

N40085-08-R-1428

**NAVFAC SPECIFICATION
08-1428**

AMENDMENT NO. 0003

IMPORTANT

This amendment should be acknowledged when your proposal is submitted. Failure to acknowledge the amendment may constitute grounds for rejection of the proposal.

If your proposal has been submitted prior to the receipt of this amendment, acknowledgment should be made, which should state whether the price contained in your proposal is to remain unchanged, is to be decreased by an amount, or is to be increased by an amount. The acknowledgment must be received prior to the due date established for the receipt of proposals.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE	PAGE OF PAGES
				J	1 13
2. AMENDMENT/MODIFICATION NO. 0003	3. EFFECTIVE DATE 28-Oct-2008	4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO.(If applicable)	
6. ISSUED BY NAVFAC MID ATLANTIC NORTH CAROLINA IPT 6506 HAMPTON BLVD NORFOLK VA 23508-1212	CODE N40085	7. ADMINISTERED BY (If other than item 6) See Item 6		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)				X	9A. AMENDMENT OF SOLICITATION NO. N40085-08-R-1428
				X	9B. DATED (SEE ITEM 11) 19-Sep-2008
					10A. MOD. OF CONTRACT/ORDER NO.
					10B. DATED (SEE ITEM 13)
CODE	FACILITY CODE				
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS					
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning <u>1</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
12. ACCOUNTING AND APPROPRIATION DATA (If required)					
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.					
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).					
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:					
D. OTHER (Specify type of modification and authority)					
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.					
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) P1227,BEQ WOUNDED WARRIOR BATTALION, MCB, CAMP LEJEUNE, NORTH CAROLINA RECEIPT OF PROPOSALS REMAINS 7 NOVEMBER 2008 @ 2:00 PM NO MORE BID INQUIRIES WILL BE RECEIVED. SEE CONTINUATION SHEET sharon.taylor@navy.mil					
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.					
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)		
			TEL: _____ EMAIL: _____		
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)		16C. DATE SIGNED 28-Oct-2008	

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION 00010 - SOLICITATION CONTRACT FORM

The following have been added by full text:

AMENDMENT 0003

CONTINUATION SHEET

PROJECT TABLE OF CONTENTS

Section 26 23 00, SWITCHGEAR is added to the Project Table of Contents and accompanies this Amendment.

SECTION 00102 LIST OF DRAWINGS

1.2 CONTRACT DRAWINGS

The following drawings are revised as of 10-28-08

NAVFAC DWG No. Title

12525248	Electrical Power – First Floor Plan, Revised
12525249	Electrical Lighting – First Floor Plan, Revised
12525253	Electrical Power – Single Line Diagram, Revised
12525254	Telecommunications – Single Line Diagram, Revised

Sketches SKA1-005, SKA1-006, SKA2-001, SKA2-002, SKP2-005, SKP2-006, SKP2-007, SKP2-008, SKFX2-001, SKM2-002, SKM2-003, SKM2-004 and SKM2-005, are added to the list of drawings. These sketches accompany this Amendment.

Sketches SKP2-001, SKP2-003 SKP2-004 and SKM2-001, shall be deleted from Amendment No. 1.

SECTION 26 00 00.00 20: BASIC ELECTRICAL MATERIALS AND METHODS

3.1 ACCEPTANCE TESTS AND INSPECTIONS: Add the following:

“e. Section 26 23 00, SWITCHGEAR”.

SECTION 26 12 19.10: THREE-PHASE PAD-MOUNTED TRANSFORMERS

Paragraph 2.2.1.2 Low Voltage:

b.1. Change telephone switch transformer from “300 KVA” to “500 KVA”.

b.9. Change CT ratio from “800/5” to “1200/5, RF to 1.5”.

Paragraph 2.2.2 Transformers: Change telephone switch building transformer from “300” to “500” KVA.

SECTION 26 32 13.00 20: SINGLE OPERATION GENERATOR SETS

General: Change “350 KW” to “400 KW” generator for the telephone switch building.

Paragraph 2.2.4.2 Diesel Fuel Systems:

- a. Change “24 hour” fuel capacity to “72 hour” fuel capacity.

On NAVFAC Dwg. No. 12525121 (A1-407)

Attic Stair at Attic Floor Level: Delete the term “catwalk” from the plan. There are no catwalks in the design.

On NAVFAC Dwg. No. 12525219 (S2-101)

Foundation Sheet Key Notes: At Note D change the indication for “#5 BARS @ 9”O.C.” for the main reinforcing bars to “#6 BARS at 9” O.C.”

Foundation Plan: Coordinate the location and configuration of the foundation at the Toilet and the Battery Area with the Revised Floor Plan in sketch SKA2-001 which accompanies this amendment.

On NAVFAC Dwg. No. 12525221 (S2-301)

At Wall Section C4: At the “5” DIA. SLEEVE” shown, modify this portion of the wall section to include the PIPE SLEEVE CURB DETAIL shown in sketch SKA2-002 which accompanies this amendment.

On NAVFAC Dwg. No. 12525228 (A2-101)

Floor Plan: Delete the stairs to BATTERY AREA 102.

Floor Plan: Delete the floor plan shown and replace with Revised Floor Plan in sketch SKA2-001 which accompanies this amendment. Refer to A2-101 for NOTE LEGEND. Note that the FLOOR HATCH changed in size from 2’-8” to 3’-0” square.

Finish Schedule: Delete the SPRINKLER RISER ROOM 105 from the schedule.

On NAVFAC Dwg. No. 12525236 (A2-502)

At Floor Hatch Detail C2: Delete the notes indicating 8” CMU walls and replace with the following note: “8” CMU - MIN. ONE HOUR FIRE RATED ENCLOSURE PER UL DESIGN NO. U905.”

On NAVFAC Dwg. No. 12525240 (A2-601)

Door Schedule: Delete Door No.PEX6 from the schedule.

On NAVFAC Dwg. No. 12525241 (P2-101)

Sketch SKP2-005 is added to the list of drawings. This sketch accompanies this Amendment. Plumbing Floor Plan. The eye wash with associated instantaneous water heater is relocated to inside the Battery Area surface mounted on wall.

Water piping to CRAC units is routed in a new arrangement.

Sketch SKP2-006 is added to the list of drawings. This sketch accompanies this Amendment. Plumbing Floor Plan. The building domestic water back flow preventer is relocated to be exposed inside the toilet.

Water piping to CRAC units is routed in a new arrangement.

Sketch SKP2-007 is added to the list of drawings. This sketch accompanies this Amendment. Plumbing Sanitary Waste & Vent & Water Riser Diagrams . Water piping riser diagram adjusted to reflect the piping changes made in sketch SKP2-001 as shown in sketch SKP2-005 and SKP2-006.

Sketch SKP2-008 is added to the list of drawings. This sketch accompanies this Amendment. Plumbing Enlarged Floor Plan C5. Toilet room 103 relocated within building. Relocated water line to enter the toilet room 103, exposed with backflow preventer.

On NAVFAC Dwg. No. 12525242 (FX2-101)

Telephone Exchange Floor Plan: Delete the floor plan shown and replace with Revised Floor Plan in sketch SKFX2-001 which accompanies this amendment.

Fire Suppression General Notes: Delete Note 9. and replace as follows: "DESIGN AREA SHALL BE 4,000 S.F. AND SHALL INCLUDE THE VAULT."

On Navfac Dwg. 12525244, (M2-101)

Mechanical Floor Plan. Add the following:

Controls: The open area shall be served by two CRAC units operating as required to maintain space temperature. The third unit shall be redundant during normal operation. If one of the primary CRAC units fail, the standby system shall automatically start and provide the required environmental control. The active and standby unit shall automatically switch at least once a week where the active unit becomes the standby and the standby unit becomes the active unit.

The HVAC system shall be interconnected to the fire alarm system so that upon fire alarm activation, the HVAC system shall be automatically shut down.

Sketch SKM2-002 is added to the list of drawings. This sketch accompanies this Amendment. Mechanical Floor Plan. The exhaust fan -2 ductwork shall be modified as shown. Addition of DAHU-1 and DCU-1 with interconnecting refrigerant piping and condensate drain. EW-2 is eliminated.

Sketch SKM2-003 is added to the list of drawings. This sketch accompanies this Amendment. Mechanical Floor Plan. The electrical heater, EW-1, in Toilet 103 is relocated. CRAC-3 is relocated.

Sketch SKM2-004 is added to the list of drawings. This sketch accompanies this Amendment. Mechanical Floor Plan. The condensate drain is modified through the exterior ramp.

On NAVFAC Dwg. No. 12525245 (M2-601)

Electric Baseboard Heater Schedule. Eliminate this schedule from this sheet.

On Navfac Dwg. 12525247, (E2-002)

Cable Schedule. Make the following modifications to Amendment No. 1:
Change Cable 4: from “3 parallel runs” to “5 parallel runs in 6 way ductbank, 1-4” spare”.
Change Cable 5: from “3 parallel runs” to “5 parallel runs in 6 way ductbank, 1-4” spare”.

Pad-Mounted Transformer Detail – 300 KVA:

Change “300 KVA” to “500 KVA”
Change Ct’s from “800/5” to “1200/5”.

Typical Pad-Mounted Compartmental Transformer Installation:

Add: Transformer ground ring shall be tied to the Building ground ring, full size.

On Amendment #1, reference to Navfac Dwg. 12525248, (E2-101)

Amendment No. 1: Delete references to changes this sheet.

On Amendment #1, reference to Navfac Dwg. 12525249, (E2-102)

Amendment No. 1: Delete references to changes this sheet.

On Navfac Dwg. 12525250, (E2-103)

Security Systems – First Floor Plan: Update plan for new toilet location and changes to Battery Room.

On Navfac Dwg. 12525251, (E2-104)

Lightning Protection Plan and Legend. Change perimeter ground loop from #1/0 to 250 KCMIL wire gauge. Add “perimeter ground loop shall be minimum 3’ off building.”

On Amendment #1, reference to Navfac Dwg. 12525255, (E2-603)

Change Panel MDP to 800A MLO panel, delete 600A/3P breaker to Panel RP make a 200A/3P spare. Add 20A/2P circuit breaker to Panel ‘PP’; space 40, 42; for DCU.

CLARIFICATIONS:

1. Drawing E1-505, detail C5 indicates that the Krone blocks for voice will be rack mounted however; drawing E1-601 Telephone Riser Diagram indicates wall mounted blocks. Please clarify the requirement for the voice cable termination.

Response:

There are two telephone data systems. One is the Base Communication System that would feed the non-living unit outlets. The other is the commercial Telephone System. The requirements for each are indicated in the two separate riser diagrams shown on E1-601 and E1-602. The Krone blocks and rack detail on sheet E1-505 is associated with the Base Communication System. The wall mounted blocks are indicated for the Commercial System. No further clarifications should be required.

2. Drawing E1-505 detail C5 indicates one 19” rack with patch panels. The number of patch panels and wire managers required to terminate the data cables indicated will not fit into one rack. What is the number of racks required for this project?

Response:

It is our understanding that if all the living units associated with Commercial System are distributed separately as designed, the Base communication that is primarily located on the first floor only should be adequately supported by one rack as indicated.

3. Drawing E1-601 Telephone Riser Diagram indicates that all cables will follow out of the phone room on the second floor in 4” conduits to the attic and then all drop locations will be installed in 1” conduits in a stacked fashion down from the third to the second and finally the first floor. Will all workstation cables install from the attic?

Response:

Again, each system is feed differently as indicated on the Risers and Plans. The living unit commercial system is feed through the attic. The Base system with the workstation outlets are not. Conduits will be extended from each outlet to the appropriate cable tray to the outlets as indicated.

4. Is this a non-plenum environment?

Response:

Some of the areas are return air plenums such as above the interior corridor ceilings. The attic space would not be considered a return air plenum.

5. RFP Section 27 10 00 paragraph 2.4.4 indicates the contractor is responsible to supply patch cords but does not indicate a length or quantity. Please clarify the number and length of patch cords required.

Response:

Provide patch cords to facilitate the rack distribution system supplied.

6. Are all fiber cables, and terminations supplied by contractors outside this section?

Response:

Provide fiber Optic cable as specified. Coordinate with OSP subcontractor to facilitate a complete system.

7. Who is responsible for the television head end equipment?

Response:

The commercial CATV headend equipment will be supplied by the local CATV service provider per Section 27 54 00.00 20 paragraph 1.3.2. The Contractor shall provide distribution amplifiers at the CATV backing board per paragraph 2.2.1.

8. Drawing E1-601 Cable Television System riser Diagram indicates that all television locations will consist of a RG6 cable installed in a home run fashion to the second floor equipment room. Drawing E1-402 detail A4 indicates a RG11 cable installed in the ceiling of the first floor and splitters running into RG6 for each TV location. Which is correct?

Response:

They both are correct.

We disagree with your description of the Cable Television Riser Diagram. The diagram on sheet E1-601 indicates feeder cable in conduit to the attic and feeder cable throughout the attic cable tray system with splitters as required to deliver the RG-6 drop cables in conduit to each living unit outlet.

In addition to the living units, a few CATV outlets are distributed to non-living units as indicated on sheet E1-402. The CATV outlets in the two small dining rooms on the second and third floors may be extended from the attic or directly from the CATV distribution board.

9. Is there any cable tray required in the telephone equipment room and if so, who is responsible for it?

Response:

See drawing E1-110 for cable tray indicated. Additional cable tray may be provided for the commercial system at the discretion of the Contractor.

10. Who will provide the plywood backboards for the telephone equipment room?

Response:

The Contractor shall provide it. Subcontractors will coordinate their bids and create their own delineation of work through the successful Contractor.

11. The RFP for Wounded Warriors in paragraph 5.a.1 regarding the schedule to be submitted states, "allow time for permits and provide a breakdown of the required design submittals scheduled for Government review." If this is design-bid-build then there are no "design submittals." They are just "submittals." Can you get clarification from the CO on this, please?

Response: The statement in 5.a.1, "allow time for permits and provide a breakdown of the required design submittals scheduled for Government review", should be changed to read as "allow time for permits and provide a breakdown of the required submittals scheduled for review". Also adding to this paragraph "Refer to Specifications Section 01 33 00 SUBMITTAL PROCEDURES."

12. Hazardous Materials - Please confirm that there are no hazardous materials or asbestos containing materials that will require remediation in this scope of work.

RESPONSE: No remediation or abatement of hazardous or asbestos containing materials will be required by this contract.

13. Testing & Inspections – Per specification section 01 45 02 - paragraph 1.12, it indicates that we are to perform testing and sampling under this contract. Please confirm that the independent testing services are to be a first tier subcontractor to the General Contractor and that all associated costs are to be included within this contract.

RESPONSE: The independent testing services are to be a first tier subcontractor hired by the General Contractor and all associated costs are to be included in the bids for this contract.

14. Special Inspections – Per the contract document sheet LS1-001, it indicates this building was designed under the IBC 2006 code. It is our interpretation of IBC 2006 that "special inspections" are required. Please confirm that "special Inspections" are required and that all costs will be picked up by others.

RESPONSE: All lab and field testing and all inspections required by this Contract will be performed and paid for by the General Contractor. Refer to the Project Specifications for required inspections.

15. Attic Catwalk – Sheet A1-116 refers to the installation of 30” wide walking pads for the attic space. In other locations on the drawings (B5/A1-407) indicates that there is an attic catwalk required. Please clarify the construction/composition of these walkways/pads.

RESPONSE: Install 30” wide by min. ½” thick plywood or glass mat gypsum board walkway adhered to the attic insulation and covering the extent indicated on Sheet A1-116. Delete the term “catwalk” at B5/A1-407. There are no catwalks in the design.

16. Attic Spray Insulation - Section A5/A1-303 indicates that Polyicynene Spray Insulation is required at the attic roof deck. On Section A3/A1-301 visually indicates that this spray insulation only goes up a certain length on the roof decking. Please clarify the distance and extent of the Polyicynene Spray Insulation is required.

RESPONSE: Provide the polyicynene spray insulation on the full extent of the underside of the high-pitched one-story roof area (over Great Room 146) at the BEQ building.

17. Access Panels - Please clarify if access panels are required in the chase located in each living space that contains the plumbing, electrical and mechanical systems. At this time no access panels are shown or indicated.

RESPONSE: No access panels are required at the chase in question.

18. Bathroom Masonry Partitions - The section A3/A1-301 indicates that the bathroom masonry partitions are to be terminated one block above the ceiling height (8’8” AFF). Detail C3/A1-302 indicates that the bathroom partitions are to be to the deck above. Please confirm that all bathroom partitions are to be one block over the ceiling height.

