole or in part, provided that at least one of the following conditions applies:

a. It can be demonstrated that the proposed development is not likely to impair attainment of the objectives of this instruction.

b. The Regional Environmental Group Water Program Manager agrees that meeting the minimum on-site management requirements is not feasible due to the natural or existing physical characteristics of a site and no other feasible site location is available.

c. Non-structural practices will be used on the site that reduce:

(1) The generation of stormwater from the site;

(2) The size and cost of stormwater storage; and

(3) The pollutants generated at the site.

In instances where one of the conditions above applies, the Regional Environmental Group may grant a waiver from strict compliance with the stormwater management provisions.

8. Enforcement. Any activity that violates this instruction may be subject to enforcement actions under the Clean Water Act and Virginia Stormwater Management Law; including Warning Letters, Notices of Violation, fines, and penalties from the Virginia Department of Conservation and Recreation. The party that causes the violation will be responsible for all required corrective actions and will have to provide a written description of why the violation occurred to the Regional Environmental Group.

9. Responsibilities

a. Regional Environmental Group

(1) Water Program Manager. The Water Program Managers are responsible for reviewing and approving Stormwater Management Plans; ensuring the required stormwater management BMPs are installed and maintained as required by all applicable environmental laws and regulations; and granting waivers where appropriate. The Water Program Managers will perform annual inspections of all BMPs in their area of responsibilities (AORs) to determine maintenance requirements and costs for the next year. Inspections will be completed during the third quarter of the fiscal year.

(2) Natural Resources Manager. The Natural Resources Managers are responsible for reviewing the suitability of proposed BMPs; including landscaping plans, wetlands issues, as well as any other issues deemed appropriate by the Water Program Manager.

b. Public Works Office. Public Works Office (Facilities Maintenance Group) will be responsible for funding and maintaining all installed stormwater management BMPs.

c. Designers. Designers, both in-house and A&E firms, will be responsible for developing and submitting Stormwater Management Plans in accordance with this instruction.

10. Review Authority. The Regional Environmental Group Water Program Manager is responsible for reviewing and updating this instruction.

S. A. TURCOTTE

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FAR 8.405-1 States the designer shall review at least three schedule contractors through GSA (NAVSUP BPAs). In addition to price, when determining best value, the designer may consider the factors such as special features, trade in considerations, life cycle analysis, warranty, maintenance, past performance, sustainability, comfort, delivery, training needed, technical qualifications, compatibility, and administrative costs as part of the Best Value Determination (BVD) (Enclosures 1 and 2)

If other than price is the deciding factor for selection, the designer must document the decision in a narrative paragraph as part of the BVD.

The designer must sign the BVD forms under Submitting Official

BVD REQUIREMENTS

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

Greater than $3,000 and $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 BPA holders/manufacturers as well as UNICOR. UNICOR must always be solicited which is done by sending an email with the requirements and evaluation criteria. In addition to the review of published list prices, the contractor's interior designer must confirm the pricing with the vendor and provide a written quote. The BVD form (Enclosure 1) must be completed and submitted for all FF&E procurements greater than $3,000 and $150,000 or less. (FAR 2.101)

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. Allow a minimum of 30 days for responses. The BVD form (Enclosure 2) must be completed and submitted for all FF&E procurements greater than $150,000 (FAR 2.101) and manufacturer's quotes and a summary of all proposals must be attached.

Federal Prison Industries (UNICOR) must be considered as part of all BVDs. UNICOR contact information to obtain pricing or send solicitations is enclosed. (Enclosure 3)

This policy is in effect immediately for any projects awarded after 1 Mar 09. Any questions can be directed to Peggy Noland, CID, Supervisory Interior Designer, NAVFAC MIDLANT at 757-341-0136 or margaret.noland@navy.mil.

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Enclosure (1)

BEST VALUE DETERMINATION GUIDELINES
$3,000 - $150,000

(Schedule Purchases are subject to FAR 8.4, DFARS 208.4, and DFARS PGI Supplement 208.405-70) (FAR 2.101)

- FAR 8.4 required that you make a best value determination before placing Multiple Award Schedule (MAS) orders above the micro-purchase limit (currently $3,000).
- The Navy Furniture BPAs shall be the primary source for FF&E. Refer to Specification Section E20.
- For orders between $3,000 and $150,000, review pricing from at least three sources and UNICOR. (FAR 8.405-1(c)) (FAR 2.101)
- Seek additional price discounts from the contractor offering the best value. (FAR 8.405-1(d))

1. Brief Description of Item, System or Component to be Procured:

2. Did you review the required number of sources under the BPA and/or Federal Supply Schedule? YES ☐ NO ☐

3. Identify the Navy Furniture BPA or other Federal Supply Schedule utilized or indicate not applicable.

4. Was UNICOR included in the review? YES ☐ NO ☐

5. <u>List the name(s) and contract number(s) of contractor(s) who were considered:</u>

List three or more contractors' names, contract numbers and business size reviewed.

6. Identify the contractor recommended as the best value.

7. When you sought additional price reductions, were they received? YES ☐ NO ☐

8. Identify price with discounts for the recommended best value contractor.

9. Is installation, site preparation, design or ancillary services included in this project? YES ☐ NO ☐ If yes, be sure that the installation, site preparation, design or ancillary services are included as separate line items in each quote.

10. Are you selecting the lowest priced item? YES ☐ NO ☐ If no, indicate in addition to price, those factors listed below, considered in your decision.

- ☐ Price
- ☐ Special features required in effective program performance:
- ☐ Trade-in considerations
- ☐ Probable life of the item selected as compared with that of a comparable item: .
- ☐ Warranty considerations:
- ☐ Maintenance availability
- ☐ Past performance
- ☐ Environmental and energy efficiency considerations
- ☐ Comfort/suitability of the item:
- ☐ Delivery terms
- ☐ Your administrative costs
- ☐ Training needed or provided
- ☐ Technical qualifications
- ☐ Compatibility with existing furniture / Products / Technology (circle appropriate category)
- ☐ Other (*specify*):

11.
Best Value Determination:
A narrative justification for each box checked above for other than low price selection must be attached. Describe the evaluation factor, how the recommended best value contractor's offer met or exceeded the standard for each factor, and why the offeror represents the best value to the Government compared to the other offerors.

SUBMITTING OFFICIAL (PRIME CONTRACTOR'S INTERIOR DESIGNER)
In accordance with FAR 8.404(b), all agency specific regulations and statutes applicable to this purchase are attached. I have reviewed the findings and documentation attached and I have affirmatively determined them to be complete and accurate.

Name:_____Title: _____ Date: _____

Telephone: _____ Email: _____

Signature:_____

Enclosure (2)

BEST VALUE DETERMINATION GUIDELINES
Greater than $150,000

(Schedule Purchases are subject to FAR 8.4, DFARS 208.4, and DFARS PGI Supplement 208.405-70) (FAR 2.101)

- FAR 8.4 required that you make a best value determination before placing Multiple Award Schedule (MAS) orders above the micro-purchase limit (currently $3,000).
- The Navy Furniture BPAs shall be the primary source for FF&E. Refer to Specification Section E20.
- For orders greater than $150,000, all BPA holders for the applicable schedule shall be given an opportunity to compete for the requirement. In addition, UNICOR shall also be solicited. (DFARS PGI 208.405-70) (FAR 2.101)
- Seek additional price discounts from the contractor offering the best value. (FAR 8.405-1(d))

1. Brief Description of Item, System or Component to be Procured:

2. Were all BPA holders and/or Federal Supply Schedule holders given the opportunity to propose on the requirement?
   YES ☐ NO ☐

3. Identify the Navy Furniture BPA or other Federal Supply Schedule utilized or indicate not applicable.

4. Was UNICOR included in the review? YES ☐ NO ☐

5. Provide evidence of affording all BPA holder and/or Federal Supply Schedule holders the opportunity to compete. Also, provide evidence that UNICOR was solicited.

6. <u>List the name(s) and contract number(s) of contractor(s) who responded to the request for proposal for this requirement:</u>
   <u>List contractors' names, contract numbers and business size for those who responded.</u>

7. Provide copies of all quotes received and reviewed.

8. Identify the contractor recommended as the best value.

9. When you sought additional price reductions, were they received? YES ☐ NO ☐

10. Identify price with discounts for the recommended best value contractor.

11. Is installation, site preparation, design or ancillary services included in this project? YES ☐ NO ☐
If yes, be sure that the installation, site preparation, design or ancillary services are included as separate line items in each quote.

12. Are you selecting the lowest priced item? YES ☐ NO ☐
If no, indicate in addition to price, those factors listed below, considered in your decision.

- ☐ Price
- ☐ Special features required in effective program performance:
- ☐ Trade-in considerations
- ☐ Probable life of the item selected as compared with that of a comparable item: .
- ☐ Warranty considerations:
- ☐ Maintenance availability
- ☐ Past performance
- ☐ Environmental and energy efficiency considerations
- ☐ Comfort/suitability of the item:
- ☐ Delivery terms
- ☐ Your administrative costs
- ☐ Training needed or provided
- ☐ Technical qualifications
- ☐ Compatibility with existing furniture / Products / Technology (circle appropriate category)
- ☐ Other (*specify*):

13.
Best Value Determination:
A narrative justification for each box checked above for other than low price selection must be attached. Describe the evaluation factor, how the recommended best value contractor's offer met or exceeded the standard for each factor, and why the offeror represents the best value to the Government compared to the other offerors.

SUBMITTING OFFICIAL (PRIME CONTRACTOR'S INTERIOR DESIGNER)
In accordance with FAR 8.404(b), all agency specific regulations and statutes applicable to this purchase are attached. I have reviewed the findings and documentation attached and I have affirmatively determined them to be complete and accurate.

Name:_____Title: _____ Date: _____

Telephone: _____ Email: _____

Signature:_____

NAVAL FACILITIES ENGINEERING COMMAND MID-ATLANTIC

SHEET:
DATE:

PROJECT:
ITEM CODE:
BASE/CITY/STATE:
ITEM:

BPA CONTRACT #:
EXPIRATION DATE:
GSA CONTRACT #:
MANUFACTURER:
ORDERING ADDRESS:

LOCAL REP CONTACT INFO:

ANY VARIANCE OR MODIFICATION OF THIS SPECIFICATION WILL BE COORDINATED THROUGH NAVFAC MID-ATLANTIC

NAVFAC ID CONTACT:
PROJECT ID CONTACT:

DESCRIPTION:	QTY:	UNIT COST:	TOTAL COST:
TOTAL:			

ROOM LOCATIONS:
QTY ROOM NUMBER

ENVIRONMENTAL CERTIFICATIONS:

REMARKS:

ITEM PHOTO/FINISH SAMPLES

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LEED 2009 for New Construction and Major Renovation

Project Checklist

Project Name

Date

Sustainable Sites — Possible Points: 26

Y	N	?			
Y			Prereq 1	Construction Activity Pollution Prevention	
			Credit 1	Site Selection	1
			Credit 2	Development Density and Community Connectivity	5
			Credit 3	Brownfield Redevelopment	1
			Credit 4.1	Alternative Transportation—Public Transportation Access	6
			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
			Credit 4.4	Alternative Transportation—Parking Capacity	2
			Credit 5.1	Site Development—Protect or Restore Habitat	1
			Credit 5.2	Site Development—Maximize Open Space	1
			Credit 6.1	Stormwater Design—Quantity Control	1
			Credit 6.2	Stormwater Design—Quality Control	1
			Credit 7.1	Heat Island Effect—Non-roof	1
			Credit 7.2	Heat Island Effect—Roof	1
			Credit 8	Light Pollution Reduction	1

Water Efficiency — Possible Points: 10

Y			Prereq 1	Water Use Reduction—20% Reduction	
			Credit 1	Water Efficient Landscaping	2 to 4
			Credit 2	Innovative Wastewater Technologies	2
			Credit 3	Water Use Reduction	2 to 4

Energy and Atmosphere — Possible Points: 35

Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
			Credit 1	Optimize Energy Performance	1 to 19
			Credit 2	On-Site Renewable Energy	1 to 7
			Credit 3	Enhanced Commissioning	2
			Credit 4	Enhanced Refrigerant Management	2
			Credit 5	Measurement and Verification	3
			Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

Y			Prereq 1	Storage and Collection of Recyclables	
			Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
			Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
			Credit 2	Construction Waste Management	1 to 2
			Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	N	?			
			Credit 4	Recycled Content	1 to 2
			Credit 5	Regional Materials	1 to 2
			Credit 6	Rapidly Renewable Materials	1
			Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
			Credit 1	Outdoor Air Delivery Monitoring	1
			Credit 2	Increased Ventilation	1
			Credit 3.1	Construction IAQ Management Plan—During Construction	1
			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
			Credit 5	Indoor Chemical and Pollutant Source Control	1
			Credit 6.1	Controllability of Systems—Lighting	1
			Credit 6.2	Controllability of Systems—Thermal Comfort	1
			Credit 7.1	Thermal Comfort—Design	1
			Credit 7.2	Thermal Comfort—Verification	1
			Credit 8.1	Daylight and Views—Daylight	1
			Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

			Credit 1.1	Innovation in Design: Specific Title	1
			Credit 1.2	Innovation in Design: Specific Title	1
			Credit 1.3	Innovation in Design: Specific Title	1
			Credit 1.4	Innovation in Design: Specific Title	1
			Credit 1.5	Innovation in Design: Specific Title	1
			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

			Credit 1.1	Regional Priority: Specific Credit	1
			Credit 1.2	Regional Priority: Specific Credit	1
			Credit 1.3	Regional Priority: Specific Credit	1
			Credit 1.4	Regional Priority: Specific Credit	1

Total — Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

REFERENCES

NAVFAC CAPITAL IMPROVEMENTS GOV ENERGY BASELINE PRA

The following is the NAVFAC Capital Improvements Government Energy Baseline and Offerors Model Performance Ratings Assumptions (PRA).

