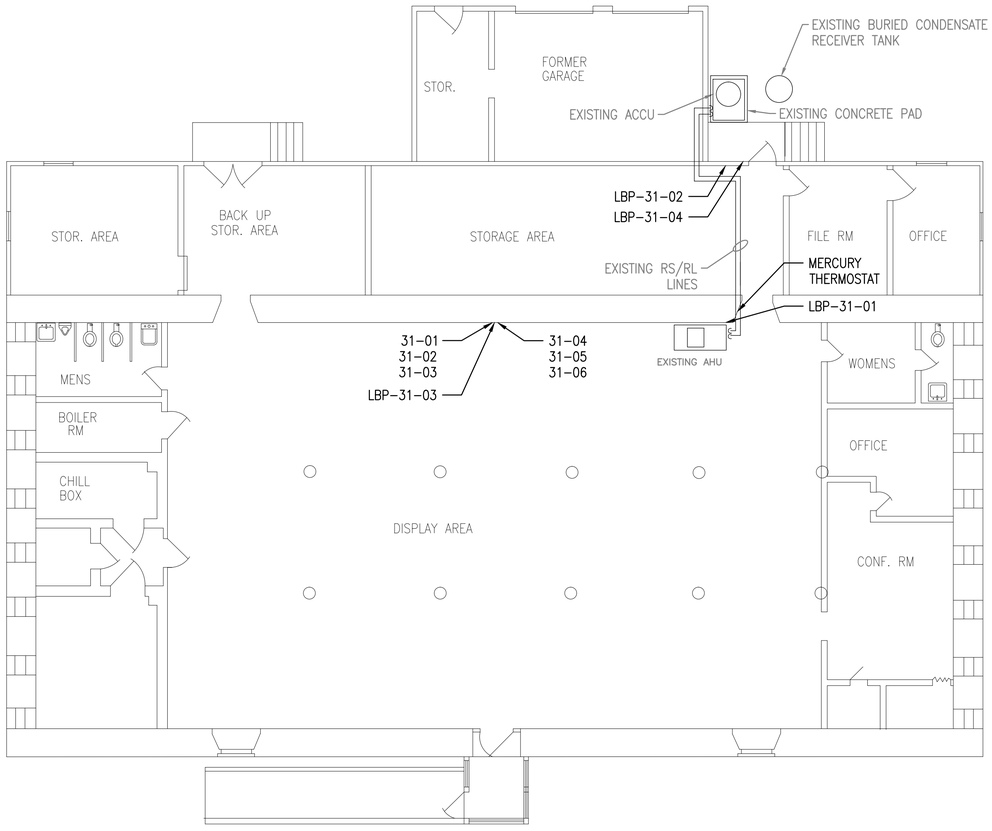


## B31 HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 1/8" = 1'

PLAN NORTH

## GENERAL SHEET NOTES

1. ALL PACM (PRESUMED ASBESTOS CONTAINING MATERIAL), LBP (LEAD BASED PAINT), PCB, AND OTHER HAZARDOUS BUILDING MATERIALS MAY NOT BE IDENTIFIED IN THIS SURVEY, PARTICULARLY THOSE HIDDEN IN WALLS, CEILINGS, FLOORS, ETC. AND IN AREAS DESCRIBED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, WHICH WERE INACCESSIBLE DURING THE SURVEY. ASSESSMENT EFFORTS DID INCLUDE, TO THE EXTENT FEASIBLE, ACCESS TO INTERIOR AND EXTERIOR OF THE STRUCTURE. HOWEVER, THE ABSENCE OF ALL PACM, LBP, PCB, AND OTHER HAZARDOUS BUILDING MATERIALS IN HIDDEN OR INACCESSIBLE PORTIONS CANNOT BE DEFINITIVELY ENSURED.

2. RENOVATION AND/OR DEMOLITION ACTIVITIES SHOULD BE MONITORED BY PERSONNEL CAPABLE OF IDENTIFYING PACM, LBP, PCB AND OTHER HAZARDOUS BUILDING MATERIALS. IF PACM, LBP, PCB OR OTHER HAZARDOUS BUILDING MATERIALS ARE ENCOUNTERED, THESE MATERIALS SHOULD BE BULK SAMPLED BY A LICENSED INSPECTOR AND DISPOSED OF IN ACCORDANCE WITH PNSY AND ALL OTHER APPLICABLE REGULATIONS.

3. SEE B31 ASBESTOS, LEAD, PCB, AND TCLP INVENTORY TABLES LOCATED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, DATED JUNE 22, 2015, FOR ADDITIONAL INFORMATION.

## HAZARDOUS MATERIAL SAMPLING SUMMARY

| SAMPLE ID | ACM | LBP |
|---|---|---|
| 31-01 | ND | NS |
| 31-02 | ND | NS |
| 31-03 | ND | NS |
| 31-04 | ND | NS |
| 31-05 | ND | NS |
| 31-06 | ND | NS |
| LBP-31-01 | NS | 0.053 |
| LBP-31-02 | NS | <RL |
| LBP-31-03 | NS | 0.22 |
| LBP-31-04 | NS | 8.6 |

ACM = ASBESTOS CONTAINING MATERIALS
LBP = LEAD BASED PAINT
<RL = LESS THAN REPORTING LIMIT
ND = NONE DETECTED
NS = NOT SAMPLED
H = EXCEEDS REGULATORY STANDARDS FOR HAZARDOUS CONCENTRATION

NOTE:
REFER TO HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT DATED JUNE 22, 2015 FOR COMPLETE SAMPLING INFORMATION AND DATA.

## GRAPHIC SCALE

1/8" = 1' scale 8 4 0 8 16 24 feet

CHECK GRAPHIC SCALE BEFORE USING

| NO. | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
| 1 | 90% SUBMISSION | 06/05/2015 | BLM |

NAVFAC

STATE OF MAINE
Bradlee Mezquita
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A/E INFO

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ACTIVITY
SATISFACTORY TO DATE

DES: A/E | DRW: REP | CHK: BLM
PM/DM: PETER STOCKLESS
BRANCH MANAGER: BRUCE LITALIEN
LEAD/PM&E: AMIN BAHROUR PM&E
FIRE PROTECTION: X

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PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH

KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

# B31 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703554
SHEET 101 OF 506
H1.0 | 31-15-47

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\AA\A1066 AEC Subconsulting Support\HazMats\DWG\A1066_2_H2MI_R22.dwg LAYOUT NAME: B31-H1.0 PLOTTED: Friday, August 07, 2015 - 2:35pm USER: REP

# HVAC ABBREVIATIONS

| | | | |
|---|---|---|---|
| °F | DEGREES FAHRENHEIT | ID | INSIDE DIAMETER |
| °C | DEGREES CELSIUS | IN | INCHES |
| ø | DIAMETER | INSUL | INSULATION |
| ACV | AUTOMATIC CONTROL VALVE | KW | KILOWATT |
| AD | ACCESS DOOR | KVA | KILOVOLT AMPERE |
| ADJ | ADJUSTABLE | L | LENGTH |
| ADDL | ADDITIONAL | LB | POUND |
| AFF | ABOVE FINISHED FLOOR | LF | LINEAR FEET |
| AFG | ABOVE FINISHED GRADE | LVG | LEAVING |
| ALT | ALTERNATE | M | ONE THOUSAND |
| AP | ACCESS PANEL | MAX | MAXIMUM |
| ARCH | ARCHITECT | MBH | THOUSAND BRITISH THERMAL UNITS PER HOUR |
| ATC | AUTOMATIC TEMPERATURE CONTROL | MCA | MINIMUM CIRCUIT AMPS |
| AS | AIR SEPARATOR | MCC | MOTOR CONTROL CENTER |
| AVG | AVERAGE | MECH | MECHANICAL |
| BAS | BUILDING AUTOMATION SYSTEM | MEZZ | MEZZANINE |
| BFF | BELOW FINISHED FLOOR | MFR | MANUFACTURER |
| BHP | BRAKE HORSEPOWER | MIN | MINIMUM |
| BLDG | BUILDING | MTD | MOUNTED |
| BLR | BOILER | MU | MAKEUP WATER |
| BOD | BOTTOM OF DUCT | N/A | NOT APPLICABLE |
| BOP | BOTTOM OF PIPE | NC | NORMALLY CLOSED |
| BSMY | BASEMENT | NC | NOISE CRITERIA |
| BTU | BRITISH THERMAL UNIT | NIC | NOT IN CONTRACT |
| BTUH | BRITISH THERMAL UNIT PER HOUR | NO | NORMALLY OPEN |
| C | CONVECTOR | NO. | NUMBER |
| CF | CEILING FAN | NOM | NOMINAL |
| CL | CENTERLINE | NTS | NOT TO SCALE |
| CLG | CEILING | OB | OCTAVE BAND |
| CO | CLEAN-OUT | OC | ON CENTER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COMP | COMPRESSOR | ODP | OPEN DRIP PROOF |
| CONC | CONCRETE | OFCI | OWNER FURNISHED CONTRACTOR INSTALLED |
| CONN | CONNECTION | OFOI | OWNER FURNISHED OWNER INSTALLED |
| CONTR | CONTRACTOR | OV | OUTLET VELOCITY |
| CORR | CORRIDOR | PCF | POUNDS PER CUBIC FOOT |
| CUF | CUBIC FEET | PD | PRESSURE DROP |
| CUH | CABINET UNIT HEATER | PH | PHASE |
| CYL | CYLINDER | PLMB | PLUMBING |
| D | DRAIN | POS | PROVIDED BY OTHER SECTION(S) |
| DB | DRY BULB TEMPERATURE | PRESS | PRESSURE |
| DDC | DIRECT DIGITAL CONTROL | PRIM | PRIMARY |
| DDCFP | DIRECT DIGITAL CONTROL FIELD PANEL | PSIA | POUNDS PER SQUARE INCH ABSOLUTE |
| DIA | DIAMETER | PSID | POUNDS PER SQUARE INCH DIFFERENTIAL |
| DIM | DIMENSION | PSIG | POUNDS PER SQUARE INCH GAUGE |
| DN | DOWN | PVC | POLYVINYL CHLORIDE |
| DWG | DRAWING | REP | REPRESENTATIVE |
| EA | EACH | RET | RETURN |
| EAT | ENTERING AIR TEMPERATURE | REQD | REQUIRED |
| EFF | EFFICIENCY | REQS | REQUIREMENTS |
| ECUH | ELECTRIC CABINET UNIT HEATER | RH | RELATIVE HUMIDITY |
| ELEC | ELECTRICAL | RM | ROOM |
| ELEV | ELEVATION | RPM | REVOLUTIONS PER MINUTE |
| EMER | EMERGENCY | SCH | SCHEDULE |
| ENT | ENTERING | SOV | SOLENOID OPERATED VALVE |
| EQUIP | EQUIPMENT | SPECS | SPECIFICATIONS |
| EXH | EXHAUST | SQ | SQUARE |
| EXP | EXPANSION | SQFT | SQUARE FEET |
| FTR | FINNED TUBE RADIATION | SS | STAINLESS STEEL |
| FCV | FLOW CONTROL VALVE | STD | STANDARD |
| FG | FIBERGLASS | STDBY | STANDBY |
| FLEX | FLEXIBLE | STL | STEEL |
| FLR | FLOOR | SUCT | SUCTION |
| FLRDR | FLOOR DRAIN | SUP | SUPPLY |
| FP | FIRE PROTECTION | TA | THROW-AWAY |
| FPM | FEET PER MINUTE | TAV | THERMOSTATIC AIR VENT |
| FT | FEET | TEFC | TOTALLY ENCLOSED FAN COOLED |
| FT/SEC | FEET PER SECOND | TEL | TELEPHONE |
| FURN | FURNISHED | TEMP | TEMPERATURE |
| FVNR | FULL VOLTAGE NON-REVERSING | TOD | TOP OF DUCT |
| GA | GAUGE | TOP | TOP OF PIPE |
| GAL | GALLONS | TYP | TYPICAL |
| GALV | GALVANIZED | UH | UNIT HEATER |
| GC | GENERAL CONTRACTOR | V | VENT |
| GND | GROUND | VEL | VELOCITY |
| GPH | GALLONS PER HOUR | VERT | VERTICAL |
| GPM | GALLONS PER MINUTE | VFD | VARIABLE FREQUENCY DRIVE |
| GRD | GRADE (GROUND LEVEL) | VTR | VENT THROUGH ROOF |
| GWB | GYPSUM WALL BOARD | W | WIDTH |
| H | HEIGHT | W/ | WITH |
| HD | HEAD | W/O | WITHOUT |
| HP | HORSEPOWER | WB | WET BULB TEMPERATURE |
| HR | HOUR | WF | WIDE FLANGE |
| HZ | HERTZ | WG | WATER GAUGE |
| | | WRT | WITH RESPECT TO |

# PIPING LEGEND

- RISE (SINGLE LINE - PLAN VIEW)
- DROP (SINGLE LINE - PLAN VIEW)
- TOP TAKEOFF
- BOTTOM TAKEOFF
- PIPE BREAK (SINGLE LINE)

# FLOW DIAGRAM & CONTROL DIAGRAM EQUIP. SYMBOLS

- FILTER BANK
- HEATING COIL
- COOLING COIL
- PARALLEL BLADE DAMPER W/ MODULATING ACTUATOR
- BACKDRAFT DAMPER
- CENTRIFUGAL FAN
- INLINE CENTRIFUGAL FAN
- OPPOSED BLADE DAMPER W/ TWO POSITION ACTUATOR
- OPPOSED BLADE DAMPER W/ MODULATING ACTUATOR
- PARALLEL BLADE DAMPER W/ TWO POSITION ACTUATOR

# HVAC SYSTEM TAGS

- AHU 1 — AIR HANDLING UNIT
- ACCU 1 — AIR COOLED CONDENSING UNIT
- J 1 — JACE BOX

# CALL OUT SYMBOLS

- THERMOSTAT
- CONNECT TO EXISTING
- REFER TO DRAWINGS ( ) FOR CONTINUATION
- SYMBOL DESIGNATES ASSOCIATED SYSTEM OR SERVICE (ie LPS)
- DIFFUSER, GRILLE, REGISTER LETTER DESIGNATION (See Schedule for ATD type)
- SA-2 / 200 — DESIGN CFM

# EQUIPMENT TAG SYMBOLS & ABBREVIATIONS

EQUIPMENT NOT REQUIRING ELECTRIC SERVICE → TAG NO / TAG DATA DATA → SEE SCHEDULE FOR PERFORMANCE REQUIREMENTS ← TAG NO / TAG DATA DATA ← EQUIPMENT REQUIRING ELECTRIC SERVICE

NOTE:REFER TO SCHEDULES FOR DEFINITION OF EQUIPMENT SPECIFIC DATA LISTED WITHIN TAG BLOCKS

# AIR SYSTEM SPECIFIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| AC | AIR CONDITIONING | LVDR | LOUVERED DOOR |
| ACD | AUTOMATIC CONTROL DAMPER | OA | OUTSIDE AIR |
| ACU | AIR CONDITIONING UNIT | OAI | OUTSIDE AIR INTAKE |
| AF | AIR FOIL | OBD | OPPOSED BLADE DAMPER |
| AHU | AIR HANDLING UNIT | OED | OPEN END DUCT |
| ALD | ACOUSTICALLY LINED DUCTWORK | RA | RETURN AIR |
| ATD | AIR TERMINAL DEVICE | RF | RETURN FAN |
| AVS | AIR VOLUME TRAVERSE STATION | RG | RETURN GRILLE |
| BDD | BACKDRAFT DAMPER | RHC | REHEAT COIL |
| BI | BACKWARD INCLINED | RLF | RELIEF |
| CC | COOLING COIL | RR | RETURN REGISTER |
| CD | CEILING DIFFUSER | RV | ROOF VENT |
| CFM | CUBIC FEET PER MINUTE | SA | SUPPLY AIR |
| CG | CEILING GRILLE | SATT | SOUND ATTENUATOR |
| DIFF | DIFFUSER | SCR | SCREEN |
| DWDI | DOUBLE WIDTH DOUBLE INLET | SD | SMOKE DAMPER |
| DWSI | DOUBLE WIDTH SINGLE INLET | SDET | SMOKE DETECTOR |
| DX | DIRECT EXPANSION | SEF | SMOKE EXHAUST FAN |
| EF | EXHAUST FAN | SF | SUPPLY FAN |
| EG | EXHAUST GRILLE | SFD | COMBINATION AUTOMATIC SMOKE/FIRE DAMPER |
| ESP | EXTERNAL STATIC PRESSURE | -- | WITH ACCESS DOOR |
| F | FAN | SG | SUPPLY GRILLE |
| FC | FORWARD CURVED | SM | SHEETMETAL |
| FA | FREE AREA | SP | STATIC PRESSURE |
| FCU | FAN COIL UNIT | SR | SUPPLY REGISTER |
| FD | FIRE DAMPER (W/ ACCESS DOOR) | SWDI | SINGLE WIDTH DOUBLE INLET |
| FLTR | FILTER | SWSI | SINGLE WIDTH SINGLE INLET |
| FPI | FINS PER INCH | TE | TOILET EXHAUST |
| FPT | FAN POWERED TERMINAL BOX | TF | TRANSFER FAN |
| GE | GENERAL EXHAUST | TG | TRANSFER GRILLE |
| GIH | GRAVITY INTAKE HOOD | TR | TRANSFER |
| GRH | GRAVITY RELIEF HOOD | TSP | TOTAL STATIC PRESSURE |
| HC | HEATING COIL | UC | UNDERCUT DOOR |
| LAT | LEAVING AIR TEMPERATURE | VD | VOLUME DAMPER |
| LD | LINEAR DIFFUSER | VV | VARIABLE VOLUME SUPPLY AIR TERMINAL BOX |
| LUVR | LOUVER | WMS | WIRE MESH SCREEN |

# HVAC GENERAL NOTES

1. GENERAL NOTES APPLY TO ALL HVAC DRAWINGS.
2. THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID, ARE DEEMED TO BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITIONS OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. ABSOLUTELY NO CLAIMS FOR EXTRA COMPENSATION WILL BE CONSIDERED FOR EXISTING CONDITIONS VISIBLE OR REASONABLY INFERABLE FROM A CAREFUL EXAMINATION OF THE EXISTING BUILDING.
3. THIS CONTRACTOR SHALL INSPECT THE EXISTING FIELD CONDITIONS AT THE SITE AND THE "AS-BUILT" BASE BUILDING CONTRACT DOCUMENTS PRIOR TO THE START OF ANY WORK TO DETERMINE WHAT EFFECT THE EXISTING CONDITIONS WILL HAVE ON HIS WORK. POTENTIAL PROBLEM AREAS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER IMMEDIATELY.
4. THIS CONTRACTOR SHALL CONNECT HIS WORK TO VARIOUS EXISTING PIPING, DUCTWORK, AND CONTROL SYSTEMS IN THE BASE BUILDING. THE NEW WORK SHALL BE COMPATIBLE WITH THE EXISTING SYSTEMS. LOCATION OF EQUIPMENT OR THE ROUTING OF THE VARIOUS SYSTEMS AS WELL AS OPENINGS IN FLOOR SLABS OR WALLS SHALL BE GOVERNED BY THE EXISTING CONDITIONS AS THEY APPEAR IN THE FIELD OR ON THE "AS-BUILT" DRAWINGS.
5. CARE SHALL BE TAKEN DURING THE INSTALLATION TO NOT DAMAGE OR INTERRUPT BUILDING SYSTEMS AND SERVICES THAT ARE ALREADY INSTALLED. DAMAGE TO SUCH SYSTEMS OR EQUIPMENT CAUSED BY THIS CONTRACTOR DURING INSTALLATION SHALL BE REPAIRED AND/OR REPLACED AT THIS CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE BUILDING OWNER.
6. SHUTDOWN OF EXISTING SYSTEMS FOR CONNECTION TO EXISTING SERVICES SHALL BE COORDINATED WITH THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR AND BUILDING OWNER. THIS CONTRACTOR SHALL SUBMIT REQUESTS, WHERE THEY AFFECT THE OPERATION OF THE BUILDING SYSTEMS, AT LEAST FIFTEEN DAYS IN ADVANCE OF ANY REQUIRED SHUTDOWN. THE ACTUAL SHUTDOWN PERIOD SHALL BE AS SHORT AS POSSIBLE AND AT A TIME MUTUALLY AGREEABLE TO THE BUILDING OWNER AND THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR.
7. DRAWINGS ARE DIAGRAMMATIC, THEREFORE DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS, AS WELL AS ROUTING PATHS, IN FIELD.
8. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER, AND SHOULD BE KEPT TO A MINIMUM FOR SYSTEM EFFICIENCIES.
9. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT AND/OR PIPE TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION. VERIFY ACCESS IS PROVIDED FOR SERVICING EQUIPMENT AS REQUIRED.
10. ALL MATERIALS AND EQUIPMENT UNLESS SPECIFICALLY INDICATED AS REUSED, SHALL BE NEW.
11. ACCESS PANELS SHALL BE PROVIDED TO ALLOW FOR CLEANING OF COILS AND SERVICING OF DAMPERS, HEATERS, VALVES, AND ALL CONCEALED MECHANICAL EQUIPMENT.
12. INSTALL NEW THERMOSTATS 4 FEET AFF OR AS DIRECTED OTHERWISE BY ENGINEER.
13. GENERAL CONTRACTOR TO PATCH ALL EFFECTED INTERIOR AND EXTERIOR EXISTING FLOOR, WALL, AND CEILING SURFACES TO MATCH EXISTING. PROVIDE ESCUTCHEON PLATES.
14. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
15. ANY AND ALL WALLS, CEILINGS AND FLOORS THAT ARE ANTICIPATED TO BE DISTURBED DURING THE DEMOLITION OR INSTALLATIONS PROCESS, AS INDICATED ON THE DRAWINGS, SHALL BE TESTED FOR HAZARDOUS MATERIALS PRIOR TO DISTURBING THE SURFACES. ROUTING OF PIPING HAS BEEN INDICATED TO DEPICT THE INTENT OF THE WORK. ACTUAL ROUTING MAY DIFFER IN THE FIELD DUE TO BUILDING CONSTRUCTION. COORDINATE TESTING OF ALL SURFACES TO BE DISTURBED, ALONG THE ACTUAL INSTALLATION ROUTE, WITH THE HAZARDOUS MATERIALS CONTRACTOR. REFER TO EXISTING HAZMAT REPORT FOR TESTING RESULTS.
16. MECHANICAL CONTRACTOR TO REMOVE ALL IDENTIFIED R-22 EQUIPMENT AND ASSOCIATED APPURTENANCES AND REPLACE IN KIND WITH A R410A OR R407C SYSTEM.
17. REFRIGERANT PIPING IS DIAGRAMMATIC, CONTRACTOR TO DETERMINE ROUTING IN FIELD AND RE-USE EXISTING PENETRATIONS. ANY EXPOSED PIPING TO BE CONCEALED IN A CHASE. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
18. SEE CIVIL DRAWINGS FOR DEMOLISHED AND NEW CONCRETE PADS.
19. THE MECHANICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE MECHANICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL ADDITIONAL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.
20. SEE PWD-ME DRAWING;
    43-15-67 FOR TITLE SHEET
    43-15-68 FOR LIST OF DRAWINGS
    43-15-69 FOR GENERAL NOTES & LEGENDS
    43-15-72 FOR CHASE AND SOFFIT DETAILS
    43-15-74 FOR STRUCTURAL NOTES AND SUPPORTS

# SCHEDULE OF DRAWINGS

| DWG# | DESCRIPTION |
|---|---|
| M1.0 | BUILDING 31 HVAC LEGEND |
| MD2.0 | BUILDING 31 HVAC FIRST FLOOR DEMOLITION PLAN |
| M2.0 | BUILDING 31 HVAC FIRST FLOOR PLAN |
| M3.0 | BUILDING 31 HVAC CONTROLS |
| M3.1 | BUILDING 31 HVAC CONTROLS |
| M3.2 | BUILDING 31 HVAC CONTROLS |
| M4.0 | BUILDING 31 HVAC SCHEDULES AND DETAILS |

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

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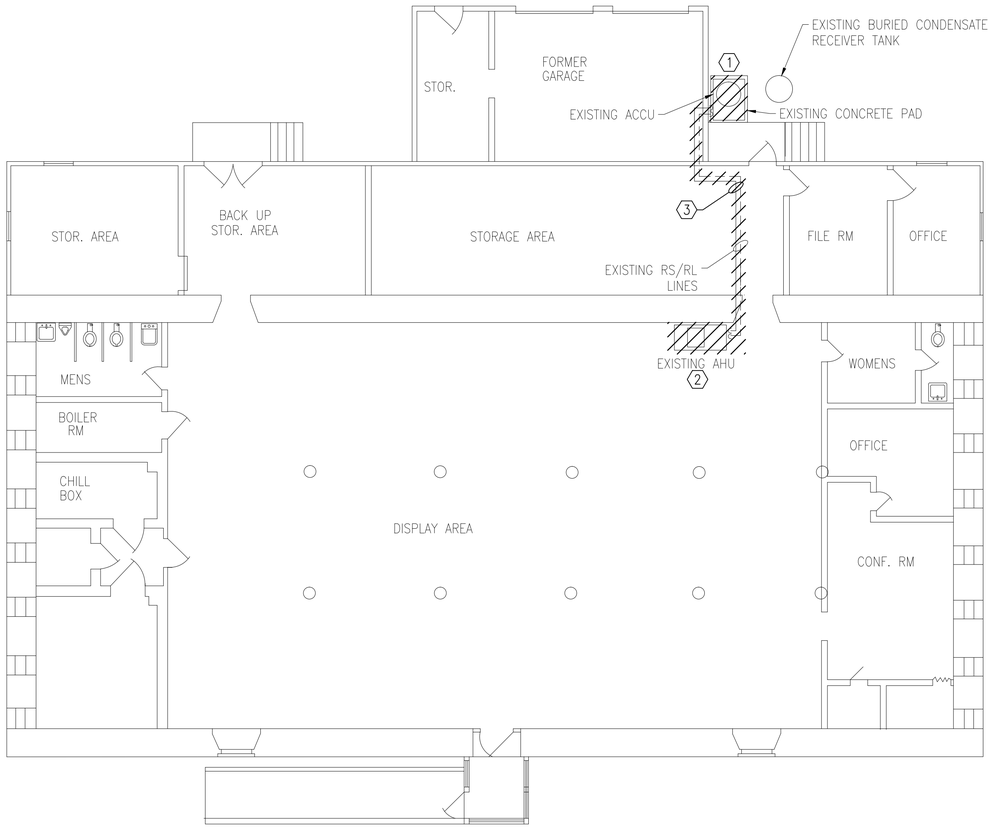
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 31 HVAC LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703555
SHEET 102 OF 506

M1.0 | 31-15-48

DRAWFORM REVISION: 10 OCTOBER 2014




PLAN NORTH

## BUILDING 31 HVAC FIRST FLOOR DEMOLITION PLAN

1/8"=1'-0"

## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES. .
2. CONTRACTOR RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL EQUIPMENT AND MATERIALS AT PERMITTED WASTE FACILITY.
3. CONTRACTOR TO COORDINATE R-22 DISPOSAL WITH PSNY ENVIRONMENTAL GROUP.

## DEMOLITION KEYNOTES

1. REMOVE EXISTING ACCU. EXISTING CONCRETE PAD TO REMAIN.
2. REMOVE EXISTING AHU AND ASSOCIATED THERMOSTAT. EXISTING CONDENSATE LINES, CONTROL WIRING, AND DUCTWORK TO REMAIN AND BE DISCONNECTED.
3. ACCESSIBLE EXISTING RS/RL LINES TO BE REMOVED. ANY REMAINING RS/RL CONCEALED TO BE EVACUATED, CAPPED AND ABANDONED IN PLACE.
4. CONTRACTOR RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL EQUIPMENT AND MATERIALS AT PERMITTED WASTE FACILITY.
5. CONTRACTOR TO COORDINATE R-22 DISPOSAL WITH PSNY ENVIRONMENTAL GROUP.

## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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DES: JC | DRW: SV | CHK: DM
PM/DM: PETER STOCKLESS
BRANCH MANAGER: BRUCE LITALIEN
LEAD/PM&E: AMIN BAHROUR PM&E
FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

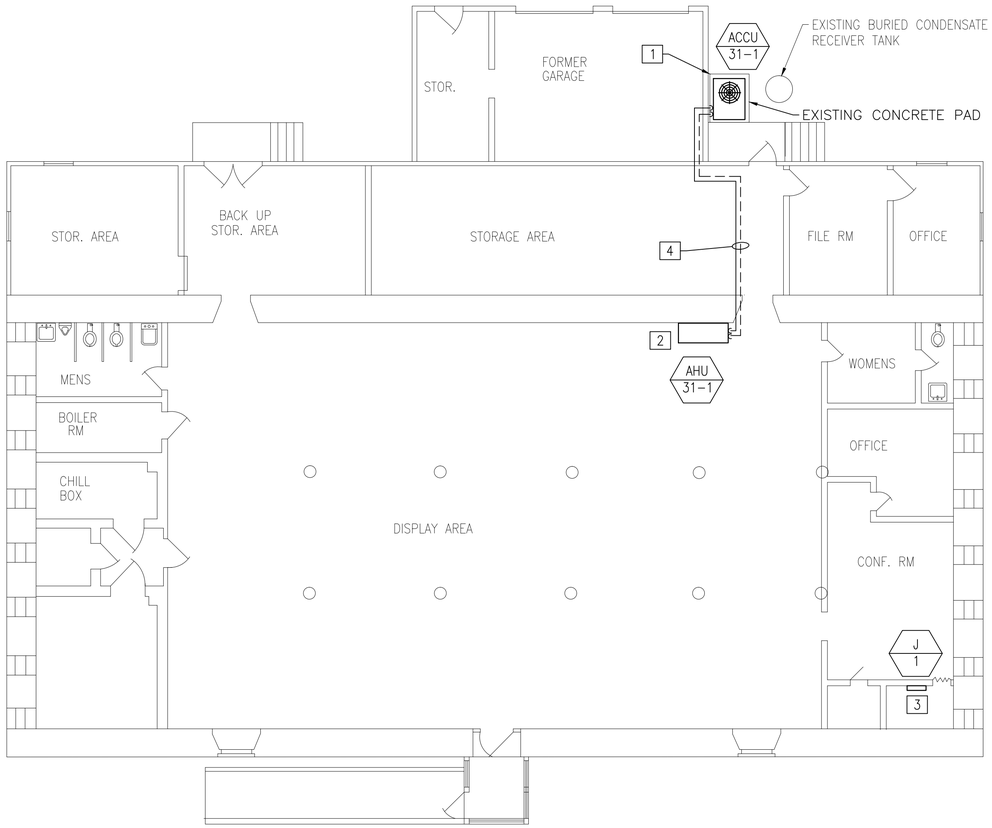
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH

FY 16 ENERGY PROJECT
TASK 1-B-R-22
KITTERY, MAINE

BUILDING 31 HVAC FIRST FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703556
SHEET 103 OF 506
MD2.0 | 31-15-49

DRAWFORM REVISION: 10 OCTOBER 2014




PLAN NORTH

## BUILDING 31 HVAC FIRST FLOOR PLAN

1/8"=1'-0"

# GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

# NEW WORK KEYNOTES

1. FURNISH AND INSTALL A NEW AIR COOLED CONDENSING UNIT AND IT'S ASSOCIATED RS/RL LINES. PLACE NEW ACCU ON EXISTING CONCRETE PAD.
2. FURNISH AND INSTALL NEW AHU AND RS/RL LINES. EXISTING CONDENSATE LINES, CONTROL WIRING, AND DUCTWORK TO BE RECONNECTED. PROVIDE WITH NEW DUCTWORK WHERE NECESSARY TO CONNECT TO NEW EQUIPMENT. PROVIDE WITH NEW DDC COMPATIBLE THERMOSTAT AND CONNECT TO EXISTING CONTROL WIRING, FIELD COORDINATE EXACT LOCATION WITH NAVFAC.
3. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF NEW DDC JACE BOX WITH NAVFAC.
4. SEE HVAC GENERAL NOTE 17 ON SHEET M1.0 FOR PIPING INFORMATION.

## GRAPHIC SCALE

1/8" = 1' scale 8 4 0 8 16 24 feet

CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE — DAVID H. MAHONEY No. 12370 — LICENSED PROFESSIONAL ENGINEER — SEAL

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CSI ENGINEERING — FIRE PROTECTION — 999 Bedford Street, Suite 206, Stamford, CT 06905, 781-213-2828, 23 Main Street, Suite 204, Holbrook, MA 02343, 617-924-1221

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: JC | DRW: SV | CHK: DM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

FEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 31 HVAC FIRST FLOOR PLAN

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703557

SHEET 104 OF 506

M2.0 | 31-15-50

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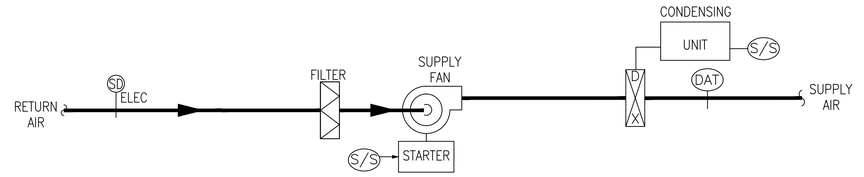



EQUIPMENT:

AHU–31–1
ACCU–31–1

GENERAL
1. THE EQUIPMENT IS STARTED AND STOPPED VIA DDC THERMOSTAT. COORDINATE OCCUPIED AND UNOCCUPIED SCHEDULES WITH OWNER.

OFF
1. SF DEENERGIZED
2. ACCU DEENERGIZED

UNOCCUPIED COOLING CONTROL

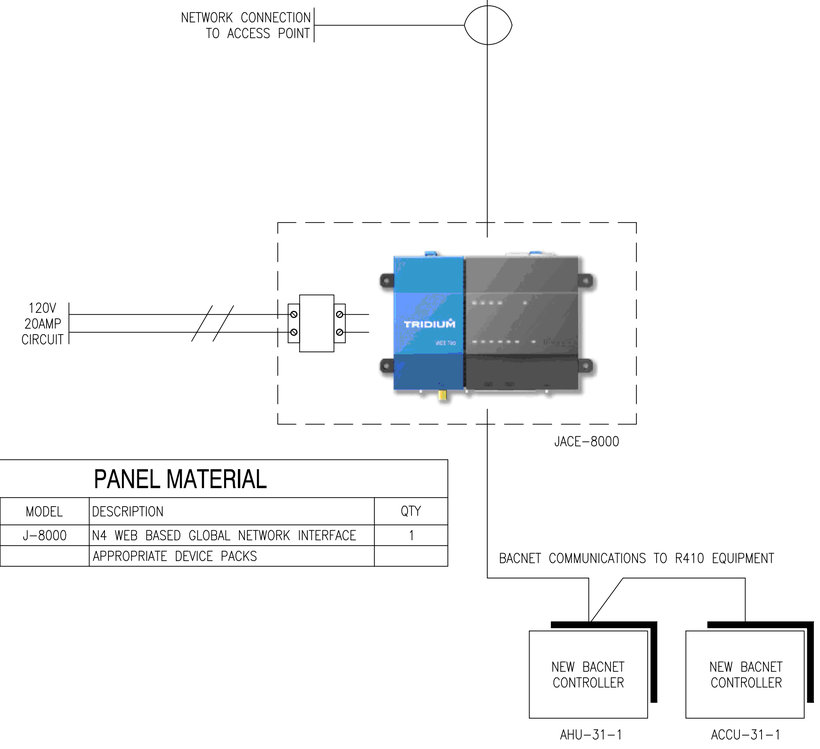
1. SF ENERGIZED
2. ACCU IS STAGED ON TO MAINTAIN THE SPACE TEMPERATURE SETPOINT OF 80°F(ADJ).
3. DISCHARGE AIR TEMPERATURE SENSOR DAT SHALL LIMIT SUPPLY AIR TO 53°F MINIMUM.

OCCUPIED COOLING CONTROL

1. SF ENERGIZED
2. ACCU IS STAGED ON TO MAINTAIN THE SPACE TEMPERATURE SETPOINT OF 75°F(ADJ).
3. DISCHARGE AIR TEMPERATURE SENSOR DAT SHALL LIMIT SUPPLY AIR TO 53°F MINIMUM.

## AIR HANDLER W/ DX COOLING SEQUENCE OF OPERATION

PORTSMOUTH NAVAL SHIPYARD ( BUILDING 31_GENERAL ADMINISTRATION )
NEW INTEGRATED DDC SYSTEM ARCHITECTURE




## PANEL MATERIAL

| ITEM NO | MODEL | DESCRIPTION | QTY |
|---|---|---|---|
| C1 | J–8000 | N4 WEB BASED GLOBAL NETWORK INTERFACE | 1 |
| | | APPROPRIATE DEVICE PACKS | |

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
SEAL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781.333.2828
23 WATERFALL AVE, STE 2201
BEDFORD, NH 03110
603.570.6924


APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: JC DRW: SV CHK: DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

LEAD/PM&E AMIN BAHROUR PM&E

EIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 31 HVAC CONTROLS

EPROJECT NO.: 1350913

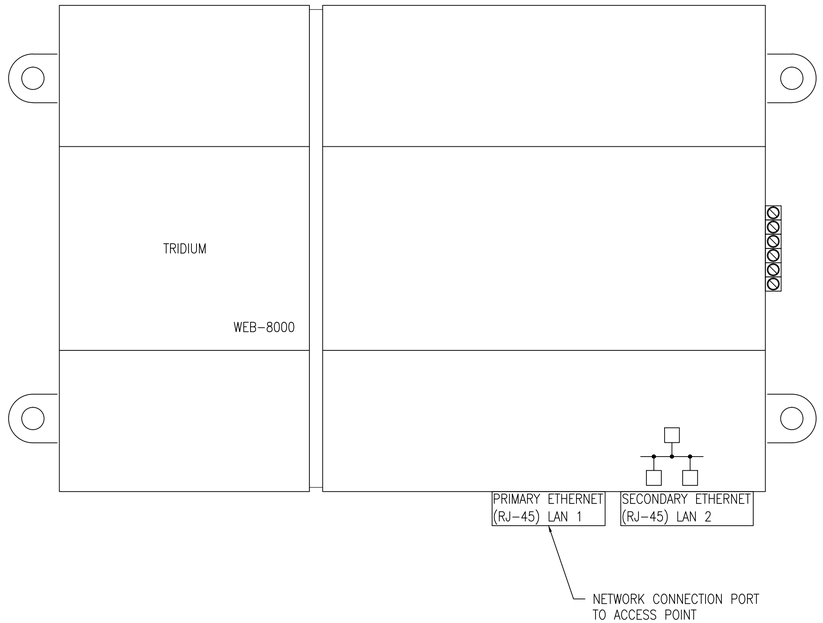
CONSTR. CONTR. NO.
N40085–XX–C–XXXX

NAVFAC DRAWING NO.
12703558

SHEET 105 OF 506

M3.0 31-15-51

DRAWFORM REVISION: 10 OCTOBER 2014




ETHERNET CONNECTION TO RF ACCESS POINT

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
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CSI ENGINEERING
FIRE PROTECTION
999 Bedford Street, 7th Floor
Stamford, CT 06905
TEL: 203-316-0505
215 Hamilton Ave, STE 204
Portsmouth, NH 03801
603-319-9244


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FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH

KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 31 HVAC CONTROLS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

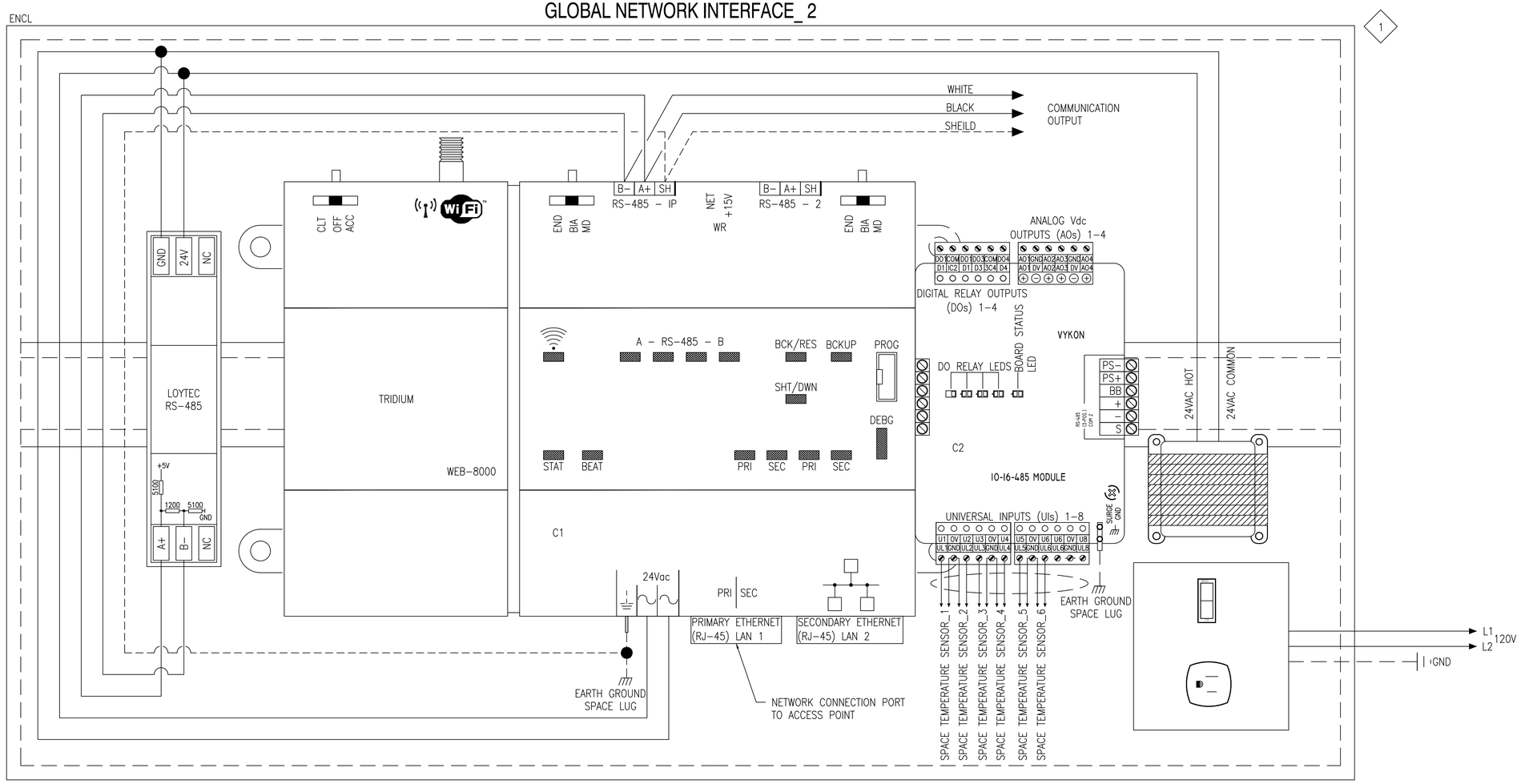
NAVFAC DRAWING NO. 12703559

SHEET 106 OF 506

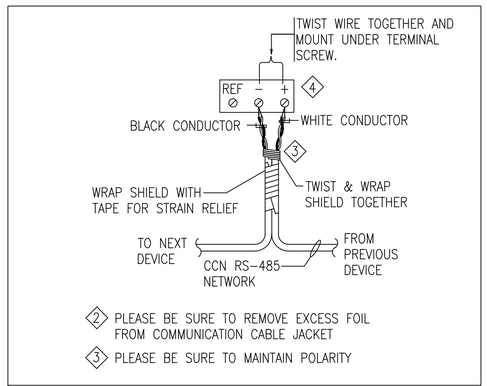
M3.1 | 31-15-52

DRAWFORM REVISION: 10 OCTOBER 2014

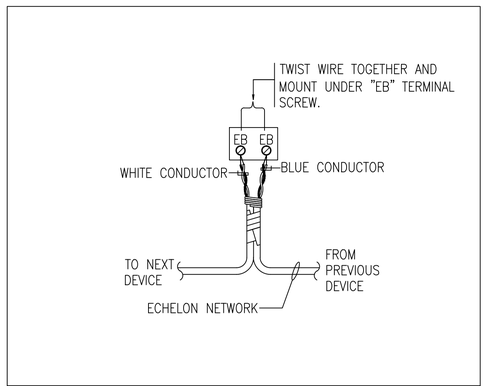
# GLOBAL NETWORK INTERFACE_ 2




1 LOCATION OF CONTROLLER TO BE FIELD VERIFIED




RS-485 BACNET MS/TP CONNECTION DETAIL




E-BUS CONNECTION DETAIL

## PANEL MATERIAL

| ITEM NO | MODEL | DESCRIPTION | QTY |
|---|---|---|---|
| C1 | J–8000 | N4 WEB BASED GLOBAL NETWORK INTERFACE | 1 |
| C2 | IO–16–485 | REMOTE I/O MODULE | 1 |
| ENCL | ENC–001 | 12"x18"x4" ENCLOSURE W/ 24V TRANSFORMER | 1 |
| EOL1 | 209541B | END OF LINE RESISTOR | 1 |
| LT1 | LT–B4 | RS–485 NETWORK TERMINATOR | 1 |

| NO | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

STM

NAVFAC

DAVID M. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE SEAL

CSI

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES JC DRW SV CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 31 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085–XX–C–XXXX
NAVFAC DRAWING NO.: 12703560
SHEET 107 OF 506
M3.2 31-15-53

DRAWFORM REVISION: 10 OCTOBER 2014

# AIR HANDLING UNIT SCHEDULE

| TAG | SERVICE | LOCATION | CFM | FAN DATA | | | | DX COOLING COIL | | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MOTOR | | | | CAPACITY (MBH) | | REFRIGERANT TYPE | AIR DATA | | | | DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD) | |
| | | | | | | | | | | | EAT (°F) | | LAT (°F) | | | |
| | | | | RPM | HP | V | PH | TOTAL | SENS. | | DB | WB | DB | WB | | |
| AHU-31-1 | BLDG 31 | DISPLAY AREA | 4000 | 1725 | 2 | 208 | 3 | 120.5 | 95.46 | R-410A | 80 | 67 | 59 | 57.9 | TRANE TWE120D3 | SEE NOTES |

NOTES: 1. PROVIDE W/ BACNET INTERFACE. 2. CONTRACTOR TO VERIFY SMOKE DETECTOR IN RETURN AIR. 3. PROVIDE MOUNTING HARDWARE AS REQUIRED. 4. PROVIDE W/ BELT DRIVE MOTORS. 5. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPTMENT.

# AIR COOLED CONDENSING UNIT SCHEDULE

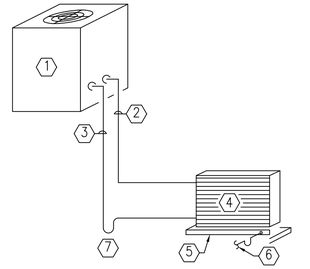
| TAG | SERVES | DESIGN BASED ON MANUFACTURER | DESIGN BASED ON MODEL No. | COOLING DATA | ELECTRIC DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | COOLING (MBH) | VOLTS | HZ | PHASE | FLA | MCA | MOCP | |
| ACCU-31-1 | BLDG-31 | TRANE | TTA120D3 | 120.5 | 208 | 60 | 3 | 5 | 42.6 | 60 | SEE NOTES |

NOTES: 1. PROVIDE W/ BACNET INTERFACE. 2. PROVIDE W/ HIGH PRESSURE CONTROL. 3. PROVIDE LIQUID LINE REFRIGERANT DRIER. 4. PROVIDE W/ LOW AMBIENT COOLING TO 50°F OIN ELECTROMECHANICAL MODELS. 5. PROVIDE W/ SCROLL COMPRESSORS. 6. PROVIDE W/ THERMAL EXPANSION VALVE. 7. PROVIDE UNIT CONTROL PANEL WITH MAIN DISCONNECT. 8. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 9. PROVIDE WITH SEACOAST RATED COATING FOR CONDENSER COIL.

# JACE BOX

| TAG NO. | LOCATION | ELECTRICAL | | DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD) | NOTES |
|---|---|---|---|---|---|
| | | AMP | V | | |
| J-1 | SEE PLANS | 20 | 120 | JACE 8000 | SEE NOTES |

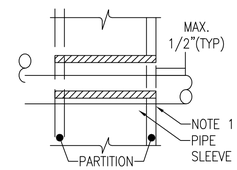
NOTES: 1. PROVIDE W/ MEMORY UPGRADE TO 4GB. 2. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.




1. CONDENSING UNIT
2. LIQUID LINE
3. INSULATED SUCTION LINE
4. COOLING COIL
5. DRAIN PAN
6. DRAIN LINE-TRAP & ROUTE TO DRAIN OR CONDENSATE PUMP
7. TRAP

NOTE:
1. PIPE SIZES, CONTROL EQUIPMENT AND TRAPS AS REQUIRED BY UNIT MANUFACTURER (SUBMIT IN SHOP DRAWING).

## REFRIGERANT PIPING SMALL COMPONENT SCHEMATIC




NOTES:
1. AT FIRE RATED PARTITIONS ADD LAYER OF FIRE SAFING INSULATION AROUND PENETRATIONS SO AS TO FILL CAVITY.
2. PIPE PENETRATIONS THROUGH CORRIDOR WALLS ABOVE THE CEILING ARE TO BE FIRE STOPPED AROUND THE PENETRATION.
3. CONTRACTOR REPSONSIBLE FOR DETERMINING REQUIRED HOUR RATING TO MATCH EXISTING WALL ASSEMBLY.

## PIPE PENETRATIONS

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
SEAL

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CSI ENGINEERING
999 BANDFACT BLVD, STE 206
KINGSTON, NH 03848
781.222.0626
23 JUVENTAS AVE, STE 204
HYANNIS, MA 02601
508.815.9924
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: JC | DRW: SV | CHK: DM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

FEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 31 HVAC SCHEDULES AND DETAILS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.: N40085-XX-C-XXXX

NAVFAC DRAWING NO.: 12703561

SHEET 108 OF 506

M4.0 | 31-15-54

DRAWFORM REVISION: 10 OCTOBER 2014

## TYPICAL FLASH PROTECTION WARNING LABEL

**WARNING**

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

| | |
|---|---|
| EQUIPMENT TYPE: | |
| GROUNDING: | Y/N GROUNDED |
| WORK DISTANCE: | INCHES |
| AVAILABLE 3ϕ BOLTED CURRENT: | kA |
| FLASH PROTECTION BOUNDARY: | INCHES |
| INCIDENT ENERGY AT 23 INCHES: | cal/cm² |
| PPE LEVEL: | 4 |
| DATE: | xx/xx/xxxx |

NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. PROVIDE ON ALL IN-LINE METER SOCKETS, SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS AND MOTOR CONTROL CENTERS IN ACCORDANCE WITH NEC 110.16.

## TYPICAL NAMEPLATE DETAIL

3" x 1"

PANEL PP1
225A 208Y/120V
FED FROM MDP

NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. NAMEPLATE TO BE 1/16" THICK PLASTIC WITH WHITE CENTER LAMINATION. FACE SHALL BE BLACK, ENGRAVED LETTERS SHALL BE WHITE.
3. SECURE NAMEPLATE TO SURFACES WITH HIGH STRENGTH ADHESIVE CEMENT. UTILIZE MECHANICAL FASTENERS FOR ALL EXTERIOR LOCATIONS.
4. TYPICAL FOR "STARTERS", "DISCONNECTS", AND "TRANSFORMERS".

## RECEPTACLE LABEL REQUIREMENTS

## TYPICAL DEVICE MOUNTING HEIGHTS DETAIL

NOTES:

1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE EXCEPT EXIT SIGNS, CLOCKS, EMERGENCY LIGHTING AND FIRE ALARM A/V DEVICES.
2. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE.
3. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL UNLESS OTHERWISE NOTED.
4. STROBE HEIGHT ILLUSTRATED AT MAXIMUM HEIGHT. STROBE SHALL BE 80" AFF OR 6" BELOW CEILING, WHICHEVER IS LOWER.

## ELECTRIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| A/AMP | AMPERE | LTG | LIGHTING |
| AC | ALTERNATING CURRENT | MCB | MAIN CIRCUIT BREAKER |
| ADA | AMERICAN WITH DISABILITIES ACT | MEC | MASSACHUSETTS ELECTRIC CODE |
| AF | AMPERE FRAME | MH | MANHOLE |
| AFF | ABOVE FINISHED FLOOR | MLO | MAIN LUGS ONLY |
| AFG | ABOVE FINISHED GRADE | MTD | MOUNTED |
| AIC | AMPERE INTERRUPTING CAPACITY | MTG | MOUNTING |
| AL | ALUMINUM | NEC | NATIONAL ELECTRIC CODE |
| AT | AMPERE TRIP | NTS | NOT TO SCALE |
| ATS | AUTOMATIC TRANSFER SWTICH | # | NUMBER |
| AWG | AMERICAN WIRE GAUGE | PVC | POLYVINYL CHLORIDE |
| C | CONDUIT | PWR | POWER |
| CATV | CABLE TELEVISION | RGS | RIGID GALVANIZED STEEL |
| CCTV | CLOSED CIRCUIT TELEVISION | SWBD | SWITCHBOARD |
| CB | CIRCUIT BREAKER | TEL | TELEPHONE |
| CKT | CIRCUIT | TERM | TERMINAL |
| ℄ | CENTERLINE | TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSION |
| DWG | DRAWING | TSP | TWISTED SHIELDED PAIR |
| EC | ELECTRICAL CONTRACTOR | TYP | TYPICAL |
| EMT | ELECTRICAL METALLIC TUBING | UNO | UNLESS OTHERWISE NOTED |
| FLMT | FLEXIBLE LIQUID TIGHT METALLIC TUBING | UPS | UNINTERRUPTIBLE POWER SUPPLY |
| GFI | GROUND FAULT INTERRUPTING | UTP | UNSHIELDED TWISTED PAIR |
| GND | GROUND | V | VOLT |
| HH | HANDHOLE | VA | VOLT AMPERE |
| HP | HORSEPOWER | VFD | VARIABLE FREQUENCY DRIVE |
| HVAC | HEATING, VENTILATION AND AIR CONDITIONING | W | WATT |
| HZ | HERTZ | WP | WEATHERPROOF |
| IG | ISOLATED GROUND | | |
| KVA | KILOVOLT – AMPERE | | |
| KW | KILOWATT | | |

## MOTOR & CONTROLS LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| $S_M$ | MANUAL MOTOR STARTING SWITCH WITH THERMAL OVERLOAD PROTECTION |
| 30AS/15AF 3R | FUSED DISCONNECT SWITCH, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED<br>"3R" – INDICATES NEMA TYPE 3R ENCLOSURE<br>"30AS" – INDICATES 30AMP SWITCH<br>"15AF" – INDICATES 15AMP FUSES |
| JCB | DDC CONTROL JACE BOX. PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION. |

## ELECTRIC SYSTEM TAGS OR CALL OUT SYMBOLS

SYMBOL

- EQUIPMENT SYMBOLS (REFER TO EQUIPMENT SCHEDULES)
- EUH – EQUIPMENT DESIGNATION
- # – EQUIPMENT REFERENCE NUMBER (TYP)
- # – NEW WORK NOTE TAG
- # – DEMOLITION NOTE TAG

## FIRE ALARM LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| XXXX | FIRE ALARM DEVICE<br>"RTS" – INDICATES REMOTE TEST STATION |
| S | DUCT MOUNTED SMOKE DETECTOR |

## POWER DISTRIBUTION LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| ▬ | 208Y/120 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS |

## BRANCH CIRCUIT & FEEDER LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| PP1-(X) | BRANCH CIRCUIT HOME RUN. TYPICAL 2#12 & 1#12G IN ¾"C MINIMUM. PP1-(1) INDICATES PANEL AND CIRCUIT DESIGNATION FROM WHICH HOME RUN SHALL ORIGINATE. EACH CIRCUIT SHALL BE 20A-1P (20AMP SINGLE POLE) UNLESS NOTED OTHERWISE. |

## EXISTING EQUIPMENT LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| XM | EXISTING EQUIPMENT TO REMAIN |
| XR | EXISTING EQUIPMENT TO BE REMOVED |
| ☐ | EXISTING EQUIPMENT TO REMAIN FOR INFORMATION ONLY – (XM)<br>INDICATED BY SYMBOL WITH LIGHT OUT OF FUNCTION LINE TYPE |
| ⬚ | EXISTING EQUIPMENT TO BE REWORKED – (XN, XL, XE, XR)<br>INDICATED BY SYMBOL WITH DASHED AND IN FUNCTION LINE TYPE |

## WIRING DEVICES

| SYMBOL | DESCRIPTION |
|---|---|
| # GFI | DUPLEX RECEPTACLE, GROUNDING TYPE, RATED 20A, 125V<br>"#" – INDICATES CIRCUIT NUMBER (TYP)<br>"WP" – INDICATES WEATHERPROOF (TYP)<br>"GFI" – INDICATES GROUND FAULT INTERRUPTER |

## ELECTRIC GENERAL NOTES

1. THE ELECTRICAL DEMOLITION PLANS AND DETAILS INDICATE THE GENERAL INTENT AND ARE NOT INTENDED TO SHOW ALL ITEMS TO BE REMOVED OR RETAINED. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO THE SUBMISSION OF BIDS TO BECOME FAMILIAR WITH THE ACTUAL CONDITIONS AND EXTENT OF WORK. DEVICES AND EQUIPMENT LOCATED ON WALLS AND/OR CEILINGS TO BE REMOVED SHALL BE DISCONNECTED AND MADE SAFE FOR REMOVAL. THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY UNANTICIPATED HIDDEN CONDITIONS ENCOUNTERED DURING DEMOLITION.
2. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL SYSTEMS OR BUILDING COMPONENTS DAMAGED DURING THE EXECUTION OF WORK. DAMAGE SHALL INCLUDE BUT NOT LIMITED TO THE DESTRUCTION OR DISPOSAL OF ITEMS INTENDED TO REMAIN OR BE SALVAGED.
3. THE ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE AND REMOVE ALL CONDUCTORS AND RACEWAYS TO THEIR POINT OF ORIGIN WITHIN THE AREA OF DEMOLITION SCOPE. ITEMS IDENTIFIED FOR DEMOLITION SHALL NOT BE ABANDONED IN PLACE. RACEWAYS THAT ENTER MASONRY WALLS AND FLOORS SHALL BE CUT FLUSH AT THE SURFACE FOR PATCHING BY TRADE CONTRACTOR. ALL CIRCUIT BREAKERS ASSOCIATED WITH THE DEMOLITION SCOPE SHALL BE DE-ENERGIZED AND LABELED AS SPARE.
4. ALL REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF UNLESS IDENTIFIED FOR REUSE OR TURNED OVER TO OWNER. THE OWNER'S REPRESENTATIVE SHALL INSPECT ALL RETAINED ITEMS PRIOR TO PLACEMENT IN THE IDENTIFIED STORAGE LOCATION BY THE ELECTRICAL CONTRACTOR.
5. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. CIRCUITRY HAS BEEN DETERMINED BASED UPON INFORMATION GATHERED, ASSUMPTIONS, AND INFORMATION OBTAINED FROM NAVFAC. EXACT CIRCUITING, EQUIPMENT SIZES, AND CONDUIT AND WIRING SIZES MAY DIFFER IN THE FIELD FROM WHAT IS SHOWN ON THE DRAWINGS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TRACING ALL CIRCUITS BEING DEMOLISHED AND REUSED PRIOR TO DISCONNECTING, VERIFYING EXISTING CIRCUITRY AND EQUIPMENT SIZES, AND SHALL SIZE ALL NEW EQUIPMENT AND BRANCH CIRCUITRY ACCORDINGLY IF ACTUAL CONDITIONS DIFFER FROM WHAT IS SHOWN ON THE DRAWINGS. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY. INTERCONNECTING BRANCH WIRING SHALL BE SIZED EQUAL TO THE HOMERUN UNLESS NOTED OTHERWISE.
6. VOLTAGE DROP HAS BEEN CONSIDERED IN THE DESIGN OF ALL BRANCH CIRCUITRY AND FEEDER SIZES BASED UPON THE ILLUSTRATED EQUIPMENT LAYOUTS AND SHORTEST CONDUCTOR/RACEWAY ROUTING. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR DEVIATIONS TAKEN THAT WILL INCREASE CONDUCTOR/RACEWAY ROUTING LENGTHS. BRANCH CIRCUITS LONGER THAN 75' FOR 120V FROM PANEL TO LAST OUTLET SHALL BE INCREASED A MINIMUM OF ONE SIZE ABOVE THAT SPECIFIED TO LIMIT VOLTAGE DROP TO LESS THAN 3%. FEEDERS SHALL FOLLOW SIMILAR GUIDELINES AND BE LIMITED TO 2% DROP.
7. THE ELECTRICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE ELECTRICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL ADDITIONAL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.
8. ROUTING IS DIAGRAMMATIC. CONTRACTOR SHALL DETERMINE ROUTING IN FIELD AND RE-USE EXISTING PENETRATIONS WHERE POSSIBLE.
9. SEE PWD-ME DRAWING NUMBERS;
   - 9.1. 43-15-67 FOR TITLE SHEET
   - 9.2. 43-15-68 FOR LIST OF DRAWINGS
   - 9.3. 43-15-69 FOR GENERAL NOTES & LEGENDS
   - 9.4. 43-15-72 FOR CHASE AND SOFFIT DETAILS
   - 9.5. 43-15-74 FOR STRUCTURAL NOTES AND SUPPORTS

## SCHEDULE OF DRAWINGS

| DWG# | DESCRIPTION |
|---|---|
| E1.0 | BUILDING 31 ELECTRICAL LEGEND |
| ED2.0 | BUILDING 31 ELECTRICAL FIRST FLOOR DEMOLITION PLAN |
| E2.0 | BUILDING 31 ELECTRICAL FIRST FLOOR PLAN |
| E3.0 | BUILDING 31 ELECTRICAL SCHEDULES |

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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25 AVIATION AVE STE 204, PORTSMOUTH, NH 03801, 603-319-8244
A/E INFO

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ACTIVITY
SATISFACTORY TO DATE

DES TM | DRW TM | CHK JO
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

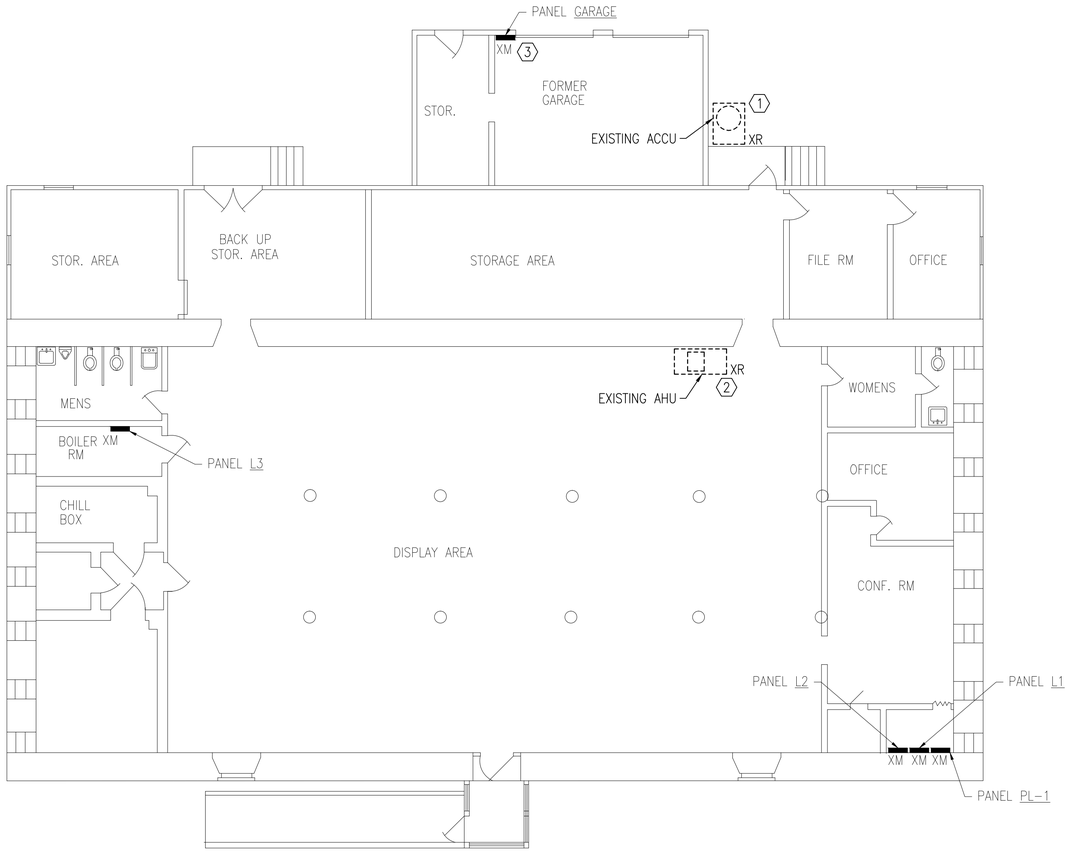
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 31 ELECTRICAL LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703562
SHEET 109 OF 506
E1.0 | 31-15-55

DRAWFORM REVISION: 10 OCTOBER 2014




## BUILDING 31 ELECTRICAL FIRST FLOOR DEMOLITION PLAN

1/8"= 1'-0"

PLAN NORTH

## GENERAL SHEET NOTES

1. REFER TO DRAWING E1.0 FOR LEGEND, SYMBOLS AND GENERAL NOTES.
2. THE ELECTRICAL CONTRACTOR SHALL CIRCUIT TRACE AND LABEL ALL EXISTING BRANCH CIRCUITS AND FEEDERS SCHEDULED TO BE REMOVED WITHIN THE AREA OF DEMOLITION SCOPE PRIOR TO DE-ENERGIZING AND DISCONNECTION. ALL CIRCUITS WITHIN PANELBOARDS IDENTIFIED FOR REMOVAL SHALL BE TRACED AND LABELED TO ENSURE THAT NO AREA OUTSIDE THE DEMOLITION SCOPE LIMIT IS AFFECTED.
3. THE ELECTRICAL CONTRACTOR SHALL IDENTIFY ALL BRANCH CIRCUITS, FEEDERS AND SYSTEM COMPONENTS, WHICH ARE TO REMAIN WITHIN THE AREA OF DEMOLITION SCOPE. THERE SHALL BE NO INTERRUPTION OF SERVICE TO ANY AREA OUTSIDE THE SCOPE LIMITS WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE. EXISTING EQUIPMENT TO REMAIN SHALL BE LEFT IN A CODE COMPLIANT MANNER.
4. THE ELECTRICAL CONTRACTOR SHALL TEMPORARILY SUPPORT ALL ITEMS TO REMAIN THAT ARE AFFECTED BY THE DEMOLITION OF BUILDING STRUCTURAL COMPONENTS (WALLS, CEILINGS, ETC.). TEMPORARILY SUPPORTED ITEMS SHALL BE PERMANENTLY SUPPORTED AND INSTALLED WHEN FINALIZED STRUCTURES ARE IN PLACE.