RESPONSE: The partition walls in question shall extend to one course above ceiling height as indicated in Section A3/A1-301.

19. Steel SubFrame at Mechanical Units - Note 6 on S1-105 indicates that “Mechanical Units shall be supported from or suspended from a minimum of 3 joist and at panel points only. Provide steel sub framing if required.” It is intended that major mechanical equipment is to be placed on the attic slab with the required vibration isolation. Please clarify if the mechanical units can be placed on the attic slab. If this cannot occur, please provide the framing design since this is a structural element and not a miscellaneous steel item. Other than hollow core design, we do not have design requirements for this building.

RESPONSE: See sketch SKA1-006 which accompanies this amendment.

20. Roof Access - The documents indicate that we are to provide means of roof access for removal of equipment at a later date. Please indicate if roof access hatches and ladders are required. If roof access hatches are not required please indicate as to how you would like to facilitate this future removal for access points.

RESPONSE: Roof access hatches and ladders are not required. The roof access areas indicated are to be removable roof sections for future removal and replacement of mechanical equipment by crane.

21. Spray on Fire Proofing - Spray on Fire Proofing is not indicated on the documents. Please confirm that this is not required for the structural steel or bar joists indicated on the documents.

RESPONSE: Spray-on fireproofing of the structural members is not required for this project.

22. Telecom Building Interior Screen Wall Area - The documents do not currently indicate as to what the interior screen wall substrate shall be other than the concrete housekeeping pads. Please confirm that this can be left as fine graded materials in lieu of a concrete pad throughout this location. If a concrete pad is required in this locations please confirm that concrete thickness and reinforcement.

RESPONSE: Provide a minimum 3" thick gravel bed on grade at the areas in question. A concrete slab covering the entire enclosed screen wall area is not required.

23. Telecom Building Fire Protection System - FX2-101 note 3 indicates a pre-action life safety system. While FX2-600 shows a detail for a clean agent bottles. In our opinion this is two separate fire protection system. . The specifications indicate as to what needs to be installed for a clean agent system.. It appears that two life safety systems are needed in this building. Please provide direction as to what system is needed and the location of each.

RESPONSE: The use of a clean agent system and a pre-action system is within the intent of UFC 3-600-01 and NFPA. Both systems are required throughout.

24. Masonry Substrate - The architectural details indicate that the Ceramic/Porcelain tile is applied directly to the masonry walls in numerous areas. This is contradicted by detail A5/A1-404 which indicates that we are to install ½ inch glass mat sheathing in the bathrooms of the second and third floor toilet areas. Please confirm that we are not required to utilize the glass mat sheathing and that we can apply the tile directly to the masonry with approved TCA methods.

RESPONSE: The erroneous reference on Sheet A1-404 has been corrected by a previous amendment. Apply the tile directly to masonry per approved TCA methods.

25. Brick Materials - A1-203 indicates that you are specifying a Brick Manufacture d by Belden Brick Company. Upon investigation, we have determined that this brick is not locally manufactured within the 500 Mile Radius that is utilized for LEED review and applications. It appears that utilizing a brick that is not manufactured locally within North Carolina would be in non-compliance with LEED aspects as well as being cost prohibitive. Please provide another brick manufacture and color selection that is within 500 miles of the project site.

RESPONSE: There are at least six (6) Beldon Brick Company manufacturing plants within 500 miles of the project site. However, the brick color selection indicated is for color, texture and range matching only.

26. Architectural: Section 10 14 01 & 10 14 02 (Interior & Exterior signs) both reference the drawings for dimensions, message content, and locations of signs. Please advise where this information can be found.

RESPONSE: See sketch SKA1-005 which accompanies this amendment.

27. Refer to Door Schedule on sheet A1-111: Doors 16 and 26 are aluminum storefront doors in aluminum frames. Notes 1 and 4 are called out which indicate a 20 minute rating. Aluminum storefront doors are not fire rated.

RESPONSE: Change the indication for “aluminum” doors and frames at the openings in question to “steel” and provide rated assemblies per Notes 1 and 4.

28. Refer to Toilet Plan B2/A1-404 and Specification Section 10 21 13: The plan calls out “Solid Polymer Toilet Partitions”; paragraphs 22.2.1 and 2.2.2 in the specification calls for “Solid Phenolic” in a 1” thickness, which is generally not available; paragraph 2.6.2 in the specification calls for polyethylene – which is available in a 1” thickness. Please clarify what material is required.

RESPONSE: Provide high-density polyethylene (HDPE) toilet partitions.

29. Refer to SKA1-001 in Amendment 001: What is the length of the vanity top?

RESPONSE: Provide 2’-9” long vanity counters.

30. Is the FFE installation required to be completed in the same time frame given for contract completion of the construction? This makes a difference in preparing a schedule.

RESPONSE: The building construction and the FF&E installation must both be completed by the project closeout date.

31. Does the FFE installation need to be completed prior to building flush out for IAQ requirements?

RESPONSE: The FF&E installation must be completed prior to indoor air quality testing.

32. Refer to the Telephone Exchange Building Electrical Drawings: Where are the two UPS panels fed from, and what size conduit and conductors are required to feed them?

RESPONSE: “See Amendments for clarification.” UPS System was deleted

33. Reference drawing A1-303, wall sections A2, 3, 4: The wall sections call out "4" Rigid Insulation (R-28)" on the concrete decks. Extruded polystyrene would provide R-20 and

polyisocyanurate would provide R-25. Please clarify what insulation should be used to provide R-28 in 4.0" thickness.

RESPONSE: Rigid Polyisocyanurate will provide an R-28 insulation value in a 4" thickness.

34. Reference all roof sections and details that call for 30 lb felt versus specification section 074113, 2.7.1: The specification is calling for a synthetic underlayment that meets ASTM D226 Type II; but all roof sections and details call for 30 lb felt, which is NOT synthetic, but does meet ASTM D226 Type II. Please clarify if a synthetic underlayment is required or if 30 lb felt is acceptable as detailed.

RESPONSE: Either underlayment system is acceptable. Verify acceptance and compatibility with the roofing manufacturer.

35. Reference low sloped roofs with insulation, wall sections A1, A4 and C2/A1-304: Specification section 07 21 13 does not provide an insulation to be used for roofs, only an R-value for the Telephone and Exchange building. Please clarify what insulation should be used for the low sloped roofs of the BEQ and what thickness or R-value is required.

RESPONSE: Provide Rigid Polyisocyanurate in a 4" thickness for an R-28 insulation value at low-slope roofs.

36. Reference roof sections that call for "Glass Mat Gypsum Sheathing" and specification section 092900 2.1.5: None of the roof sections or details for the BEQ call out any thickness of gypsum board, but the specification calls for 5/8". So this is pretty clear. However, the roof details for the Telephone and Exchange building call for 1/2" glass mat gypsum sheathing. Please clarify if 5/8" sheathing is required for the BEQ and 1/2" sheathing is required for the T & E building.

RESPONSE: Provide 5/8" thick Glass Mat Gypsum Sheathing throughout.

37. Specification Section 09 65 00, Paragraph 2.5 specifies a LEED CapriCork product for the athletic flooring, AF-1; however, no thickness is indicated. CapriCork Re-Tire comes in 4mm, 6mm and 9 mm and is priced accordingly. Please clarify desired thickness.

RESPONSE: 6mm

(End of Summary of Changes)

SECTION 26 23 00

SWITCHGEAR

07/06

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C39.1 (1981; R 1992) Requirements for Electrical Analog Indicating Instruments

ASTM INTERNATIONAL (ASTM)

ASTM A 123/A 123M (2002) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A 153/A 153M (2005) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

ASTM A 167 (1999; R 2004) Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip

ASTM A 653/A 653M (2007) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

ASTM A 780 (2001; R 2006) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings

ASTM D 1535 (2007) Specifying Color by the Munsell System

ASTM D 709 (2001; R 2007) Laminated Thermosetting Materials

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2 (2007; Errata 2007) National Electrical Safety Code

IEEE C37.13 (1990; R 1995) Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures

IEEE C37.20.1 (2002; Amendment A 2005; Amendment B 2006) Standard for Metal-Enclosed Low-Voltage

Power Circuit-Breaker Switchgear

- IEEE C37.90.1 (2002) Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus
- IEEE C57.12.28 (2005) Standard for Pad-Mounted Equipment - Enclosure Integrity
- IEEE C57.12.29 (2005) Pad-Mounted Equipment - Enclosure Integrity for Coastal Environments
- IEEE C57.13 (1993; R 2003) Standard Requirements for Instrument Transformers
- IEEE Std 100 (2000) The Authoritative Dictionary of IEEE Standards Terms
- IEEE Std 81 (1983) Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System (Part 1) Normal Measurements

INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)

- NETA ATS (2003) Acceptance Testing Specifications

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

- NEMA C12.1 (2001) Electric Meters; Code for Electricity Metering
- NEMA ICS 6 (1993; R 2006) Standard for Industrial Controls and Systems Enclosures
- NEMA ST 20 (1992; R 1997) Standard for Dry-Type Transformers for General Applications

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

- NFPA 70 (2007) National Electrical Code - 2008 Edition

UNDERWRITERS LABORATORIES (UL)

- UL 1558 (1999; Rev thru Mar 2006) Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear
- UL 467 (2007) Standard for Grounding and Bonding Equipment

1.2 RELATED REQUIREMENTS

Section 26 08 00 APPARATUS INSPECTION AND TESTING applies to this section, with the additions and modifications specified herein.

1.3 DEFINITIONS

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

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00
SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Switchgear Drawings; G

Include wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices. Submittals shall include the nameplate data, size, and capacity. Submittals shall also include applicable federal, military, industry, and technical society publication references.

SD-03 Product Data

Switchgear; G

SD-06 Test Reports

Switchgear design tests; G

Switchgear production tests; G

Acceptance checks and tests; G

SD-10 Operation and Maintenance Data

Switchgear Operation and Maintenance, Data Package 5; G

SD-11 Closeout Submittals

Assembled Operation and Maintenance Manuals; G

Equipment Test Schedule; G

Request for Settings; G

1.5 QUALITY ASSURANCE

1.5.1 Switchgear Product Data

Each submittal shall include manufacturer's information for each component, device and accessory provided with the switchgear including:

- a. Circuit breaker type, interrupting rating, and trip devices, including available settings
- b. Manufacturer's instruction manuals and published time-current curves (on full size logarithmic paper) of the main secondary breaker and largest secondary feeder device.

1.5.2 Switchgear Drawings

Drawings shall include, but are not limited to the following:

- a. One-line diagram including breakers, current transformers, and meters
- b. Outline drawings including front elevation, section views, footprint, and overall dimensions
- c. Bus configuration including dimensions and ampere ratings of bus bars
- d. Markings and NEMA nameplate data
- e. Circuit breaker type, interrupting rating, and trip devices, including available settings
- f. Three-line diagrams and elementary diagrams and wiring diagrams with terminals identified, and indicating prewired interconnections between items of equipment and the interconnection between the items.
- g. Manufacturer's instruction manuals and published time-current curves (on full size logarithmic paper) of the main secondary breaker and largest secondary feeder device. These shall be used by the designer of record to provide breaker settings that will ensure protection and coordination are achieved.

1.5.3 Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

1.5.4 Standard Products

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in this section.

1.5.4.1 Alternative Qualifications

Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

1.5.4.2 Material and Equipment Manufacturing Date

Products manufactured more than 3 years prior to date of delivery to site shall not be used, unless specified otherwise.

1.6 MAINTENANCE

1.6.1 Switchgear Operation and Maintenance Data

Submit Operation and Maintenance Manuals in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

1.6.2 Assembled Operation and Maintenance Manuals

Manuals shall be assembled and bound securely in durable, hard covered, water resistant binders. The manuals shall be assembled and indexed in the following order with a table of contents. The contents of the assembled operation and maintenance manuals shall be as follows:

- a. Manufacturer's O&M information required by the paragraph entitled "SD-10, Operation and Maintenance Data".
- b. Catalog data required by the paragraph entitled, "SD-03, Product Data".
- c. Drawings required by the paragraph entitled, "SD-02, Shop Drawings".
- d. Prices for spare parts and supply list.
- e. Information on metering
- f. Design test reports
- g. Production test reports

1.7 WARRANTY

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

PART 2 PRODUCTS

2.1 PRODUCT COORDINATION

Products and materials not considered to be switchgear and related accessories are specified in Section 33 71 02.00 20 UNDERGROUND TRANSMISSION AND DISTRIBUTION, and Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.

2.2 SWITCHGEAR

IEEE C37.20.1 and UL 1558.

2.2.1 Ratings

The voltage rating of the switchgear shall be 208Y/120 volts AC, 4-wire 3 phase. The continuous current rating of the main bus shall be as indicated. The short-circuit current rating shall be as indicated. The switchgear shall be UL listed and labeled for its intended use.

2.2.2 Construction

Switchgear shall consist of vertical sections bolted together to form a rigid assembly and shall be rear aligned. All circuit breakers shall be front accessible. Compartmentalized switchgear shall have vertical insulating barriers between the front device section, the main bus section, and the cable compartment with full front to rear vertical insulating barriers between adjacent sections. Where indicated, "space for future" or "space" shall mean to include bus, device supports, and connections. Apply moisture resistant coating to all rough-cut edges of barriers. Switchgear shall be completely factory engineered and assembled, including protective devices and equipment indicated with necessary interconnections, instrumentation, and control wiring.

2.2.2.1 Enclosure

The switchgear enclosure shall be a NEMA ICS 6 Type 1. Enclosure shall be bolted together with removable bolt-on side and hinged rear covers, and sloping roof downward toward rear. Bases, frames and channels of enclosure shall be corrosion resistant and shall be fabricated of ASTM A 167 type 304 or 304L stainless steel or galvanized steel. Base shall include any part of enclosure that is within 3 inches of concrete pad. Galvanized steel shall be ASTM A 123/A 123M, ASTM A 653/A 653M G90 coating, and ASTM A 153/A 153M, as applicable. Galvanize after fabrication where practicable. Paint enclosure, including bases, ASTM D 1535 light gray No. 61 or No. 49. Paint coating system shall comply with IEEE C57.12.28 for galvanized steel and IEEE C57.12.29 for stainless steel.

2.2.2.2 Bus Bars

Bus bars shall be copper with silver-plated contact surfaces or aluminum with tin-plated contact surfaces. Plating shall be a minimum of 0.0002 inch thick. Make bus connections and joints with hardened steel bolts. The through-bus shall be rated at the full ampacity of the main throughout the switchboard. Provide minimum one-quarter by 2 inch copper ground bus secured to each vertical section along the entire length of the switchgear. The neutral bus shall be rated 100 percent of the main bus continuous current rating.

2.2.2.3 Main Section (Stand Alone)

The main section shall consist of an individually mounted drawout air power circuit breaker.

2.2.2.4 Distribution Sections (Stand Alone)

The distribution section shall consist of main lugs only with individually mounted, drawout, air power circuit breakers as indicated.

2.2.2.5 Handles

Handles for individually mounted devices shall be of the same design and method of external operation. Label handles prominently to indicate device ampere rating, color coded for device type. Identify ON-OFF indication by handle position and by prominent marking.

2.2.3 Protective Device

Provide main and branch protective devices as indicated.

2.2.3.1 Power Circuit Breaker

IEEE C37.13. 120 Vac manually operated drawout, unfused, steel frame, low-voltage power circuit breaker with a short-circuit current rating of 65,000 rms amperes symmetrical at 208 volts. Breaker frame size shall be as indicated.

2.2.4 Drawout Breakers

Equip drawout breakers with disconnecting contacts, wheels, and interlocks for drawout application. The main, auxiliary, and control disconnecting contacts shall be silver-plated, multifinger, positive pressure, self-aligning type. Each drawout breaker shall be provided with four-position operation. Each position shall be clearly identified by an indicator on the circuit breaker front panel.

- a. Connected Position: Primary and secondary contacts are fully engaged. Breaker must be tripped before racking into or out of position.
- b. Test Position: Primary contacts are disconnected but secondary contacts remain fully engaged. Position shall allow complete test and operation of the breaker without energizing the primary circuit.
- c. Disconnected Position: Primary and secondary contacts are disconnected.
- d. Withdrawn (Removed) Position: Places breaker completely out of compartment, ready for removal. Removal of the breaker shall actuate assembly that isolates the primary stabs.

2.2.5 Electronic Trip Units

Equip stand alone main and distribution breakers with a solid-state tripping system consisting of three current sensors and a microprocessor-based trip unit that will provide true rms sensing adjustable time-current circuit protection. The ampere rating of the current sensors shall be as indicated. The trip unit ampere rating shall be as indicated. The electronic trip units shall have the following features as indicated.