The GOV Energy Baseline Total Ownership Cost (TOC) and Offerors Performance Rating Assumptions shall be utilized for technical evaluation factor six (6), Total Ownership Cost. This summary shall serve no other purpose. The assumptions listed here shall not be considered as RFP requirements.

BASELINE BUILDING PERFORMANCE RATING ASSUMPTIONS

The GOV Energy Baseline Report and TOC baseline provides a rough order of measure estimate of the Baseline (Code Minimum) energy consumption for this project, based on ASHRAE Std 90.1-2010 Appendix G. (Note that the USGBC and the DoD have agreed that BEQs shall be regarded as commercial facilities for transient populations under ASHRAE Std 90.1). The proposer is advised that the goal for this project is to reduce estimated annual energy consumption by 30% less than the Baseline ASHRAE 90.1-2010.

The following assumptions and clarifications should be considered before proceeding with a Proposed Building simulation:

The Baseline building for this model has been simplified for evaluation purposes. Building is assumed to be an average BEQ in ASHRAE Climate Zone 4A. Details of the baseline building simulation are contained in the Gov Baseline Workbook.

OFFERORS PERFORMANCE RATING ASSUMPTIONS

The offerors energy model used in the Offeror TOC Workbook - Offeror Energy Analysis, shall use the following assumptions within the model as appropriate:

- Use the TMY Weather Data for Norfolk, VA
- Weather location shall be based on TMY Weather Data for Norfolk, VA

- Dormitory Style Bedrooms, FC 4-721-10n, marine Corps 2+0 Rooms
- Each bedroom is to be double occupancy
- Occupancy assumed to be 240 people. Space Usage Classification: BEQ / Hotel

Use Hotel/Motel.

- Lighting Schedule: Building Area Method Classification: Dormitory, Table 9.5.1 of 0.61 W/Ft2 for lighting power density ASHRAE 90.-1 2010 and Table G-G for schedule for Hotel/Motel (ASHRAE 90.1-2007 User Guide)

- Thermostat Schedule: ASHRAE 90.1-2007, Space Usage Classification: BEQ / Hotel

Use Hotel/Motel. Table G-G for HVAC System (ASHRAE 90.1-2007 User Guide)

- People occupancy Schedule: Use Hotel/Motel, ASHRAE 90.1-2007

Table G-G (ASHRAE 90.1-2007 User Guide) Use occupant load of 2 persons per bedroom

- Occupied/ Unoccupied Cooling Space temp Set point:

o BEQ Living areas 78 degrees summer, 68 degrees winter (UFC 3-410-01)
Unoccupied in winter 55 degrees F (UFC 3-410-01)
o Mechanical/electrical spaces semi-conditioned 92 summer, 55 degrees winter

- Infiltration on perimeter zones only; Assume 0 infiltration when the fans are running. When the fans are not running: If the offeror proposes to use air barriers with testing to 0.25 CFM/ft2 (envelope) at 0.3" WG, he may simulate tight building construction. If the offeror proposes to use air barriers with testing to 0.15 (or lower) CFM/ft2 (envelope) at 0.3" WG, he may simulate zero building infiltration.

- Receptacle/plug load modeled as Space Usage Classification: BEQ / Hotel

Use Hotel/Motel. Table G-C of 0.25 W/FT2 (ASHRAE 90.1-2010 User Guide). Schedule for receptacle load shall follow the Hotel/Motel Occupancy, ASHRAE 90.1-2007
Table G-G (ASHRAE 90.1-2007 User Guide)

- Service Hot Water modeled as Space Usage Classification: BEQ / Hotel

Use Hotel/Motel. Table G-C of 1110 BTU/HR per Person (ASHRAE 90.1-2010 User Guide)
For the service hot water schedule: Use Table GG, ASHRAE User Guide

- Elevator schedule modeled as Space Usage Classification: BEQ / Hotel

Use Hotel/Motel. Table G-G (ASHRAE 90.1-2007 User Guide)

- Parking Area modeled as Space Usage Classification:
Table 9.4.3.B of 0.13 W/FT2 (ASHRAE 90.1-2010)

- The electric utility rate (burdened) for Naval Weapons Station, Yorktown, VA is $0.1045 per kWH. No demand charges shall be considered.

- The natural gas utility rate (burdened) for Naval Weapons Station, Yorktown, VA is $0.0541 per therm.

- Baseline HVAC System: Use System 5 Packaged rooftop VAV (DX and gas fired boiler) with fan powered VAV boxes and reheat (ASHRAE User Manual Table G-A) with outside air heat recovery and System 9 for heating and ventilated areas, AHUs with hot water coils (gas fired boiler).

For Ground Source Heat Pumps modeling, Assume the following soil and grout conditions at NWS Yorktown: (These conditions shall not be used for design only for Factor 6 work)

Formation Thermal Conductivity: 1.15 Btu/hour-ft-degrees F
Formation Thermal Diffusivity: (0.79^2)/day
Undisturbed Formation Temperature: 64.7 65.7 degrees F
300 feet depth geothermal well

Baseline Exterior Wall Construction: Steel Frame, U-factor = 0.064 BTU/H-FT2-F, Non-residential, Zone 4A, ASHRAE 90.1-2010, Appendix G

Baseline Roof Construction, Insulation entirely above deck, U-factor = 0.048 BTU/H-FT2-F, reflectivity=0.3, (non-Residential) ASHRAE 90.1-2010, Appendix G

Baseline Window to Gross Wall Ratio: 19%

Baseline Fenestration Type: Metal framing vertical Glazing: U-factor = 0.55 BTU/HR-FT2-F and SHGC = 0.4 (non-residential), non-residential ASHRAE 90.1-2010, Appendix G

Equipment Sizing: 1.15% for Cooling; 1.25% for Heating, ASHRAE 90.1-2010, Appendix G

--End of Section--

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Lighting Compliance Documentation

Project Name:		
Project Address:		Date:
Designer of Record:	Email:	Telephone:
Contact Person:	Email:	Telephone:
City:		Exterior Lighting Zone:

Mandatory Provisions Checklist

- ☐ Lighting Control (9.4.1)
  - ☐ Automatic lighting shutoff controls are provided based on either a scheduling device or an occupant sensor (9.4.1.1)
  - ☐ Each enclosed space has its own control including bilevel or occupancy based where required (9.4.1.2)
  - ☐ Controls for parking garages, including bilevel, transition and perimeter control as required (9.4.1.3)
  - ☐ Automatic daylighting controls for primary sidelighted areas (9.4.1.4)
  - ☐ Automatic daylighting controls for toplighting (9.4.1.5)
  - ☐ Additional controls for display/accent, case, guest room, task, nonvisual and demonstration lighting applications (9.4.1.6)
  - ☐ Exterior lighting controls including automatic shutoff and bilevel as required (9.4.1.7)
- ☐ Exit signs do not exceed 5 W per face (9.4.2)
- ☐ Exterior lighting power (9.4.3) — See worksheet
- ☐ Functional testing completed on specified controls (9.4.4)

Interior Lighting Power Allowance (Building Area Method – 9.5)

Building ID	Building Type (9.5.1)	Lighting Power Density, W/ft² (W/m²)	Building Area, ft² (m²)	Lighting Power Allowance (W)
			Total	

Interior Lighting Power Allowance (Space-by-Space Method – 9.6)

Space ID	Building Type/Space Type (9.6.1)	Lighting Power Density, W/ft^2 (W/m^2)	Room Cavity Ratio	Space Area, ft^2 (m^2)	Lighting Power Allowance (W)
				Subtotal	
				Controls Allowance (9.6.2c)	
				Total	

Lighting Compliance Documentation

Project Name:		
Contact Person:	Email:	Telephone:

Interior Connected Lighting Power

ID	Luminaire Description (including number of lamps per fixture, watts per lamp, type of ballast, type of fixture)	Type						Number of Luminaires	Watts/ Luminaire	Total Watts
		Incandescent	Fluorescent	HID	Line-Voltage Track	Low-Voltage Track	Other			
		❍	❍	❍	❍	❍	❍			
		❍	❍	❍	❍	❍	❍			
		❍	❍	❍	❍	❍	❍			
		❍	❍	❍	❍	❍	❍			
		❍	❍	❍	❍	❍	❍			
		❍	❍	❍	❍	❍	❍			
		❍	❍	❍	❍	❍	❍			
		❍	❍	❍	❍	❍	❍			
		❍	❍	❍	❍	❍	❍			
									Total	

Additional Interior Lighting Power Allowance—Control Credits

Space ID	Space Name	Control Type (Table 9.6.2)	Control Factor (Table 9.6.2)	Installed Watts (W)	Additional Allowance (W)
				Total	

Additional Interior Lighting Power Allowance – Decorative and Display

Space ID	Space Name	Type		Area, ft² (m²)	Unit Allowance, W/ft² (W/m²)	Allowance (W)	Lumin-aire ID's	Installed Power (W)
		Decorative	Display Lighting					
		❍	❍					
		❍	❍					
		❍	❍					
		❍	❍					
		❍	❍					
		❍	❍					
		❍	❍					
		❍	❍					

Lighting Compliance Documentation

Project Name:		
Contact Person:	Email:	Telephone:

Additional Interior Connected Lighting Power

Space ID	Luminaire ID	Luminaire Description (including number of lamps per fixture, watts per lamp, type of ballast, type of fixture)	Type						Number of Luminaires	Watts/ Luminaire	Total Watts
			Incandescent	Fluorescent	HID	Line-Voltage Track	Low-Voltage Track	Other			
			❍	❍	❍	❍	❍	❍			
			❍	❍	❍	❍	❍	❍			
			❍	❍	❍	❍	❍	❍			
			❍	❍	❍	❍	❍	❍			
			❍	❍	❍	❍	❍	❍			
			❍	❍	❍	❍	❍	❍			
			❍	❍	❍	❍	❍	❍			
			❍	❍	❍	❍	❍	❍			
			❍	❍	❍	❍	❍	❍			

Lighting Compliance Documentation

Exterior Building Lighting Power Allowance (Tradable Lighting Applications)

Application	Allowance	Area or Length, ft^2 or ft (m^2 or m)	Tradable Power Allowance
		Tradable Power Allowance	

Exterior Building Lighting Power Allowance (Non-Tradable Lighting Applications)

ID	Application	Allowance per Unit	Area or Length or Quantity	Non-Tradable Power Allowance
			Non-Tradable Power Allowance	

Exterior Connected Lighting Power (Tradable Applications)

ID	Luminaire Description (including number of lamps per fixture, watts per lamp, type of ballast, type of fixture)	Number of Luminaires	Watts/ Luminaire	Total Watts
			Total	

Exterior Connected Lighting Power (Non-Tradable Applications)

ID	Non-Tradable Application	Luminaire Description (including number of lamps per fixture, watts per lamp, type of ballast, type of fixture)	Number of Luminaires	Watts/ Luminaire	Total Watts
				Total	

Exterior Lighting Compliance Test

	Tradable Power Allowance (Watts)		Base site allowance		Tradable Connected Lighting Power (Watts)
		+		≥	
Non-Tradable Application	Non-Tradable Power Allowance (Watts)				Non-Tradable Connected Lighting Power (Watts)
		+		≥	
		+		≥	
		+		≥	
			Allocated base site allowance		Unallocated base site allowance
				≤	

Performance Rating Report

Project Name:		
Project Address:		Date:
Designer of Record:	Email:	Telephone:
Contact Person:	Email	Telephone:
City:		Principal Heating Source: ☐ Fossil Fuel ☐ Electricity ☐ Fossil/Electric Hybrid & Purchased Heat ☐ Other

Space Summary

Building Use	Conditioned Area (ft^2 or m^2)	Unconditioned Area (ft^2 or m^2)	Total Area (ft^2 or m^2)
Total			

Advisory Messages

	Proposed Building Design	Baseline Building	Difference Proposed – Baseline
Number of hours heating loads not met (system/plant)			
Number of hours cooling loads not met (system/plant)			
Number of warnings			
Number of errors			
Number of defaults overridden			

Simulation General

	Proposed Building Design	Baseline Building	Baseline same as Proposed?
Simulation program			
Weather data			
Utility rates			

Performance Rating Result

The proposed and baseline buildings comply with the mandatory requirements of the ANSI/ASHRAE/IES 90.1-2010 Standard and meet the Performance Rating Method requirement. Individual certifying authenticity of the data provided in this analysis:

Signature:	Title:

Performance Rating Report

Project Name:		
Contact Person:	Email:	Telephone:

Energy Summary by End Use

End Use	Energy Type	Proposed Building		Baseline Building		Proposed / Baseline Energy (%)
		Energy 10^6 Btu/yr (MJ/yr)	Peak 10^3 Btu/h (kW)	Energy 10^6 Btu/yr (MJ/yr)	Peak 10^3 Btu/h (kW)	
Lighting - conditioned						
Lighting - unconditioned						
Space heating (1)						
Space heating (2)						
Space cooling						
Pumps						
Heat rejection						
Fans - interior ventilation						
Fans - interior exhaust						
Fans - parking garage						
Service water heating						
Office equipment						
Elevators & escalators						
Refrigeration (food, etc.)						
Cooking (commercial)						
Total Building Consumption						

Energy and Cost Summary by Fuel Type

	Proposed Building		Baseline Building		Percentage Improvement
	Energy Use 10^6 Btu/yr (MJ/yr)	Energy Cost ($/yr)	Energy Use 10^6 Btu/yr (MJ/yr)	Energy Cost ($/yr)	100 × (1 – Proposed Energy Cost/ Baseline Energy Cost) %
Electricity					
Natural gas					
Other fossil fuel					
District steam					
Total Nonsolar					
Solar or site recovered					
Total Including Solar					

*These results use assumptions for showing compliance during a typical year; actual energy costs may be substantially different.