## DEMOLITION KEYNOTES

1. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING ACCU. DEMOLISH EXISTING BRANCH CIRCUITRY AND DISCONNECT IN THEIR ENTIRETY. MAINTAIN EXISTING CIRCUIT BREAKER AND LABEL AS "SPARE" FOR FUTURE USE.
2. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING AHU. DEMOLISH EXISTING BRANCH CIRCUITRY AND DISCONNECT IN THEIR ENTIRETY. MAINTAIN EXISTING CIRCUIT BREAKER AND LABEL AS "SPARE" FOR FUTURE USE.
3. EXISTING GARAGE PANEL FEEDS EXISTING AHU AND ACCU. ELECTRICAL CONTRACTOR SHALL REMOVE EXISTING CIRCUIT BREAKERS FROM PANEL AND REPLACE WITH SPACE PLATES.

## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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No. 13078
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SATISFACTORY TO DATE

DES TM | DRW TM | CHK JO
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
LEAD/PM&E AMIN BAHROUR PM&E
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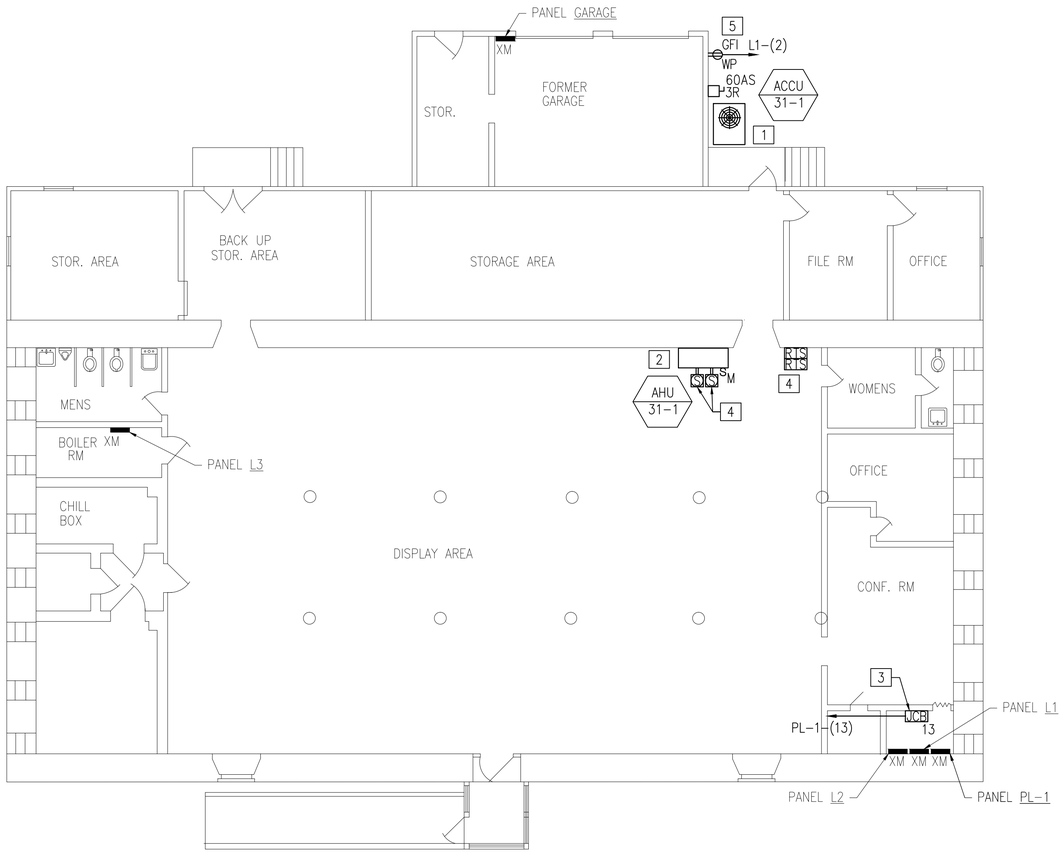
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22
BUILDING 31 ELECTRICAL FIRST FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703563
SHEET 110 OF 506
ED2.0 | 31-15-56

DRAWFORM REVISION: 10 OCTOBER 2014




## BUILDING 31 ELECTRICAL FIRST FLOOR PLAN

1/8" = 1'-0"

PLAN NORTH

## GENERAL SHEET NOTES

1. REFER TO DRAWING E1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. POWER BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. POWER BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
3. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING POWER DEVICES TO REMAIN.
4. FINAL LOW-VOLTAGE CONNECTIONS TO BE MADE BY CONTROLS CONTRACTOR. FIELD COORDINATE EXACT LOCATION OF EQUIPMENT WITH CONTROLS CONTRACTOR AND NAVFAC.
5. FIRE ALARM BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. FIRE ALARM BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
6. MC CABLE FOR FIRE ALARM SERVICE SHALL HAVE A RED IDENTIFIER ALONG ITS ENTIRE LENGTH. JUNCTION BOX COVERS AND CONDUIT COUPLINGS FOR ALL FIRE ALARM WIRING RACEWAYS SHALL BE PAINTED RED PRIOR TO INSTALLATION.
7. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING FIRE ALARM DEVICES TO REMAIN.

## NEW WORK KEYNOTES

1. PROVIDE NEW CIRCUIT BREAKER IN PANEL "PL-1" FOR NEW ACCU. PROVIDE NEW DISCONNECT AS SHOWN FOR NEW UNIT. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
2. PROVIDE NEW CIRCUIT BREAKER IN PANEL "PL-1" FOR NEW AHU. PROVIDE NEW DISCONNECT AS SHOWN. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
3. NEW DDC JACE BOX PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.
4. NEW DUCT SMOKE DETECTOR PROVIDED BY TRADE CONTRACTOR. COORDINATE EXACT LOCATION OF DUCT SMOKE DETECTOR WITH MECHANICAL CONTRACTOR. PROVIDE NEW REMOTE TEST STATION. CONNECT NEW DUCT SMOKE DETECTOR AND REMOTE TEST STATION TO EXISTING IRE ALARM DETECTION CIRCUIT SERVING THE AREA. REUSE AS MUCH EXISTING CONDUIT AND WIRING AS POSSIBLE AND EXTEND AS NEEDED. NEW CONDUIT AND WIRING SHALL MATCH EXISTING IN ALL RESPECTS.
5. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY IF A RECEPTACLE EXISTS WITHIN 6' OF NEW UNIT. IF NO RECEPTACLE EXISTS, PROVIDE NEW AS SHOWN. REFER TO PANELBOARD SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.

## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet

CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
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| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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NAVFAC INFO


APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: TM DRW: TM CHK: JO

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

LEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

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NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 31 ELECTRICAL FIRST FLOOR PLAN

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703564

SHEET 111 OF 506

E2.0 | 31-15-57

DRAWFORM REVISION: 10 OCTOBER 2014

## PANELBOARD SCHEDULE

| | | | |
|---|---|---|---|
| PANEL: L1 | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING | |
| MAIN: MLO | BUS AMPS: 250A | MOUNT.: SURFACE | |
| PH/WIRE: 3ø/4W | AIC: | LOC: BLDG 31 ELEC. CLOSET | |

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20/1 | ON | 0 | – | | 1 | .18 | ACCU–31–1 GFI RECEPTACLE | 20/1 | 2 |
| 3 | 20/1 | ON | 0 | – | | – | 0 | SPARE | 20/1 | 4 |
| 5 | 20/1 | HEATER BACK | 0 | – | | – | 0 | SPARE | 20/1 | 6 |
| 7 | 20/1 | HEATER FRONT | 0 | – | | – | 0 | SPARE | 20/1 | 8 |
| 9 | 20/1 | HEATER FRONT | 0 | – | | – | 0 | SPARE | 20/1 | 10 |
| 11 | 20/1 | HEATER ANNEX | 0 | – | | – | 0 | SPARE | 20/1 | 12 |
| 13 | 20/1 | HEATER BATHROOM | 0 | – | | – | 0 | SPARE | 20/1 | 14 |
| 15 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 16 |
| 17 | 20/1 | OUTSIDE LIGHTS | 0 | – | | – | 0 | SPARE | 20/1 | 18 |
| 19 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 20 |
| 21 | 20/1 | NMCI CABINET (BELOW) | 0 | – | | – | 0 | SPARE | 20/1 | 22 |
| 23 | 20/1 | RAYDON SYSTEM FAN | 0 | – | | – | 0 | SPARE | 20/1 | 24 |
| 25 | – | SPACE | – | – | | – | – | SPACE | – | 26 |
| 27 | – | SPACE | – | – | | – | – | SPACE | – | 28 |
| 29 | – | SPACE | – | – | | – | – | SPACE | – | 30 |
| | | | 0.0 | | | | 0.2 | TOTAL CONNECTED kVA: | 0.18 | |
| | | | | | | | | TOTAL CONNECTED AMPERES: | 0.50 | |

NOTES:
1. VERIFY AND REUSE EXISTING CIRCUIT BREAKER AS INDICATED FOR NEW LOAD.
2. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

## PANELBOARD SCHEDULE

| | | | |
|---|---|---|---|
| PANEL: PL–1 | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING | |
| MAIN: 225A MCB | BUS AMPS: 225A | MOUNT.: SURFACE | |
| PH/WIRE: 3ø/4W | AIC: 65K | LOC: BLDG 31 ELEC. CLOSET | |

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | 2 |
| 3 | 100/3 | GARAGE PANEL | 0 | – | | – | 0 | REF | 60/3 | 4 |
| 5 | | | | | | | | | | 6 |
| 7 | | | | | | | | | | 8 |
| 9 | 60/3 | PANEL L1 | .18 | – | | – | 0 | BLDG 32 (STORAGE BLDG) | 60/3 | 10 |
| 11 | | | | | | | | | | 12 |
| 13 | 20/1 | DDC JACE BOX & SWITCH | .02 | 1 | | | | | | 14 |
| 15 | | | | | | – | 0 | MCP–31 & CRU–31 | 50/3 | 16 |
| 17 | 60/3 | ACCU–31–1 | 15.3 | 1 | | | | | | 18 |
| 19 | | | | | | | | | | 20 |
| 21 | | SPACE | | – | | 1 | 2.8 | AHU–31–1 | 20/3 | 22 |
| 23 | | SPACE | | – | | | | | | 24 |
| 25 | | | | | | | | | | 26 |
| 27 | 125/3 | PANEL L2 | 0 | – | | – | 0 | PANEL L3 | 125/3 | 28 |
| 29 | | | | | | | | | | 30 |
| | | | 15.5 | | | | 2.80 | TOTAL CONNECTED kVA: | 18.30 | |
| | | | | | | | | TOTAL CONNECTED AMPERES: | 50.86 | |

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER SIZED AS INDICATED FOR NEW LOAD.
2. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

## MECHANICAL EQUIPMENT SCHEDULE

| EQUIP TAG | DESCRIPTION | LOAD | | | | PANEL SOURCE | | BRANCH CIRCUIT | CONNECTION | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | HP | KVA | VOLT | PH | PANEL | C/B | | FLEX | JB | REC | DISC | |
| ACCU 31–1 | CONDENSING UNIT | 1 | 15.3 | 208 | 3 | P1–1–(15,17,19) | 60A/3P | (3)#6, (1)#10G, 3/4"C | X | | | X | NOTES 6,7 |
| AHU 31–1 | AIR HANDLING UNIT | 2 | 2.8 | 208 | 3 | P1–1–(20,22,24) | 20A/3P | (3)#12, (1)#12G, 3/4"C | X | | | X | NOTES 8 |

NOTES:

1. BRANCH CIRCUIT WIRING METHODS SHALL BE AS NOTED ON THE DRAWINGS AND/OR SPECIFICATIONS FOR THE APPLICABLE LOCATION.
2. "FLEX" – DENOTES FINAL THREE FEET (MAXIMUM) OF RACEWAY SHALL BE FLEXIBLE METAL OR LIQUIDTIGHT METAL CONDUIT.
3. "JB" – JUNCTION BOX DENOTES FINAL CONNECTION TO BOX OR CONTROL PANEL PREWIRED TO THE EQUIPMENT.
4. "REC" – PROVIDE RECEPTACLE IN THE NEMA CONFIGURATION NOTED.
5. NOTES 6–9 ARE OPTIONS WHICH SHALL BE SPECIFICALLY NOTED IN REMARKS FOR INCLUSION.
6. DISCONNECT SHALL BE FUSIBLE.
7. DISCONNECT SHALL BE NEMA "3R"
8. DISCONNECT SHALL BE MOTOR–RATED SWITCH WITH THERMAL OVERLOAD ELEMENT.
9. DISCONNECT PROVIDED INTEGRAL (PREWIRED) TO EQUIPMENT BY TRADE CONTRACTOR.
10. INTEGRAL CONVENIENCE RECEPTACLE PROVIDED PREWIRED TO EQUIPMENT BY TRADE CONTRACTOR.

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 07/10/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 01/20/2015 | DM |

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STATE OF NEW HAMPSHIRE – CHARLES E. MACE No. 13078 LICENSED PROFESSIONAL ENGINEER – SEAL


TM LEAD DISCIPLINE
MEP/FP CRITICAL
MECHANICAL
ELECTRICAL
FIRE PROTECTION
CIVIL
STRUCTURAL
ARCHITECTURAL
CORROSION
ENVIRONMENTAL
ANTI-TERRORISM
SECURITY
TELECOMMUNICATIONS
UFC 1-200-01 DM
UFGS-01 33 00
CONTRACTOR QC
ENGINEERING
CSI
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FIRE PROTECTION
713 Juniper Rd, Suite 204
Lake Worth, FL 33460
407-247-9824
INFO


APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: TM | DRW: TM | CHK: JO

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

LEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 31 ELECTRICAL SCHEDULES

EPROJECT NO.: 1350913

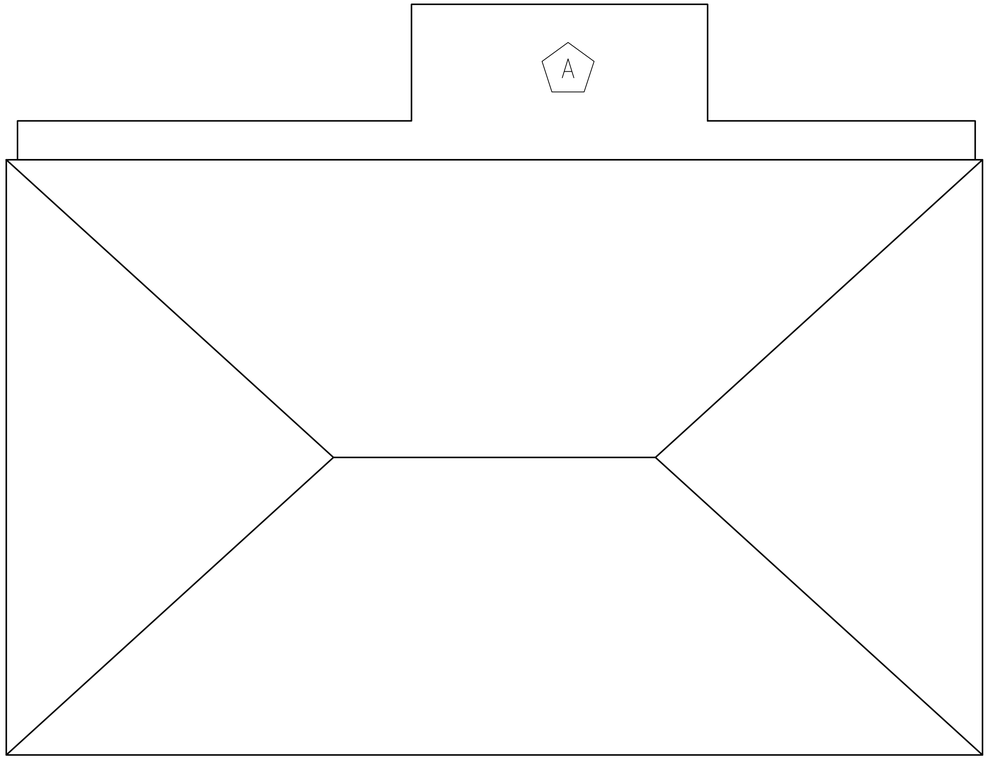
CONSTR. CONTR. NO.: N40085–XX–C–XXX

NAVFAC DRAWING NO.: 12703565

SHEET 112 OF 506

E3.0 | 31-15-58

DRAWFORM REVISION: 10 OCTOBER 2014




## B31 ANTENNA LOCATION - ROOF PLAN

1/8" =1'-0"

PLAN NORTH

| EQUIPMENT | WIRELESS STANDARD | ANTENNA | FREQUENCY | DIMENSIONS | WEIGHT | INPUT POWER | MANUFACTURER | DESIGN BASED ON MODEL |
|---|---|---|---|---|---|---|---|---|
| WIRELESS ACCESS POINT | 802.11n | INTEGRATED | 2.4 GHZ & 5.8 GHZ | 9 X 7 X 4 INCHES | 5 LBS | AIR-PWRINJ4 | CISCO AIRONET | AIR-AP1532I-UXK9 |

NOTE: PROVIDE POWER INJECTOR FOR POWER OF ETHERNET TO WIRELESS ACCESSS POINT. DESIGN BASED ON CISCO MODEL AIR-PWRINJ4.

## GENERAL SHEET NOTES

1. FASTENERS SHALL BE ATTACHED TO MORTAR IN MASONRY BUILDINGS, AVOIDING DAMAGE TO THE BRICK WHEREVER PRACTICAL.
2. EXTERIOR CONDUIT SHALL BE INSTALLED IN SHADOW-LINES OR ADJACENT TO EXISTING CONDUIT; CONDUIT COLOR TO BE COORDINATED WITH CULTURAL RESOURCE MANAGER AND A-E.
3. REFER TO MECHANICAL DRAWINGS FOR JACE LOCATION AND INFORMATION.
4. EXISTING ROOF AND WALL PENETRATIONS SHALL BE USED WHEREVER PRACTICAL.
5. INTERIOR, WINDOW-MOUNTED ACCESS POINTS SHALL BE MOUNTED IN AN OBSCURE LOCATION THAT IS LEAST VISIBLE FROM INTERIOR & EXTERIOR.
6. ACCESS POINT MOUNTS SHALL NOT OBSTRUCT EGRESS, EXISTING WALKWAYS, STAIRWELLS, MECHANICAL EQUIPMENT CLEARANCES, OR OTHER APPURTANANCES.
7. UNLESS OTHERWISE NOTED, ROOFTOP ACCESS POINTS SHALL BE CENTRALIZED ON THE ROOF TO MINIMIZE VISIBILITY FROM GROUND LEVEL.
8. CONTRACTOR TO FIELD-VERIFY COMMUNICATION ACCESS POINTS ARE ALIGNED AND LINE OF SIGHT IS UNOBSTRUCTED.
9. IF A FIELD CHANGE IS REQUIRED, CONTRACTOR SHALL COORDINATE WITH CULTURAL RESOURCE MANAGER AND A-E PRIOR TO RELOCATING EQUIPMENT.
10. ANY PROPOSED CHANGES (PENETRATIONS, CONDUIT, ETC.) NOT ALREADY INDICATED ON DRAWINGS MADE TO HISTORIC BUILDINGS OR BUILDINGS LOCATED IN HISTORIC DISTRICT MUST BE REVIEWED AND APPROVED BY SHPO THROUGH NAVFAC CULTURAL RESOURCES DEPARTMENT PRIOR TO INSTALLATION.
11. CONTRACTOR TO VERIFY RF SIGNAL STRENGTH AND CONNECTIVITY FROM/TO ALL ACCESS POINTS.
12. SEE PWD-ME DRAWING NUMBERS;
    - 12.1. 43-15-67 FOR TITLE SHEET
    - 12.2. 43-15-68 FOR LIST OF DRAWINGS
    - 12.3. 43-15-69 FOR GENERAL NOTES AND LEGEND
    - 12.4. 43-15-72 FOR CHASE AND SOFFIT DETAILS
    - 12.5. 43-15-74 FOR STRUCTURAL NOTES AND SUPPORT

## NEW WORK KEYNOTES

A

1. CONTRACTOR SHALL INSTALL NON-PENETRATING ROOF-MOUNT FOR RF ACCESS POINT ON GARAGE ROOF.
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT TO B086A ACCESS POINT.
3. ROOF MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS. MOUNTING HEIGHT TO BE DETERMINED BY CONTRACTOR TO MINIMIZE GROUND-LEVEL VISIBILITY WHILE MAINTAINING ACCESS POINT LINE-OF-SIGHT.
4. CAT5 CABLE SHALL BE ROUTED THROUGH EXISTING PENETRATIONS IN EAST WALL AND ALONG EXISTING PATH ABOVE DROP CEILING TO JACE.

## GRAPHIC SCALE

1/8" = 1' scale 8 4 0 8 16 24 feet

CHECK GRAPHIC SCALE BEFORE USING

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 0 | 90% SUBMISSION | 07/15/15 | DM |
| | 100% SUBMISSION | 07/31/15 | |

NAVFAC

STATE OF NEW HAMPSHIRE KEITH CHRISTOPHER No. 13414 LICENSED PROFESSIONAL ENGINEER

SEAL

aecom architects|engineers
13 WATER ST NEWMARKET NH
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A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES VSL | DRW SRR | CHK KLC

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

B031 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

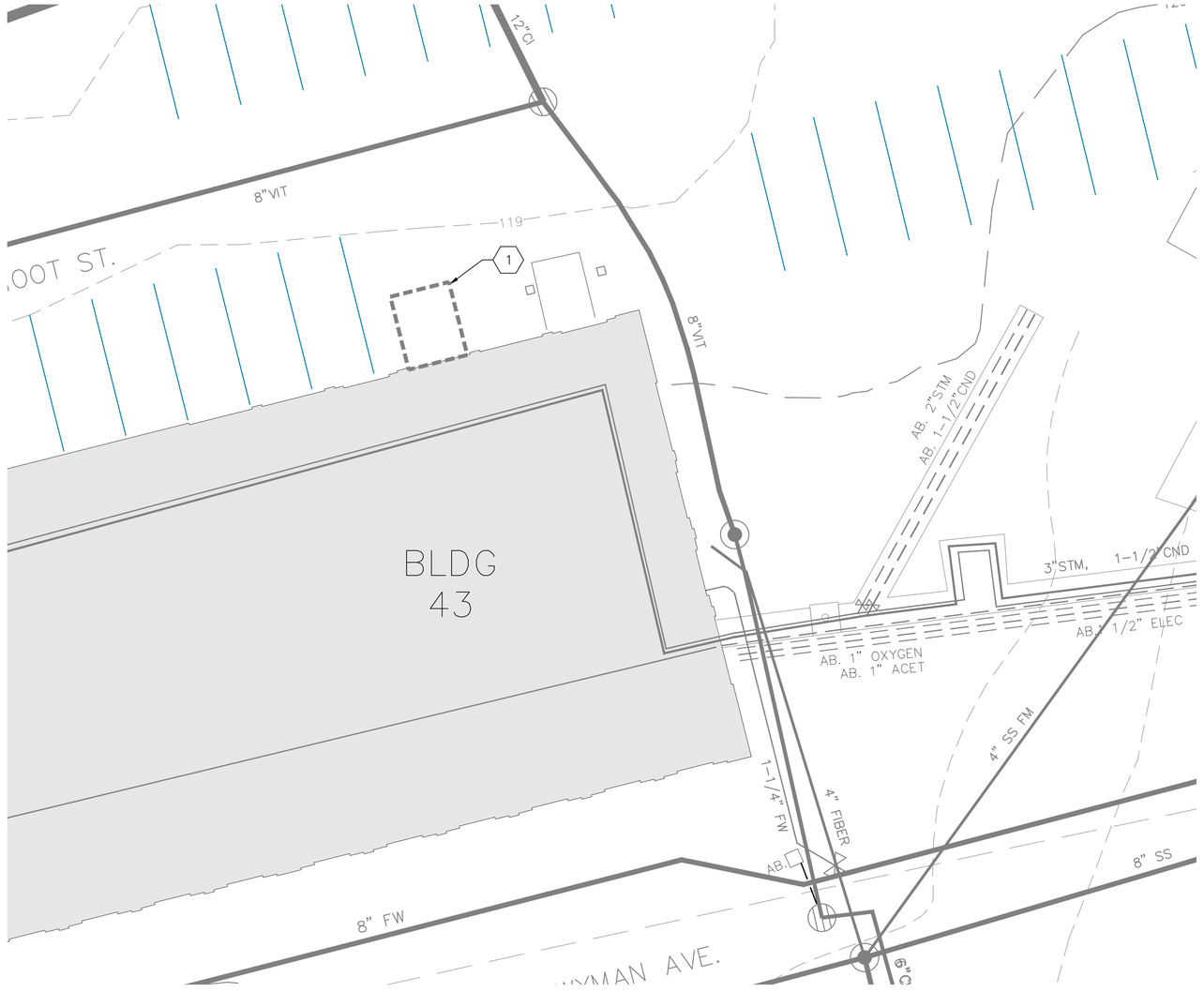
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703566

SHEET 113 OF 506

ET1.0 | 31-15-59

DRAWFORM REVISION: 10 OCTOBER 2014




## B43 DEMOLITION PLAN
SCALE: 1" = 10'

## GENERAL SHEET NOTES

1. ALL WORK SHALL BE COORDINATED THROUGH THE PWD–MAINE CONSTRUCTION OFFICER.
2. BURIED UTILITIES ARE SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL VERIFY ACTUAL LOCATIONS OF ALL BURIED UTILITIES.
3. CONTRACTOR SHALL CONDUCT AN ENVIRONMENTAL PERMIT REVIEW OF THE SITE PRIOR TO EXCAVATION.
4. CONTRACTOR SHALL CONDUCT AN ARCHEOLOGICAL REVIEW OF THE SITE PRIOR TO EXCAVATION.
5. EXCAVATED SOIL SHALL BE DISPOSED OF IN ACCORDANCE WITH SECTION 31 23 00.00 22 EXCAVATION AND FILL (PWD MAINE).
6. CONTRACTOR SHALL DISPOSE OF ALL CONSTRUCTION DEBRIS AND MATERIALS AT PERMITTED OFF–SITE DISPOSAL FACILITY.

## DEMOLITION KEYNOTES

1. LIMIT OF SAWCUT

## GRAPHIC SCALE

1" = 10'
10 5 0 10 20 30
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
| 1 | 90% SUBMISSION | 06/05/2015 | BLM |

NAVFAC

STATE OF MAINE
Bradlee Mezquita
9410
LICENSED PROFESSIONAL ENGINEER
SEAL

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A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACMTY
SATISFACTORY TO DATE

DES A/E | DRW REP | CHK BLM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

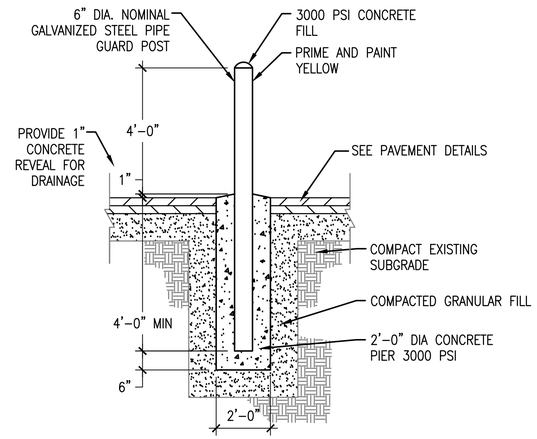
FY 16 ENERGY PROJECT
TASK 1–B–R–22

B43 DEMOLITION PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703567
SHEET 114 OF 506
C1.0 | 43-15-70

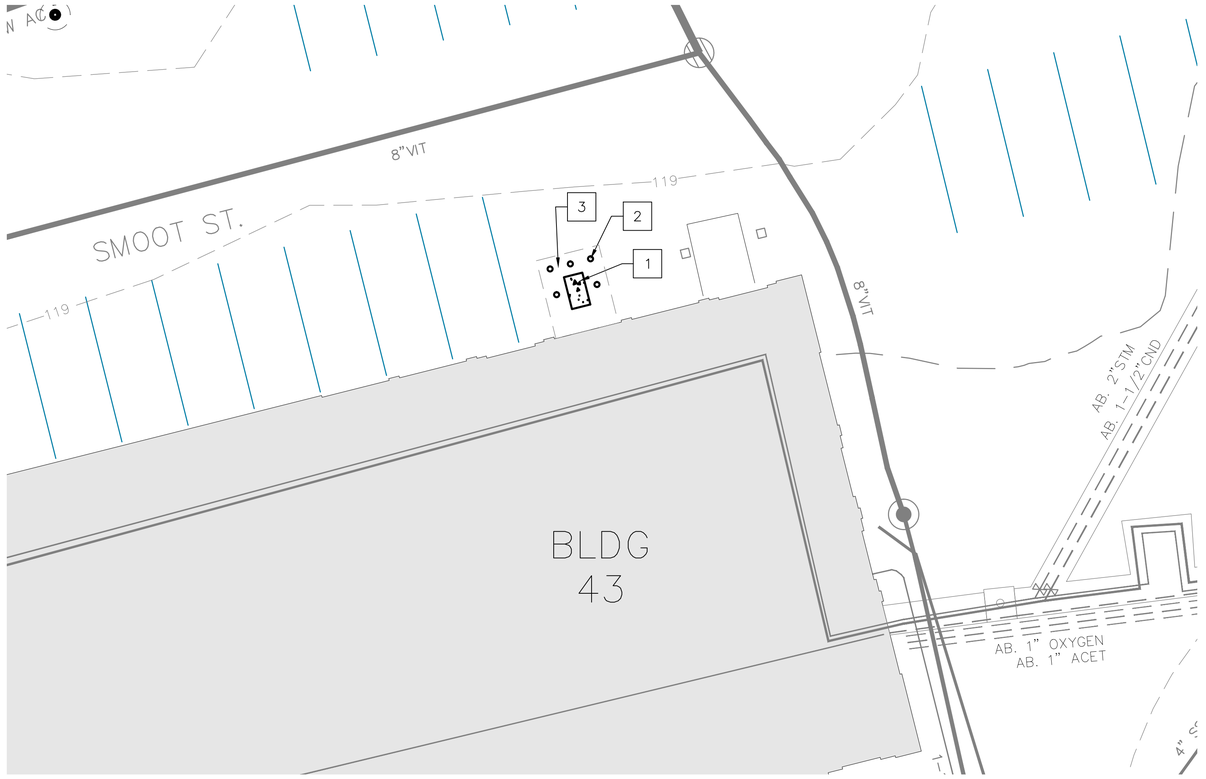
DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\VA\A1066 AEC Subconsulting Support\02_R-22\DWG-CAD\DESIGN\A1066_2_R22_SITE.dwg LAYOUT NAME: C1.0 B43 DEMO PLOTTED: Friday, August 07, 2015 - 2:54pm USER: REP



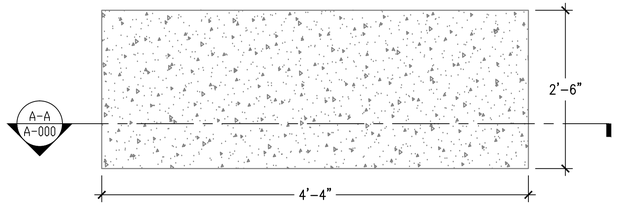

## CONCRETE FILLED STEEL BOLLARD DETAIL 2

NO SCALE




## B43 SITE PLAN

SCALE: 1" = 10'

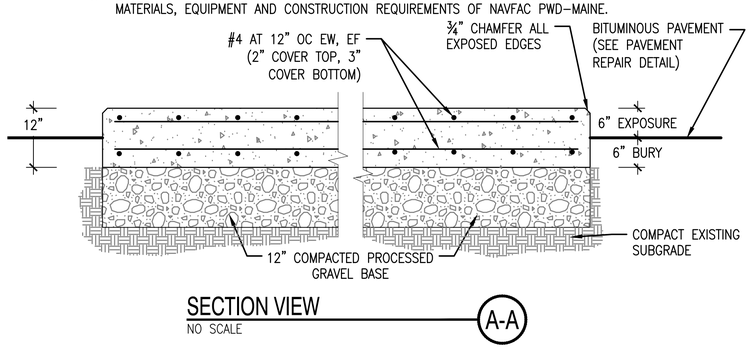



## CONCRETE EQUIPMENT PAD DETAIL 1

NO SCALE

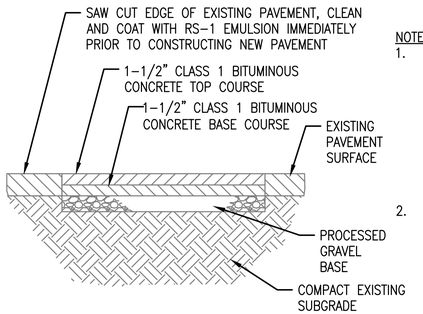
NOTES:

1. COORDINATE PAD DIMENSIONS WITH ACTUAL EQUIPMENT DIMENSIONS.
2. CONCRETE SHALL EXTEND 6" ON EACH SIDE OF EQUIPMENT.
3. CONCRETE SHALL BE MINIMUM 4000 PSI, 7% AIR ENTRAINED.
4. EXCAVATION AND CONSTRUCTION OF CONCRETE PAD SHALL CONFORM TO THE MATERIALS, EQUIPMENT AND CONSTRUCTION REQUIREMENTS OF NAVFAC PWD–MAINE.




## SECTION VIEW A-A

NO SCALE




NOTES:

1. ALL BITUMINOUS CONCRETE, AGGREGATE, STABILIZED COURSE, SUBBASE AND LIQUID BITUMEN SHALL CONFORM TO THE MATERIALS, EQUIPMENT AND CONSTRUCTION REQUIREMENTS OF NAVFAC AND MAINE DOT.
2. THE CONTRACTOR SHALL MAINTAIN A MINIMUM 15' WIDE TRAVEL WAY AT ROAD CROSSINGS AT ALL TIMES DURING CONSTRUCTION.

## PERMANENT PAVEMENT REPAIR DETAIL 3

NO SCALE

## GENERAL SHEET NOTES

1. ALL WORK SHALL BE COORDINATED THROUGH THE PWD–MAINE CONSTRUCTION OFFICER.
2. BURIED UTILITIES ARE SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL VERIFY ACTUAL LOCATIONS OF ALL BURIED UTILITIES.
3. CONTRACTOR SHALL CONDUCT AN ENVIRONMENTAL PERMIT REVIEW OF THE SITE PRIOR TO EXCAVATION.
4. CONTRACTOR SHALL CONDUCT AN ARCHEOLOGICAL REVIEW OF THE SITE PRIOR TO EXCAVATION.
5. EXCAVATED SOIL SHALL BE DISPOSED OF IN ACCORDANCE WITH SECTION 31 23 00.00 22 EXCAVATION AND FILL (PWD MAINE).
6. CONTRACTOR SHALL DISPOSE OF ALL CONSTRUCTION DEBRIS AND MATERIALS AT PERMITTED OFF–SITE DISPOSAL FACILITY.
7. RELOCATE EQUIPMENT PAD AS NECESSARY TO AVOID INTERRUPTION TO EXISTING UTILITIES.

## NEW WORK KEYNOTES

1. CONSTRUCT CONCRETE EQUIPMENT PAD.
2. CONSTRUCT 6" CONCRETE FILLED STEEL BOLLARDS AROUND EQUIPMENT PADS. (TYP. OF 5) BOLLARDS SHALL BE EVENLY SPACED AND PLACED AS TO NOT INTERFERE WITH EQUIPMENT ACCESS OR OPERATION.
3. REPAIR PAVEMENT IN AREAS OF DISTURBANCE.

## GRAPHIC SCALE

1" = 10'

10 5 0 10 20 30

scale feet

CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
| 1 | 90% SUBMISSION | 06/05/2015 | BLM |

NAVFAC

STATE OF MAINE — Bradlee Mezquita 9410 — LICENSED PROFESSIONAL ENGINEER — SEAL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(603) 433-8818
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A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES A/E | DRW REP | CHK BLM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

LEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

B43 SITE PLAN

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085–XX–C–XXXX

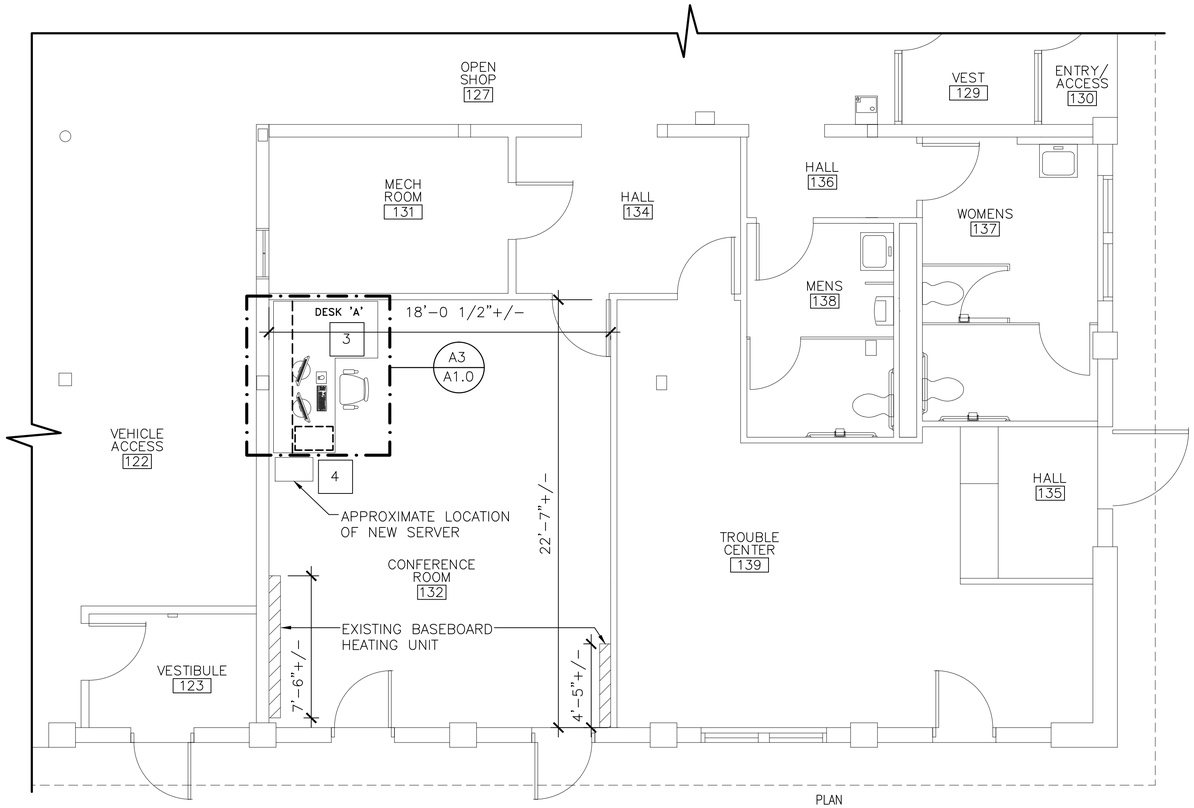
NAVFAC DRAWING NO. 12703568

SHEET 115 OF 506

C2.0 | 43-15-71

DRAWFORM REVISION: 10 OCTOBER 2014

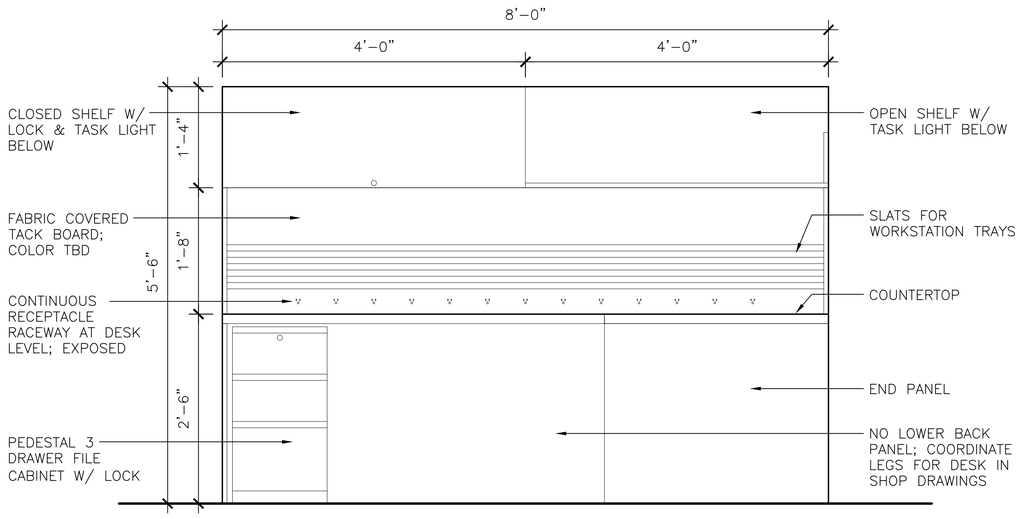

FILE NAME: J:\A\A1066 AEC Subconsulting Support\02_R-22\DWG-CAD\DESIGN\A1066_2_R22_SITE.dwg LAYOUT NAME: C2.0 B043 SITE PLOTTED: Friday, August 07, 2015 - 2:54pm USER: REP




## B043 FIRST FLOOR CONTROL CENTER PARTIAL FLOOR PLAN

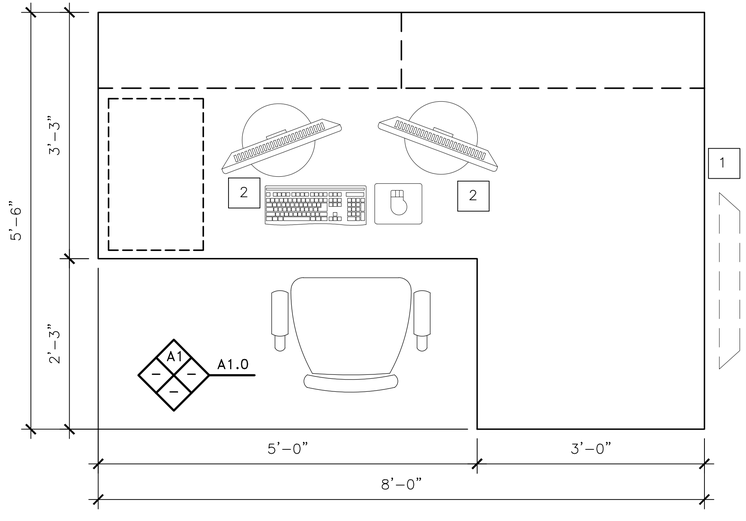
1/2" – 1'–0"

PLAN NORTH




A1 / A1.0 PROPOSED ELEVATION AT DESK, TYPICAL

1" – 1'–0"




A3 / A1.0 PROPOSED PLAN AT DESK, TYP.

1" – 1'–0"

## GENERAL SHEET NOTES

1. BUILDING 043 CONFERENCE ROOM NO. 132 SHALL BE REVIEWED BY THE PORTSMOUTH NAVAL SHIPYARD FOR COMPLIANCE WITH MIDLANT ACCREDITATION STANDARDS.
2. NAVFAC TO PROVIDE FURNISHINGS; REFER TO UFC 4–1411–05N (MOST RECENT DATE) FOR DESK SIZING GUIDELINE AND BEST PRACTICES. FURNISHING SHOWN IN PLAN REPRESENT INTERPRETATION OF UFC 4–1411–05N APRIL 1, 2015 REQUIREMENTS FOR A DISTRIBUTED ICS MONITORING STATION MODEL.
3. GENERAL NOISE AND VIBRATION CONTROL REQUIREMENTS AS IDENTIFIED IN UFC 3–101–01 AND UFC 3–450–01; PROVIDE SOUND ISOLATION AND SOUND ABSORPTION AT INDIVIDUAL SPACES WHERE POSSIBLE.
4. PATCH ANY WALL PENETRATIONS OR DAMAGE TO WALLS EXISTING OR CREATED DURING CONSTRUCTION. PROVIDE ONE (1) COAT OF PRIMER AS REQUIRED, AND TWO (2) COATS OF LATEX PAINT AT WALLS & CEILING; COLOR TO BE DETERMINED BY PNSY.
5. REPLACE ANY DAMAGED CEILING TILES TO MATCH EXISTING.
6. REPLACE ANY DAMAGED FLOORING TO MATCH EXISTING.
7. PROVIDE CLEAN AGENT FIRE EXTINGUISHER; ACCORDING TO UFC 4–1411–05N. PROVIDE SURFACE MOUNTED CABINETS TO MATCH EXISTING STYLE. COORDINATE WITH A–E FOR LOCATION.
8. SEE SHEET A1.1 FOR SHAFT AND CHASE ENCLOSURE INFORMATION.
9. ALL WIRING & CABLING SHALL BE NEATLY ROUTED AND CONTAINED IN FLEXIBLE BRAIDED SHEATHING

## NEW WORK KEYNOTES

1. 54" MONITOR, WALL HUNG, VERIFY HEIGHT AND LOCATION IN FIELD.
2. 32" MONITOR, DESKTOP.
3. WORKSTATION; THE DEPICTED WORK STATIONS ARE SHOWN FOR GENERAL CONFIGURATION. CONTRACTOR SHALL PROVIDE A WORKSTATION PLAN SHOWING EQUIPMENT AND LAYOUT FOR PNSY APPROVAL.
4. APPROXIMATE LOCATION OF NEW NETWORK SERVER.

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 0 | 90% SUBMISSION | 07/15/15 | DM |
| | 100% SUBMISSION | 07/31/15 | |

NAVFAC

LICENSED ARCHITECT NICOLE MARIE MARTINEAU No. 3625 STATE OF NEW HAMPSHIRE

SEAL

aecom architects | engineers
13 WATER ST NEWMARKET NH
(603) 200–0096 AECOM.COM
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES NCM | DRW SRR | CHK KLC

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

B43 CONTROL CENTER PARTIAL FLOOR PLAN AND DETAILS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085–XX–C–XXXX

NAVFAC DRAWING NO. 12703569

SHEET 116 OF 550

A1.0 | 43-15-73

# GENERIC HVAC ABBREVIATIONS

| | | | |
|---|---|---|---|
| °F | DEGREES FAHRENHEIT | ID | INSIDE DIAMETER |
| °C | DEGREES CELSIUS | IN | INCHES |
| ø | DIAMETER | INSUL | INSULATION |
| ACV | AUTOMATIC CONTROL VALVE | KW | KILOWATT |
| AD | ACCESS DOOR | KVA | KILOVOLT AMPERE |
| ADJ | ADJUSTABLE | L | LENGTH |
| ADDL | ADDITIONAL | LB | POUND |
| AFF | ABOVE FINISHED FLOOR | LF | LINEAR FEET |
| AFG | ABOVE FINISHED GRADE | LVG | LEAVING |
| ALT | ALTERNATE | M | ONE THOUSAND |
| AP | ACCESS PANEL | MAX | MAXIMUM |
| ARCH | ARCHITECT | MBH | THOUSAND BRITISH THERMAL UNITS PER HOUR |
| ATC | AUTOMATIC TEMPERATURE CONTROL | MCA | MINIMUM CIRCUIT AMPS |
| AS | AIR SEPARATOR | MCC | MOTOR CONTROL CENTER |
| AVG | AVERAGE | MECH | MECHANICAL |
| BAS | BUILDING AUTOMATION SYSTEM | MEZZ | MEZZANINE |
| BFF | BELOW FINISHED FLOOR | MFR | MANUFACTURER |
| BHP | BRAKE HORSEPOWER | MIN | MINIMUM |
| BLDG | BUILDING | MTD | MOUNTED |
| BLR | BOILER | MU | MAKEUP WATER |
| BOD | BOTTOM OF DUCT | N/A | NOT APPLICABLE |
| BOP | BOTTOM OF PIPE | NC | NORMALLY CLOSED |
| BSMY | BASEMENT | NC | NOISE CRITERIA |
| BTU | BRITISH THERMAL UNIT | NIC | NOT IN CONTRACT |
| BTUH | BRITISH THERMAL UNIT PER HOUR | NO | NORMALLY OPEN |
| C | CONVECTOR | NO. | NUMBER |
| CF | CEILING FAN | NOM | NOMINAL |
| CL | CENTERLINE | NTS | NOT TO SCALE |
| CLG | CEILING | OB | OCTAVE BAND |
| CO | CLEAN-OUT | OC | ON CENTER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COMP | COMPRESSOR | ODP | OPEN DRIP PROOF |
| CONC | CONCRETE | OFCI | OWNER FURNISHED CONTRACTOR INSTALLED |
| CONN | CONNECTION | OFOI | OWNER FURNISHED OWNER INSTALLED |
| CONTR | CONTRACTOR | OV | OUTLET VELOCITY |
| CORR | CORRIDOR | PCF | POUNDS PER CUBIC FOOT |
| CUF | CUBIC FEET | PD | PRESSURE DROP |
| CUH | CABINET UNIT HEATER | PH | PHASE |
| CYL | CYLINDER | PLMB | PLUMBING |
| D | DRAIN | POS | PROVIDED BY OTHER SECTION(S) |
| DB | DRY BULB TEMPERATURE | PRESS | PRESSURE |
| DDC | DIRECT DIGITAL CONTROL | PRIM | PRIMARY |
| DDCFP | DIRECT DIGITAL CONTROL FIELD PANEL | PSIA | POUNDS PER SQUARE INCH ABSOLUTE |
| DIA | DIAMETER | PSID | POUNDS PER SQUARE INCH DIFFERENTIAL |
| DIM | DIMENSION | PSIG | POUNDS PER SQUARE INCH GAUGE |
| DN | DOWN | PVC | POLYVINYL CHLORIDE |
| DWG | DRAWING | REP | REPRESENTATIVE |
| EA | EACH | RET | RETURN |
| EAT | ENTERING AIR TEMPERATURE | REQD | REQUIRED |
| EFF | EFFICIENCY | REQS | REQUIREMENTS |
| ECUH | ELECTRIC CABINET UNIT HEATER | RH | RELATIVE HUMIDITY |
| ELEC | ELECTRICAL | RM | ROOM |
| ELEV | ELEVATION | RPM | REVOLUTIONS PER MINUTE |
| EMER | EMERGENCY | SCH | SCHEDULE |
| ENT | ENTERING | SOV | SOLENOID OPERATED VALVE |
| EQUIP | EQUIPMENT | SPECS | SPECIFICATIONS |
| EXH | EXHAUST | SQ | SQUARE |
| EXP | EXPANSION | SQFT | SQUARE FEET |
| FTR | FINNED TUBE RADIATION | SS | STAINLESS STEEL |
| FCV | FLOW CONTROL VALVE | STD | STANDARD |
| FG | FIBERGLASS | STDBY | STANDBY |
| FLEX | FLEXIBLE | STL | STEEL |
| FLR | FLOOR | SUCT | SUCTION |
| FLRDR | FLOOR DRAIN | SUP | SUPPLY |
| FP | FIRE PROTECTION | TA | THROW-AWAY |
| FPM | FEET PER MINUTE | TAV | THERMOSTATIC AIR VENT |
| FT | FEET | TEFC | TOTALLY ENCLOSED FAN COOLED |
| FT/SEC | FEET PER SECOND | TEL | TELEPHONE |
| FURN | FURNISHED | TEMP | TEMPERATURE |
| FVNR | FULL VOLTAGE NON-REVERSING | TOD | TOP OF DUCT |
| GA | GAUGE | TOP | TOP OF PIPE |
| GAL | GALLONS | TYP | TYPICAL |
| GALV | GALVANIZED | UH | UNIT HEATER |
| GC | GENERAL CONTRACTOR | V | VENT |
| GND | GROUND | VEL | VELOCITY |
| GPH | GALLONS PER HOUR | VERT | VERTICAL |
| GPM | GALLONS PER MINUTE | VFD | VARIABLE FREQUENCY DRIVE |
| GRD | GRADE (GROUND LEVEL) | VTR | VENT THROUGH ROOF |
| GWB | GYPSUM WALL BOARD | W | WIDTH |
| H | HEIGHT | W/ | WITH |
| HD | HEAD | W/O | WITHOUT |
| HP | HORSEPOWER | WB | WET BULB TEMPERATURE |
| HR | HOUR | WF | WIDE FLANGE |
| HZ | HERTZ | WG | WATER GAUGE |
| | | WRT | WITH RESPECT TO |

# PIPING LEGEND

- BALL VALVE
- RISE (SINGLE LINE – PLAN VIEW)
- DROP (SINGLE LINE – PLAN VIEW)
- TOP TAKEOFF
- BOTTOM TAKEOFF
- PIPE BREAK (SINGLE LINE)

# FLOW DIAGRAM & CONTROL DIAGRAM EQUIP. SYMBOLS

- FILTER BANK
- HEATING COIL
- COOLING COIL
- PARALLEL BLADE DAMPER W/ MODULATING ACTUATOR
- BACKDRAFT DAMPER
- CENTRIFUGAL FAN
- INLINE CENTRIFUGAL FAN
- OPPOSED BLADE DAMPER W/ TWO POSITION ACTUATOR
- OPPOSED BLADE DAMPER W/ MODULATING ACTUATOR
- PARALLEL BLADE DAMPER W/ TWO POSITION ACTUATOR

# GENERIC HVAC SYSTEM TAGS

- CRACU 1 — COMPUTER ROOM AC UNIT
- J 1 — JACE BOX
- ACCU 1 — AIR COOLED CONDENSING UNIT

# CALL OUT SYMBOLS

- THERMOSTAT
- CONNECT TO EXISTING
- LIMIT OF NEW WORK
- REFER TO DRAWINGS ( ) FOR CONTINUATION
- SYMBOL DESIGNATES ASSOCIATED SYSTEM OR SERVICE (ie LPS)
- DIFFUSER, GRILLE, REGISTER LETTER DESIGNATION (See Schedule for ATD type)
- SA-2 / 200 ← DESIGN CFM

# EQUIPMENT TAG SYMBOLS & ABBREVIATIONS

EQUIPMENT NOT REQUIRING ELECTRIC SERVICE → TAG / NO; TAG / DATA / DATA → SEE SCHEDULE FOR PERFORMANCE REQUIREMENTS ← TAG / NO; TAG / DATA / DATA ← EQUIPMENT REQUIRING ELECTRIC SERVICE

NOTE:REFER TO SCHEDULES FOR DEFINITION OF EQUIPMENT SPECIFIC DATA LISTED WITHIN TAG BLOCKS

# AIR SYSTEM SPECIFIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| AC | AIR CONDITIONING | LVDR | LOUVERED DOOR |
| ACD | AUTOMATIC CONTROL DAMPER | OA | OUTSIDE AIR |
| ACU | AIR CONDITIONING UNIT | OAI | OUTSIDE AIR INTAKE |
| AF | AIR FOIL | OBD | OPPOSED BLADE DAMPER |
| AHU | AIR HANDLING UNIT | OED | OPEN END DUCT |
| ALD | ACOUSTICALLY LINED DUCTWORK | RA | RETURN AIR |
| ATD | AIR TERMINAL DEVICE | RF | RETURN FAN |
| AVS | AIR VOLUME TRAVERSE STATION | RG | RETURN GRILLE |
| BDD | BACKDRAFT DAMPER | RHC | REHEAT COIL |
| BI | BACKWARD INCLINED | RLF | RELIEF |
| CC | COOLING COIL | RR | RETURN REGISTER |
| CD | CEILING DIFFUSER | RV | ROOF VENT |
| CFM | CUBIC FEET PER MINUTE | SA | SUPPLY AIR |
| CG | CEILING GRILLE | SATT | SOUND ATTENUATOR |
| DIFF | DIFFUSER | SCR | SCREEN |
| DWDI | DOUBLE WIDTH DOUBLE INLET | SD | SMOKE DAMPER |
| DWSI | DOUBLE WIDTH SINGLE INLET | SDET | SMOKE DETECTOR |
| DX | DIRECT EXPANSION | SEF | SMOKE EXHAUST FAN |
| EF | EXHAUST FAN | SF | SUPPLY FAN |
| EG | EXHAUST GRILLE | SFD | COMBINATION AUTOMATIC SMOKE/FIRE DAMPER |
| ESP | EXTERNAL STATIC PRESSURE | -- | WITH ACCESS DOOR |
| F | FAN | SG | SUPPLY GRILLE |
| FC | FORWARD CURVED | SM | SHEETMETAL |
| FA | FREE AREA | SP | STATIC PRESSURE |
| FCU | FAN COIL UNIT | SR | SUPPLY REGISTER |
| FD | FIRE DAMPER (W/ ACCESS DOOR) | SWDI | SINGLE WIDTH DOUBLE INLET |
| FLTR | FILTER | SWSI | SINGLE WIDTH SINGLE INLET |
| FPI | FINS PER INCH | TE | TOILET EXHAUST |
| FPT | FAN POWERED TERMINAL BOX | TF | TRANSFER FAN |
| GE | GENERAL EXHAUST | TG | TRANSFER GRILLE |
| GIH | GRAVITY INTAKE HOOD | TR | TRANSFER |
| GRH | GRAVITY RELIEF HOOD | TSP | TOTAL STATIC PRESSURE |
| HC | HEATING COIL | UC | UNDERCUT DOOR |
| LAT | LEAVING AIR TEMPERATURE | VD | VOLUME DAMPER |
| LD | LINEAR DIFFUSER | VV | VARIABLE VOLUME SUPPLY AIR TERMINAL BOX |
| LUVR | LOUVER | WMS | WIRE MESH SCREEN |

# HVAC GENERAL NOTES

1. GENERAL NOTES APPLY TO ALL HVAC DRAWINGS.
2. THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID, ARE DEEMED TO BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITIONS OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. ABSOLUTELY NO CLAIMS FOR EXTRA COMPENSATION WILL BE CONSIDERED FOR EXISTING CONDITIONS VISIBLE OR REASONABLY INFERABLE FROM A CAREFUL EXAMINATION OF THE EXISTING BUILDING.
3. THIS CONTRACTOR SHALL INSPECT THE EXISTING FIELD CONDITIONS AT THE SITE AND THE "AS-BUILT" BASE BUILDING CONTRACT DOCUMENTS PRIOR TO THE START OF ANY WORK TO DETERMINE WHAT EFFECT THE EXISTING CONDITIONS WILL HAVE ON HIS WORK. POTENTIAL PROBLEM AREAS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER IMMEDIATELY.
4. THIS CONTRACTOR SHALL CONNECT HIS WORK TO VARIOUS EXISTING PIPING, DUCTWORK, AND CONTROL SYSTEMS IN THE BASE BUILDING. THE NEW WORK SHALL BE COMPATIBLE WITH THE EXISTING SYSTEMS. LOCATION OF EQUIPMENT OR THE ROUTING OF THE VARIOUS SYSTEMS AS WELL AS OPENINGS IN FLOOR SLABS OR WALLS SHALL BE GOVERNED BY THE EXISTING CONDITIONS AS THEY APPEAR IN THE FIELD OR ON THE "AS-BUILT" DRAWINGS.
5. CARE SHALL BE TAKEN DURING THE INSTALLATION TO NOT DAMAGE OR INTERRUPT BUILDING SYSTEMS AND SERVICES THAT ARE ALREADY INSTALLED. DAMAGE TO SUCH SYSTEMS OR EQUIPMENT CAUSED BY THIS CONTRACTOR DURING INSTALLATION SHALL BE REPAIRED AND/OR REPLACED AT THIS CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE BUILDING OWNER.
6. SHUTDOWN OF EXISTING SYSTEMS FOR CONNECTION TO EXISTING SERVICES SHALL BE COORDINATED WITH THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR AND BUILDING OWNER. THIS CONTRACTOR SHALL SUBMIT REQUESTS, WHERE THEY AFFECT THE OPERATION OF THE BUILDING SYSTEMS, AT LEAST FIFTEEN DAYS IN ADVANCE OF ANY REQUIRED SHUTDOWN. THE ACTUAL SHUTDOWN PERIOD SHALL BE AS SHORT AS POSSIBLE AND AT A TIME MUTUALLY AGREEABLE TO THE BUILDING OWNER AND THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR.
7. DRAWINGS ARE DIAGRAMMATIC, THEREFORE DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS, AS WELL AS ROUTING PATHS, IN FIELD.
8. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER, AND SHOULD BE KEPT TO A MINIMUM FOR SYSTEM EFFICIENCIES.
9. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT AND/OR PIPE TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION. VERIFY ACCESS IS PROVIDED FOR SERVICING EQUIPMENT AS REQUIRED.
10. ALL MATERIALS AND EQUIPMENT UNLESS SPECIFICALLY INDICATED AS REUSED, SHALL BE NEW.
11. ACCESS PANELS SHALL BE PROVIDED TO ALLOW FOR CLEANING OF COILS AND SERVICING OF DAMPERS, HEATERS, VALVES, AND ALL CONCEALED MECHANICAL EQUIPMENT.
12. INSTALL NEW THERMOSTATS 4 FEET AFF OR AS DIRECTED OTHERWISE BY ENGINEER.
13. GENERAL CONTRACTOR TO PATCH ALL EFFECTED INTERIOR AND EXTERIOR EXISTING FLOOR, WALL, AND CEILING SURFACES TO MATCH EXISTING. PROVIDE ESCUTCHEON PLATES.
14. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
15. ANY AND ALL WALLS, CEILINGS AND FLOORS THAT ARE ANTICIPATED TO BE DISTURBED DURING THE DEMOLITION OR INSTALLATIONS PROCESS, AS INDICATED ON THE DRAWINGS, SHALL BE TESTED FOR HAZARDOUS MATERIALS PRIOR TO DISTURBING THE SURFACES. ROUTING OF PIPING HAS BEEN INDICATED TO DEPICT THE INTENT OF THE WORK. ACTUAL ROUTING MAY DIFFER IN THE FIELD DUE TO BUILDING CONSTRUCTION. COORDINATE TESTING OF ALL SURFACES TO BE DISTURBED, ALONG THE ACTUAL INSTALLATION ROUTE, WITH THE HAZARDOUS MATERIALS CONTRACTOR. REFER TO EXISTING HAZMAT REPORT FOR TESTING RESULTS.
16. MECHANICAL CONTRACTOR TO REMOVE ALL IDENTIFIED R-22 EQUIPMENT AND ASSOCIATED APPURTENANCES AND REPLACE IN KIND WITH A R410A OR R407C SYSTEM.
17. REFRIGERANT PIPING IS DIAGRAMMATIC, CONTRACTOR TO DETERMINE ROUTING IN FIELD AND RE-USE EXISTING PENETRATIONS. ANY EXPOSED PIPING TO BE CONCEALED IN A CHASE. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
18. SEE CIVIL DRAWINGS FOR DEMOLISHED AND NEW CONCRETE PADS.
19. THE MECHANICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE MECHANICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL ADDITIONAL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.
20. SEE PWD-ME DRAWING;
 43-15-67 FOR TITLE SHEET
 43-15-68 FOR LIST OF DRAWINGS
 43-15-69 FOR GENERAL NOTES & LEGENDS
 43-15-72 FOR CHASE AND SOFFIT DETAILS
 43-15-74 FOR STRUCTURAL NOTES AND SUPPORTS

# SCHEDULE OF DRAWINGS

| DWG# | DESCRIPTION |
|---|---|
| M1.0 | BUILDING 43 HVAC LEGEND |
| M2.0 | BUILDING 43 HVAC FIRST FLOOR PLAN |
| M3.0 | BUILDING 43 HVAC CONTROLS |
| M3.1 | BUILDING 43 HVAC CONTROLS |
| M3.2 | BUILDING 43 HVAC CONTROLS |
| M4.0 | BUILDING 43 HVAC SCHEDULES AND DETAILS |

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE – DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER – SEAL

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25 AVIATION AVE STE 204 PORTSMOUTH, NH 03801 603-319-8244
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

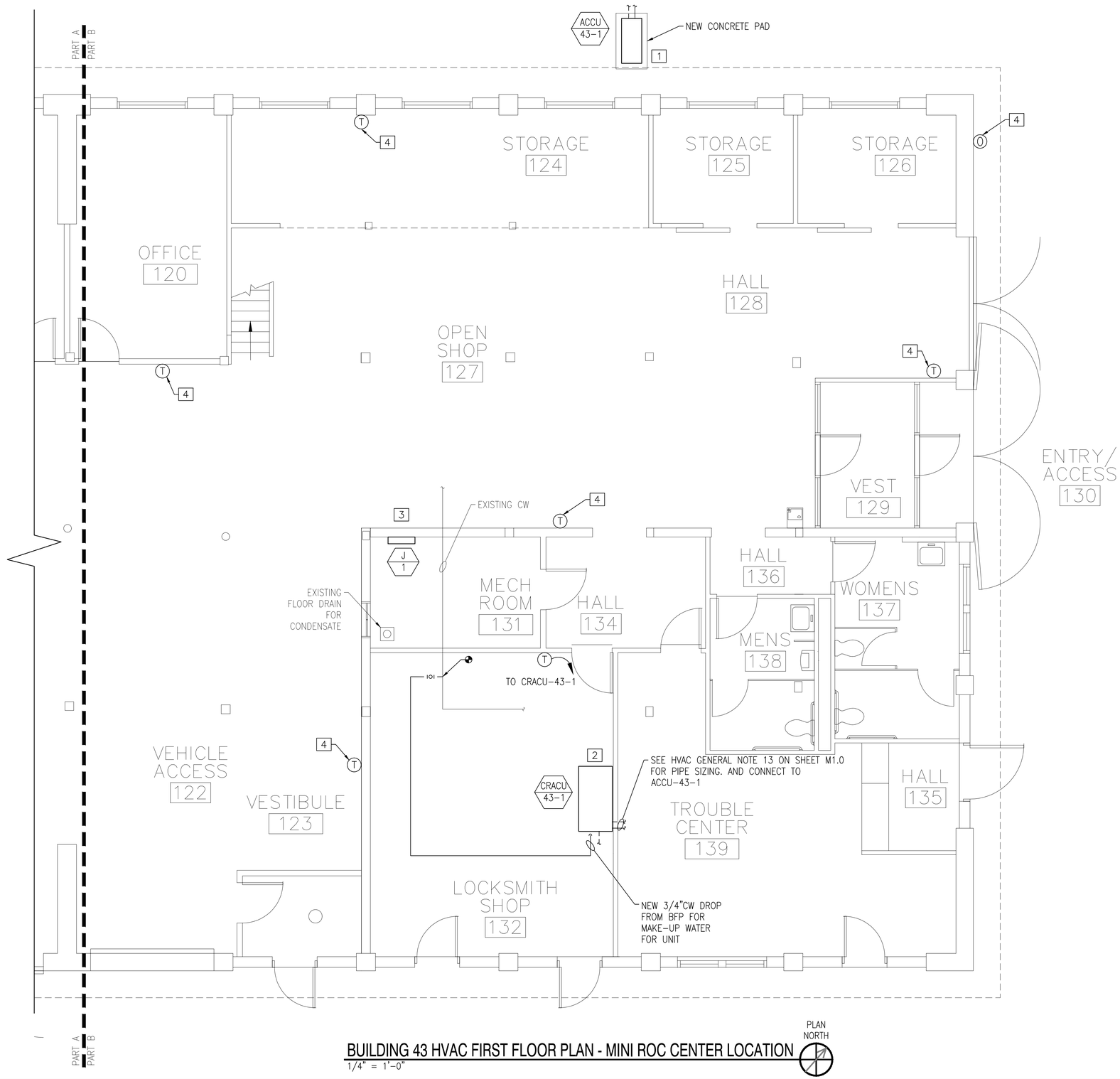
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 43 HVAC LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703570
SHEET 117 OF 506

M1.0 | 43-15-75

DRAWFORM REVISION: 10 OCTOBER 2014




BUILDING 43 HVAC FIRST FLOOR PLAN - MINI ROC CENTER LOCATION

1/4" = 1'-0"

PLAN NORTH

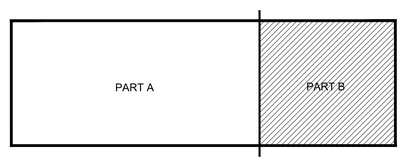
## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

## NEW WORK KEYNOTES

1. FURNISH AND INSTALL NEW ACCU AND IT'S ASSOCIATED RS/RL LINES. NEW ACCU TO BE PLACED ON NEW CONCRETE PAD.
2. FURNISH AND INSTALL NEW CEILING MOUNTED CRACU AND IT'S ASSOCIATED RS/RL LINES AND WATER LINES. CONDENSATE LINE TO BE ROUTED TO NEAREST INDIRECT DRAIN IN MECHANICAL ROOM. PROVIDE WITH NEW DDC COMPATIBLE THERMOSTAT AND CONNECT TO EXISTING CONTROL WIRING, FIELD COORDINATE EXACT LOCATION WITH NAVFAC.
3. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF NEW DDC JACE BOX WITH NAVFAC.
4. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF TEMPERATURE SENSOR AND OUTDOOR AIR SENSOR WITH NAVFAC.