- a. Indicated Breakers shall have long delay pick-up and time settings, and LED indication of cause of circuit breaker trip.
- b. Main breakers shall have short delay pick-up and time settings as indicated.
- c. Distribution breakers shall have short delay pick-up and time settings as indicated.

- d. Main Breakers shall have a digital display for phase and ground current.
- e. Main Breakers shall have a digital display for watts, vars, VA, kWh, kvarh, and kVAh.
- f. Main Breakers shall have a digital display for phase voltage, and percent THD voltage and current.
- g. Main Breakers shall have provisions for communication via a network twisted pair cable for remote monitoring and control.

2.2.6 Instruments

ANSI C39.1 for electrical indicating switchboard instruments, with 2 percent accuracy. The ac ammeters and voltmeters shall be a minimum of 2 inches square, with 250-degree scale. Provide single phase indicating instruments with flush-mounted transfer switches for reading three phases.

2.2.6.1 Ac Ammeters

Self-contained.

2.2.6.2 Ac Voltmeters

Self-contained.

2.2.6.3 Instrument Control Switches

Provide rotary cam-operated type with positive means of indicating contact positions. Switches shall have silver-to-silver contacts enclosed in a protective cover which can be removed to inspect the contacts.

2.2.7 Watthour and Digital Meters

2.2.7.1 Digital Meters

IEEE C37.90.1 for surge withstand. Provide true rms, plus/minus one percent accuracy, programmable, microprocessor-based meter enclosed in sealed cases with a simultaneous three line, twelve value LED display. Meters shall have 0.56 inch, minimum, LEDs. Watthour meter shall have 0.56 inch, minimum, LEDs. The meters shall accept input from standard 5A secondary instrument transformers and direct voltage monitoring range to 300 volts, phase to phase. Programming shall be via a front panel display and a communication interface with a computer. Password secured programming shall be stored in non-volatile EEPROM memory. Digital communications shall be Modbus ASCII protocol via a RS232C serial port. The meter shall calculate and store average max/min demand values for all readings based on a user selectable sliding window averaging period. The meter shall have programmable hi/low set limits with two Form C dry contact relays when exceeding alarm conditions. Meter shall provide Total Harmonic Distortion (THD) measurement to the thirty-first order.

- a. Multi-Function Meter: Meter shall simultaneously display a selected phase to neutral voltage, phase to phase voltage, percent phase to neutral voltage THD, percent phase to phase voltage THD; a selected phase current, neutral current, percent phase current THD, percent neutral current; selected total PF, kW, KVA, kVAR, FREQ, kVAh, kWh. Detected alarm conditions include over/under current, over/under

voltage, over/under KVA, over/under frequency, over/under selected PF/kVAR, voltage phase reversal, voltage imbalance, reverse power, over percent THD. The meter shall have a Form C KYZ pulse output relay.

2.2.8 Current Transformers

IEEE C57.13. Transformers shall be single ratio, 60 hertz, 1500 to 5-ampere ratio, 1.5 rating factor, with a metering accuracy class of 0.3 through B-0.9.

2.2.9 Meter Fusing

Provide a fuse block mounted in the metering compartment containing one fuse per phase to protect the voltage input to voltage sensing meters. Size fuses as recommended by the meter manufacturer.

2.2.10 Heaters

Provide 120-volt heaters in each switchgear section. Heaters shall be of sufficient capacity to control moisture condensation in the section, shall be 250 watts minimum, and shall be controlled by a thermostat located in the section. Thermostat shall be industrial type, high limit, to maintain sections within the range of 60 to 90 degrees F. Supply voltage for the heaters shall be obtained from a control power transformer within the switchgear. If heater voltage is different than switchgear voltage, provide transformer rated to carry 125 percent of heater full load rating. Transformer shall have 220 degrees C insulation system with a temperature rise not exceeding 115 degrees C and shall conform to **NEMA ST 20**.

2.2.11 Terminal Boards

Provide with engraved plastic terminal strips and screw type terminals for external wiring between components and for internal wiring between removable assemblies. Terminal boards associated with current transformers shall be short-circuiting type. Terminate conductors for current transformers with ring-tongue lugs. Terminal board identification shall be identical in similar units. External wiring shall be color coded consistently for similar terminal boards.

2.2.12 Wire Marking

Mark control and metering conductors at each end. Provide factory-installed, white, plastic tubing, heat stamped with black block type letters on factory-installed wiring. On field-installed wiring, provide white, preprinted, polyvinyl chloride (PVC) sleeves, heat stamped with black block type letters. Each sleeve shall contain a single letter or number, shall be elliptically shaped to securely grip the wire, and shall be keyed in such a manner to ensure alignment with adjacent sleeves. Provide specific wire markings using the appropriate combination of individual sleeves. Each wire marker shall indicate the device or equipment, including specific terminal number to which the remote end of the wire is attached.

2.3 MANUFACTURER'S NAMEPLATE

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable. This nameplate and method of attachment may be the

manufacturer's standard if it contains the required information.

2.4 FIELD FABRICATED NAMEPLATES

ASTM D 709. Provide laminated plastic nameplates for each switchgear, equipment enclosure, relay, switch, and device; as specified in this section or as indicated on the drawings. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125 inch thick, white with black center core. Provide red laminated plastic label with white center core where indicated. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be one by 2.5 inches. Lettering shall be a minimum of 0.25 inch high normal block style.

2.5 SOURCE QUALITY CONTROL

2.5.1 Equipment Test Schedule

The Government reserves the right to witness tests. Provide equipment test schedules for tests to be performed at the manufacturer's test facility. Submit required test schedule and location, and notify the Contracting Officer 30 calendar days before scheduled test date. Notify Contracting Officer 15 calendar days in advance of changes to scheduled date.

a. Test Instrument Calibration

1. The manufacturer shall have a calibration program which assures that all applicable test instruments are maintained within rated accuracy.
2. The accuracy shall be directly traceable to the National Institute of Standards and Technology.
3. Instrument calibration frequency schedule shall not exceed 12 months for both test floor instruments and leased specialty equipment.
4. Dated calibration labels shall be visible on all test equipment.
5. Calibrating standard shall be of higher accuracy than that of the instrument tested.
6. Keep up-to-date records that indicate dates and test results of instruments calibrated or tested. For instruments calibrated by the manufacturer on a routine basis, in lieu of third party calibration, include the following:
 - (a) Maintain up-to-date instrument calibration instructions and procedures for each test instrument.
 - (b) Identify the third party/laboratory calibrated instrument to verify that calibrating standard is met.

2.5.2 Switchgear Design Tests

IEEE C37.20.1 and **UL 1558.**

2.5.2.1 Design Tests

Furnish documentation showing the results of design tests on a product of the same series and rating as that provided by this specification.

- a. Short-circuit current test
- b. Enclosure tests
- c. Dielectric test

2.5.3 Switchgear Production Tests

IEEE C37.20.1 and UL 1558. Furnish reports which include results of production tests performed on the actual equipment for this project. These tests include:

- a. 60-hertz dielectric tests
- b. Mechanical operation tests
- c. Electrical operation and control wiring tests
- d. Ground fault sensing equipment test

PART 3 EXECUTION

3.1 INSTALLATION

Electrical installations shall conform to IEEE C2, NFPA 70, and to the requirements specified herein.

3.2 GROUNDING

NFPA 70 and IEEE C2, except that grounds and grounding systems shall have a resistance to solid earth ground not exceeding 5 ohms.

3.2.1 Grounding Electrodes

Provide driven ground rods as specified in Section 33 71 02.00 20 UNDERGROUND ELECTRICAL DISTRIBUTION. Connect ground conductors to the upper end of the ground rods by exothermic weld or compression connector. Provide compression connectors at equipment end of ground conductors.

3.2.2 Equipment Grounding

Provide bare copper cable not smaller than No. 4/0 AWG not less than 24 inches below grade connecting to the indicated ground rods. When work in addition to that indicated or specified is directed to obtain the specified ground resistance, the provision of the contract covering "Changes" shall apply.

3.2.3 Connections

Make joints in grounding conductors and loops by exothermic weld or compression connector. Exothermic welds and compression connectors shall be installed as specified in Section 33 71 02.00 20 UNDERGROUND ELECTRICAL DISTRIBUTION, paragraph entitled "Grounding Connections."

3.2.4 Grounding and Bonding Equipment

UL 467, except as indicated or specified otherwise.

3.3 INSTALLATION OF EQUIPMENT AND ASSEMBLIES

Install and connect equipment furnished under this section as indicated on project drawings, the approved shop drawings, and as specified herein.

3.3.1 Switchgear

IEEE C37.20.1.

3.3.2 Meters and Instrument Transformers

NEMA C12.1.

3.3.3 Field Applied Painting

Where field painting of enclosures is required to correct damage to the manufacturer's factory applied coatings, provide manufacturer's recommended coatings and apply in accordance with manufacturer's instructions.

3.3.4 Galvanizing Repair

Repair damage to galvanized coatings using ASTM A 780, zinc rich paint, for galvanizing damaged by handling, transporting, cutting, welding, or bolting. Do not heat surfaces that repair paint has been applied to.

3.3.5 Field Fabricated Nameplate Mounting

Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets.

3.4 FIELD QUALITY CONTROL

Contractor shall submit request for settings of breakers to the Contracting Officer after approval of switchgear and at least 30 days in advance of their requirement.

3.4.1 Performance of Acceptance Checks and Tests

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

3.4.1.1 Switchgear

a. Visual and Mechanical Inspection

1. Compare equipment nameplate data with specifications and approved shop drawings.
2. Inspect physical, electrical, and mechanical condition.
3. Confirm correct application of manufacturer's recommended lubricants.

4. Verify appropriate anchorage, required area clearances, and correct alignment.
5. Inspect all doors, panels, and sections for paint, dents, scratches, fit, and missing hardware.
6. Verify that circuit breaker sizes and types correspond to approved shop drawings.
7. Verify that current transformer ratios correspond to approved shop drawings.
8. Inspect all bolted electrical connections for high resistance using low-resistance ohmmeter, verifying tightness of accessible bolted electrical connections by calibrated torque-wrench method, or performing thermographic survey.
9. Confirm correct operation and sequencing of electrical and mechanical interlock systems.
10. Clean switchgear.
11. Inspect insulators for evidence of physical damage or contaminated surfaces.
12. Verify correct barrier installation.
13. Exercise all active components.
14. Inspect all mechanical indicating devices for correct operation.
15. Verify that vents are clear.
16. Test operation, alignment, and penetration of instrument transformer withdrawal disconnects.
17. Inspect control power transformers.

b. Electrical Tests

1. Perform insulation-resistance tests on each bus section.
2. Perform overpotential tests.
3. Perform insulation-resistance test on control wiring; Do not perform this test on wiring connected to solid-state components.
4. Perform control wiring performance test.
5. Perform primary current injection tests on the entire current circuit in each section of assembly.
6. Verify operation of switchgear heaters.

3.4.1.2 Circuit Breakers - Low Voltage - Power

a. Visual and Mechanical Inspection

1. Compare nameplate data with specifications and approved shop

drawings.

2. Inspect physical and mechanical condition.
3. Confirm correct application of manufacturer's recommended lubricants.
4. Inspect anchorage, alignment, and grounding. Inspect arc chutes. Inspect moving and stationary contacts for condition, wear, and alignment.
5. Verify that all maintenance devices are available for servicing and operating the breaker.
6. Verify that primary and secondary contact wipe and other dimensions vital to satisfactory operation of the breaker are correct.
7. Perform all mechanical operator and contact alignment tests on both the breaker and its operating mechanism.
8. Inspect all bolted electrical connections for high resistance using low-resistance ohmmeter, verifying tightness of accessible bolted electrical connections by calibrated torque-wrench method, or performing thermographic survey.
9. Verify cell fit and element alignment.
10. Verify racking mechanism.

b. Electrical Tests

1. Perform contact-resistance tests on each breaker.
2. Perform insulation-resistance tests.
3. Adjust Breaker(s) for final settings in accordance with Government provided settings.
4. Determine long-time minimum pickup current by primary current injection.
5. Determine long-time delay by primary current injection.
6. Determine short-time pickup and delay by primary current injection.
7. Activate auxiliary protective devices, such as ground-fault or undervoltage relays, to ensure operation of shunt trip devices; Check the operation of electrically-operated breakers in their cubicle.
8. Verify correct operation of any auxiliary features such as trip and pickup indicators, zone interlocking, electrical close and trip operation, trip-free, and antipump function.
9. Verify operation of charging mechanism.

3.4.1.3 Current Transformers

a. Visual and Mechanical Inspection

1. Compare equipment nameplate data with specifications and approved shop drawings.
2. Inspect physical and mechanical condition.
3. Verify correct connection.
4. Verify that adequate clearances exist between primary and secondary circuit.
5. Inspect all bolted electrical connections for high resistance using low-resistance ohmmeter, verifying tightness of accessible bolted electrical connections by calibrated torque-wrench method, or performing thermographic survey.
6. Verify that all required grounding and shorting connections provide good contact.

b. Electrical Tests

1. Perform resistance measurements through all bolted connections with low-resistance ohmmeter, if applicable.
2. Perform insulation-resistance tests.
3. Perform polarity tests.
4. Perform ratio-verification tests.

3.4.1.4 Metering and Instrumentation

a. Visual and Mechanical Inspection

1. Compare equipment nameplate data with specifications and approved shop drawings.
2. Inspect physical and mechanical condition.
3. Verify tightness of electrical connections.

b. Electrical Tests

1. Determine accuracy of meters at 25, 50, 75, and 100 percent of full scale.
2. Calibrate watthour meters according to manufacturer's published data.
3. Verify all instrument multipliers.
4. Electrically confirm that current transformer and voltage transformer secondary circuits are intact.

3.4.1.5 Grounding System

a. Visual and Mechanical Inspection

1. Inspect ground system for compliance with contract plans and specifications.

b. Electrical Tests

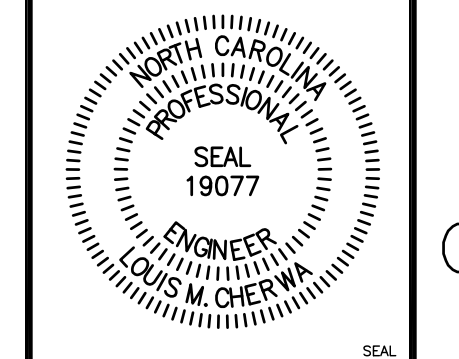
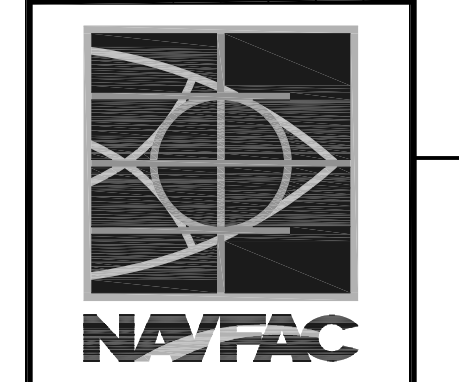
1. **IEEE Std 81.** Perform ground-impedance measurements utilizing the fall-of-potential method. On systems consisting of interconnected ground rods, perform tests after interconnections are complete. On systems consisting of a single ground rod perform tests before any wire is connected. Take measurements in normally dry weather, not less than 48 hours after rainfall. Use a portable ground testing megger in accordance with manufacturer's instructions to test each ground or group of grounds. The instrument shall be equipped with a meter reading directly in ohms or fractions thereof to indicate the ground value of the ground rod or grounding systems under test.
2. Submit the measured ground resistance of each ground rod and grounding system, indicating the location of the rod and grounding system. Include the test method and test setup (i.e., pin location) used to determine ground resistance and soil conditions at the time the measurements were made.

3.4.2 Follow-Up Verification

Upon completion of acceptance checks, settings, and tests, the Contractor shall show by demonstration in service that circuits and devices are in good operating condition and properly performing the intended function. Circuit breakers shall be tripped by operation of each protective device. Test shall require each item to perform its function not less than three times. As an exception to requirements stated elsewhere in the contract, the Contracting Officer shall be given 5 working days advance notice of the dates and times for checks, settings, and tests.