Service Water Heating Compliance Documentation

Project Name:		
Project Address:		Date:
Designer of Record:	Email:	Telephone:
Contact Person:	Email:	Telephone:
City:		

Mandatory Provisions Checklist

- ❑ Load calculations have been provided for sizing of systems and equipment (7.4.1).
- ❑ Equipment efficiencies meet or exceed the requirements of Table 7.8 (7.4.2).
- ❑ Circulating systems are fully insulated (per Table 6.8.3) and have automatic pump controls (7.4.3 and 7.4.4.2).
- ❑ Non-circulating systems have insulated heat traps and outlet piping insulated (per Table 6.8.3) for 8 ft (2.44 m) from the storage tank (7.4.6).
- ❑ Tanks with remote heaters have circulation pump controls (7.4.4.4).
- ❑ All water heating systems have temperature controls that are adjustable down to 120°F (48.9°C) or lower (7.4.4.1).
- ❑ Systems designed with pipe heating systems such as heat trace have temperature or time controls (7.4.4.2).
- ❑ Public lavatories have outlet temperature controls that limit the discharge temperature to 110°F (43.3°C) (7.4.4.3).
- ❑ Pool heaters have readily accessible controls and gas-fired heaters do not have standing pilot lights (7.4.5.1).
- ❑ Heated swimming pools have vapor retardant covers (7.4.5.2).
- ❑ Pool heaters and circulation pumps have time switches (7.4.5.3)

Equipment Efficiency Worksheet (7.4.1)

System Tag	Equipment Type (From Table 7.8)	Sub-Category or Rating Condition (From Table 7.8)	Input Rating (Btu/h or kW)	Volume (gal or l)	Energy Factor or Et Rated ≥ Required	Standby Loss Specified ≤ Nameplate
					≥	≤
					≥	≤
					≥	≤
					≥	≤

Combination Space and Water Heating Worksheet (7.5.1)

System Tag	Standby Loss Method	or Energy Use Exception (attach calculations)	or Size Exception
	Equipment ≤ Requirement	Equipment < Requirement	Equipment < Requirement
	≤	<	< 150,000 Btu/h (44 kW)
	≤	<	< 150,000 Btu/h (44 kW)
	≤	<	< 150,000 Btu/h (44 kW)
	≤	<	< 150,000 Btu/h (44 kW)

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Electrical Meter Specification Requirements for AMI

3.0 Equipment

This document contains requirements specific to Navy Region Mid-Atlantic which are intended to be in addition to the generalized requirements already given in the AMI contract. Proposals shall also be in compliance with all other applicable requirements in the basic contract SOW.

The offer shall address the preparation of the following equipment. The offer shall indicate the manufacturer, model, and specifications, as well as the pricing of the equipment considered to be purchased. Submittals shall be provided for all installed equipment and project documentation as required.

A five (5) year warranty shall be provided per specifications provided at Attachment (08).

3.1. Electric Meters

The Contractor will be responsible for the purchase of all required electric meters, in the quantity described in this document. The meters shall be approved by the California Public Utilities Commission, and meet all requirements described in Sections 2.4 and 4.4 of the basic contract Statement of Work and latest version of the “Unified Facilities Guide Specification for Electricity Metering” (UFGS 26 27 14.00 20).

All electric meters shall have sufficient **on-board non-volatile** memory to store 4 channels of 15 minute load profile data, metering registers, event and alarm logs, and mechanical meter consumption data (when applicable) **for a minimum of 65 consecutive days**.

The electric meters shall be compatible with the offered DAS and the offered communication solution; which means that the offered meters, DAS, and communication system shall work with each other as one system.

Wherever possible, the 3-phase WYE services shall be metered as Form 9; and Delta services shall be metered as Form 5. The single phase services shall be metered as one of the Forms 2, 25, or 12. All new installations shall follow these forms as well. When the service configuration, on existing installations, does not fit any of these metering forms, the existing form will be kept. Electric meters to have consolidated forms and 120-480v capabilities with auto service detection.

A newly installed meter shall match the removed meter for type of mounting (socket, switchboard, etc).

The voltage level for existing installations will be kept, and the metering “Class” (current level) should be considered 200A for self-contained, and 20A for transformer-rated meters. More details can be found at the UFGS for Electricity Metering.

All wiring shall be performed in a professional manner with the wire bundled and supported. Install wire markers on each end to identify the destination and origin of each individual wire

All electric meters for the Navy Region Mid-Atlantic shall be provided from one metering manufacturer, to optimize the effort of creating configuration programs and software management. Every electric meter shall be tested by its manufacturer for accuracy. The test results shall be obtained by the Contractor and provided to the government for record. All electric meters shall be tested for accurate, reliable, and repeatable “communication” with the DAS after installation.

1. Every electric meter shall be configured (programmed) by the Contractor using the manufacturer’s configuration tool (software). The configuration program shall include all registers/constants/alarms/events required by the SOW and this PWS. For every meter, coordinate with the designated Contracting Officer’s Representative (COR) to ensure the correct constants and registers are programmed in the meters. Also, the Contractor shall coordinate with the COR to determine what registers are programmed as Normal Mode, Alternate Mode, and Test Mode for electric meters. Disable programming via switches on face of meter. Programming shall be password protected.

2. All electric meters shall be programmed to record both delivered and received kWh totals in time-of-use periods. Use tables provided by the Navy to obtain this information. Meter registers shall be secondary reading and the multiplier shall be a factor of the PT and CT ratio. The multiplier shall not be programmed into the electric meter itself.

3. Meter display scroll shall display per the below table in the Normal, Alternate, and Test modes and shall include time-of-use data (peak time period kWh delivered and received, semi-peak time period kWh delivered and received, off-peak time period kWh delivered and received, total kWh delivered and received, meter number, current date and time (reflecting Daylight Savings Time), and any errors (non freezing). Meter display shall have identifiers. Display also to have disk emulator. All display options shall be programmable.

Display Code	REGISTER	NORMAL	ALTERNATE	TEST
888	ALL SEGMENTS	Yes	Yes	Yes

Display Code	REGISTER	NORMAL	ALTERNATE	TEST
001	DATE	Yes	Yes	No
002	TIME	Yes	Yes	No
010	RATE A TOTAL KWH	Yes	No	No
011	RATE A MAXIMUM KW	Yes	No	No
012	RATE B TOTAL KWH	Yes	No	No
013	RATE B MAXIMUM KW	Yes	No	No
014	RATE C TOTAL KWH	Yes	No	No
015	RATE C MAXIMUM KW	Yes	No	No
016	RATE D TOTAL KWH	Yes	No	No
017	RATE D MAXIMUM KW	Yes	No	No
018	TOTAL KWH	Yes	Yes	Yes
019	MAXIMUM KW	Yes	Yes	No
020	TOTAL KVARHr	Yes	No	Yes
030	BATTERY CARRYOVER TIME	Yes	Yes	No
031	DEVICE ID	Yes	No	No
032	METER BASE ID	Yes	No	No
041	INSTANTANEOUS APPARENT POWER (KVA)	No	Yes	No
042	VA	No	Yes	Yes
043	VB	No	Yes	No
044	VC	No	Yes	No
045	IA	No	Yes	No
046	IB	No	Yes	No
047	IC	No	Yes	No
048	CURRENT ANGLE PHASE A	No	Yes	No
049	CURRENT ANGLE PHASE B	No	Yes	No
050	CURRENT ANGLE PHASE C	No	Yes	No
051	INSTANTANEOUS POWER FACTOR	Yes	Yes	Yes

Display Code	REGISTER	NORMAL	ALTERNATE	TEST
052	INSTANTANEOUS POWER (KW)	No	Yes	No
060	KH OF METER	No	Yes	No
070	NUMBER OF PULSES RECEIVED FROM GAS METER	No	Yes	No
071	CONSUMPTION OF GAS METER	Yes	No	No
072	NUMBER OF PULSES RECEIVED FROM WATER METER	No	Yes	No
073	CONSUMPTION OF WATER METER	Yes	No	No
074	NUMBER OF PULSES RECEIVED FROM STEAM METER	No	Yes	No
075	CONSUMPTION OF STEAM METER	Yes	No	No
080	TOTAL KWH PULSES	Yes	No	Yes
090	INTERVAL LENGTH IN MINUTES	Yes	No	No
	(any other required display / register)			
	(any other required display / register)			
	(any other required display / register)			

List of metering data/registers to be transmitted to the DAS is provided in Section 6.0 of this RFTOP. Refer to Attachment (05) for electric meter register information.

4. Meters shall be capable of being read via existing government-owned Itron G5 and Itron FC200 handheld meter reading devices using the Optocom probe and the HHF files produced shall be downloaded to government-owned databases.

5. The meter shall also offer a “disk emulator” on the display that moves from left to the right for “delivered power”, with speed proportional to the power going through the meter.

6. In addition to the required Ethernet port, meters shall be equipped with a RS-232 serial communication port with DNP 3.0 level 2 protocols.

3.2. Metering Enclosure & Hardware

The Contractor shall provide, install, and connect metering enclosures (cabinets) for the purpose of electric metering, and any hardware required for installation of water, steam, gas, and sewer metering.

The enclosures for electric meters shall be **NEMA Type 3R** approved. *Stainless steel 4X enclosures shall be required at Dam Neck Annex*. Enclosures/ sockets shall be UL approved and meet the requirements of ANSI C12.7-2005: Requirements for Watthour Meter Socket. Enclosures shall be provided with locking hasps and padlocks. The padlocks shall be brass, suitable for outdoor use, and common-keyed for each site.

All enclosure penetrations shall be from the bottom of the enclosure, except for penetrations from the secondary side of the transformer to the meter enclosure which can be through the back of the enclosure, or for an overhead electrical service entrance which can be through the top of the enclosure. The penetration shall be sealed to preclude entry of water using a silicone sealant.

3.3. Instrument Transformers

The Contractor shall provide, install, and connect all instrument transformers which are necessary for the AMI effort. This includes current transformer (CT) and potential (voltage) transformer (PT). The requirements for acceptable CTs and PTs, as well as the incoming electric feeds that require such equipment are described in the UFGS for Electricity Metering (UFGS 26 27 14.00 20).

The newly installed CTs shall be properly sized. For more information, examples and tables regarding acceptable CT sizing, refer to Section 2 of the UFGS for Electricity Metering.

The specifications of selected CTs (e.g. the acceptable accuracy range) shall comply with the instructions in Section 2 of the UFGS for Electricity Metering.

The “turns ratio test” and “burden test” results for every new current transformer shall be obtained from the CT manufacturer and provided to the government.

In the Navy Region Mid-Atlantic, the instrument transformers that meet all the requirements may be kept, by obtaining approval from the COR. Also the instrument transformers installed at services higher than 4000 Volts may be kept/ re-used.

3.4. Test Switches

Test Switches (ten-pole-blocks) shall be installed with the meter. These switches enable a technician to take the meter in or out of the metering circuit when a test or

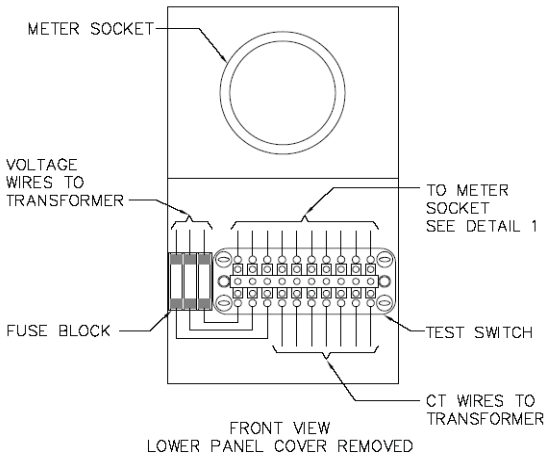
maintenance is performed. The Contractor shall provide the electrical and physical specifications of the test switches to be used in this project.

The test switches shall be equipped with “shorting bars” – which applies a closed link on the secondary of the CT to prevent “open secondary” condition during the time that “current” switches are at open position. Every electric meter requires a test switch.

3.5. Fuse Blocks and Disconnect Switches

For newly installed meters, every voltage connection to the meter needs to be fused in accordance with the UFGS for Electricity Metering. The preferred installation of fuse blocks is inside the meter enclosure (figure below). Fuse blocks are required for every newly installed electric meter except in-line (self-contained) electric meters where fuse blocks are not to be installed. For the in-line (self-contained) electric meters, a meter disconnect switch shall be installed in order to disconnect the load to the meter if needed.

For sites where only the meter is being replaced and no fuse block exists, the fuse block is not required.



3.6. Water, Steam, Gas, and Sewer Meters

The contractor shall be responsible for design, purchase, installation, and remote-communication with water, steam, and gas meters. The sewer meters are all existing and shall not be replaced. The sewer meters are Fischer-Porter meters with digital pulse outputs available.

SECTION 26 27 14.00 20

ELECTRICITY METERING
07/10

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.