## KEY PLAN




## GRAPHIC SCALE

1/4" = 1' 4 2 0 4 8 12 scale feet

| | DM | APPR |
|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 |
| 2 | 90% SUBMISSION | 06/04/2015 |
| 1 | 80% SUBMISSION | 04/24/2015 |
| 0 | 35% SUBMISSION | 02/23/2015 |
| STM | DESCRIPTION | DATE |

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215 RAUTHO AVE, STE 204
PORTSMOUTH, NH 03801
603-431-9424
NFPA INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: JC | DRW: SV | CHK: DM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

LEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 43 HVAC FIRST FLOOR PLAN

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703571

SHEET 118 OF 506

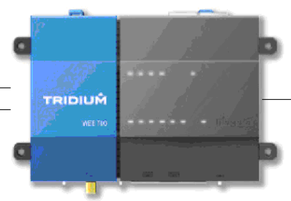
M2.0 | 43-15-76

DRAWFORM REVISION: 10 OCTOBER 2014

PORTSMOUTH NAVAL SHIPYARD ( BUILDING 43 _ PW SHOP )
NEW INTEGRATED DDC & EXISTING INVENSYS BMS SYSTEM ARCHITECTURE

NETWORK CONNECTION TO ACCESS POINT

120V 20AMP CIRCUIT




JACE-8000

NEW TRIDIUM JACE INTEGRATION

EXISTING DDC SYSTEM

1

ECHELON COMMUNICATION

EXISTING PROGRAMMABLE LON CONTROLLER
HEAT RECOVERY UNIT (HRU-1)

EXISTING PROGRAMMABLE LON CONTROLLER
AHU-1 CONTROL

1 IT IS CRITICAL THAT THE COMMUNICATION BUS IS WIRED IN A CONTINUOUS DAISY CHAIN FASHION.

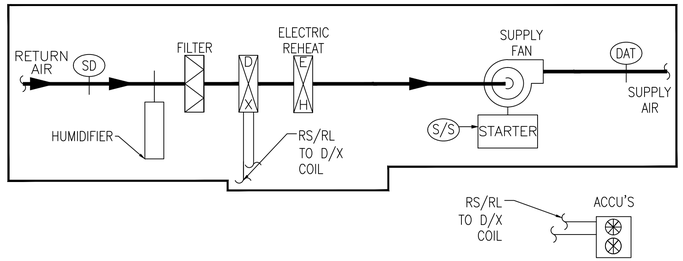
BACNET COMMUNICATIONS TO R410 EQUIPMENT

NEW BACNET CONTROLLER
CRACU-43-1

NEW BACNET CONTROLLER
ACCU-43-1

BUILDING 43
OUTDOOR AIR SENSOR
MOUNT ON NORTH SIDE OF BUILDING OUT OF DIRECT SUNLIGHT

BUILDING 43 SPACE TEMPERATURE SENSOR_5
BUILDING 43 SPACE TEMPERATURE SENSOR_4
BUILDING 43 SPACE TEMPERATURE SENSOR_3
BUILDING 43 SPACE TEMPERATURE SENSOR_2
BUILDING 43 SPACE TEMPERATURE SENSOR_1
BUILDING 43 HOT WATER RETURN TEMPERATURE
BUILDING 43 HOT WATER SUPPLY TEMPERATURE




H HUMIDITY SENSOR

T TEMPERATURE SENSOR

EQUIPMENT:
CRACU-43-1
ACCU-43-1

OFF MODE
- SUPPLY FAN IS OFF
- ACCU OFF
- COMPRESSOR IS OFF
- ELECTRIC REHEAT COIL IS OFF
- HUMIDIFIER IS OFF

COOLING MODE
- SUPPLY FAN IS ON
- ACCU ON
- COMPRESSOR IS ON
- HUMIDIFIER IS OFF
- ELECTRIC REHEAT COIL IS OFF
- SETPOINT IS 70°F(ADJ)

HUMIDIFY MODE
- SUPPLY FAN IS ON
- ACCU ON
- ELECTRIC REHEAT COIL IS OFF
- SETPOINT IS 70°F(ADJ)
- IF ROOM RELATIVE HUMIDITY (RH) DROPS BELOW 45% (ADJ) FOR TEN MINUTES AS MEASURED BY HSTAT, HUMIDIFICATION CYCLE SHALL BE ACTIVATED.
- HUMIDIFIER IS ON
- HUMIDIFICATION CYCLE ENDS WHEN SPACE HUMIDITY RISES ABOVE 55% (ADJ).

DEHUMDIFICATION MODE
- SUPPLY FAN IS ON
- ACCU ON
- HUMIDIFIER IS OFF
- SETPOINT IS 70°F(ADJ)
- IF ROOM RELATIVE HUMIDITY (RH) RISES ABOVE 55% (ADJ) FOR TEN MINUTES AS MEASURED BY HSTAT, DEHUMIDIFICATION CYCLE SHALL BE ACTIVATED.
- ELECTRIC REHEAT COIL IS ON
- DEHUMIDIFICATION CYCLE ENDS WHEN SPACE HUMIDITY DROPS BELOW 45% (ADJ).

ALARMS & SAFETIES
- WHEN SMOKE DETECTOR IS ACTIVATED, CRAC AND ACCU IS SHUTDOWN
- WHEN FAN FAILS UNIT SHUTS DOWN

## CRAC CONTROL SEQUENCE

## PANEL MATERIAL

| ITEM NO | MODEL | DESCRIPTION | QTY |
|---|---|---|---|
| C1 | J-8000 | N4 WEB BASED GLOBAL NETWORK INTERFACE | 1 |
| | | APPROPRIATE DEVICE PACKS | |
| C2 | IO-16-485 | REMOTE I/O MODULE | 1 |

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
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999 Bedford Street, Fifth Floor
Stamford, CT 06905
TEL: 203.316.0505
FAX: 203.316.0534


APPROVED
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ACTIVITY
SATISFACTORY TO DATE
DES JC | DRW SV | CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
LEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

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NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

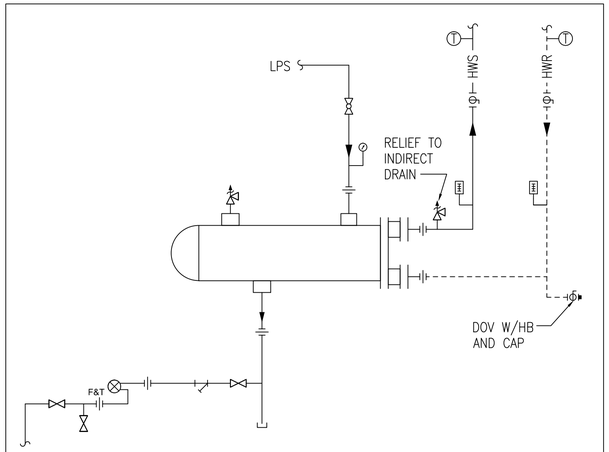
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 43 HVAC CONTROLS

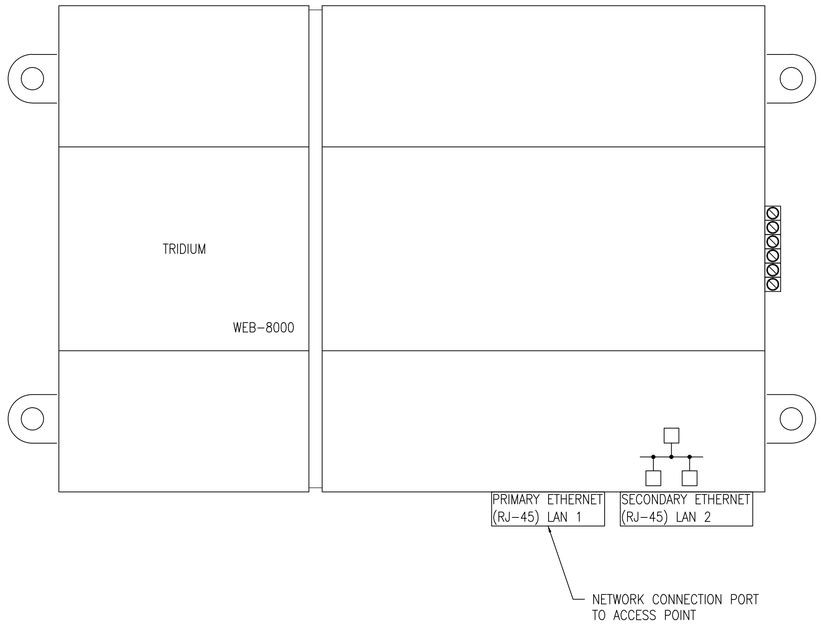
EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085-XX-C-XXXX
NAVFAC DRAWING NO.: 12703572
SHEET 119 OF 506

M3.0 | 43-15-77

DRAWFORM REVISION: 10 OCTOBER 2014




STEAM TO HOT WATER HEAT EXCHANGER




ETHERNET CONNECTION TO RF ACCESS POINT

| | STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|---|
| | 4 | 100% SUBMISSION | 08/07/2015 | DM |
| | 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| | 2 | 90% SUBMISSION | 06/04/2015 | DM |
| | 1 | 80% SUBMISSION | 04/24/2015 | DM |
| | 0 | 35% SUBMISSION | 02/23/2015 | DM |

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STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY
No. 12370
LICENSED
PROFESSIONAL ENGINEER
SEAL

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Stamford, CT 06905
781-213-8888
215 SOUTH VAN, STE 204
Centre, AL 35960
256-219-9224
NAVFAC INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

| DES | JC | DRW | SV | CHK | DM |
|---|---|---|---|---|---|

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

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NAVAL FACILITIES ENGINEERING COMMAND
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NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 43 HVAC CONTROLS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.
N40085-XX-C-XXXX

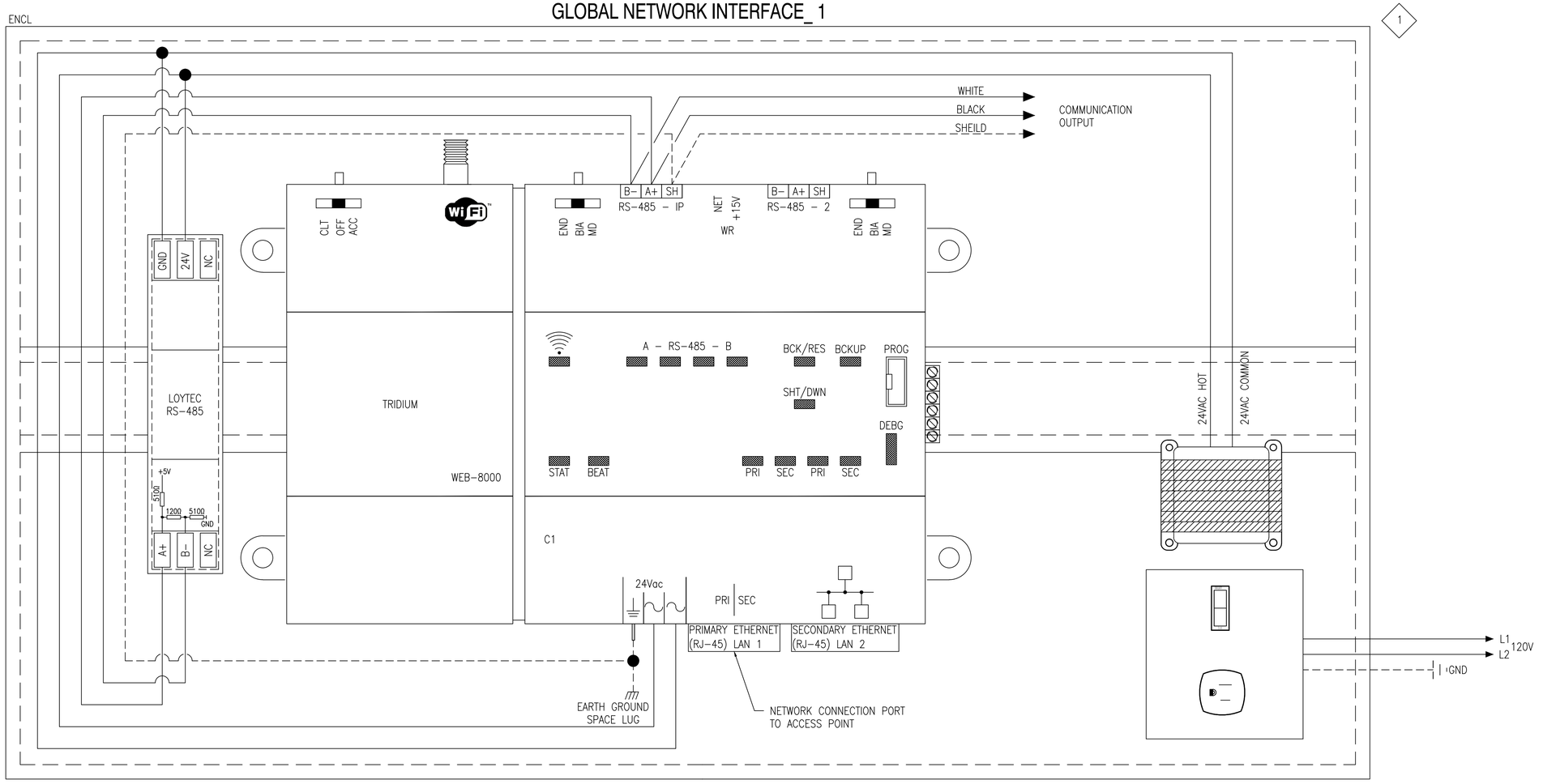
NAVFAC DRAWING NO.
12703573

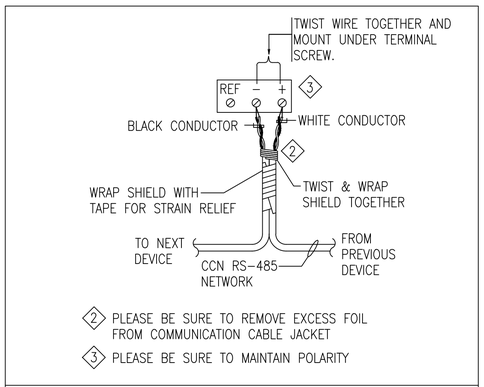
SHEET 120 OF 506

M3.1 | 43-15-78

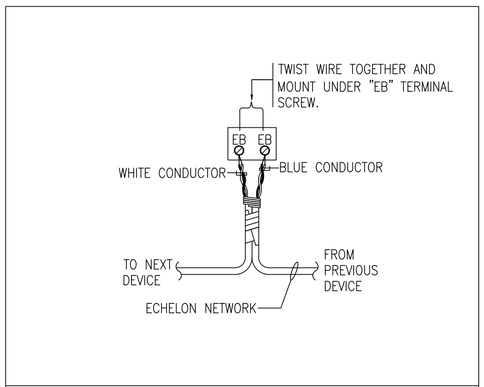
DRAWFORM REVISION: 10 OCTOBER 2014

# GLOBAL NETWORK INTERFACE_ 1




RS-485 BACNET MS/TP CONNECTION DETAIL




E-BUS CONNECTION DETAIL

1 LOCATION OF CONTROLLER TO BE FIELD VERIFIED

## PANEL MATERIAL

| ITEM NO | MODEL | DESCRIPTION | QTY |
|---|---|---|---|
| C1 | J–8000 | N4 WEB BASED GLOBAL NETWORK INTERFACE | 1 |
| ENCL | ENC–001 | 12"x18"x4" ENCLOSURE W/ 24V TRANSFORMER | 1 |
| EOL1 | 209541B | END OF LINE RESISTOR | 1 |
| LT1 | LT–B4 | RS–485 NETWORK TERMINATOR | 1 |

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
SEAL

CSI
CONSTRUCTION SPECIALTIES, INC.
999 Broadway - Suite 226
Saugus, MA 01906
781-233-9933
215 SOUTH VAN DYKE
SUITE 420
DOVER, DE 19904
302-674-8244
INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES: JC DRW: SV CHK: DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 43 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703574
SHEET 121 OF 506
M3.2 43-15-79
DRAWFORM REVISION: 10 OCTOBER 2014

# COMPUTER ROOM AIR-CONDITIONING UNIT SCHEDULE

| TAG No. | SERVICE | ASSOCIATED OUTDOOR UNIT | TYPE | CFM | SUPPLY FAN | | | DX EVAPORATOR COIL | | | | REHEAT | | | HUMIDIFIER | | | ELECTRICAL | | | | FILTER DATA (SEE FILTER SCHEDULE) | DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD) | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | TOTAL | STATIC PRESS. (IN.WG) | MOTOR | | CAPACITY (MBH) | | EDB (°F) | EWB (°F) | CAPACITY (MBH) | ELECTRIC | | TYPE | CAPACITY LB./HR | ELEC. (KW) | V | PH | FLA | OPD | | | |
| | | | | | EXTERNAL | QTY. | HP | TOTAL | SENS. | | | | STAGES | kW | | | | | | | | | | |
| CRACU-43-1 | SERVER RM | ACCU-43-1 | CEILING HUNG | 800 | 0.3 | 1 | 0.5 | 23.8 | 20.1 | 72 | 61 | 16.04 | 2 | 4.7 | STEAM | 4.3 | 1.5 | 208 | 1 | 34.2 | 45 | MERV8 | LIEBERT MMD24E-PHED | SEE NOTES |

NOTES: 1. PROVIDE WITH BACNET INTERFACE. 2. PROVIDE WITH ELECTRIC REHEAT. 3. PROVIDE WITH STEAM CANISTER HUMIDIFIER. 4. PROVIDE WITH DUAL-FLOAT CONDENSATE PUMP. 5. PROVIDE WITH UNIT DISCONNECT SWITCH. 6. PROVIDE WITH SWEAT ADAPTER KIT. 7. PROVIDE WITH AIR DISTRIBUTION PLENUM. 8. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 9. PROVIDE WITH REMOTE CONTROL AND MONITORING WALL BOX.

# JACE BOX

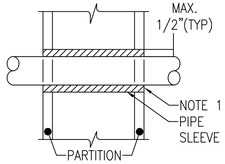
| TAG NO. | LOCATION | ELECTRICAL | | DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD) | NOTES |
|---|---|---|---|---|---|
| | | AMP | V | | |
| J-1 | SEE PLANS | 20 | 120 | JACE 8000 | SEE NOTES |

NOTES: 1. PROVIDE W/ MEMORY UPGRADE TO 4GB. 2. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.

# AIR COOLED CONDENSING UNIT SCHEDULE

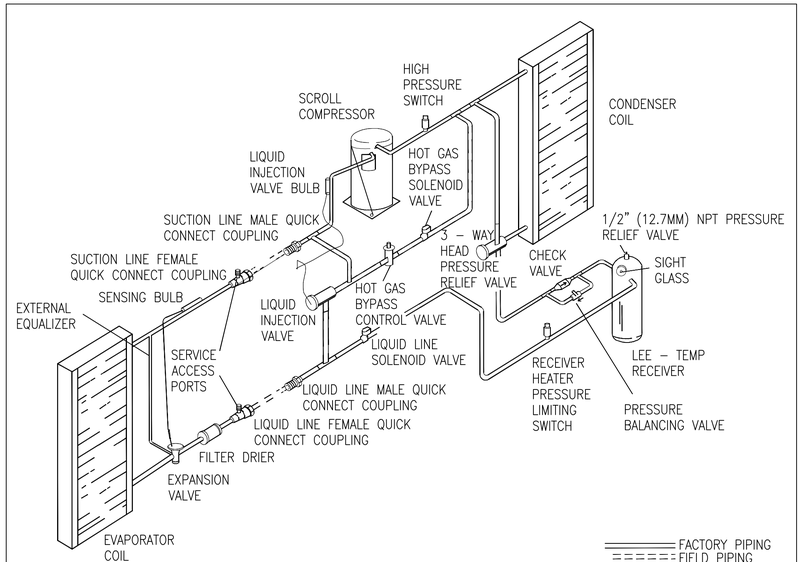
| TAG | SERVES | DESIGN BASED ON MANUFACTURER | DESIGN BASED ON MODEL No. | COOLING DATA | ELECTRIC DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | COOLING (MBH) | VOLTS | HZ | PHASE | FLA | MOCP | |
| ACCU-43-1 | CRACU-43-1 | LIEBERT | PFH027A-PL3 | 24 | 208 | 60 | 1 | 12.8 | 25 | SEE NOTES |

NOTES: 1. PROVIDE W/ SEACOAST MODEL. 2. PROVIDE W/ WIND BAFFLE. 3. PROVIDE WITH DRAIN PAN. 4. PROVIDE WITH MOUNTING BASE. 5. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.




NOTES:
1. AT FIRE RATED PARTITIONS ADD LAYER OF FIRE SAFING INSULATION AROUND PENETRATIONS SO AS TO FILL CAVITY.
2. PIPE PENETRATIONS THROUGH CORRIDOR WALLS ABOVE THE CEILING ARE TO BE FIRE STOPPED AROUND THE PENETRATION.
3. CONTRACTOR REPSONSIBLE FOR DETERMINING REQUIRED HOUR RATING TO MATCH EXISTING WALL ASSEMBLY.

## PIPE PENETRATIONS




## CRAC REFRIGERANT PIPING SMALL COMPONENT SCHEMATIC

| NO | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE SEAL

CSI ENGINEERING

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: JC | DRW: SV | CHK: DM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

FEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 43 HVAC SCHEDULES AND DETAILS

EPROJECT NO.: 1350913

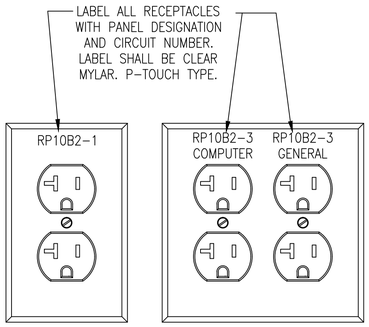
CONSTR. CONTR. NO.: N40085-XX-C-XXXX

NAVFAC DRAWING NO.: 12703575

SHEET 122 OF 506

M4.0 | 43-15-80

DRAWFORM REVISION: 10 OCTOBER 2014




## RECEPTACLE LABEL REQUIREMENTS

**W A R N I N G**

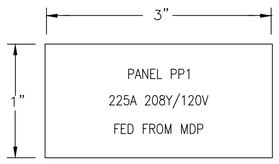
ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

| | |
|---|---|
| EQUIPMENT TYPE: | |
| GROUNDING: | Y/N GROUNDED |
| WORK DISTANCE: | INCHES |
| AVAILABLE 3ϕ BOLTED CURRENT: | kA |
| FLASH PROTECTION BOUNDARY: | INCHES |
| INCIDENT ENERGY AT 23 INCHES: | cal/cm² |
| PPE LEVEL: | 4 |
| DATE: | xx/xx/xxxx |

NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. PROVIDE ON ALL IN-LINE METER SOCKETS, SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS AND MOTOR CONTROL CENTERS IN ACCORDANCE WITH NEC 110.16.

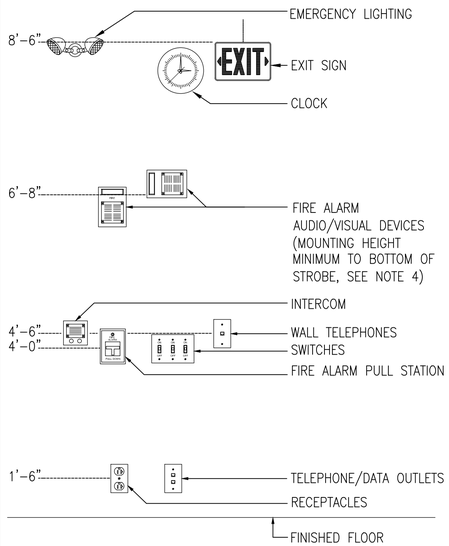
## TYPICAL FLASH PROTECTION WARNING LABEL




NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. NAMEPLATE TO BE 1/16" THICK PLASTIC WITH WHITE CENTER LAMINATION. FACE SHALL BE BLACK, ENGRAVED LETTERS SHALL BE WHITE.
3. SECURE NAMEPLATE TO SURFACES WITH HIGH STRENGTH ADHESIVE CEMENT. UTILIZE MECHANICAL FASTENERS FOR ALL EXTERIOR LOCATIONS.
4. TYPICAL FOR "STARTERS", "DISCONNECTS", AND "TRANSFORMERS".

## TYPICAL NAMEPLATE DETAIL




NOTES:

1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE EXCEPT EXIT SIGNS, CLOCKS, EMERGENCY LIGHTING AND FIRE ALARM A/V DEVICES.
2. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE.
3. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL UNLESS OTHERWISE NOTED.
4. STROBE HEIGHT ILLUSTRATED AT MAXIMUM HEIGHT. STROBE SHALL BE 80" AFF OR 6" BELOW CEILING, WHICHEVER IS LOWER.

## TYPICAL DEVICE MOUNTING HEIGHTS DETAIL

## ELECTRIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| A/AMP | AMPERE | LTG | LIGHTING |
| AC | ALTERNATING CURRENT | MCB | MAIN CIRCUIT BREAKER |
| ADA | AMERICAN WITH DISABILITIES ACT | MEC | MASSACHUSETTS ELECTRIC CODE |
| AF | AMPERE FRAME | MH | MANHOLE |
| AFF | ABOVE FINISHED FLOOR | MLO | MAIN LUGS ONLY |
| AFG | ABOVE FINISHED GRADE | MTD | MOUNTED |
| AIC | AMPERE INTERRUPTING CAPACITY | MTG | MOUNTING |
| AL | ALUMINUM | NEC | NATIONAL ELECTRIC CODE |
| AT | AMPERE TRIP | NTS | NOT TO SCALE |
| ATS | AUTOMATIC TRANSFER SWTICH | # | NUMBER |
| AWG | AMERICAN WIRE GAUGE | PVC | POLYVINYL CHLORIDE |
| C | CONDUIT | PWR | POWER |
| CATV | CABLE TELEVISION | RGS | RIGID GALVANIZED STEEL |
| CCTV | CLOSED CIRCUIT TELEVISION | SWBD | SWITCHBOARD |
| CB | CIRCUIT BREAKER | TEL | TELEPHONE |
| CKT | CIRCUIT | TERM | TERMINAL |
| ℄ | CENTERLINE | TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSION |
| DWG | DRAWING | TSP | TWISTED SHIELDED PAIR |
| EC | ELECTRICAL CONTRACTOR | TYP | TYPICAL |
| EMT | ELECTRICAL METALLIC TUBING | UNO | UNLESS OTHERWISE NOTED |
| FLMT | FLEXIBLE LIQUID TIGHT METALLIC TUBING | UPS | UNINTERRUPTIBLE POWER SUPPLY |
| GFI | GROUND FAULT INTERRUPTING | UTP | UNSHIELDED TWISTED PAIR |
| GND | GROUND | V | VOLT |
| HH | HANDHOLE | VA | VOLT AMPERE |
| HP | HORSEPOWER | VFD | VARIABLE FREQUENCY DRIVE |
| HVAC | HEATING, VENTILATION AND AIR CONDITIONING | W | WATT |
| HZ | HERTZ | WP | WEATHERPROOF |
| IG | ISOLATED GROUND | | |
| KVA | KILOVOLT – AMPERE | | |
| KW | KILOWATT | | |

## ELECTRIC GENERAL NOTES

1. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL SYSTEMS OR BUILDING COMPONENTS DAMAGED DURING THE EXECUTION OF WORK. DAMAGE SHALL INCLUDE BUT NOT LIMITED TO THE DESTRUCTION OF ITEMS INTENDED TO REMAIN.
2. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. CIRCUITRY HAS BEEN DETERMINED BASED UPON INFORMATION GATHERED, ASSUMPTIONS, AND INFORMATION OBTAINED FROM NAVFAC. EXACT CIRCUITING, EQUIPMENT SIZES, AND CONDUIT AND WIRING SIZES MAY DIFFER IN THE FIELD FROM WHAT IS SHOWN ON THE DRAWINGS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TRACING ALL CIRCUITS BEING DEMOLISHED AND REUSED PRIOR TO DISCONNECTING, VERIFYING EXISTING CIRCUITRY AND EQUIPMENT SIZES, AND SHALL SIZE ALL NEW EQUIPMENT AND BRANCH CIRCUITRY ACCORDINGLY IF ACTUAL CONDITIONS DIFFER FROM WHAT IS SHOWN ON THE DRAWINGS. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY. INTERCONNECTING BRANCH WIRING SHALL BE SIZED EQUAL TO THE HOMERUN UNLESS NOTED OTHERWISE.
3. VOLTAGE DROP HAS BEEN CONSIDERED IN THE DESIGN OF ALL BRANCH CIRCUITRY AND FEEDER SIZES BASED UPON THE ILLUSTRATED EQUIPMENT LAYOUTS AND SHORTEST CONDUCTOR/RACEWAY ROUTING. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR DEVIATIONS TAKEN THAT WILL INCREASE CONDUCTOR/RACEWAY ROUTING LENGTHS. BRANCH CIRCUITS LONGER THAN 75' FOR 120V FROM PANEL TO LAST OUTLET SHALL BE INCREASED A MINIMUM OF ONE SIZE ABOVE THAT SPECIFIED TO LIMIT VOLTAGE DROP TO LESS THAN 3%. FEEDERS SHALL FOLLOW SIMILAR GUIDELINES AND BE LIMITED TO 2% DROP.
4. THE ELECTRICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE ELECTRICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL ADDITIONAL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.
5. ROUTING IS DIAGRAMMATIC. CONTRACTOR SHALL DETERMINE ROUTING IN FIELD AND RE-USE EXISTING PENETRATIONS WHERE POSSIBLE.
6. SEE PWD-ME DRAWING NUMBERS;
   - 6.1. 43-15-67 FOR TITLE SHEET
   - 6.2. 43-15-68 FOR LIST OF DRAWINGS
   - 6.3. 43-15-69 FOR GENERAL NOTES & LEGENDS
   - 6.4. 43-15-72 FOR CHASE AND SOFFIT DETAILS
   - 6.5. 43-15-74 FOR STRUCTURAL NOTES AND SUPPORTS

## MOTOR & CONTROLS LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| 60AS 2P | DISCONNECT SWITCH RATED 30AMP, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED<br>"3R" – INDICATES NEMA TYPE 3R ENCLOSURE<br>"2P" – INDICATES 2 POLE SINGLE PHASE DISCONNECT<br>"60AS" – INDICATES 60AMP SWITCH |
| | MOTOR |
| R | RELAY |
| | MAGNETIC MOTOR STARTER |
| EPO | EMERGENCY POWER OFF BUTTON |
| WC | WIRELESS CONTROLLER PROVIDED BY NAVFAC. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER FOR POWER CONFIGURATION. |
| AP | EXTERIOR ACCESS POINT PROVIDED BY NAVFAC. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER FOR POWER CONFIGURATION. |
| JCB | DDC CONTROL JACE BOX. PROVIDED BY OTHERS. FIELD COORDINATE EXACT LOCATION. |
| IR | TRIDIUM REMOTE IO MODULE. PROVIDED BY OTHERS. FIELD COORDINATE EXACT LOCATION. |

## ELECTRIC SYSTEM TAGS OR CALL OUT SYMBOLS

SYMBOL

## TELECOMMUNICATIONS LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | WALL MOUNTED BOX FOR TELEPHONE/DATA CONNECTION TO FURNITURE PARTITIONS |
| C | DATA OUTLET<br>"C" – INDICATES COUNTER HEIGHT |
| C | COMBINATION TELEPHONE/DATA OUTLET<br>"C" – INDICATES COUNTER HEIGHT |

## POWER DISTRIBUTION LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| | 208Y/120 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS |
| | 480Y/277 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS |
| T | DRY TYPE TRANSFORMER |

## BRANCH CIRCUIT & FEEDER LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| PP1-(X) | BRANCH CIRCUIT HOME RUN. TYPICAL 2#12 & 1#12G IN ¾"C MINIMUM. PP1-(1) INDICATES PANEL AND CIRCUIT DESIGNATION FROM WHICH HOME RUN SHALL ORIGINATE. EACH CIRCUIT SHALL BE 20A-1P (20AMP SINGLE POLE) UNLESS NOTED OTHERWISE. |
| PP1-(X) | |

## WIRING DEVICES

| SYMBOL | DESCRIPTION |
|---|---|
| # C | DUPLEX RECEPTACLE, GROUNDING TYPE, RATED 20A, 125V<br>"C" – INDICATES COUNTER HEIGHT<br>"#" – INDICATES CIRCUIT NUMBER |
| WP | GROUND FAULT INTERRUPTER DUPLEX RECEPTACLE<br>"WP" – DENOTES WEATHERPROOF ENCLOSURE |
| P | WALL MOUNTED BOX FOR POWER CONNECTION TO FURNITURE PARTITIONS |

## FIRE ALARM LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| F | FIRE ALARM MANUAL PULL STATION |
| 75cd F | FIRE ALARM NOTIFICATION DEVICE<br>"75cd" – DENOTES CANDELA RATING<br>"F" – DENOTES AUDIBLE/VISUAL DEVICE<br>"L" – DENOTES VISUAL ONLY DEVICE |
| S | SMOKE DETECTOR |

## LIGHTING LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| EB1 | EMERGENCY BATTERY UNIT – WALL MOUNTED |

## EXISTING EQUIPMENT LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| XM | EXISTING EQUIPMENT TO REMAIN |

## SCHEDULE OF DRAWINGS

| DWG# | DESCRIPTION |
|---|---|
| E1.0 | BUILDING 43 ELECTRICAL LEGEND |
| E2.0 | BUILDING 43 ELECTRICAL FIRST FLOOR PARTIAL PLAN – MINI ROC CENTER LOCATION |
| E3.0 | BUILDING 43 ELECTRICAL SCHEDULES |

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

CHARLES E. MACE No. 13078 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE SEAL

CSI

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES TM | DRW TM | CHK JO

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 43 ELECTRICAL LEGEND

EPROJECT NO.: 1350913

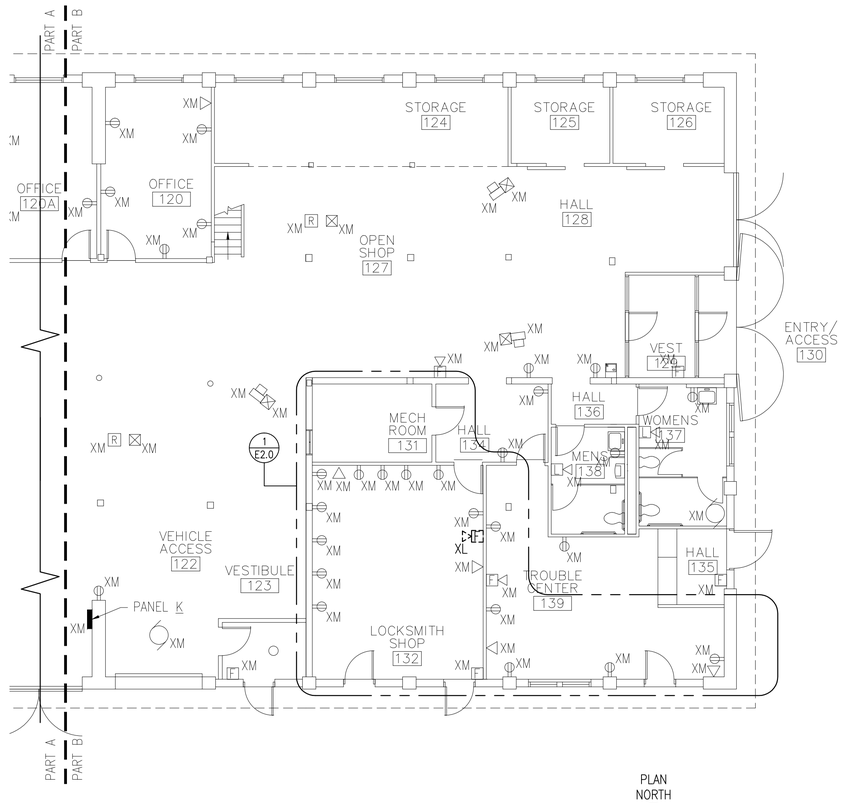
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703576

SHEET 123 OF 506

E1.0 | 43-15-81

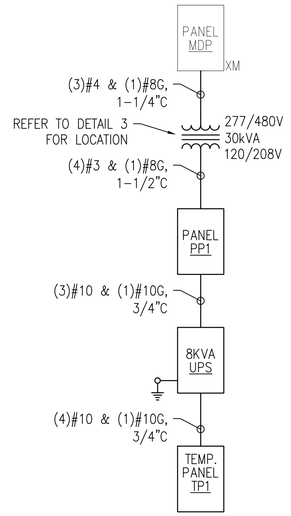
DRAWFORM REVISION: 10 OCTOBER 2014




## BUILDING 43 EXISTING CONDITIONS PARTIAL PLAN

1/8" = 1'-0"

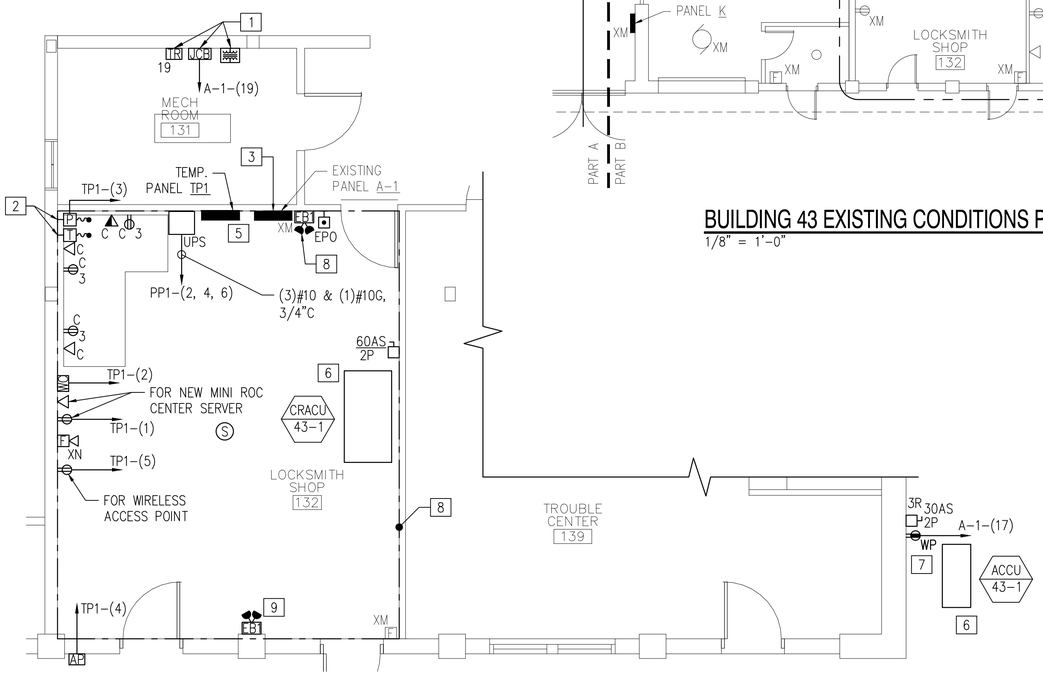
PLAN NORTH




## ONE-LINE DIAGRAM

N.T.S.

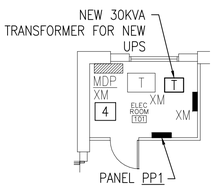
2 / E2.0




## BUILDING 43 MINI ROC CENTER MONITORING STATION PART PLAN

1/4" = 1'-0"

1 / E2.0

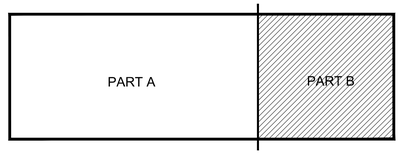



## MAIN ELECTRIC ROOM PLAN

1/8" = 1'-0"

3 / E2.0

## KEY PLAN




## GENERAL SHEET NOTES

1. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY. INTERCONNECTING BRANCH WIRING SHALL BE SIZED EQUAL TO THE HOMERUN UNLESS NOTED OTHERWISE.
2. VOLTAGE DROP HAS BEEN CONSIDERED IN THE DESIGN OF ALL BRANCH CIRCUITRY AND FEEDER SIZES BASED UPON THE ILLUSTRATED EQUIPMENT LAYOUTS AND SHORTEST CONDUCTOR/RASEWAY ROUTING. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR DEVIATIONS TAKEN THAT WILL INCREASE CONDUCTOR/RACEWAY ROUTING LENGTHS. BRANCH CIRCUITS LONGER THAN 75' FOR 120V FROM PANEL TO LAST OUTLET SHALL BE INCREASED A MINIMUM OF ONE SIZE ABOVE THAT SPECIFIED TO LIMIT VOLTAGE DROP TO LESS THAN 3%. FEEDERS SHALL FOLLOW SIMILAR GUIDELINES AND BE LIMITED TO 2% DROP.
3. THE ELECTRICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE ELECTRICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.
4. POWER BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. POWER BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
5. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING POWER DEVICES TO REMAIN.
6. FINAL LOW-VOLTAGE CONNECTIONS TO BE MADE BY CONTROLS CONTRACTOR. FIELD COORDINATE EXACT LOCATION OF EQUIPMENT WITH CONTROLS CONTRACTOR AND NAVFAC.

## NEW WORK KEYNOTES

1. NEW DDC JACE BOX AND TRIDIUM MODULE PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.
2. NEW SURFACE MOUNTED FURNITURE POWER AND TEL/DATA FEEDS. UTILIZE SURFACE MOUNTED WIREWAY WHEN IN NON-CONCEALED LOCATIONS.
3. PANEL "A-1" IS SHOWN DIAGRAMATTICALLY ONLY. EXACT LOCATIONS OF PANELS TO BE DETERMINED IN FIELD.
4. PROVIDE NEW CIRCUIT BREAKER IN EXISTING "MDP" FOR NEW UPS. REFER TO PANELBOARD SCHEDULE AND ONE-LINE DIAGRAM ON THIS SHEET FOR ADDITIONAL INFORMATION.
5. PROVIDE NEW 30A 120/208V 3-PHASE 4-WIRE PANELBOARD FOR TEMPORARY MINI ROC EQUIPMENT. REFER TO DETAIL 2 ONE-LINE DIAGRAM THIS SHEET FOR ADDITIONAL INFORMATION.
6. PROVIDE NEW CIRCUIT BREAKER IN PANEL "TP1" FOR NEW EQUIPMENT AS INDICATED ON PANELBOARD SCHEDULE. PROVIDE NEW DISCONNECT AS SHOWN. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
7. ELECTRICAL CONTRACTOR TO FIELD VERIFY IF A RECEPTACLE EXISTS WITHIN 6' OF NEW CONDENSING UNITS. IF NO RECEPTACLE EXISTS, PROVIDE NEW AS SHOWN.
8. EXISTING LIGHTING AND LIGHTING CONTROLS WITHIN THIS AREA TO BE MAINTAINED AT ALL TIMES UNLESS NOTED OTHERWISE. CONTRACTOR SHALL CLEAN, REPAIR, RE-LAMP AND RE-BALLAST ALL LIGHTING FIXTURES.
9. PROVIDE NEW EBU'S AS INDICATED. INTERCEPT EXISTING LIGHTING CIRCUIT WITHIN THE ROOM AND WIRE EBU AHEAD OF SWITCH.

## GRAPHIC SCALES

1/8" = 1' — 8 4 0 8 16 24 — scale — feet

1/4" = 1' — 4 2 0 4 8 12 — scale — feet

| | | DM | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |
| STM | DESCRIPTION | DATE | |

NAVFAC

STATE OF NEW HAMPSHIRE — CHARLES E. MACE No. 13078 — LICENSED PROFESSIONAL ENGINEER — SEAL

THE LEAD DESIGNER AND THE DESIGN TEAM HAVE PERFORMED THE DESIGN OF THIS PROJECT IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE CODES AND REGULATIONS AND HAVE PREPARED THESE CONTRACT DOCUMENTS. AS AUTHORIZED DESIGNERS OF RECORD, WE HEREBY CERTIFY THAT THESE CONTRACT DOCUMENTS COMPLY WITH THE APPLICABLE CODES AND REGULATIONS. CSD1-2015-RM

ELECTRICAL — PLUMBING — FIRE PROTECTION

CSI ENGINEERING — 919 BRIDGEWAY, SUITE 206, SAUSALITO, CA 94965, 781.213.2600 — 215 AUSTIN AVE, STE 201, BRADENTON, FL 34201, 941.243.7424 — A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES TM | DRW TM | CHK JO

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

LEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 43 ELECTRICAL FIRST FLOOR PARTIAL PLAN
MINI ROC CENTER LOCATION

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703577

SHEET 124 OF 506

E2.0 | 43-15-82

DRAWFORM REVISION: 10 OCTOBER 2014

## PANELBOARD SCHEDULE

PANEL: TP1 | VOLTS: 120/208 | NEW/EXISTING.: NEW
MAIN: 30A MCB | BUS AMPS: 100A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: 10K | LOC: LOCKSMITH SHOP 132 BLDG 43

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20/1 | MINI ROC CENTER SERVER | 1.5 | 1 | | – | .12 | WIRELESS CONTROLLER | 15/1 | 2 |
| 3 | 20/1 | FURNITURE FEED | .72 | – | | – | .2 | EXTERIOR ACCESS POINT | 15/1 | 4 |
| 5 | 15/1 | WIRELESS ACCESS POINT | .18 | – | | – | 0 | SPARE | 20/1 | 6 |
| 7 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 8 |
| 9 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 10 |
| 11 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 12 |
| | | | 2.40 | | | | 0.32 | TOTAL CONNECTED kVA: | 2.72 | |
| | | | | | | | | TOTAL CONNECTED AMPERES: | 7.56 | |

NOTES:
1. FIELD COORDINATE EXACT BREAKER SIZE WITH EQUIPMENT AND PROVIDE CIRCUIT BREAKER SIZED ACCORDINGLY.
2. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

## PANELBOARD SCHEDULE

PANEL: PP1 | VOLTS: 120/208 | NEW/EXISTING.: NEW
MAIN: 100A MCB | BUS AMPS: 100A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: 10K | LOC: LOCKSMITH SHOP 132 BLDG 43

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 25/2 | ACCU-43-1 | 2.66 | – | | – | 8 | TEMPORARY MINI ROC UPS | 30/3 | 2 |
| 3 | | | | | | | | | | 4 |
| 5 | 45/2 | CRACU-43-1 | 7.11 | – | | | | | | 6 |
| 7 | | | | | | – | 0 | SPARE | 20/1 | 8 |
| 9 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 10 |
| 11 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 12 |
| 13 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 14 |
| 15 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 16 |
| 17 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 18 |
| 19 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 20 |
| 21 | | SPACE | | – | | – | | SPACE | | 22 |
| 23 | | SPACE | | – | | – | | SPACE | | 24 |
| 25 | | SPACE | | – | | – | | SPACE | | 26 |
| 27 | | SPACE | | – | | – | | SPACE | | 28 |
| 29 | | SPACE | | – | | – | | SPACE | | 30 |
| | | | 9.77 | | | | 8.00 | TOTAL CONNECTED kVA: | 17.77 | |
| | | | | | | | | TOTAL CONNECTED AMPERES: | 49.38 | |

NOTES:
1. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

## PANELBOARD SCHEDULE

PANEL: A-1 | VOLTS: 120/208 | NEW/EXISTING.: EXISTING
MAIN: 60A MCB | BUS AMPS: 100A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: 10K | LOC: LOCKSMITH SHOP 132 BLDG 43

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 15/1 | BATHROOM | 0 | – | | – | 0 | EXISTING LOAD | 20/1 | 2 |
| 3 | 15/1 | EXISTING LOAD | 0 | – | | – | 0 | EL COMBO | 20/1 | 4 |
| 5 | 15/1 | TOOL ROOM & LIGHTS | 0 | – | | – | 0 | EXIT LIGHT ELECTRICAL ROOM | 20/1 | 6 |
| 7 | 20/1 | HVAC RM LIGHTS | 0 | – | | – | 0 | MODINE HEATER | 20/1 | 8 |
| 9 | 20/1 | RECPT. ELEC. ROOM | 0 | – | | – | 0 | OUTLETS LOCKSMITHS | 20/1 | 10 |
| 11 | 20/1 | EXISTING LOAD | 0 | – | | – | 0 | EXISTING LOAD | 20/1 | 12 |
| 13 | 20/1 | EXISTING LOAD | 0 | – | | – | 0 | LIGHTS LOCKSMITHS | 20/1 | 14 |
| 15 | 20/1 | EXISTING LOAD | 0 | – | | – | 0 | TOOL GRID MODINE | 20/1 | 16 |
| 17 | 20/1 | ACCU GFI RECEPTACLE | .18 | 1 | | OFF | 0 | SPARE | 20/1 | 18 |
| 19 | 20/1 | JACE BOX | .02 | 1 | | OFF | 0 | SPARE | 20/1 | 20 |
| 21 | 20/1 | SPARE | 0 | OFF | | OFF | 0 | SPARE | 20/1 | 22 |
| 23 | 20/1 | SPARE | 0 | OFF | | OFF | 0 | SPARE | 20/1 | 24 |
| 25 | 20/1 | ELEC. ROOM BENCH | 0 | OFF | | OFF | 0 | SPARE | 20/1 | 26 |
| 27 | 20/1 | SPARE | 0 | OFF | | OFF | 0 | SPARE | 20/1 | 28 |
| 29 | 20/1 | ELEC. RM QUAD | 0 | OFF | | OFF | 0 | SPARE | 20/1 | 30 |
| | | | 0.20 | | | | 0.00 | TOTAL NEW CONNECTED kVA: | 0.20 | |
| | | | | | | | | TOTAL NEW CONNECTED AMPERES: | 0.56 | |

NOTES:
1. VERIFY AND UTILIZE EXISTING SPARE CIRCUIT BREAKER AS INDICATED FOR NEW LOAD.
2. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

## PANELBOARD SCHEDULE

PANEL: MDP | VOLTS: 277/480 | NEW/EXISTING.: EXISTING
MAIN: 250A MCB | BUS AMPS: | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: 35K | LOC: BLDG 43 ELEC. ROOM 101

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 100/3 | PANEL D1 | 0 | – | | – | | SPACE | | 2 |
| 3 | | | | | | – | | SPACE | | 4 |
| 5 | | | | | | – | | SPACE | | 6 |
| 7 | 150/3 | SPARE | | | | | | | | 8 |
| 9 | | | | | | | | | | 10 |
| 11 | | | | | | | | | | 12 |
| 13 | 50/3 | 30KVA TRANSFORMER FOR PANEL PP1 | 17.77 | 1 | | – | 0 | TRANSFORMER T1 112.5KVA | 150/3 | 14 |
| 15 | | | | | | | | | | 16 |
| 17 | | | | | | | | | | 18 |
| 19 | 200/3 | SPARE | 0 | – | | – | | SPACE 3P | | 20 |
| 21 | | | | | | | | | | 22 |
| 23 | | | | | | | | | | 24 |
| | | | 17.77 | | | | ### # | TOTAL CONNECTED NEW kVA: | 17.77 | |
| | | | | | | | | TOTAL NEW CONNECTED AMPERES: | 21.40 | |

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER SIZED AS INDICATED FOR NEW LOAD.
2. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

## LIGHTING FIXTURE SCHEDULE

| TYPE | MANUFACTURERS | CATALOG NUMBER | DESCRIPTION | LAMPS NO. | LAMPS TYPE | INPUT VOLTS | INPUT WATTS | NOTES: |
|---|---|---|---|---|---|---|---|---|
| EB1 | LITHONIA | ELM2 | THERMOPLASTIC EMERGENCY BATTERY UNIT WITH ADJUSTABLE HEADS | 2 | LED | 120 | 2.88 | |

NOTES:
1. FIXTURES SPECIFIED WITH CATALOG NUMBERS ESTABLISH QUALITY LEVEL FOR EQUAL FIXTURES FROM MANUFACTURERS LISTED WITHOUT CATALOG NUMBERS.
2. VERIFY EXACT MOUNTING CONDITIONS AND PROVIDE APPROPRIATE ACCESSORIES AND HARDWARE TO ACCOMMODATE REQUIREMENTS.

## MECHANICAL EQUIPMENT SCHEDULE

| EQUIP TAG | DESCRIPTION | LOAD HP | LOAD KVA | LOAD VOLT | LOAD PH | PANEL SOURCE PANEL | PANEL SOURCE C/B | BRANCH CIRCUIT | CONNECTION FLEX | CONNECTION JB | CONNECTION REC | CONNECTION DISC | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACCU 43-1 | CONDENSING UNIT | – | 2.66 | 208 | 1 | PP1-(1,3) | 25A/2P | (2)#10 & (1)#10G, 3/4"C | X | – | – | X | NOTE 7 |
| CRACU 43-1 | COMPUTER ROOM A/C UNIT | – | 7.11 | 208 | 1 | PP1-(5,7) | 45A/2P | (2)#8 & (1)#10G, 3/4"C | X | – | – | X | – |

NOTES:
1. BRANCH CIRCUIT WIRING METHODS SHALL BE AS NOTED ON THE DRAWINGS AND/OR SPECIFICATIONS FOR THE APPLICABLE LOCATION.
2. "FLEX" – DENOTES FINAL THREE FEET (MAXIMUM) OF RACEWAY SHALL BE FLEXIBLE METAL OR LIQUIDTIGHT METAL CONDUIT.
3. "JB" – JUNCTION BOX DENOTES FINAL CONNECTION TO BOX OR CONTROL PANEL PREWIRED TO THE EQUIPMENT.
4. "REC" – PROVIDE RECEPTACLE IN THE NEMA CONFIGURATION NOTED.
5. NOTES 6-9 ARE OPTIONS WHICH SHALL BE SPECIFICALLY NOTED IN REMARKS FOR INCLUSION.
6. DISCONNECT SHALL BE FUSIBLE.
7. DISCONNECT SHALL BE NEMA "3R"
8. DISCONNECT SHALL BE MOTOR-RATED SWITCH WITH THERMAL OVERLOAD ELEMENT.
9. DISCONNECT PROVIDED INTEGRAL (PREWIRED) TO EQUIPMENT BY TRADE CONTRACTOR.
10. INTEGRAL CONVENIENCE RECEPTACLE PROVIDED PREWIRED TO EQUIPMENT BY TRADE CONTRACTOR.

| APPR | DATE | DESCRIPTION | STM |
|---|---|---|---|
| DM | 08/07/2015 | 100% SUBMISSION | 4 |
| DM | 07/24/2015 | 100% REVIEW SUBMISSION | 3 |
| DM | 06/04/2015 | 90% SUBMISSION | 2 |
| DM | 04/24/2015 | 80% SUBMISSION | 1 |
| DM | 02/23/2015 | 35% SUBMISSION | 0 |

NAVFAC

STATE OF NEW HAMPSHIRE – CHARLES E. MACE No. 13078 – LICENSED PROFESSIONAL ENGINEER – SEAL

THE LOCKSMITH SHOP 132 BLDG 43 ELECTRICAL SCHEDULES

PLUMBING FIRE PROTECTION – CSI ENGINEERING – 919 BROADWAY, SUITE 206, NEW YORK, NY 10010, 781.213.2400 – 213 SAATTHIN AVE, STE 204, CUMMING, GEORGIA 30040, 678.513.9424 – W.E. INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

DES TM | DRW TM | CHK JO
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

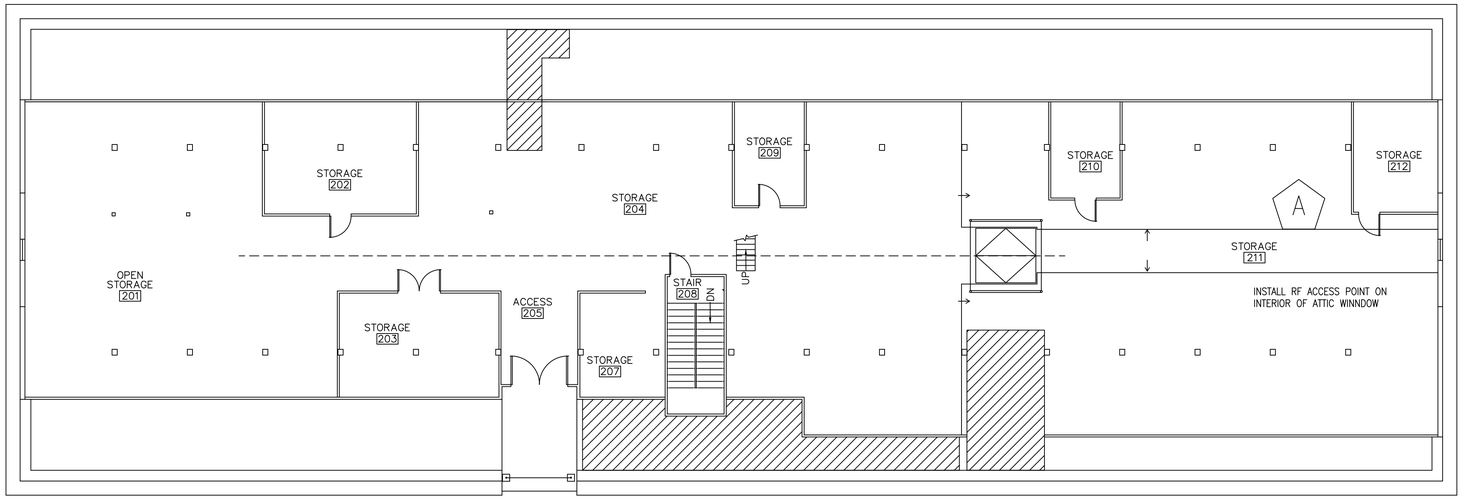
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 43 ELECTRICAL SCHEDULES

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703578
SHEET 125 OF 506

E3.0 | 43-15-83

DRAWFORM REVISION: 10 OCTOBER 2014




## B43 ANTENNA LOCATION - SECOND FLOOR PLAN

3/32" = 1'-0"

PLAN NORTH

| EQUIPMENT | WIRELESS STANDARD | MAX ACCESS POINTS | DIMENSIONS | WEIGHT | INPUT POWER | MANUFACTURER | DESIGN BASED ON MODEL |
|---|---|---|---|---|---|---|---|
| WIRELESS LAN CONTROLLER | 802.11n | 100.0000 | 17.3 X 21.2 X 1.75 INCHES | 20 LBS | 100 TO 240 VAC | CISCO 5500 | AIR-CT5508-100-K9 |

NOTE: PROVIDE APPROPRIATE ETHERNET CARD. DESIGN BASED ON CISCO MODEL GLC-T

| EQUIPMENT | WIRELESS STANDARD | ANTENNA | FREQUENCY | DIMENSIONS | WEIGHT | INPUT POWER | MANUFACTURER | DESIGN BASED ON MODEL |
|---|---|---|---|---|---|---|---|---|
| WIRELESS ACCESS POINT | 802.11n | INTEGRATED | 2.4 GHZ & 5.8 GHZ | 8.7 X 8.7 X 1.84 INCHES | 1.9 LBS | AIR-PWRINJ4 | CISCO AIRONET | AIR-CAP1602I-x-K9 |

NOTE: PROVIDE POWER INJECTOR FOR POWER OVER ETHERNET TO WIRELESS ACCESSS POINT. DESIGN BASED ON CISCO MODEL AIR-PWRINJ4.

## GENERAL SHEET NOTES

1. FASTENERS SHALL BE ATTACHED TO MORTAR IN MASONRY BUILDINGS, AVOIDING DAMAGE TO THE BRICK WHEREVER PRACTICAL.
2. EXTERIOR CONDUIT SHALL BE INSTALLED IN SHADOW-LINES OR ADJACENT TO EXISTING CONDUIT; CONDUIT COLOR TO BE COORDINATED WITH CULTURAL RESOURCE MANAGER AND A-E.
3. REFER TO MECHANICAL DRAWINGS FOR JACE LOCATION AND INFORMATION.
4. EXISTING ROOF AND WALL PENETRATIONS SHALL BE USED WHEREVER PRACTICAL.
5. INTERIOR, WINDOW-MOUNTED ACCESS POINTS SHALL BE MOUNTED IN AN OBSCURE LOCATION THAT IS LEAST VISABLE FROM INTERIOR & EXTERIOR.
6. ACCESS POINT MOUNTS SHALL NOT OBSTRUCT EGRESS, EXISTING WALKWAYS, STAIRWELLS, MECHANICAL EQUIPMENT CLEARANCES, OR OTHER APPURTANANCES.
7. UNLESS OTHERWISE NOTED, ROOFTOP ACCESS POINTS SHALL BE CENTRALIZED ON THE ROOF TO MINIMIZE VISIBILITY FROM GROUND LEVEL.
8. CONTRACTOR TO FIELD-VERIFY COMMUNICATION ACCESS POINTS ARE ALIGNED AND LINE OF SIGHT IS UNOBSTRUCTED.
9. IF A FIELD CHANGE IS REQUIRED, CONTRACTOR SHALL COORDINATE WITH CULTURAL RESOURCE MANAGER AND A-E PRIOR TO RELOCATING EQUIPMENT.
10. ANY PROPOSED CHANGES (PENETRATIONS, CONDUIT, ETC.) NOT ALREADY INDICATED ON DRAWINGS MADE TO HISTORIC BUILDINGS OR BUILDINGS LOCATED IN HISTORIC DISTRICT MUST BE REVIEWED AND APPROVED BY SHPO THROUGH NAVFAC CULTURAL RESOURCES DEPARTMENT PRIOR TO INSTSALLATION.
11. CONTRACTOR TO VERIFY RF SIGNAL STRENGTH AND CONNECTIVITY FROM/TO ALL ACCESS POINTS.
12. SEE PWD-ME DRAWING NUMBERS;
    - 12.1. 43-15-67 FOR TITLE SHEET
    - 12.2. 43-15-68 FOR LIST OF DRAWINGS
    - 12.3. 43-15-69 FOR GENERAL NOTES AND LEGEND
    - 12.4. 43-15-72 FOR CHASE AND SOFFIT DETAILS
    - 12.5. 43-15-74 FOR STRUCTURAL NOTES AND SUPPORT

## NEW WORK KEYNOTES

A

1. CONTRACTOR SHALL INSTALL NON-PENETRATING MOUNT FOR RF ACCESS POINT IN INTERIOR OF EAST WALL ATTIC WINDOW.
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT THROUGH WINDOW TO B376 ACCESS POINT.
3. CAT5 CABLE SHALL BE ROUTED ALONG EXISTING PATH TO JACE.