-- End of Section --

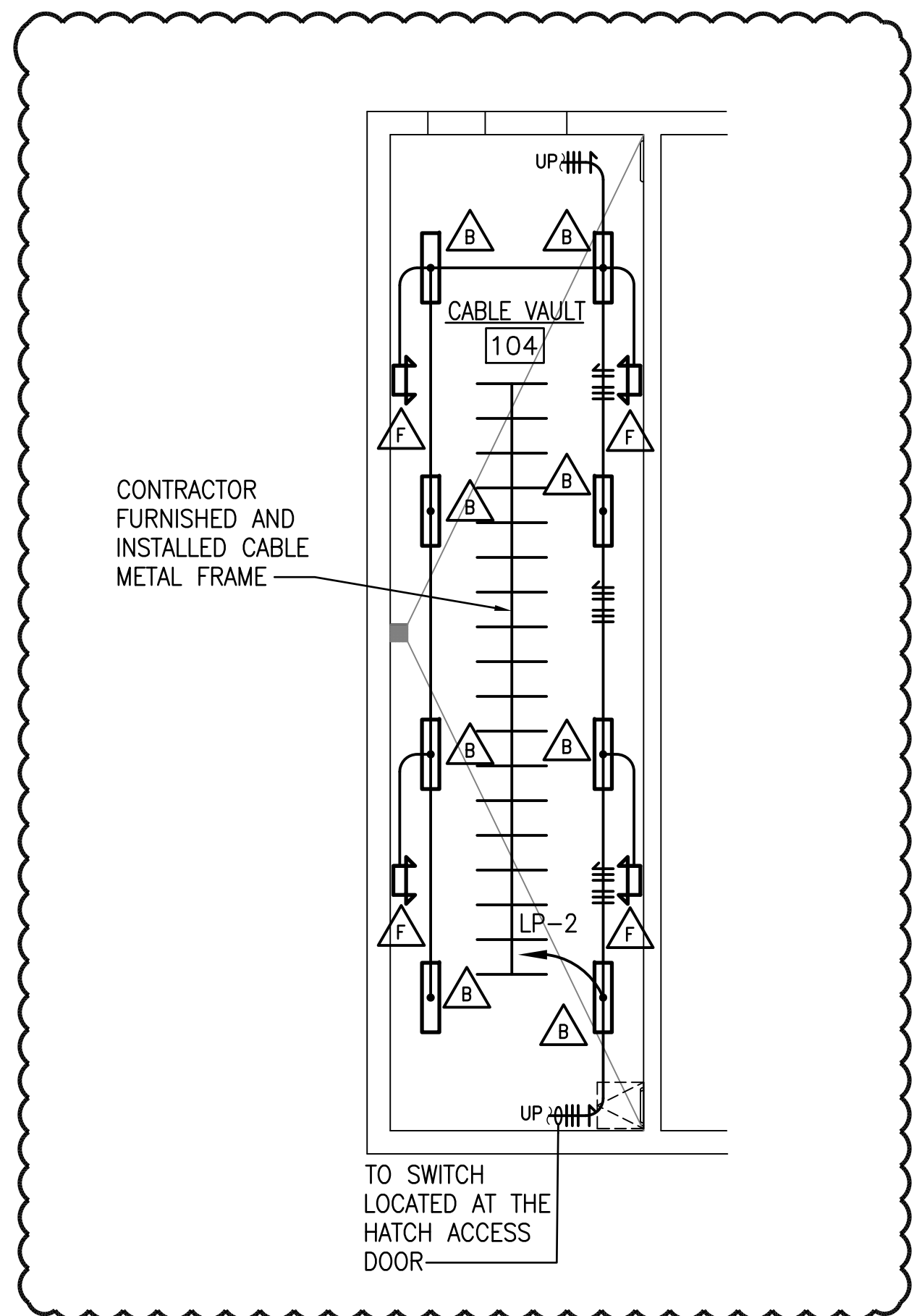
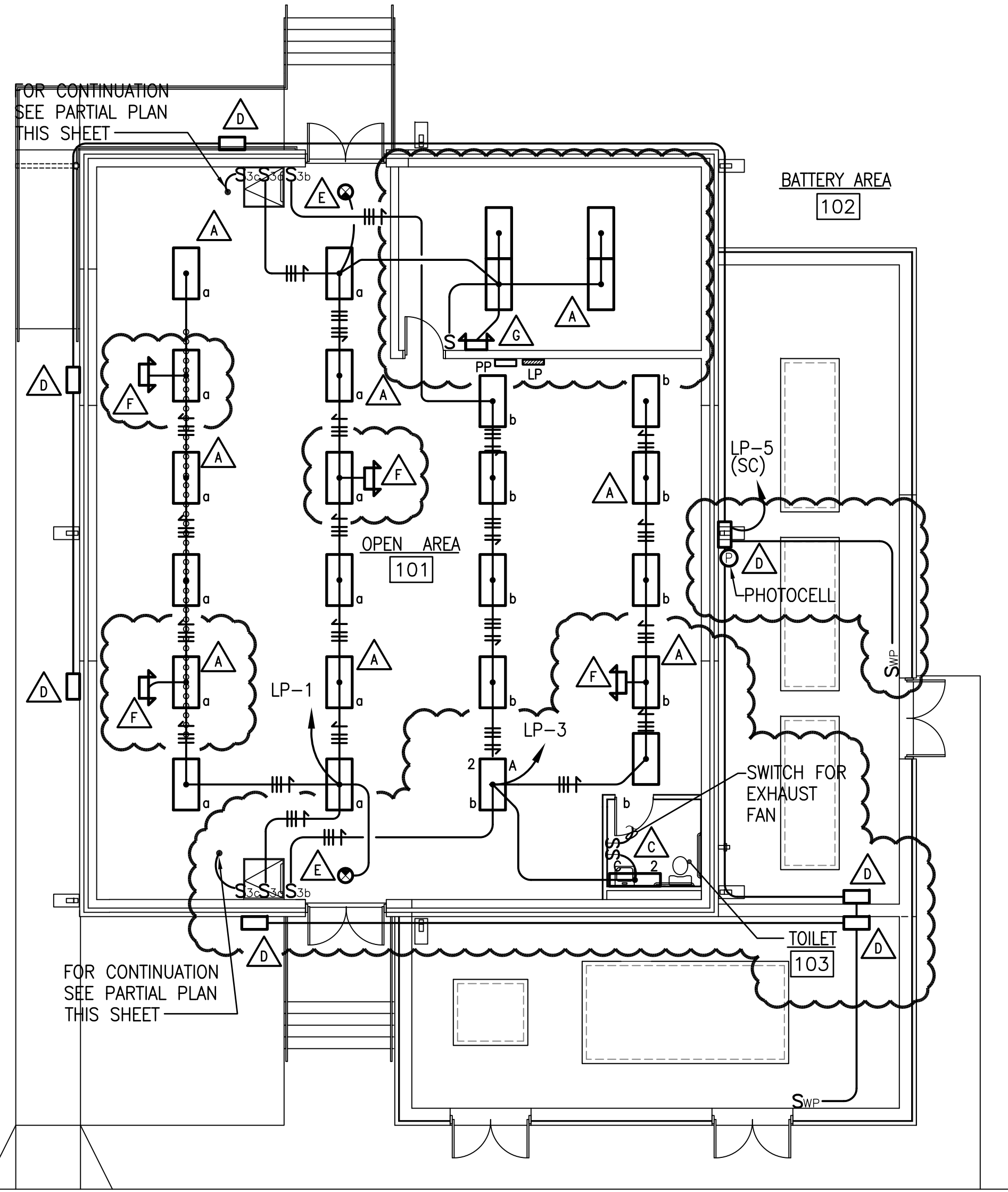
NO.	DATE	DESCRIPTION



SUBMITTED BY	
FIRM MEMBER	
DATE	
APPROVED	
ACTIVITY - SATISFACTORY TO	
DATE	
APPROVED	
FOR COMMANDER NAVFAC	
DESIGNER	
DESIGNER	
REVIEWED BY	
QC	
AIC/EIC	
FIRE PROTECTION	
BRANCH MANAGER	
DESIGN DIRECTOR	

NAVY FACILITIES ENGINEERING COMMAND
 NAVFAC MID-ATLANTIC
 CAMP LEJEUNE, NC
 MARINE CORPS BASE
BEQ - WOUNDED WARRIOR BATTALION
ELECTRICAL LIGHTING - FIRST FLOOR PLAN

CODE ID. NO.	80091	SIZE	D
SCALE			
MAXIMO NO.	566830		
JOB ORDER NO.	5A2860		
SPEC. NO.	08P1227		
CONSTR. CONTR. NO.	N40085-08-R-1428		
NAVFAC DRAWING NO.	12525249		
SHEET	209	OF	256



ELECTRICAL LIGHTING - FIRST FLOOR PLAN

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

CABLE VAULT LIGHTING PLAN

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

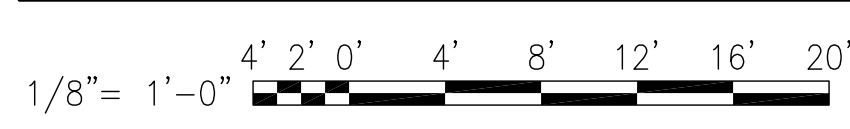
LIGHTING FIXTURE SCHEDULE

CONTRACT DRAWING FIXTURE MARK	PLATE	TYPE	LAMP				FIXTURE VOLTAGE	MOUNTING	REMARKS	FIXTURE DESCRIPTION
			TYPE	NO.	WATTS	TOTAL WATTS				
A	NL-4	3-LAMP	F32T8	3	32	90	120	RECESSED FLANGED	(5) (6)	PARABOLIC RECESSED 2X4 FLUORESCENT TROFFER
B	CE-11	2-LAMP	F32T8	2	32	60	120	WALL	(5) (6)	ROUGH SERVICE SURFACE FLUORESCENT FIXTURE
C	NL-24	TYPE C	F32T8	2	32	60	120	WALL	(4)	FLUORESCENT VANITY LIGHT
D	NL-57	50W HPS	HPS	1	50	70	120	WALL	(2) (3)	WALL-MOUNTED HALF SHIELDED CUTOFF FIXTURE
E	NL-63		LED	--	--	10	120	SURFACE		L.E.D. EXIT SIGN
F	NL-67	12W MR16 HALOGEN	MR16	2	24	25	120	CEILING		BATTERY PACK
G	NL-67	12W MR16 HALOGEN	MR16	2	24	25	120	WALL		BATTERY PACK

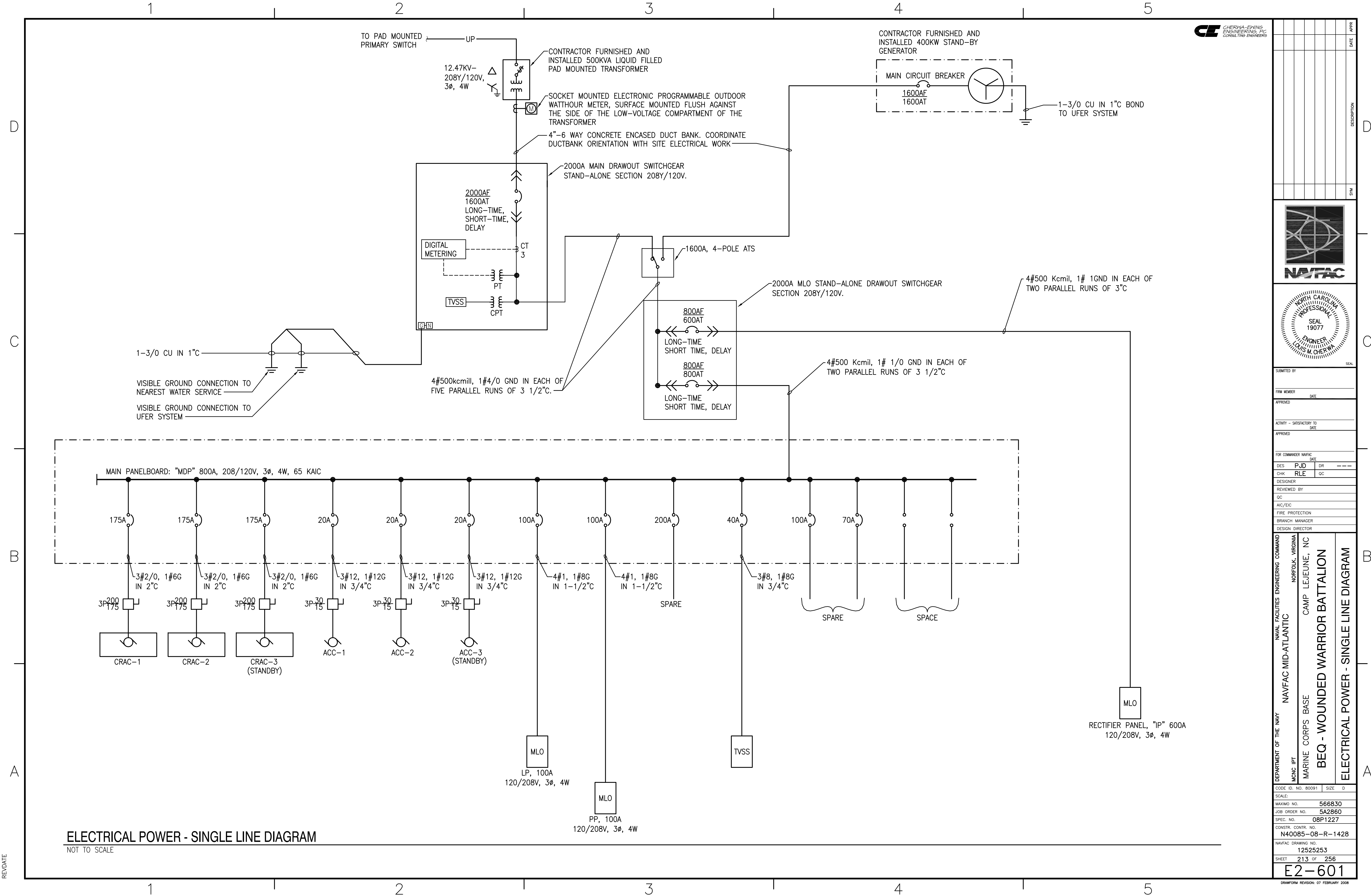
LIGHTING FIXTURE NOTES:

- (1) NOT USED.
- (2) MOUNT 14' ABOVE GRADE TO BOTTOM.
- (3) PROVIDE INTEGRAL PE SWITCH.
- (4) MOUNT 2" ABOVE MIRROR TO BOTTOM.
- (5) PROVIDE FLANGED KIT FOR HARD CEILINGS.
- (6) PROVIDE INDUCTIVE CAPACITOR CIRCUIT (RADIO INTERFERENCE FILTER) TO EACH BALLAST TO MINIMIZE FEEDBACK INTO LINE PER MIL-STD 461A.