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

ANSI C12.1	(2008) Electric Meters Code for Electricity Metering
ANSI C12.18	(2006) Protocol Specification for ANSI Type 2 Optical Port
ANSI C12.19	(1997) Utility Industry End Device Data Tables
ANSI C12.20	(2002) Electricity Meters - 0.2 and 0.5 Accuracy Classes
ANSI C12.7	(2005) Requirements for Watthour Meter Sockets

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2	(2007; TIA 2007-1; TIA 2007-2; TIA 2007-3; TIA 2007-4; TIA 2007-5) National Electrical Safety Code
IEEE C37.90.1	(2002) Standard for Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus
IEEE C57.13	(2008) Standard Requirements for Instrument Transformers
IEEE 100	(2000; Archived) The Authoritative Dictionary of IEEE Standards Terms

INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)

NETA ATS	(2009) Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2008; AMD 1 2008) National Electrical Code

1.2 DEFINITIONS

Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, shall be as defined in IEEE 100.

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.

Technical data packages consisting of technical data and computer software (meaning technical data which relates to computer software) which are specifically identified in this project and which may be defined/required in other specifications shall be delivered strictly in accordance with the CONTRACT CLAUSES and in accordance with the Contract Data Requirements List, DD Form 1423. Data delivered shall be identified by reference to the particular specification paragraph against which it is furnished. All submittals not specified as technical data packages are considered 'shop drawings' under the Federal Acquisition Regulation Supplement (FARS) and shall contain no proprietary information and be delivered with unrestricted rights.

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, the CONTRACT CLAUSES and DD Form 1423:

SD-02 Shop Drawings

Installation Drawings; G

SD-03 Product Data

Electricity meters; G

The most recent meter product data shall be submitted as a Technical Data Package and shall be licensed to the project site. Any software shall be submitted on CD-ROM and 6 hard copies of the software user manual shall be submitted for each piece of software provided.

Current transformer; G

Potential transformer; G

External communications devices; G

Configuration Software; G

The most recent version of the configuration software for each type (manufacturer and model) shall be submitted as a Technical Data Package and shall be licensed to the project site. Software shall be submitted on CD-ROM and 6 hard copies of the software user manual shall be submitted for each piece of software provided.

SD-06 Test Reports

Acceptance checks and tests; G

System functional verification; G

Building meter installation sheet, per building; G

Completed meter schedule; G

Meter configuration template; G

Contractor shall fill in the meter configuration template and submit to the Activity for concurrence.

Meter configuration report; G

The meter configuration report shall be submitted as a Technical Data Package.

SD-10 Operation and Maintenance Data

Electricity Meters and Accessories, Data Package 5; G

Submit operation and maintenance data in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA and as specified herein.

SD-11 Closeout Submittals

System functional verification; G

1.4 QUALITY ASSURANCE

1.4.1 Installation Drawings

Drawings shall be provided in hard-copy and electronic format, and shall include but not be limited to the following:

a. Wiring diagrams with terminals identified of advanced meter, current transformers, potential transformers, protocol modules, communications interfaces, Ethernet connections, telephone lines. For each typical meter installation, provide a diagram.

b. One-line diagram, including meters, switch(es), current transformers, potential transformers, protocol modules, communications interfacess, Ethernet connections, telephone outlets, and fuses. For each typical meter installation, provide a diagram.

1.4.2 Standard Products

Refer to Section C of the RFTOP for meter requirements. Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 1 year prior to bid opening. The 1-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product, or an earlier release of the product, shall have been on sale on the commercial market through advertisements, manufacturers catalogs, or brochures during the prior 1-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in this section.

1.4.3 Material and Equipment Manufacturing Data

Products manufactured more than 1 year prior to date of delivery to site shall not be used, unless specified otherwise.

1.5 MAINTENANCE

1.5.1 Additions to Operation and Maintenance Data

In addition to requirements of Data Package 5, include the following on the actual electricity meters and accessories provided:

a. A condensed description of how the system operates

b. Block diagram indicating major assemblies

c. Troubleshooting information

d. Preventive maintenance

e. Prices for spare parts and supply list

1.6 WARRANTY

The equipment items and software shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

1.7 SYSTEM DESCRIPTION

1.7.1 System Requirements

Electricity metering, consisting of meters and associated equipment, will be used to record the electricity consumption and other values as described in the requirements that follow and as shown on the drawings and in the RFTOP. Communication system requirements are contained in a separate specification section as identified in paragraph entitled "Communications Interfaces".

The Advanced Metering Infrastructure system, including meters, software, and all other equipment, shall be provided with a 5-year warranty period.

1.7.2 Selection Criteria

Metering components and software are part of a system that includes the physical meter, data recorder function and communications method. Every building site identified shall include sufficient metering components to measure the electrical parameters identified and to store and communicate the values as required.

Contractor shall verify that the electricity meter installed on any building site is compatible with the base-wide metering system with respect to the types of meters selected and the method used to program the meters for initial use. Software and meter programming tools are necessary to set up the meters described by this specification. New software tools different from the meter programming methods currently used by base personnel will require separate approval for use.

PART 2 PRODUCTS

2.1 ELECTRICITY METERS AND ACCESSORIES

2.1.1 Physical and Common Requirements

a. Provide metering system components in accordance with the Metering System Schedule shown in the RFTOP. Provide meter configuration template.

b. Existing meter bases can be re-used if they are electrically functional, in physically good condition, and show no signs of corrosion on the electrical contacts. If the existing meter base is usable, the meter base determines meter form factor. If a new meter is being installed, use meter and base form factor of 9S unless installation-specific limitations require the use of a different form type. If a socket adapter is used, contractor shall verify that all clearances are met and doors are able to be properly closed.

c. Meter shall have NEMA 3R enclosure (NEMA 4X stainless steel enclosure required at Dam Neck Annex, Virginia Beach, VA) for surface mounting with bottom or rear penetrations.

d. Surge withstand capability shall conform to IEEE C37.90.1.

e. Use #12 SIS (XHHW, or equivalent) wiring with ring lugs for all meter connections. Color code and mark the conductors as follows:

(1) Red - Phase A CT - C1
(2) Orange - Phase B CT - C2
(3) Brown - Phase C CT - C3
(4) Gray with white stripe - neutral current return - C0
(5) Black - Phase A voltage - V1
(6) Yellow - Phase B voltage - V2
(7) Blue - Phase C voltage - V3
(8) White - Neutral voltage

2.1.2 Potential Transformer Requirements

a. Meter shall be capable of connection to the service voltage phases and magnitude being monitored. If the meter is not rated for the service voltage, provide suitable potential transformers to send an acceptable voltage to the meter.

b. Voltage input shall be optically isolated to 2500 volts DC from signal and communications outputs. Components shall meet or exceed IEEE C37.90.1.

c. Provide a pull-out type fuse block containing one fuse per phase, Class RK type, to protect the voltage input to the meter. Size fuses as recommended by the meter manufacturer. Fusing shall either be inside the secondary compartment of the transformer or inside the same enclosure as the CT shorting device.

d. Potential transformers will be used to convert 480 volt inputs to 120 volts for the locations shown on the metering schedule. Potential

transformers shall be rated indoor or outdoor, as required for the specific application. Voltage rating shall provide 120 volts, wye-connected, 3 phase, 4 wire, 60 Hz, insulation class, 600 volts. Potential transformers BIL shall be 10 kV and shall have an accuracy class of 0.3 at burdens w, x, and y. Thermal rating shall be 500 VA.

e. The Contractor shall be responsible for determining the actual voltage ratio of each potential transformer for medium voltage applications. Transformer shall conform to IEEE C57.13 and the following requirements.

(1) Type: Dry type, of two-winding construction.

(2) Weather: Outdoor or indoor rated for the application.

(3) Frequency: Nominal 60 Hz.

(4) Accuracy: Plus or minus 0.3% at 60 Hz.

f. Potential transformers installed inside switchgear and panels shall be rated for interior use. Voltage rating shall provide 120 volts, wye-connected, 3 phase, 4 wire, 60 Hz, insulation class, 600 volts. Potential transformers BIL shall be a minimimum of 10 kV, and have an insulation class and BIL rating that equals or exceeds the ratings of the associated switchgear. Potential transformers shall have an accuracy class of 0.3 at burdens w, x, and y. Thermal rating shall be 500 VA. Potential transformers shall be accessed from the front and mounted in a metering section.

2.1.3 Current Transformer Requirements

a. Current transformer shall be installed with a rating as shown in the schedule.

b. Current transformers shall have an Accuracy Class of 0.3 (with a maximum error of +/- 0.3% at 5.0 amperes) when operating within the specified rating factor.

c. Current transformers shall be solid-core, bracket-mounted for new installations using ring-tongue lugs for electrical connections. Current transformers shall be accessible and the associated wiring shall be installed in an organized and neat workmanship arrangement. Current transformers that are retrofitted onto existing switchgear busbar can be a busbar split-core design.

d. Current transformers shall have:

(1) Insulation Class: All 600 volt and below current transformers shall be rated 10 KV BIL. Current transformers for 2400 and 4160 volt service shall be rated 25 KV BIL.

(2) Frequency: Nominal 60 Hz.

(3) Burden: Burden class shall be selected for the load.

(4) Phase Angle Range: 0 to 60 degrees.

e. Meter shall accept current input from standard instrument transformers (5A secondary current transformers).

f. Current inputs shall have a continuous rating in accordance with IEEE C57.13.

g. Provide one single-ratio current transformer for each phase per power transformer with characteristics listed in the following table.

Single-Ratio Current Transformer Characteristics

kVA	Sec. Volt	CT Ratio	RF 55 C	Meter Acc. Class
75	208Y/120	200/5	2.0	0.3 thru B 0.1
112.5	208Y/120	200/5	2.0	0.3 thru B 0.2
150	208Y/120	300/5	2.0	0.3 thru B 0.2
225	208Y/120	400/5	2.0	0.3 thru B 0.2
300	208Y/120	600/5	1.5	0.3 thru B 0.5
500	208Y/120	1200/5	1.33	0.3 thru B 0.5
750	208Y/120	2000/5	1.0	0.3 thru B 0.9
75	480Y/277	100/5	2.0	0.3 thru B 0.1
112.5	480Y/277	200/5	2.0	0.3 thru B 0.1
150	480Y/277	200/5	2.0	0.3 thru B 0.1
225	480Y/277	200/5	2.0	0.3 thru B 0.1
300	480Y/277	300/5	2.0	0.3 thru B 0.2
500	480Y/277	600/5	1.5	0.3 thru B 0.5
750	480Y/277	800/5	1.33	0.3 thru B 0.5
1000	480Y/277	1200/5	1.33	0.3 thru B 0.5
1500	480Y/277	1500/5	1.33	0.3 thru B 0.9
2000	480Y/277	2000/5	1.0	0.3 thru B 0.9
2500	480Y/277	3000/5	1.0	0.3 thru B 1.8

2.1.4 Meter Requirements

Electricity meters shall include the following features:

a. Meter shall comply with ANSI C12.1, ANSI C12.19, and ANSI C12.20.

b. Meter sockets shall comply with ANSI C12.7.

c. Provide socket-mounted or panel-mounted meters as indicated on the meter schedule.

(1) Panel-mounted meters shall be semi-flush, back-connected, dustproof, draw-out switchboard type. Cases shall have window removable covers capable of being sealed against tampering. Meters shall be of a type that can be withdrawn through approved sliding contacts from fronts of panels or doors without opening current-transformer secondary circuits, disturbing external circuits, or requiring disconnection of any meter leads. Necessary test devices shall be incorporated within each meter and shall provide means for testing either from an external source of electric power or from associated instrument transformers or bus voltage.

(2) For meter replacement projects, meter shall match the existing

installation.

d. Meter shall be a Class 20, transformer rated design.

e. Use Class 200 meters for direct current reading without current transformers for applications with an expected load less than 200 amperes, where indicated.

f. Meter shall be rated for use at temperature from -40 degrees Centigrade to +70 degrees Centigrade.

g. The meters shall have an electronic demand recording register and shall be secondary reading as indicated. The register shall be used to indicate maximum kilowatt demand as well as cumulative or continuously cumulative demand. Demand shall be measured on a block-interval basis and shall be capable of a 5 to 60 minute interval and initially set to a 15-minute interval. It shall have provisions to be programmed to calculate demand on a rolling interval basis. Meter readings shall be true RMS.

h. The meter electronic register shall be of modular design with non-volatile data storage. Downloading meter stored data shall be capable via an optical port. Recording capability of data storage with a minimum capability of 89 days of 15 min, 2 channel interval data. The meter shall be capable of providing at least 2 KYZ pulse outputs (dry contacts). Default initial configuration (unless identified otherwise by base personnel) shall be:

(1) First channel - kWh
(2) Second channel - kVARh
(3) KYZ output #1 - kWh
(4) KYZ output #2 - kVARh

i. All meters shall have identical features available in accordance with this specification. The meter schedule identifies which features shall be activated at each meter location.

j. Enable switches for Time of Use (TOU), pulse and load profile measurement module at the factory.

k. Meter shall have an optical port on front of meter capable of speeds from 9600 to a minimum of 19.2k baud, and shall be initially set at 9600 baud. Optical device shall be compatible with ANSI C12.18.

l. Meters shall be 120-480 volts auto-ranging.

m. Provide blank tag fixed to the meter faceplate for the addition of the meter multiplier, which will be the product of the current transformer and potential transformer ratio and will be filled in by base personnel on the job site. The meter's nameplate shall include:

(1) Meter ID number.
(2) Rated voltage.
(3) Current class.
(4) Metering form.
(5) Test amperes.
(6) Frequency.
(7) Catalog number.

(8) Manufacturing date.

n. On switchboard style installations, provide switchboard case with disconnect means for meter removal incorporating automatic short-circuiting of current transformer circuits.

o. Meter covers shall be polycarbonate resins with an optical port and reset. Backup battery shall be easily accessible for change-out after removing the meter cover.

p. The normal billing data scroll shall be fully programmable. Data scroll display shall include the following.