## GRAPHIC SCALE

3/32" = 1'

0 3' 6' 12' 18' 30'

scale feet

CHECK GRAPHIC SCALE BEFORE USING

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 0 | 90% SUBMISSION | 07/15/15 | DM |
| | 100% SUBMISSION | 07/31/15 | |

NAVFAC

KEITH CHRISTOPHER No. 13014 REGISTERED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SEAL

aecom architects | engineers
13 WATER ST NEWMARKET NH
(603) 200-0096 AECOM.COM
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES VSL DRW SRR CHK KLC

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

# B043 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703579

SHEET 126 OF 506

ET1.0 | 43-15-84

DRAWFORM REVISION: 10 OCTOBER 2014

# GENERAL SHEET NOTES

1. THE DESIGN OF THE RADIO-FREQUENCY (RF) NETWORK IS INTENDED TO PROVIDE LINE-OF-SIGHT (LOS) TO THE EXISTING RADIO TOWER AT B86A WHERE POSSIBLE. LOS IS ENCOURAGED TO PROVIDE THE STRONGEST, MOST RELIABLE LINKS FOR THE RF NETWORK. B86A WAS CHOSEN AS A PRIMARY RF HUB DUE TO GEOGRAPHICALLY CENTRAL LOCATION, BEST ELEVATION, AN EXISTING TOWER STRUCTURE, GOOD FIBER INFRASTRUCTURE WITH CONNECTIVITY TO B374 AND B43, AND LOS TO THE MAJORITY OF THE SHIPYARD. WHERE LOS TO THE B86A TOWER IS NOT AVAILABLE, AN INTERMEDIARY ACCESS POINT SHALL BE INSTALLED AT ANOTHER BUILDING TO PROVIDE LOS VIA A HELPER. ADDITIONALLY, THE NETWORK SHALL BE CONFIGURED AS A MESH NETWORK TO ENSURE SELF-HEALING SHOULD AN INDIVIDUAL NODE GO DOWN.
2. THIS PLAN IS INTENDED TO PROVIDE A GENERAL SCHEMATIC OF THE LOS RF TRANSMISSION PATHWAYS FOR THE WIRELESS NETWORK. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ANTENNA LOCATIONS AND RADIO-FREQUENCY SIGNAL CONNECTIVITY BETWEEN BUILDINGS.
3. ANY PROPOSED CHANGES TO THE LOS RF PATHWAYS OR ANTENNA LOCATIONS MUST BE APPROVED BY NAVFAC PRIOR TO INSTALLATION.
4. THE BASIS OF DESIGN RF HARDWARE ARE CISCO AIRONET SERIES RADIOS.
5. THE AVAILABLE 2.4GHZ AND 5.8GHZ SPECTRUM WAS IDENTIFIED BY THE BASE FREQUENCY MANAGER. INDEPENDENT SPECTRUM ANALYSIS WAS PERFORMED AT MULTIPLE LOCATIONS ON BASE TO DOCUMENT CURRENT SIGNAL TO NOISE RATIOS (SNR), AS WELL AS PLAN SPECIFIC FREQUENCIES AND CHANNEL WIDTHS TO BE USED FOR OPTIMUM NETWORK PERFORMANCE.
6. PER THE BASE COMMUNICATIONS OFFICE (BCO) AND NETWORK ENGINEERS, THE APPROPRIATE IP RANGE AND SUBNET WAS DETERMINED TO BE X.X.X.X 255.255.252.0 TO ALLOW FOR UP TO 1022 USEABLE IP ADDRESSES, AMPLY PROVIDING FOR THE IMMEDIATE REQUIREMENT FOR THREE IP ADDRESSES PER BUILDING SCOPED IN THE PROJECT, AS WELL AS SIGNIFICANT ROOM FOR GROWTH AND ADDITIONAL BUILDINGS/DEVICES AS NEEDED.
7. STATIC IP ADDRESSING WILL BE USED AND TRACKED IN A TABLE AS OPPOSED TO DYNAMIC HOST CONFIGURATION PROTOCOL (DHCP) TO ENSURE CONSISTENT REMOTE ACCESSIBILITY TO EACH DEVICE WITHOUT THE ADDED COMPLEXITY OF A DHCP SERVER AND DOMAIN NAME SYSTEM (DNS) TABLE MAINTENANCE.
   a. EACH BUILDING WILL BE IP ADDRESSED IN SEQUENTIAL GROUPS:
      i. PRIMARY BUILDING IP ADDRESS: RADIO (EX. 192.168.1.10)
      ii. SECONDARY BUILDING IP ADDRESS: NETWORK SWITCH OR ROUTER (EX. 192.168.1.11)
      iii. TERTIARY BUILDING IP ADDRESS: JACE (EX. 192.168.1.12)
8. NETWORK ADDRESS TRANSLATION IS NOT REQUIRED PER THE BCO.
9. PHYSICAL AND LOGICAL NETWORK SECURITY WILL MEET OR EXCEED NIST 8500 STANDARDS WITH THE INTENT OF THE R-22 AND ROC NETWORKS BEING FULLY ACCREDITABLE WHEN COMPLETE.

B386 B384 B376 B060 B059 B043 B044 B031 B029 B027 B086A B306 B086 B079 B299 B014 B022 B343 B291 B013 DD1 B018 B315 B096 B389 B153 B238 B170 B301 B308 B300 B156 B099 B375 B342 B337

LEGEND

RF TRANSMISSION PATH

| NO | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 0 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 100% SUBMISSION | 07/31/15 | |

NAVFAC

SEAL

aecom architects | engineers
13 WATER ST NEWMARKET NH
(603) 200-0096 AECOM.COM
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES VSL | DRW DPB | CHK KLC
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

RF NETWORK OVERVIEW

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703580
SHEET 127 OF 506
ET2.0 | 43-15-85

DRAWFORM REVISION: 10 OCTOBER 2014

## HAZARDOUS MATERIAL SAMPLING SUMMARY

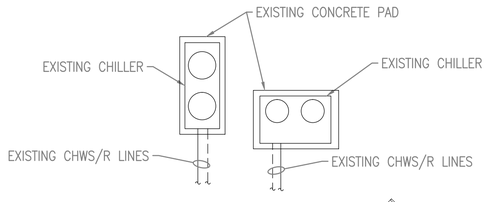
| SAMPLE ID | ACM | LBP |
|---|---|---|
| 44-01 | ND | NS |
| 44-02 | ND | NS |
| 44-03 | ND | NS |
| 44-04 | ND | NS |
| 44-05 | ND | NS |
| 44-06 | ND | NS |
| 44-07 | ND | NS |
| 44-08 | ND | NS |
| 44-08 | ND | NS |
| 44-09 | ND | NS |
| 44-10 | ND | NS |
| 44-11 | ND | NS |
| 44-12 | ND | NS |
| 44-13 | ND | NS |
| 44-14 | ND | NS |
| 44-15 | ND | NS |
| 44-16 | ND | NS |
| 44-17 | ND | NS |
| LBP-44-01 | NS | 0.19 |
| LBP-44-02 | NS | 0.33 |

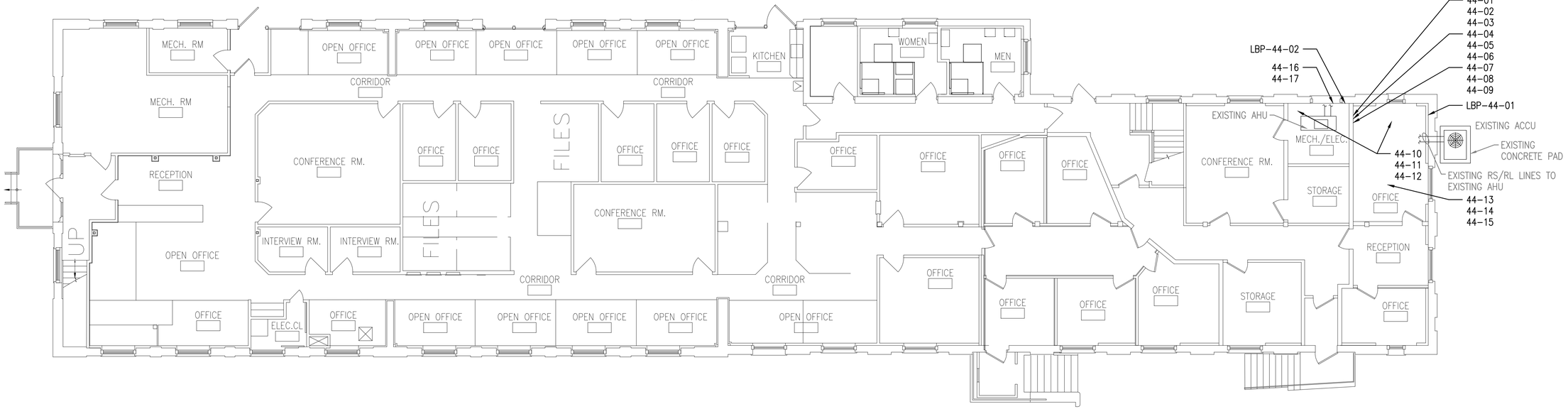
ACM = ASBESTOS CONTAINING MATERIALS
LBP = LEAD BASED PAINT
<RL = LESS THAN REPORTING LIMIT
ND = NONE DETECTED
NS = NOT SAMPLED
H = EXCEEDS REGULATORY STANDARDS FOR HAZARDOUS CONCENTRATION

NOTE:
REFER TO HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT DATED JUNE 22, 2015 FOR COMPLETE SAMPLING INFORMATION AND DATA.

## GENERAL SHEET NOTES

1. ALL PACM (PRESUMED ASBESTOS CONTAINING MATERIAL), LBP (LEAD BASED PAINT), PCB, AND OTHER HAZARDOUS BUILDING MATERIALS MAY NOT BE IDENTIFIED IN THIS SURVEY, PARTICULARLY THOSE HIDDEN IN WALLS, CEILINGS, FLOORS, ETC. AND IN AREAS DESCRIBED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, WHICH WERE INACCESSIBLE DURING THE SURVEY. ASSESSMENT EFFORTS DID INCLUDE, TO THE EXTENT FEASIBLE, ACCESS TO INTERIOR AND EXTERIOR OF THE STRUCTURE. HOWEVER, THE ABSENCE OF ALL PACM, LBP, PCB, AND OTHER HAZARDOUS BUILDING MATERIALS IN HIDDEN OR INACCESSIBLE PORTIONS CANNOT BE DEFINITIVELY ENSURED.
2. RENOVATION AND/OR DEMOLITION ACTIVITIES SHOULD BE MONITORED BY PERSONNEL CAPABLE OF IDENTIFYING PACM, LBP, PCB AND OTHER HAZARDOUS BUILDING MATERIALS. IF PACM, LBP, PCB OR OTHER HAZARDOUS BUILDING MATERIALS ARE ENCOUNTERED, THESE MATERIALS SHOULD BE BULK SAMPLED BY A LICENSED INSPECTOR AND DISPOSED OF IN ACCORDANCE WITH PNSY AND ALL OTHER APPLICABLE REGULATIONS.
3. SEE B44 ASBESTOS, LEAD, PCB, AND TCLP INVENTORY TABLES LOCATED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, DATED JUNE 22, 2015, FOR ADDITIONAL INFORMATION.




## B44 HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 1/8" = 1'

PLAN NORTH

## GRAPHIC SCALE

1/8" = 1' (8 4 0 8 16 24 scale feet)

CHECK GRAPHIC SCALE BEFORE USING

| NO. | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
| 1 | 90% SUBMISSION | 06/05/2015 | BLM |

NAVFAC

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A/E INFO

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FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: A/E DRW: REP CHK: BLM
PM/DM: PETER STOCKLESS
BRANCH MANAGER: BRUCE LITALIEN
FEAD/PM&E: AMIN BAHROUR PM&E
FIRE PROTECTION: X

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PORTSMOUTH NAVAL SHIPYARD

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NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

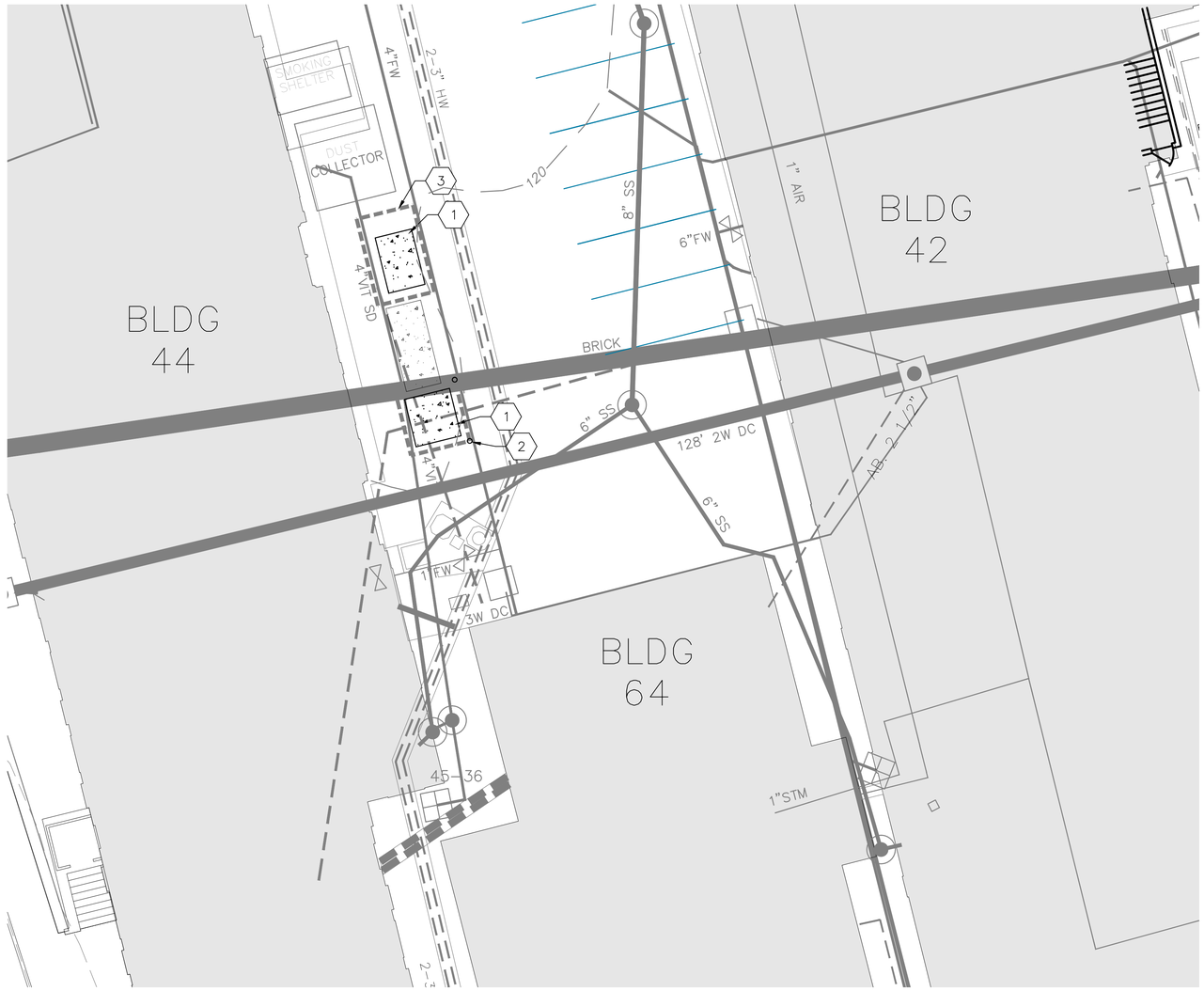
FY 16 ENERGY PROJECT
TASK 1-B-R-22

B44 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085-XX-C-XXXX
NAVFAC DRAWING NO.: 12703581
SHEET 128 OF 506
H1.0 | 44-15-144

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\Haz Mats\DWG\A1066_2_H2MT_R22.dwg LAYOUT NAME: B44-H1.0 PLOTTED: Friday, August 07, 2015 - 2:35pm USER: REP




## B44 DEMOLITION PLAN
SCALE: 1" = 10'

PLAN NORTH

## GENERAL SHEET NOTES

1. ALL WORK SHALL BE COORDINATED THROUGH THE PWD–MAINE CONSTRUCTION OFFICER.
2. BURIED UTILITIES ARE SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL VERIFY ACTUAL LOCATIONS OF ALL BURIED UTILITIES.
3. CONTRACTOR SHALL CONDUCT AN ENVIRONMENTAL PERMIT REVIEW OF THE SITE PRIOR TO EXCAVATION.
4. CONTRACTOR SHALL CONDUCT AN ARCHEOLOGICAL REVIEW OF THE SITE PRIOR TO EXCAVATION.
5. EXCAVATED SOIL SHALL BE DISPOSED OF IN ACCORDANCE WITH SECTION 31 23 00.00 22 EXCAVATION AND FILL (PWD MAINE).
6. CONTRACTOR SHALL DISPOSE OF ALL CONSTRUCTION DEBRIS AND MATERIALS AT PERMITTED OFF–SITE DISPOSAL FACILITY.
7. DEMOLISH ABANDONED WATER MAINS AS NECESSARY.

## DEMOLITION KEYNOTES

1. DEMOLISH EXISTING CONCRETE EQUIPMENT PAD.
2. DEMOLISH EXISTING BOLLARDS (TYP. OF 2)
3. LIMIT OF SAWCUT

## GRAPHIC SCALE

1" = 10'  10 5 0 10 20 30
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
| 1 | 90% SUBMISSION | 06/05/2015 | BLM |

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STATE OF MAINE
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9410
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SEAL

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ACTIVITY
SATISFACTORY TO DATE

DES A/E | DRW REP | CHK BLM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

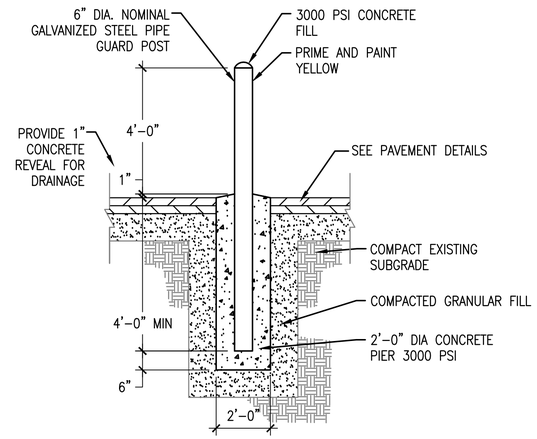
B44 DEMOLITION PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085–XX–C–XXXX
NAVFAC DRAWING NO.: 12703582
SHEET 129 OF 506

C1.0 | 44-15-145

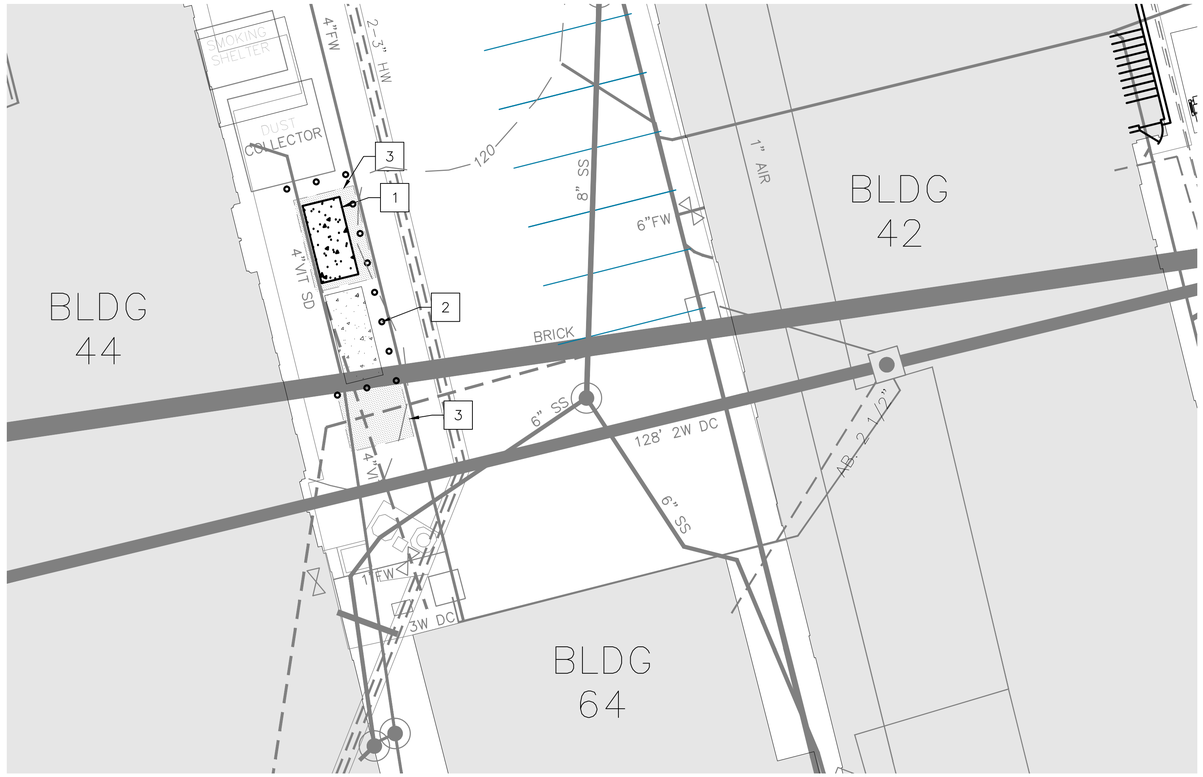
DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\02_R-22\DWG-CAD\DESIGN\A1066_2_R22_SITE.dwg LAYOUT NAME: C1.0 B044 DEMO PLOTTED: Friday, August 07, 2015 - 2:54pm USER: REP




## CONCRETE FILLED STEEL BOLLARD DETAIL 2

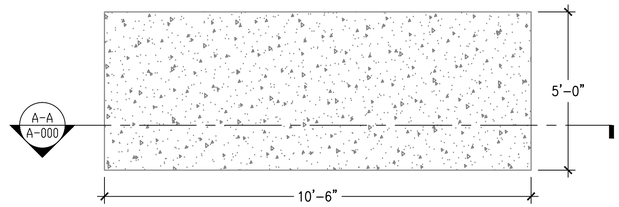
NO SCALE




PLAN NORTH

## B44 SITE PLAN

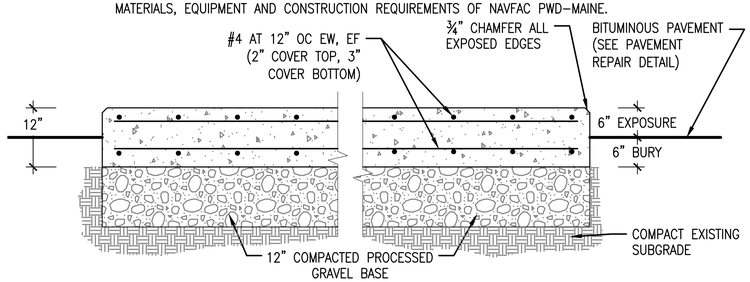
SCALE: 1" = 10'




## CONCRETE EQUIPMENT PAD DETAIL 1

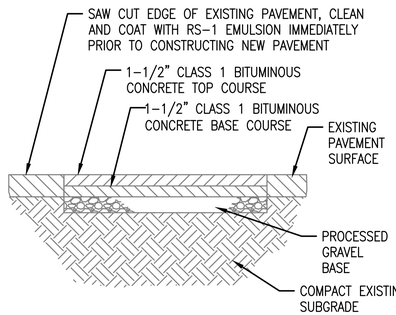
NO SCALE

NOTES:
1. COORDINATE PAD DIMENSIONS WITH ACTUAL EQUIPMENT DIMENSIONS.
2. CONCRETE SHALL EXTEND 6" ON EACH SIDE OF EQUIPMENT.
3. CONCRETE SHALL BE MINIMUM 4000 PSI, 7% AIR ENTRAINED.
4. EXCAVATION AND CONSTRUCTION OF CONCRETE PADS SHALL CONFORM TO THE MATERIALS, EQUIPMENT AND CONSTRUCTION REQUIREMENTS OF NAVFAC PWD-MAINE.




## SECTION VIEW A-A

NO SCALE




NOTES:
1. ALL BITUMINOUS CONCRETE, AGGREGATE, STABILIZED COURSE, SUBBASE AND LIQUID BITUMEN SHALL CONFORM TO THE MATERIALS, EQUIPMENT AND CONSTRUCTION REQUIREMENTS OF NAVFAC AND MAINE DOT.
2. THE CONTRACTOR SHALL MAINTAIN A MINIMUM 15' WIDE TRAVEL WAY AT ROAD CROSSINGS AT ALL TIMES DURING CONSTRUCTION.

## PERMANENT PAVEMENT REPAIR DETAIL 3

NO SCALE

## GENERAL SHEET NOTES

1. ALL WORK SHALL BE COORDINATED THROUGH THE PWD-MAINE CONSTRUCTION OFFICER.
2. BURIED UTILITIES ARE SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL VERIFY ACTUAL LOCATIONS OF ALL BURIED UTILITIES.
3. CONTRACTOR SHALL CONDUCT AN ENVIRONMENTAL PERMIT REVIEW OF THE SITE PRIOR TO EXCAVATION.
4. CONTRACTOR SHALL CONDUCT AN ARCHEOLOGICAL REVIEW OF THE SITE PRIOR TO EXCAVATION.
5. EXCAVATED SOIL SHALL BE DISPOSED OF IN ACCORDANCE WITH SECTION 31 23 00.00 22 EXCAVATION AND FILL (PWD MAINE).
6. CONTRACTOR SHALL DISPOSE OF ALL CONSTRUCTION DEBRIS AND MATERIALS AT PERMITTED OFF-SITE DISPOSAL FACILITY.
7. VERIFY LOCATION AND DEPTH OF WATER MAINS AND STORM SEWER PRIOR TO CONSTRUCTION ACTIVITIES. RELOCATE EQUIPMENT PAD AS NECESSARY TO AVOID INTERRUPTION TO EXISTING UTILITIES.

## NEW WORK KEYNOTES

1. CONSTRUCT CONCRETE EQUIPMENT PAD.
2. CONSTRUCT 6" CONCRETE FILLED STEEL BOLLARDS AROUND EQUIPMENT PADS. (TYP. OF 12) BOLLARDS SHALL BE EVENLY SPACED AND PLACED AS TO NOT INTERFERE WITH EQUIPMENT ACCESS OR OPERATION.
3. REPAIR PAVEMENT IN AREAS OF DEMOLISHED EQUIPMENT PADS.

## GRAPHIC SCALE

1" = 10'

10 5 0 10 20 30

scale feet

CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
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ACTIVITY

SATISFACTORY TO DATE

| DES | A/E | DRW | REP | CHK | BLM |
|---|---|---|---|---|---|

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

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NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

B44 SITE PLAN

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703583

SHEET 130 OF 506

C2.0 | 44-15-146

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\02_R-22\DWG-CAD\DESIGN\A1066_2_R22_SITE.dwg LAYOUT NAME: C2.0 B044 SITE PLOTTED: Friday, August 07, 2015 - 2:54pm USER: REP

# HVAC ABBREVIATIONS

| | | | |
|---|---|---|---|
| °F | DEGREES FAHRENHEIT | ID | INSIDE DIAMETER |
| °C | DEGREES CELSIUS | IN | INCHES |
| ø | DIAMETER | INSUL | INSULATION |
| ACV | AUTOMATIC CONTROL VALVE | KW | KILOWATT |
| AD | ACCESS DOOR | KVA | KILOVOLT AMPERE |
| ADJ | ADJUSTABLE | L | LENGTH |
| ADDL | ADDITIONAL | LB | POUND |
| AFF | ABOVE FINISHED FLOOR | LF | LINEAR FEET |
| AFG | ABOVE FINISHED GRADE | LVG | LEAVING |
| ALT | ALTERNATE | M | ONE THOUSAND |
| AP | ACCESS PANEL | MAX | MAXIMUM |
| ARCH | ARCHITECT | MBH | THOUSAND BRITISH THERMAL UNITS PER HOUR |
| ATC | AUTOMATIC TEMPERATURE CONTROL | MCA | MINIMUM CIRCUIT AMPS |
| AS | AIR SEPARATOR | MCC | MOTOR CONTROL CENTER |
| AVG | AVERAGE | MECH | MECHANICAL |
| BAS | BUILDING AUTOMATION SYSTEM | MEZZ | MEZZANINE |
| BFF | BELOW FINISHED FLOOR | MFR | MANUFACTURER |
| BHP | BRAKE HORSEPOWER | MIN | MINIMUM |
| BLDG | BUILDING | MTD | MOUNTED |
| BLR | BOILER | MU | MAKEUP WATER |
| BOD | BOTTOM OF DUCT | N/A | NOT APPLICABLE |
| BOP | BOTTOM OF PIPE | NC | NORMALLY CLOSED |
| BSMY | BASEMENT | NC | NOISE CRITERIA |
| BTU | BRITISH THERMAL UNIT | NIC | NOT IN CONTRACT |
| BTUH | BRITISH THERMAL UNIT PER HOUR | NO | NORMALLY OPEN |
| C | CONVECTOR | NO. | NUMBER |
| CF | CEILING FAN | NOM | NOMINAL |
| CL | CENTERLINE | NTS | NOT TO SCALE |
| CLG | CEILING | OB | OCTAVE BAND |
| CO | CLEAN-OUT | OC | ON CENTER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COMP | COMPRESSOR | ODP | OPEN DRIP PROOF |
| CONC | CONCRETE | OFCI | OWNER FURNISHED CONTRACTOR INSTALLED |
| CONN | CONNECTION | OFOI | OWNER FURNISHED OWNER INSTALLED |
| CONTR | CONTRACTOR | OV | OUTLET VELOCITY |
| CORR | CORRIDOR | PCF | POUNDS PER CUBIC FOOT |
| CUF | CUBIC FEET | PD | PRESSURE DROP |
| CUH | CABINET UNIT HEATER | PH | PHASE |
| CYL | CYLINDER | PLMB | PLUMBING |
| D | DRAIN | POS | PROVIDED BY OTHER SECTION(S) |
| DB | DRY BULB TEMPERATURE | PRESS | PRESSURE |
| DDC | DIRECT DIGITAL CONTROL | PRIM | PRIMARY |
| DDCFP | DIRECT DIGITAL CONTROL FIELD PANEL | PSIA | POUNDS PER SQUARE INCH ABSOLUTE |
| DIA | DIAMETER | PSID | POUNDS PER SQUARE INCH DIFFERENTIAL |
| DIM | DIMENSION | PSIG | POUNDS PER SQUARE INCH GAUGE |
| DN | DOWN | PVC | POLYVINYL CHLORIDE |
| DWG | DRAWING | REP | REPRESENTATIVE |
| EA | EACH | RET | RETURN |
| EAT | ENTERING AIR TEMPERATURE | REQD | REQUIRED |
| EFF | EFFICIENCY | REQS | REQUIREMENTS |
| ECUH | ELECTRIC CABINET UNIT HEATER | RH | RELATIVE HUMIDITY |
| ELEC | ELECTRICAL | RM | ROOM |
| ELEV | ELEVATION | RPM | REVOLUTIONS PER MINUTE |
| EMER | EMERGENCY | SCH | SCHEDULE |
| ENT | ENTERING | SOV | SOLENOID OPERATED VALVE |
| EQUIP | EQUIPMENT | SPECS | SPECIFICATIONS |
| EXH | EXHAUST | SQ | SQUARE |
| EXP | EXPANSION | SQFT | SQUARE FEET |
| FTR | FINNED TUBE RADIATION | SS | STAINLESS STEEL |
| FCV | FLOW CONTROL VALVE | STD | STANDARD |
| FG | FIBERGLASS | STDBY | STANDBY |
| FLEX | FLEXIBLE | STL | STEEL |
| FLR | FLOOR | SUCT | SUCTION |
| FLRDR | FLOOR DRAIN | SUP | SUPPLY |
| FP | FIRE PROTECTION | TA | THROW-AWAY |
| FPM | FEET PER MINUTE | TAV | THERMOSTATIC AIR VENT |
| FT | FEET | TEFC | TOTALLY ENCLOSED FAN COOLED |
| FT/SEC | FEET PER SECOND | TEL | TELEPHONE |
| FURN | FURNISHED | TEMP | TEMPERATURE |
| FVNR | FULL VOLTAGE NON-REVERSING | TOD | TOP OF DUCT |
| GA | GAUGE | TOP | TOP OF PIPE |
| GAL | GALLONS | TYP | TYPICAL |
| GALV | GALVANIZED | UH | UNIT HEATER |
| GC | GENERAL CONTRACTOR | V | VENT |
| GND | GROUND | VEL | VELOCITY |
| GPH | GALLONS PER HOUR | VERT | VERTICAL |
| GPM | GALLONS PER MINUTE | VFD | VARIABLE FREQUENCY DRIVE |
| GRD | GRADE (GROUND LEVEL) | VTR | VENT THROUGH ROOF |
| GWB | GYPSUM WALL BOARD | W | WIDTH |
| H | HEIGHT | W/ | WITH |
| HD | HEAD | W/O | WITHOUT |
| HP | HORSEPOWER | WB | WET BULB TEMPERATURE |
| HR | HOUR | WF | WIDE FLANGE |
| HZ | HERTZ | WG | WATER GAUGE |
| | | WRT | WITH RESPECT TO |

# PIPING LEGEND

- RISE (SINGLE LINE – PLAN VIEW)
- DROP (SINGLE LINE – PLAN VIEW)
- TOP TAKEOFF
- BOTTOM TAKEOFF
- PIPE BREAK (SINGLE LINE)

# FLOW DIAGRAM & CONTROL DIAGRAM EQUIP. SYMBOLS

- FILTER BANK
- HEATING COIL
- COOLING COIL
- PARALLEL BLADE DAMPER W/ MODULATING ACTUATOR
- BACKDRAFT DAMPER
- CENTRIFUGAL FAN
- INLINE CENTRIFUGAL FAN
- OPPOSED BLADE DAMPER W/ TWO POSITION ACTUATOR
- OPPOSED BLADE DAMPER W/ MODULATING ACTUATOR
- PARALLEL BLADE DAMPER W/ TWO POSITION ACTUATOR

# HVAC SYSTEM TAGS

- CH 1 — CHILLER
- AHU 1 — AIR HANDLING UNIT
- ACCU 1 — AIR COOLED CONDENSING UNIT
- J 1 — JACE BOX

# CALL OUT SYMBOLS

- THERMOSTAT
- CONNECT TO EXISTING
- LIMIT OF NEW WORK

REFER TO DRAWINGS (   ) FOR CONTINUATION

SYMBOL DESIGNATES ASSOCIATED SYSTEM OR SERVICE (ie LPS)

DIFFUSER, GRILLE, REGISTER LETTER DESIGNATION (See Schedule for ATD type)

SA-2 / 200 — DESIGN CFM

# EQUIPMENT TAG SYMBOLS & ABBREVIATIONS

EQUIPMENT NOT REQUIRING ELECTRIC SERVICE → TAG NO / TAG DATA DATA → SEE SCHEDULE FOR PERFORMANCE REQUIREMENTS ← TAG NO / TAG DATA DATA ← EQUIPMENT REQUIRING ELECTRIC SERVICE

NOTE:REFER TO SCHEDULES FOR DEFINITION OF EQUIPMENT SPECIFIC DATA LISTED WITHIN TAG BLOCKS

# AIR SYSTEM SPECIFIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| AC | AIR CONDITIONING | LVDR | LOUVERED DOOR |
| ACD | AUTOMATIC CONTROL DAMPER | OA | OUTSIDE AIR |
| ACU | AIR CONDITIONING UNIT | OAI | OUTSIDE AIR INTAKE |
| AF | AIR FOIL | OBD | OPPOSED BLADE DAMPER |
| AHU | AIR HANDLING UNIT | OED | OPEN END DUCT |
| ALD | ACOUSTICALLY LINED DUCTWORK | RA | RETURN AIR |
| ATD | AIR TERMINAL DEVICE | RF | RETURN FAN |
| AVS | AIR VOLUME TRAVERSE STATION | RG | RETURN GRILLE |
| BDD | BACKDRAFT DAMPER | RHC | REHEAT COIL |
| BI | BACKWARD INCLINED | RLF | RELIEF |
| CC | COOLING COIL | RR | RETURN REGISTER |
| CD | CEILING DIFFUSER | RV | ROOF VENT |
| CFM | CUBIC FEET PER MINUTE | SA | SUPPLY AIR |
| CG | CEILING GRILLE | SATT | SOUND ATTENUATOR |
| DIFF | DIFFUSER | SCR | SCREEN |
| DWDI | DOUBLE WIDTH DOUBLE INLET | SD | SMOKE DAMPER |
| DWSI | DOUBLE WIDTH SINGLE INLET | SDET | SMOKE DETECTOR |
| DX | DIRECT EXPANSION | SEF | SMOKE EXHAUST FAN |
| EF | EXHAUST FAN | SF | SUPPLY FAN |
| EG | EXHAUST GRILLE | SFD | COMBINATION AUTOMATIC SMOKE/FIRE DAMPER |
| ESP | EXTERNAL STATIC PRESSURE | | WITH ACCESS DOOR |
| F | FAN | SG | SUPPLY GRILLE |
| FC | FORWARD CURVED | SM | SHEETMETAL |
| FA | FREE AREA | SP | STATIC PRESSURE |
| FCU | FAN COIL UNIT | SR | SUPPLY REGISTER |
| FD | FIRE DAMPER (W/ ACCESS DOOR) | SWDI | SINGLE WIDTH DOUBLE INLET |
| FLTR | FILTER | SWSI | SINGLE WIDTH SINGLE INLET |
| FPI | FINS PER INCH | TE | TOILET EXHAUST |
| FPT | FAN POWERED TERMINAL BOX | TF | TRANSFER FAN |
| GE | GENERAL EXHAUST | TG | TRANSFER GRILLE |
| GIH | GRAVITY INTAKE HOOD | TR | TRANSFER |
| GRH | GRAVITY RELIEF HOOD | TSP | TOTAL STATIC PRESSURE |
| HC | HEATING COIL | UC | UNDERCUT DOOR |
| LAT | LEAVING AIR TEMPERATURE | VD | VOLUME DAMPER |
| LD | LINEAR DIFFUSER | VV | VARIABLE VOLUME SUPPLY AIR TERMINAL BOX |
| LUVR | LOUVER | WMS | WIRE MESH SCREEN |

# HYDRONIC SYSTEM SPECIFIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| AS | AIR SEPARATOR | ET | EXPANSION TANK |
| AAV | AUTOMATIC AIR VENT | EWT | ENTERING WATER TEMPERATURE |
| CH | CHILLER | LWT | LEAVING WATER TEMPERATURE |
| CHW | CHILLED WATER | MAV | MANUAL AIR VENT |
| CHWR | CHILLED WATER RETURN | NPSH | NET POSITIVE SUCTION HEAD |
| CHWS | CHILLED WATER SUPPLY | PU | PUMP |

# HVAC GENERAL NOTES

1. GENERAL NOTES APPLY TO ALL HVAC DRAWINGS.

2. THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID, ARE DEEMED TO BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITIONS OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. ABSOLUTELY NO CLAIMS FOR EXTRA COMPENSATION WILL BE CONSIDERED FOR EXISTING CONDITIONS VISIBLE OR REASONABLY INFERABLE FROM A CAREFUL EXAMINATION OF THE EXISTING BUILDING.

3. THIS CONTRACTOR SHALL INSPECT THE EXISTING FIELD CONDITIONS AT THE SITE AND THE "AS-BUILT" BASE BUILDING CONTRACT DOCUMENTS PRIOR TO THE START OF ANY WORK TO DETERMINE WHAT EFFECT THE EXISTING CONDITIONS WILL HAVE ON HIS WORK. POTENTIAL PROBLEM AREAS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER IMMEDIATELY.

4. THIS CONTRACTOR SHALL CONNECT HIS WORK TO VARIOUS EXISTING PIPING, DUCTWORK, AND CONTROL SYSTEMS IN THE BASE BUILDING. THE NEW WORK SHALL BE COMPATIBLE WITH THE EXISTING SYSTEMS. LOCATION OF EQUIPMENT OR THE ROUTING OF THE VARIOUS SYSTEMS AS WELL AS OPENINGS IN FLOOR SLABS OR WALLS SHALL BE GOVERNED BY THE EXISTING CONDITIONS AS THEY APPEAR IN THE FIELD OR ON THE "AS-BUILT" DRAWINGS.

5. CARE SHALL BE TAKEN DURING THE INSTALLATION TO NOT DAMAGE OR INTERRUPT BUILDING SYSTEMS AND SERVICES THAT ARE ALREADY INSTALLED. DAMAGE TO SUCH SYSTEMS OR EQUIPMENT CAUSED BY THIS CONTRACTOR DURING INSTALLATION SHALL BE REPAIRED AND/OR REPLACED AT THIS CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE BUILDING OWNER.

6. SHUTDOWN OF EXISTING SYSTEMS FOR CONNECTION TO EXISTING SERVICES SHALL BE COORDINATED WITH THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR AND BUILDING OWNER. THIS CONTRACTOR SHALL SUBMIT REQUESTS, WHERE THEY AFFECT THE OPERATION OF THE BUILDING SYSTEMS, AT LEAST FIFTEEN DAYS IN ADVANCE OF ANY REQUIRED SHUTDOWN. THE ACTUAL SHUTDOWN PERIOD SHALL BE AS SHORT AS POSSIBLE AND AT A TIME MUTUALLY AGREEABLE TO THE BUILDING OWNER AND THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR.

7. DRAWINGS ARE DIAGRAMMATIC, THEREFORE DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS, AS WELL AS ROUTING PATHS, IN FIELD.

8. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER, AND SHOULD BE KEPT TO A MINIMUM FOR SYSTEM EFFICIENCIES.

9. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT AND/OR PIPE TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION. VERIFY ACCESS IS PROVIDED FOR SERVICING EQUIPMENT AS REQUIRED.

10. ALL MATERIALS AND EQUIPMENT UNLESS SPECIFICALLY INDICATED AS REUSED, SHALL BE NEW.

11. ACCESS PANELS SHALL BE PROVIDED TO ALLOW FOR CLEANING OF COILS AND SERVICING OF DAMPERS, HEATERS, VALVES, AND ALL CONCEALED MECHANICAL EQUIPMENT.

12. INSTALL NEW THERMOSTATS 4 FEET AFF OR AS DIRECTED OTHERWISE BY ENGINEER.

13. GENERAL CONTRACTOR TO PATCH ALL EFFECTED INTERIOR AND EXTERIOR EXISTING FLOOR, WALL, AND CEILING SURFACES TO MATCH EXISTING. PROVIDE ESCUTCHEON PLATES.

14. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.

15. ANY AND ALL WALLS, CEILINGS AND FLOORS THAT ARE ANTICIPATED TO BE DISTURBED DURING THE DEMOLITION OR INSTALLATIONS PROCESS, AS INDICATED ON THE DRAWINGS, SHALL BE TESTED FOR HAZARDOUS MATERIALS PRIOR TO DISTURBING THE SURFACES. ROUTING OF PIPING HAS BEEN INDICATED TO DEPICT THE INTENT OF THE WORK. ACTUAL ROUTING MAY DIFFER IN THE FIELD DUE TO BUILDING CONSTRUCTION. COORDINATE TESTING OF ALL SURFACES TO BE DISTURBED, ALONG THE ACTUAL INSTALLATION ROUTE, WITH THE HAZARDOUS MATERIALS CONTRACTOR. REFER TO EXISTING HAZMAT REPORT FOR TESTING RESULTS.

16. MECHANICAL CONTRACTOR TO REMOVE ALL IDENTIFIED R-22 EQUIPMENT AND ASSOCIATED APPURTENANCES AND REPLACE IN KIND WITH A R410A OR R407C SYSTEM.

17. REFRIGERANT PIPING IS DIAGRAMMATIC, CONTRACTOR TO DETERMINE ROUTING IN FIELD AND RE-USE EXISTING PENETRATIONS. ANY EXPOSED PIPING TO BE CONCEALED IN A CHASE. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

18. SEE CIVIL DRAWINGS FOR DEMOLISHED AND NEW CONCRETE PADS.

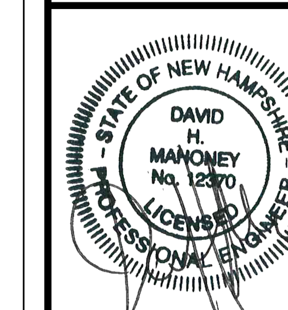
19. THE MECHANICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE MECHANICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL ADDITIONAL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.

20. SEE PWD-ME DRAWING;
    43-15-67 FOR TITLE SHEET
    43-15-68 FOR LIST OF DRAWINGS
    43-15-69 FOR GENERAL NOTES & LEGENDS
    43-15-72 FOR CHASE AND SOFFIT DETAILS
    43-15-74 FOR STRUCTURAL NOTES AND SUPPORTS

# SCHEDULE OF DRAWINGS

| DWG# | DESCRIPTION |
|---|---|
| M1.0 | BUILDING 44 HVAC LEGEND |
| MD2.0 | BUILDING 44 HVAC FIRST FLOOR DEMOLITION PLAN |
| M2.0 | BUILDING 44 HVAC FIRST FLOOR PLAN |
| M3.0 | BUILDING 44 HVAC CONTROLS |
| M3.1 | BUILDING 44 HVAC CONTROLS |
| M3.2 | BUILDING 44 HVAC CONTROLS |
| M4.0 | BUILDING 44 HVAC SCHEDULES AND DETAILS |

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |



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25 AVIATION AVE STE 204, PORTSMOUTH, NH 03801, 603-319-8244
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ACTIVITY

SATISFACTORY TO    DATE

DES JC | DRW SV | CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL SHIPYARD - PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 44 HVAC LEGEND

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703584

SHEET 131 OF 506

M1.0 | 44-15-147

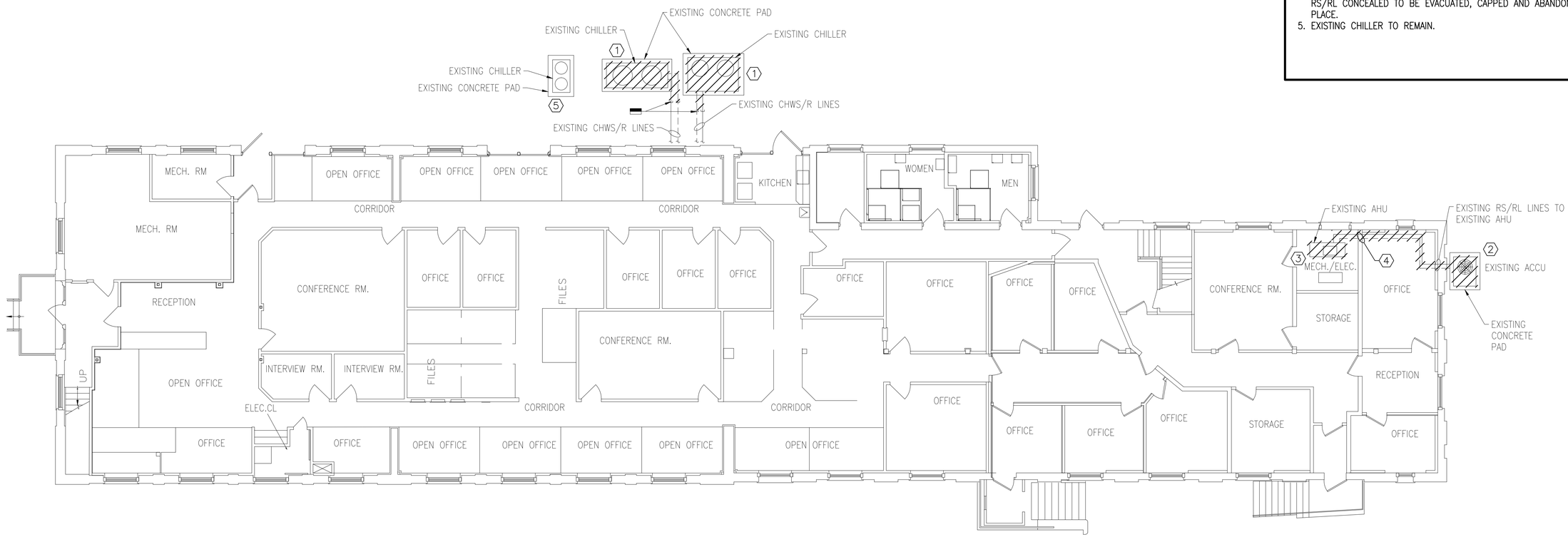
DRAWFORM REVISION: 10 OCTOBER 2014

## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES. .
2. CONTRACTOR RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL EQUIPMENT AND MATERIALS AT PERMITTED WASTE FACILITY.
3. CONTRACTOR TO COORDINATE R-22 DISPOSAL WITH PSNY ENVIRONMENTAL GROUP.

## DEMOLITION KEYNOTES

1. REMOVE EXISTING CHILLER AND ASSOCIATED CHWS/R PIPING UP TO POINT OF DEMOLITION AS INDICATED ON DRAWINGS. EXISTING CONCRETE PAD TO REMAIN.
2. REMOVE EXISTING ACCU. EXISTING CONCRETE PAD TO REMAIN.
3. REMOVE EXISTING AHU AND ASSOCIATED THERMOSTAT. EXISTING CONDENSATE LINES, CONTROL WIRING, AND DUCTWORK TO REMAIN
4. ACCESSIBLE EXISTING RS/RL LINES TO BE REMOVED. ANY REMAINING RS/RL CONCEALED TO BE EVACUATED, CAPPED AND ABANDONED IN PLACE.
5. EXISTING CHILLER TO REMAIN.




# BUILDING 44 HVAC FIRST FLOOR DEMOLITION PLAN

1/8"=1'-0"

PLAN NORTH

## GRAPHIC SCALE

1/8" = 1' (8 4 0 8 16 24 scale feet)

CHECK GRAPHIC SCALE BEFORE USING

| | DATE | APPR |
|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |
| STM | DESCRIPTION | | |

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ACTIVITY

SATISFACTORY TO DATE

| | | | |
|---|---|---|---|
| DES | JC | DRW | SV |
| CHK | DM | | |

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

LEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 44 HVAC FIRST FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703585

SHEET 132 OF 506

MD2.0 | 44-15-148

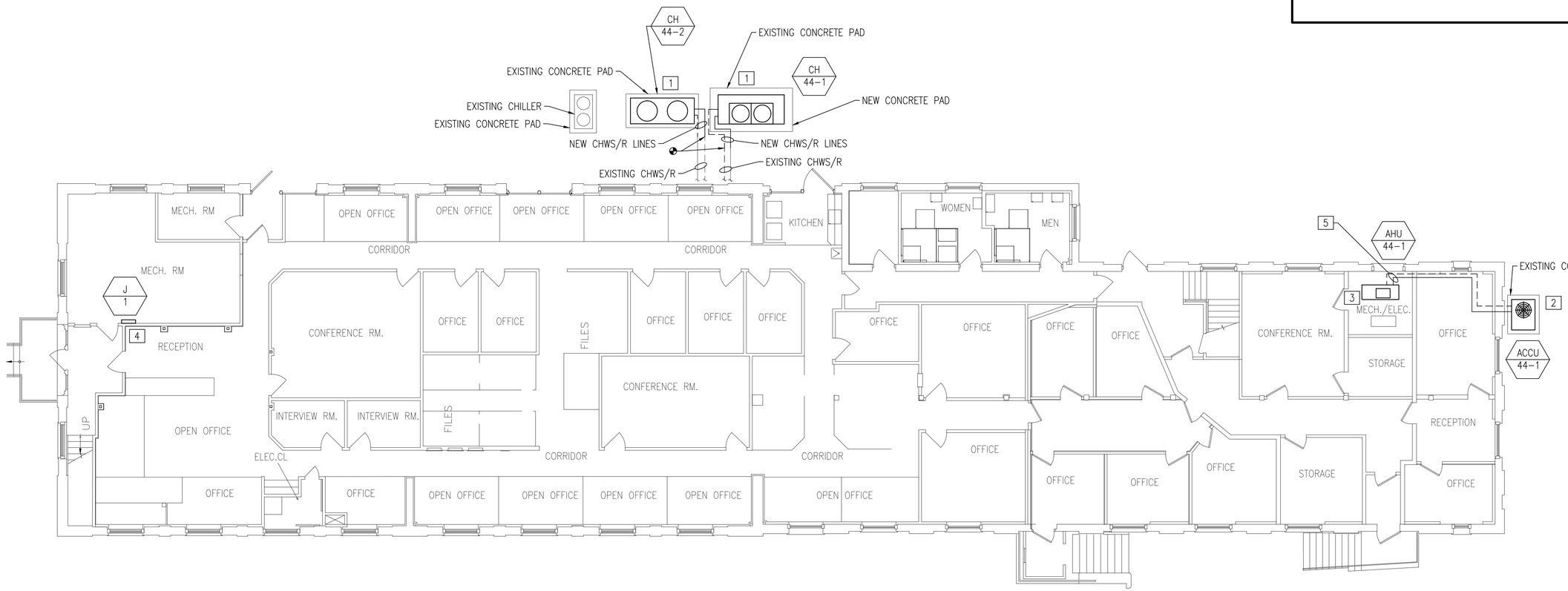
DRAWFORM REVISION: 10 OCTOBER 2014

## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

## NEW WORK KEYNOTES

1. FURNISH AND INSTALL NEW CHILLER AND IT'S ASSOCIATED CHWS/R LINES AS SHOWN ON PLANS. NEW CHILLER TO BE CONNECTED TO EXISTING SYSTEM. PLACE ON EXISTING CONCRETE PAD, EXTEND WHERE NECESSARY.
2. FURNISH AND INSTALL NEW ACCU AND IT'S ASSOCIATED RS/RL LINES. NEW ACCU TO BE PLACED ON EXISTING CONCRETE PAD
3. FURNISH AND INSTALL NEW AHU AND IT'S ASSOCIATED RS/RL LINES. NEW AHU TO BE CONNECTED TO ASSOCIATED ACCU. EXISTING CONDENSATE LINES, CONTROL WIRING AND DUCTWORK TO BE RECONNECTED. PROVIDE WITH NEW DUCTWORK WHERE NECESSARY TO CONNECT TO NEW EQUIPMENT. PROVIDE WITH NEW DDC COMPATIBLE THERMOSTAT AND CONNECT TO EXISTING CONTROL WIRING, FIELD COORDINATE EXACT LOCATION WITH NAVFAC.
4. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF NEW DDC JACE BOX WITH NAVFAC.
5. SEE HVAC GENERAL NOTE 17 ON SHEET M1.0 FOR PIPING INFORMATION.




PLAN NORTH

**BUILDING 44 HVAC FIRST FLOOR PLAN**
1/8" = 1'-0"

## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| | | | |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |
| STM | DESCRIPTION | DATE | APPR |

NAVFAC

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VIRGINIA
M/E/P/FP
FIRE PROTECTION
M/E INFO

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ACTIVITY
SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

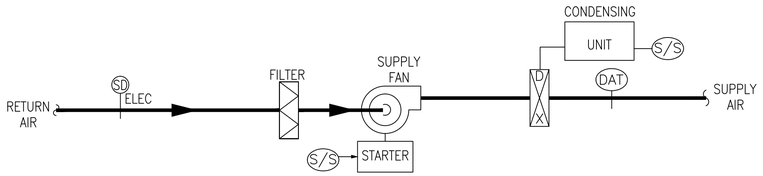
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 44 HVAC FIRST FLOOR PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703586
SHEET 133 OF 506

M2.0 | 44-15-149

DRAWFORM REVISION: 10 OCTOBER 2014




EQUIPMENT:

AHU-44-1
ACCU-44-1

GENERAL

1. THE EQUIPMENT IS STARTED AND STOPPED VIA DDC THERMOSTAT. COORDINATE OCCUPIED AND UNOCCUPIED SCHEDULES WITH OWNER.

OFF

1. SF DEENERGIZED
2. ACCU DEENERGIZED

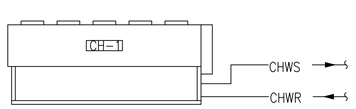
UNOCCUPIED COOLING CONTROL

1. SF ENERGIZED
2. ACCU IS STAGED ON TO MAINTAIN THE SPACE TEMPERATURE SETPOINT OF 80°F(ADJ).
3. DISCHARGE AIR TEMPERATURE SENSOR DAT SHALL LIMIT SUPPLY AIR TO 53°F MINIMUM.

OCCUPIED COOLING CONTROL

1. SF ENERGIZED
2. ACCU IS STAGED ON TO MAINTAIN THE SPACE TEMPERATURE SETPOINT OF 75°F(ADJ).
3. DISCHARGE AIR TEMPERATURE SENSOR DAT SHALL LIMIT SUPPLY AIR TO 53°F MINIMUM.

## AIR HANDLER W/ DX COOLING SEQUENCE OF OPERATION




GENERAL:

- PACKAGED CHILLER IS MONITORED AND ON/OFF CONTROLLED BY THE NEW NIAGRA BUILDING DDC SYSTEM

OFF MODE:

- PACKAGED CHILLER IS DE-ENERGIZED

ON MODE:

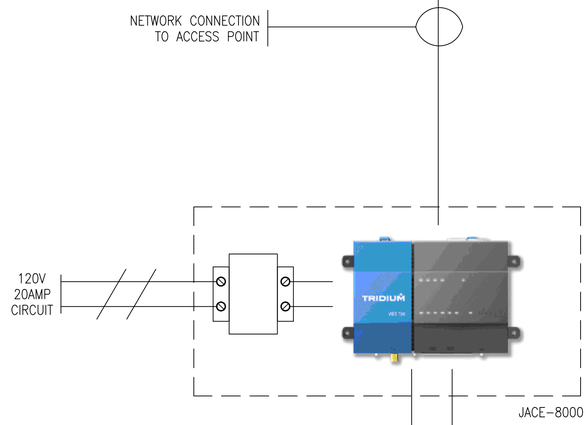
- CHILLED WATER PUMPS ARE ENERGIZED AND FLOW ESTABLISHED
- PACKAGED CHILLER IS ENERGIZED
- SCROLL COMPRESSORS STAGE ON TO MAINTAIN DISCHARGE WATER TEMPERATURE OF 44°F (ADJ.)

ALARMS:

- PUMP FAILURE SENDS SIGNAL TO DDC FRONT END
- GENERAL FAILURE ALARM FROM CHILLER CONTROL PANEL

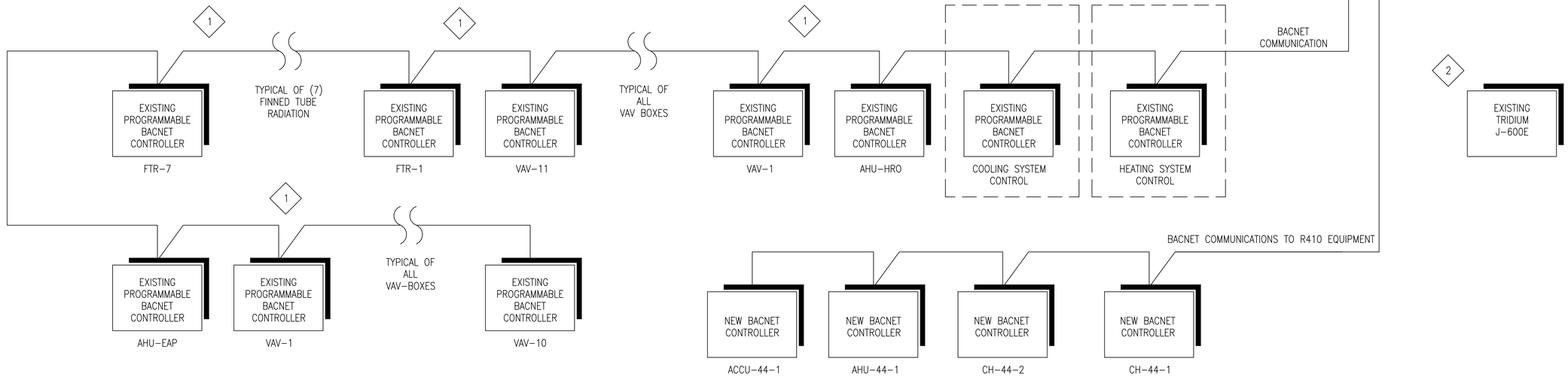
## PACKAGED CHILLER SEQUENCE OF OPERATION

PORTSMOUTH NAVAL SHIPYARD ( BUILDING 44 _ HRO / CODE 106 )
EXISTING INVENSYS INTEGRATED DDC SYSTEM ARCHITECTURE




NEW TRIDIUM JACE INTEGRATION
EXISTING DDC SYSTEM

NEW TRIDIUM JACE INTEGRATION
EXISTING DDC SYSTEM




1 IT IS CRITICAL THAT THE COMMUNICATION BUS IS WIRED IN A CONTINUOUS DAISY CHAIN FASHION.

2 REPLACE EXISTING R2 JACE WITH NEW JACE

## PANEL MATERIAL

| ITEM NO | MODEL | DESCRIPTION | QTY |
|---|---|---|---|
| C1 | J-8000 | N4 WEB BASED GLOBAL NETWORK INTERFACE | 1 |
| | | APPROPRIATE DEVICE PACKS | |

| NO | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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SATISFACTORY TO DATE

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PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 44 HVAC CONTROLS

EPROJECT NO.: 1350913

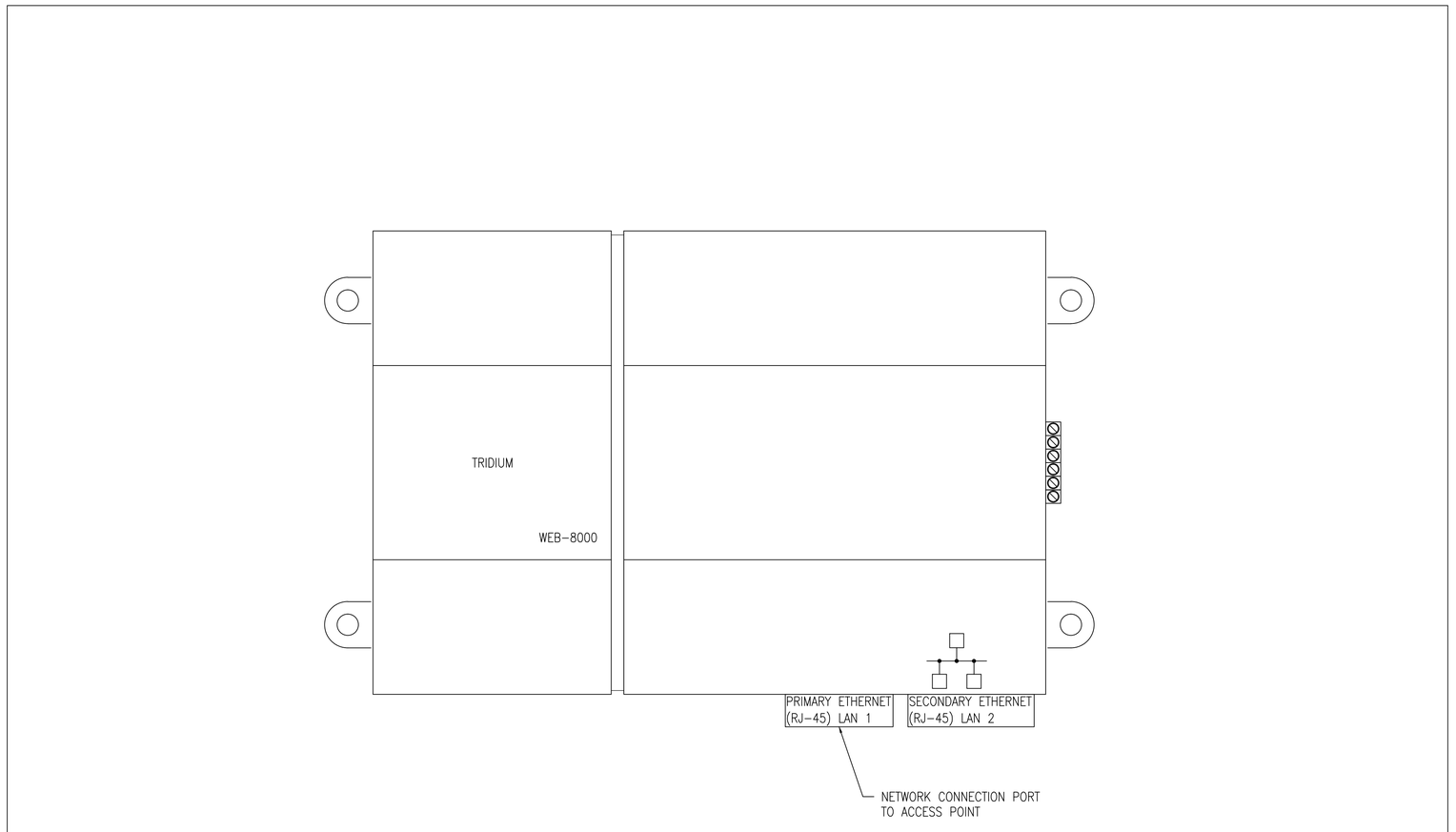
CONSTR. CONTR. NO.
N40085-XX-C-XXXX

NAVFAC DRAWING NO.
12703587

SHEET 134 OF 506

M3.0 | 44-15-150

DRAWFORM REVISION: 10 OCTOBER 2014




ETHERNET CONNECTION TO RF ACCESS POINT

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY
No. 12370
LICENSED
PROFESSIONAL ENGINEER
SEAL

PRINCIPAL
CSI ENGINEERING
FIRE PROTECTION
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781-233-9828
213 SOUTH VAN DYKE
SUITE 201
ERIE, PA 16507
814-217-9224
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES: JC | DRW: SV | CHK: DM
PM/DM: PETER STOCKLESS
BRANCH MANAGER: BRUCE LITALIEN
FEAD/PM&E: AMIN BAHROUR PM&E
FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 44 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085-XX-C-XXXX
NAVFAC DRAWING NO.: 12703588
SHEET 135 OF 506

M3.1 | 44-15-151

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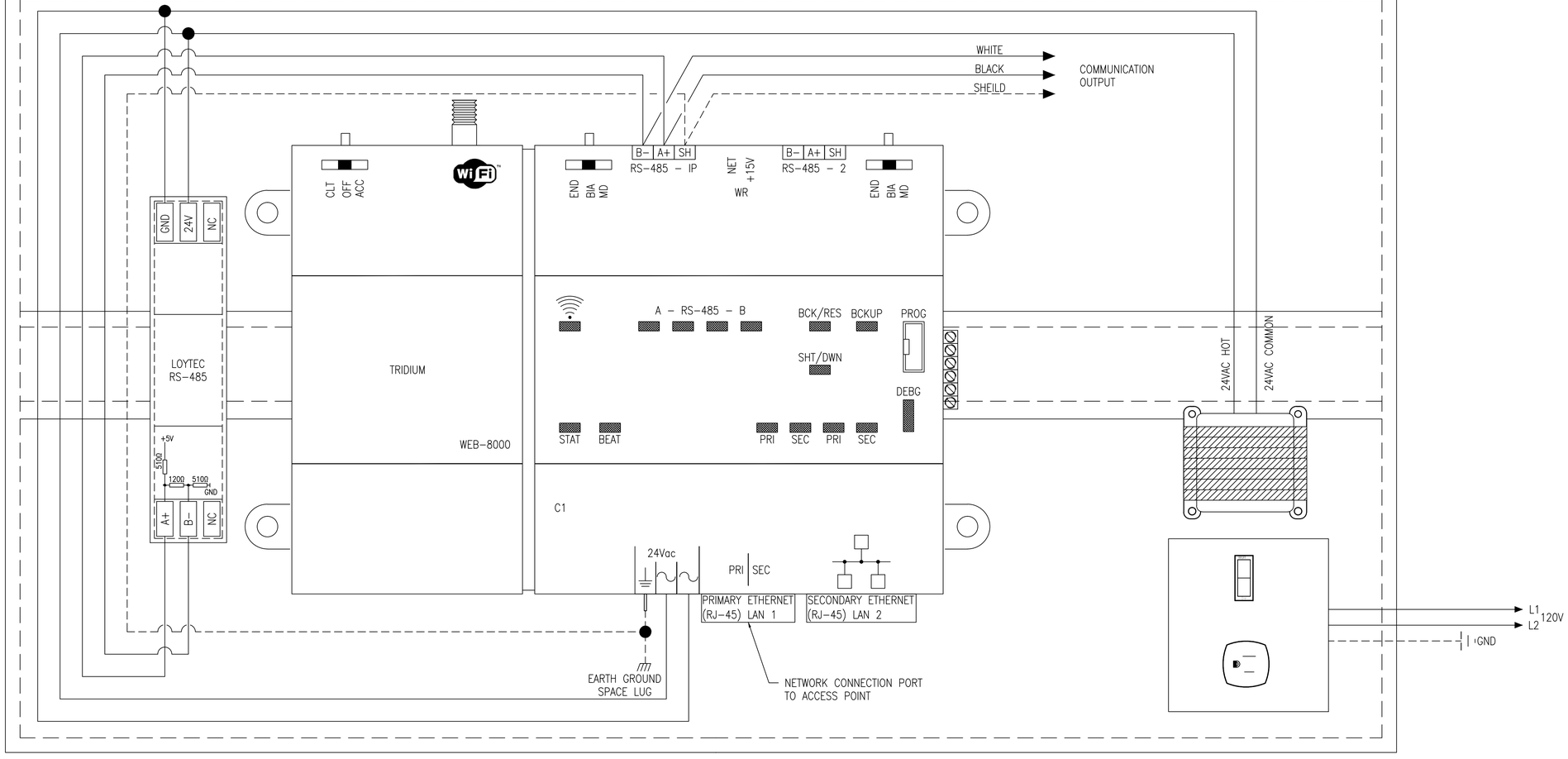
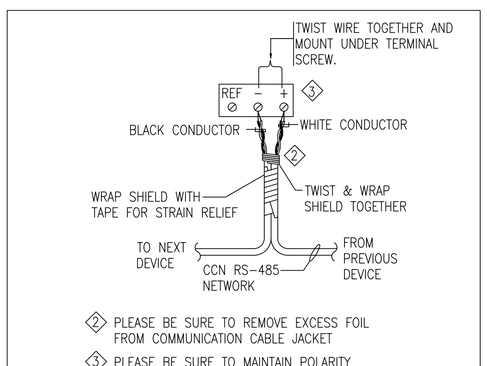
# GLOBAL NETWORK INTERFACE_1



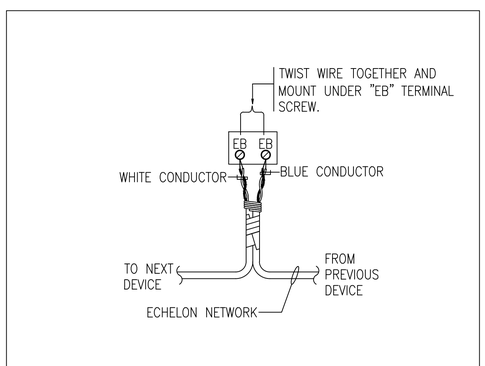

1 LOCATION OF CONTROLLER TO BE FIELD VERIFIED




2 PLEASE BE SURE TO REMOVE EXCESS FOIL FROM COMMUNICATION CABLE JACKET

3 PLEASE BE SURE TO MAINTAIN POLARITY

RS-485 BACNET MS/TP CONNECTION DETAIL




E-BUS CONNECTION DETAIL

## PANEL MATERIAL

| ITEM NO | MODEL | DESCRIPTION | QTY |
|---|---|---|---|
| C1 | J-8000 | N4 WEB BASED GLOBAL NETWORK INTERFACE | 1 |
| ENCL | ENC-001 | 12"x18"x4" ENCLOSURE W/ 24V TRANSFORMER | 1 |
| EOL1 | 209541B | END OF LINE RESISTOR | 1 |
| LT1 | LT-B4 | RS-485 NETWORK TERMINATOR | 1 |

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
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| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
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NAVFAC

STATE OF NEW HAMPSHIRE DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER

SEAL

CSI ENGINEERING

FIRE PROTECTION

999 MIDDLEWAY SUITE 205 BARRIE, ON L4N 0W5 781-233-9808

25 AVIATION AVE STE 204 PORTSMOUTH, NH 03801 603-319-8244

A/E INFO

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ACTIVITY

SATISFACTORY TO DATE

DES JC DRW SV CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 44 HVAC CONTROLS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703589

SHEET 136 OF 506

M3.2 44-15-152

DRAWFORM REVISION: 10 OCTOBER 2014

# AIR-COOLED WATER CHILLER SCHEDULE

| TAG | SERVICE | LOCATION | MINIMUM CAPACITY (TONS) | EVAPORATOR | | | | | REFRIG. TYPE | COMPRESSOR(S) | | | AMBIENT (°F) | CONDENSER FAN | | | ELECTRIC SERVICE | | | | | WEIGHT (LBS) | DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD) | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | GPM | % GLYCOL | EWT (°F) | LWT (°F) | MAX P.D.(FT.) | | QTY. | POWER (KW) | TYPE | MAX | QTY. | POWER (KW) | RPM | MAX kW | MCA (AMP) | MOP (AMP) | V | PH | | | |
| CH-44-1 | BLDG 44 | GROUND FLOOR | 20 | 48.9 | 35 | 54 | 44 | 38.7 | R-410A | 2 | 20.1 | SCROLL | 95 | 2 | 2.4 | 840 | 22.7 | 50.5 | 60 | 460 | 3 | 2200 | TRANE CGAM020F | 1,2,3,5 |
| CH-44-2 | BLDG 44 | GROUND FLOOR | 19 | 37.1 | 35 | 54 | 44 | 6.3 | R-410A | 2 | 17.6 | SCROLL | 95 | 2 | – | 920 | 18.6 | 44 | 60 | 460 | 3 | 1481 | YORK YCAL0019EE46XEBSXXX | 1,2,4,5 |

NOTES: 1. PROVIDE W/ BACNET INTERFACE. 2. PROVIDE UNIT CONTROL PANEL WITH MAIN DISCONNECT. 3. PROVIDE WITH LOW-TEMPERATURE PROCESSING. 4. PROVIDE WITH LOW SOUND FANS. 5. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 6. PROVIDE WITH SEACOAST RATED COATING FOR CONDENSER COIL.