GRAPHIC SCALE



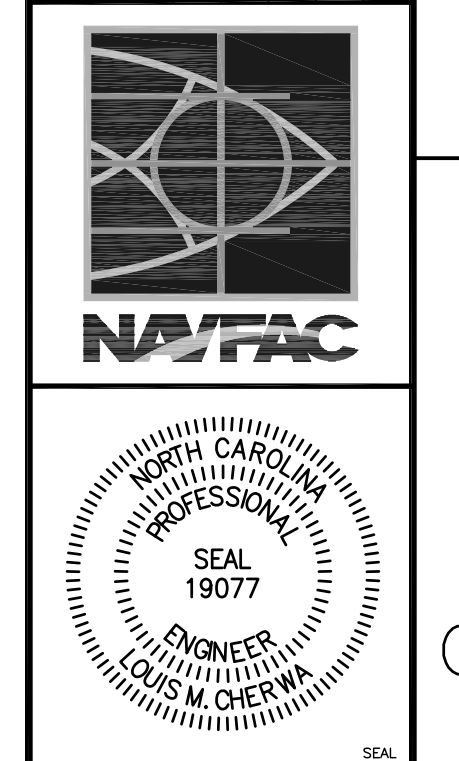
REVDATE



ELECTRICAL POWER - SINGLE LINE DIAGRAM
NOT TO SCALE



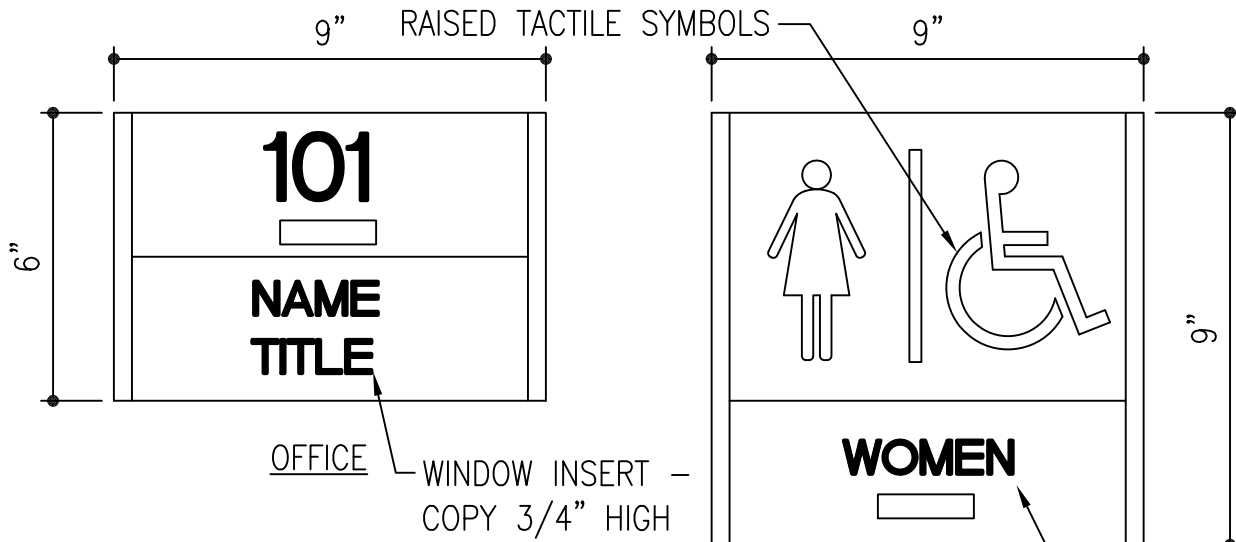
NO.	DATE	DESCRIPTION



SUBMITTED BY	DATE
FIRM MEMBER	DATE
APPROVED	DATE
ACTIVITY - SATISFACTORY TO	DATE
APPROVED	DATE
FOR COMMANDER NAVFAC	DATE
DES PJD	DR
CHK RLE	QC
DESIGNER	
REVIEWED BY	
QC	
AIC/EIC	
FIRE PROTECTION	
BRANCH MANAGER	
DESIGN DIRECTOR	

DEPARTMENT OF THE NAVY
NAVFAC MID-ATLANTIC
NAVFACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA
MARINE CORPS BASE
CAMP LEJUNE, NC
BEQ - WOUNDED WARRIOR BATTALION
ELECTRICAL POWER - SINGLE LINE DIAGRAM

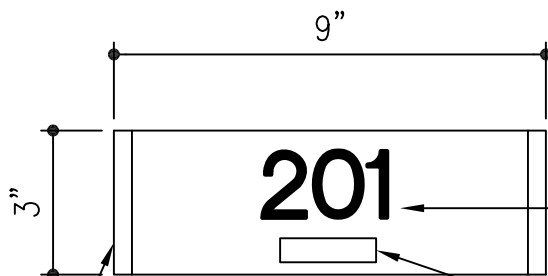
CODE ID. NO. 80091	SIZE D
SCALE:	
MAXIMO NO. 566830	
JOB ORDER NO. 5A2860	
SPEC. NO. 08P1227	
CONSTR. CONTR. NO. N40085-08-R-1428	
NAVFAC DRAWING NO. 12525253	
SHEET 213 OF 256	
E2-601	



OFFICE WINDOW INSERT -
COPY 3/4" HIGH

RESTROOMS

INSERT W/ RAISED TACTILE
COPY 3/4" HIGH



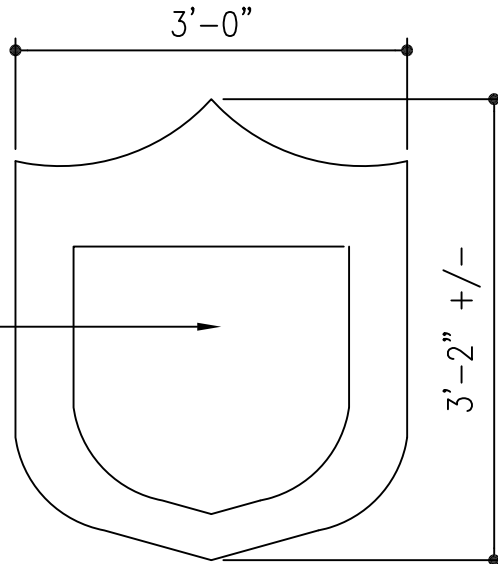
RAISED TACTILE LETTERS -
1 1/2" HIGH, TYP.

BRAILLE LOCATION, TYP.

TYPICAL ROOM

END CAP, TYP.

WOUNDED WARRIOR
BATTALION EAST LOGO



BUILDING ENTRY CANOPY

NOT TO SCALE

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
MCNC IPT NAVFAC MID-ATLANTIC NORFOLK, VIRGINIA

LANTDIV SKETCH NO. **SKA1-005** DATE: 10/03/08
THIS SKETCH REVISES IN PART NAVFAC DWG. NO. -

MARINE CORP BASE CAMP LEJEUNE, NC
BEQ-WOUNDED WARRIOR BATTALION

DESIGN: IMK REVIEW: CWR
DRAWN: JKK

SPEC. NO.
08P1227

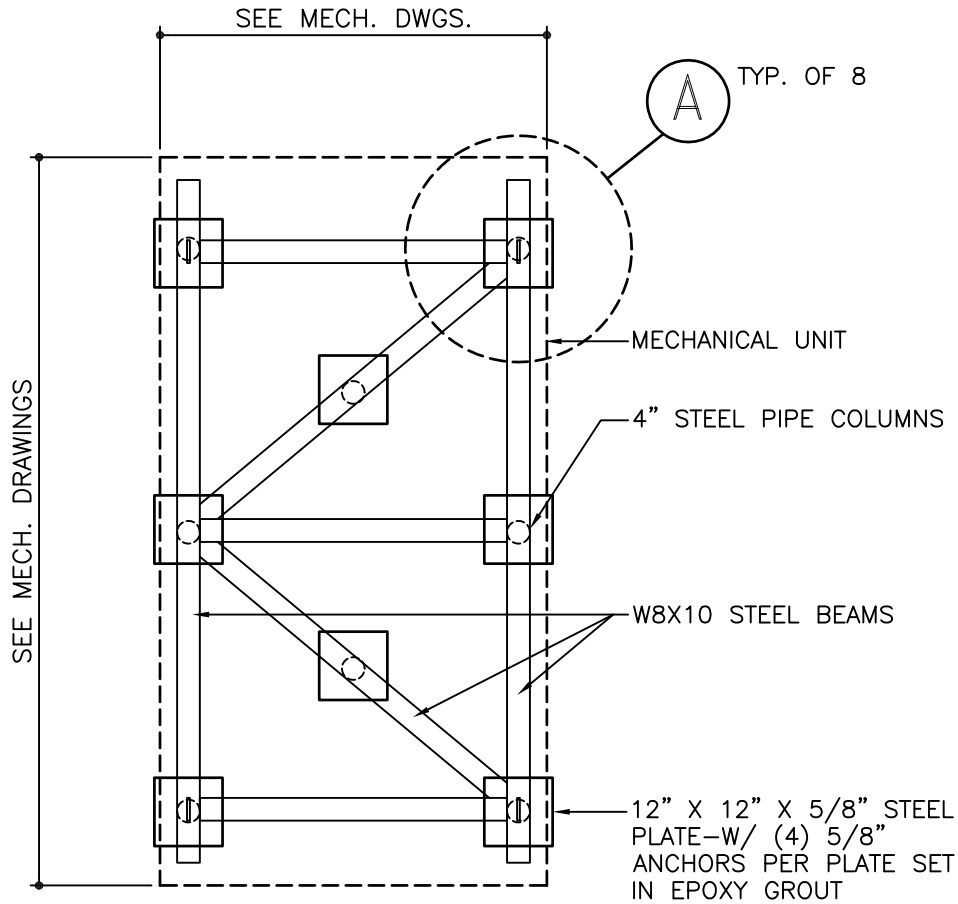


6160 Kempville Circle
Suite 316A
Norfolk, VA 23502

SIGNAGE DETAILS

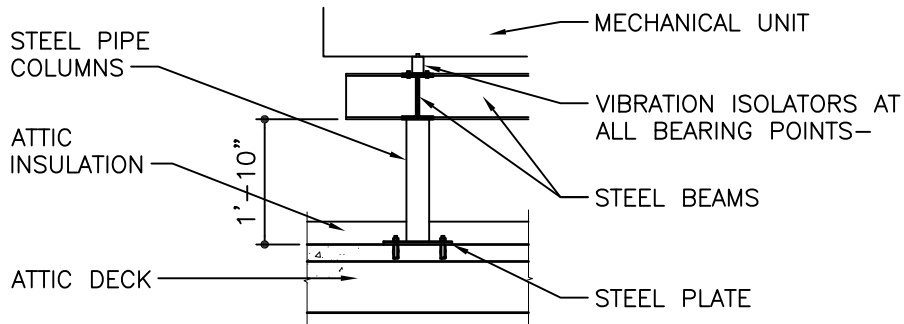
CONSTR. CONTR. NO.
N40085-08-R-1428

10/28/2008 10:27:56 AM, Kroskin Design Group, Letter, 1:1



HVAC EQUIPMENT MOUNTING PLAN

NOT TO SCALE



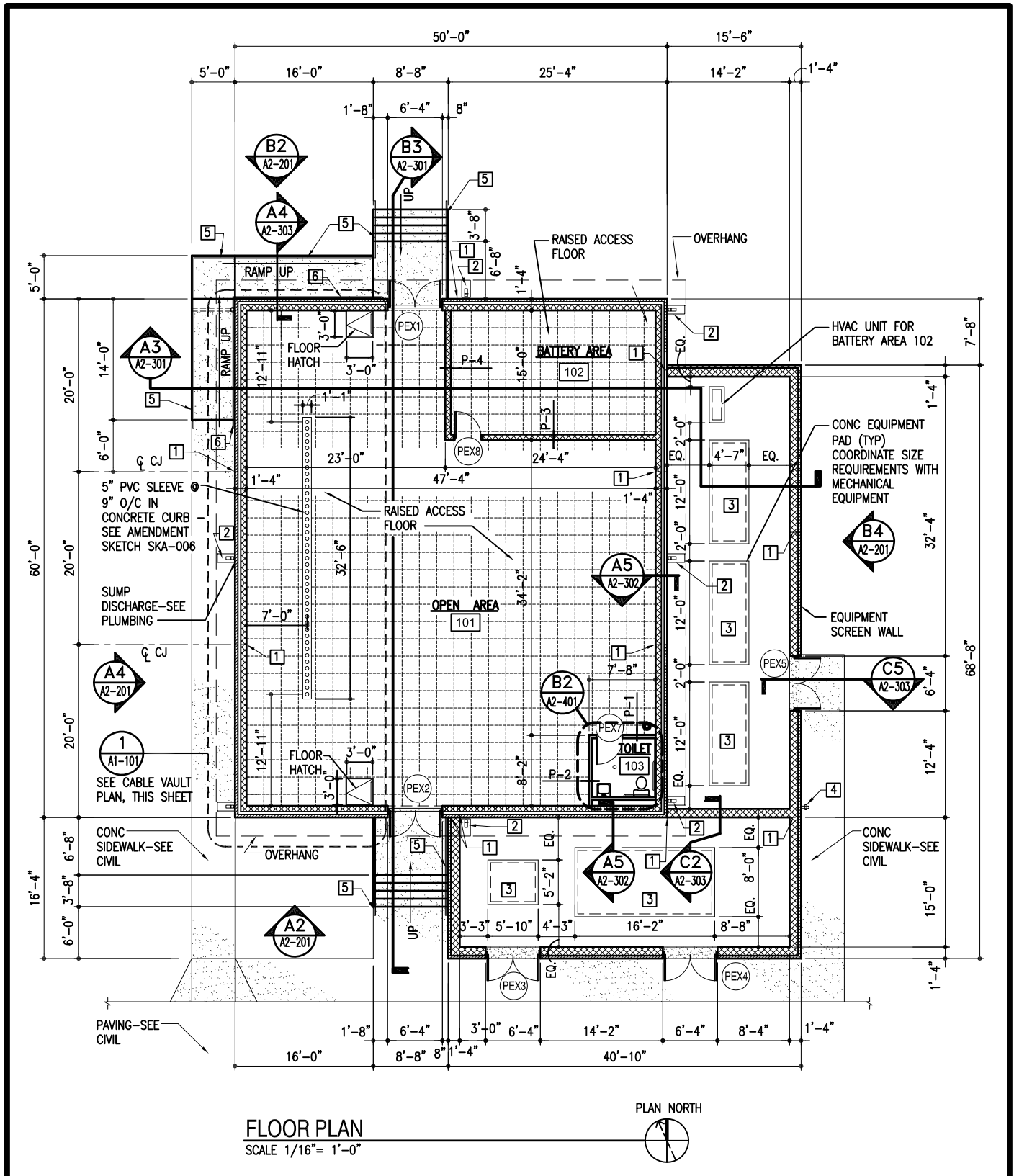
EQUIPMENT MOUNTING DETAIL

NOT TO SCALE

DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC MCNC IPT		NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA		LANTDIV SKETCH NO. SKA1-006 DATE: 10/03/08	
MARINE CORP BASE BEQ-WOUNDED WARRIOR BATTALION		CAMP LEJEUNE, NC		DESIGN: <u>IMK</u> DRAWN: <u>JKK</u>	REVIEW: <u>CWR</u>
HVAC MOUNTING DETAIL		SPEC. NO. 08P1227		CONSTR. CONTR. NO. N40085-08-R-1428	



10/28/2008 10:15:49 AM, Kroskin Design Group, Letter, 1:1



FLOOR PLAN
SCALE 1/16" = 1'-0"

PLAN NORTH

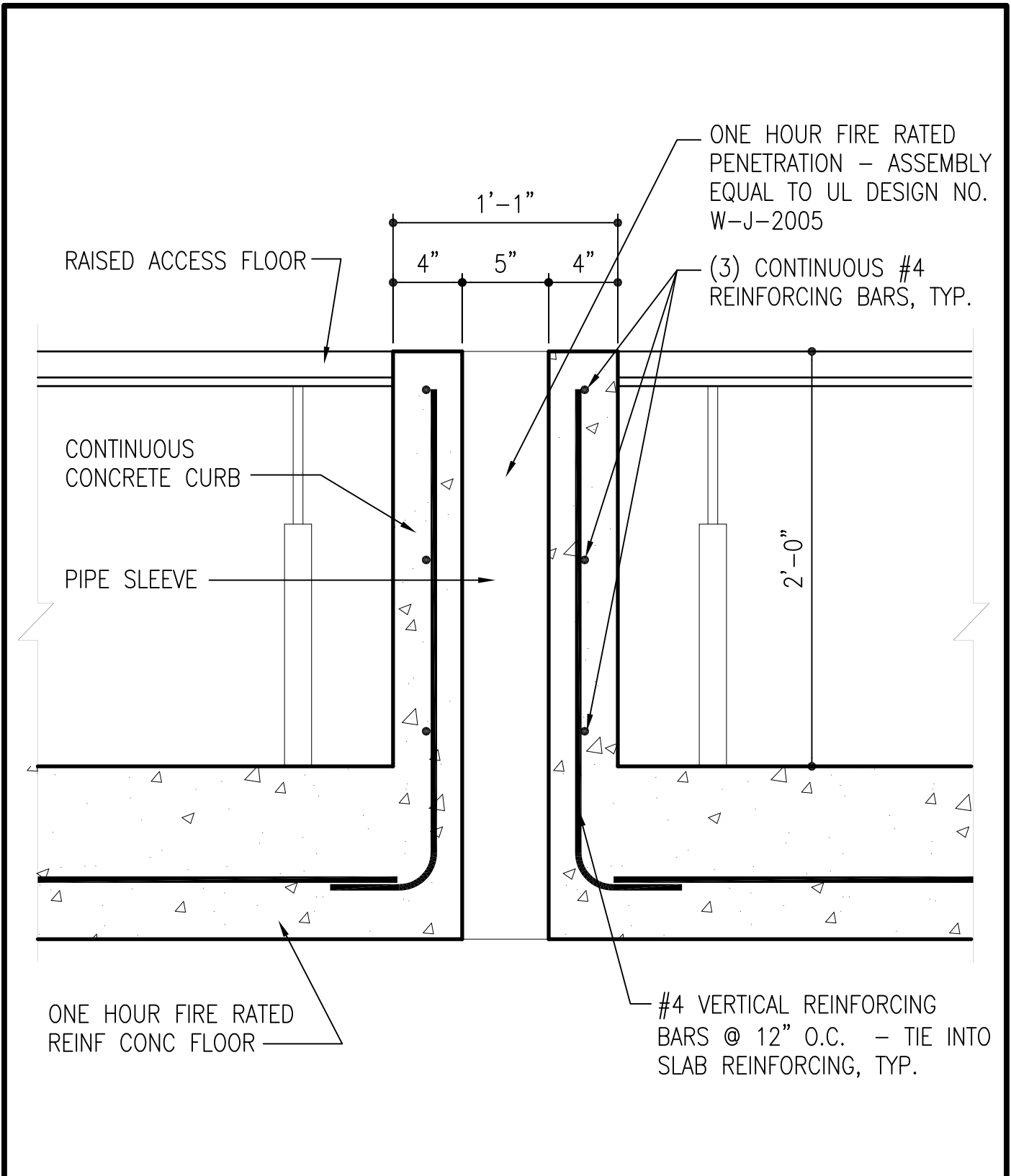


DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC MCNC IPT		NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA		LANTDIV SKETCH NO. SKA2-001 DATE: 10/03/08 THIS SKETCH REVISES IN PART NAVFAC DWG. NO. 12525228	
MARINE CORP BASE BEQ-WOUNDED WARRIOR BATTALION		CAMP LEJEUNE, NC		DESIGN: <u>IMK</u> DRAWN: <u>JKK</u> REVIEW: <u>CWR</u>	
REVISED FLOOR PLAN				SPEC. NO. 08P1227	
				CONSTR. CONTR. NO. N40085-08-R-1428	