(1) Number of demand resets.
(2) End-of-interval indication.
(3) Maximum demand.
(4) New maximum demand indication.
(5) Cumulative or continuously cumulative.
(6) Time remaining in interval.
(7) Kilowatt hours.

q. The register shall incorporate a built-in test mode that allows it to be tested without the loss of any data or parameters. The following quantities shall be available for display in the test mode:

(1) Present interval's accumulating demand.
(2) Maximum demand.
(3) Number of impulses being received by the register.

r. Pulse module simple I/O board with programmable ratio selection.

s. Meters shall be programmed after installation via an optical port. Optical display shall show TOU data, peak kWh, semi-peak kWh, off peak kWh, and phase angles.

t. Self-monitoring to provide for:

(1) Unprogrammed register.
(2) RAM checksum error.
(3) ROM checksum error.
(4) Hardware failure.
(5) Memory failure.
(6) EPROM error.
(7) Battery status (fault, condition, or time in service).

u. Liquid crystal alphanumeric displays, 9 digits, blinking squares confirm register operation. 6 Large digits for data and smaller digits for display identifier.

v. Display operations, programmable sequence with display identifiers. Display identifiers shall be selectable for each item. Continually sequence with time selectable for each item.

w. The meters shall support three modes of registers: Normal Mode, Alternate Mode, and Test Mode. The meter also shall support a "Toolbox" or "Service Information" (accessible in the field) through an optocom port to a separate computer using the supplied software to allow access to instantaneous service information such as voltage, current, power factor, load demand, and the phase angle for individual phases.

x. Meter shall have a standard 5-year warranty.

2.1.5 Disconnect Method

a. Provide a 10-pole safety disconnect complete with isolation devices for the voltage and current transformer inputs, including a shorting means for the current transformers.

b. Disconnecting wiring blocks shall be provided between the current transformer and the meter. A shorting mechanism shall be built into the wiring block to allow the current transformer wiring to be changed without removing power to the transformer. The wiring blocks shall be located where they are accessible without the necessity of disconnecting power to the transformer.

c. Voltage monitoring circuits shall be equipped with disconnect switches to isolate the meter base or socket from the voltage source.Provide fuse protection in accordance with paragraph entitled "Voltage Requirements"

2.1.6 Installation Methods

a. Transformer Mounted ("XFMR" in Metering Systems Schedule). Meter base shall be located outside on the secondary side of the pad-mounted transformer.

b. Stand Mounted Adjacent to Transformer ("STAND" in Metering Systems Schedule). Meter base shall be mounted on a structural steel pole approximately 4 feet from the transformer pad. This can be used for multiple meters associated with a single transformers.

c. Building Mounted ("BLDG" in Metering Systems Schedule). Meter base shall be mounted on the side of the existing building near the service entrance.

d. Panel Mounted. ("PNL" in Metering Systems Schedule). Meter shall be mounted where directed.

e. Commercial meter pedestal ("PED" in Metering Systems Schedule).

2.2 COMMUNICATIONS INTERFACES

Meter shall have two-way communication with the data acquisition system (DAS) as described in Section C of the RFTOP. Refer to Section C of the RFTOP for the communication interface and software requirements for these meters.

2.3 METERING SYSTEM SCHEDULE

PART 3 EXECUTION

3.1 INSTALLATION

Electrical installations shall conform to IEEE C2, NFPA 70 (National Electrical Code), and to the requirements specified herein. Provide new equipment and materials unless indicated or specified otherwise.

3.1.1 Existing Condition Survey

The Contractor shall perform a field survey, including inspection of all existing equipment, resulting clearances, and new equipment locations intended to be incorporated into the system and furnish an existing conditions report to the Government. The report shall identify those items that are non-workable as defined in the contract documents. The Contractor shall be held responsible for repairs and modifications necessary to make the system perform as required.

3.1.1.1 Existing Meter Sockets

In some cases, the existing meter sockets will have to be replaced to accommodate the new electrical meters. An existing socket is considered unacceptable for any of the following conditions:

a. It is a non-ANSI form factor meter socket.

b. It is weathered beyond the point of being safe to reuse.

c. It is installed incorrectly, such as a non-weather resistant enclosure installed outdoors.

d. It is not the correct form factor for the existing electrical service.

3.1.1.2 Existing Meters

As part of the existing condition survey, the following applies for installations with existing meters:

a. Replace any meters that do not comply with this section.

b. If CTs are installed, verify that they comply with this section. If they do not comply, replace them with CTs that comply with this section. One CT per phase is required for wye-connected systems.

c. If potential transformers are installed on low-voltage systems, remove the PTs as part of the installation.

d. Install disconnect switches as specified in this section.

3.1.2 Scheduling of Work and Outages

The Contract Clauses shall govern regarding permission for power outages, scheduling of work, coordination with Government personnel, and special working conditions.

3.1.3 Configuration Software

The standard meter shall include the latest available version of firmware and software. Meter shall either be programmed at the factory or shall be programmed in the field. Meters shall have a password that shall be provided to the Contracting Officer upon project completion. When field programming is performed, turn field programming device over to the Contracting Officer at completion of project. Refer to Part 1 Section C of the RFTOP for details.

3.2 FIELD QUALITY CONTROL

Perform the following acceptance checks and tests on a random sample of 10 percent of the installed meters as designated by the Contracting Officer .

3.2.1 Performance of Acceptance Checks and Tests

Perform in accordance with the manufacturer's recommendations and include the following visual and mechanical inspections and electrical tests, performed in accordance with NETA ATS.

a. Meter Assembly

(1) Visual and mechanical inspection.

(a) Compare equipment nameplate data with specification and approved shop drawings.

(b) Inspect physical and mechanical condition. Confirm the meter is firmly seated in the socket, the socket is not abnormally heated, the display is visible, and the ring and seal on the cover are intact.

(c) Inspect all electrical connections to ensure they are tight. For Class 200 services, verify tightness of the service conductor terminations for high resistance by using a low-resistance ohmmeter, or by verifying tightness of accessible bolted electrical connections by calibrated torque-wrench method.

(d) Record model number, serial number, firmware revision, software revision, and rated control voltage.

(e) Verify operation of display and indicating devices.

(f) Record password and user log-in for each meter.

(g) Verify grounding of metering enclosure.

(h) Set all required parameters including instrument transformer ratios, system type, frequency, power demand methods/intervals, and communications requirements. Verify that the CT ratio and the PT ratio are properly included in the meter multiplier or the programming of the meter. Confirm that the multiplier is provided on the meter face or on the meter.

(i) Provide building meter installation sheet, per building for each facility.

(j) Provide the completed meter schedule for the installation.

(2) Electrical tests.

(a) Apply voltage or current as appropriate to each analog input and verify correct measurement and indication.

(b) Confirm correct operation and setting of each auxiliary input/output feature including mechanical relay, digital, and analog.

(c) After initial system energization, confirm measurements and indications are consistent with loads present.

(d) Make note of, and report, any "Error-Code" or "Caution-Code" on the meter's display.

(3) Provide meter configuration report.

b. Current Transformers

(1) Visual and mechanical inspection.

(a) Compare equipment nameplate data with specification and approved shop drawings.

(b) Inspect physical and mechanical condition.

(c) Verify correct connection, including polarity.

(d) Inspect all electrical connections to ensure they are tight.

(e) Verify that required grounding and shorting connections provide good contact.

(2) Electrical Tests.

(a) Verify proper operation by reviewing the meter configuration report.

c. Potential Transformers

(1) Visual and mechanical inspection.

(a) Verify potential transformers are rigidly mounted.

(b) Verify potential transformers are the correct voltage.

(c) Verify that adequate clearances exist between the primary and secondary circuit.

(2) Electrical Tests.

(a) Verify by the meter configuration report that the polarity and phasing are correct.

3.2.2 System Functional Verification

Verify that the installed meters are working correctly in accordance with the meter configuration report:

a. The correct meter form is installed.

b. All voltage phases are present.

c. Phase rotation is correct.

d. Phase angles are correct.

e. The new meter accurately measures power magnitude and direction, and can communicate as required by paragraph entitled "Communications Interfaces".

-- End of Section --

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
1510 GILBERT ST
NORFOLK, VA 23511-2699

IN REPLY REFER TO:
11300
Ser EICO/tjh
01 MAR 2001

From: Commander, Naval Facilities Engineering Command, Engineering Innovation and Criteria Office (EICO)
To: Distribution

Subj: ITG 01-01 INTERIM TECHNICAL GUIDANCE (ITG) "ELEVATOR DESIGN"

Ref: (a) Design Manual-3.09, Elevators, Escalators, Dumbwaiters, Access Lifts and Pneumatic Tube Systems
(b) NAVFAC Guide Specifications (NFGS) – 14210, Electric Traction Elevators
(c) NAVFAC Guide Specifications (NFGS) – 14240, Hydraulic Elevators
(d) Maintenance and Operations Manual, MO-118, Inspection of Vertical Transportation Equipment

Encl: (1) NAVFAC Elevator Design Guide dtd 10 JAN 2001

1. Purpose. To provide interim technical guidance for provision of elevators, including the coordination of design efforts among the various design disciplines. The guidance may be retained for record purposes until it is incorporated into the criteria as noted in paragraph 4.

2. Background. Elevators are required to be provided at certain locations, by statutes, regulations, codes, and Navy criteria. Examination of the existing Navy criteria, construction and inspection reports of less than satisfactory installations, and excessive change orders has resulted in the refinement of elevator design procedures.

3. Discussion. See enclosure (1). It supplements reference (a), and coordinates the functional requirements among the various design disciplines.

4. Criteria. The NAVFAC Criteria Office will revise the appropriate sections of references (a) through (d), as appropriate.

5. Coordination. This ITG has been coordinated with NAVFAC HQ Fire Protection, and Safety Offices.

6. Action.

a. Design and Construction. Design all new projects using this guidance. Revise all projects under design, but not completed, to comply with the guidance where funds and schedule permit. Modify Navy projects currently under construction and amend advertised construction projects to conform to the enclosed guidance where funds and schedule permit. Use this guidance to the extent practicable for all elevator repair and replacement projects.

b. Maintenance and Operations. Continue to maintain and operate in accordance with MO-118.

7. Points of Contact. For additional information concerning elevators, the following points of contact are provided:

a. NAVFAC Criteria Office – Mr. Thomas J. Harris, P.E. at DSN 262-4206, commercial 757-322-4206, FAX at 4416 or via Internet at harristj@efdlant.navfac.navy.mil;

b. NAVFAC Elevator Program Manager – Mr. Kevin Morse at DSN 262-4653, commercial 757-322-4653, or via the Internet at morsekp@efdlant.navfac.navy.mil.

c. NAVFAC CHIEF FIRE PROTECTION ENGINEER – Mr. Joseph Simone at DSN 325-9177, commercial 202-685-9177, Fax at 1577, or via Internet at simoneja@hq.navfac.navy.mil.

R.D. CURFMAN, P.E.
By direction

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CHAPTER 1

INTRODUCTION

1-1 Purpose and Scope. This document is intended to reflect Navy policy regarding design and construction of elevators. In addition, these requirements compliment non-governmental standards such as those published by ASME and NFPA. This document has been developed to assist architects and engineers in the proper design of Navy facility elevators. Because elevators are complex multi-disciplined products, guidance is needed to consolidate the Navy elevator criteria and help the architectural and engineering disciplines understand their roles in elevator design.

1-2 Applicability. The requirements of this document apply to all elevators in Navy facilities.

1-3 References. Applicable references are listed in each chapter.

1-4 Content and Format. This guidance is arranged by design disciplines, and within each design discipline the chapter is arranged by the major elevator component. This arrangement serves three purposes; (1) allows easy and ready access to elevator requirements needed by each designer; (2) allows a checklist format for the designer to assure all requirements have been met; (3) allows the designer in charge of the overall facility to understand the roles of each of his architects and engineers by providing a tool for coordination of the design effort.

CHAPTER 2

ARCHITECTURAL
ELEVATOR DESIGN GUIDE

2-1 Design Reference Documents

2-1.1 Design elevator, hoistway, and machine room in accordance with the current versions of the following reference documents:

ADA/ABA - American with Disabilities Act (ADA) Accessibility Guide Lines for Building And Facilities; Architectural Barriers Act (ABA) Accessibility Guide Lines.
ADAAG - American Disabilities Act Accessibility Guide Lines
ASME A17.1, - American Society of Mechanical Engineers Safety Code for Elevators and Escalators.
ASME A17.2.1, - Inspector's Manual for Electric Elevators.
ASME A17.2.2, - Inspector's Manual for Hydraulic Elevators.
ASME A17.2.3, - Inspector's Manual for Escalators.
ASME A17.3, - Safety Code for Existing Elevators and Escalators (For designing changes to existing Elevator/Escalator Systems)
NAVFAC PDPS 94-01 – Barrier Free Design Accessibility Requirements
NEII - National Elevator Industry, Inc. (1992) –Vertical Transportation Standards
NFGS - 14210 - NAVFAC Guide Specifications Section 14210, "Electric Traction Elevators"
NFGS - 14240 - NAVFAC Guide Specifications Section 14240, "Hydraulic Elevators"
NFPA 70 - National Electric Code (NEC)
NFPA 80 - Fire Door and Fire Windows
UBC - Uniform Building Code
UFAS - Uniform Federal Accessibility Standards

2-1.2 The requirements and guidance provided in this Architectural Elevator Design Guide are applicable to both continental United States and overseas projects, however the technical/commercial reference standards (ASME, NEC, ADAAG) listed in this document will be different in Europe.