# AIR HANDLING UNIT SCHEDULE

| TAG | SERVICE | LOCATION | CFM | EXTERNAL S.P. (IN. W.G) | FAN DATA | | | | DX COOLING COIL | | | | | | DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD) | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MOTOR | | | | CAPACITY (MBH) | | REFRIGERANT TYPE | AIR DATA | | | | |
| | | | | | RPM | HP | V | PH | TOTAL | SENS. | | EAT (°F) | | LAT (°F) | | |
| | | | | | | | | | | | | DB | WB | DB | WB | |
| AHU-44-1 | BLDG 44 | MECH. ROOM | 4000 | 0.3 | 1725 | 2 | 208 | 3 | 120.5 | 95.46 | R-410A | 80 | 67 | 59 | 57.9 | TRANE TWE120E3 | SEE NOTES |

NOTES: 1. PROVIDE W/ BACNET INTERFACE. 2. MECHANICAL CONTRACTOR TO VERIFY SMOKE DETECTOR IN RA. 3. PROVIDE MOUNTING HARDWARE AS REQUIRED. 4. PROVIDE W/ BELT DRIVE MOTORS. 5. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.

# JACE BOX

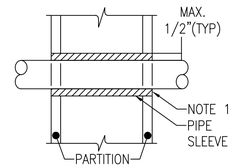
| TAG NO. | LOCATION | ELECTRICAL | | DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD) | NOTES |
|---|---|---|---|---|---|
| | | AMP | V | | |
| J-1 | SEE PLANS | 20 | 120 | JACE 8000 | SEE NOTES |

NOTES: 1. PROVIDE W/ MEMORY UPGRADE TO 4GB. 2. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.

# AIR COOLED CONDENSING UNIT SCHEDULE

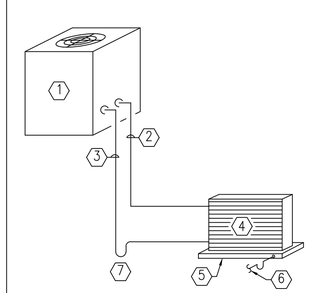
| TAG | SERVES | DESIGN BASED ON MANUFACTURER | DESIGN BASED ON MODEL No. | COOLING DATA | ELECTRIC DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | COOLING (MBH) | VOLTS | HZ | PHASE | FLA | MCA | MOCP | |
| ACCU-44-1 | BLDG-44 | TRANE | TTA120E4 | 120.5 | 460 | 60 | 3 | 2.5 | 20.1 | 25 | SEE NOTES |

NOTES: 1. PROVIDE W/ BACNET INTERFACE. 2. PROVIDE W/ HIGH PRESSURE CONTROL. 3. PROVIDE LIQUID LINE REFRIGERANT DRIER. 4. PROVIDE W/ LOW AMBIENT COOLING TO 50°F IN ELECTROMECHANICAL MODELS. 5. PROVIDE W/ SCROLL COMPRESSORS. 6. PROVIDE W/ THERMAL EXPANSION VALVE. 7. PROVIDE UNIT CONTROL PANEL WITH MAIN DISCONNECT. 8. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 9. PROVIDE WITH SEACOAST RATED COATING FOR CONDENSER COIL.




NOTES:
1. AT FIRE RATED PARTITIONS ADD LAYER OF FIRE SAFING INSULATION AROUND PENETRATIONS SO AS TO FILL CAVITY.
2. PIPE PENETRATIONS THROUGH CORRIDOR WALLS ABOVE THE CEILING ARE TO BE FIRE STOPPED AROUND THE PENETRATION.
3. CONTRACTOR REPSONSIBLE FOR DETERMINING REQUIRED HOUR RATING TO MATCH EXISTING WALL ASSEMBLY.

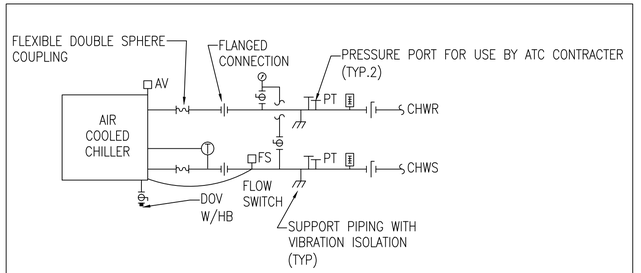
## PIPE PENETRATIONS




1. CONDENSING UNIT
2. LIQUID LINE
3. INSULATED SUCTION LINE
4. COOLING COIL
5. DRAIN PAN
6. DRAIN LINE-TRAP & ROUTE TO DRAIN OR CONDENSATE PUMP
7. TRAP

NOTE:
1. PIPE SIZES, CONTROL EQUIPMENT AND TRAPS AS REQUIRED BY UNIT MANUFACTURER (SUBMIT IN SHOP DRAWING).

## REFRIGERANT PIPING SMALL COMPONENT SCHEMATIC




## AIR COOLED CHILLER PIPING DETAIL

| | | | |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |
| STM | DESCRIPTION | DATE | APPR |

NAVFAC

DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER — STATE OF NEW HAMPSHIRE — SEAL

THE CAD/CAD FILE USED FOR THE PREPARATION OF THIS DRAWING AND ASSOCIATED DATA MAY BE USED BY THE CONTRACTOR FOR CONVENIENCE, BUT ANY INFORMATION OBTAINED BY THE CONTRACTOR FROM THESE SOURCES IS NOT A SUBSTITUTE FOR CONTRACTUAL REQUIREMENTS OR THE CONTRACTOR'S RESPONSIBILITY TO REVIEW AND VERIFY CONTRACT DOCUMENTS. CONTRACT NO. N40085-11-D-1018 CTO 0010

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FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

| DES | JC | DRW | SV | CHK | DM |
|---|---|---|---|---|---|
| PM/DM | PETER STOCKLESS | | | | |
| BRANCH MANAGER | BRUCE LITALIEN | | | | |
| FEAD/PM&E | AMIN BAHROUR PM&E | | | | |
| FIRE PROTECTION | X | | | | |

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NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 44 HVAC SCHEDULES AND DETAILS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703590

SHEET 137 OF 506

M4.0 | 44-15-153

DRAWFORM REVISION: 10 OCTOBER 2014

## TYPICAL FLASH PROTECTION WARNING LABEL

**WARNING**

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

| | |
|---|---|
| EQUIPMENT TYPE: | |
| GROUNDING: | Y/N GROUNDED |
| WORK DISTANCE: | INCHES |
| AVAILABLE 3ϕ BOLTED CURRENT: | kA |
| FLASH PROTECTION BOUNDARY: | INCHES |
| INCIDENT ENERGY AT 23 INCHES: | cal/cm² |
| PPE LEVEL: | 4 |
| DATE: | xx/xx/xxxx |

NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. PROVIDE ON ALL IN-LINE METER SOCKETS, SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS AND MOTOR CONTROL CENTERS IN ACCORDANCE WITH NEC 110.16.

## TYPICAL NAMEPLATE DETAIL

3" × 1"

PANEL PP1
225A 208Y/120V
FED FROM MDP

NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. NAMEPLATE TO BE 1/16" THICK PLASTIC WITH WHITE CENTER LAMINATION. FACE SHALL BE BLACK, ENGRAVED LETTERS SHALL BE WHITE.
3. SECURE NAMEPLATE TO SURFACES WITH HIGH STRENGTH ADHESIVE CEMENT. UTILIZE MECHANICAL FASTENERS FOR ALL EXTERIOR LOCATIONS.
4. TYPICAL FOR "STARTERS", "DISCONNECTS", AND "TRANSFORMERS".

## RECEPTACLE LABEL REQUIREMENTS

## TYPICAL DEVICE MOUNTING HEIGHTS DETAIL

NOTES:

1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE EXCEPT EXIT SIGNS, CLOCKS, EMERGENCY LIGHTING AND FIRE ALARM A/V DEVICES.
2. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE.
3. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL UNLESS OTHERWISE NOTED.
4. STROBE HEIGHT ILLUSTRATED AT MAXIMUM HEIGHT. STROBE SHALL BE 80" AFF OR 6" BELOW CEILING, WHICHEVER IS LOWER.

## GENERAL PROJECT NOTES

1. THE ELECTRICAL DEMOLITION PLANS AND DETAILS INDICATE THE GENERAL INTENT AND ARE NOT INTENDED TO SHOW ALL ITEMS TO BE REMOVED OR RETAINED. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO THE SUBMISSION OF BIDS TO BECOME FAMILIAR WITH THE ACTUAL CONDITIONS AND EXTENT OF WORK. DEVICES AND EQUIPMENT LOCATED ON WALLS AND/OR CEILINGS TO BE REMOVED SHALL BE DISCONNECTED AND MADE SAFE FOR REMOVAL. THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY UNANTICIPATED HIDDEN CONDITIONS ENCOUNTERED DURING DEMOLITION.
2. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL SYSTEMS OR BUILDING COMPONENTS DAMAGED DURING THE EXECUTION OF WORK. DAMAGE SHALL INCLUDE BUT NOT LIMITED TO THE DESTRUCTION OR DISPOSAL OF ITEMS INTENDED TO REMAIN OR BE SALVAGED.
3. THE ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE AND REMOVE ALL CONDUCTORS AND RACEWAYS TO THEIR POINT OF ORIGIN WITHIN THE AREA OF DEMOLITION SCOPE. ITEMS IDENTIFIED FOR DEMOLITION SHALL NOT BE ABANDONED IN PLACE. RACEWAYS THAT ENTER MASONRY WALLS AND FLOORS SHALL BE CUT FLUSH AT THE SURFACE FOR PATCHING BY TRADE CONTRACTOR. ALL CIRCUIT BREAKERS ASSOCIATED WITH THE DEMOLITION SCOPE SHALL BE DE-ENERGIZED AND LABELED AS SPARE.
4. ALL REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF UNLESS IDENTIFIED FOR REUSE OR TURNED OVER TO OWNER. THE OWNER'S REPRESENTATIVE SHALL INSPECT ALL RETAINED ITEMS PRIOR TO PLACEMENT IN THE IDENTIFIED STORAGE LOCATION BY THE ELECTRICAL CONTRACTOR.
5. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. CIRCUITRY HAS BEEN DETERMINED BASED UPON INFORMATION GATHERED, ASSUMPTIONS, AND INFORMATION OBTAINED FROM NAVFAC. EXACT CIRCUITING, EQUIPMENT SIZES, AND CONDUIT AND WIRING SIZES MAY DIFFER IN THE FIELD FROM WHAT IS SHOWN ON THE DRAWINGS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TRACING ALL CIRCUITS BEING DEMOLISHED AND REUSED PRIOR TO DISCONNECTING, VERIFYING EXISTING CIRCUITRY AND EQUIPMENT SIZES, AND SHALL SIZE ALL NEW EQUIPMENT AND BRANCH CIRCUITRY ACCORDINGLY IF ACTUAL CONDITIONS DIFFER FROM WHAT IS SHOWN ON THE DRAWINGS. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY. INTERCONNECTING BRANCH WIRING SHALL BE SIZED EQUAL TO THE HOMERUN UNLESS NOTED OTHERWISE.
6. VOLTAGE DROP HAS BEEN CONSIDERED IN THE DESIGN OF ALL BRANCH CIRCUITRY AND FEEDER SIZES BASED UPON THE ILLUSTRATED EQUIPMENT LAYOUTS AND SHORTEST CONDUCTOR/RACEWAY ROUTING. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR DEVIATIONS TAKEN THAT WILL INCREASE CONDUCTOR/RACEWAY ROUTING LENGTHS. BRANCH CIRCUITS LONGER THAN 75' FOR 120V FROM PANEL TO LAST OUTLET SHALL BE INCREASED A MINIMUM OF ONE SIZE ABOVE THAT SPECIFIED TO LIMIT VOLTAGE DROP TO LESS THAN 3%. FEEDERS SHALL FOLLOW SIMILAR GUIDELINES AND BE LIMITED TO 2% DROP.
7. THE ELECTRICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE ELECTRICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL ADDITIONAL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.

## ABBREVIATIONS

| | | | |
|---|---|---|---|
| A/AMP | AMPERE | LTG | LIGHTING |
| AC | ALTERNATING CURRENT | MCB | MAIN CIRCUIT BREAKER |
| ADA | AMERICAN WITH DISABILITIES ACT | MEC | MASSACHUSETTS ELECTRIC CODE |
| AF | AMPERE FRAME | MH | MANHOLE |
| AFF | ABOVE FINISHED FLOOR | MLO | MAIN LUGS ONLY |
| AFG | ABOVE FINISHED GRADE | MTD | MOUNTED |
| AIC | AMPERE INTERRUPTING CAPACITY | MTG | MOUNTING |
| AL | ALUMINUM | NEC | NATIONAL ELECTRIC CODE |
| AT | AMPERE TRIP | NTS | NOT TO SCALE |
| ATS | AUTOMATIC TRANSFER SWTICH | # | NUMBER |
| AWG | AMERICAN WIRE GAUGE | PVC | POLYVINYL CHLORIDE |
| C | CONDUIT | PWR | POWER |
| CATV | CABLE TELEVISION | RGS | RIGID GALVANIZED STEEL |
| CCTV | CLOSED CIRCUIT TELEVISION | SWBD | SWITCHBOARD |
| CB | CIRCUIT BREAKER | TEL | TELEPHONE |
| CKT | CIRCUIT | TERM | TERMINAL |
| ℄ | CENTERLINE | TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSION |
| DWG | DRAWING | TSP | TWISTED SHIELDED PAIR |
| EC | ELECTRICAL CONTRACTOR | TYP | TYPICAL |
| EMT | ELECTRICAL METALLIC TUBING | UNO | UNLESS OTHERWISE NOTED |
| FLMT | FLEXIBLE LIQUID TIGHT METALLIC TUBING | UPS | UNINTERRUPTIBLE POWER SUPPLY |
| GFI | GROUND FAULT INTERRUPTING | UTP | UNSHIELDED TWISTED PAIR |
| GND | GROUND | V | VOLT |
| HH | HANDHOLE | VA | VOLT AMPERE |
| HP | HORSEPOWER | VFD | VARIABLE FREQUENCY DRIVE |
| HVAC | HEATING, VENTILATION AND AIR CONDITIONING | W | WATT |
| HZ | HERTZ | WP | WEATHERPROOF |
| IG | ISOLATED GROUND | | |
| KVA | KILOVOLT – AMPERE | | |
| KW | KILOWATT | | |

## MOTOR & CONTROLS LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| $S_M$ | MANUAL MOTOR STARTING SWITCH WITH THERMAL OVERLOAD PROTECTION |
| 30AS 3R | DISCONNECT SWITCH RATED 30AMP, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED<br>"3R" – INDICATES NEMA TYPE 3R ENCLOSURE<br>"30AS" – INDICATES 30A SWITCH |
| 30AS/15AF | FUSED DISCONNECT SWITCH, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED<br>"3R" – INDICATES NEMA TYPE 3R ENCLOSURE<br>"30AS" – INDICATES 30AMP SWITCH<br>"15AF" – INDICATES 15AMP FUSES |
| FS | FIBER OPTIC SWITCH. PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR. |
| | HONEYWELL AT120B1028/B 120VAC-24VAC FIBER OPTIC CONTROL TRANSFORMER. FIELD COORDINATE EXACT LOCATION. FINAL LOW-VOLTAGE CONNECTION BY TRADE CONTRACTOR. |
| JCB | DDC CONTROL JACE BOX. PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION. |

## GENERAL SYMBOLS

SYMBOL

- DETAIL LETTER
- DWG NUMBER ON WHICH SECTION IS SHOWN
- EUH / # – EQUIPMENT SYMBOLS (REFER TO EQUIPMENT SCHEDULES); EQUIPMENT DESIGNATION; EQUIPMENT REFERENCE NUMBER (TYP)
- # – NEW WORK NOTE TAG
- ⟨#⟩ – DEMOLITION NOTE TAG

## FIRE ALARM LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| XXXX | FIRE ALARM DEVICE<br>"RTS" – INDICATES REMOTE TEST STATION |
| S | DUCT MOUNTED SMOKE DETECTOR |

## POWER DISTRIBUTION LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| ▬ | 208Y/120 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS |
| ▨ | 480Y/277 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS |
| T | DRY TYPE TRANSFORMER |
| Ⓜ | CUSTOMER METER |

## BRANCH CIRCUIT & FEEDER LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| PP1-(X) | BRANCH CIRCUIT HOME RUN. TYPICAL 2#12 & 1#12G IN ¾"C MINIMUM. PP1-(1) INDICATES PANEL AND CIRCUIT DESIGNATION FROM WHICH HOME RUN SHALL ORIGINATE. EACH CIRCUIT SHALL BE 20A-1P (20AMP SINGLE POLE) UNLESS NOTED OTHERWISE. |

## EXISTING EQUIPMENT LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| XM | EXISTING EQUIPMENT TO REMAIN |
| XR | EXISTING EQUIPMENT TO BE REMOVED |
| XE | EXISTING EQUIPMENT TO BE REMOVED AND NEW EQUIPMENT TO BE INSTALLED ON EXISTING BRANCH/FEEDER |
| (light box) | EXISTING EQUIPMENT TO REMAIN FOR INFORMATION ONLY – (XM)<br>INDICATED BY SYMBOL WITH LIGHT OUT OF FUNCTION LINE TYPE |
| (dashed box) | EXISTING EQUIPMENT TO BE REWORKED – (XN, XL, XE, XR)<br>INDICATED BY SYMBOL WITH DASHED AND IN FUNCTION LINE TYPE |

## WIRING DEVICES

| SYMBOL | DESCRIPTION |
|---|---|
| # GFI | DUPLEX RECEPTACLE, GROUNDING TYPE, RATED 20A, 125V<br>"#" – INDICATES CIRCUIT NUMBER (TYP)<br>"WP" – INDICATES WEATHERPROOF (TYP)<br>"GFI" – INDICATES GROUND FAULT INTERRUPTER |

## ELECTRICAL GENERAL NOTES

SEE PWD-ME DRAWING NUMBERS;
43-15-67 FOR TITLE SHEET
43-15-68 FOR LIST OF DRAWINGS
43-15-69 FOR GENERAL NOTES & LEGENDS
43-15-72 FOR CHASE AND SOFFIT DETAILS
43-15-74 FOR STRUCTURAL NOTES AND SUPPORTS

## SCHEDULE OF DRAWINGS

| DWG# | DESCRIPTION |
|---|---|
| E1.0 | BUILDING 44 ELECTRICAL LEGEND |
| ED2.0 | BUILDING 44 ELECTRICAL FIRST FLOOR DEMOLITION PLAN |
| E2.0 | BUILDING 44 ELECTRICAL FIRST FLOOR PLAN |
| E3.0 | BUILDING 44 ELECTRICAL SCHEDULES |

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC


STATE OF NEW HAMPSHIRE – CHARLES E. MACE No. 13078 LICENSED PROFESSIONAL ENGINEER
SEAL



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25 AVIATION AVE STE 204 PORTSMOUTH, NH 03801 603-319-8244
A/E INFO


APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES TM | DRW TM | CHK JO
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
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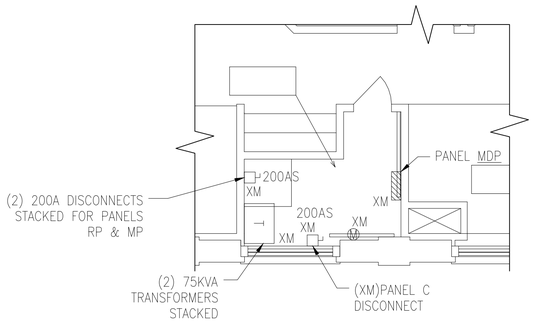
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 44 ELECTRICAL LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703591
SHEET 138 OF 506
E1.0 | 44-15-154

DRAWFORM REVISION: 10 OCTOBER 2014




1 ED2.0 **BUILDING 44 ELECTRICAL FIRST FLOOR MAIN ELECTRICAL ROOM**
1/4" = 1'-0"

## GENERAL SHEET NOTES

1. REFER TO DRAWING E1.0 FOR LEGEND, SYMBOLS AND GENERAL NOTES.
2. THE ELECTRICAL CONTRACTOR SHALL CIRCUIT TRACE AND LABEL ALL EXISTING BRANCH CIRCUITS AND FEEDERS SCHEDULED TO BE REMOVED WITHIN THE AREA OF DEMOLITION SCOPE PRIOR TO DE-ENERGIZING AND DISCONNECTION. ALL CIRCUITS WITHIN PANELBOARDS IDENTIFIED FOR REMOVAL SHALL BE TRACED AND LABELED TO ENSURE THAT NO AREA OUTSIDE THE DEMOLITION SCOPE LIMIT IS AFFECTED.
3. THE ELECTRICAL CONTRACTOR SHALL IDENTIFY ALL BRANCH CIRCUITS, FEEDERS AND SYSTEM COMPONENTS, WHICH ARE TO REMAIN WITHIN THE AREA OF DEMOLITION SCOPE. THERE SHALL BE NO INTERRUPTION OF SERVICE TO ANY AREA OUTSIDE THE SCOPE LIMITS WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE. EXISTING EQUIPMENT TO REMAIN SHALL BE LEFT IN A CODE COMPLIANT MANNER.
4. THE ELECTRICAL CONTRACTOR SHALL TEMPORARILY SUPPORT ALL ITEMS TO REMAIN THAT ARE AFFECTED BY THE DEMOLITION OF BUILDING STRUCTURAL COMPONENTS (WALLS, CEILINGS, ETC.). TEMPORARILY SUPPORTED ITEMS SHALL BE PERMANENTLY SUPPORTED AND INSTALLED WHEN FINALIZED STRUCTURES ARE IN PLACE.

## DEMOLITION KEYNOTES

1. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING CHILLERS. MAINTAIN EXISTING BRANCH CIRCUITRY AND CIRCUIT BREAKER FOR REUSE. DEMOLISH EXISTING DISCONNECTS IN THEIR ENTIRETY.
2. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING AHU. DEMOLISH EXISTING CONDUIT, WIRING, AND DISCONNECT IN THEIR ENTIRETY. MAINTAIN ASSOCIATED CIRCUIT BREAKER AND LABEL AS "SPARE" FOR FUTURE USE.
3. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING ACCU. DEMOLISH EXISTING CONDUIT, WIRING, AND DISCONNECT IN THEIR ENTIRETY. MAINTAIN ASSOCIATED CIRCUIT BREAKER AND LABEL AS "SPARE" FOR FUTURE USE.

**BUILDING 44 ELECTRICAL FIRST FLOOR DEMOLITION PLAN**
1/8" = 1'-0"

PLAN NORTH

## GRAPHIC SCALE

1/8" = 1' — 8 4 0 8 16 24 — scale feet

CHECK GRAPHIC SCALE BEFORE USING

| | | DM | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |
| STM | DESCRIPTION | DATE | |

NAVFAC

CHARLES E. MACE No. 13078 LICENSED PROFESSIONAL ENGINEER — STATE OF NEW HAMPSHIRE — SEAL

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CSI ENGINEERING — FIRE PROTECTION — 919 BROADWAY, SUITE 206, DENVER, CO 80203, 781.333.0828, 25 ANTHONY AVE, STE 204, PORTSMOUTH, NH 03801, 603.319.6214

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES TM | DRW TM | CHK JO

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH — KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

# BUILDING 44 ELECTRICAL FIRST FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913

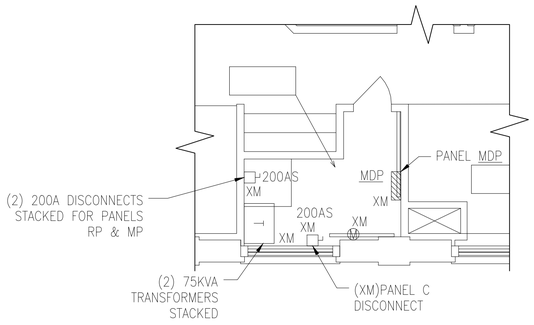
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703592

SHEET 139 OF 506

ED2.0 | 44-15-155

DRAWFORM REVISION: 10 OCTOBER 2014




## GENERAL SHEET NOTES

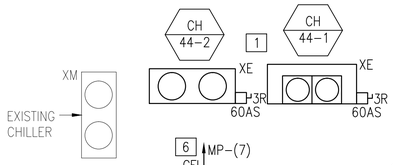
1. REFER TO DRAWING E1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. POWER BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. POWER BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
3. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING POWER DEVICES TO REMAIN.
4. FINAL LOW-VOLTAGE CONNECTIONS TO BE MADE BY CONTROLS CONTRACTOR. FIELD COORDINATE EXACT LOCATION OF EQUIPMENT WITH CONTROLS CONTRACTOR AND NAVFAC.
5. FIRE ALARM BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. FIRE ALARM BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
6. MC CABLE FOR FIRE ALARM SERVICE SHALL HAVE A RED IDENTIFIER ALONG ITS ENTIRE LENGTH. JUNCTION BOX COVERS AND CONDUIT COUPLINGS FOR ALL FIRE ALARM WIRING RACEWAYS SHALL BE PAINTED RED PRIOR TO INSTALLATION.
7. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING FIRE ALARM DEVICES TO REMAIN.

## NEW WORK KEYNOTES

1. CONNECT NEW CHILLERS TO EXISTING BRANCH CIRCUITRY MAINTAINED DURING DEMOLITION. PROVIDE NEW DISCONNECT AS SHOWN. ELECTRICAL CONTRACTOR SHALL REUSE AS MUCH EXISTING CONDUIT AND WIRING AS POSSIBLE AND EXTEND AS NEEDED. NEW CONDUIT AND WING SHALL MATCH EXISTING IN ALL RESPECTS.
2. PROVIDE NEW CIRCUIT BREAKER IN PANEL "D1" FOR NEW AHU. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
3. PROVIDE NEW CIRCUIT BREAKER IN PANEL "MDP" FOR NEW ACCU. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
4. NEW DDC JACE BOX PROVIDED TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.
5. NEW DUCT SMOKE DETECTOR PROVIDED BY TRADE CONTRACTOR. COORDINATE EXACT LOCATION OF DUCT SMOKE DETECTOR WITH MECHANICAL CONTRACTOR. PROVIDE NEW REMOTE TEST STATION. CONNECT NEW DUCT SMOKE DETECTOR AND REMOTE TEST STATION TO EXISTING FIRE ALARM DETECTION CIRCUIT SERVING THE AREA. REUSE AS MUCH EXISTING CONDUIT AND WIRING AS POSSIBLE AND EXTEND AS NEEDED. NEW CONDUIT AND WIRING SHALL MATCH EXISTING IN ALL RESPECTS.
6. ELECTRICAL CONTRACTOR TO FIELD VERIFY IF A RECEPTACLE EXISTS WITHIN 6' OF NEW CHILLERS. IF NO RECEPTACLE EXISTS, PROVIDE NEW AS SHOWN. REFER TO PANELBOARD SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.

## 1 E2.0 BUILDING 44 ELECTRICAL FIRST FLOOR MAIN ELECTRICAL ROOM

1/4" = 1'-0"



## BUILDING 44 ELECTRICAL FIRST FLOOR PLAN

1/8" = 1'-0"

PLAN NORTH

## GRAPHIC SCALE

1/8" = 1' (8 4 0 8 16 24 scale feet)

CHECK GRAPHIC SCALE BEFORE USING

| | | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

STATE OF NEW HAMPSHIRE — CHARLES E. MACE No. 13078 LICENSED PROFESSIONAL ENGINEER — SEAL

CSI — 999 Broadway, Suite 306, Saugus, MA 01906, 781-233-9933, 603-319-9244 — A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: TM | DRW: TM | CHK: JO

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

LEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 44 ELECTRICAL FIRST FLOOR PLAN

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703593

SHEET 140 OF 506

E2.0 | 44-15-156

DRAWFORM REVISION: 10 OCTOBER 2014

## PANELBOARD SCHEDULE

| | | | |
|---|---|---|---|
| PANEL: D1 | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING | |
| MAIN: 200A MCB | BUS AMPS: 225A | MOUNT.: RECESSED | |
| PH/WIRE: 3ø/4W | AIC: 22K | LOC: BLDG 44 MECH/ELEC. ROOM | |

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20/1 | REC. ROOM 100 | 0 | – | | – | 0 | COPIER CORR. 103 | 20/1 | 2 |
| 3 | 20/1 | REC. ROOM 101 | 0 | – | | – | 0 | REC. CORRIDOR 109, 110 | 20/1 | 4 |
| 5 | 20/1 | REC. ROOM 104 | 0 | – | | – | 0 | REC. 105 | 20/1 | 6 |
| 7 | 20/1 | REC. ROOM 106 | 0 | – | | – | 0 | REC. 107 | 20/1 | 8 |
| 9 | 20/1 | REC. ROOMS 117 & 118 | 0 | – | | – | 0 | REC. 117 | 20/1 | 10 |
| 11 | 20/1 | REC. ROOM 116 | 0 | – | | – | 0 | REC. 114, 115 | 20/1 | 12 |
| 13 | 20/1 | REC. ROOM 113 | 0 | – | | – | 0 | CEILING REC. 113 | 20/1 | 14 |
| 15 | 20/1 | LIGHTS 100, 101, 103–106 | 0 | – | | – | 0 | LIGHTS 107, 109–112 | 20/1 | 16 |
| 17 | 20/1 | LIGHTS 113–118 | 0 | – | | – | 0 | EXIT LIGHTS | 20/1 | 18 |
| 19 | 30/1 | CUH–1 ROOM 112 | 0 | – | | – | 0 | OUTSIDE GFI @ CU | 20/1 | 20 |
| 21 | 30/1 | VAV POWER | 0 | – | | | | | | 22 |
| 23 | 20/2 | SPARE | 0 | – | | – | 0 | SPARE | 40/3 | 24 |
| 25 | | | | | | | | | | 26 |
| 27 | | | | | | | | | | 28 |
| 29 | 60/3 | SPARE | 0 | – | | 1 | 2.8 | AHU–44–1 | 15/3 | 30 |
| 31 | | | | | | | | | | 32 |
| 33 | | SPACE | | – | | – | | SPACE | | 34 |
| 35 | | SPACE | | – | | – | | SPACE | | 36 |
| 37 | | SPACE | | – | | – | | SPACE | | 38 |
| 39 | | SPACE | | – | | – | | SPACE | | 40 |
| 41 | | SPACE | | – | | – | | SPACE | | 42 |
| | | | 0.00 | | | | 2.80 | TOTAL CONNECTED kVA: | 2.80 | |
| | | | | | | | | TOTAL CONNECTED AMPERES: | 7.78 | |

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER SIZED AS INDICATED FOR NEW LOAD.
2. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

## PANELBOARD SCHEDULE

| | | | |
|---|---|---|---|
| PANEL: MP | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING | |
| MAIN: 400A MCB | BUS AMPS: 400A | MOUNT.: RECESSED | |
| PH/WIRE: 3ø/4W | AIC: | LOC: BLDG 44 1ST FLOOR CORRIDOR | |

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20/1 | CONDENSATE PUMP CP1 & CP2 | 0 | – | | – | 0 | EF–1 & EF–2 | 20/1 | 2 |
| 3 | 20/1 | PUMP P2 | 0 | – | | – | 0 | TELEPHONE BOARD | 20/1 | 4 |
| 5 | 20/1 | DDC JACE BOX | .02 | 1 | | – | 0 | FIRE ALARM PANEL | 20/1 | 6 |
| 7 | 20/1 | GFI RECPTACLE FOR CHILLERS | .18 | 1 | | – | 0 | SPRINKLER PUMP | 20/1 | 8 |
| 9 | 20/1 | SPARE | 0 | – | | – | 0 | EWC | 20/1 | 10 |
| 11 | 20/1 | SPARE | 0 | – | | – | | SPACE | | 12 |
| 13 | 20/3 | PUMP P3 | 0 | – | | – | | SPACE | | 14 |
| 15 | | | | | | – | | SPACE | | 16 |
| 17 | | | | | | – | | SPACE | | 18 |
| 19 | 20/1 | SPARE | 0 | – | | – | | SPACE | | 20 |
| 21 | 20/3 | EXISTING PMP P–1 | 0 | – | | – | | SPACE | | 22 |
| 23 | | | | | | – | | SPACE | | 24 |
| 25 | | | | | | – | | SPACE | | 26 |
| 27 | 20/1 | SPARE | 0 | – | | – | | SPACE | | 28 |
| 29 | 20/1 | SPARE | 0 | – | | – | | SPACE | | 30 |
| 31 | 20/1 | SPARE | 0 | – | | – | | SPACE | | 32 |
| 33 | 20/1 | SPARE | 0 | – | | – | | SPACE | | 34 |
| 35 | 20/1 | SPARE | 0 | – | | – | | SPACE | | 36 |
| 37 | 100/3 | PANEL LP | 0 | – | | – | | SPACE | | 38 |
| 39 | | | | | | – | | SPACE | | 40 |
| 41 | | | | | | – | | SPACE | | 42 |
| 43 | | SPACE | | | | – | | SPACE | | 44 |
| 45 | | SPACE | | | | – | | SPACE | | 46 |
| 47 | | SPACE | | | | – | | SPACE | | 48 |
| | | | 0.20 | | | 0.00 | | TOTAL CONNECTED kVA: | 0.20 | |
| | | | | | | | | TOTAL CONNECTED AMPERES: | 0.56 | |

NOTES:
1. VERIFY AND REUSE EXISTING CIRCUIT BREAKER AS INDICATED FOR NEW LOAD.
2. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

## PANELBOARD SCHEDULE

| | | | |
|---|---|---|---|
| PANEL: MDP | VOLTS: 480 | NEW/EXISTING.: EXISTING | |
| MAIN: 400A MCB | BUS AMPS: 400A | MOUNT.: SURFACE | |
| PH/WIRE: 3ø/3W | AIC: 42K | LOC: BLDG. 44 ELEC RM | |

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 100/3 | 2ND FOOR PANEL (PANEL B) | 0 | – | | – | 0 | PANEL RP | 70/3 | 2 |
| 3 | | | | | | | | | | 4 |
| 5 | | | | | | | | | | 6 |
| 7 | 125/3 | BULDING 64 | 0 | – | | – | .2 | PANEL MP | 70/3 | 8 |
| 9 | | | | | | | | | | 10 |
| 11 | | | | | | | | | | 12 |
| 13 | 30/3 | SPARE | 0 | – | | 1 | 16.0 | ACCU–44–1 | 25/3 | 14 |
| 15 | | | | | | | | | | 16 |
| 17 | | | | | | | | | | 18 |
| 19 | 60/3 | CH–44–1 | 40.2 | 2 | | – | 0 | WATER HEATER | 20/3 | 20 |
| 21 | | | | | | | | | | 22 |
| 23 | | | | | | | | | | 24 |
| 25 | 50/3 | PANEL HW44/64 | 0 | – | | 2 | 35.1 | CH–44–2 | 60/3 | 26 |
| 27 | | | | | | | | | | 28 |
| 29 | | | | | | | | | | 30 |
| 31 | | SPACE | | – | | – | 2.8 | 44 1ST FLOOR REAR PANEL D | 100/3 | 32 |
| 33 | | SPACE | | – | | | | | | 34 |
| 35 | | SPACE | | – | | | | | | 36 |
| 37 | | SPACE | | – | | – | | SPACE | | 38 |
| 39 | | SPACE | | – | | – | | SPACE | | 40 |
| 41 | | SPACE | | – | | – | | SPACE | | 42 |
| | | | 40.2 | | | | 54.1 | TOTAL CONNECTED kVA: | 94.30 | |
| | | | | | | | | TOTAL CONNECTED AMPERES: | 113.56 | |

NOTES:
1. REMOVE EXISTING CIRCUIT BREAKER AND PROVIDE NEW SIZED AS INDICATED FOR NEW LOAD.
2. VERIFY AND REUSE EXISTING CIRCUIT BREAKER AS INDICATED FOR NEW LOAD.
3. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

## MECHANICAL EQUIPMENT SCHEDULE

| EQUIP TAG | DESCRIPTION | LOAD | | | | PANEL SOURCE | | BRANCH CIRCUIT | CONNECTION | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | HP | KVA | VOLT | PH | PANEL | C/B | | FLEX | JB | REC | DISC | |
| ACCU 44–1 | CONDENSING UNIT | – | 16.01 | 460 | 3 | MDP–(14,16,18) | 25A/3P | (3)#10 & (1)#10G, 3/4"C | X | | | X | NOTE 7 |
| AHU 44–1 | AIR HANDLER | – | 2.81 | 208 | 3 | D1–(28,30,32) | 15A/3P | (3)#12 & (1)#12G, 3/4"C | X | | | X | NOTE 8 |
| CH 44–1 | CHILLER | – | 40.24 | 460 | 3 | MDP–(19,21,23) | 60A/3P | – | X | | | X | NOTE 11 |
| CH 44–2 | CHILLER | – | 35.06 | 460 | 3 | MDP–(26,28,30) | 60A/3P | – | X | | | X | NOTE 11 |

NOTES:

1. BRANCH CIRCUIT WIRING METHODS SHALL BE AS NOTED ON THE DRAWINGS AND/OR SPECIFICATIONS FOR THE APPLICABLE LOCATION.
2. "FLEX" – DENOTES FINAL THREE FEET (MAXIMUM) OF RACEWAY SHALL BE FLEXIBLE METAL OR LIQUIDTIGHT METAL CONDUIT.
3. "JB" – JUNCTION BOX DENOTES FINAL CONNECTION TO BOX OR CONTROL PANEL PREWIRED TO THE EQUIPMENT.
4. "REC" – PROVIDE RECEPTACLE IN THE NEMA CONFIGURATION NOTED.
5. NOTES 6–9 ARE OPTIONS WHICH SHALL BE SPECIFICALLY NOTED IN REMARKS FOR INCLUSION.
6. DISCONNECT SHALL BE FUSIBLE.
7. DISCONNECT SHALL BE NEMA "3R"
8. DISCONNECT SHALL BE MOTOR–RATED SWITCH WITH THERMAL OVERLOAD ELEMENT.
9. DISCONNECT PROVIDED INTEGRAL (PREWIRED) TO EQUIPMENT BY TRADE CONTRACTOR.
10. INTEGRAL CONVENIENCE RECEPTACLE PROVIDED PREWIRED TO EQUIPMENT BY TRADE CONTRACTOR.
11. REUSE EXISTING BRANCH CIRCUITRY & CIRCUIT BREAKER. PROVIDE NEW DISCONNECT AS SHOWN ON DRAWING E2.0 & EXTEND CIRCUIT AS REQUIRED.

| APPR | DATE | DESCRIPTION | STM |
|---|---|---|---|
| DM | 08/07/2015 | 100% SUBMISSION | 4 |
| DM | 07/24/2015 | 100% REVIEW SUBMISSION | 3 |
| DM | 06/04/2015 | 90% SUBMISSION | 2 |
| DM | 04/24/2015 | 80% SUBMISSION | 1 |
| DM | 02/23/2015 | 35% SUBMISSION | 0 |

NAVFAC

CHARLES E. MACE No. 13078 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE SEAL

CSI ENGINEERING

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES TM | DRW TM | CHK JO

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 44 ELECTRICAL SCHEDULES

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085–XX–C–XXXX

NAVFAC DRAWING NO. 12703594

SHEET 141 OF 506

E3.0 | 44-15-157

DRAWFORM REVISION: 10 OCTOBER 2014

## B44 ANTENNA LOCATION - FIRST FLOOR PLAN

1/8" = 1'-0"

PLAN NORTH

## GENERAL SHEET NOTES

1. FASTENERS SHALL BE ATTACHED TO MORTAR IN MASONRY BUILDINGS, AVOIDING DAMAGE TO THE BRICK WHEREVER PRACTICAL.
2. EXTERIOR CONDUIT SHALL BE INSTALLED IN SHADOW-LINES OR ADJACENT TO EXISTING CONDUIT; CONDUIT COLOR TO BE COORDINATED WITH CULTURAL RESOURCE MANAGER AND A-E.
3. REFER TO MECHANICAL DRAWINGS FOR JACE LOCATION AND INFORMATION.
4. EXISTING ROOF AND WALL PENETRATIONS SHALL BE USED WHEREVER PRACTICAL.
5. INTERIOR, WINDOW-MOUNTED ACCESS POINTS SHALL BE MOUNTED IN AN OBSCURE LOCATION THAT IS LEAST VISIBLE FROM INTERIOR & EXTERIOR.
6. ACCESS POINT MOUNTS SHALL NOT OBSTRUCT EGRESS, EXISTING WALKWAYS, STAIRWELLS, MECHANICAL EQUIPMENT CLEARANCES, OR OTHER APPURTANANCES.
7. UNLESS OTHERWISE NOTED, ROOFTOP ACCESS POINTS SHALL BE CENTRALIZED ON THE ROOF TO MINIMIZE VISIBILITY FROM GROUND LEVEL.
8. CONTRACTOR TO FIELD-VERIFY COMMUNICATION ACCESS POINTS ARE ALIGNED AND LINE OF SIGHT IS UNOBSTRUCTED.
9. IF A FIELD CHANGE IS REQUIRED, CONTRACTOR SHALL COORDINATE WITH CULTURAL RESOURCE MANAGER AND A-E PRIOR TO RELOCATING EQUIPMENT.
10. ANY PROPOSED CHANGES (PENETRATIONS, CONDUIT, ETC.) NOT ALREADY INDICATED ON DRAWINGS MADE TO HISTORIC BUILDINGS OR BUILDINGS LOCATED IN HISTORIC DISTRICT MUST BE REVIEWED AND APPROVED BY SHPO THROUGH NAVFAC CULTURAL RESOURCES DEPARTMENT PRIOR TO INSTALLATION.
11. CONTRACTOR TO VERIFY RF SIGNAL STRENGTH AND CONNECTIVITY FROM/TO ALL ACCESS POINTS.
12. SEE PWD-ME DRAWING NUMBERS;
    - 12.1. 43-15-67 FOR TITLE SHEET
    - 12.2. 43-15-68 FOR LIST OF DRAWINGS
    - 12.3. 43-15-69 FOR GENERAL NOTES AND LEGEND
    - 12.4. 43-15-72 FOR CHASE AND SOFFIT DETAILS
    - 12.5. 43-15-74 FOR STRUCTURAL NOTES AND SUPPORT

## (A) NEW WORK KEYNOTES

1. CONTRACTOR SHALL MOUNT RF ACCESS POINT TO MORTAR OF EXTERIOR WALL IN FIRST FLOOR MECHANICAL ROOM.
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT THROUGH NORTH-EAST WINDOW TO B376 ACCESS POINT.
3. CAT5 CABLE SHALL BE ROUTED ALONG EXISTING PATH IN SAME ROOM TO JACE.

| EQUIPMENT | WIRELESS STANDARD | ANTENNA | FREQUENCY | DIMENSIONS | WEIGHT | INPUT POWER | MANUFACTURER | DESIGN BASED ON MODEL |
|---|---|---|---|---|---|---|---|---|
| WIRELESS ACCESS POINT | 802.11n | INTEGRATED | 2.4 GHZ & 5.8 GHZ | 8.7 X 8.7 X 1.84 INCHES | 1.9 LBS | AIR-PWRINJ4 | CISCO AIRONET | AIR-CAP1602I-x-K9 |

NOTE: PROVIDE POWER INJECTOR FOR POWER OVER ETHERNET TO WIRELESS ACCESSS POINT. DESIGN BASED ON CISCO MODEL AIR-PWRINJ4.

## GRAPHIC SCALE

1/8" = 1' (8 4 0 8 16 24 scale feet)

CHECK GRAPHIC SCALE BEFORE USING

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 0 | 90% SUBMISSION | 07/15/15 | DM |
| | 100% SUBMISSION | 07/31/15 | |

NAVFAC

SEAL

aecom architects|engineers
13 WATER ST NEWMARKET NH
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A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES VSL | DRW SRR | CHK KLC

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

B044 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

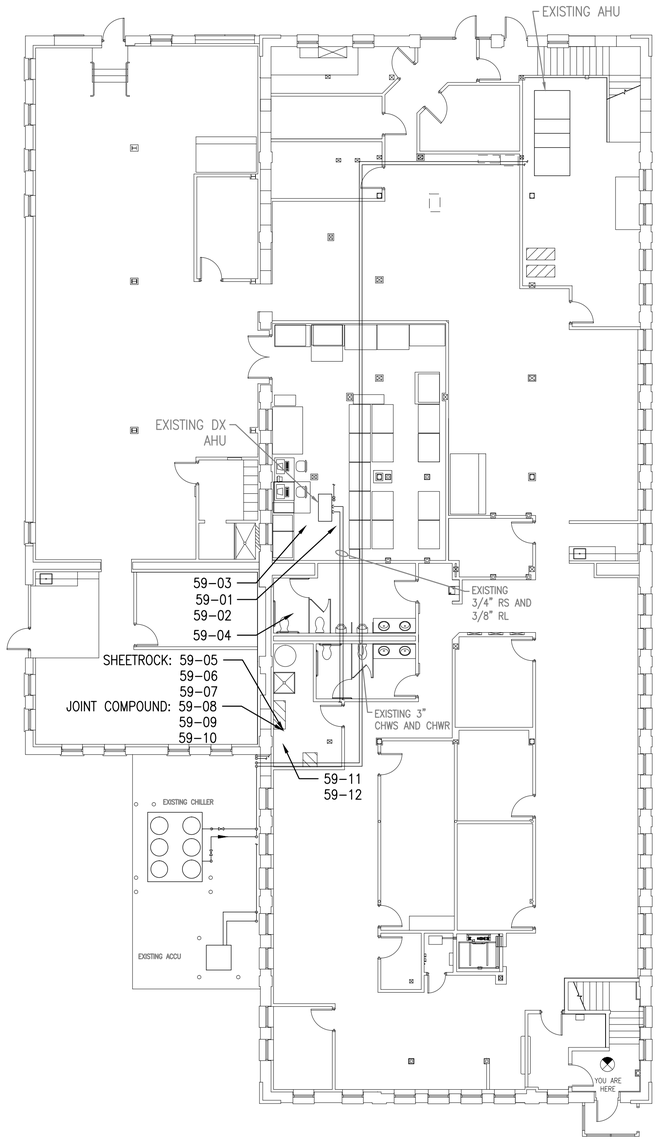
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703595

SHEET 142 OF 506

ET1.9 | 44-15-158

DRAWFORM REVISION: 10 OCTOBER 2014




## B59 HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 3/32" = 1'

PLAN NORTH

## GENERAL SHEET NOTES

1. ALL PACM (PRESUMED ASBESTOS CONTAINING MATERIAL), LBP (LEAD BASED PAINT), PCB, AND OTHER HAZARDOUS BUILDING MATERIALS MAY NOT BE IDENTIFIED IN THIS SURVEY, PARTICULARLY THOSE HIDDEN IN WALLS, CEILINGS, FLOORS, ETC. AND IN AREAS DESCRIBED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, WHICH WERE INACCESSIBLE DURING THE SURVEY. ASSESSMENT EFFORTS DID INCLUDE, TO THE EXTENT FEASIBLE, ACCESS TO INTERIOR AND EXTERIOR OF THE STRUCTURE. HOWEVER, THE ABSENCE OF ALL PACM, LBP, PCB, AND OTHER HAZARDOUS BUILDING MATERIALS IN HIDDEN OR INACCESSIBLE PORTIONS CANNOT BE DEFINITIVELY ENSURED.

2. RENOVATION AND/OR DEMOLITION ACTIVITIES SHOULD BE MONITORED BY PERSONNEL CAPABLE OF IDENTIFYING PACM, LBP, PCB AND OTHER HAZARDOUS BUILDING MATERIALS. IF PACM, LBP, PCB OR OTHER HAZARDOUS BUILDING MATERIALS ARE ENCOUNTERED, THESE MATERIALS SHOULD BE BULK SAMPLED BY A LICENSED INSPECTOR AND DISPOSED OF IN ACCORDANCE WITH PNSY AND ALL OTHER APPLICABLE REGULATIONS.

3. SEE B59 ASBESTOS, LEAD, PCB, AND TCLP INVENTORY TABLES LOCATED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, DATED JUNE 22, 2015, FOR ADDITIONAL INFORMATION.

## HAZARDOUS MATERIAL SAMPLING SUMMARY

| SAMPLE ID | ACM | LBP |
|---|---|---|
| 59-01 | ND | NS |
| 59-02 | ND | NS |
| 59-03 | ND | NS |
| 59-04 | ND | NS |
| 59-05 | ND | NS |
| 59-06 | ND | NS |
| 59-07 | ND | NS |
| 59-08 | ND | NS |
| 59-09 | ND | NS |
| 59-10 | ND | NS |
| 59-11 | ND | NS |
| 59-12 | ND | NS |

ACM = ASBESTOS CONTAINING MATERIALS
LBP = LEAD BASED PAINT
<RL = LESS THAN REPORTING LIMIT
ND = NONE DETECTED
NS = NOT SAMPLED
H = EXCEEDS REGULATORY STANDARDS FOR HAZARDOUS CONCENTRATION

NOTE:
REFER TO HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT DATED JUNE 22, 2015 FOR COMPLETE SAMPLING INFORMATION AND DATA.

## GRAPHIC SCALE

3/32" = 1' scale 0 3' 6' 12' 18' 30' feet

CHECK GRAPHIC SCALE BEFORE USING

| NO. | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
| 1 | 90% SUBMISSION | 06/05/2015 | BLM |

NAVFAC

STATE OF MAINE — Bradlee Mezquita 9410 — LICENSED PROFESSIONAL ENGINEER — SEAL

Tighe&Bond
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Portsmouth, New Hampshire
(603) 433-8818
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A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

DES: A/E | DRW: REP | CHK: BLM
PM/DM: PETER STOCKLESS
BRANCH MANAGER: BRUCE LITALIEN
FEAD/PM&E: AMIN BAHROUR PM&E
FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

# B59 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085-XX-C-XXXX
NAVFAC DRAWING NO.: 12703596
SHEET 143 OF 506
H1.0 59-15-159

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\HazMats\DWG\A1066_2_HZMT_P22.dwg LAYOUT NAME: B59-H1.0 PLOTTED: Friday, August 07, 2015 - 2:35pm USER: REP

# HVAC ABBREVIATIONS

| | | | |
|---|---|---|---|
| °F | DEGREES FAHRENHEIT | ID | INSIDE DIAMETER |
| °C | DEGREES CELSIUS | IN | INCHES |
| ø | DIAMETER | INSUL | INSULATION |
| ACV | AUTOMATIC CONTROL VALVE | KW | KILOWATT |
| AD | ACCESS DOOR | KVA | KILOVOLT AMPERE |
| ADJ | ADJUSTABLE | L | LENGTH |
| ADDL | ADDITIONAL | LB | POUND |
| AFF | ABOVE FINISHED FLOOR | LF | LINEAR FEET |
| AFG | ABOVE FINISHED GRADE | LVG | LEAVING |
| ALT | ALTERNATE | M | ONE THOUSAND |
| AP | ACCESS PANEL | MAX | MAXIMUM |
| ARCH | ARCHITECT | MBH | THOUSAND BRITISH THERMAL UNITS PER HOUR |
| ATC | AUTOMATIC TEMPERATURE CONTROL | MCA | MINIMUM CIRCUIT AMPS |
| AS | AIR SEPARATOR | MCC | MOTOR CONTROL CENTER |
| AVG | AVERAGE | MECH | MECHANICAL |
| BAS | BUILDING AUTOMATION SYSTEM | MEZZ | MEZZANINE |
| BFF | BELOW FINISHED FLOOR | MFR | MANUFACTURER |
| BHP | BRAKE HORSEPOWER | MIN | MINIMUM |
| BLDG | BUILDING | MTD | MOUNTED |
| BLR | BOILER | MU | MAKEUP WATER |
| BOD | BOTTOM OF DUCT | N/A | NOT APPLICABLE |
| BOP | BOTTOM OF PIPE | NC | NORMALLY CLOSED |
| BSMY | BASEMENT | NC | NOISE CRITERIA |
| BTU | BRITISH THERMAL UNIT | NIC | NOT IN CONTRACT |
| BTUH | BRITISH THERMAL UNIT PER HOUR | NO | NORMALLY OPEN |
| C | CONVECTOR | NO. | NUMBER |
| CF | CEILING FAN | NOM | NOMINAL |
| CL | CENTERLINE | NTS | NOT TO SCALE |
| CLG | CEILING | OB | OCTAVE BAND |
| CO | CLEAN–OUT | OC | ON CENTER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COMP | COMPRESSOR | ODP | OPEN DRIP PROOF |
| CONC | CONCRETE | OFCI | OWNER FURNISHED CONTRACTOR INSTALLED |
| CONN | CONNECTION | OFOI | OWNER FURNISHED OWNER INSTALLED |
| CONTR | CONTRACTOR | OV | OUTLET VELOCITY |
| CORR | CORRIDOR | PCF | POUNDS PER CUBIC FOOT |
| CUF | CUBIC FEET | PD | PRESSURE DROP |
| CUH | CABINET UNIT HEATER | PH | PHASE |
| CYL | CYLINDER | PLMB | PLUMBING |
| D | DRAIN | POS | PROVIDED BY OTHER SECTION(S) |
| DB | DRY BULB TEMPERATURE | PRESS | PRESSURE |
| DDC | DIRECT DIGITAL CONTROL | PRIM | PRIMARY |
| DDCFP | DIRECT DIGITAL CONTROL FIELD PANEL | PSIA | POUNDS PER SQUARE INCH ABSOLUTE |
| DIA | DIAMETER | PSID | POUNDS PER SQUARE INCH DIFFERENTIAL |
| DIM | DIMENSION | PSIG | POUNDS PER SQUARE INCH GAUGE |
| DN | DOWN | PVC | POLYVINYL CHLORIDE |
| DWG | DRAWING | REP | REPRESENTATIVE |
| EA | EACH | RET | RETURN |
| EAT | ENTERING AIR TEMPERATURE | REQD | REQUIRED |
| EFF | EFFICIENCY | REQS | REQUIREMENTS |
| ECUH | ELECTRIC CABINET UNIT HEATER | RH | RELATIVE HUMIDITY |
| ELEC | ELECTRICAL | RM | ROOM |
| ELEV | ELEVATION | RPM | REVOLUTIONS PER MINUTE |
| EMER | EMERGENCY | SCH | SCHEDULE |
| ENT | ENTERING | SOV | SOLENOID OPERATED VALVE |
| EQUIP | EQUIPMENT | SPECS | SPECIFICATIONS |
| EXH | EXHAUST | SQ | SQUARE |
| EXP | EXPANSION | SQFT | SQUARE FEET |
| FTR | FINNED TUBE RADIATION | SS | STAINLESS STEEL |
| FCV | FLOW CONTROL VALVE | STD | STANDARD |
| FG | FIBERGLASS | STDBY | STANDBY |
| FLEX | FLEXIBLE | STL | STEEL |
| FLR | FLOOR | SUCT | SUCTION |
| FLRDR | FLOOR DRAIN | SUP | SUPPLY |
| FP | FIRE PROTECTION | TA | THROW–AWAY |
| FPM | FEET PER MINUTE | TAV | THERMOSTATIC AIR VENT |
| FT | FEET | TEFC | TOTALLY ENCLOSED FAN COOLED |
| FT/SEC | FEET PER SECOND | TEL | TELEPHONE |
| FURN | FURNISHED | TEMP | TEMPERATURE |
| FVNR | FULL VOLTAGE NON–REVERSING | TOD | TOP OF DUCT |
| GA | GAUGE | TOP | TOP OF PIPE |
| GAL | GALLONS | TYP | TYPICAL |
| GALV | GALVANIZED | UH | UNIT HEATER |
| GC | GENERAL CONTRACTOR | V | VENT |
| GND | GROUND | VEL | VELOCITY |
| GPH | GALLONS PER HOUR | VERT | VERTICAL |
| GPM | GALLONS PER MINUTE | VFD | VARIABLE FREQUENCY DRIVE |
| GRD | GRADE (GROUND LEVEL) | VTR | VENT THROUGH ROOF |
| GWB | GYPSUM WALL BOARD | W | WIDTH |
| H | HEIGHT | W/ | WITH |
| HD | HEAD | W/O | WITHOUT |
| HP | HORSEPOWER | WB | WET BULB TEMPERATURE |
| HR | HOUR | WF | WIDE FLANGE |
| HZ | HERTZ | WG | WATER GAUGE |
| | | WRT | WITH RESPECT TO |

# PIPING LEGEND

RISE (SINGLE LINE – PLAN VIEW)
DROP (SINGLE LINE – PLAN VIEW)
TOP TAKEOFF
BOTTOM TAKEOFF
PIPE BREAK (SINGLE LINE)

# FLOW DIAGRAM & CONTROL DIAGRAM EQUIP. SYMBOLS

FILTER BANK
HEATING COIL
COOLING COIL
PARALLEL BLADE DAMPER W/ MODULATING ACTUATOR
BACKDRAFT DAMPER
CENTRIFUGAL FAN
INLINE CENTRIFUGAL FAN
OPPOSED BLADE DAMPER W/ TWO POSITION ACTUATOR
OPPOSED BLADE DAMPER W/ MODULATING ACTUATOR
PARALLEL BLADE DAMPER W/ TWO POSITION ACTUATOR

# HVAC SYSTEM TAGS

J 1 — JACE BOX
AHU 1 — AIR HANDLING UNIT
ACCU 1 — AIR COOLED CONDENSING UNIT

# CALL OUT SYMBOLS

THERMOSTAT
CONNECT TO EXISTING
LIMIT OF NEW WORK
REFER TO DRAWINGS ( ) FOR CONTINUATION
SYMBOL DESIGNATES ASSOCIATED SYSTEM OR SERVICE (ie LPS)
DIFFUSER, GRILLE, REGISTER LETTER DESIGNATION (See Schedule for ATD type)
SA–2
200
DESIGN CFM

# EQUIPMENT TAG SYMBOLS & ABBREVIATIONS

EQUIPMENT NOT REQUIRING ELECTRIC SERVICE → TAG NO / TAG DATA DATA → SEE SCHEDULE FOR PERFORMANCE REQUIREMENTS ← TAG NO / TAG DATA DATA ← EQUIPMENT REQUIRING ELECTRIC SERVICE