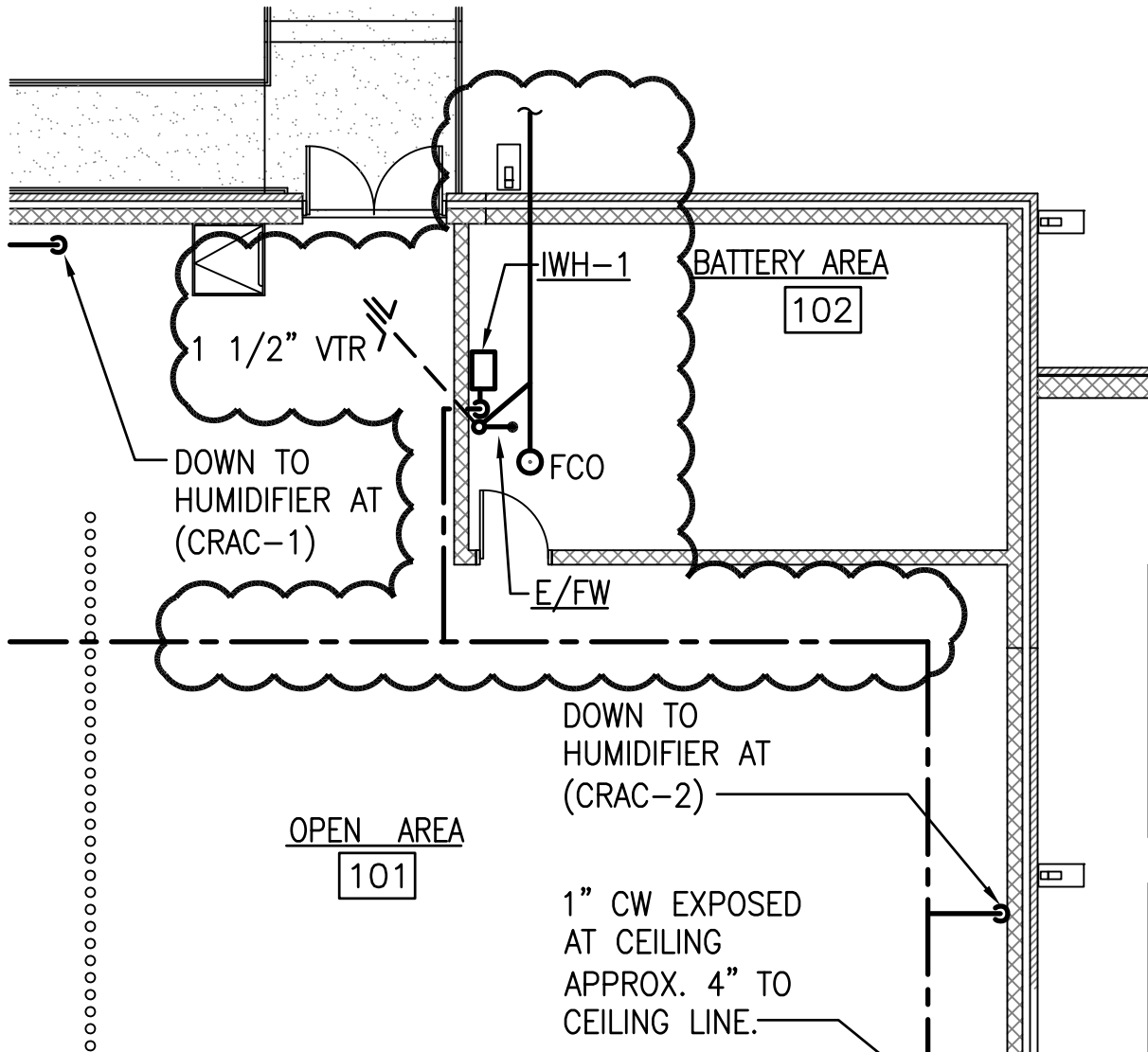
6160 Kempville Circle
Suite 316A
Norfolk, VA 23502

10/28/2008 11:45:15 AM, Kroskin Design Group, Letter, 1:1



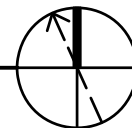
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NAVFAC MID-ATLANTIC MCNC IPT NORFOLK, VIRGINIA		LANTDIV SKETCH NO. SKA2-002 DATE: 10/03/08 THIS SKETCH REVISES IN PART NAVFAC DWG. NO. 12525221	
MARINE CORP BASE BEQ-WOUNDED WARRIOR BATTALION		CAMP LEJEUNE, NC DESIGN: <u>IMK</u> DRAWN: <u>JKK</u> REVIEW: <u>CWR</u>	
PIPE SLEEVE CURB DETAIL		SPEC. NO. 08P1227	
		CONSTR. CONTR. NO. N40085-08-R-1428	




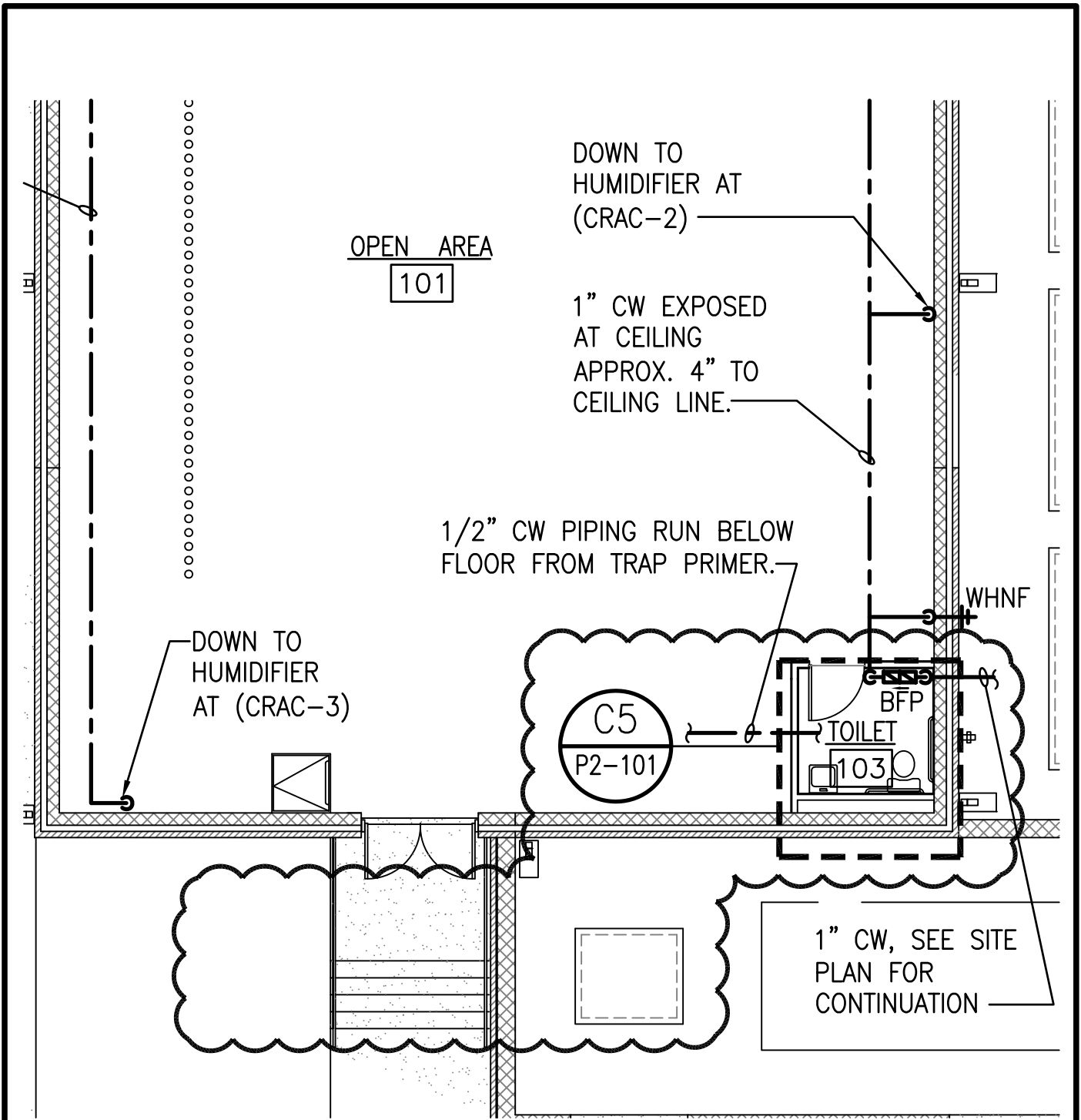


PLUMBING FLOOR PLAN

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



DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC MCNC IPT		NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA	LANTDIV SKETCH NO. SKP2-005 DATE: 10/28/08 THIS SKETCH REVISES IN PART NAVFAC DWG. NO. 12525241
MARINE CORP BASE BEQ-WOUNDED WARRIOR BATTALION		CAMP LEJEUNE, NC	DESIGN: <u>PJD</u> DRAWN: <u>GJA</u> REVIEW: <u>RLE</u>
PLUMBING FLOOR PLAN		SPEC. NO. 08P1227	
		CONSTR. CONTR. NO. N40085-08-R-1428	



PLUMBING FLOOR PLAN

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

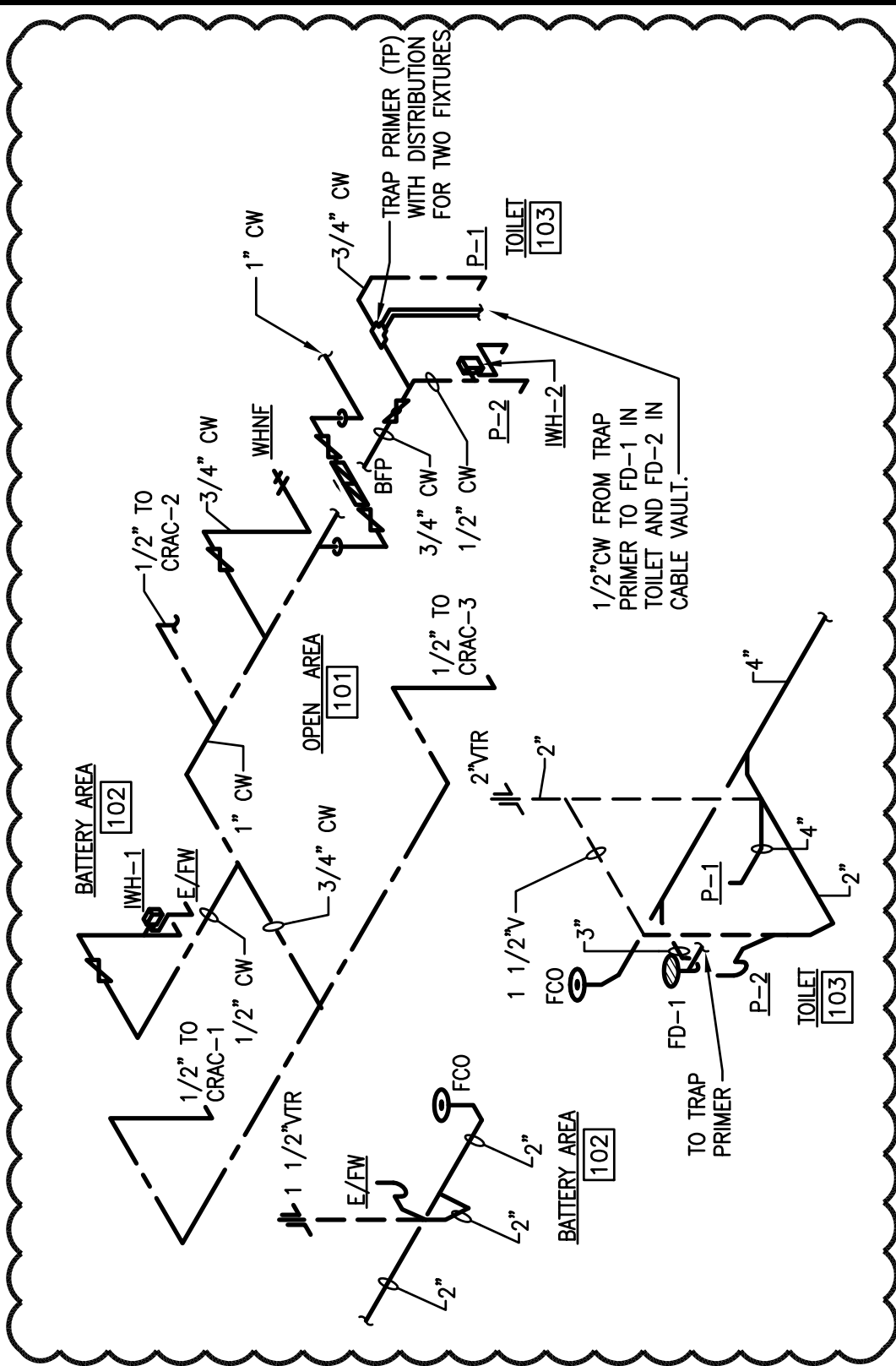



DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC MCNC IPT	NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA	LANTDIV SKETCH NO. SKP2-006 DATE: 10/28/08 THIS SKETCH REVISES IN PART NAVFAC DWG. NO. 12525241
MARINE CORP BASE BEQ-WOUNDED WARRIOR BATTALION	CAMP LEJEUNE, NC	DESIGN: <u>PJD</u> DRAWN: <u>GJA</u> REVIEW: <u>RLE</u> SPEC. NO. 08P1227
PLUMBING FLOOR PLAN		CONSTR. CONTR. NO. N40085-08-R-1428