2-1.3 Sprinkler protection shall not be provided for elevator hoistways, pit, and machine rooms of Italian construction projects. Italian law does not allow sprinklers in these areas.

2-2 General Design Guidance

2-2.1 Consult with the NAVFAC Elevator Program Manager, EFD Elevator Program Manager, or PWC Elevator Inspector during the preliminary design of facilities that include elevators. The Navy elevator experts can be located by using phone numbers and e-mail addresses from Chapter 6 "Specifications Elevator Design Guide."

2-2.2 Type of elevators addressed:

a. Hydraulic

(1) Direct plunger: A car is connected to the top of a single section piston, that moves up and down in a cylinder, which is below ground level. The car moves up when hydraulic fluid is pumped into the cylinder from a reservoir, raising the piston. Hydraulic systems are used primarily in low-rise installations where moderate car speed is required, up to 150 feet per minute. The typical extent of travel is 40 feet (12192 mm), do not exceed a maximum travel length of 44 feet (13411 mm) or a maximum building height of four floors for Navy facilities.

(2) Holeless: The car is connected on each side with a single section piston that moves up and down in a cylinder, which is mounted on top of the pit floor. The car moves up when hydraulic fluid is pumped into the cylinder from a reservoir, raising the piston. Car speed up to 125 feet per minute (38.1 meters per minute) is attained and maximum travel length is 12 feet (3658 mm).

(3) Roped: The car is supported by steel hoist ropes and sheave, which are moved up and down by a holeless single section piston in a cylinder. Car speed up to 150 feet per minute is attained and maximum travel length is 48 feet (14630 mm). The use of roped hydraulic elevators for Navy facilities must be approved by the NAVFAC Elevator Program Manager.

b. Electric Traction

(1) Geared: The car is supported in a hoistway by steel hoist ropes, a sheave, and a counterweight. The car and counterweight ride along vertical guide rails. In a geared machine, the drive sheave is connected to the motor shaft through gears in a gearbox. This equipment is designed for mid-rise applications of five or more floors requiring typical speeds up to 350 feet per minute.

(2) Gearless: The car is supported in a hoistway by steel hoist ropes, sheaves, and a counterweight. The car, counterweight and guide rails operate like those in a geared system. The gearless machine has a motor that connects directly to the shaft of the drive sheave. The equipment is designed for high-rise applications of 10 or more floors requiring typical speeds of 500 or more feet

per minute.

2-2.3 Hydraulic and electric traction elevators utilize controllers to coordinate systems and passenger calls. These elevators utilize either of these two types of controllers:

a. Microprocessor: Computer logic control is the standard for both electric traction and hydraulic elevators.

b. Relay logic: Mechanical electro-magnetic controller relays control the operation of the elevator.

2-2.4 Determine the need for elevators by compliance with the most stringent requirements of the following criteria:

a. NAVFAC PDPS 94-01 which requires facility designs to comply with UFAS and ADAAG, whichever one provide the greatest accessibility. The UFAS and ADAAG documents will be combined and superseded by the ADA/ABA in the near future. The UFAS and ADAAG documents are available at web site http://www.access-board.gov, choose "Publications". The draft ADA/ABA document is available at web site http://www.access-board.gov/ada-aba/guidenprm.htm.

b. Comply with the applicable facility design criteria for the facility building type under design. An example of this kind of criteria is the Military HandBook; MIL-HDBK-1036A, "Bachelor Housing" for Bachelor Quarters.

c. Comply with the Facility Design Program Requirements for the specific project. An example of this kind of requirement is the using Activity's desire to ensure access for persons with disabilities to programs, services and employment. Another example is the using Activity's need for vertical transportation of furniture or equipment.

2-3 Machine Room

2-3.1 Locate hydraulic elevator machine room on the lowest level served by the elevator and directly adjacent to the hoistway. Machine room and hoistway must be on the same side of any building expansion joint.

2-3.2 Provide plans and sections for elevator machine room. Show roof top machine room on elevations and plans for electric traction elevators.

2-3-3 Indicate 2 hour fire rating for floor, walls and ceiling construction. If required, indicate stair access, no ladders.

2-3.4 Machine room door (exiting to the interior of the building) shall be "B" Label, fire rated 1 ½ hour with automatic closure, latching door hardware, panic hardware exit device from interior of room, key operated hardware from outside of room only. Machine room

door shall not contain ventilation louvers or undercuts in excess of NFPA 80, Section 1-11.4 requirements. Provide threshold if floor finish under door is combustible, in accordance with NFPA 80, Section 1-11.2.

2-3.5 There are two types of elevator controllers, microprocessor and relay logic. Microprocessors are typical in most installations. However, if you have a base that is located in a remote location or subject to erratic building power supply, a relay logic controller may be a better choice. Confirm elevator controller type with local Public Works and Base Maintenance Department.

2-3.6 Determine if emergency power is required. Emergency power is usually needed in health care facilities (with bed confinement) or high rise facilities (greater than 75’-0” (22860 mm) from ground floor to highest occupied floor). If emergency power is required, coordinate requirements with the Electrical Engineer (for example, the number of elevators to run on emergency power at the same time).

2-3.7 Most electric traction elevator machines are lifted up the elevator hoistway to gain access to roof top machine rooms during construction. Provide a lifting beam at the top of the machine room to accommodate installation of the elevator machine.

2-3.8 Provide an unobstructed 7’-0” (2133 mm) minimum vertical clearance below all solid items (including the lifting beam for electric traction elevators) throughout the elevator machine room. Provide a maximum machine floor to ceiling height of 12’-0” (3658 mm). Provide a suspended gypsum board or plaster ceiling if a ceiling is required below the structural ceiling.

2-3.9 The machine room design shall contain only equipment related to the elevator operation as required by ASME A17.1.

2-3.10 Pipes, ducts and conduit not related to the elevator system are not allowed to penetrate the machine room.

2-4 Elevator Pit

2-4.1 Indicate pit ladder and hoist way sump pump pit on floor plan of the elevator pit. Locate ladder on hoist way sidewall closest to hoist way door opening. Provide sump pit and sump pumps on all elevators.

2-4.2 Detail sump pit large enough to fully enclose submersible sump pump below hoist way pit floor level. Minimum size of elevator sump pump pit is 1' - 6” (457 mm) wide x 1' – 6”
(457 mm) long x 2’- 0” (609 mm) deep, larger is preferred. Provide fully supported, removable grate cover, flush with elevator hoist way pit floor.

2-4.3 Indicate water stops in the walls and waterproofing for elevator pit floor and walls.

2-4.4 On hydraulic elevators, sprinkler protection is required in the pit of each elevator. Refer to Chapter 7, " Fire Protection Elevator Design Guide" for requirements.

2-5 Elevator Hoistway

2-5.1 Maximum travel length for direct plunger type hydraulic elevator is 44 feet (13411 mm) or a maximum building height of four floors for Navy facilities, whichever is the lesser.

2-5.2 Telescopic hydraulic pistons are not acceptable for Navy facilities. Provide only single section pistons for all hydraulic elevators.

2-5.3 Roped hydraulic elevators for Navy facilities must be approved by the NAVFAC Elevator Program Manager.

2-5.4 Geared electric traction machines should be used for buildings of five or more floors.

2-5.5 Gearless electric traction should be used for buildings of ten floors or more where intensive traffic is anticipated.

2-5.6 The elevator code does not allow anything to be installed in the hoistway not related to the elevator operation.

2-5.7 Pipes, ducts and conduit not related to the elevator system are not allowed to penetrate the hoistway.

2-5.8 Show locations of all support beams required in hoistway. Indicate beams on building sections and details. For multiple elevators in the same hoistway, provide divider beams for guiderail support brackets.

2-5.9 Eliminate all ledges (potential personnel standing locations, etc.) in hoistway construction. Provide details which indicate that all horizontal projections and recesses of 2" (50 mm) or more, have been beveled back to hoistway wall at a 75-degree angle downward from horizontal.

2-5.10 Provide exterior ventilation of hoistway if the elevator exceeds 15 feet (4572 mm) of travel. To obtain this ventilation, provide a weatherproof louver with a minimum free area of 3 1/2 % of the hoistway horizontal cross sectional area. The louver must have a minimum free area of at least three square feet (0.3 square meters).

2-5.11 Detail grouted cast white bronze or nickel silver hoistway sills at elevator landings. Match the material used in the cab sill.

2-5.12 Indicate all elevator hoistway door frames grouted to a height of 5 feet (1524 mm).

2-5.13 On hydraulic elevators, design clear access for hydraulic oil line between machine room and hoistway. Hydraulic oil lines shall remain in or under conditioned space from end to end and remain within the building footprint. Provide straight pipe run in PVC pipe sleeves for oil spill containment of all buried hydraulic lines between machine room and the hoistway.

2-5.14 On hydraulic elevators, sprinkler protection is required at the top of the hoistway when the hydraulic cylinder or supply piping extends above the second finished floor elevation. Refer to Chapter 7, “Fire Protection Elevator Design Guide” for requirements.

2-5.15 Coordinate sprinkler and smoke detector requirements with Fire Protection Engineer and Electrical Engineer. Confirm smoke detectors are shown on fire alarm plans and risers.

2-5.16 For interior cab dimensions of new elevators being installed in an existing hoistway, insure that the design meets the requirements of ASME A17.1. (Rule 201, Capacity and Loading). Passenger elevators frequently require greater capacity (pound per square foot (kilogram per square meter)) than freight elevators.

2-5.17 Indicate 2-hour fire rating for floor, walls, and top of hoistway (when terminated below roof level) construction.

2-5.18 If building roof construction is combustible: Item a. below is considered good practice for 2-hour rated hoistways that terminate at the roof level, item b. below is required for 2-hour rated hoistways that terminate below the roof level.

a. Extend 2 hour rated hoistway through the roof and terminate the top of the hoistway at least 3'-0" (914 mm) above the combustible roof with a 2-hour enclosure, or

b. Terminate the 2-hour rated hoistway below the roof level with a 2-hour rated enclosure.

2-5.19 If building roof construction is noncombustible: comply with one of the following requirements for top termination of the 2 hour rated hoistway.

a. Extend 2 hour rated hoistway construction to the underside of the roof deck or slab. Seal wall construction tight to deck or slab and roof construction becomes hoistway termination, or

b. Terminate the 2-hour rated hoistway below the rated roof level with a 2-hour rated enclosure.

2-5.20 Indicate and note the hoistway walls to be grouted and fire-stopped at top, tight against floor or roof construction decking.

2-5.21 Hoistway walls shall be plumb. Wall shall not vary more than one inch (25 mm) within any 60-foot (18-meter) interval of vertical height.

2-6 Elevator Cab

2-6.1 Obtain manufacturer's catalog cuts of the elevator performance. Coordinate the following elevator description information with the specification writer and appropriate design discipline(s):

a. Rated load
b. Rated speed
c. Travel length
d. Number of stops
e. Number of hoistway openings
f. Car inside dimension
g. Car door opening
h. Electrical design requirements

2-6.2 Coordinate the cab enclosures and hoistway door finishes with the specification writer:

a. Floor finish
b. Wall finish and accessories handrails
c. Interior face of doors
d. Ceiling finish and lighting
e. Hoistway doors
f. Hoistway frames.

2-6.3 The designer and client must decide whether a passenger or freight elevator is most appropriate for the facility. This decision will be based on the anticipated usage. If the elevator will be used to carry people other than a freight handler, it <u>must</u> be designed as a passenger elevator.

2-6.4 Design the size of all elevators that carry passengers to accommodate handicapped access in accordance with UFAS and ADAAG. For all buildings of four stories or more in height, provide at least one elevator of size to accommodate emergency medical services in accordance with UBC, Chapter 30.

2-6.5 Passenger elevator design/selections: The design of passenger elevators requires obtaining and utilizing the appropriate data and criteria to calculate the correct elevator size and rated load.

a. Preliminary design and layout of elevators shall be in accordance with National Elevator Industry, Inc. – Vertical Transportation Standards. Copies of this standard may be obtained from; National Elevator Industry, Inc., 400 Frank W. Burr Blvd., Teaneck, NJ 07666-6801; Telephone: (201) 928-2828.

b. The Final elevator design including the required number of cars, their capacity and car inside dimensions, speed, and operation is to be determined by a traffic study. The following factors will be utilized in this analysis, which should be performed by a qualified elevator consultant.

(1). Type and Use of Building
(2). Size and Height of Building.
(3). Exterior Traffic Consideration
(4). Population of Building
(5). Anticipated Traffic Flow

c. Determine minimum rated load of elevator by utilizing attachment #1: ASME A17.1 Table 207.1.

2-6.6 Freight elevator design/selection: If the elevator will be used to carry passengers and general freight, it must be designed as a passenger elevator. However, if a freight elevator is required, design in accordance with ASME A17.1 (Rule 207. 2 Minimum Rated Load for Freight Elevator).

2-6.7 Provide a cast white bronze or nickel silver car sill. Match the material used in the hoistway sill.