NOTE:REFER TO SCHEDULES FOR DEFINITION OF EQUIPMENT SPECIFIC DATA LISTED WITHIN TAG BLOCKS

# AIR SYSTEM SPECIFIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| AC | AIR CONDITIONING | LVDR | LOUVERED DOOR |
| ACD | AUTOMATIC CONTROL DAMPER | OA | OUTSIDE AIR |
| ACU | AIR CONDITIONING UNIT | OAI | OUTSIDE AIR INTAKE |
| AF | AIR FOIL | OBD | OPPOSED BLADE DAMPER |
| AHU | AIR HANDLING UNIT | OED | OPEN END DUCT |
| ALD | ACOUSTICALLY LINED DUCTWORK | RA | RETURN AIR |
| ATD | AIR TERMINAL DEVICE | RF | RETURN FAN |
| AVS | AIR VOLUME TRAVERSE STATION | RG | RETURN GRILLE |
| BDD | BACKDRAFT DAMPER | RHC | REHEAT COIL |
| BI | BACKWARD INCLINED | RLF | RELIEF |
| CC | COOLING COIL | RR | RETURN REGISTER |
| CD | CEILING DIFFUSER | RV | ROOF VENT |
| CFM | CUBIC FEET PER MINUTE | SA | SUPPLY AIR |
| CG | CEILING GRILLE | SATT | SOUND ATTENUATOR |
| DIFF | DIFFUSER | SCR | SCREEN |
| DWDI | DOUBLE WIDTH DOUBLE INLET | SD | SMOKE DAMPER |
| DWSI | DOUBLE WIDTH SINGLE INLET | SDET | SMOKE DETECTOR |
| DX | DIRECT EXPANSION | SEF | SMOKE EXHAUST FAN |
| EF | EXHAUST FAN | SF | SUPPLY FAN |
| EG | EXHAUST GRILLE | SFD | COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR |
| ESP | EXTERNAL STATIC PRESSURE | | |
| F | FAN | SG | SUPPLY GRILLE |
| FC | FORWARD CURVED | SM | SHEETMETAL |
| FA | FREE AREA | SP | STATIC PRESSURE |
| FCU | FAN COIL UNIT | SR | SUPPLY REGISTER |
| FD | FIRE DAMPER (W/ ACCESS DOOR) | SWDI | SINGLE WIDTH DOUBLE INLET |
| FLTR | FILTER | SWSI | SINGLE WIDTH SINGLE INLET |
| FPI | FINS PER INCH | TE | TOILET EXHAUST |
| FPT | FAN POWERED TERMINAL BOX | TF | TRANSFER FAN |
| GE | GENERAL EXHAUST | TG | TRANSFER GRILLE |
| GIH | GRAVITY INTAKE HOOD | TR | TRANSFER |
| GRH | GRAVITY RELIEF HOOD | TSP | TOTAL STATIC PRESSURE |
| HC | HEATING COIL | UC | UNDERCUT DOOR |
| LAT | LEAVING AIR TEMPERATURE | VD | VOLUME DAMPER |
| LD | LINEAR DIFFUSER | VV | VARIABLE VOLUME SUPPLY AIR TERMINAL BOX |
| LUVR | LOUVER | WMS | WIRE MESH SCREEN |

# HVAC GENERAL NOTES

1. GENERAL NOTES APPLY TO ALL HVAC DRAWINGS.
2. THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID, ARE DEEMED TO BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITIONS OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. ABSOLUTELY NO CLAIMS FOR EXTRA COMPENSATION WILL BE CONSIDERED FOR EXISTING CONDITIONS VISIBLE OR REASONABLY INFERABLE FROM A CAREFUL EXAMINATION OF THE EXISTING BUILDING.
3. THIS CONTRACTOR SHALL INSPECT THE EXISTING FIELD CONDITIONS AT THE SITE AND THE "AS–BUILT" BASE BUILDING CONTRACT DOCUMENTS PRIOR TO THE START OF ANY WORK TO DETERMINE WHAT EFFECT THE EXISTING CONDITIONS WILL HAVE ON HIS WORK. POTENTIAL PROBLEM AREAS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER IMMEDIATELY.
4. THIS CONTRACTOR SHALL CONNECT HIS WORK TO VARIOUS EXISTING PIPING, DUCTWORK, AND CONTROL SYSTEMS IN THE BASE BUILDING. THE NEW WORK SHALL BE COMPATIBLE WITH THE EXISTING SYSTEMS. LOCATION OF EQUIPMENT OR THE ROUTING OF THE VARIOUS SYSTEMS AS WELL AS OPENINGS IN FLOOR SLABS OR WALLS SHALL BE GOVERNED BY THE EXISTING CONDITIONS AS THEY APPEAR IN THE FIELD OR ON THE "AS–BUILT" DRAWINGS.
5. CARE SHALL BE TAKEN DURING THE INSTALLATION TO NOT DAMAGE OR INTERRUPT BUILDING SYSTEMS AND SERVICES THAT ARE ALREADY INSTALLED. DAMAGE TO SUCH SYSTEMS OR EQUIPMENT CAUSED BY THIS CONTRACTOR DURING INSTALLATION SHALL BE REPAIRED AND/OR REPLACED AT THIS CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE BUILDING OWNER.
6. SHUTDOWN OF EXISTING SYSTEMS FOR CONNECTION TO EXISTING SERVICES SHALL BE COORDINATED WITH THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR AND BUILDING OWNER. THIS CONTRACTOR SHALL SUBMIT REQUESTS, WHERE THEY AFFECT THE OPERATION OF THE BUILDING SYSTEMS, AT LEAST FIFTEEN DAYS IN ADVANCE OF ANY REQUIRED SHUTDOWN. THE ACTUAL SHUTDOWN PERIOD SHALL BE AS SHORT AS POSSIBLE AND AT A TIME MUTUALLY AGREEABLE TO THE BUILDING OWNER AND THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR.
7. DRAWINGS ARE DIAGRAMMATIC, THEREFORE DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS, AS WELL AS ROUTING PATHS, IN FIELD.
8. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER, AND SHOULD BE KEPT TO A MINIMUM FOR SYSTEM EFFICIENCIES.
9. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT AND/OR PIPE TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION. VERIFY ACCESS IS PROVIDED FOR SERVICING EQUIPMENT AS REQUIRED.
10. ALL MATERIALS AND EQUIPMENT UNLESS SPECIFICALLY INDICATED AS REUSED, SHALL BE NEW.
11. ACCESS PANELS SHALL BE PROVIDED TO ALLOW FOR CLEANING OF COILS AND SERVICING OF DAMPERS, HEATERS, VALVES, AND ALL CONCEALED MECHANICAL EQUIPMENT.
12. INSTALL NEW THERMOSTATS 4 FEET AFF OR AS DIRECTED OTHERWISE BY ENGINEER.
13. GENERAL CONTRACTOR TO PATCH ALL EFFECTED INTERIOR AND EXTERIOR EXISTING FLOOR, WALL, AND CEILING SURFACES TO MATCH EXISTING. PROVIDE ESCUTCHEON PLATES.
14. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
15. ANY AND ALL WALLS, CEILINGS AND FLOORS THAT ARE ANTICIPATED TO BE DISTURBED DURING THE DEMOLITION OR INSTALLATIONS PROCESS, AS INDICATED ON THE DRAWINGS, SHALL BE TESTED FOR HAZARDOUS MATERIALS PRIOR TO DISTURBING THE SURFACES. ROUTING OF PIPING HAS BEEN INDICATED TO DEPICT THE INTENT OF THE WORK. ACTUAL ROUTING MAY DIFFER IN THE FIELD DUE TO BUILDING CONSTRUCTION. COORDINATE TESTING OF ALL SURFACES TO BE DISTURBED, ALONG THE ACTUAL INSTALLATION ROUTE, WITH THE HAZARDOUS MATERIALS CONTRACTOR. REFER TO EXISTING HAZMAT REPORT FOR TESTING RESULTS.
16. MECHANICAL CONTRACTOR TO REMOVE ALL IDENTIFIED R–22 EQUIPMENT AND ASSOCIATED APPURTENANCES AND REPLACE IN KIND WITH A R410A OR R407C SYSTEM.
17. REFRIGERANT PIPING IS DIAGRAMMATIC, CONTRACTOR TO DETERMINE ROUTING IN FIELD AND RE–USE EXISTING PENETRATIONS. ANY EXPOSED PIPING TO BE CONCEALED IN A CHASE. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
18. SEE CIVIL DRAWINGS FOR DEMOLISHED AND NEW CONCRETE PADS.
19. THE MECHANICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE MECHANICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL ADDITIONAL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.
20. SEE PWD–ME DRAWING;
 43–15–67 FOR TITLE SHEET
 43–15–68 FOR LIST OF DRAWINGS
 43–15–69 FOR GENERAL NOTES & LEGENDS
 43–15–72 FOR CHASE AND SOFFIT DETAILS
 43–15–74 FOR STRUCTURAL NOTES AND SUPPORTS

# SCHEDULE OF DRAWINGS

| DWG# | DESCRIPTION |
|---|---|
| M1.0 | BUILDING 59 HVAC LEGEND |
| MD2.0 | BUILDING 59 HVAC FIRST FLOOR DEMOLITION PLAN |
| M2.0 | BUILDING 59 HVAC FIRST FLOOR PLAN |
| M3.0 | BUILDING 59 HVAC CONTROLS |
| M3.1 | BUILDING 59 HVAC CONTROLS |
| M3.2 | BUILDING 59 HVAC CONTROLS |
| M4.0 | BUILDING 59 HVAC SCHEDULES AND DETAILS |

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE – DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
SEAL

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APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

DES JC DRW SV CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

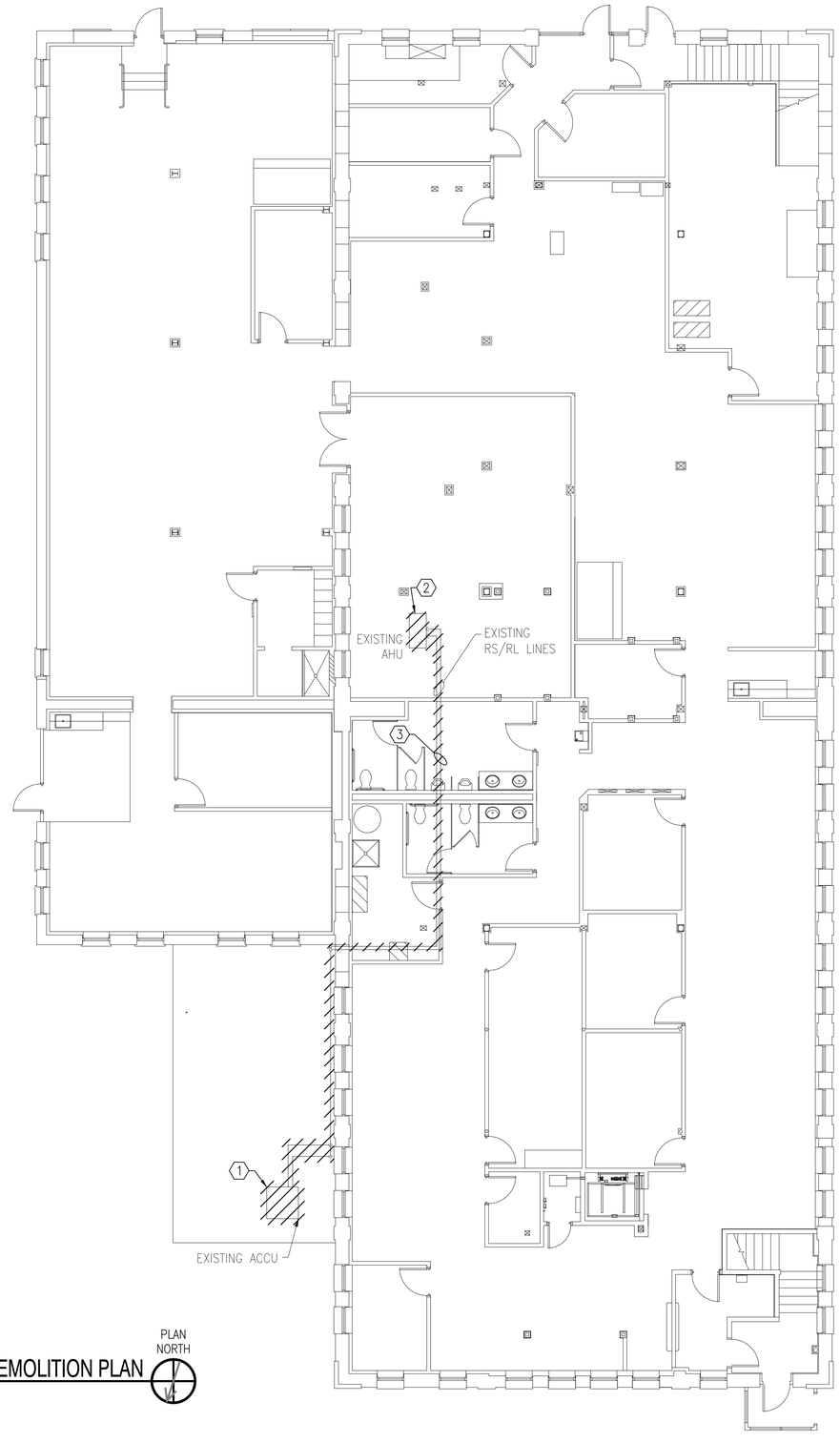
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 59 HVAC LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703597
SHEET 144 OF 506
M1.0 59-15-160

DRAWFORM REVISION: 10 OCTOBER 2014




BUILDING 59 HVAC FIRST FLOOR DEMOLITION PLAN
1/8"=1'-0"

PLAN NORTH

## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES. .
2. CONTRACTOR RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL EQUIPMENT AND MATERIALS AT PERMITTED WASTE FACILITY.
3. CONTRACTOR TO COORDINATE R-22 DISPOSAL WITH PSNY ENVIRONMENTAL GROUP.

## DEMOLITION KEYNOTES

1. REMOVE EXISTING ACCU. EXISTING CONCRETE PAD TO REMAIN.
2. CONTRACTOR TO REMOVE EXISTING AHU. EXISTING CONDENSATE LINES, CONTROL WIRING, AND DUCTWORK TO REMAIN AND BE DISCONNECTED.
3. ACCESSIBLE EXISTING RS/RL LINES TO BE REMOVED. ANY REMAINING RS/RL CONCEALED TO BE EVACUATED, CAPPED AND ABANDONED IN PLACE.

## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

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DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
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APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

DES: JC | DRW: SV | CHK: DM
PM/DM: PETER STOCKLESS
BRANCH MANAGER: BRUCE LITALIEN
FEAD/PM&E: AMIN BAHROUR PM&E
FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

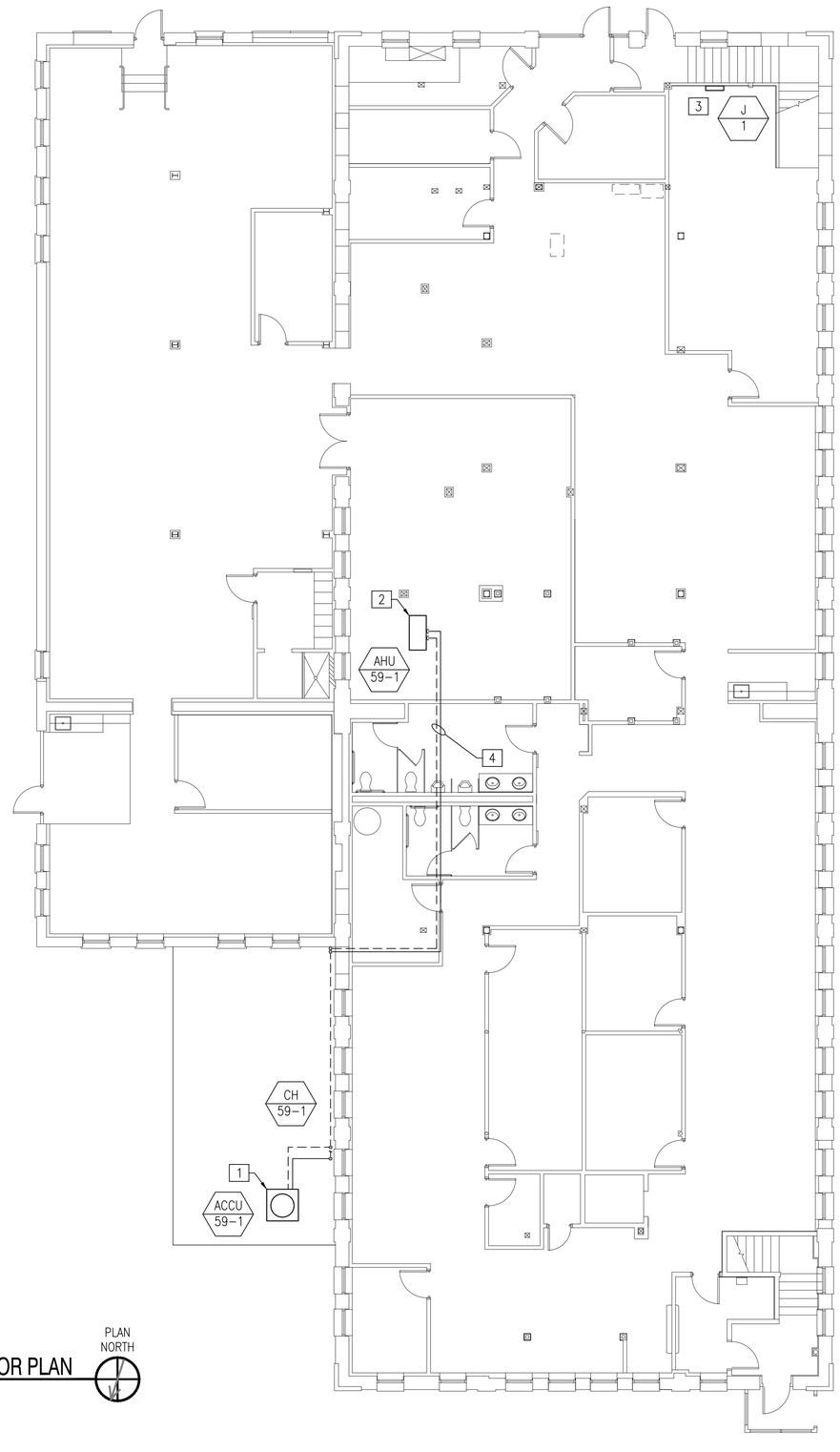
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH

KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22

# BUILDING 59 HVAC FIRST FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703598
SHEET 145 OF 506
MD2.0 | 59-15-161

DRAWFORM REVISION: 10 OCTOBER 2014




BUILDING 59 HVAC FIRST FLOOR PLAN
1/8"=1'-0"

PLAN NORTH

## GENERAL SHEET NOTES

1. REFER TO DRAWING E1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

## NEW WORK KEYNOTES

1. FURNISH AND INSTALL NEW ACCU AND IT'S ASSOCIATED RS/RL LINES. NEW ACCU TO BE PLACED ON EXISTING CONCRETE PAD.
2. FURNISH AND INSTALL NEW AHU AND ASSOCIATED RS/RL LINES. EXISTING CONDENSATE LINES, CONTROL WIRING, AND DUCTWORK TO BE RECONNECTED. PROVIDE WITH NEW DUCTWORK WHERE NECESSARY TO CONNECT TO NEW EQUIPMENT. PROVIDE WITH NEW DDC COMPATIBLE THERMOSTAT AND CONNECT TO EXISTING CONTROL WIRING, FIELD COORDINATE EXACT LOCATION WITH NAVFAC.
3. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF NEW DDC JACE BOX WITH NAVFAC.
4. SEE HVAC GENERAL NOTE 17 ON SHEET M1.0 FOR PIPING INFORMATION.

## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY
No. 12370
LICENSED
PROFESSIONAL ENGINEER
SEAL

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MAKE
CSI ENGINEERING
ELECTRONICAL
FIRE PROTECTION
999 BOSTON AVE, STE 204
BRIDGEPORT, CT 06610
25 AVENTINO AVE, STE 300
SEATTLE, WA 98101
203-213-1940 x 4
206-219-9424
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 59 HVAC FIRST FLOOR PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703599
SHEET 146 OF 506
M2.0 | 59-15-162

DRAWFORM REVISION: 10 OCTOBER 2014

## VARIABLE AIR VOLUME BOX

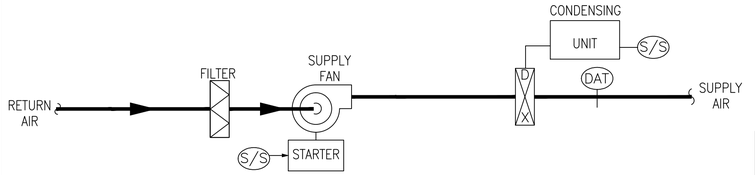
| POINT | AI | DI | DO | AO | STATUS POINT | CONTROL POINT | ALARM POINT |
|---|---|---|---|---|---|---|---|
| SPACE TEMPERATURE | 1 | | | | 1 | | 1 |
| SPACE TEMPERATURE SET POINT | | | | | | 1 | |
| DISCHARGE AIR TEMPERATURE | 1 | | | | 1 | | 1 |
| AIRFLOW QUANTITY (CFM) | | | | | 1 | | |
| VAV MIN/MAX AIRFLOW SETPOINT (ADJUSTABLE) | | | | | | 1 | |
| VAV DAMPER CONTROL | | | | 1 | | | |
| VAV DAMPER POSITION | | | | | 1 | | 1 |
| VAV REHEAT COIL CONTROL VALVE CONTROL | | | | 1 | | 1 | |
| VAV REHEAT COIL CONTROL VALVE POSITION | | | | | 1 | | 1 |
| ONLY APPLICABLE IF UNIT IS EQUIPPED WITH A REHEAT COIL | 2 | 0 | 0 | 2 | 5 | 3 | 5 |

## CHILLER

| POINT | AI | DI | DO | AO | STATUS POINT | CONTROL POINT | ALARM POINT |
|---|---|---|---|---|---|---|---|
| SUPPLY WATER TEMPERATURE | 1 | | | | 1 | | 1 |
| RETURN WATER TEMPERATURE | 1 | | | | 1 | | 1 |
| CHILLED WATER PUMP #1 STATUS | | 1 | | | 1 | | 1 |
| CHILLED WATER PUMP #2 STATUS | | 1 | | | 1 | | 1 |
| CHILLED WATER PUMP #1 START/STOP | | | 1 | | | 1 | |
| CHILLED WATER PUMP #2 START/STOP | | | 1 | | | 1 | |
| CHILLED WATER PUMP #1 VFD SPEED CONTROL SIGNAL | | | | 1 | | 1 | |
| CHILLED WATER PUMP #2 VFD SPEED CONTROL SIGNAL | | | | 1 | | 1 | |
| CHILLED WATER PUMP #1 VFD FEEDBACK IN AMPS | 1 | | | | 1 | | |
| CHILLED WATER PUMP #2 VFD FEEDBACK IN AMPS | 1 | | | | 1 | | |
| CHILLED WATER PUMP #1 VFD FAULT | | 1 | | | 1 | | 1 |
| CHILLED WATER PUMP #2 VFD FAULT | | 1 | | | 1 | | 1 |
| CHILLER FLOW STATUS | | 1 | | | 1 | | 1 |
| CHILLER ENABLE | | | 1 | | | 1 | |
| *** ONLY APPLICABLE IF PUMPS ARE EQUIPPED WITH VFDs | 4 | 5 | 3 | 2 | 9 | 5 | 7 |

## PANEL MATERIAL

| ITEM NO | MODEL | DESCRIPTION | QTY |
|---|---|---|---|
| C1 | J-8000 | N4 WEB BASED GLOBAL NETWORK INTERFACE | 1 |
| | | APPROPRIATE DEVICE PACKS | |




GENERAL
1. THE EQUIPMENT IS STARTED AND STOPPED VIA DCC THERMOSTAT. COORDINATE OCCUPIED AND UNOCCUPIED SCHEDULES WITH OWNER.

OFF
1. SF DEENERGIZED
2. ACCU DEENERGIZED

UNOCCUPIED COOLING CONTROL

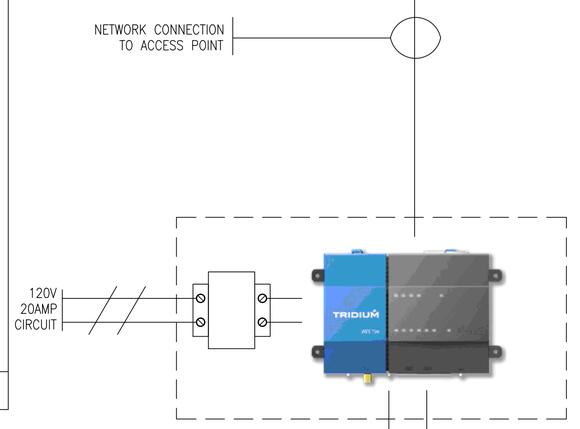
1. SF ENERGIZED
2. ACCU IS STAGED ON TO MAINTAIN THE SPACE TEMPERATURE SETPOINT OF 80°F(ADJ).
3. DISCHARGE AIR TEMPERATURE SENSOR DAT SHALL LIMIT SUPPLY AIR TO 53°F MINIMUM.

OCCUPIED COOLING CONTROL

1. SF ENERGIZED
2. ACCU IS STAGED ON TO MAINTAIN THE SPACE TEMPERATURE SETPOINT OF 75°F(ADJ).
3. DISCHARGE AIR TEMPERATURE SENSOR DAT SHALL LIMIT SUPPLY AIR TO 53°F MINIMUM.

## AIR HANDLER W/ DX COOLING SEQUENCE OF OPERATION

PORTSMOUTH NAVAL SHIPYARD ( BUILDING 59_PWD MAINE OFFICE )
EXISTING DELTA INTEGRATED DDC SYSTEM ARCHITECTURE




NEW TRIDIUM JACE INTEGRATION
EXISTING DDC SYSTEM

NEW TRIDIUM JACE INTEGRATION
EXISTING DDC SYSTEM

BACNET MS/TP COMMUNICATION

BACNET COMMUNICATIONS TO R410 EQUIPMENT

1 TYPICAL OF ALL VAV BOXES

1

| EXISTING PROGRAMMABLE BACNET CONTROLLER | EXISTING PROGRAMMABLE BACNET CONTROLLER | EXISTING PROGRAMMABLE BACNET CONTROLLER | EXISTING PROGRAMMABLE BACNET CONTROLLER | EXISTING PROGRAMMABLE BACNET CONTROLLER | EXISTING PROGRAMMABLE BACNET CONTROLLER |
|---|---|---|---|---|---|
| VAV BOX (VAV-27) | VAV BOX (VAV-1) | SPLIT SYSTEM UNIT (AC-1) | AIR HANDLING UNIT (AHU-1) | CHILLED WATER SYSTEM CONTROL | HOT WATER SYSTEM CONTROL |

| NEW BACNET CONTROLLER | NEW BACNET CONTROLLER |
|---|---|
| ACCU-59-1 | AHU-56-1 |

1 IT IS CRITICAL THAT THE COMMUNICATION BUS IS WIRED IN A CONTINUOUS DAISY CHAIN FASHION.

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER SEAL

CSI ENGINEERING

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES JC DRW SV CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

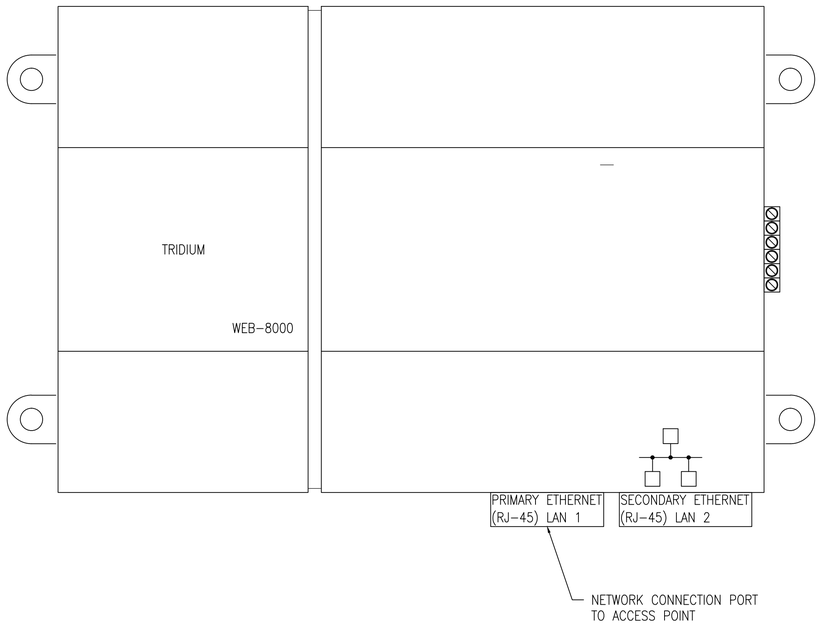
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 59 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703600
SHEET 147 OF 506

M3.0 | 59-15-163

DRAWFORM REVISION: 10 OCTOBER 2014




ETHERNET CONNECTION TO RF ACCESS POINT

| STM | | DESCRIPTION | DATE | APPR |
|---|---|---|---|---|
| 4 | | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
SEAL

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CSI ENGINEERING
FIRE PROTECTION
999 Broadway - Suite 206
Saugus, MA 01906
781-233-9828
215 Hamilton Ave, STE 204
Palo Alto, CA 94301
650-319-9244
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: JC | DRW: SV | CHK: DM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

FEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 59 HVAC CONTROLS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.
N40085-XX-C-XXXX

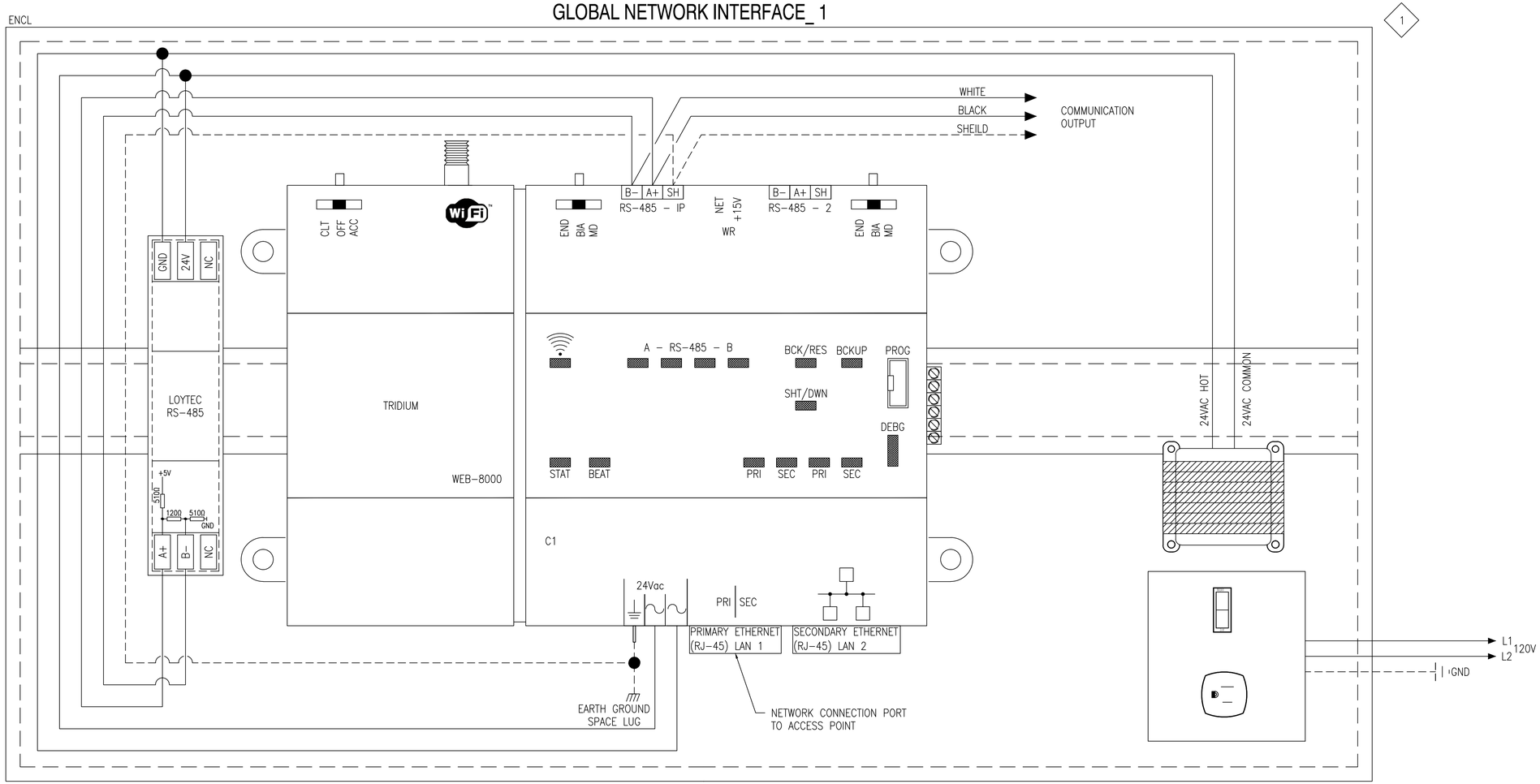
NAVFAC DRAWING NO.
12703601

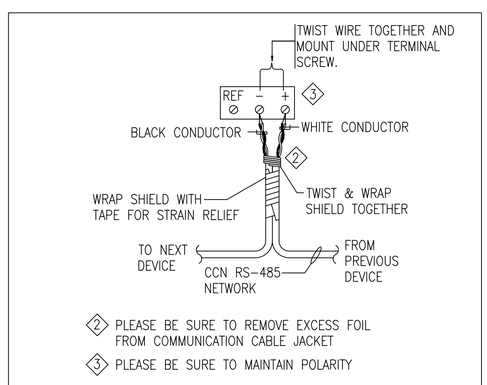
SHEET 148 OF 506

M3.1 | 59-15-164

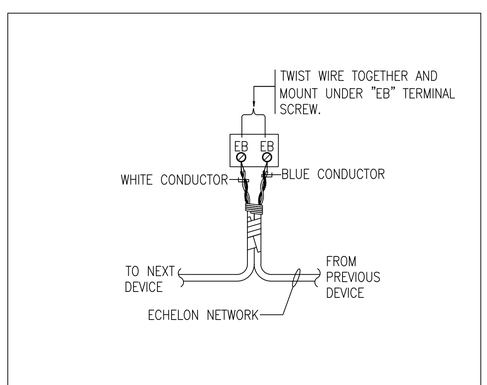
DRAWFORM REVISION: 10 OCTOBER 2014

# GLOBAL NETWORK INTERFACE_ 1




RS-485 BACNET MS/TP CONNECTION DETAIL




E-BUS CONNECTION DETAIL

1 LOCATION OF CONTROLLER TO BE FIELD VERIFIED

## PANEL MATERIAL

| ITEM NO | MODEL | DESCRIPTION | QTY |
|---|---|---|---|
| C1 | J–8000 | N4 WEB BASED GLOBAL NETWORK INTERFACE | 1 |
| ENCL | ENC–001 | 12"x18"x4" ENCLOSURE W/ 24V TRANSFORMER | 1 |
| EOL1 | 209541B | END OF LINE RESISTOR | 1 |
| LT1 | LT–B4 | RS–485 NETWORK TERMINATOR | 1 |

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY
No. 12370
LICENSED
PROFESSIONAL ENGINEER
SEAL

CSI
CIVIL SURVEYORS, INC.
999 BROADWAY SUITE 206
SOMERVILLE, MA 02144
781.393.9555
A/E INFO

APPROVED
FOR COMMANDER NAVFAC

ACTIVITY
SATISFACTORY TO DATE

| DES | JC | DRW | SV | CHK | DM |
|---|---|---|---|---|---|

PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1–B–R–22
BUILDING 59 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703602
SHEET 149 OF 506

M3.2 | 59-15-165

DRAWFORM REVISION: 10 OCTOBER 2014

## JACE BOX

| TAG NO. | LOCATION | ELECTRICAL | | DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD) | NOTES |
|---|---|---|---|---|---|
| | | AMP | V | | |
| J-1 | SEE PLANS | 20 | 120 | JACE 8000 | SEE NOTES |

NOTES: 1. PROVIDE W/ MEMORY UPGRADE TO 4GB. 2. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.

## AIR HANDLING UNIT SCHEDULE

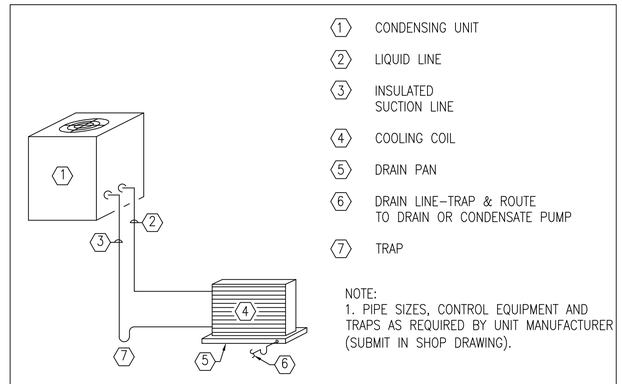
| TAG | SERVICE | CFM | FAN DATA | | | | DX COOLING COIL | | | | | | DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD) | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MOTOR | | | | CAPACITY (MBH) | REFRIGERANT TYPE | AIR DATA | | | | | |
| | | | | | | | | | EAT (°F) | | LAT (°F) | | | |
| | | | RPM | HP | V | PH | TOTAL | | DB | WB | DB | WB | | |
| AHU-59-1 | BLDG 59 | 1000 | 1075 | ⅓ | 208 | 1 | 30 | R-410A | 80 | 67 | 55 | 54 | TRANE TAM4A0A30S21SC | SEE NOTES |

NOTES: 1. PROVIDE W/ BACNET INTERFACE. 2.PROVIDE MOUNTING HARDWARE AS REQUIRED. 3. PROVIDE W/ BELT DRIVE MOTORS. 4. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.

## AIR COOLED CONDENSING UNIT SCHEDULE

| TAG | SERVES | DESIGN BASED ON MANUFACTURER | DESIGN BASED ON MODEL No. | COOLING DATA | ELECTRIC DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | COOLING (MBH) | VOLTS | HZ | PHASE | FLA | MCA | MOCP | |
| ACCU-59-1 | BLDG 59 | TRANE | 4TTR6024B1000A | 24 | 208 | 60 | 1 | 0.74 | 9 | 15 | SEE NOTES |

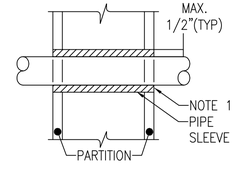
NOTES: 1. PROVIDE W/ BACNET INTERFACE. 2. PROVIDE W/ HIGH PRESSURE CONTROL. 3. PROVIDE LIQUID LINE REFRIGERANT DRIER. 4. PROVIDE W/ LOW AMBIENT COOLING TO 50°F IN ELECTROMECHANICAL MODELS. 5. PROVIDE W/ SCROLL COMPRESSORS. 6. PROVIDE W/ THERMAL EXPANSION VALVE. 7. PROVIDE UNIT CONTROL PANEL WITH MAIN DISCONNECT. 8. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 9. PROVIDE WITH SEACOAST RATED COATING FOR CONDENSER COIL.




1. CONDENSING UNIT
2. LIQUID LINE
3. INSULATED SUCTION LINE
4. COOLING COIL
5. DRAIN PAN
6. DRAIN LINE-TRAP & ROUTE TO DRAIN OR CONDENSATE PUMP
7. TRAP

NOTE:
1. PIPE SIZES, CONTROL EQUIPMENT AND TRAPS AS REQUIRED BY UNIT MANUFACTURER (SUBMIT IN SHOP DRAWING).

## REFRIGERANT PIPING SMALL COMPONENT SCHEMATIC




NOTES:
1. AT FIRE RATED PARTITIONS ADD LAYER OF FIRE SAFING INSULATION AROUND PENETRATIONS SO AS TO FILL CAVITY.
2. PIPE PENETRATIONS THROUGH CORRIDOR WALLS ABOVE THE CEILING ARE TO BE FIRE STOPPED AROUND THE PENETRATION.
3. CONTRACTOR REPSONSIBLE FOR DETERMINING REQUIRED HOUR RATING TO MATCH EXISTING WALL ASSEMBLY.

## PIPE PENETRATIONS

| APPR | DATE | DESCRIPTION | STM |
|---|---|---|---|
| DM | 08/07/2015 | 100% SUBMISSION | 4 |
| DM | 07/24/2015 | 100% REVIEW SUBMISSION | 3 |
| DM | 06/04/2015 | 90% SUBMISSION | 2 |
| DM | 04/24/2015 | 80% SUBMISSION | 1 |
| DM | 02/23/2015 | 35% SUBMISSION | 0 |

NAVFAC

DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE SEAL

THE CAD/D DESIGNER HAS MET THE REQUIREMENTS OF NAVFAC P-117 PARAGRAPH 2.3.1.4 AUTHORIZED DESIGNER

CSI ENGINEERING, PLLC FIRE PROTECTION 999 BROADWAY SUITE 206 SAUGUS, MA 01906 781.233.2835 215 HAWTHORN AVE, STE 224 OAKLAND, NJ 07436 201.676.8214 A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: JC | DRW: SV | CHK: DM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

FEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 59 HVAC SCHEDULES AND DETAILS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.: N40085-XX-C-XXXX

NAVFAC DRAWING NO.: 12703603

SHEET 150 OF 506

M4.0 | 59-15-166

DRAWFORM REVISION: 10 OCTOBER 2014

W A R N I N G

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

| | |
|---|---|
| EQUIPMENT TYPE: | |
| GROUNDING: | Y/N GROUNDED |
| WORK DISTANCE: | INCHES |
| AVAILABLE 3ϕ BOLTED CURRENT: | kA |
| FLASH PROTECTION BOUNDARY: | INCHES |
| INCIDENT ENERGY AT 23 INCHES: | cal/cm² |
| PPE LEVEL: | 4 |
| DATE: | xx/xx/xxxx |

NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. PROVIDE ON ALL IN-LINE METER SOCKETS, SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS AND MOTOR CONTROL CENTERS IN ACCORDANCE WITH NEC 110.16.

## TYPICAL FLASH PROTECTION WARNING LABEL

NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. NAMEPLATE TO BE 1/16" THICK PLASTIC WITH WHITE CENTER LAMINATION. FACE SHALL BE BLACK, ENGRAVED LETTERS SHALL BE WHITE.
3. SECURE NAMEPLATE TO SURFACES WITH HIGH STRENGTH ADHESIVE CEMENT. UTILIZE MECHANICAL FASTENERS FOR ALL EXTERIOR LOCATIONS.
4. TYPICAL FOR "STARTERS", "DISCONNECTS", AND "TRANSFORMERS".

## TYPICAL NAMEPLATE DETAIL

## RECEPTACLE LABEL REQUIREMENTS

NOTES:

1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE EXCEPT EXIT SIGNS, CLOCKS, EMERGENCY LIGHTING AND FIRE ALARM A/V DEVICES.
2. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE.
3. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL UNLESS OTHERWISE NOTED.
4. STROBE HEIGHT ILLUSTRATED AT MAXIMUM HEIGHT. STROBE SHALL BE 80" AFF OR 6" BELOW CEILING, WHICHEVER IS LOWER.

## TYPICAL DEVICE MOUNTING HEIGHTS DETAIL

## ELECTRIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| A/AMP | AMPERE | LTG | LIGHTING |
| AC | ALTERNATING CURRENT | MCB | MAIN CIRCUIT BREAKER |
| ADA | AMERICAN WITH DISABILITIES ACT | MEC | MASSACHUSETTS ELECTRIC CODE |
| AF | AMPERE FRAME | MH | MANHOLE |
| AFF | ABOVE FINISHED FLOOR | MLO | MAIN LUGS ONLY |
| AFG | ABOVE FINISHED GRADE | MTD | MOUNTED |
| AIC | AMPERE INTERRUPTING CAPACITY | MTG | MOUNTING |
| AL | ALUMINUM | NEC | NATIONAL ELECTRIC CODE |
| AT | AMPERE TRIP | NTS | NOT TO SCALE |
| ATS | AUTOMATIC TRANSFER SWTICH | # | NUMBER |
| AWG | AMERICAN WIRE GAUGE | PVC | POLYVINYL CHLORIDE |
| C | CONDUIT | PWR | POWER |
| CATV | CABLE TELEVISION | RGS | RIGID GALVANIZED STEEL |
| CCTV | CLOSED CIRCUIT TELEVISION | SWBD | SWITCHBOARD |
| CB | CIRCUIT BREAKER | TEL | TELEPHONE |
| CKT | CIRCUIT | TERM | TERMINAL |
| ℄ | CENTERLINE | TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSION |
| DWG | DRAWING | TSP | TWISTED SHIELDED PAIR |
| EC | ELECTRICAL CONTRACTOR | TYP | TYPICAL |
| EMT | ELECTRICAL METALLIC TUBING | UNO | UNLESS OTHERWISE NOTED |
| FLMT | FLEXIBLE LIQUID TIGHT METALLIC TUBING | UPS | UNINTERRUPTIBLE POWER SUPPLY |
| GFI | GROUND FAULT INTERRUPTING | UTP | UNSHIELDED TWISTED PAIR |
| GND | GROUND | V | VOLT |
| HH | HANDHOLE | VA | VOLT AMPERE |
| HP | HORSEPOWER | VFD | VARIABLE FREQUENCY DRIVE |
| HVAC | HEATING, VENTILATION AND AIR CONDITIONING | W | WATT |
| HZ | HERTZ | WP | WEATHERPROOF |
| IG | ISOLATED GROUND | | |
| KVA | KILOVOLT – AMPERE | | |
| KW | KILOWATT | | |

## MOTOR & CONTROLS LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| $S_M$ | MANUAL MOTOR STARTING SWITCH WITH THERMAL OVERLOAD PROTECTION |
| 30AS 2P 3R | DISCONNECT SWITCH RATED 30AMP, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED<br>"3R" – INDICATES NEMA TYPE 3R ENCLOSURE<br>"2P" – INDICATES 2 POLE SINGLE PHASE DISCONNECT<br>"30AS" – INDICATES 30A SWITCH |
| 30AS/15AF 3R | FUSED DISCONNECT SWITCH, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED<br>"3R" – INDICATES NEMA TYPE 3R ENCLOSURE<br>"30AS" – INDICATES 30AMP SWITCH<br>"15AF" – INDICATES 15AMP FUSES |
| JCB | DDC CONTROL JACE BOX. PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION. |

## ELECTRIC SYSTEM TAGS OR CALL OUT SYMBOLS

SYMBOL

- EUH / # – EQUIPMENT SYMBOLS (REFER TO EQUIPMENT SCHEDULES)
- EQUIPMENT DESIGNATION
- EQUIPMENT REFERENCE NUMBER (TYP)
- # – NEW WORK NOTE TAG
- # – DEMOLITION NOTE TAG

## POWER DISTRIBUTION LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| (solid bar) | 208Y/120 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS |
| (hatched bar) | 480Y/277 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS |
| T | DRY TYPE TRANSFORMER |

## BRANCH CIRCUIT & FEEDER LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| PP1-(X) | BRANCH CIRCUIT HOME RUN. TYPICAL 2#12 & 1#12G IN ¾"C MINIMUM. PP1-(1) INDICATES PANEL AND CIRCUIT DESIGNATION FROM WHICH HOME RUN SHALL ORIGINATE. EACH CIRCUIT SHALL BE 20A-1P (20AMP SINGLE POLE) UNLESS NOTED OTHERWISE. |

## EXISTING EQUIPMENT LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| XM | EXISTING EQUIPMENT TO REMAIN |
| XR | EXISTING EQUIPMENT TO BE REMOVED |
| XE | EXISTING EQUIPMENT TO BE REMOVED AND NEW EQUIPMENT TO BE INSTALLED ON EXISTING BRANCH/FEEDER |
| (solid box) | EXISTING EQUIPMENT TO REMAIN FOR INFORMATION ONLY – (XM)<br>INDICATED BY SYMBOL WITH LIGHT OUT OF FUNCTION LINE TYPE |
| (dashed box) | EXISTING EQUIPMENT TO BE REWORKED – (XN, XL, XE, XR)<br>INDICATED BY SYMBOL WITH DASHED AND IN FUNCTION LINE TYPE |

## WIRING DEVICES

| SYMBOL | DESCRIPTION |
|---|---|
| # GFI | DUPLEX RECEPTACLE, GROUNDING TYPE, RATED 20A, 125V<br>"WP" – INDICATES WEATHERPROOF (TYP)<br>"GFI" – INDICATES GROUND FAULT INTERRUPTER |

## ELECTRIC GENERAL NOTES

1. THE ELECTRICAL DEMOLITION PLANS AND DETAILS INDICATE THE GENERAL INTENT AND ARE NOT INTENDED TO SHOW ALL ITEMS TO BE REMOVED OR RETAINED. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO THE SUBMISSION OF BIDS TO BECOME FAMILIAR WITH THE ACTUAL CONDITIONS AND EXTENT OF WORK. DEVICES AND EQUIPMENT LOCATED ON WALLS AND/OR CEILINGS TO BE REMOVED SHALL BE DISCONNECTED AND MADE SAFE FOR REMOVAL. THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY UNANTICIPATED HIDDEN CONDITIONS ENCOUNTERED DURING DEMOLITION.
2. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL SYSTEMS OR BUILDING COMPONENTS DAMAGED DURING THE EXECUTION OF WORK. DAMAGE SHALL INCLUDE BUT NOT LIMITED TO THE DESTRUCTION OR DISPOSAL OF ITEMS INTENDED TO REMAIN OR BE SALVAGED.
3. THE ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE AND REMOVE ALL CONDUCTORS AND RACEWAYS TO THEIR POINT OF ORIGIN WITHIN THE AREA OF DEMOLITION SCOPE. ITEMS IDENTIFIED FOR DEMOLITION SHALL NOT BE ABANDONED IN PLACE. RACEWAYS THAT ENTER MASONRY WALLS AND FLOORS SHALL BE CUT FLUSH AT THE SURFACE FOR PATCHING BY TRADE CONTRACTOR. ALL CIRCUIT BREAKERS ASSOCIATED WITH THE DEMOLITION SCOPE SHALL BE DE-ENERGIZED AND LABELED AS SPARE.
4. ALL REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF UNLESS IDENTIFIED FOR REUSE OR TURNED OVER TO OWNER. THE OWNER'S REPRESENTATIVE SHALL INSPECT ALL RETAINED ITEMS PRIOR TO PLACEMENT IN THE IDENTIFIED STORAGE LOCATION BY THE ELECTRICAL CONTRACTOR.
5. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. CIRCUITRY HAS BEEN DETERMINED BASED UPON INFORMATION GATHERED, ASSUMPTIONS, AND INFORMATION OBTAINED FROM NAVFAC. EXACT CIRCUITING, EQUIPMENT SIZES, AND CONDUIT AND WIRING SIZES MAY DIFFER IN THE FIELD FROM WHAT IS SHOWN ON THE DRAWINGS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TRACING ALL CIRCUITS BEING DEMOLISHED AND REUSED PRIOR TO DISCONNECTING, VERIFYING EXISTING CIRCUITRY AND EQUIPMENT SIZES, AND SHALL SIZE ALL NEW EQUIPMENT AND BRANCH CIRCUITRY ACCORDINGLY IF ACTUAL CONDITIONS DIFFER FROM WHAT IS SHOWN ON THE DRAWINGS. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY. INTERCONNECTING BRANCH WIRING SHALL BE SIZED EQUAL TO THE HOMERUN UNLESS NOTED OTHERWISE.
6. VOLTAGE DROP HAS BEEN CONSIDERED IN THE DESIGN OF ALL BRANCH CIRCUITRY AND FEEDER SIZES BASED UPON THE ILLUSTRATED EQUIPMENT LAYOUTS AND SHORTEST CONDUCTOR/RACEWAY ROUTING. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR DEVIATIONS TAKEN THAT WILL INCREASE CONDUCTOR/RACEWAY ROUTING LENGTHS. BRANCH CIRCUITS LONGER THAN 75' FOR 120V FROM PANEL TO LAST OUTLET SHALL BE INCREASED A MINIMUM OF ONE SIZE ABOVE THAT SPECIFIED TO LIMIT VOLTAGE DROP TO LESS THAN 3%. FEEDERS SHALL FOLLOW SIMILAR GUIDELINES AND BE LIMITED TO 2% DROP.
7. THE ELECTRICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE ELECTRICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL ADDITIONAL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.
8. ROUTING IS DIAGRAMMATIC. CONTRACTOR SHALL DETERMINE ROUTING IN FIELD AND RE-USE EXISTING PENETRATIONS WHERE POSSIBLE.
9. SEE PWD-ME DRAWING NUMBERS;
   - 9.1. 43-15-67 FOR TITLE SHEET
   - 9.2. 43-15-68 FOR LIST OF DRAWINGS
   - 9.3. 43-15-69 FOR GENERAL NOTES & LEGENDS
   - 9.4. 43-15-72 FOR CHASE AND SOFFIT DETAILS
   - 9.5. 43-15-74 FOR STRUCTURAL NOTES AND SUPPORTS

## SCHEDULE OF DRAWINGS

| DWG# | DESCRIPTION |
|---|---|
| E1.0 | BUILDING 59 ELECTRICAL LEGEND |
| ED2.0 | BUILDING 59 ELECTRICAL FIRST FLOOR DEMOLITION PLAN |
| E2.0 | BUILDING 59 ELECTRICAL FIRST FLOOR PLAN |
| E3.0 | BUILDING 59 ELECTRICAL SCHEDULES |

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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A/E INFO

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FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES TM DRW TM CHK JO

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC

PUBLIC WORKS DEPARTMENT – MAINE NAVAL SHIPYARD – PORTSMOUTH, NH

PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 59 ELECTRICAL LEGEND

EPROJECT NO.: 1350913

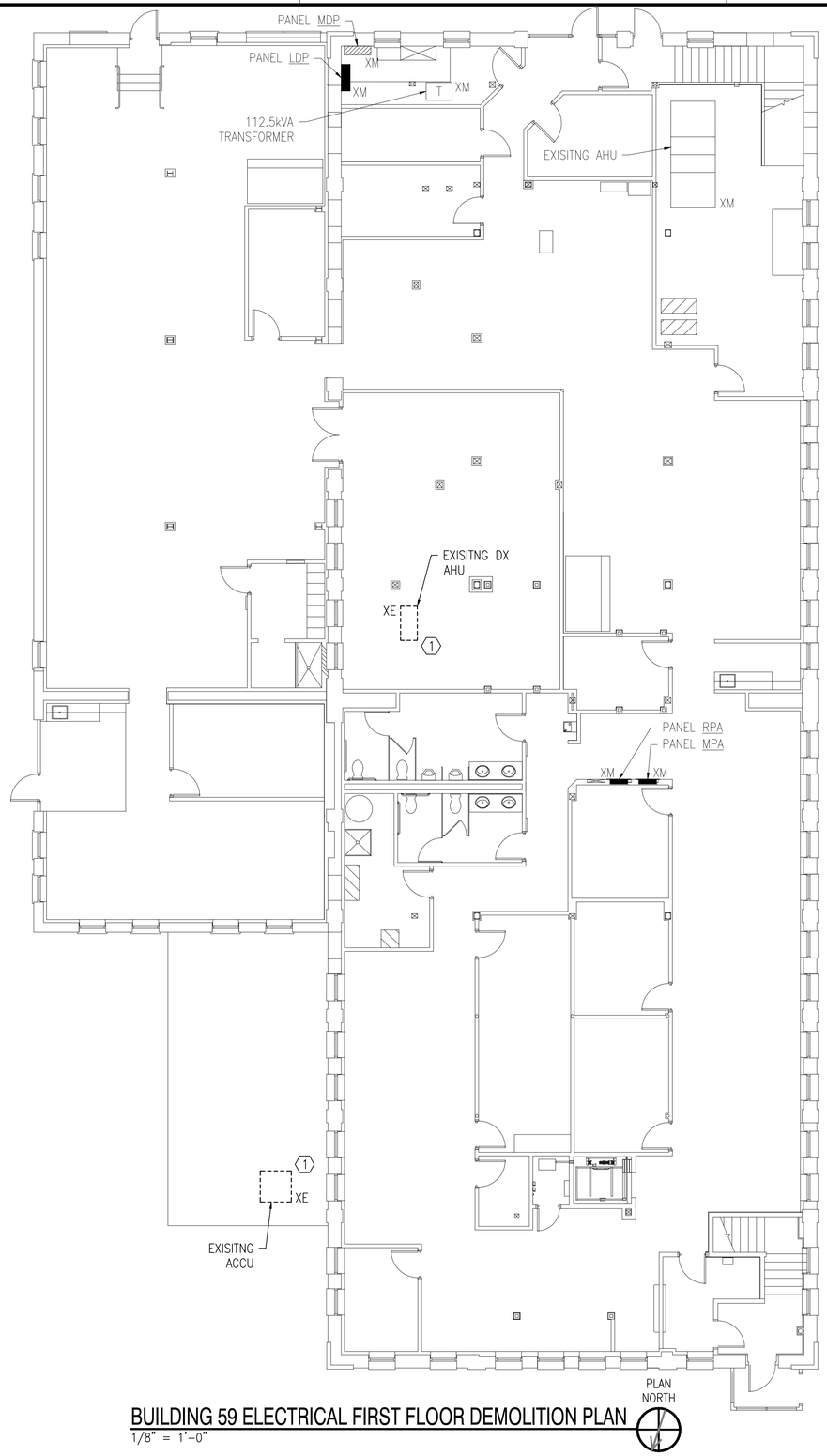
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703604

SHEET 151 OF 506

E1.0 59-15-167

DRAWFORM REVISION: 10 OCTOBER 2014




BUILDING 59 ELECTRICAL FIRST FLOOR DEMOLITION PLAN
1/8" = 1'-0"

## GENERAL SHEET NOTES

1. REFER TO DRAWING E1.0 FOR LEGEND, SYMBOLS AND GENERAL NOTES.
2. THE ELECTRICAL CONTRACTOR SHALL CIRCUIT TRACE AND LABEL ALL EXISTING BRANCH CIRCUITS AND FEEDERS SCHEDULED TO BE REMOVED WITHIN THE AREA OF DEMOLITION SCOPE PRIOR TO DE-ENERGIZING AND DISCONNECTION. ALL CIRCUITS WITHIN PANELBOARDS IDENTIFIED FOR REMOVAL SHALL BE TRACED AND LABELED TO ENSURE THAT NO AREA OUTSIDE THE DEMOLITION SCOPE LIMIT IS AFFECTED.
3. THE ELECTRICAL CONTRACTOR SHALL IDENTIFY ALL BRANCH CIRCUITS, FEEDERS AND SYSTEM COMPONENTS, WHICH ARE TO REMAIN WITHIN THE AREA OF DEMOLITION SCOPE. THERE SHALL BE NO INTERRUPTION OF SERVICE TO ANY AREA OUTSIDE THE SCOPE LIMITS WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE. EXISTING EQUIPMENT TO REMAIN SHALL BE LEFT IN A CODE COMPLIANT MANNER.
4. THE ELECTRICAL CONTRACTOR SHALL TEMPORARILY SUPPORT ALL ITEMS TO REMAIN THAT ARE AFFECTED BY THE DEMOLITION OF BUILDING STRUCTURAL COMPONENTS (WALLS, CEILINGS, ETC.). TEMPORARILY SUPPORTED ITEMS SHALL BE PERMANENTLY SUPPORTED AND INSTALLED WHEN FINALIZED STRUCTURES ARE IN PLACE.

## DEMOLITION KEYNOTES

1. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING EQUIPMENT. MAINTAIN EXISTING BRANCH CIRCUITRY AND CIRCUIT BREAKER FOR REUSE. DEMOLISH EXISTING DISCONNECT IN ITS ENTIRETY.

## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| | | DM | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DATE |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | |
| 2 | 90% SUBMISSION | 06/04/2015 | |
| 1 | 80% SUBMISSION | 04/24/2015 | |
| 0 | 35% SUBMISSION | 02/23/2015 | |
| STM | DESCRIPTION | | |

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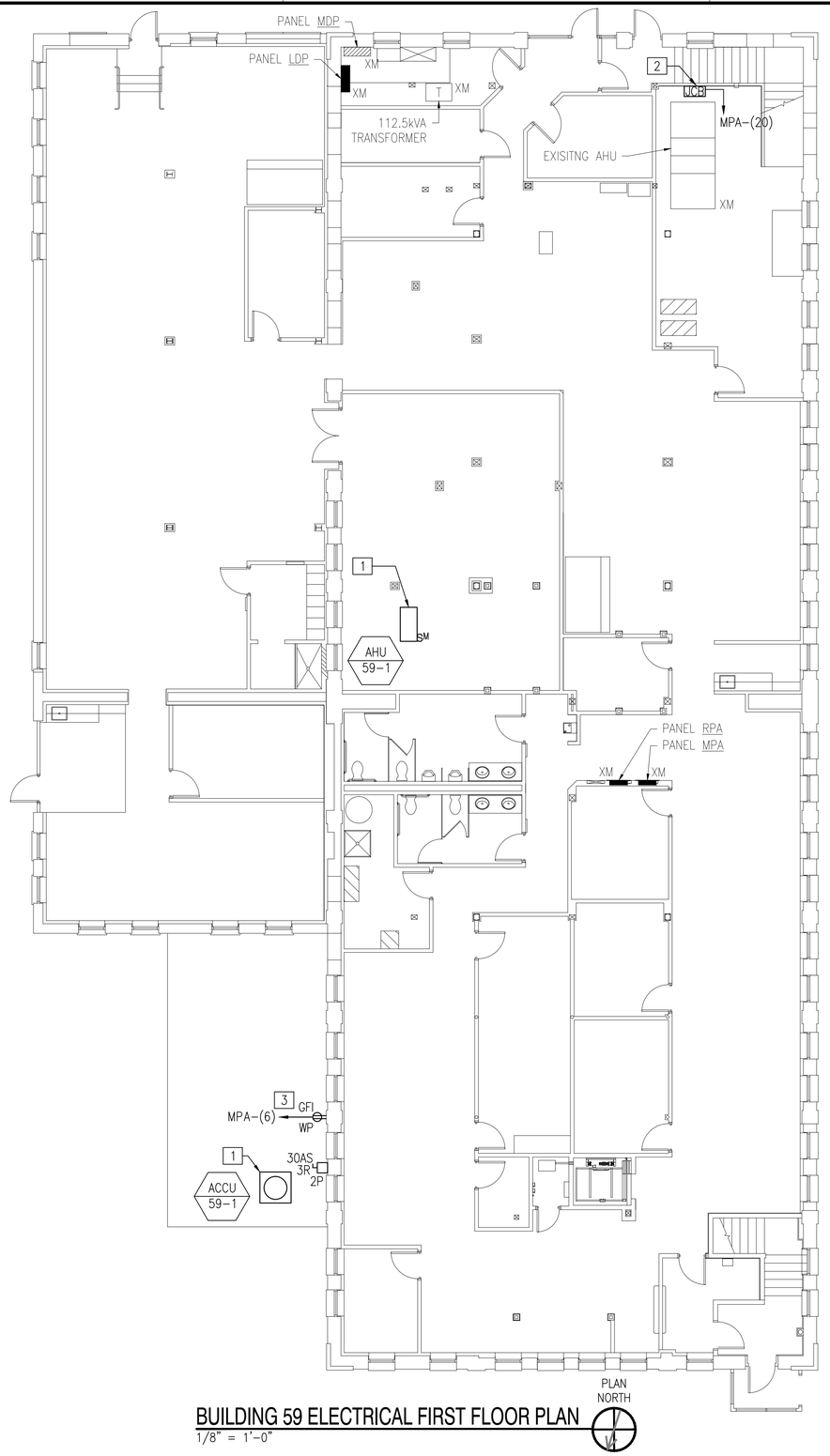
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22

# BUILDING 59 ELECTRICAL FIRST FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085-XX-C-XXXX
NAVFAC DRAWING NO.: 12703605
SHEET 152 OF 506
ED2.0 | 59-15-168

DRAWFORM REVISION: 10 OCTOBER 2014




## BUILDING 59 ELECTRICAL FIRST FLOOR PLAN

1/8" = 1'-0"

## GENERAL SHEET NOTES

1. REFER TO DRAWING E1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. POWER BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. POWER BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
3. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING POWER DEVICES TO REMAIN.
4. FINAL LOW-VOLTAGE CONNECTIONS TO BE MADE BY CONTROLS CONTRACTOR. FIELD COORDINATE EXACT LOCATION OF EQUIPMENT WITH CONTROLS CONTRACTOR AND NAVFAC.

## NEW WORK KEYNOTES

1. NEW ACCU AND ASSOCIATED AHU. CONNECT NEW UNITS TO EXISTING BRANCH CIRCUITRY AND CIRCUIT BREAKER MAINTAINED DURING DEMOLITION. PROVIDE NW DISCONNECT AS SHOWN. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION. REUSE AS MUCH EXISTING CONDUIT AND WIRING AS POSSIBLE AND EXTEND AS NEEDED. NEW CONDUIT AND WIRING TO MATCH EXISTING IN ALL RESPECTS.
2. NEW DDC JACE BOX PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.
3. ELECTRICAL CONTRACTOR TO FIELD VERIFY IF A RECEPTACLE EXISTS WITHIN 6' OF NEW UNITS. IF NO RECEPTACLE EXISTS, PROVIDE NEW AS SHOWN. REFER TO PANELBOARD SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.

## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
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No. 13078
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NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 59 ELECTRICAL FIRST FLOOR PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703606
SHEET 153 OF 506
E2.0 59-15-169

DRAWFORM REVISION: 10 OCTOBER 2014

# MECHANICAL EQUIPMENT SCHEDULE

| EQUIP TAG | DESCRIPTION | LOAD | | | | PANEL SOURCE | | BRANCH CIRCUIT | CONNECTION | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | HP | KVA | VOLT | PH | PANEL | C/B | | FLEX | JB | REC | DISC | |
| ACCU 59-1 | CONDENSING UNIT | – | 1.89 | 208 | 1 | MPA-(39,41) | 20A/2P | – | X | | | X | NOTES 7,11 |
| AHU 59-1 | AIR HANDLING UNIT | – | 1.04 | 208 | 1 | MPA-(39,41) | 20A/2P | – | X | | | X | NOTE 8,11 |

NOTES:

1. BRANCH CIRCUIT WIRING METHODS SHALL BE AS NOTED ON THE DRAWINGS AND/OR SPECIFICATIONS FOR THE APPLICABLE LOCATION.
2. "FLEX" – DENOTES FINAL THREE FEET (MAXIMUM) OF RACEWAY SHALL BE FLEXIBLE METAL OR LIQUIDTIGHT METAL CONDUIT.
3. "JB" – JUNCTION BOX DENOTES FINAL CONNECTION TO BOX OR CONTROL PANEL PREWIRED TO THE EQUIPMENT.
4. "REC" – PROVIDE RECEPTACLE IN THE NEMA CONFIGURATION NOTED.
5. NOTES 6-9 ARE OPTIONS WHICH SHALL BE SPECIFICALLY NOTED IN REMARKS FOR INCLUSION.
6. DISCONNECT SHALL BE FUSIBLE.
7. DISCONNECT SHALL BE NEMA "3R"
8. DISCONNECT SHALL BE MOTOR-RATED SWITCH WITH THERMAL OVERLOAD ELEMENT.
9. DISCONNECT PROVIDED INTEGRAL (PREWIRED) TO EQUIPMENT BY TRADE CONTRACTOR.
10. INTEGRAL CONVENIENCE RECEPTACLE PROVIDED PREWIRED TO EQUIPMENT BY TRADE CONTRACTOR.
11. REUSE EXISTING BRANCH CIRCUITRY AND CIRCUIT BREAKER. PROVIDE NEW DISCONNECT AS SHOWN ON DRAWING E2.0 & EXTEND CIRCUIT AS NEEDED.