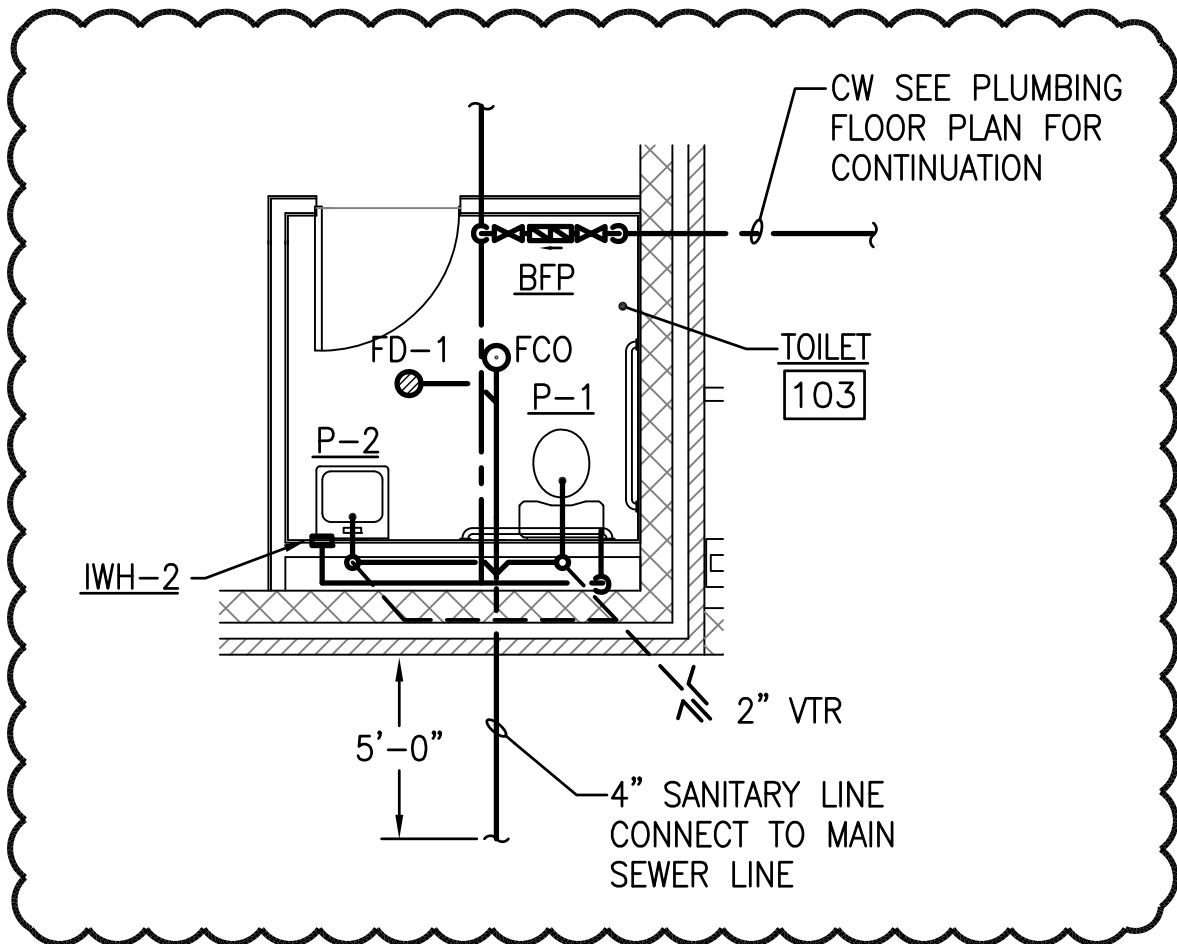


PLUMBING SANITARY WASTE, VENT & WATER RISER DIAGRAMS

NOT TO SCALE

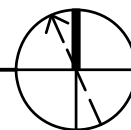


DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC MCNC IPT MARINE CORP BASE BEQ-WOUNDED WARRIOR BATTALION		NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA CAMP LEJEUNE, NC DESIGN: <u>PJD</u> DRAWN: <u>GJA</u> SPEC. NO. 08P1227		LANTDIV SKETCH NO. SKP2-007 DATE: 10/28/08 THIS SKETCH REVISES IN PART NAVFAC DWG. NO. 12525241 REVIEW: <u>RLE</u> CONSTR. CONTR. NO. N40085-08-R-1428	
PLUMBING FLOOR PLAN					



PLUMBING FLOOR PLAN

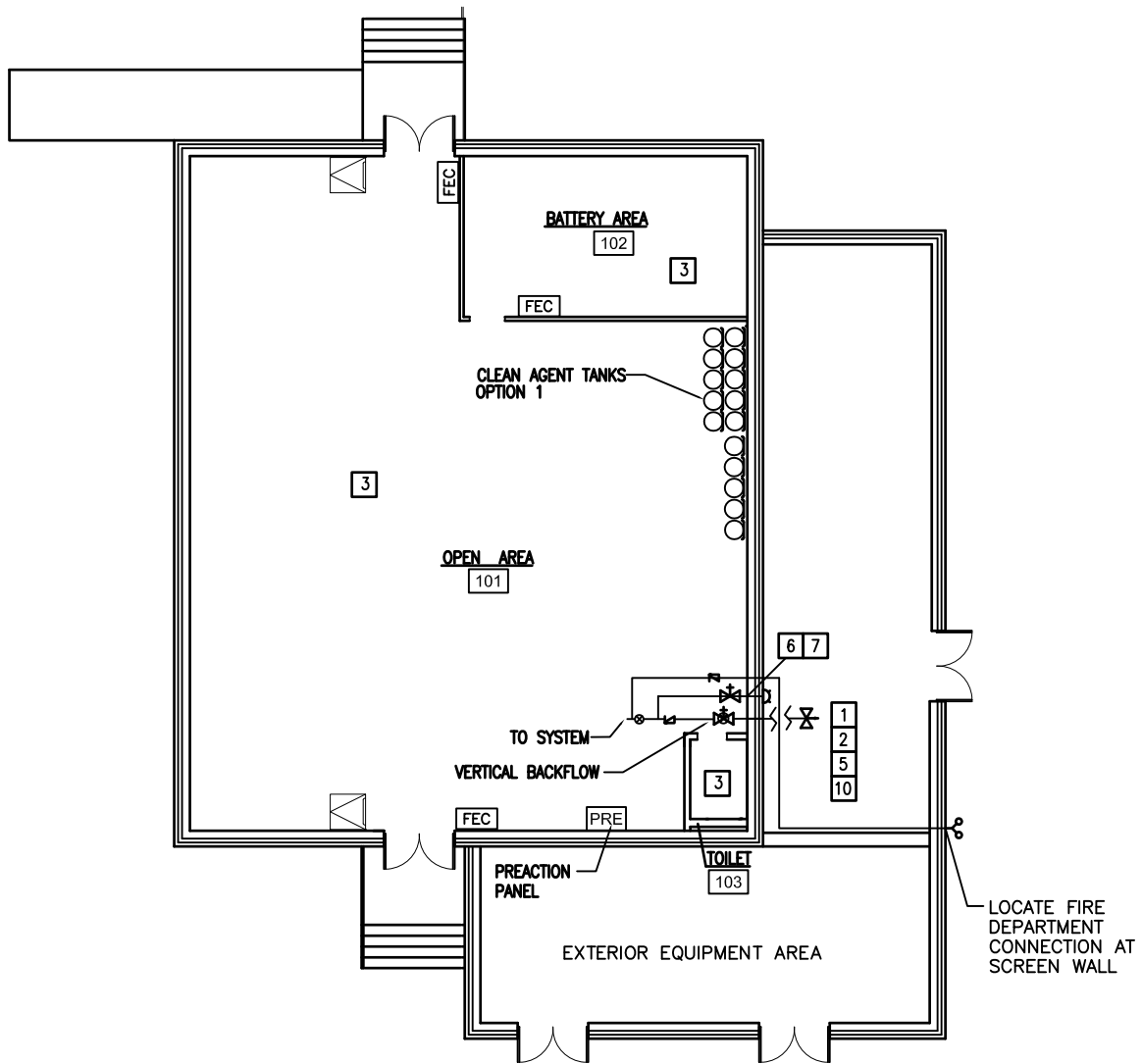
SCALE: 1/8" = 1'-0"



DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING COMMAND	LANTDIV SKETCH NO. SKP2-008 DATE: 10/28/08
MCNC IPT	NAVFAC MID-ATLANTIC	NORFOLK, VIRGINIA
MARINE CORP BASE	CAMP LEJEUNE, NC	DESIGN: <u>PJD</u> DRAWN: <u>GJA</u>
BEQ-WOUNDED WARRIOR BATTALION		REVIEW: <u>RLE</u>
PLUMBING FLOOR PLAN		SPEC. NO. 08P1227
		CONSTR. CONTR. NO. N40085-08-R-1428



10/28/2008 1:07:22 PM, Kroskin Design Group, Letter, 1:1

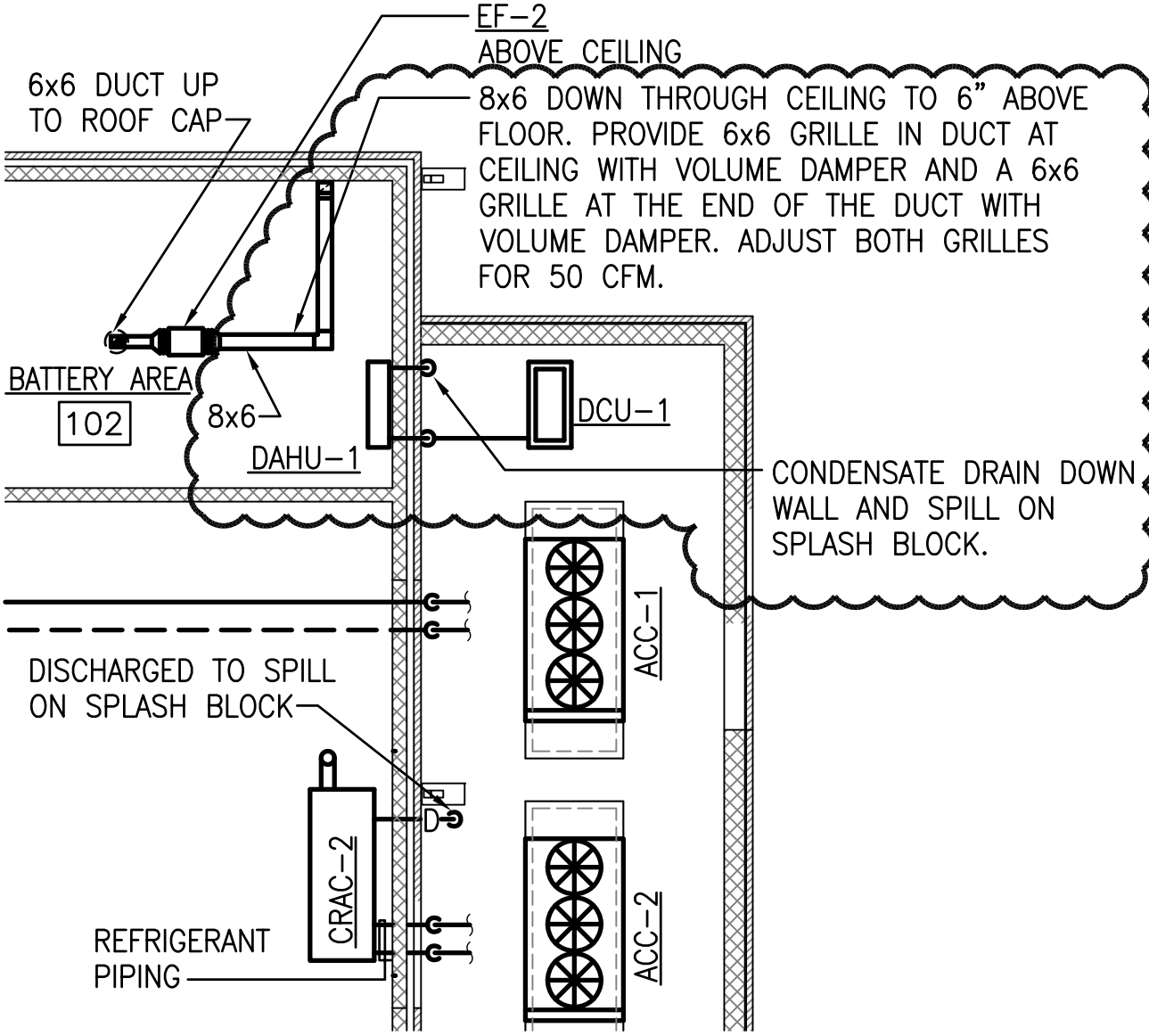


TELEPHONE EXCHANGE FLOOR PLAN
1/16"=1'-0"



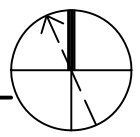
DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC MCNC IPT		NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA		LANTDIV SKETCH NO. SKFX2-001 DATE: 10/03/08 THIS SKETCH REVISES IN PART NAVFAC DWG. NO. 12525242	
MARINE CORP BASE BEQ-WOUNDED WARRIOR BATTALION		CAMP LEJEUNE, NC		DESIGN: <u>IMK</u> DRAWN: <u>JKK</u> REVIEW: <u>CWR</u>	
REVISED FLOOR PLAN		SPEC. NO. 08P1227		CONSTR. CONTR. NO. N40085-08-R-1428	



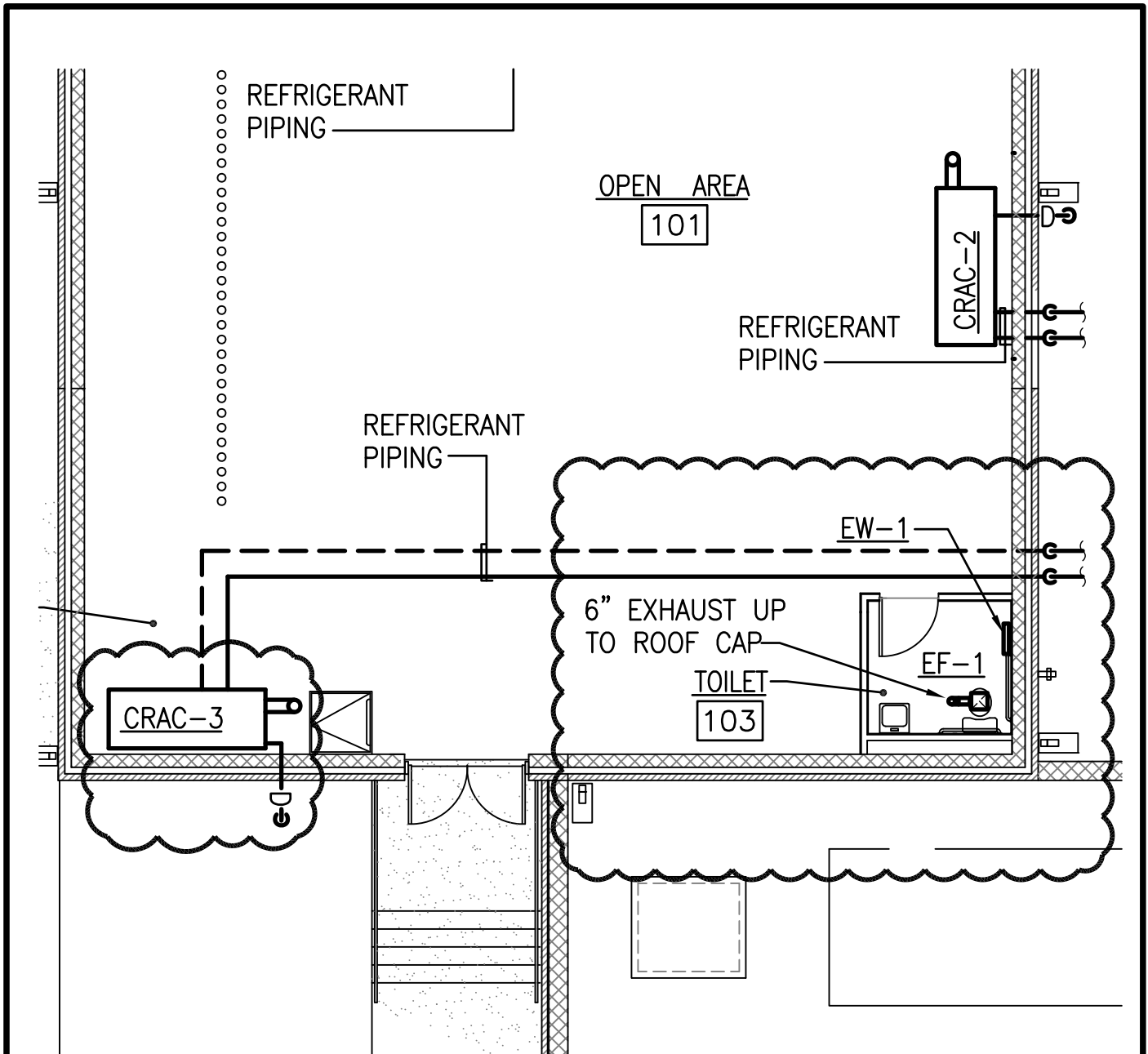


MECHANICAL FLOOR PLAN

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

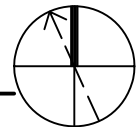


DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC MCNC IPT		NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA		LANTDIV SKETCH NO. SKM2-002 THIS SKETCH REVISES IN PART NAVFAC DWG. NO. 12525244		DATE: 10/28/08	
MARINE CORP BASE BEQ-WOUNDED WARRIOR BATTALION		CAMP LEJEUNE, NC		DESIGN: <u>PJD</u> DRAWN: <u>JLL</u>		REVIEW: <u>PJD</u>	
MECHANICAL FLOOR PLAN				SPEC. NO. 08P1227			
				CONSTR. CONTR. NO. N40085-08-R-1428			