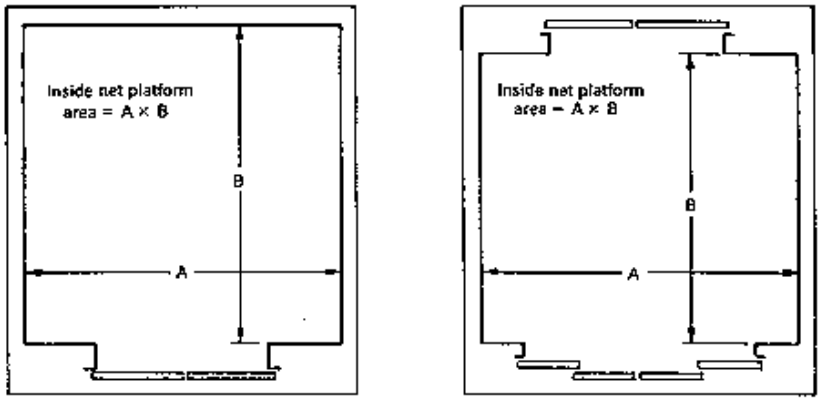

FIG. 207.1 INSIDE NET PLATFORM AREAS FOR PASSENGER ELEVATORS

TABLE 207.1
MAXIMUM* INSIDE NET PLATFORM AREAS FOR THE VARIOUS RATED LOADS

Rated Load, lb	Inside Net Platform Area, ft^2	Rated Load, lb	Inside Net Platform Area, ft^2
500	7.0	5,000	50.0
600	8.3	6,000	57.7
700	9.6	7,000	65.3
1,000	13.25	8,000	72.9
1,200	15.6	9,000	80.5
1,500	18.9	10,000	88.0
1,800	22.1	12,000	103.0
2,000	24.2	15,000	125.1
2,500	29.1	18,000	146.9
3,000	33.7	20,000	161.2
3,500	38.0	25,000	196.5
4,000	42.2	30,000	231.0
4,500	46.2		

*To allow for variations in cab designs, an increase in the maximum inside net platform area not exceeding 5% shall be permitted for the various rated loads.

GENERAL NOTE:
1 lb = 0.454 kg
1 ft^2 = 9.29 E −02 m^2

Attachment #1

CHAPTER 3

STRUCTURAL
ELEVATOR DESIGN GUIDE

3-1 Design Reference Documents

3-1.1 Design elevator, hoistway, and machine room in accordance with the current versions of the following reference documents:

ASCE-7 - America Society of Civil Engineers. Minimum Design Loads for Buildings and Other Structures.
ASME A 17.1, - America Society of Mechanical Engineers Safety Code Elevators and Escalators.
FEMA - 302, February 1999 - NEHRP Recommended Provisions for Seismic. Regulations for New Buildings and Other Structures. Part 1 Provisions.
NFGS - 14210 - NAVFAC Guide Specifications Section 14210, "Electric Traction Elevators"
NFGS - 14240 - NAVFAC Guide Specifications Section 14240, "Hydraulic Elevators"
TI 809-04, 31 December 1998 - TRI-Service Instruction, Seismic Design for Buildings.

3-1.2 The requirements and guidance provided in this Structural Elevator Design Guide are applicable to both continental United States and overseas projects, however the technical/commercial reference standards (ASME) listed in this document will be different in Europe.

3-2 Design Requirements

3-2.1 In all seismicity regions, provide adequate structural support to attach the elements of the elevator support system as required by the elevator manufacturers design and applicable codes. The elevator manufacturers shall design the elements of the elevator support system (all elements that are part of the elevator system, such as the car and counterweight frames, guide rails, supporting brackets and framing, as well as supports and attachments for driving machinery, operating devices, and control equipment) with consideration to lateral seismic forces and displacement of TI 809-04, Paragraph 10-3.h. The elevator shall also comply with the following:

a. Manufacturer shall design all supports and attachments for machinery and equipment with an a_p equal to 1.0 for rigid and rigidly attached items and equal to 2.5 for nonrigid or flexibly mounted equipment.

b. In structures conforming to Seismic Design Classification D, E, and F, the manufacturer shall provide guide rail tie brackets and intermediate spreader brackets as specified in TI 809-04, Paragraph 10-3 h.2.

3-2.2 Avoid the use of tile or brick hoistway walls, particularly those conforming to Seismic Design Classification D, E, and F.

3-2.3 Indicate details for sump pump pit and the impact of the sump pit on the foundation for the structure.

3-2.4 Indicate water stops in the walls. Indicate waterproofing for the elevator pit floor and walls if not indicated on the architectural drawings.

3-2.5 Avoid locating building expansion joints between the elevator hoistway and elevator room.

3-2.6 Design all exterior components of the elevator or machine room to the same requirements used for the facility design. In the absence of structural criteria for the exterior components use ASCE-7.

CHAPTER 4

MECHANICAL
ELEVATOR DESIGN GUIDE

4-1 Design Reference Document

4-1.1 Design elevator, hoistway, and machine room in accordance with the current versions of the following reference documents:

ADAAG - American Disabilities Act Accessibility Guidelines
ASME A17.1, - American Society of Mechanical Engineers Safety Code for Elevators and Escalators.
ASME A17.2.1, - Inspector's Manual for Electric Elevators.
ASME A17.2.2, - Inspector's Manual for Hydraulic Elevators.
ASME A17.2.3, - Inspector's Manual for Escalators.
ASME A17.3, - Safety Code for Existing Elevators and Escalators (For designing changes to existing Elevator/Escalator Systems)
NFGS - 14210 - NAVFAC Guide Specifications Section 14210, "Electric Traction Elevators"
NFGS - 14240 - NAVFAC Guide Specifications Section 14240, "Hydraulic Elevators"
NFPA 70 - National Electric Code (NEC)
NFPA 80 - Fire Door and Fire Windows
UBC - Uniform Building Code
UFAS - Uniform Federal Accessibility Standards

4-1.2 The requirements and guidance provided in this Mechanical Elevator Design Guide are applicable to both continental United States and overseas projects, however the technical/commercial reference standards (ASME, NEC, ADAAG) listed in this document will be different in Europe.

4-1.3 Sprinkler protection shall not be provided for elevators hoistway, pit, and machine rooms of Italian construction projects. Italian law does not allow sprinklers in these areas.

4-2 Machine Room

4-2.1 Indicate ventilation as required by ASME A 17.1 (Rule 101.5, Lighting and Ventilation of Machine Rooms and Machinery Spaces). Provide heating, ventilating, and air-conditioning to elevator machine room to maintain temperature limits between 50 to 90 degrees F (10 to 32 degrees C) as recommended by elevator manufacturers. Air conditioning is required in most conditions; gravity ventilation is not acceptable. Coordinate with Electrical Engineer. Provide emergency power for machine room cooling/ventilating equipment, if the elevator is on emergency power circuit

4-2.2 Do not locate equipment, pipes, conduits, and ducts unrelated to the elevator in the hoistway and the machine room. ASME A17.1 (Rule 101.2, Equipment in Machine Rooms).

4-2.3 Machine room door (exiting to the interior of the facility) shall be fire rated and shall not contain louvers for ventilation nor undercuts in excess of NFPA 80, Section 1-11.4 requirements.

4-3 Elevator Pit

4-3.1 An elevator pit floor drain is not acceptable. Elevator pit must have floor sump pit and pump. Pump to sanitary sewer through a 2" (50 mm) air gap or directly through an oil/water separator to storm sewer, or to grade outside the building line, each in accordance with discharge permits, regulations, and statutes. Coordinate sump pit pump with the Architect, Structural Engineer, and Electrical Engineer.

4-3.2 On hydraulic elevators, sprinkler protection is required in the pit of each elevator. Refer to Chapter 7, "Fire Protection Elevator Design Guide" for requirements.

4-3.3 Size sump pump for a minimum of 20 gallons (76 liters) per minute. Coordinate pump size with Architect to assure the pump will completely fit within the sump pump pit and function correctly.

4-4 Elevator Hoistway

4-4.1 Provide exterior ventilation of hoistway, if the elevator exceeds 15 feet (4572 mm) of travel. To obtain this ventilation, provide a weatherproof louver with a minimum free area of 3 1/2 % of the hoistway horizontal cross sectional area. The louver must have a minimum free area of at least three square feet (0.3 square meters). ASME A17.1 (Rule 100.4, Control of Smoke and Hot Gases).

4-4.2 Pipes, ducts, and conduit not directly related to the elevator are not allowed to penetrate the hoistway.

4-4.3 On hydraulic elevators, sprinkler protection is required at the top of the hoistway when the hydraulic cylinder or supply piping extends above the second finished floor elevation. Refer to Chapter 7, "Fire Protection Elevator Design Guide" for requirements.

CHAPTER 5

ELECTRICAL
ELEVATOR DESIGN GUIDE

5-1 Design Reference Documents

5-1.1 Design elevator, hoistway, and machine room in accordance with the current versions of the following reference documents:

ADAAG - American Disabilities Act Accessibility Guidelines
ASME A17.1, - American Society of Mechanical Engineers Safety Code for Elevators and Escalators.
ASME A17.2.1, - Inspector's Manual for Electric Elevators.
ASME A17.2.2, - Inspector's Manual for Hydraulic Elevators.
ASME A17.2.3, - Inspector's Manual for Escalators.
ASME A17.3, - Safety Code for Existing Elevators and Escalators (For designing changes to existing Elevator/Escalator Systems)
NFGS - 14210 - NAVFAC Guide Specifications Section 14210, "Electric Traction Elevators"
NFGS - 14240 - NAVFAC Guide Specifications Section 14240, "Hydraulic Elevators"
NFPA 70 - National Electric Code (NEC)
NFPA 99 - Health Care Facilities
NFPA 101 - Life Safety Code
UBC - Uniform Building Code
UFAS - Uniform Federal Accessibility Standards

5-1.2 The requirements and guidance provided in this Electrical Elevator Design Guide are applicable to both continental United States and overseas projects, however the technical/commercial reference standards (ASME, NEC, ADAAG) listed in this document will be different in Europe.

5-2 Firefighters' Service Visual Signal

ASME A17.1 requires the Firefighters' Service visual signal to activate as follows: Smoke detectors located in the elevator machine room, hoistway, and elevator lobby control illumination of the Firefighters' Service visual signal (Firefighters' hat graphic symbol) in the elevator cab. When activated, smoke detectors in the elevator machine room and the elevator hoistway shall cause the Firefighters' Service visual signal to illuminate intermittently (flash) only in the elevator car(s) with equipment located in that machine room or hoistway. When activated, smoke detectors in the enclosed elevator lobbies shall cause the Firefighters' Service visual signal to illuminate with steady illumination only in the elevator car(s) that serves those lobbies. Actuation of any smoke detector shall initiate actuation of the building fire alarm panel.

5-3 Machine Room

5-3.1 Provide a shunt trip circuit breaker for each individual elevator's main power and emergency power, if provided, located in the elevator machine room. Circuit breakers shall be capable of being locked in the open position, and shall serve the power and control of the respective elevator. Each shunt trip circuit breaker shall be served by another dedicated breaker in the main distribution electrical panel and in the emergency distribution electrical panel, if provided. Shunt trip breaker(s) shall be operated by the sprinkler flow switch(s) to automatically open the power supply. Power shall be restored manually. NEC 620-51 (a). Sprinkler protection and the related shunt trip breaker shall not be provided for Italian construction projects. Italian law does not allow sprinklers in the hoistway, pit, and machine room.

5-3.2 Designer shall consider types of elevator drives specified, i.e., Silicon Controlled Rectifier (SCR), Variable Frequency Drive (VFD), motor generator, etc., and size service and wire for the worse case.

5-3.3 The guide specification requires the elevator supplier to provide individual isolation transformers and individual choke reactors for each hoist motor, and filtering of harmonic distortion when SCR or Variable Voltage Variable Frequency (VVVF) AC controllers are utilized.

5-3.4 Provide a branch circuit separate from the main elevator power supply, with a fused disconnect switch capable of being locked in the open position, for lights, receptacles, and ventilation for each individual elevator car. As an alternative, a lockable enclosed circuit breaker may be used as the overcurrent protection device. NEC 620-53, NEC 620-22.

5-3.5. Locate all disconnecting means for elevator(s) on the inside surface of the machine room wall next to the strike side of the machine room door. Ensure each disconnect is within sight of the elevator equipment it controls.

5-3.6 A separate branch circuit shall supply each individual machine room with lighting and receptacles.

5-3.7 All 120V receptacles installed in machine room shall be GFI type (Provide at least one duplex receptacle). NEC 620-23 and NEC 620-85.

5-3.8 Conductors and optical fibers, located in the machine room, shall be in conduit.

5-3.9 Coordinate the need for emergency power with the using activity and the project architect. Emergency power is usually needed for health care facilities (with bed confinement) or high-rise facilities (greater than 75'-0" from ground floor to highest occupied floor). Provide emergency power for health care facilities in accordance with NFPA 99, high-rise facilities in accordance with NFPA 101, and other facilities as required.

5-3.10 If emergency power is used:

a. The disconnecting means required by NEC 620-51, must disconnect the elevator from normal power and from emergency power.

b. If more than one elevator is provided, determine (with Activity input) how many elevators are to operate on emergency power.

c. Design the emergency power to be able to operate selected elevator(s) at rated loads and rated speeds.

d. System design must accommodate automatic sequential operation in order to bring all elevators to the designated floor level, as required by ASME A17.1 (Rule 211.3b Smoke Detectors) and provide selected elevator(s) with emergency power operations.

e. Provide manual override switch in main elevator lobby area(s) to override the automatic emergency power selection.

f. Provide emergency power for machine room cooling/ventilation equipment and hoistway ventilating equipment, if the elevator is on emergency power circuit.

g. Provide an extra set of contacts on transfer switch (when emergency power is provided) and two-conductor 120-volt ac circuit in conduit from these contacts to junction box in machine room,

5-3.11 Provide telephone outlet with dedicated line next to each elevator controller for emergency phone service in elevator car. Indicate outlets on telephone riser.