# PANELBOARD SCHEDULE

PANEL: MPA — VOLTS: 120/ 208 — NEW/EXISTING.: EXISTING
MAIN: MLO — BUS AMPS: 225A — MOUNT.: RECESSED
PH/WIRE: 3ø/4W — AIC: 22K — LOC: CORRIDOR BLDG 59

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 20/1 | LEKTRIEVER 124 | 0 | – | – | 0 | VENDING RM 100 CUH-3 | 20/1 | 2 |
| 3 | 20/1 | LEKTRIEVER 140 | 0 | – | – | 0 | SERVER RM | 20/1 | 4 |
| 5 | 20/1 | COPIER RM 135 | 0 | – | 1 | .18 | GFI RECPT. FOR UNITS | 20/1 | 6 |
| 7 | 20/1 | SHUNT TRIP POWER | 0 | – | – | 0 | CIRC PUMP | 20/1 | 8 |
| 9 | 20/1 | OFFICE FURNITURE RM 13 | 0 | – | – | 0 | ELEVATOR SUMP | 20/1 | 10 |
| 11 | 20/1 | WATER COOLER | 0 | – | – | 0 | EF-2 | 20/1 | 12 |
| 13 | 20/1 | NMCI CAB FEE UPS #1 | 0 | – | – | 0 | CP-1 | 20/1 | 14 |
| 15 | 20/1 | NMCI CAB UPS CAB FEED | 0 | – | – | 0 | PHONE BACKBOARD | 20/1 | 16 |
| 17 | 20/1 | NMCI CAB UPS CAB FEED | 0 | – | – | 0 | ELEVATOR CAB | 20/1 | 18 |
| 19 | 20/1 | NMCI CAB UPS CAB FEED | 0 | – | 1 | .02 | DDC JACE BOX & SWITCH | 20/1 | 20 |
| 21 | 20/1 | PANELS | 0 | – | – | 0 | OUTLET RM 111 | 20/1 | 22 |
| 23 | | SPACE | | – | – | 0 | OUTLET RM 112 | 20/1 | 24 |
| 25 | | SPACE | | – | – | 0 | RECPT FRIDGE | 20/1 | 26 |
| 27 | | SPACE | | – | – | | SPACE | | 28 |
| 29 | | SPACE | | – | – | 0 | LEKTRIEVER | 20/1 | 30 |
| 31 | | SPACE | | – | – | 0 | AIR COMPRESSOR | 20/3 | 32 |
| 33 | | SPACE | | – | | | | | 34 |
| 35 | 30/2 | WATER HEATER | 0 | – | | | | | 36 |
| 37 | | | | | – | 0 | ELEVATOR | 40/3 | 38 |
| 39 | 20/2 | AHU-59-1 & ACCU-59-1 | 2.9 | 1 | | | | | 40 |
| 41 | | | | | | | | | 42 |
| | | | 2.90 | | | 0.20 | TOTAL CONNECTED kVA: | 3.10 | |
| | | | | | | | TOTAL CONNECTED AMPERES: | 8.61 | |

NOTES:
1. VERIFY AND REUSE EXISTING CIRCUIT BREAKER AS INDICATED FOR NEW LOAD.
2. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 07/10/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 01/20/2015 | DM |

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A/E INFO

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FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

DES TM | DRW TM | CHK JO
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BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE — NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD — KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 59 ELECTRICAL SCHEDULES

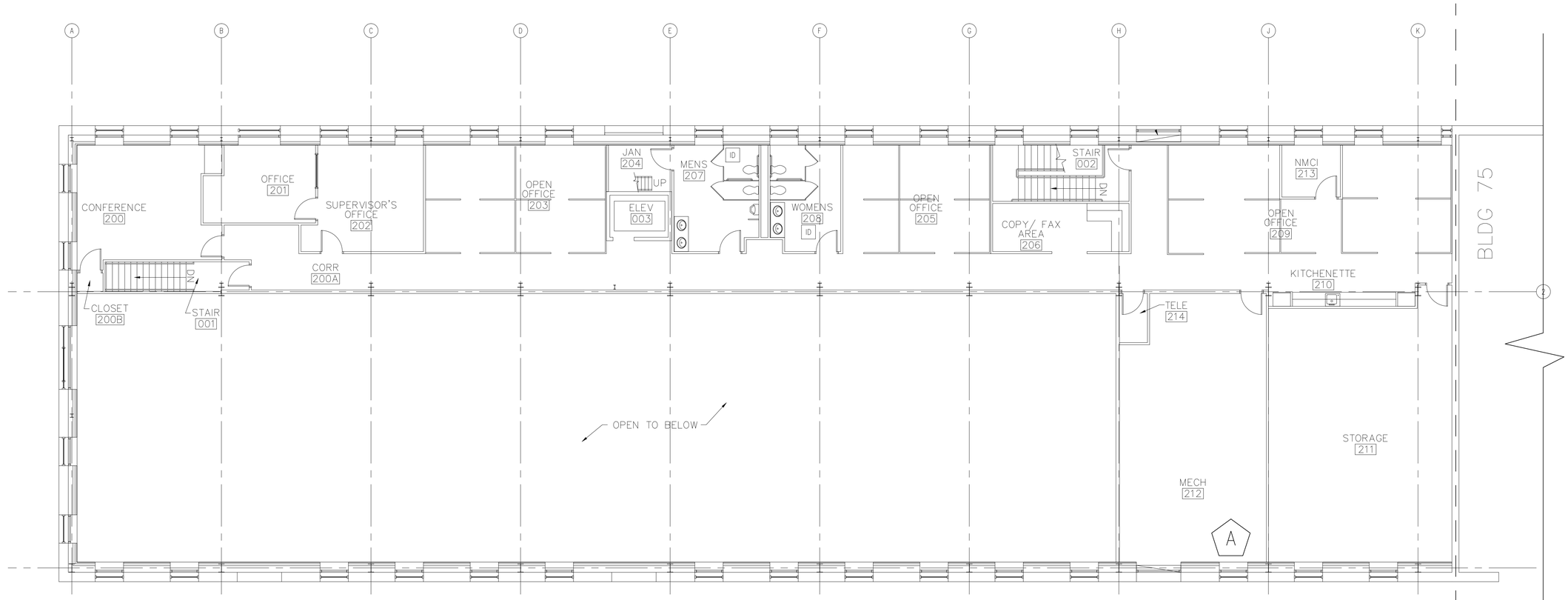
EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXX
NAVFAC DRAWING NO. 12703607
SHEET 154 OF 506
E3.0 | 59-15-170

## GENERAL SHEET NOTES

1. FASTENERS SHALL BE ATTACHED TO MORTAR IN MASONRY BUILDINGS, AVOIDING DAMAGE TO THE BRICK WHEREVER PRACTICAL.
2. EXTERIOR CONDUIT SHALL BE INSTALLED IN SHADOW-LINES OR ADJACENT TO EXISTING CONDUIT; CONDUIT COLOR TO BE COORDINATED WITH CULTURAL RESOURCE MANAGER AND A-E.
3. REFER TO MECHANICAL DRAWINGS FOR JACE LOCATION AND INFORMATION.
4. EXISTING ROOF AND WALL PENETRATIONS SHALL BE USED WHEREVER PRACTICAL.
5. INTERIOR, WINDOW-MOUNTED ACCESS POINTS SHALL BE MOUNTED IN AN OBSCURE LOCATION THAT IS LEAST VISIBLE FROM INTERIOR & EXTERIOR.
6. ACCESS POINT MOUNTS SHALL NOT OBSTRUCT EGRESS, EXISTING WALKWAYS, STAIRWELLS, MECHANICAL EQUIPMENT CLEARANCES, OR OTHER APPURTANANCES.
7. UNLESS OTHERWISE NOTED, ROOFTOP ACCESS POINTS SHALL BE CENTRALIZED ON THE ROOF TO MINIMIZE VISIBILITY FROM GROUND LEVEL.
8. CONTRACTOR TO FIELD-VERIFY COMMUNICATION ACCESS POINTS ARE ALIGNED AND LINE OF SIGHT IS UNOBSTRUCTED.
9. IF A FIELD CHANGE IS REQUIRED, CONTRACTOR SHALL COORDINATE WITH CULTURAL RESOURCE MANAGER AND A-E PRIOR TO RELOCATING EQUIPMENT.
10. ANY PROPOSED CHANGES (PENETRATIONS, CONDUIT, ETC.) NOT ALREADY INDICATED ON DRAWINGS MADE TO HISTORIC BUILDINGS OR BUILDINGS LOCATED IN HISTORIC DISTRICT MUST BE REVIEWED AND APPROVED BY SHPO THROUGH NAVFAC CULTURAL RESOURCES DEPARTMENT PRIOR TO INSTALLATION.
11. CONTRACTOR TO VERIFY RF SIGNAL STRENGTH AND CONNECTIVITY FROM/TO ALL ACCESS POINTS.
12. SEE PWD-ME DRAWING NUMBERS;
    - 12.1. 43-15-67 FOR TITLE SHEET
    - 12.2. 43-15-68 FOR LIST OF DRAWINGS
    - 12.3. 43-15-69 FOR GENERAL NOTES AND LEGEND
    - 12.4. 43-15-72 FOR CHASE AND SOFFIT DETAILS
    - 12.5. 43-15-74 FOR STRUCTURAL NOTES AND SUPPORT

## (A) NEW WORK KEYNOTES

1. CONTRACTOR SHALL MOUNT RF ACCESS POINT ON THE SECOND FLOOR INTERIOR IN SOUTH WALL WINDOW.
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT THROUGH SOUTH WINDOW TO B178 ACCESS POINT.
3. CAT5 CABLE SHALL BE ROUTED ALONG EXISTING PATH TO JACE.




## B45 ANTENNA LOCATION - SECOND FLOOR PLAN

1/8" = 1'-0"

PLAN NORTH

| EQUIPMENT | WIRELESS STANDARD | ANTENNA | FREQUENCY | DIMENSIONS | WEIGHT | INPUT POWER | MANUFACTURER | DESIGN BASED ON MODEL |
|---|---|---|---|---|---|---|---|---|
| WIRELESS ACCESS POINT | 802.11n | INTEGRATED | 2.4 GHZ & 5.8 GHZ | 8.7 X 8.7 X 1.84 INCHES | 1.9 LBS | AIR-PWRINJ4 | CISCO AIRONET | AIR-CAP1602I-x-K9 |

NOTE: PROVIDE POWER INJECTOR FOR POWER OVER ETHERNET TO WIRELESS ACCESSS POINT. DESIGN BASED ON CISCO MODEL AIR-PWRINJ4.

## GRAPHIC SCALE

1/8" = 1' scale 8 4 0 8 16 24 feet

CHECK GRAPHIC SCALE BEFORE USING

| APPR | DATE | DESCRIPTION | STM |
|---|---|---|---|
| DM | 07/31/15 | 100% SUBMISSION | |
| | 07/15/15 | 90% SUBMISSION | |
| | | | 0 |

NAVFAC

SEAL


aecom architects|engineers
13 WATER ST NEWMARKET NH
(603) 200-0096 AECOM.COM
A/E INFO


APPROVED

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ACTIVITY

SATISFACTORY TO DATE

DES VSL | DRW SRR | CHK KLC

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAO/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-A-ROC

B045 RF INSTALLATION DETAILS

EPROJECT NO.: 1350914

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12704056

SHEET 53 OF 229

ET1.0 | 45-15-266

DRAWFORM REVISION: 10 OCTOBER 2014

# HVAC ABBREVIATIONS

| | | | |
|---|---|---|---|
| °F | DEGREES FAHRENHEIT | ID | INSIDE DIAMETER |
| °C | DEGREES CELSIUS | IN | INCHES |
| ø | DIAMETER | INSUL | INSULATION |
| ACV | AUTOMATIC CONTROL VALVE | KW | KILOWATT |
| AD | ACCESS DOOR | KVA | KILOVOLT AMPERE |
| ADJ | ADJUSTABLE | L | LENGTH |
| ADDL | ADDITIONAL | LB | POUND |
| AFF | ABOVE FINISHED FLOOR | LF | LINEAR FEET |
| AFG | ABOVE FINISHED GRADE | LVG | LEAVING |
| ALT | ALTERNATE | M | ONE THOUSAND |
| AP | ACCESS PANEL | MAX | MAXIMUM |
| ARCH | ARCHITECT | MBH | THOUSAND BRITISH THERMAL UNITS PER HOUR |
| ATC | AUTOMATIC TEMPERATURE CONTROL | MCA | MINIMUM CIRCUIT AMPS |
| AS | AIR SEPARATOR | MCC | MOTOR CONTROL CENTER |
| AVG | AVERAGE | MECH | MECHANICAL |
| BAS | BUILDING AUTOMATION SYSTEM | MEZZ | MEZZANINE |
| BFF | BELOW FINISHED FLOOR | MFR | MANUFACTURER |
| BHP | BRAKE HORSEPOWER | MIN | MINIMUM |
| BLDG | BUILDING | MTD | MOUNTED |
| BLR | BOILER | MU | MAKEUP WATER |
| BOD | BOTTOM OF DUCT | N/A | NOT APPLICABLE |
| BOP | BOTTOM OF PIPE | NC | NORMALLY CLOSED |
| BSMY | BASEMENT | NC | NOISE CRITERIA |
| BTU | BRITISH THERMAL UNIT | NIC | NOT IN CONTRACT |
| BTUH | BRITISH THERMAL UNIT PER HOUR | NO | NORMALLY OPEN |
| C | CONVECTOR | NO. | NUMBER |
| CF | CEILING FAN | NOM | NOMINAL |
| CL | CENTERLINE | NTS | NOT TO SCALE |
| CLG | CEILING | OB | OCTAVE BAND |
| CO | CLEAN-OUT | OC | ON CENTER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COMP | COMPRESSOR | ODP | OPEN DRIP PROOF |
| CONC | CONCRETE | OFCI | OWNER FURNISHED CONTRACTOR INSTALLED |
| CONN | CONNECTION | OFOI | OWNER FURNISHED OWNER INSTALLED |
| CONTR | CONTRACTOR | OV | OUTLET VELOCITY |
| CORR | CORRIDOR | PCF | POUNDS PER CUBIC FOOT |
| CUF | CUBIC FEET | PD | PRESSURE DROP |
| CUH | CABINET UNIT HEATER | PH | PHASE |
| CYL | CYLINDER | PLMB | PLUMBING |
| D | DRAIN | POS | PROVIDED BY OTHER SECTION(S) |
| DB | DRY BULB TEMPERATURE | PRESS | PRESSURE |
| DDC | DIRECT DIGITAL CONTROL | PRIM | PRIMARY |
| DDCFP | DIRECT DIGITAL CONTROL FIELD PANEL | PSIA | POUNDS PER SQUARE INCH ABSOLUTE |
| DIA | DIAMETER | PSID | POUNDS PER SQUARE INCH DIFFERENTIAL |
| DIM | DIMENSION | PSIG | POUNDS PER SQUARE INCH GAUGE |
| DN | DOWN | PVC | POLYVINYL CHLORIDE |
| DWG | DRAWING | REP | REPRESENTATIVE |
| EA | EACH | RET | RETURN |
| EAT | ENTERING AIR TEMPERATURE | REQD | REQUIRED |
| EFF | EFFICIENCY | REQS | REQUIREMENTS |
| ECUH | ELECTRIC CABINET UNIT HEATER | RH | RELATIVE HUMIDITY |
| ELEC | ELECTRICAL | RM | ROOM |
| ELEV | ELEVATION | RPM | REVOLUTIONS PER MINUTE |
| EMER | EMERGENCY | SCH | SCHEDULE |
| ENT | ENTERING | SOV | SOLENOID OPERATED VALVE |
| EQUIP | EQUIPMENT | SPECS | SPECIFICATIONS |
| EXH | EXHAUST | SQ | SQUARE |
| EXP | EXPANSION | SQFT | SQUARE FEET |
| FTR | FINNED TUBE RADIATION | SS | STAINLESS STEEL |
| FCV | FLOW CONTROL VALVE | STD | STANDARD |
| FG | FIBERGLASS | STDBY | STANDBY |
| FLEX | FLEXIBLE | STL | STEEL |
| FLR | FLOOR | SUCT | SUCTION |
| FLRDR | FLOOR DRAIN | SUP | SUPPLY |
| FP | FIRE PROTECTION | TA | THROW-AWAY |
| FPM | FEET PER MINUTE | TAV | THERMOSTATIC AIR VENT |
| FT | FEET | TEFC | TOTALLY ENCLOSED FAN COOLED |
| FT/SEC | FEET PER SECOND | TEL | TELEPHONE |
| FURN | FURNISHED | TEMP | TEMPERATURE |
| FVNR | FULL VOLTAGE NON-REVERSING | TOD | TOP OF DUCT |
| GA | GAUGE | TOP | TOP OF PIPE |
| GAL | GALLONS | TYP | TYPICAL |
| GALV | GALVANIZED | UH | UNIT HEATER |
| GC | GENERAL CONTRACTOR | V | VENT |
| GND | GROUND | VEL | VELOCITY |
| GPH | GALLONS PER HOUR | VERT | VERTICAL |
| GPM | GALLONS PER MINUTE | VFD | VARIABLE FREQUENCY DRIVE |
| GRD | GRADE (GROUND LEVEL) | VTR | VENT THROUGH ROOF |
| GWB | GYPSUM WALL BOARD | W | WIDTH |
| H | HEIGHT | W/ | WITH |
| HD | HEAD | W/O | WITHOUT |
| HP | HORSEPOWER | WB | WET BULB TEMPERATURE |
| HR | HOUR | WF | WIDE FLANGE |
| HZ | HERTZ | WG | WATER GAUGE |
| | | WRT | WITH RESPECT TO |

# FLOW DIAGRAM & CONTROL DIAGRAM EQUIP. SYMBOLS

- FILTER BANK
- HEATING COIL
- COOLING COIL
- PARALLEL BLADE DAMPER W/ MODULATING ACTUATOR
- BACKDRAFT DAMPER
- CENTRIFUGAL FAN
- INLINE CENTRIFUGAL FAN
- OPPOSED BLADE DAMPER W/ TWO POSITION ACTUATOR
- OPPOSED BLADE DAMPER W/ MODULATING ACTUATOR
- PARALLEL BLADE DAMPER W/ TWO POSITION ACTUATOR

# HVAC SYSTEM TAGS

J 1 — JACE BOX

# CALL OUT SYMBOLS

- THERMOSTAT
- CONNECT TO EXISTING
- REFER TO DRAWINGS ( ) FOR CONTINUATION
- SYMBOL DESIGNATES ASSOCIATED SYSTEM OR SERVICE (ie LPS)
- DIFFUSER, GRILLE, REGISTER LETTER DESIGNATION (See Schedule for ATD type)
- SA-2 / 200 — DESIGN CFM

# EQUIPMENT TAG SYMBOLS & ABBREVIATIONS

EQUIPMENT NOT REQUIRING ELECTRIC SERVICE → TAG NO / TAG DATA DATA → SEE SCHEDULE FOR PERFORMANCE REQUIREMENTS ← TAG NO / TAG DATA DATA ← EQUIPMENT REQUIRING ELECTRIC SERVICE

NOTE:REFER TO SCHEDULES FOR DEFINITION OF EQUIPMENT SPECIFIC DATA LISTED WITHIN TAG BLOCKS

# AIR SYSTEM SPECIFIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| AC | AIR CONDITIONING | LVDR | LOUVERED DOOR |
| ACD | AUTOMATIC CONTROL DAMPER | OA | OUTSIDE AIR |
| ACU | AIR CONDITIONING UNIT | OAI | OUTSIDE AIR INTAKE |
| AF | AIR FOIL | OBD | OPPOSED BLADE DAMPER |
| AHU | AIR HANDLING UNIT | OED | OPEN END DUCT |
| ALD | ACOUSTICALLY LINED DUCTWORK | RA | RETURN AIR |
| ATD | AIR TERMINAL DEVICE | RF | RETURN FAN |
| AVS | AIR VOLUME TRAVERSE STATION | RG | RETURN GRILLE |
| BDD | BACKDRAFT DAMPER | RHC | REHEAT COIL |
| BI | BACKWARD INCLINED | RLF | RELIEF |
| CC | COOLING COIL | RR | RETURN REGISTER |
| CD | CEILING DIFFUSER | RV | ROOF VENT |
| CFM | CUBIC FEET PER MINUTE | SA | SUPPLY AIR |
| CG | CEILING GRILLE | SATT | SOUND ATTENUATOR |
| DIFF | DIFFUSER | SCR | SCREEN |
| DWDI | DOUBLE WIDTH DOUBLE INLET | SD | SMOKE DAMPER |
| DWSI | DOUBLE WIDTH SINGLE INLET | SDET | SMOKE DETECTOR |
| DX | DIRECT EXPANSION | SEF | SMOKE EXHAUST FAN |
| EF | EXHAUST FAN | SF | SUPPLY FAN |
| EG | EXHAUST GRILLE | SFD | COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR |
| ESP | EXTERNAL STATIC PRESSURE | | |
| F | FAN | SG | SUPPLY GRILLE |
| FC | FORWARD CURVED | SM | SHEETMETAL |
| FA | FREE AREA | SP | STATIC PRESSURE |
| FCU | FAN COIL UNIT | SR | SUPPLY REGISTER |
| FD | FIRE DAMPER (W/ ACCESS DOOR) | SWDI | SINGLE WIDTH DOUBLE INLET |
| FLTR | FILTER | SWSI | SINGLE WIDTH SINGLE INLET |
| FPI | FINS PER INCH | TE | TOILET EXHAUST |
| FPT | FAN POWERED TERMINAL BOX | TF | TRANSFER FAN |
| GE | GENERAL EXHAUST | TG | TRANSFER GRILLE |
| GIH | GRAVITY INTAKE HOOD | TR | TRANSFER |
| GRH | GRAVITY RELIEF HOOD | TSP | TOTAL STATIC PRESSURE |
| HC | HEATING COIL | UC | UNDERCUT DOOR |
| LAT | LEAVING AIR TEMPERATURE | VD | VOLUME DAMPER |
| LD | LINEAR DIFFUSER | VV | VARIABLE VOLUME SUPPLY AIR TERMINAL BOX |
| LUVR | LOUVER | WMS | WIRE MESH SCREEN |

# HVAC GENERAL NOTES

1. GENERAL NOTES APPLY TO ALL HVAC DRAWINGS.
2. THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID, ARE DEEMED TO BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITIONS OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. ABSOLUTELY NO CLAIMS FOR EXTRA COMPENSATION WILL BE CONSIDERED FOR EXISTING CONDITIONS VISIBLE OR REASONABLY INFERABLE FROM A CAREFUL EXAMINATION OF THE EXISTING BUILDING.
3. THIS CONTRACTOR SHALL INSPECT THE EXISTING FIELD CONDITIONS AT THE SITE AND THE "AS-BUILT" BASE BUILDING CONTRACT DOCUMENTS PRIOR TO THE START OF ANY WORK TO DETERMINE WHAT EFFECT THE EXISTING CONDITIONS WILL HAVE ON HIS WORK. POTENTIAL PROBLEM AREAS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER IMMEDIATELY.
4. THIS CONTRACTOR SHALL CONNECT HIS WORK TO VARIOUS EXISTING PIPING, DUCTWORK, AND CONTROL SYSTEMS IN THE BASE BUILDING. THE NEW WORK SHALL BE COMPATIBLE WITH THE EXISTING SYSTEMS. LOCATION OF EQUIPMENT OR THE ROUTING OF THE VARIOUS SYSTEMS AS WELL AS OPENINGS IN FLOOR SLABS OR WALLS SHALL BE GOVERNED BY THE EXISTING CONDITIONS AS THEY APPEAR IN THE FIELD OR ON THE "AS-BUILT" DRAWINGS.
5. CARE SHALL BE TAKEN DURING THE INSTALLATION TO NOT DAMAGE OR INTERRUPT BUILDING SYSTEMS AND SERVICES THAT ARE ALREADY INSTALLED. DAMAGE TO SUCH SYSTEMS OR EQUIPMENT CAUSED BY THIS CONTRACTOR DURING INSTALLATION SHALL BE REPAIRED AND/OR REPLACED AT THIS CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE BUILDING OWNER.
6. SHUTDOWN OF EXISTING SYSTEMS FOR CONNECTION TO EXISTING SERVICES SHALL BE COORDINATED WITH THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR AND BUILDING OWNER. THIS CONTRACTOR SHALL SUBMIT REQUESTS, WHERE THEY AFFECT THE OPERATION OF THE BUILDING SYSTEMS, AT LEAST FIFTEEN DAYS IN ADVANCE OF ANY REQUIRED SHUTDOWN. THE ACTUAL SHUTDOWN PERIOD SHALL BE AS SHORT AS POSSIBLE AND AT A TIME MUTUALLY AGREEABLE TO THE BUILDING OWNER AND THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR.
7. DRAWINGS ARE DIAGRAMMATIC, THEREFORE DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS, AS WELL AS ROUTING PATHS, IN FIELD.
8. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER, AND SHOULD BE KEPT TO A MINIMUM FOR SYSTEM EFFICIENCIES.
9. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT AND/OR PIPE TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION. VERIFY ACCESS IS PROVIDED FOR SERVICING EQUIPMENT AS REQUIRED.
10. ALL MATERIALS AND EQUIPMENT UNLESS SPECIFICALLY INDICATED AS REUSED, SHALL BE NEW.
11. ACCESS PANELS SHALL BE PROVIDED TO ALLOW FOR CLEANING OF COILS AND SERVICING OF DAMPERS, HEATERS, VALVES, AND ALL CONCEALED MECHANICAL EQUIPMENT.
12. INSTALL NEW THERMOSTATS 4 FEET AFF OR AS DIRECTED OTHERWISE BY ENGINEER.
13. GENERAL CONTRACTOR TO PATCH ALL EFFECTED INTERIOR AND EXTERIOR EXISTING FLOOR, WALL, AND CEILING SURFACES TO MATCH EXISTING. PROVIDE ESCUTCHEON PLATES.
14. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
15. ANY AND ALL WALLS, CEILINGS AND FLOORS THAT ARE ANTICIPATED TO BE DISTURBED DURING THE DEMOLITION OR INSTALLATIONS PROCESS, AS INDICATED ON THE DRAWINGS, SHALL BE TESTED FOR HAZARDOUS MATERIALS PRIOR TO DISTURBING THE SURFACES. ROUTING OF PIPING HAS BEEN INDICATED TO DEPICT THE INTENT OF THE WORK. ACTUAL ROUTING MAY DIFFER IN THE FIELD DUE TO BUILDING CONSTRUCTION. COORDINATE TESTING OF ALL SURFACES TO BE DISTURBED, ALONG THE ACTUAL INSTALLATION ROUTE, WITH THE HAZARDOUS MATERIALS CONTRACTOR. REFER TO EXISTING HAZMAT REPORT FOR TESTING RESULTS.
16. MECHANICAL CONTRACTOR TO REMOVE ALL IDENTIFIED R-22 EQUIPMENT AND ASSOCIATED APPURTENANCES AND REPLACE IN KIND WITH A R410A OR R407C SYSTEM.
17. REFRIGERANT PIPING IS DIAGRAMMATIC, CONTRACTOR TO DETERMINE ROUTING IN FIELD AND RE-USE EXISTING PENETRATIONS. ANY EXPOSED PIPING TO BE CONCEALED IN A CHASE. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
18. SEE CIVIL DRAWINGS FOR DEMOLISHED AND NEW CONCRETE PADS.
19. THE MECHANICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE MECHANICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL ADDITIONAL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.
20. SEE PWD-ME DRAWING;
    43-15-67 FOR TITLE SHEET
    43-15-68 FOR LIST OF DRAWINGS
    43-15-69 FOR GENERAL NOTES & LEGENDS
    43-15-72 FOR CHASE AND SOFFIT DETAILS
    43-15-74 FOR STRUCTURAL NOTES AND SUPPORTS

# SCHEDULE OF DRAWINGS

| DWG# | DESCRIPTION |
|---|---|
| M1.0 | BUILDING 60 HVAC LEGEND |
| M2.0 | BUILDING 60 HVAC FIRST FLOOR PARTIAL PLAN, SCHEDULES & CONTROLS |
| M3.0 | BUILDING 60 HVAC CONTROLS |
| M3.1 | BUILDING 60 HVAC CONTROLS |

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE - DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER

SEAL

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CSI ENGINEERING
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25 AVIATION AVE STE 204 PORTSMOUTH, NH 03801 603-319-8244
A/E INFO

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ACTIVITY

SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL SHIPYARD - PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 60 HVAC LEGEND

EPROJECT NO.: 1350913

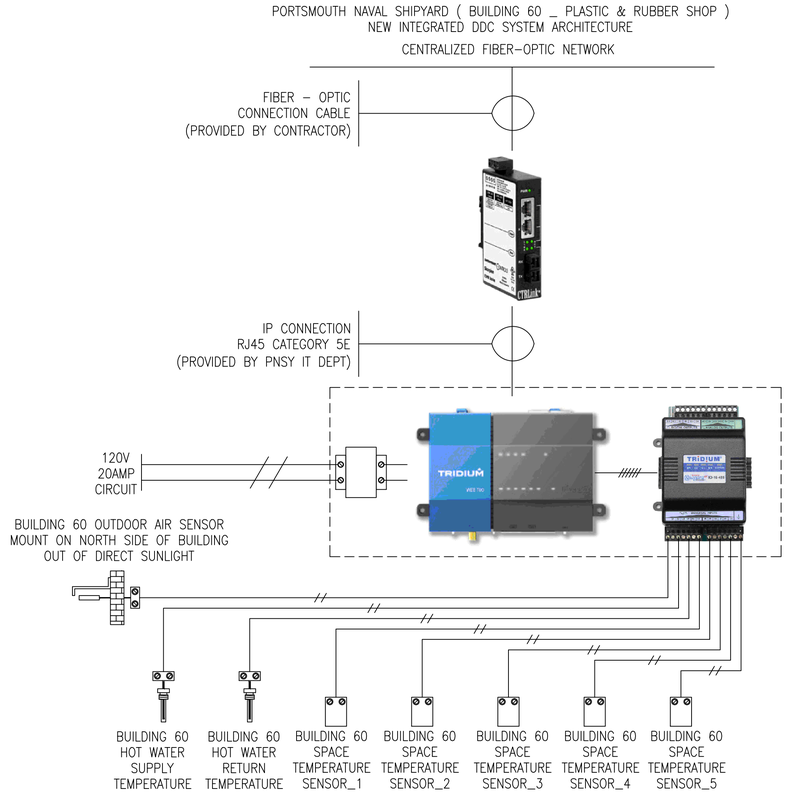
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703609

SHEET 156 OF 506

M1.0 | 60-15-344

DRAWFORM REVISION: 10 OCTOBER 2014



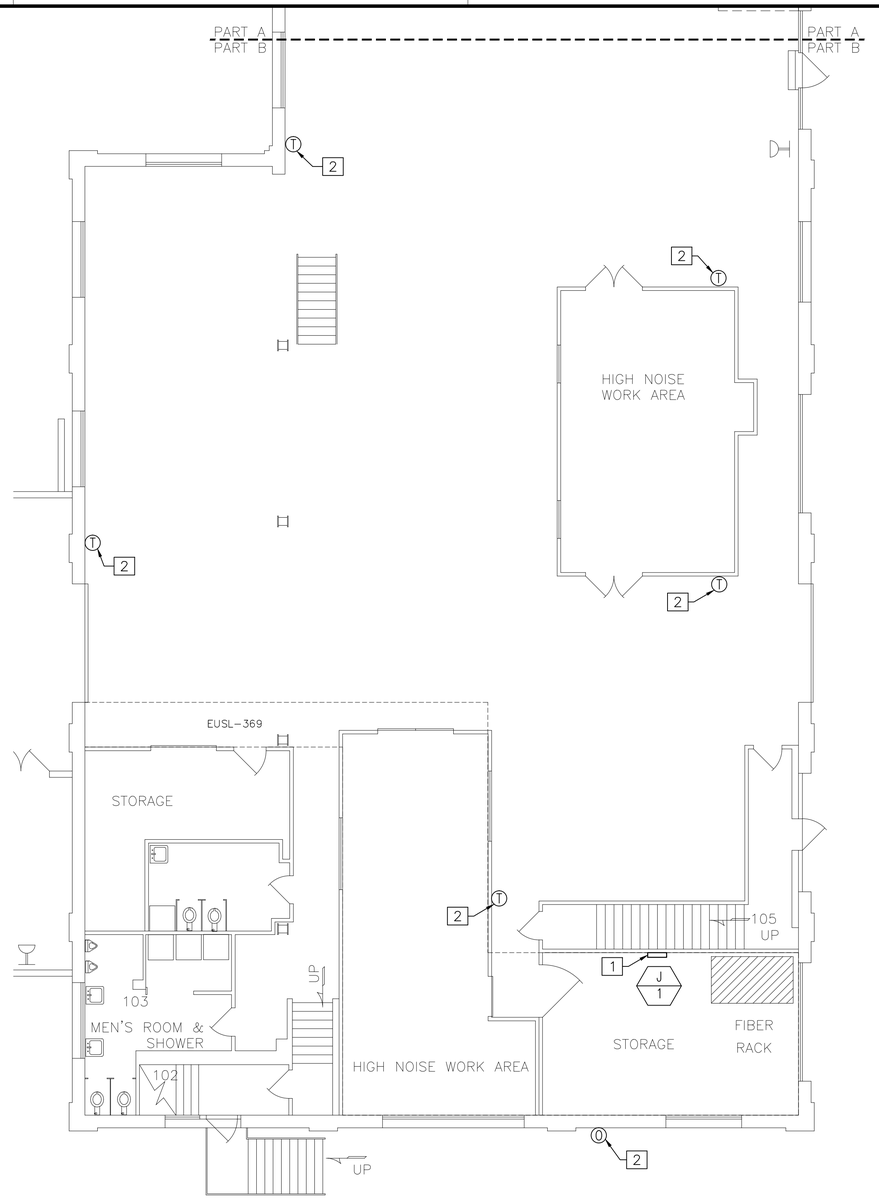

## PANEL MATERIAL

| ITEM NO | MODEL | DESCRIPTION | QTY |
|---|---|---|---|
| C1 | J-8000 | N4 WEB BASED GLOBAL NETWORK INTERFACE | 1 |
| | | APPROPRIATE DEVICE PACKS | 1 |
| C2 | IO-16-485 | REMOTE I/O MODULE | 1 |

## JACE BOX

| TAG NO. | LOCATION | ELECTRICAL | | DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD) | REMARKS |
|---|---|---|---|---|---|
| | | AMP | V | | |
| J-1 | SEE PLANS | 20 | 120 | JACE 8000 | SEE NOTES |

NOTES: 1. PROVIDE W/ MEMORY UPGRADE TO 4GB. 2. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE AND TRAINING FOR EACH PIECE OF EQUIPMENT.




BUILDING 60 HVAC FIRST FLOOR PARTIAL PLAN
1/8"=1'-0"

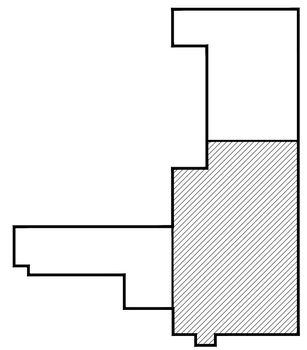
## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

## NEW WORK KEYNOTES

1. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF NEW DDC JACE BOX WITH NAVFAC.
2. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF TEMPERATURE SENSORS AND OUTDOOR AIR SENSOR WITH NAVFAC.

## KEY PLAN



## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24 scale feet

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
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NAVFAC

STATE OF NEW HAMPSHIRE DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER

SEAL

CSI ENGINEERING

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC DRW SV CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT - MAINE NAVAL SHIPYARD - PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 60 HVAC FIRST FLOOR PARTIAL PLAN, SCHEDULES & CONTROLS

EPROJECT NO.: 1350913

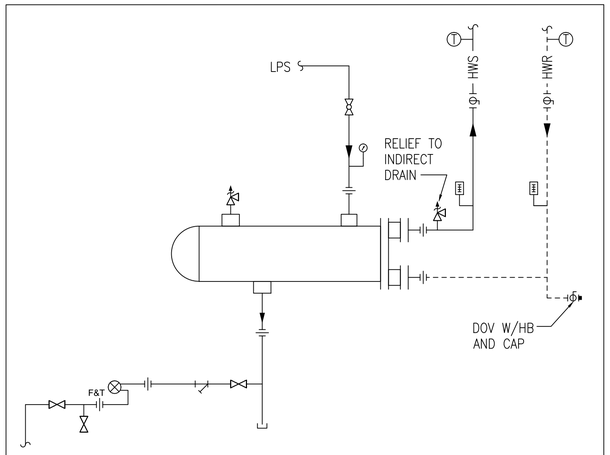
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703610

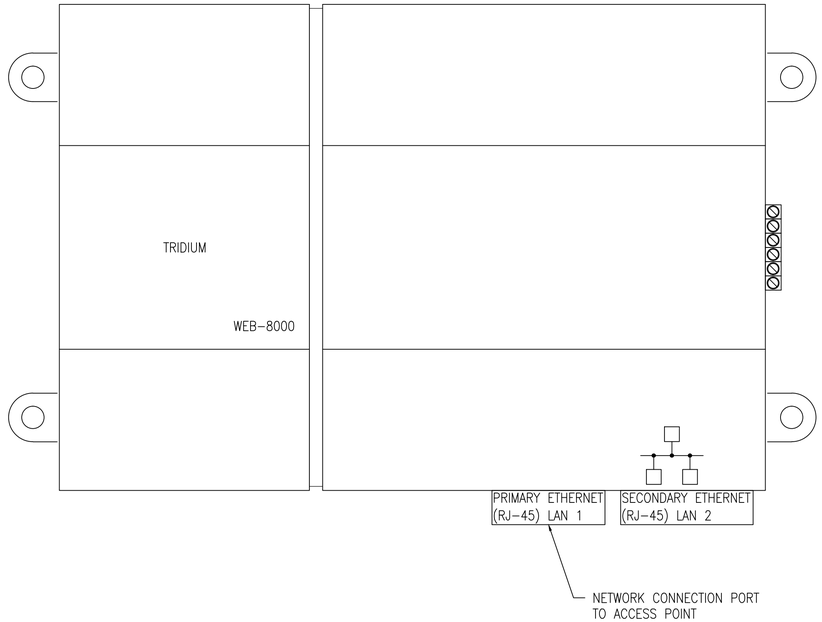
SHEET 157 OF 506

M2.0 60-15-345

DRAWFORM REVISION: 10 OCTOBER 2014




STEAM TO HOT WATER HEAT EXCHANGER




ETHERNET CONNECTION TO RF ACCESS POINT

| | | | | |
|---|---|---|---|---|
| | 4 | 100% SUBMISSION | 08/07/2015 | DM |
| | 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| | 2 | 90% SUBMISSION | 06/04/2015 | DM |
| | 1 | 80% SUBMISSION | 04/24/2015 | DM |
| | 0 | 35% SUBMISSION | 02/23/2015 | DM |
| | STM | DESCRIPTION | DATE | APPR |

NAVFAC

DAVID M. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE SEAL

THE ISSUANCE OF THESE PLANS DOES NOT AUTHORIZE THE USE OF ANY PATENTED PROCESS OR EQUIPMENT SHOWN OR SPECIFIED HEREIN. THE GOVERNMENT SHALL NOT BE RESPONSIBLE FOR ANY INFRINGEMENT OF PATENTED PROCESS OR EQUIPMENT RESULTING FROM THE USE OF THESE PLANS. THE GOVERNMENT SHALL NOT BE RESPONSIBLE FOR ANY CONSTRUCTION METHODS OR PROCEDURES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, REGULATIONS AND STANDARDS.

ENGINEERING
FIRE PROTECTION
CSI
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999 BROADWAY, SUITE 206
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215 WILTSHIRE AVE, STE 204
CHARLESTON, SC 29401
843.971.9924
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: JC | DRW: SV | CHK: DM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

FEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 60 HVAC CONTROLS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.: N40085-XX-C-XXXX

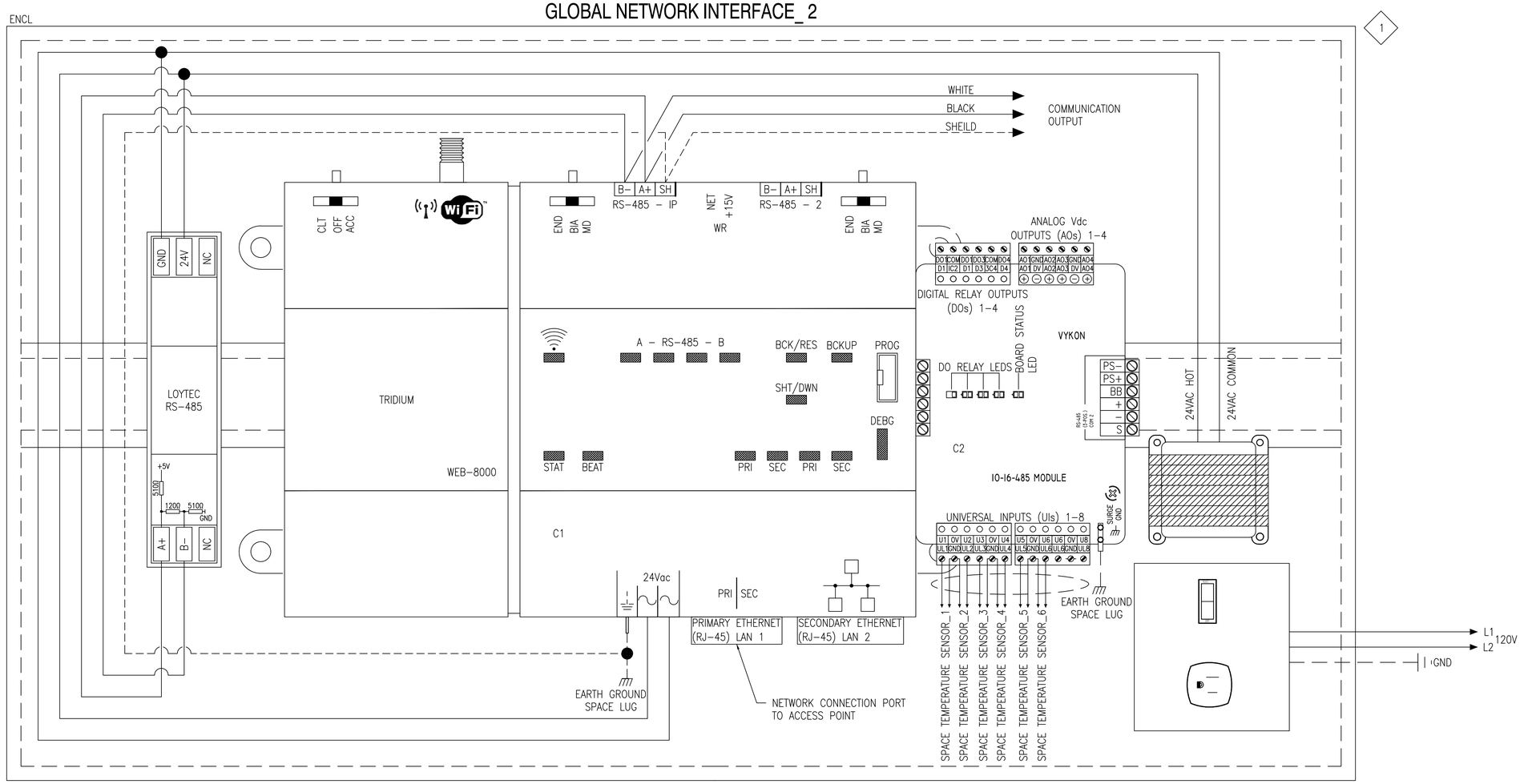
NAVFAC DRAWING NO.: 12703611

SHEET 158 OF 506

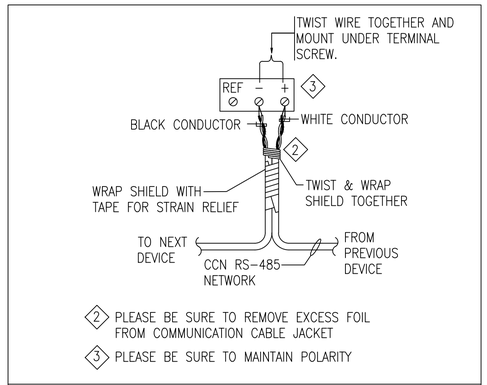
M3.0 | 60-15-346

DRAWFORM REVISION: 10 OCTOBER 2014

# GLOBAL NETWORK INTERFACE_ 2



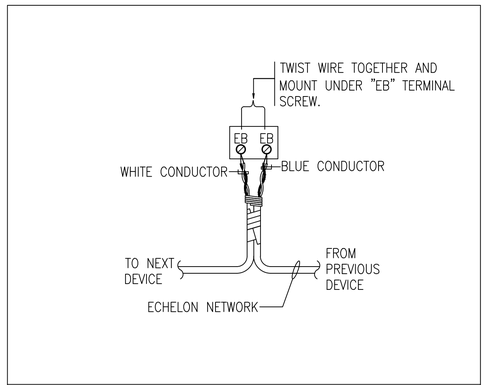

1 LOCATION OF CONTROLLER TO BE FIELD VERIFIED




2 PLEASE BE SURE TO REMOVE EXCESS FOIL FROM COMMUNICATION CABLE JACKET

3 PLEASE BE SURE TO MAINTAIN POLARITY

RS-485 BACNET MS/TP CONNECTION DETAIL




E-BUS CONNECTION DETAIL

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER

SEAL

CSI ENGINEERING

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC DRW SV CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 60 HVAC CONTROLS

EPROJECT NO.: 1350913

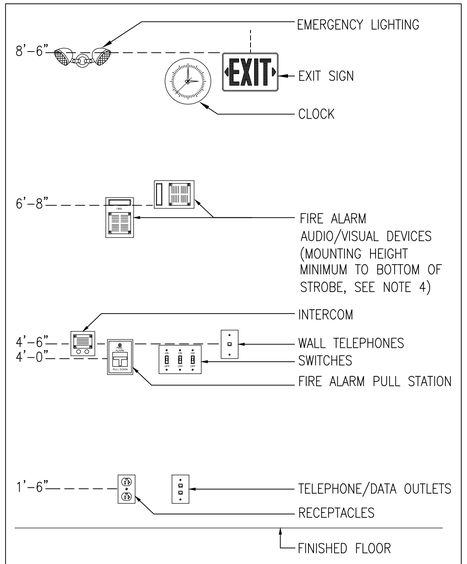
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703612

SHEET 159 OF 506

M3.1 60-15-347

DRAWFORM REVISION: 10 OCTOBER 2014




NOTES:

1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE EXCEPT EXIT SIGNS, CLOCKS, EMERGENCY LIGHTING AND FIRE ALARM A/V DEVICES.
2. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE.
3. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL UNLESS OTHERWISE NOTED.
4. STROBE HEIGHT ILLUSTRATED AT MAXIMUM HEIGHT. STROBE SHALL BE 80" AFF OR 6" BELOW CEILING, WHICHEVER IS LOWER.

## TYPICAL DEVICE MOUNTING HEIGHTS DETAIL

## ELECTRIC SYSTEM TAGS OR CALL OUT SYMBOLS

| SYMBOL | |
|---|---|
| # | NEW WORK NOTE TAG |

## MOTOR & CONTROLS LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| 30AS 2P | DISCONNECT SWITCH RATED 30AMP, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED<br>"2P" – INDICATES 2 POLE SINGLE PHASE DISCONNECT<br>"30AS" – INDICATES 30A SWITCH |
| JCB | DDC CONTROL JACE BOX. PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION. |

## ELECTRIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| A/AMP | AMPERE | LTG | LIGHTING |
| AC | ALTERNATING CURRENT | MCB | MAIN CIRCUIT BREAKER |
| ADA | AMERICAN WITH DISABILITIES ACT | MEC | MASSACHUSETTS ELECTRIC CODE |
| AF | AMPERE FRAME | MH | MANHOLE |
| AFF | ABOVE FINISHED FLOOR | MLO | MAIN LUGS ONLY |
| AFG | ABOVE FINISHED GRADE | MTD | MOUNTED |
| AIC | AMPERE INTERRUPTING CAPACITY | MTG | MOUNTING |
| AL | ALUMINUM | NEC | NATIONAL ELECTRIC CODE |
| AT | AMPERE TRIP | NTS | NOT TO SCALE |
| ATS | AUTOMATIC TRANSFER SWTICH | # | NUMBER |
| AWG | AMERICAN WIRE GAUGE | PVC | POLYVINYL CHLORIDE |
| C | CONDUIT | PWR | POWER |
| CATV | CABLE TELEVISION | RGS | RIGID GALVANIZED STEEL |
| CCTV | CLOSED CIRCUIT TELEVISION | SWBD | SWITCHBOARD |
| CB | CIRCUIT BREAKER | TEL | TELEPHONE |
| CKT | CIRCUIT | TERM | TERMINAL |
| ℄ | CENTERLINE | TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSION |
| DWG | DRAWING | TSP | TWISTED SHIELDED PAIR |
| EC | ELECTRICAL CONTRACTOR | TYP | TYPICAL |
| EMT | ELECTRICAL METALLIC TUBING | UNO | UNLESS OTHERWISE NOTED |
| FLMT | FLEXIBLE LIQUID TIGHT METALLIC TUBING | UPS | UNINTERRUPTIBLE POWER SUPPLY |
| GFI | GROUND FAULT INTERRUPTING | UTP | UNSHIELDED TWISTED PAIR |
| GND | GROUND | V | VOLT |
| HH | HANDHOLE | VA | VOLT AMPERE |
| HP | HORSEPOWER | VFD | VARIABLE FREQUENCY DRIVE |
| HVAC | HEATING, VENTILATION AND AIR CONDITIONING | W | WATT |
| HZ | HERTZ | WP | WEATHERPROOF |
| IG | ISOLATED GROUND | | |
| KVA | KILOVOLT – AMPERE | | |
| KW | KILOWATT | | |

## POWER DISTRIBUTION LEGEND

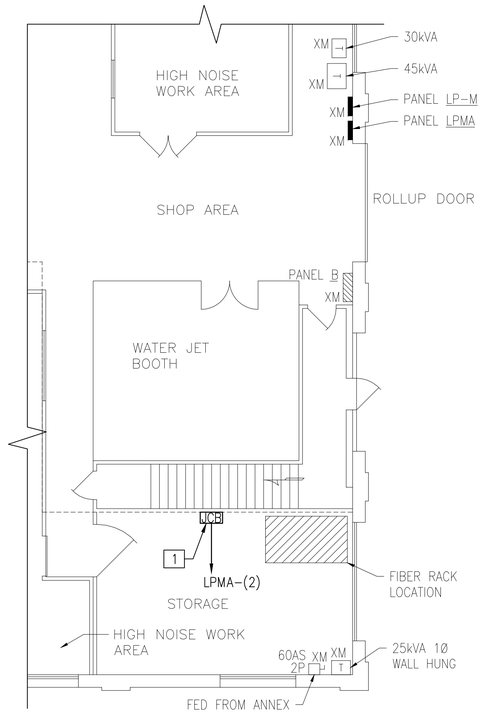
| SYMBOL | DESCRIPTION |
|---|---|
| ▬ | 208Y/120 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS |
| ▨ | 480Y/277 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS |
| T | DRY TYPE TRANSFORMER |

## BRANCH CIRCUIT & FEEDER LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| PP1-(X) → | BRANCH CIRCUIT HOME RUN. TYPICAL 2#12 & 1#12G IN ¾"C MINIMUM. PP1-(1) INDICATES PANEL AND CIRCUIT DESIGNATION FROM WHICH HOME RUN SHALL ORIGINATE. EACH CIRCUIT SHALL BE 20A-1P (20AMP SINGLE POLE) UNLESS NOTED OTHERWISE. |

## EXISTING EQUIPMENT LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| XM | EXISTING EQUIPMENT TO REMAIN |
| □ | EXISTING EQUIPMENT TO REMAIN FOR INFORMATION ONLY – (XM)<br>INDICATED BY SYMBOL WITH LIGHT OUT OF FUNCTION LINE TYPE |




## BUILDING 60 ELECTRICAL FIRST FLOOR PARTIAL PLAN - FIBER RACK LOCATION

1/8" = 1'-0"

PLAN NORTH

## PANELBOARD SCHEDULE

PANEL: LPMA — VOLTS: 120/ 208 — NEW/EXISTING.: EXISTING
MAIN: MLO — BUS AMPS: 100A — MOUNT.: SURFACE
PH/WIRE: 3ø/4W — AIC: 10K — LOC: BLDG 60 BASEMENT

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | 1 | .02 | JACE BOX | 20/1 | 2 |
| 3 | 60/3 | SPARE | 0 | – | – | 0 | VALVE ROOM LIGHTS | 20/1 | 4 |
| 5 | | | | | – | 0 | VALVE ROOM GFI | 20/1 | 6 |
| 7 | 20/1 | LIGHTS/WATER CUTTING | 0 | – | – | 0 | SPARE | 20/1 | 8 |
| 9 | 20/1 | WATER CUTTING/REC. | 0 | GFI | – | 0 | EXTERIOR WALL PACK LIGHTS | 20/2 | 10 |
| 11 | | SPACE | | – | | | | | 12 |
| 13 | 20/1 | WATER CUTTING/REC. | 0 | GFI | – | 0 | SPARE | 20/2 | 14 |
| 15 | | | | | | | | | 16 |
| 17 | 20/3 | SPARE | 0 | – | – | 0 | BOOTH BR LTS & MEN HEAT | 20/1 | 18 |
| 19 | | | | | – | 0 | WOMEN BATH REC. 1ST FLR | 20/1 | 20 |
| 21 | 50/2 | SPARE | 0 | – | – | 0 | MEN BATH REC. 1ST FLR | 20/1 | 22 |
| 23 | | | | | – | | SPACE | | 24 |
| 25 | | SPACE | | – | – | | SPACE | | 26 |
| 27 | | SPACE | | – | – | | SPACE | | 28 |
| 29 | | SPACE | | – | – | | SPACE | | 30 |
| | | | 0.00 | | | 0.02 | TOTAL CONNECTED kVA: | 0.02 | |
| | | | | | | | TOTAL CONNECTED AMPERES: | 0.06 | |

NOTES:
1. VERIFY AND REUSE EXISTING CIRCUIT BREAKER AS INDICATED FOR NEW LOAD.
2. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

## SCHEDULE OF DRAWINGS

| DWG# | DESCRIPTION |
|---|---|
| E1.0 | BUILDING 60 ELECTRICAL LEGEND, FIRST FLOOR PARTIAL PLAN & PANELBOARD SCHEDULE |

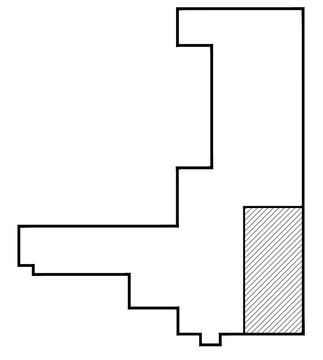
## GENERAL SHEET NOTES

1. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY. INTERCONNECTING BRANCH WIRING SHALL BE SIZED EQUAL TO THE HOMERUN UNLESS NOTED OTHERWISE.
2. VOLTAGE DROP HAS BEEN CONSIDERED IN THE DESIGN OF ALL BRANCH CIRCUITRY AND FEEDER SIZES BASED UPON THE ILLUSTRATED EQUIPMENT LAYOUTS AND SHORTEST CONDUCTOR/RASEWAY ROUTING. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR DEVIATIONS TAKEN THAT WILL INCREASE CONDUCTOR/RACEWAY ROUTING LENGTHS. BRANCH CIRCUITS LONGER THAN 75' FOR 120V FROM PANEL TO LAST OUTLET SHALL BE INCREASED A MINIMUM OF ONE SIZE ABOVE THAT SPECIFIED TO LIMIT VOLTAGE DROP TO LESS THAN 3%. FEEDERS SHALL FOLLOW SIMILAR GUIDELINES AND BE LIMITED TO 2% DROP.
3. THE ELECTRICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE ELECTRICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.
4. POWER BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. POWER BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
5. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING POWER DEVICES TO REMAIN.
6. FINAL LOW-VOLTAGE CONNECTIONS TO BE MADE BY CONTROLS CONTRACTOR. FIELD COORDINATE EXACT LOCATION OF EQUIPMENT WITH CONTROLS CONTRACTOR AND NAVFAC.
7. SEE PWD-ME DRAWING NUMBERS;
   - 43-15-67 FOR TITLE SHEET
   - 43-15-68 FOR LIST OF DRAWINGS
   - 43-15-69 FOR GENERAL NOTES & LEGENDS
   - 43-15-72 FOR CHASE AND SOFFIT DETAILS
   - 43-15-74 FOR STRUCTURAL NOTES AND SUPPORTS

## NEW WORK KEYNOTES

1. NEW DDC JACE BOX PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.

## KEY PLAN



## GRAPHIC SCALE

1/8" = 1' — 8 4 0 8 16 24 — scale — feet

CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

CHARLES E. MACE No. 13078 LICENSED PROFESSIONAL ENGINEER — STATE OF NEW HAMPSHIRE — SEAL

CSI ENGINEERING — FIRE PROTECTION — 999 Broadway, Suite 226, Saugus, MA 01906, 781-233-2600 — 215 Southern Ave, Ste 204, Tempe, AZ 85282, 623-379-8214

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: TM | DRW: TM | CHK: JO

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

FEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT ~ MAINE
PORTSMOUTH NAVAL SHIPYARD
NAVAL FACILITIES ENGINEERING COMMAND ~ NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 60 ELECTRICAL LEGEND, FIRST FLOOR PARTIAL PLAN & PANELBOARD SCHEDULE

EPROJECT NO.: 1350913

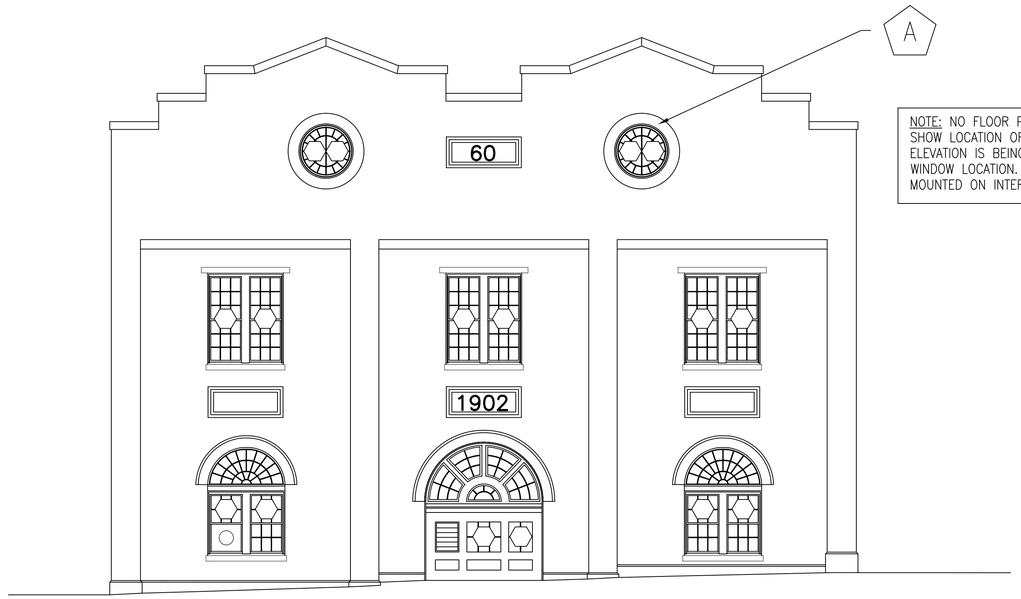
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703613

SHEET 160 OF 506

E1.0 | 60-15-348

DRAWFORM REVISION: 10 OCTOBER 2014




NOTE: NO FLOOR PLANS WERE AVAILABLE TO SHOW LOCATION OF ANTENNA. EXTERIOR ELEVATION IS BEING USED TO IDENTIFY THE WINDOW LOCATION. ANTENNA IS TO BE MOUNTED ON INTERIOR OF BUILDING.

## B60 ANTENNA LOCATION - SOUTH ELEVATION

1/8" = 1'-0"

PLAN NORTH

| EQUIPMENT | WIRELESS STANDARD | ANTENNA | FREQUENCY | DIMENSIONS | WEIGHT | INPUT POWER | MANUFACTURER | DESIGN BASED ON MODEL |
|---|---|---|---|---|---|---|---|---|
| WIRELESS ACCESS POINT | 802.11n | INTEGRATED | 2.4 GHZ & 5.8 GHZ | 8.7 X 8.7 X 1.84 INCHES | 1.9 LBS | AIR-PWRINJ4 | CISCO AIRONET | AIR-CAP1602I-x-K9 |

NOTE: PROVIDE POWER INJECTOR FOR POWER OVER ETHERNET TO WIRELESS ACCESSS POINT. DESIGN BASED ON CISCO MODEL AIR-PWRINJ4.

## GENERAL SHEET NOTES

1. FASTENERS SHALL BE ATTACHED TO MORTAR IN MASONRY BUILDINGS, AVOIDING DAMAGE TO THE BRICK WHEREVER PRACTICAL.
2. EXTERIOR CONDUIT SHALL BE INSTALLED IN SHADOW-LINES OR ADJACENT TO EXISTING CONDUIT; CONDUIT COLOR TO BE COORDINATED WITH CULTURAL RESOURCE MANAGER AND A-E.
3. REFER TO MECHANICAL DRAWINGS FOR JACE LOCATION AND INFORMATION.
4. EXISTING ROOF AND WALL PENETRATIONS SHALL BE USED WHEREVER PRACTICAL.
5. INTERIOR, WINDOW-MOUNTED ACCESS POINTS SHALL BE MOUNTED IN AN OBSCURE LOCATION THAT IS LEAST VISIBLE FROM INTERIOR & EXTERIOR.
6. ACCESS POINT MOUNTS SHALL NOT OBSTRUCT EGRESS, EXISTING WALKWAYS, STAIRWELLS, MECHANICAL EQUIPMENT CLEARANCES, OR OTHER APPURTANANCES.
7. UNLESS OTHERWISE NOTED, ROOFTOP ACCESS POINTS SHALL BE CENTRALIZED ON THE ROOF TO MINIMIZE VISIBILITY FROM GROUND LEVEL.
8. CONTRACTOR TO FIELD-VERIFY COMMUNICATION ACCESS POINTS ARE ALIGNED AND LINE OF SIGHT IS UNOBSTRUCTED.
9. IF A FIELD CHANGE IS REQUIRED, CONTRACTOR SHALL COORDINATE WITH CULTURAL RESOURCE MANAGER AND A-E PRIOR TO RELOCATING EQUIPMENT.
10. ANY PROPOSED CHANGES (PENETRATIONS, CONDUIT, ETC.) NOT ALREADY INDICATED ON DRAWINGS MADE TO HISTORIC BUILDINGS OR BUILDINGS LOCATED IN HISTORIC DISTRICT MUST BE REVIEWED AND APPROVED BY SHPO THROUGH NAVFAC CULTURAL RESOURCES DEPARTMENT PRIOR TO INSTALLATION.
11. CONTRACTOR TO VERIFY RF SIGNAL STRENGTH AND CONNECTIVITY FROM/TO ALL ACCESS POINTS.
12. SEE PWD-ME DRAWING NUMBERS;
    - 12.1. 43-15-67 FOR TITLE SHEET
    - 12.2. 43-15-68 FOR LIST OF DRAWINGS
    - 12.3. 43-15-69 FOR GENERAL NOTES AND LEGEND
    - 12.4. 43-15-72 FOR CHASE AND SOFFIT DETAILS
    - 12.5. 43-15-74 FOR STRUCTURAL NOTES AND SUPPORT

## NEW WORK KEYNOTES

A

1. CONTRACTOR SHALL MOUNT RF ACCESS POINT IN SOUTH WALL ATTIC WINDOW INTERIOR.
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT THROUGH SOUTH WINDOW TO B086A ACCESS POINT.
3. CAT5 CABLE SHALL BE ROUTED ALONG EXISTING PATH IN ATTIC AND DOWN TO JACE.