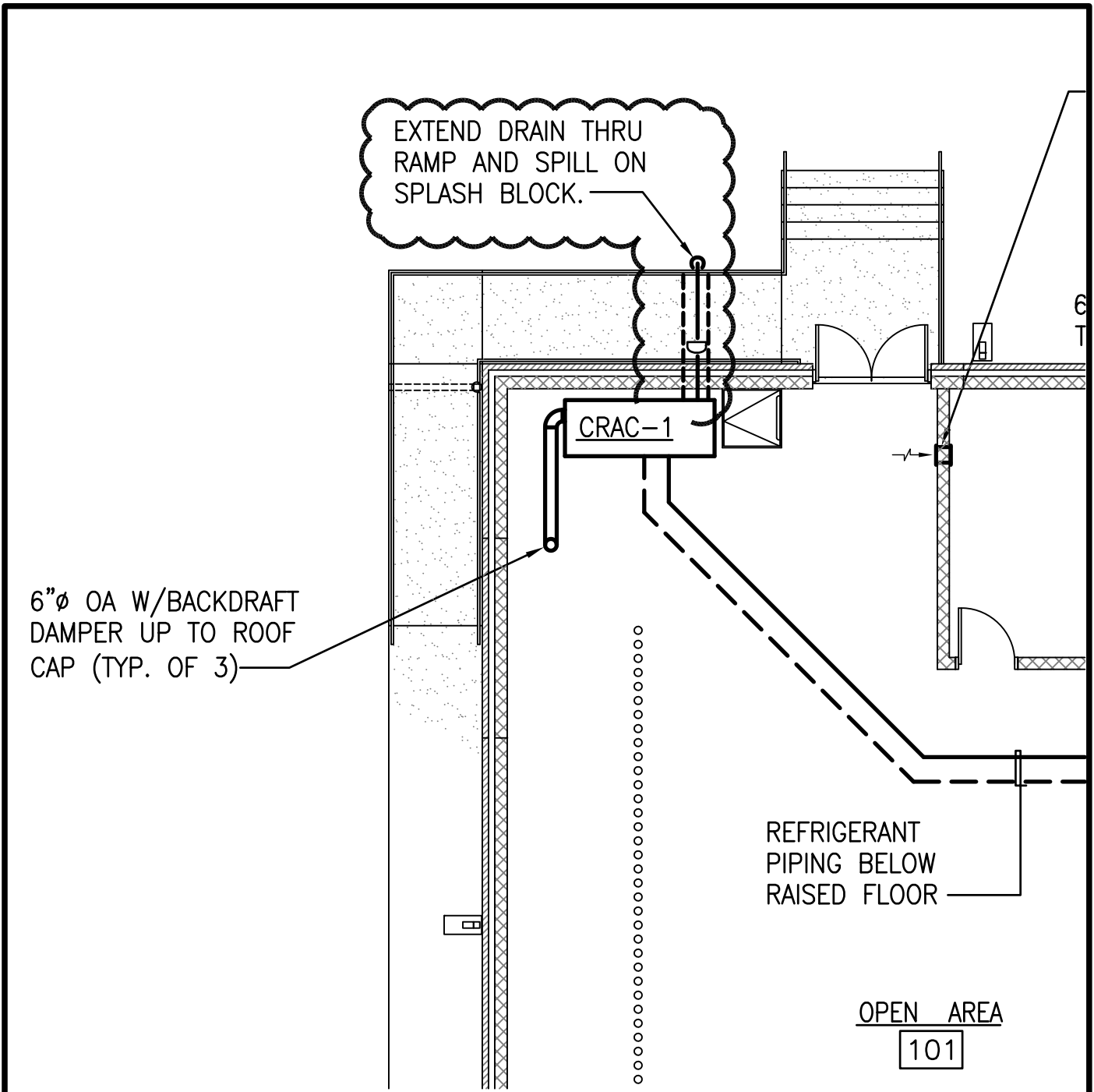


MECHANICAL FLOOR PLAN

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

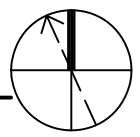


DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC MCNC IPT		NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA		LANTDIV SKETCH NO. SKM2-003 THIS SKETCH REVISES IN PART NAVFAC DWG. NO. 12525244		DATE: 10/28/08	
MARINE CORP BASE BEQ-WOUNDED WARRIOR BATTALION		CAMP LEJEUNE, NC		DESIGN: <u>PJD</u> DRAWN: <u>JLL</u>		REVIEW: <u>PJD</u>	
MECHANICAL FLOOR PLAN				SPEC. NO. 08P1227			
				CONSTR. CONTR. NO. N40085-08-R-1428			

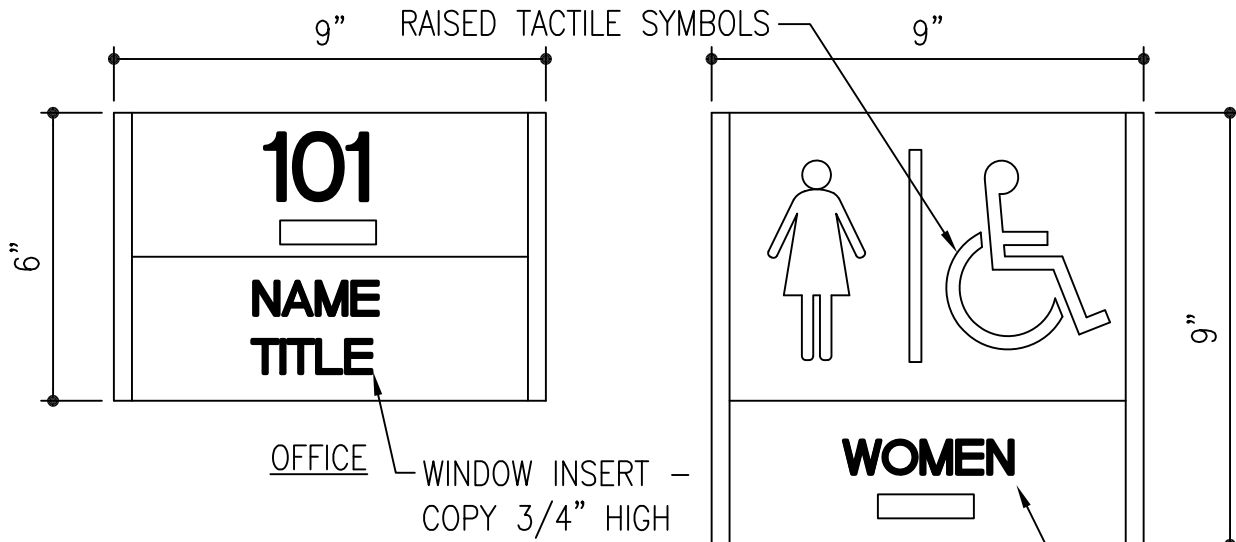


MECHANICAL FLOOR PLAN

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



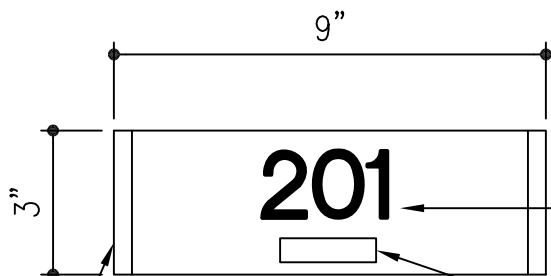
DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING COMMAND	LANTDIV SKETCH NO. SKM2-004	DATE: 10/28/08
MCNC IPT	NAVFAC MID-ATLANTIC	NORFOLK, VIRGINIA	THIS SKETCH REVISES IN PART NAVFAC DWG. NO. 12525244
MARINE CORP BASE	CAMP LEJEUNE, NC	DESIGN: <u>PJD</u>	REVIEW: <u>PJD</u>
BEQ-WOUNDED WARRIOR BATTALION		DRAWN: <u>JLL</u>	
MECHANICAL FLOOR PLAN		SPEC. NO. 08P1227	
		CONSTR. CONTR. NO. N40085-08-R-1428	



OFFICE WINDOW INSERT -
COPY 3/4" HIGH

RESTROOMS

INSERT W/ RAISED TACTILE
COPY 3/4" HIGH



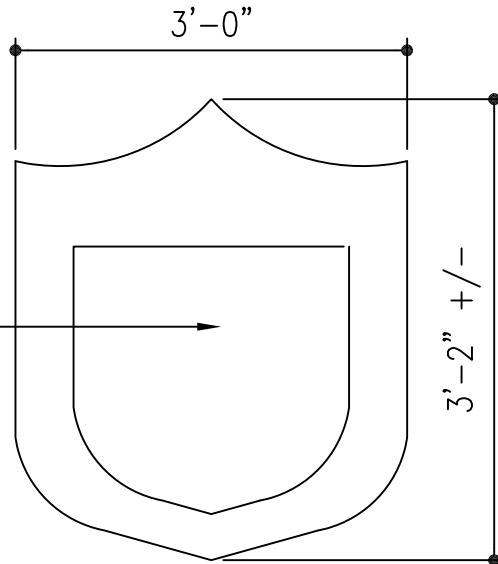
RAISED TACTILE LETTERS -
1 1/2" HIGH, TYP.

BRAILLE LOCATION, TYP.

TYPICAL ROOM

END CAP, TYP.

WOUNDED WARRIOR
BATTALION EAST LOGO



BUILDING ENTRY CANOPY

NOT TO SCALE

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
MCNC IPT NAVFAC MID-ATLANTIC NORFOLK, VIRGINIA

LANTDIV SKETCH NO. **SKA1-005** DATE: 10/03/08
THIS SKETCH REVISES IN PART NAVFAC DWG. NO. -

MARINE CORP BASE CAMP LEJEUNE, NC
BEQ-WOUNDED WARRIOR BATTALION

DESIGN: IMK REVIEW: CWR
DRAWN: JKK

SPEC. NO.
08P1227

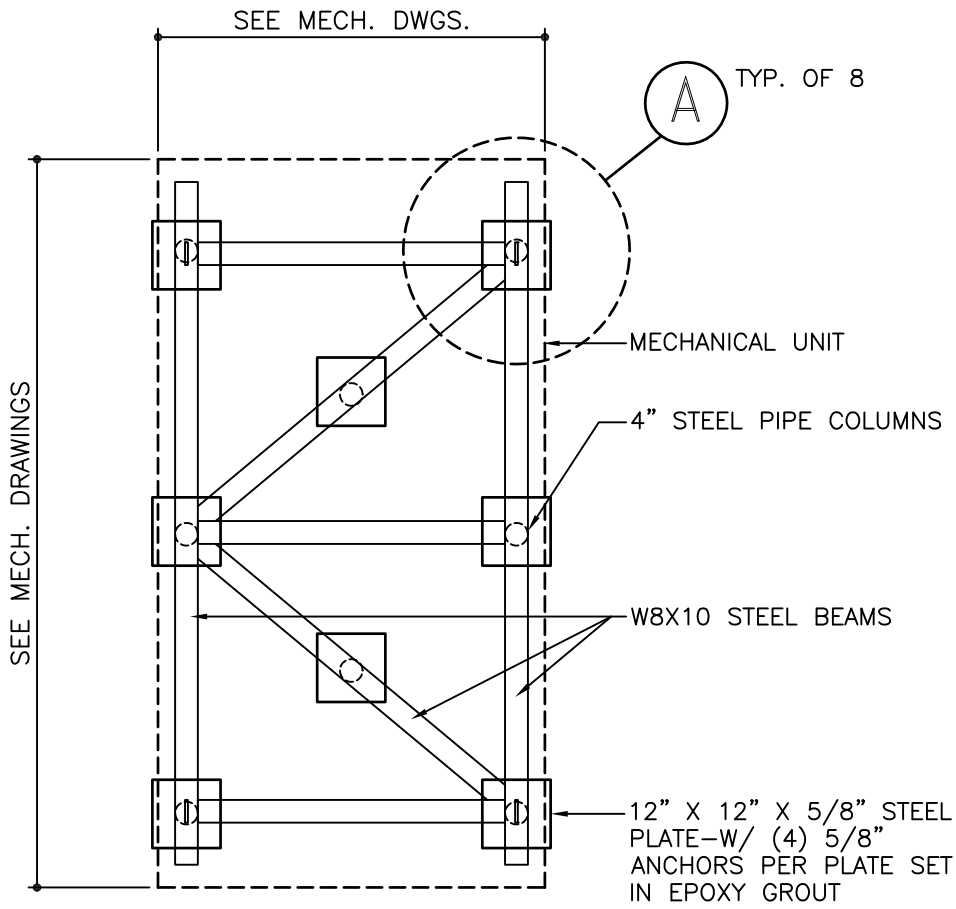


6160 Kempville Circle
Suite 316A
Norfolk, VA 23502

SIGNAGE DETAILS

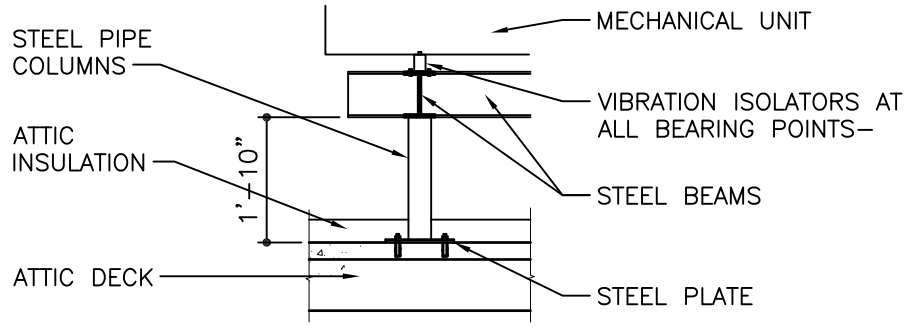
CONSTR. CONTR. NO.
N40085-08-R-1428

10/28/2008 10:27:56 AM, Kroskin Design Group, Letter, 1:1



HVAC EQUIPMENT MOUNTING PLAN

NOT TO SCALE



EQUIPMENT MOUNTING DETAIL

NOT TO SCALE

DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC MCNC IPT		NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA		LANTDIV SKETCH NO. SKA1-006 DATE: 10/03/08 THIS SKETCH REVISES IN PART NAVFAC DWG. NO. —	
MARINE CORP BASE BEQ-WOUNDED WARRIOR BATTALION		CAMP LEJEUNE, NC		DESIGN: <u>IMK</u> DRAWN: <u>JKK</u> REVIEW: <u>CWR</u>	
HVAC MOUNTING DETAIL		SPEC. NO. 08P1227		CONSTR. CONTR. NO. N40085-08-R-1428	



DUCTLESS AIR HANDLING UNIT SCHEDULE						
MARK	FAN DATA			ELECTRICAL DATA		REMARKS
	CFM	TOTAL SENSIBLE (MBH)	EAT (FDB/FWB)	VOLT/PH	AMPS	
DAHU-1	600	18.0	76/62	208/230/1	0.4	① ② ③ ④

- ① DAHU-1 IS MATCHED TO DCU-1.
- ② POWER FOR INDOOR UNIT IS SUPPLIED FROM OUTDOOR UNIT AT 208/230V, 9.5 MCA FOR BOTH UNITS.
- ③ PROVIDE WITH UNIT MOUNTED CONTROLS.
- ④ MOUNT UNIT ON WALL AT 60" AFF TO BOTTOM.

AIR COOLED CONDENSING UNIT SCHEDULE														
MARK	COOLING		HEATING			COMPRESSOR		CONDENSER FAN		ELECTRICAL		REMARKS		
	CAPACITY (MBH)	OUT. AIR TEMP (°F)	CAPACITY (MBH)	OUT. AIR TEMP (°F)	OUT. AIR TEMP (°F)	R.L. AMPS	L.R. AMPS	FLA	VOLTS	PHASE	HZ.		FUSE SIZE	MCA
DCU-1	16.6	95	26.0	47	16.0	17	6.6	42	0.85	208/230	1	60	15	9.5

- ① PROVIDE UNIT WITH LOW AMBIENT CONTROL, COMPRESSOR START ASSIST, CYCLE PROTECTOR, CRANK CASE HEATER, HARD-START-STRAIGHT COOL AND EVAPORATOR FREEZE THERMOSTAT.
- ② DCU IS MATCHED WITH DAHU-1.
- ③ POWER DELIVERED TO OUTDOOR UNIT INCLUDES INDOOR FAN POWER. INDOOR UNIT TO BE POWERED FROM OUTDOOR UNIT.

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVFAC MID-ATLANTIC
 MCNC IPT NORFOLK, VIRGINIA

LANTDIV SKETCH NO. **SKM2-005** DATE: 10/28/08
 THIS SKETCH REVISES IN PART NAVFAC DWG. NO. **12525245**

MARINE CORP BASE CAMP LEJEUNE, NC
BEQ-WOUNDED WARRIOR BATTALION

DESIGN: PJD REVIEW: RLE
 DRAWN: GJA

SPEC. NO.
08P1227



MECHANICAL SCHEDULES

CONSTR. CONTR. NO.
N40085-08-R-1428