5-3.12 Provide machine room smoke detectors to initiate actuation of Firefighters' Service, illuminate intermittently (flash) Firefighters' Service visual signal, and initiate actuation of the building fire alarm panel. Refer to Chapter 7, "Fire Protection Elevator Design Guide" for requirements. Require smoke detectors to be mounted in the machine room by indicating detectors on the electrical drawings, unless shown on separate fire protection drawings. Coordinate with Fire Protection Engineer.

5-3.13 Only electrical wiring, raceways and cables used directly in connection with the elevator shall be permitted in the machine room. NEC 620-37.

5-4 Elevator Pit

5-4.1 Provide a twist lock simplex receptacle with matching plug, without GFI protection, to supply the permanently installed sump pump. Mount sump pump receptacle 3'-0" (914 mm) above elevator pit floor. Provide pilot lamp to verify circuit is energized. NEC 620-85.

5-4.2 Provide a separate branch circuit supplying the hoistway pit lighting and at least one duplex receptacle in the pit. All duplex receptacles in the pit shall be GFI. NEC-24, NEC 620-85. Locate receptacle 5'-0" (1524 mm) above pit floor.

5-4.3 Locate light with wire guard more than 4'-0" (1219 mm) above pit floor. Locate light switch on wall inside the hoistway adjacent to the top of the pit ladder. NEC 620-24.

5-4.4 When sprinklers are installed in the hoistway, all electrical equipment located less than 4' -0" (1219 mm) above the pit floor shall be weatherproof (NEMA 4) and wiring shall be identified for use in wet locations in accordance with the requirements in NFPA 70.

5-4.5 When sprinklers are provided in the elevator pit, activation of the sprinkler is not required to initiate shutdown of elevator power. Refer to Chapter 7, "Fire Protection. Elevator Design Guide" for requirements.

5-5 Elevator Hoistway

5-5.1 Only electric wiring, raceways, and cables used directly in connection with the elevator shall be permitted inside the hoistway. NEC 620-37.

5-5.2 Conductors and optical fibers located in the hoistway, not including traveling cable, shall be in conduit.

5-5.3 Provide smoke detection at the top of the hoistway whenever sprinklers are installed in the hoistway. If provided, smoke detectors located at the top of the hoistway shall initiate actuation of Firefighters' Service, illuminate intermittently (flash) the Firefighters' Service visual signal, and initiate actuation of the building fire alarm panel. Refer to Chapter 7, "Fire Protection Elevator Design Guide" for requirements. Insure that smoke detectors are indicated on the electrical drawings, unless shown on separate fire protection drawings. Coordinate with Fire Protection Engineer.

5-5.4 When sprinkler protection is required at the top of the hoistway, actuation of that sprinkler(s) shall initiate operation of the elevator power shunt trip breaker(s). Refer to the Machine Room paragraph earlier in this section and to the Chapter 7 "Fire Protection Elevator Design Guide" for further guidance.

5-6 Elevator Lobby

5-6.1 Provide lobby smoke detector to initiate actuation of Firefighters' Service, steady illumination of Firefighters' Service visual signal, and initiate actuation of the building fire alarm panel. Refer to Chapter 7, "Fire Protection Elevator Design Guide" for requirements. Require lobby smoke detectors to be mounted on the ceiling by indicating detectors on the electrical drawings, unless shown on separate fire protection drawings. Coordinate with Fire Protection Engineer.

CHAPTER 6

SPECIFICATIONS
ELEVATOR DESIGN GUIDE

6-1 Design Reference Documents

6-1.1 Design elevator, hoistway, and machine room in accordance with the current version of the following reference documents:

ADAAG – American Disabilities Act Accessibility Guidelines
ASME A17.1, - American Society of Mechanical Engineers Safety Code for Elevators and Escalators.
ASME A17.2.1, - Inspector's Manual for Electric Elevators.
ASME A17.2.2, - Inspector's Manual for Hydraulic Elevators.
ASME A17.2.3, - Inspector's Manual for Escalators.
ASME A17.3, - Safety Code for Existing Elevators and Escalators (For designing changes to existing Elevator/Escalator Systems)
NFGS 14210 - Electric Traction Elevator
NFGS 14240 - Hydraulic Elevators
NFPA 70 - National Electric Code (NEC)
UBC - Uniform Building Code
UFAS - Uniform Federal Accessibility Standards

6-1.2 The requirements and guidance provided in this Specifications Elevator Design Guide are applicable to both continental United States and overseas projects, however the technical/commercial reference standards (ASME) listed in this document will be different in Europe.

6-2 Specification Requirements

6-2.1 Utilize the most current version of the NAVFAC Elevator Guide Specifications to specify the project elevator. The NAVFAC Guide Specifications (NFGS) are available on the Construction Criteria Base (CCB) or NAVFAC homepage at http://criteria.navfac.navy.mil/criteria and choose "Guide Specs". Do not use previously edited versions of the guide specification for a new job. Start from the most current version of the guide specifications to assure all updated changes are incorporated in the guide specifications. Any editing of non-bracketed paragraphs within the NAVFAC Guide Specification shall be approved through the NAVFAC Elevator Program.

6-2.2 Incorporate all current LANTDIV Interim Specifications Revisions (ISR) into the prefinal edited project specifications. These ISR changes are available at the LANTDIV homepage at the following address: http://www.efdlant.navfac.navy.mil/lantops_04/home.htm , choose "Specifications", then "The Specification Preparation Manual".

6-2.3 Design/Build RFP documents should utilize the entire current NAVFAC Guide Specification. Do not attempt to abbreviate or write a performance specification for elevators.

6-2.4 If you have any Navy or Local code compliance questions that cannot be answered by in-house expertise or an elevator consultant, contact the NAVFAC Elevator Program Manager or an EFD Elevator Program Manager or a PWC Elevator Inspector for assistance. The NAVFAC Elevator Program Manager, Mr. Kevin Morse (Code 1611K), can be reached by telephone at (757) 322-4653 or by E-mail at MorseKP@efdlant.navfac.navy.mil. The SOUTHWEST Division Elevator Program Manager, Mr. Harold Tompkins, can be reached by telephone at (415) 244-3074, Fax (415) 244-3090. The Norfolk PWC Elevator Inspector, Mr. Dale Hughes, can be reached by telephone at (757) 445-2086 or by E-mail at dhuges@po2.pwc.com. The NAS PAX, Patuxent River, Maryland Elevator Inspector, Mr. Bill Snyder, can be reached by telephone at (301) 757-4902, Fax (301) 342-3700, or by E-mail at snyderwm@navair.navy.mil

6-2.5 Design of elevators is a multidisciplinary design function; therefore, input from architectural, structural, mechanical, and electrical disciplines is required for a successfully written specification or review of the elevator shop drawings.

6-2.6 If difficulties arise from the use of this NAVFAC Elevator Design Guide or the NFGS Sections 14210, "Electric Traction Elevators" or 14240,"Hydraulic Elevator," please contact LANTDIV to make the authors aware of any needed changes in these elevator documents. The point of contact is Mr. Peter Byrne; R. A. (Code 4062) and he can be reached at (757) 322-4310 or by E-mail at BrynePR@efdlant.navfac.navy.mil.

CHAPTER 7

FIRE PROTECTION
ELEVATOR DESIGN GUIDE

7-1 Design Reference Documents

7-1.1 Design elevator, hoistway, and machine room in accordance with the current versions of the following reference documents:

ADAAG - American Disabilities Act Accessibility Standards
ASME A17.1, - American Society of Mechanical Engineers Safety Code for Elevators and Escalators.
ASME A17.2.1, - Inspector's Manual for Electric Elevators.
ASME A17.2.2, - Inspector's Manual for Hydraulic Elevators.
ASME A17.2.3, - Inspector's Manual for Escalators.
ASME A17.3, - Safety Code for Existing Elevators and Escalators (For designing changes to existing Elevator/Escalator Systems)
NFGS - 14210 - NAVFAC Guide Specifications Section 14210, "Electric Traction Elevators"
NFGS - 14240 - NAVFAC Guide Specifications Section 14240, "Hydraulic Elevators"
NFPA 13 - Standard for the Installation of Sprinkler Systems
NFPA 70 - National Electric Code (NEC)
UBC - Uniform Building Code
UFAS - Uniform Federal Accessibility Standards

7-1.2 The requirements and guidance provided in this Fire Protection Elevator Design Guide are applicable to both continental United States and overseas projects, however the technical/commercial reference standards (ASME, NEC, ADAAG) listed in this document will be different in Europe.

7-1.3 Sprinkler protection shall not be provided for elevators hoistway, pit, and machine rooms of Italian construction projects. Italian law does not allow sprinklers in these areas.

7-2 Design Requirements

7-2.1 Provide dual-contact smoke detectors or addressable fire alarm system smoke detectors and control modules at:

a. All elevator lobbies.
b. Top of the hoistway. (Only if sprinklers are provided at the top of the hoistway).
c. Elevator machine room.

Smoke detectors are specified in Section 13852, “Interior Fire Detection and Alarm System,” or Section 13855, “Analog/Addressable Interior Fire Alarm System,” including conduit and wiring from each smoke detector to elevator controller. In elevator section, provide connections to elevator controls, which will, when smoke is detected by any smoke detector, activate visual and audible signals and send each elevator to the designated floor as required by ASME A17.1 (Rule 211.3b, Smoke Detectors). Indicate detectors and connections on fire protection drawings or on electrical drawings if fire protection drawings are not provided. Coordinate with Electrical Engineer.

7-2.2 For electric traction elevator with 2-hour fire rated hoistway, sprinkler(s) are not required by code for the hoistway. Sprinklers are required in the electric traction elevator machine room (except in Italy). Actuation of the flow switch shall remove power to the elevator by shunt trip breaker operation. The flow switch shall have no time delay.

7-2.3 In buildings protected with an automatic sprinkler system, provide protection of hydraulic elevator installations as follows (except in Italy):

a. Machine Room: Provide a sprinkler(s) with sprinkler guards in the machine room. Provide a supervised shut-off valve, check valve, flow switch, and test valve in the sprinkler line supplying the machine room. These items shall be located outside of and adjacent to the machine room. Actuation of the flow switch shall remove power to the elevator by shunt trip breaker operation. The flow switch shall have no time delay. Coordinate with Electrical Engineer.

b. Elevator Pit: Provide a sidewall sprinkler(s) with sprinkler guards in the pit for hydraulic elevators. Locate the sprinkler no more than 2’-0” (609 mm) above the pit floor. Provide a supervised shut-off valve in the sprinkler line supplying the pit. Locate the valve outside of and adjacent to the pit. Actuation of the pit sprinkler shall not disconnect power to the elevator.

c. Elevator Hoistway: Provide a sprinkler(s) at the top of the hoistway for hydraulic elevators with cylinder or supply piping extending above the second finished floor elevation. Provide a supervised shut-off valve, check valve, flow switch, and test valve in the sprinkler line supplying the hoistway. These items shall be located outside of and adjacent to the hoistway. Actuation of the flow switch shall disconnect power to the elevator by shunt trip breaker operation. Flow switch shall have no time delay. Coordinate with Electrical Engineer.

d. Test Valve: Provide inspector’s test connection for each flow switch associated with the elevator machine room and/or elevator hoistway sprinklers. Locate the test connection outside the rated enclosure. Route test connection piping to a floor drain location that can accept full flow or where water may be discharged without property damage. Discharge to a floor drain shall be permitted only if the drain is sized to accommodate full flow. Discharge to janitor sinks or similar plumbing fixtures is not permitted.

7-2.4 Coordinate the requirements of the elevator specification section with the applicable fire protection systems specifications as listed below:

a. Section 13852, “Interior Fire Detection and Alarm System”
b. Section 13855, “Analog/Addressable Interior Fire Alarm System”
c. Section 13930, “Wet-Pipe Fire Suppression Sprinklers”
d. Section 16402. “Interior Distribution System”

7-3 Fire Resistant Construction

7-3.1 Coordinate 2 hours fire resistant construction requirements with Chapter Two, “Architectural Elevator Design Guide.”

7-4 Fire Protection Requirement Summary

7-4.1 A summary of the NAVFAC Sprinkler and Smoke Detector requirements are attached in table titled 7-4.1, "NAVFAC Fire Protection Requirements for Elevators Summary Table."

7-4.1 NAVFAC ELEVATOR FIRE PROTECTION REQUIREMENTS SUMMARY TABLE

ELECTRIC ELEVATOR		
ROOM/AREA	PROVIDE SPRINKLER (NOT APPLICABLE FOR UNSPRINKLERED BUILDING)	PROVIDE SMOKE DETECTOR TO INITIATE ELEVATOR FIREFIGHTER'S SERVICE AND BUILDING FIRE ALARM SYSTEM
PENTHOUSE MACHINE ROOM	YES *	YES
ELEVATOR LOBBIES	YES	YES
PIT AREA	NO	NO
TOP OF HOISTWAY	NO **	NO **

DIRECT PLUNGER HYDRAULIC ELEVATOR (NOT TO EXCEED 44' OF TRAVEL)

MACHINE ROOM	YES *	YES
ELEVATOR LOBBIES	YES	YES
PIT AREA	YES *	NO
TOP OF HOISTWAY	NO **	NO **

HOLELESS HYDRAULIC ELEVATOR (NOT TO EXCEED 12' OF TRAVEL)

MACHINE ROOM	YES *	YES
ELEVATOR LOBBIES	YES	YES
PIT AREA	YES *	NO
TOP OF HOISTWAY	YES *	YES

* Italian law prohibits sprinklers in elevator hoistway and machine room.

** Provide sprinklers and smoke detector where existing hoistway walls are not 2 hour rated, or existing elevator cab does not meet flame spread or smoke development requirements of ASME A17.1. This situation may occur in historical building renovations.