## GRAPHIC SCALE

1/8" = 1' (8 4 0 8 16 24; scale / feet)

CHECK GRAPHIC SCALE BEFORE USING

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 0 | 90% SUBMISSION | 07/15/15 | DM |
| | 100% SUBMISSION | 07/31/15 | |

NAVFAC

STATE OF NEW HAMPSHIRE — KEITH CHRISTOPHER — No. 13414 — LICENSED PROFESSIONAL ENGINEER

SEAL

aecom architects|engineers
13 WATER ST NEWMARKET NH
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A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES VSL | DRW SRR | CHK KLC

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

# B060 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.: N40085-XX-C-XXXX

NAVFAC DRAWING NO.: 12703614

SHEET 161 OF 506

ET1.0 | 60-15-349

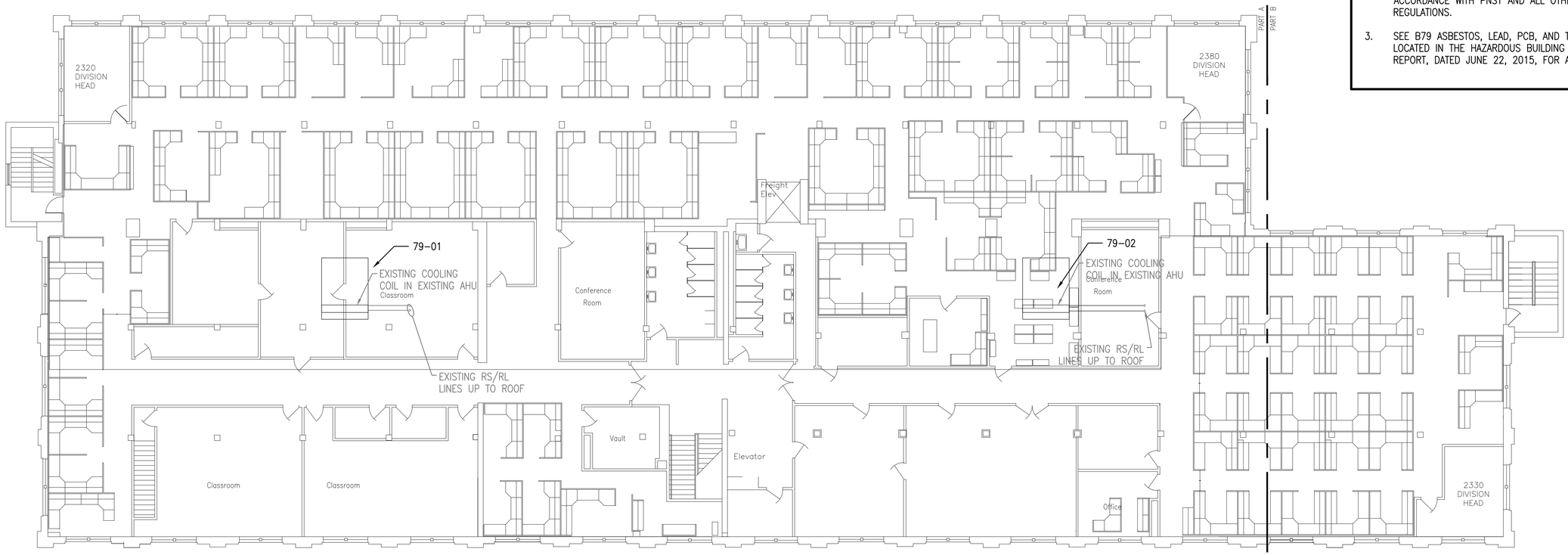
DRAWFORM REVISION: 10 OCTOBER 2014

# GENERAL SHEET NOTES

1. ALL PACM (PRESUMED ASBESTOS CONTAINING MATERIAL), LBP (LEAD BASED PAINT), PCB, AND OTHER HAZARDOUS BUILDING MATERIALS MAY NOT BE IDENTIFIED IN THIS SURVEY, PARTICULARLY THOSE HIDDEN IN WALLS, CEILINGS, FLOORS, ETC. AND IN AREAS DESCRIBED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, WHICH WERE INACCESSIBLE DURING THE SURVEY. ASSESSMENT EFFORTS DID INCLUDE, TO THE EXTENT FEASIBLE, ACCESS TO INTERIOR AND EXTERIOR OF THE STRUCTURE. HOWEVER, THE ABSENCE OF ALL PACM, LBP, PCB, AND OTHER HAZARDOUS BUILDING MATERIALS IN HIDDEN OR INACCESSIBLE PORTIONS CANNOT BE DEFINITIVELY ENSURED.

2. RENOVATION AND/OR DEMOLITION ACTIVITIES SHOULD BE MONITORED BY PERSONNEL CAPABLE OF IDENTIFYING PACM, LBP, PCB AND OTHER HAZARDOUS BUILDING MATERIALS. IF PACM, LBP, PCB OR OTHER HAZARDOUS BUILDING MATERIALS ARE ENCOUNTERED, THESE MATERIALS SHOULD BE BULK SAMPLED BY A LICENSED INSPECTOR AND DISPOSED OF IN ACCORDANCE WITH PNSY AND ALL OTHER APPLICABLE REGULATIONS.

3. SEE B79 ASBESTOS, LEAD, PCB, AND TCLP INVENTORY TABLES LOCATED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, DATED JUNE 22, 2015, FOR ADDITIONAL INFORMATION.




PLAN NORTH

## B79 FIRST FLOOR HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 3/32" = 1'

## HAZARDOUS MATERIAL SAMPLING SUMMARY

| SAMPLE ID | ACM | LBP |
|---|---|---|
| 79-01 | ND | NS |
| 79-02 | ND | NS |

ACM = ASBESTOS CONTAINING MATERIALS
LBP = LEAD BASED PAINT
<RL = LESS THAN REPORTING LIMIT
ND = NONE DETECTED
NS = NOT SAMPLED
H = EXCEEDS REGULATORY STANDARDS FOR HAZARDOUS CONCENTRATION

NOTE:
REFER TO HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT DATED JUNE 22, 2015 FOR COMPLETE SAMPLING INFORMATION AND DATA.

## GRAPHIC SCALE

3/32" = 1' (scale)
0 3' 6' 12' 18' 30' (feet)
CHECK GRAPHIC SCALE BEFORE USING

| NO. | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
| 1 | 90% SUBMISSION | 06/05/2015 | BLM |

NAVFAC

STATE OF MAINE
Bradlee Mezquita
9410
LICENSED PROFESSIONAL ENGINEER
SEAL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(603) 433-8818
www.tighebond.com
A/E INFO


APPROVED
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ACTIVITY
SATISFACTORY TO DATE

| | | | |
|---|---|---|---|
| DES | A/E | DRW | REP |
| CHK | BLM | | |
| PM/DM | PETER STOCKLESS | | |
| BRANCH MANAGER | BRUCE LITALIEN | | |
| FEAD/PM&E | AMIN BAHROUR PM&E | | |
| FIRE PROTECTION | X | | |

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PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

# B79 HAZARDOUS MATERIAL SAMPLING PLAN

| | |
|---|---|
| EPROJECT NO.: | 1350913 |
| CONSTR. CONTR. NO. | N40085-XX-C-XXXX |
| NAVFAC DRAWING NO. | 12703615 |
| SHEET | 162 OF 506 |
| | H1.0 79-15-569 |

DRAWFORM REVISION: 10 OCTOBER 2014

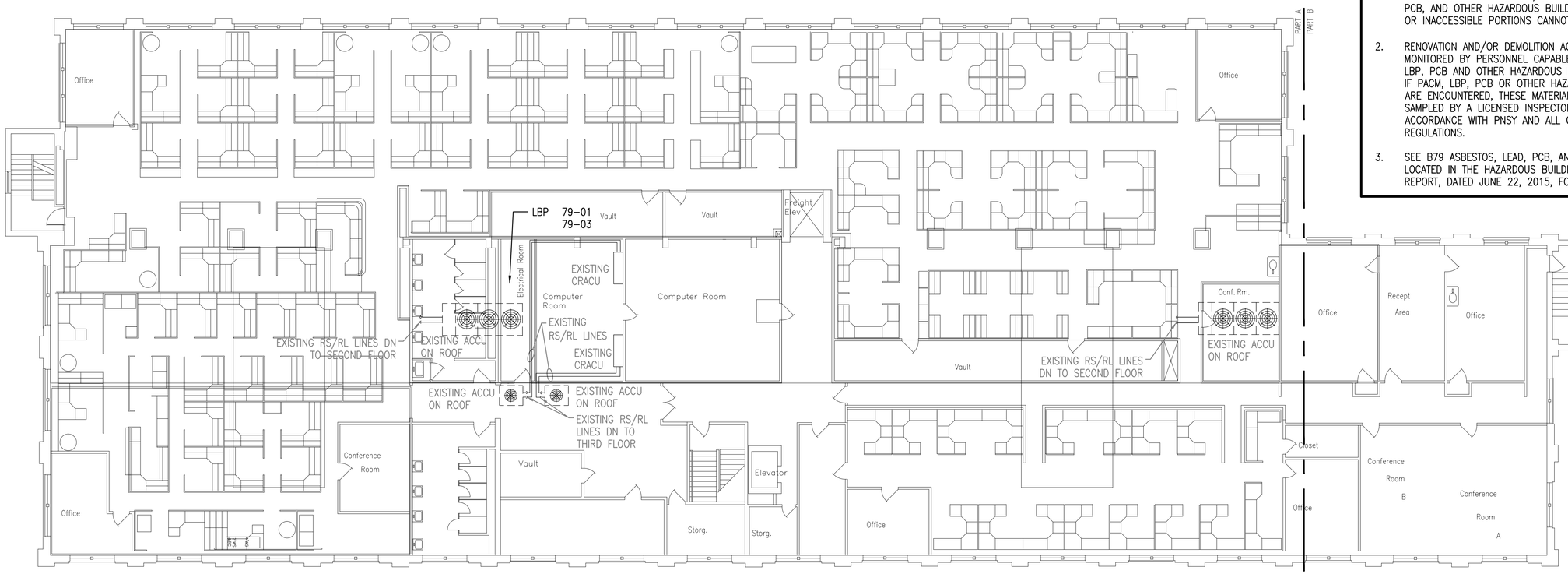
FILE NAME: J:\A\A1066 AEC Subconsulting Support\Haz Mats\DWG\A1066_2_HZMT_R22.dwg LAYOUT NAME: B79-H1.0 PLOTTED: Friday, August 07, 2015 - 2:35pm USER: REP

# GENERAL SHEET NOTES

1. ALL PACM (PRESUMED ASBESTOS CONTAINING MATERIAL), LBP (LEAD BASED PAINT), PCB, AND OTHER HAZARDOUS BUILDING MATERIALS MAY NOT BE IDENTIFIED IN THIS SURVEY, PARTICULARLY THOSE HIDDEN IN WALLS, CEILINGS, FLOORS, ETC. AND IN AREAS DESCRIBED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, WHICH WERE INACCESSIBLE DURING THE SURVEY. ASSESSMENT EFFORTS DID INCLUDE, TO THE EXTENT FEASIBLE, ACCESS TO INTERIOR AND EXTERIOR OF THE STRUCTURE. HOWEVER, THE ABSENCE OF ALL PACM, LBP, PCB, AND OTHER HAZARDOUS BUILDING MATERIALS IN HIDDEN OR INACCESSIBLE PORTIONS CANNOT BE DEFINITIVELY ENSURED.

2. RENOVATION AND/OR DEMOLITION ACTIVITIES SHOULD BE MONITORED BY PERSONNEL CAPABLE OF IDENTIFYING PACM, LBP, PCB AND OTHER HAZARDOUS BUILDING MATERIALS. IF PACM, LBP, PCB OR OTHER HAZARDOUS BUILDING MATERIALS ARE ENCOUNTERED, THESE MATERIALS SHOULD BE BULK SAMPLED BY A LICENSED INSPECTOR AND DISPOSED OF IN ACCORDANCE WITH PNSY AND ALL OTHER APPLICABLE REGULATIONS.

3. SEE B79 ASBESTOS, LEAD, PCB, AND TCLP INVENTORY TABLES LOCATED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, DATED JUNE 22, 2015, FOR ADDITIONAL INFORMATION.




## HAZARDOUS MATERIAL SAMPLING SUMMARY

| SAMPLE ID | ACM | LBP |
|---|---|---|
| 79-03 | ND | NS |
| 79-04 | ND | NS |
| 79-05 | ND | NS |
| 79-06 | ND | NS |
| 79-07 | ND | NS |
| 79-08 | ND | NS |
| 79-09 | ND | NS |
| 79-10 | ND | NS |
| 79-11 | ND | NS |
| 79-12 | ND | NS |
| LBP-79-01 | NS | 0.25 |

ACM = ASBESTOS CONTAINING MATERIALS
LBP = LEAD BASED PAINT
<RL = LESS THAN REPORTING LIMIT
ND = NONE DETECTEDNS = NOT SAMPLED
H = EXCEEDS REGULATORY STANDARDS FOR HAZARDOUS CONCENTRATION

NOTE:
REFER TO HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT DATED JUNE 22, 2015 FOR COMPLETE SAMPLING INFORMATION AND DATA.

## B79 SECOND FLOOR HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 3/32" = 1'

PLAN NORTH

SAMPLES COLLECTED NEAR ROOFTOP ACCU'S:

GREEN ROOFING CEMENT: 79-04
79-05
79-06
BLACK ROOFING CEMENT: 79-07
79-08
79-09
SHINGLING: 79-10
79-11
79-12

ASBESTOS PIPING WAS OBSERVED IN THE SPACE BETWEEN THE THIRD FLOOR AND ROOF. THE PIPING ISN'T ASSOCIATED WITH THIS PROJECT, BUT WORKERS IN THE AREA SHOULD BE NOTIFIED OF

## GRAPHIC SCALE

3/32" = 1'
0 3' 6' 12' 18' 30'
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
| 1 | 90% SUBMISSION | 06/05/2015 | BLM |

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A/E INFO

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FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES A/E DRW REP CHK BLM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
LEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

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NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

B79 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703616
SHEET 163 OF 506
H1.1 79-15-570

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: d:\AA\1066 AEC Subconsulting Support\HazMats\DWG\A1066_2_H2MF_R22.dwg LAYOUT NAME: B79-H1.1 PLOTTED: Friday, August 07, 2015 - 2:35pm USER: REP

# HVAC ABBREVIATIONS

| | | | |
|---|---|---|---|
| °F | DEGREES FAHRENHEIT | ID | INSIDE DIAMETER |
| °C | DEGREES CELSIUS | IN | INCHES |
| Ø | DIAMETER | INSUL | INSULATION |
| ACV | AUTOMATIC CONTROL VALVE | KW | KILOWATT |
| AD | ACCESS DOOR | KVA | KILOVOLT AMPERE |
| ADJ | ADJUSTABLE | L | LENGTH |
| ADDL | ADDITIONAL | LB | POUND |
| AFF | ABOVE FINISHED FLOOR | LF | LINEAR FEET |
| AFG | ABOVE FINISHED GRADE | LVG | LEAVING |
| ALT | ALTERNATE | M | ONE THOUSAND |
| AP | ACCESS PANEL | MAX | MAXIMUM |
| ARCH | ARCHITECT | MBH | THOUSAND BRITISH THERMAL UNITS PER HOUR |
| ATC | AUTOMATIC TEMPERATURE CONTROL | MCA | MINIMUM CIRCUIT AMPS |
| AS | AIR SEPARATOR | MCC | MOTOR CONTROL CENTER |
| AVG | AVERAGE | MECH | MECHANICAL |
| BAS | BUILDING AUTOMATION SYSTEM | MEZZ | MEZZANINE |
| BFF | BELOW FINISHED FLOOR | MFR | MANUFACTURER |
| BHP | BRAKE HORSEPOWER | MIN | MINIMUM |
| BLDG | BUILDING | MTD | MOUNTED |
| BLR | BOILER | MU | MAKEUP WATER |
| BOD | BOTTOM OF DUCT | N/A | NOT APPLICABLE |
| BOP | BOTTOM OF PIPE | NC | NORMALLY CLOSED |
| BSMY | BASEMENT | NC | NOISE CRITERIA |
| BTU | BRITISH THERMAL UNIT | NIC | NOT IN CONTRACT |
| BTUH | BRITISH THERMAL UNIT PER HOUR | NO | NORMALLY OPEN |
| C | CONVECTOR | NO. | NUMBER |
| CF | CEILING FAN | NOM | NOMINAL |
| CL | CENTERLINE | NTS | NOT TO SCALE |
| CLG | CEILING | OB | OCTAVE BAND |
| CO | CLEAN-OUT | OC | ON CENTER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COMP | COMPRESSOR | ODP | OPEN DRIP PROOF |
| CONC | CONCRETE | OFCI | OWNER FURNISHED CONTRACTOR INSTALLED |
| CONN | CONNECTION | OFOI | OWNER FURNISHED OWNER INSTALLED |
| CONTR | CONTRACTOR | OV | OUTLET VELOCITY |
| CORR | CORRIDOR | PCF | POUNDS PER CUBIC FOOT |
| CUF | CUBIC FEET | PD | PRESSURE DROP |
| CUH | CABINET UNIT HEATER | PH | PHASE |
| CYL | CYLINDER | PLMB | PLUMBING |
| D | DRAIN | POS | PROVIDED BY OTHER SECTION(S) |
| DB | DRY BULB TEMPERATURE | PRESS | PRESSURE |
| DDC | DIRECT DIGITAL CONTROL | PRIM | PRIMARY |
| DDCFP | DIRECT DIGITAL CONTROL FIELD PANEL | PSIA | POUNDS PER SQUARE INCH ABSOLUTE |
| DIA | DIAMETER | PSID | POUNDS PER SQUARE INCH DIFFERENTIAL |
| DIM | DIMENSION | PSIG | POUNDS PER SQUARE INCH GAUGE |
| DN | DOWN | PVC | POLYVINYL CHLORIDE |
| DWG | DRAWING | REP | REPRESENTATIVE |
| EA | EACH | RET | RETURN |
| EAT | ENTERING AIR TEMPERATURE | REQD | REQUIRED |
| EFF | EFFICIENCY | REQS | REQUIREMENTS |
| ECUH | ELECTRIC CABINET UNIT HEATER | RH | RELATIVE HUMIDITY |
| ELEC | ELECTRICAL | RM | ROOM |
| ELEV | ELEVATION | RPM | REVOLUTIONS PER MINUTE |
| EMER | EMERGENCY | SCH | SCHEDULE |
| ENT | ENTERING | SOV | SOLENOID OPERATED VALVE |
| EQUIP | EQUIPMENT | SPECS | SPECIFICATIONS |
| EXH | EXHAUST | SQ | SQUARE |
| EXP | EXPANSION | SQFT | SQUARE FEET |
| FTR | FINNED TUBE RADIATION | SS | STAINLESS STEEL |
| FCV | FLOW CONTROL VALVE | STD | STANDARD |
| FG | FIBERGLASS | STDBY | STANDBY |
| FLEX | FLEXIBLE | STL | STEEL |
| FLR | FLOOR | SUCT | SUCTION |
| FLRDR | FLOOR DRAIN | SUP | SUPPLY |
| FP | FIRE PROTECTION | TA | THROW-AWAY |
| FPM | FEET PER MINUTE | TAV | THERMOSTATIC AIR VENT |
| FT | FEET | TEFC | TOTALLY ENCLOSED FAN COOLED |
| FT/SEC | FEET PER SECOND | TEL | TELEPHONE |
| FURN | FURNISHED | TEMP | TEMPERATURE |
| FVNR | FULL VOLTAGE NON-REVERSING | TOD | TOP OF DUCT |
| GA | GAUGE | TOP | TOP OF PIPE |
| GAL | GALLONS | TYP | TYPICAL |
| GALV | GALVANIZED | UH | UNIT HEATER |
| GC | GENERAL CONTRACTOR | V | VENT |
| GND | GROUND | VEL | VELOCITY |
| GPH | GALLONS PER HOUR | VERT | VERTICAL |
| GPM | GALLONS PER MINUTE | VFD | VARIABLE FREQUENCY DRIVE |
| GRD | GRADE (GROUND LEVEL) | VTR | VENT THROUGH ROOF |
| GWB | GYPSUM WALL BOARD | W | WIDTH |
| H | HEIGHT | W/ | WITH |
| HD | HEAD | W/O | WITHOUT |
| HP | HORSEPOWER | WB | WET BULB TEMPERATURE |
| HR | HOUR | WF | WIDE FLANGE |
| HZ | HERTZ | WG | WATER GAUGE |
| | | WRT | WITH RESPECT TO |

# PIPING LEGEND

- RISE (SINGLE LINE - PLAN VIEW)
- DROP (SINGLE LINE - PLAN VIEW)
- TOP TAKEOFF
- BOTTOM TAKEOFF
- PIPE BREAK (SINGLE LINE)

# FLOW DIAGRAM & CONTROL DIAGRAM EQUIP. SYMBOLS

- FILTER BANK
- HEATING COIL
- COOLING COIL
- PARALLEL BLADE DAMPER W/ MODULATING ACTUATOR
- BACKDRAFT DAMPER
- CENTRIFUGAL FAN
- INLINE CENTRIFUGAL FAN
- OPPOSED BLADE DAMPER W/ TWO POSITION ACTUATOR
- OPPOSED BLADE DAMPER W/ MODULATING ACTUATOR
- PARALLEL BLADE DAMPER W/ TWO POSITION ACTUATOR

# HVAC SYSTEM TAGS

- CC / 1 — COOLING COIL
- ACCU / 1 — AIR COOLED CONDENSING UNIT
- J / 1 — JACE BOX

# CALL OUT SYMBOLS

- T — THERMOSTAT
- CONNECT TO EXISTING
- REFER TO DRAWINGS ( ) FOR CONTINUATION
- SYMBOL DESIGNATES ASSOCIATED SYSTEM OR SERVICE (ie LPS)
- DIFFUSER, GRILLE, REGISTER LETTER DESIGNATION (See Schedule for ATD type)
- SA-2 / 200 — DESIGN CFM

# EQUIPMENT TAG SYMBOLS & ABBREVIATIONS

EQUIPMENT NOT REQUIRING ELECTRIC SERVICE → TAG NO / TAG DATA DATA → SEE SCHEDULE FOR PERFORMANCE REQUIREMENTS ← TAG NO / TAG DATA DATA ← EQUIPMENT REQUIRING ELECTRIC SERVICE

NOTE:REFER TO SCHEDULES FOR DEFINITION OF EQUIPMENT SPECIFIC DATA LISTED WITHIN TAG BLOCKS

# AIR SYSTEM SPECIFIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| AC | AIR CONDITIONING | LVDR | LOUVERED DOOR |
| ACD | AUTOMATIC CONTROL DAMPER | OA | OUTSIDE AIR |
| ACU | AIR CONDITIONING UNIT | OAI | OUTSIDE AIR INTAKE |
| AF | AIR FOIL | OBD | OPPOSED BLADE DAMPER |
| AHU | AIR HANDLING UNIT | OED | OPEN END DUCT |
| ALD | ACOUSTICALLY LINED DUCTWORK | RA | RETURN AIR |
| ATD | AIR TERMINAL DEVICE | RF | RETURN FAN |
| AVS | AIR VOLUME TRAVERSE STATION | RG | RETURN GRILLE |
| BDD | BACKDRAFT DAMPER | RHC | REHEAT COIL |
| BI | BACKWARD INCLINED | RLF | RELIEF |
| CC | COOLING COIL | RR | RETURN REGISTER |
| CD | CEILING DIFFUSER | RV | ROOF VENT |
| CFM | CUBIC FEET PER MINUTE | SA | SUPPLY AIR |
| CG | CEILING GRILLE | SATT | SOUND ATTENUATOR |
| DIFF | DIFFUSER | SCR | SCREEN |
| DWDI | DOUBLE WIDTH DOUBLE INLET | SD | SMOKE DAMPER |
| DWSI | DOUBLE WIDTH SINGLE INLET | SDET | SMOKE DETECTOR |
| DX | DIRECT EXPANSION | SEF | SMOKE EXHAUST FAN |
| EF | EXHAUST FAN | SF | SUPPLY FAN |
| EG | EXHAUST GRILLE | SFD | COMBINATION AUTOMATIC SMOKE/FIRE DAMPER |
| ESP | EXTERNAL STATIC PRESSURE | | WITH ACCESS DOOR |
| F | FAN | SG | SUPPLY GRILLE |
| FC | FORWARD CURVED | SM | SHEETMETAL |
| FA | FREE AREA | SP | STATIC PRESSURE |
| FCU | FAN COIL UNIT | SR | SUPPLY REGISTER |
| FD | FIRE DAMPER (W/ ACCESS DOOR) | SWDI | SINGLE WIDTH DOUBLE INLET |
| FLTR | FILTER | SWSI | SINGLE WIDTH SINGLE INLET |
| FPI | FINS PER INCH | TE | TOILET EXHAUST |
| FPT | FAN POWERED TERMINAL BOX | TF | TRANSFER FAN |
| GE | GENERAL EXHAUST | TG | TRANSFER GRILLE |
| GIH | GRAVITY INTAKE HOOD | TR | TRANSFER |
| GRH | GRAVITY RELIEF HOOD | TSP | TOTAL STATIC PRESSURE |
| HC | HEATING COIL | UC | UNDERCUT DOOR |
| LAT | LEAVING AIR TEMPERATURE | VD | VOLUME DAMPER |
| LD | LINEAR DIFFUSER | VV | VARIABLE VOLUME SUPPLY AIR TERMINAL BOX |
| LUVR | LOUVER | WMS | WIRE MESH SCREEN |

# HVAC GENERAL NOTES

1. GENERAL NOTES APPLY TO ALL HVAC DRAWINGS.
2. THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID, ARE DEEMED TO BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITIONS OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. ABSOLUTELY NO CLAIMS FOR EXTRA COMPENSATION WILL BE CONSIDERED FOR EXISTING CONDITIONS VISIBLE OR REASONABLY INFERABLE FROM A CAREFUL EXAMINATION OF THE EXISTING BUILDING.
3. THIS CONTRACTOR SHALL INSPECT THE EXISTING FIELD CONDITIONS AT THE SITE AND THE "AS-BUILT" BASE BUILDING CONTRACT DOCUMENTS PRIOR TO THE START OF ANY WORK TO DETERMINE WHAT EFFECT THE EXISTING CONDITIONS WILL HAVE ON HIS WORK. POTENTIAL PROBLEM AREAS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER IMMEDIATELY.
4. THIS CONTRACTOR SHALL CONNECT HIS WORK TO VARIOUS EXISTING PIPING, DUCTWORK, AND CONTROL SYSTEMS IN THE BASE BUILDING. THE NEW WORK SHALL BE COMPATIBLE WITH THE EXISTING SYSTEMS. LOCATION OF EQUIPMENT OR THE ROUTING OF THE VARIOUS SYSTEMS AS WELL AS OPENINGS IN FLOOR SLABS OR WALLS SHALL BE GOVERNED BY THE EXISTING CONDITIONS AS THEY APPEAR IN THE FIELD OR ON THE "AS-BUILT" DRAWINGS.
5. CARE SHALL BE TAKEN DURING THE INSTALLATION TO NOT DAMAGE OR INTERRUPT BUILDING SYSTEMS AND SERVICES THAT ARE ALREADY INSTALLED. DAMAGE TO SUCH SYSTEMS OR EQUIPMENT CAUSED BY THIS CONTRACTOR DURING INSTALLATION SHALL BE REPAIRED AND/OR REPLACED AT THIS CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE BUILDING OWNER.
6. SHUTDOWN OF EXISTING SYSTEMS FOR CONNECTION TO EXISTING SERVICES SHALL BE COORDINATED WITH THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR AND BUILDING OWNER. THIS CONTRACTOR SHALL SUBMIT REQUESTS, WHERE THEY AFFECT THE OPERATION OF THE BUILDING SYSTEMS, AT LEAST FIFTEEN DAYS IN ADVANCE OF ANY REQUIRED SHUTDOWN. THE ACTUAL SHUTDOWN PERIOD SHALL BE AS SHORT AS POSSIBLE AND AT A TIME MUTUALLY AGREEABLE TO THE BUILDING OWNER AND THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR.
7. DRAWINGS ARE DIAGRAMMATIC, THEREFORE DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS, AS WELL AS ROUTING PATHS, IN FIELD.
8. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER, AND SHOULD BE KEPT TO A MINIMUM FOR SYSTEM EFFICIENCIES.
9. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT AND/OR PIPE TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION. VERIFY ACCESS IS PROVIDED FOR SERVICING EQUIPMENT AS REQUIRED.
10. ALL MATERIALS AND EQUIPMENT UNLESS SPECIFICALLY INDICATED AS REUSED, SHALL BE NEW.
11. ACCESS PANELS SHALL BE PROVIDED TO ALLOW FOR CLEANING OF COILS AND SERVICING OF DAMPERS, HEATERS, VALVES, AND ALL CONCEALED MECHANICAL EQUIPMENT.
12. INSTALL NEW THERMOSTATS 4 FEET AFF OR AS DIRECTED OTHERWISE BY ENGINEER.
13. GENERAL CONTRACTOR TO PATCH ALL EFFECTED INTERIOR AND EXTERIOR EXISTING FLOOR, WALL, AND CEILING SURFACES TO MATCH EXISTING. PROVIDE ESCUTCHEON PLATES.
14. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
15. ANY AND ALL WALLS, CEILINGS AND FLOORS THAT ARE ANTICIPATED TO BE DISTURBED DURING THE DEMOLITION OR INSTALLATIONS PROCESS, AS INDICATED ON THE DRAWINGS, SHALL BE TESTED FOR HAZARDOUS MATERIALS PRIOR TO DISTURBING THE SURFACES. ROUTING OF PIPING HAS BEEN INDICATED TO DEPICT THE INTENT OF THE WORK. ACTUAL ROUTING MAY DIFFER IN THE FIELD DUE TO BUILDING CONSTRUCTION. COORDINATE TESTING OF ALL SURFACES TO BE DISTURBED, ALONG THE ACTUAL INSTALLATION ROUTE, WITH THE HAZARDOUS MATERIALS CONTRACTOR. REFER TO EXISTING HAZMAT REPORT FOR TESTING RESULTS.
16. MECHANICAL CONTRACTOR TO REMOVE ALL IDENTIFIED R-22 EQUIPMENT AND ASSOCIATED APPURTENANCES AND REPLACE IN KIND WITH A R410A OR R407C SYSTEM.
17. REFRIGERANT PIPING IS DIAGRAMMATIC, CONTRACTOR TO DETERMINE ROUTING IN FIELD AND RE-USE EXISTING PENETRATIONS. ANY EXPOSED PIPING TO BE CONCEALED IN A CHASE. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
18. SEE CIVIL DRAWINGS FOR DEMOLISHED AND NEW CONCRETE PADS.
19. THE MECHANICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE MECHANICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL ADDITIONAL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.
20. SEE PWD-ME DRAWING;
    43-15-67 FOR TITLE SHEET
    43-15-68 FOR LIST OF DRAWINGS
    43-15-69 FOR GENERAL NOTES & LEGENDS
    43-15-72 FOR CHASE AND SOFFIT DETAILS
    43-15-74 FOR STRUCTURAL NOTES AND SUPPORTS

# SCHEDULE OF DRAWINGS

| DWG# | DESCRIPTION |
|---|---|
| M1.0 | BUILDING 79 HVAC LEGEND |
| MD2.0 | BUILDING 79 HVAC SECOND FLOOR DEMOLITION PLAN PART A |
| MD2.1 | BUILDING 79 HVAC THIRD FLOOR DEMOLITION PLAN PART A |
| MD2.2 | BUILDING 79 HVAC ROOF DEMOLITION PLAN PART A |
| M2.0 | BUILDING 79 HVAC SECOND FLOOR PLAN PART A |
| M2.1 | BUILDING 79 HVAC THIRD FLOOR PLAN PART A |
| M2.2 | BUILDING 79 HVAC ROOF PLAN PART A |
| M3.0 | BUILDING 79 HVAC CONTROLS |
| M3.1 | BUILDING 79 HVAC CONTROLS |
| M3.2 | BUILDING 79 HVAC CONTROLS |
| M4.0 | BUILDING 79 SCHEDULES AND DETAILS |

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE – DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER

SEAL

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25 AVIATION AVE STE 204 PORTSMOUTH, NH 03801 603-319-8244
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL SHIPYARD - PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 79 HVAC LEGEND

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

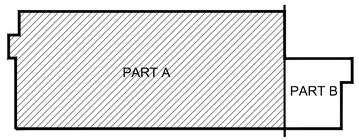
NAVFAC DRAWING NO. 12703617

SHEET 164 OF 506

M1.0 79-15-571

DRAWFORM REVISION: 10 OCTOBER 2014

## KEY PLAN

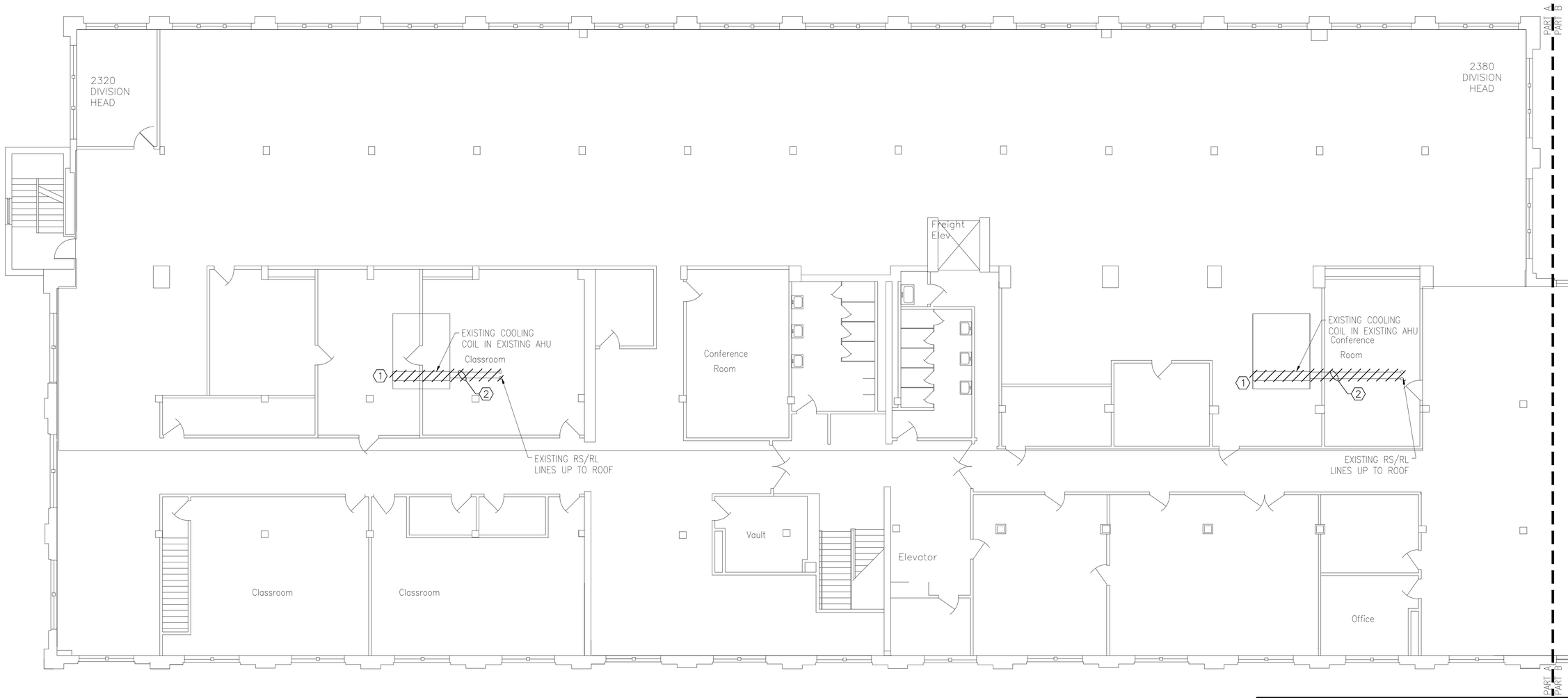



## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. SHUTDOWN OF EXISTING SYSTEMS FOR CONNECTION TO EXISTING SERVICES SHALL BE COORDINATED WITH THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR AND BUILDING OWNER. THIS CONTRACTOR SHALL SUBMIT REQUESTS, WHERE THEY AFFECT THE OPERATION OF THE BUILDING SYSTEMS, AT LEAST FIFTEEN DAYS IN ADVANCE OF ANY REQUIRED SHUTDOWN. THE ACTUAL SHUTDOWN PERIOD SHALL BE ESTIMATED TO BE FIVE WEEKS AND AT A TIME MUTUALLY AGREEABLE TO THE BUILDING OWNER AND THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR.
3. CONTRACTOR RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL EQUIPMENT AND MATERIALS AT PERMITTED WASTE FACILITY.
4. CONTRACTOR TO COORDINATE R-22 DISPOSAL WITH PSNY ENVIRONMENTAL GROUP.

## DEMOLITION KEYNOTES

1. REMOVE EXISTING COOLING COIL. EXISTING CONDENSATE LINES TO REMAIN AND BE DISCONNECTED. EXISTING AHU TO REMAIN AND BE CLEANED AND REFURBISHED TO LIKE NEW CONDITION. ALL WEARABLE PARTS, BEARINGS, DAMPERS, MOTORS, SENSORS, ETC. TO BE REPLACED. EXISTING THERMOSTAT TO BE REMOVED, CONTROL WIRING TO REMAIN. PROVIDE THE FOLLOWING SERVICES ON EXISTING AHU INDICATED TO BE REUSED: 1) FILTER CHANGES, 2) BALANCING, 3) LUBRICATION.
2. ACCESSIBLE EXISTING RS/RL LINES TO BE REMOVED. ANY REMAINING RS/RL CONCEALED TO BE EVACUATED, CAPPED AND ABANDONED IN PLACE.




BUILDING 79 HVAC SECOND FLOOR DEMOLITION PLAN PART A
1/8"=1'-0"

PLAN NORTH

## GRAPHIC SCALE

1/8" = 1' (8 4 0 8 16 24)
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
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781.233.9525
23 AVENTAS AVE, STE 204
LARKSPUR, CA 94939
415.519.9924
A/E INFO


APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

LEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 79 HVAC SECOND FLOOR DEMOLITION PLAN PART A

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703618

SHEET 165 OF 506

MD2.0 | 79-15-572

DRAWFORM REVISION: 10 OCTOBER 2014

SHEET TAKEN OUT OF PROJECT

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
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PRIME

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ROCHESTER, NY 14620
781.332.0202
215 MANTON AVE, STE 204
MILFORD, CT 06460
203.917.9924
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: JC | DRW: SV | CHK: DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

# BUILDING 79 HVAC THIRD FLOOR DEMOLITION PLAN PART A

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703619

SHEET 166 OF 506

MD2.1 | 79-15-573

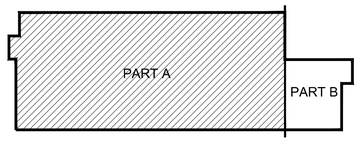
DRAWFORM REVISION: 10 OCTOBER 2014

## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet

CHECK GRAPHIC SCALE BEFORE USING

## KEY PLAN

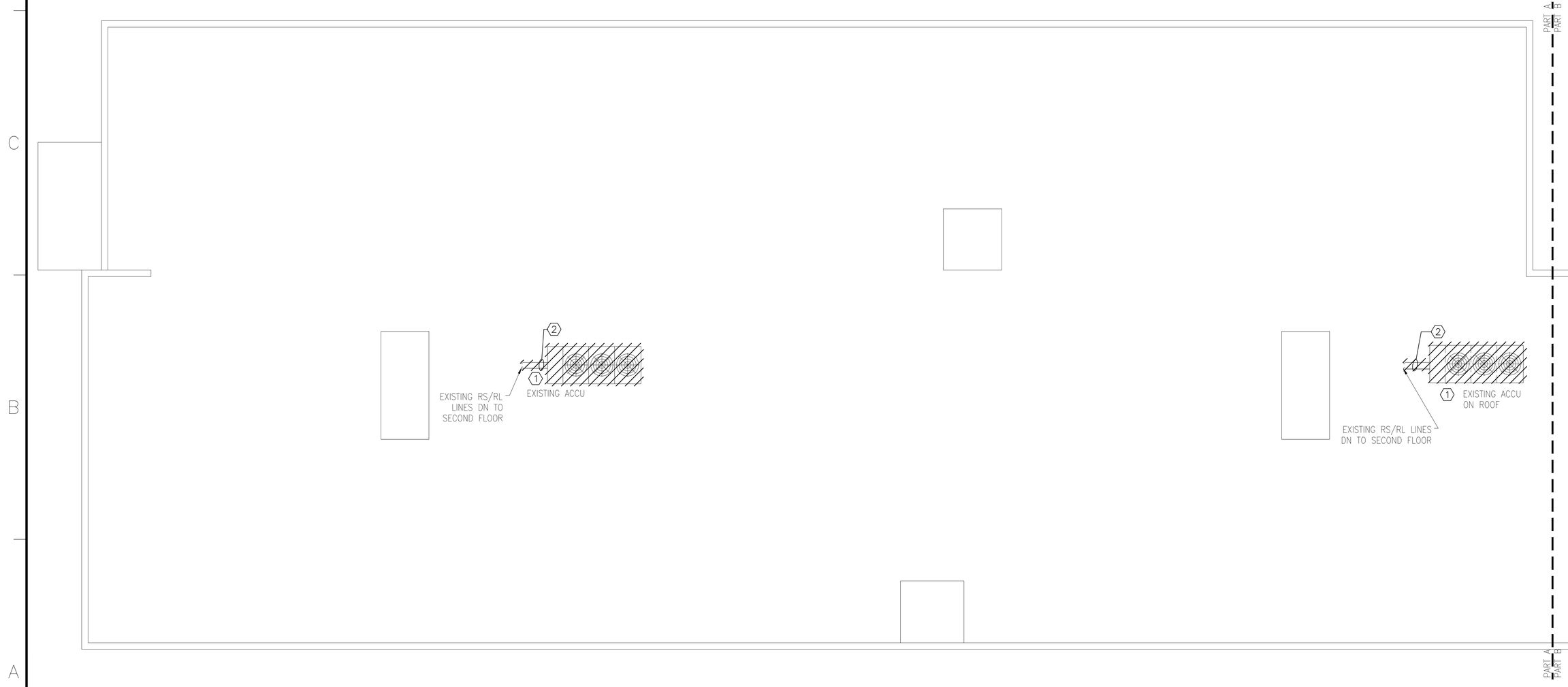



## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

## DEMOLITION KEYNOTES

1. REMOVE EXISTING ACCU. SEE STRUCTURAL DRAWINGS FOR ANY ROOF CURB MODIFICATIONS.
2. ACCESSIBLE EXISTING RS/RL LINES TO BE REMOVED. ANY REMAINING RS/RL CONCEALED TO BE EVACUATED, CAPPED AND ABANDONED IN PLACE.
3. CONTRACTOR RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL EQUIPMENT AND MATERIALS AT PERMITTED WASTE FACILITY.
4. CONTRACTOR TO COORDINATE R-22 DISPOSAL WITH PSNY ENVIRONMENTAL GROUP.




BUILDING 79 HVAC ROOF DEMOLITION PLAN PART A
1/8"=1'-0"

PLAN NORTH

## GRAPHIC SCALE

1/8" = 1' (8 4 0 8 16 24)
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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NORTH ANDOVER, MA 01845
603-319-9214
A/E INFO

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FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

| | |
|---|---|
| DES JC | DRW SV CHK DM |
| PM/DM | PETER STOCKLESS |
| BRANCH MANAGER | BRUCE LITALIEN |
| FEAD/PM&E | AMIN BAHROUR PM&E |
| FIRE PROTECTION | X |

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

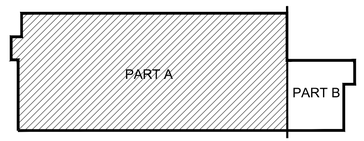
FY 16 ENERGY PROJECT
TASK 1-B-R-22

# BUILDING 79 HVAC ROOF DEMOLITION PLAN PART A

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-11-D-0502
NAVFAC DRAWING NO. 12703620
SHEET 167 OF 506
MD2.2 | 79-15-574

DRAWFORM REVISION: 10 OCTOBER 2014

## KEY PLAN

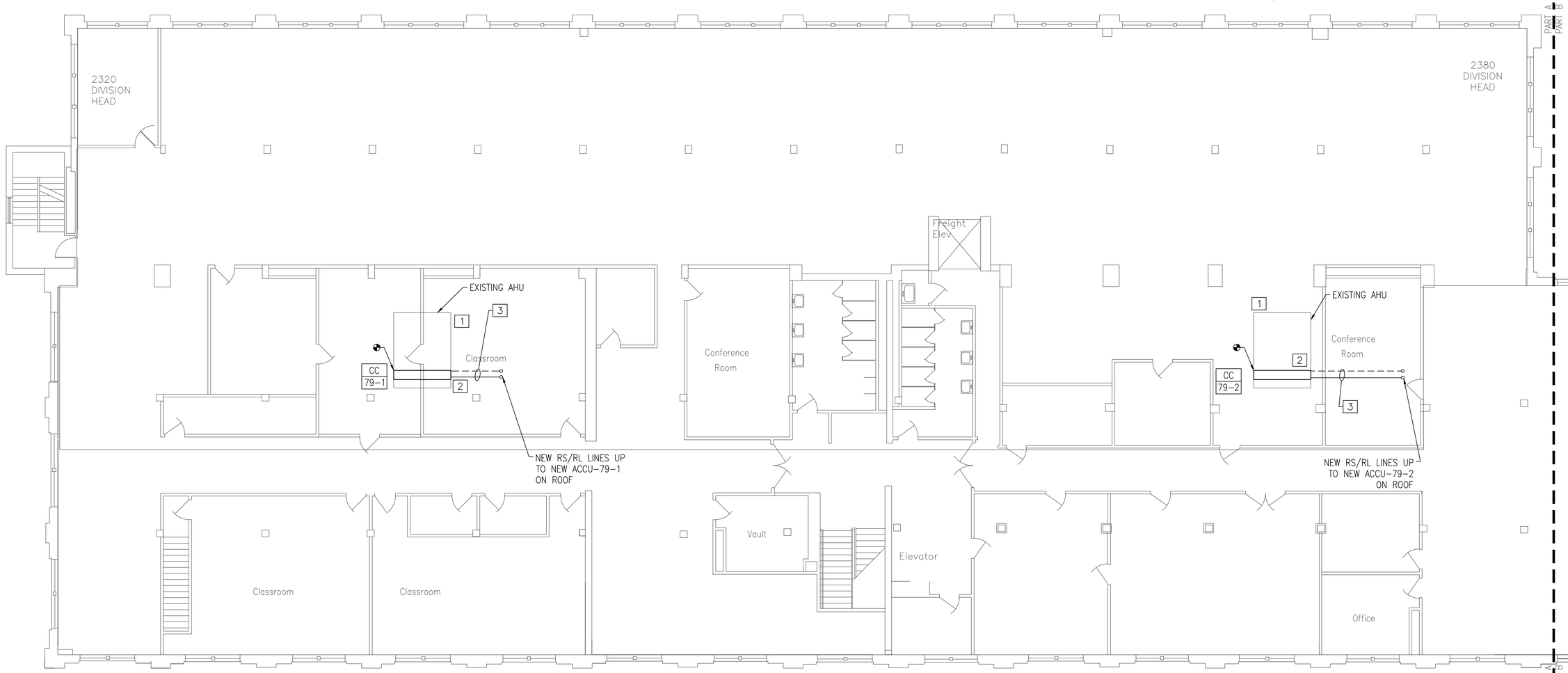



## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

## NEW WORK KEYNOTES

1. FURNISH AND INSTALL NEW COOLING COIL IN ASSOCIATED EXISTING AHU. NEW COOLING COIL TO BE CONNECTED TO ASSOCIATED RS/RL LINES. EXISTING CONDENSATE LINES TO BE RECONNECTED. EXISTING AHU TO BE CLEANED AND REFURBISHED TO LIKE NEW CONDITION. ALL WEARABLE PARTS, BEARINGS, DAMPERS, MOTORS, SENSORS, FILTERS, ETC. TO BE REPLACED. PROVIDE THE FOLLOWING SERVICES ON EXISTING AHU INDICATED TO BE REUSED: 1) FILTER CHANGES, 2) BALANCING, 3) LUBRICATION. PROVIDE WITH NEW DDC COMPATIBLE THERMOSTAT AND CONNECT TO EXISTING CONTROL WIRING, FIELD COORDINATE EXACT LOCATION WITH NAVFAC.
2. THE NEW SUCTION CONNECTION SIZES AND LOCATIONS WILL BE PER SFI'S RECOMMENDATION FOR OPTIMUM OIL RETURN. THE CONTRACTOR WILL PUNCH NEW HOLES IN THE COIL SECTION SIDE PANELS TO MATCH.
3. SEE HVAC GENERAL NOTE 17 ON SHEET M1.0 FOR PIPING INFORMATION.




BUILDING 79 HVAC SECOND FLOOR PLAN PART A
1/8"=1'-0"

PLAN NORTH

## GRAPHIC SCALE

1/8" = 1' (8 4 0 8 16 24)
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| | DES | DATE |
|---|---|---|
| 4 | 100% SUBMISSION | DM | 08/07/2015 |
| 3 | 100% REVIEW SUBMISSION | DM | 07/24/2015 |
| 2 | 90% SUBMISSION | DM | 06/04/2015 |
| 1 | 80% SUBMISSION | DM | 04/24/2015 |
| 0 | 35% SUBMISSION | DM | 02/23/2015 |
| STM | DESCRIPTION | APPR | DATE |

NAVFAC

DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE — SEAL

MECHANICAL: CSI ENGINEERING, 999 Broadway, Suite 306, Saugus, MA 01906, 781-233-9828
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A/E INFO

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FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 79 HVAC SECOND FLOOR PLAN PART A

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703621
SHEET 168 OF 506
M2.0 | 79-15-575

DRAWFORM REVISION: 10 OCTOBER 2014

SHEET TAKEN OUT OF PROJECT

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
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FIRE PROTECTION
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781-213-2828
215 Haverhill Ave, Ste. 204
Portsmouth, NH 03801
603-319-9244
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

LEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

# BUILDING 79 HVAC THIRD FLOOR PLAN PART A

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.
N40085-XX-C-XXXX

NAVFAC DRAWING NO.
12703622

SHEET 169 OF 506

M2.1 | 79-15-576

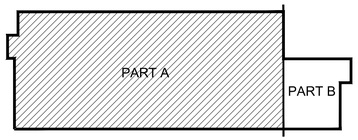
DRAWFORM REVISION: 10 OCTOBER 2014

## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet

CHECK GRAPHIC SCALE BEFORE USING

## KEY PLAN




## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

## NEW WORK KEYNOTES

1. FURNISH AND INSTALL NEW ACCU AND IT'S ASSOCIATED RS/RL LINES. NEW ACCU IS TO BE CONNECTED TO NEW COOLING COIL IN ASSOCIATED AHU UNIT. SEE STRUCTURAL DRAWINGS FOR ANY ROOF CURB MODIFICATIONS.
2. SEE HVAC GENERAL NOTE 17 ON SHEET M1.0 FOR PIPING INFORMATION.

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

PART A
PART B

NEW RS/RL LINES DN TO CC-79-1 ON SECOND FLR

ACCU 79-1

2

1

NEW RS/RL LINES DN TO CC-79-2 ON SECOND FLR

ACCU 79-2

1

2

PART A
PART B

# BUILDING 79 HVAC ROOF PLAN PART A

1/8"=1'-0"

PLAN NORTH

## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet
CHECK GRAPHIC SCALE BEFORE USING

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
SEAL

THE CONSTRUCTOR SHALL REVIEW AND APPROVE SHOP DRAWINGS, SAMPLES, AND SIMILAR SUBMITTALS PRIOR TO SUBMISSION TO THE GOVERNMENT. REVIEW AND APPROVAL BY THE CONSTRUCTOR SHALL CERTIFY THAT MATERIALS, EQUIPMENT, AND SYSTEMS CONFORM TO THE CONTRACT REQUIREMENTS, AND THAT THE CONSTRUCTOR HAS DETERMINED AND VERIFIED ALL FIELD MEASUREMENTS, FIELD CONSTRUCTION CRITERIA, MATERIALS, CATALOG NUMBERS, AND SIMILAR DATA, AND HAS COORDINATED EACH ITEM WITH OTHER APPLICABLE APPROVED SHOP DRAWINGS AND CONTRACT REQUIREMENTS.

CONSULTANTS

CSI ENGINEERING
MECHANICAL FIRE PROTECTION ELECTRICAL
999 BROADWAY SUITE 206 SOMERVILLE, MA 02144 781.393.9929
23 BARTON AVE STE 204 PORTSMOUTH, NH 03801 603.319.9924
AE INFO

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FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

| DES | JC | DRW | SV | CHK | DM |
|---|---|---|---|---|---|
| PM/DM | PETER STOCKLESS | | | | |
| BRANCH MANAGER | BRUCE LITALIEN | | | | |
| FEAD/PM&E | AMIN BAHROUR PM&E | | | | |
| FIRE PROTECTION | X | | | | |

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 79 HVAC ROOF PLAN PART A

EPROJECT NO.: 1350913

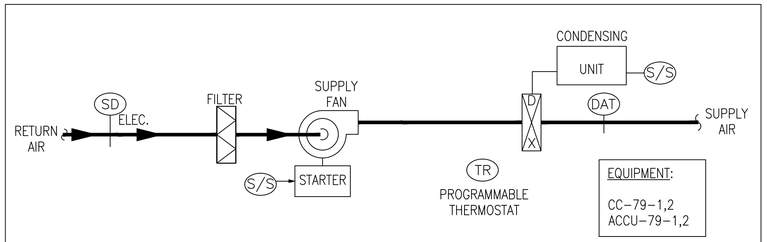
CONSTR. CONTR. NO. N40085-11-D-0502

NAVFAC DRAWING NO. 12703623

SHEET 170 OF 506

M2.2 | 79-15-577

DRAWFORM REVISION: 10 OCTOBER 2014




GENERAL
1. THE EQUIPMENT IS STARTED AND STOPPED VIA DCC THERMOSTAT. COORDINATE OCCUPIED AND UNOCCUPIED SCHEDULES WITH OWNER.

OFF
1. SF DEENERGIZED
2. ACCU DEENERGIZED

UNOCCUPIED COOLING CONTROL

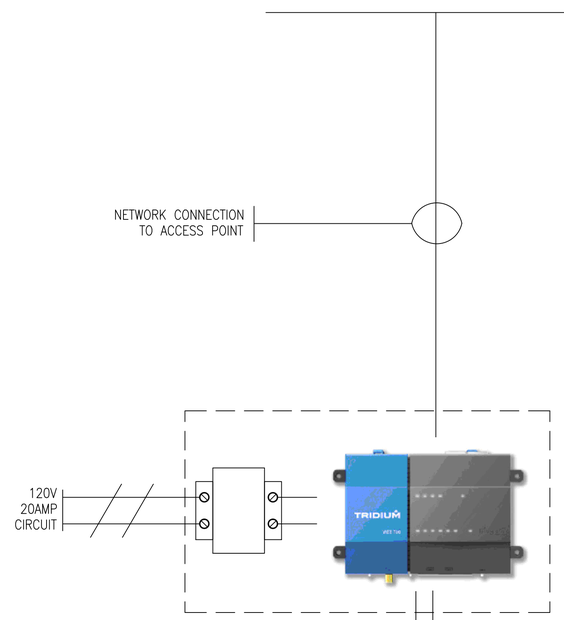
1. SF ENERGIZED
2. ACCU IS STAGED ON TO MAINTAIN THE SPACE TEMPERATURE SETPOINT OF 80°F(ADJ).
3. DISCHARGE AIR TEMPERATURE SENSOR DAT SHALL LIMIT SUPPLY AIR TO 53°F MINIMUM.

OCCUPIED COOLING CONTROL

1. SF ENERGIZED
2. ACCU IS STAGED ON TO MAINTAIN THE SPACE TEMPERATURE SETPOINT OF 75°F(ADJ).
3. DISCHARGE AIR TEMPERATURE SENSOR DAT SHALL LIMIT SUPPLY AIR TO 53°F MINIMUM.

## AIR HANDLER W/ DX COOLING SEQUENCE OF OPERATION

PORTSMOUTH NAVAL SHIPYARD ( BUILDING 79 _ ADMIN, SUPPLY & STORAGE )
EXISTING BARBER COLEMAN INTEGRATED DDC SYSTEM ARCHITECTURE




NEW TRIDIUM JACE INTEGRATION
EXISTING DDC SYSTEM

NEW TRIDIUM JACE INTEGRATION
EXISTING DDC SYSTEM

BACNET
COMMUNICATION

EXISTING PROGRAMMABLE BACNET CONTROLLER — AHU-4
TYPICAL OF ALL AIR HANDLING UNITS
EXISTING PROGRAMMABLE BACNET CONTROLLER — AHU-1
EXISTING PROGRAMMABLE BACNET CONTROLLER — BB-3
EXISTING PROGRAMMABLE BACNET CONTROLLER — AHU-2
EXISTING PROGRAMMABLE BACNET CONTROLLER — *BB-2*
EXISTING PROGRAMMABLE BACNET CONTROLLER — BB-1
EXISTING PROGRAMMABLE BACNET CONTROLLER — UH-4
TYPICAL OF ALL UNIT HEATER
EXISTING PROGRAMMABLE BACNET CONTROLLER — UH-1
EXISTING PROGRAMMABLE BACNET CONTROLLER — AHU-1
EXISTING PROGRAMMABLE BACNET CONTROLLER — HEATING SYSTEM CONTROL

1 IT IS CRITICAL THAT THE COMMUNICATION BUS IS WIRED IN A CONTINUOUS DAISY CHAIN FASHION.

2 REPLACE EXISTING R2 JACE WITH NEW JACE

2 EXISTING MICROZONE 8000

BACNET COMMUNICATIONS
TO R410 EQUIPMENT

NEW BACNET CONTROLLER — ACCU-79-1
NEW BACNET CONTROLLER — ACCU-79-2

## PANEL MATERIAL

| ITEM NO | MODEL | DESCRIPTION | QTY |
|---|---|---|---|
| C1 | J-8000 | N4 WEB BASED GLOBAL NETWORK INTERFACE | 1 |
| | | APPROPRIATE DEVICE PACKS | |

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER — STATE OF NEW HAMPSHIRE — SEAL

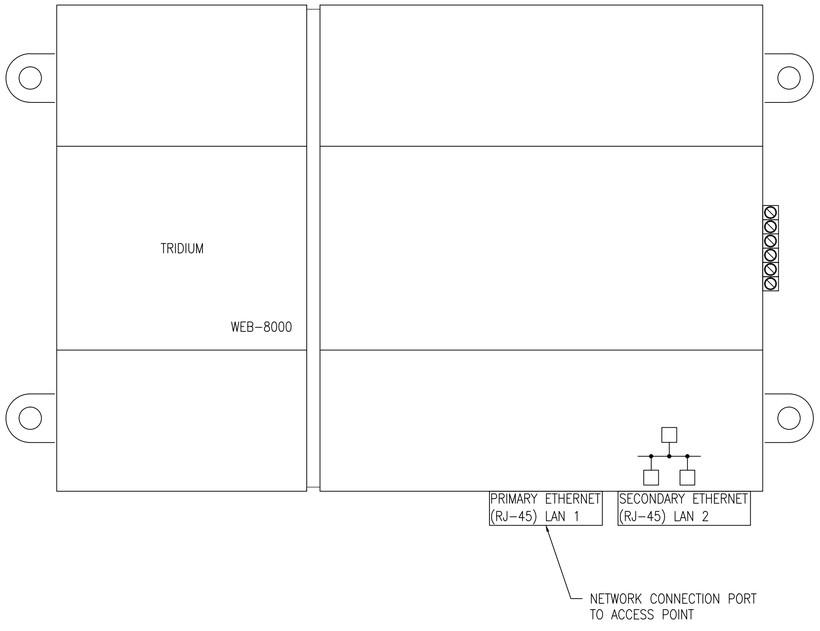
CSI — 999 Broadway, Suite 206, Saugus, MA 01906, 781-233-9828 — 213 South Van Dyke, Suite 204, Plymouth, MI 48170, 603-319-9244

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES: JC | DRW: SV | CHK: DM
PM/DM: PETER STOCKLESS
BRANCH MANAGER: BRUCE LITALIEN
FEAD/PM&E: AMIN BAHROUR PM&E
FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22
BUILDING 79 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703624
SHEET 171 OF 506
M3.0 | 79-15-578

DRAWFORM REVISION: 10 OCTOBER 2014




ETHERNET CONNECTION TO RF ACCESS POINT

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
SEAL

THE LEAD DESIGNER AND ALL SUBCONSULTANTS WHO PREPARED PORTIONS OF THIS DESIGN ARE AUTHORIZED TO PRACTICE IN THE JURISDICTION WHERE THE PROJECT IS LOCATED. THE DESIGN COMPLIES WITH APPLICABLE CODES, STANDARDS, REGULATIONS, AND ACCEPTED ENGINEERING GOOD PRACTICE. THE DESIGN IS CONSISTENT WITH THE SCOPE OF THE BASIS OF DESIGN. THE DESIGN DOCUMENTS ARE COMPLETE AND COORDINATED.
TO/CO: 0014-08
RFP/RFQ: N/A

CONSULTANT
CSI
CONSTRUCTION SPECIFICATIONS INSTITUTE
999 Peachtree Street, Suite 726
Atlanta, GA 30309
781-233-9828
213 SOUTH AVE, STE 204
FANWOOD, NJ 07023
908-317-9224
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: JC | DRW: SV | CHK: DM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

FEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22-DDL

BUILDING 79 HVAC CONTROLS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.
N40085-XX-C-XXXX

NAVFAC DRAWING NO.
12703625

SHEET 172 OF 506

M3.1 | 79-15-579

DRAWFORM REVISION: 10 OCTOBER 2014

# GLOBAL NETWORK INTERFACE_ 1

ENCL

WHITE
BLACK
SHEILD
COMMUNICATION OUTPUT

CLT OFF ACC

WiFi

END BIA MD

B− A+ SH
RS−485 − IP

NET +15V
WR

B− A+ SH
RS−485 − 2

END BIA MD

GND 24V NC

LOYTEC RS−485

+5V
5100
1200
5100
GND

A+ B− NC

TRIDIUM

WEB−8000

A − RS−485 − B

BCK/RES BCKUP PROG

SHT/DWN

DEBG

STAT BEAT

PRI SEC PRI SEC

24VAC HOT
24VAC COMMON

C1

24Vac

PRI SEC

PRIMARY ETHERNET (RJ−45) LAN 1

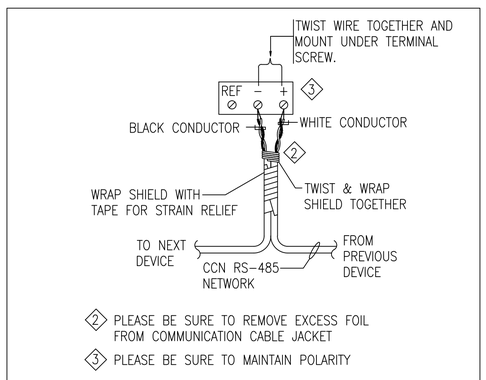
SECONDARY ETHERNET (RJ−45) LAN 2

NETWORK CONNECTION PORT TO ACCESS POINT

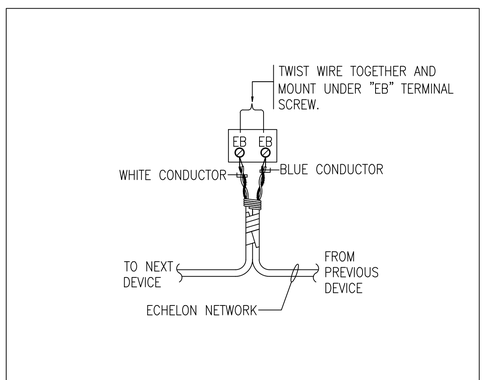
EARTH GROUND SPACE LUG

L1 120V
L2
GND

1 LOCATION OF CONTROLLER TO BE FIELD VERIFIED




RS−485 BACNET MS/TP CONNECTION DETAIL




E−BUS CONNECTION DETAIL

PANEL MATERIAL

| ITEM NO | MODEL | DESCRIPTION | QTY |
|---|---|---|---|
| C1 | J−8000 | N4 WEB BASED GLOBAL NETWORK INTERFACE | 1 |
| ENCL | ENC−001 | 12"x18"x4" ENCLOSURE W/ 24V TRANSFORMER | 1 |
| EOL1 | 209541B | END OF LINE RESISTOR | 1 |
| LT1 | LT−B4 | RS−485 NETWORK TERMINATOR | 1 |

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE — DAVID H. MAHONEY No. 12370 — LICENSED PROFESSIONAL ENGINEER — SEAL

CSI — CONSTRUCTION SPECIALTIES, INC. — 999 BROADWAY, SUITE 206, SAUGUS, MA 01906, 781.233.2828 — 23 ALEXANDER AVE, STE 204, LEWISTON, ME 04240, 207.513.0924 — A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT − MAINE
NAVAL FACILITIES ENGINEERING COMMAND − MID−ATLANTIC
NAVAL SHIPYARD − PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1−B−R−22
BUILDING 79 HVAC CONTROLS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085−XX−C−XXXX

NAVFAC DRAWING NO. 12703626

SHEET 173 OF 506

M3.2 | 79-15-580

DRAWFORM REVISION: 10 OCTOBER 2014

## DX COOLING COIL SCHEDULE

| TAG | ASSOCIATED OUTDOOR UNIT | DESIGN BASED ON MANUFACTURER | REFRIGERANT TYPE | TOTAL CAPACITY (MBH) | SENSIBLE CAPACITY (MBH) | CFM | AIR P.D. (IN.WG.) | ROWS | FPI | AIR DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | EAT DB(°F) | EAT WB(°F) | LAT DB(°F) | LAT WB(°F) | |
| CC-79-1 | ACCU-79-1 | CARRIER | R-410A | 453.5 | 333.5 | 16,000 | 0.71 | 4 | 11 | 75.9 | 64.6 | 56.7 | 55 | SEE NOTES |
| CC-79-2 | ACCU-79-2 | CARRIER | R-410A | 452.5 | 350.1 | 16,000 | 0.71 | 4 | 11 | 76.8 | 64.4 | 56.7 | 55 | SEE NOTES |

NOTES: 1. COOLING COIL TO BE PLACED IN EXISTING CARRIER AHU 39MN30C. 2. TXVS TO BE PROVIDED BY OTHERS. 3. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.

## AIR COOLED CONDENSING UNIT SCHEDULE

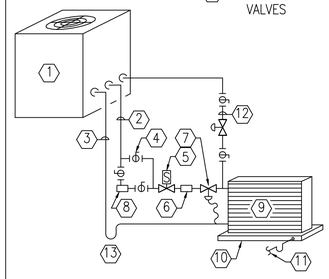
| TAG | SERVES | DESIGN BASED ON MANUFACTURER | DESIGN BASED ON MODEL No. | COOLING DATA | NOMINAL CONDENSER CAPACITY (KW) | ELECTRIC DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | COOLING (MBH) | | VOLTS | HZ | PHASE | MCA | MOCP | |
| ACCU-79-1 | BLDG 79 | CARRIER | 38APS0406D-16020 | 472 | 138 | 460 | 60 | 3 | 83.8 | 100 | 1,2,3,4,5,7,8,9 |
| ACCU-79-2 | BLDG 79 | CARRIER | 38APS0406D-16020 | 472 | 138 | 460 | 60 | 3 | 83.8 | 100 | 1,2,3,4,5,7,8,9 |

NOTES: 1. PROVIDE WITH E-COAT COIL PROTECTION. 2. PROVIDE WITH LOW AMBIENT HEAD PRESSURE CONTROL. 3. PROVIDE WITH LOW SOUND FANS. 4. PROVIDE WITH SCROLLING MARQUEE. 5. PROVIDE WITH BACNET INTERFACE. 6. PROVIDE WITH DIGITAL SCROLL COMPRESSOR. 7. PROVIDE WITH DISCONNECT. 8. PROVIDE WITH ENGINEERING SUPPORTS SIMILAR TO MICRO INDUSTRIES INC. 9. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.

## JACE BOX

| TAG NO. | LOCATION | ELECTRICAL | | DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD) | NOTES |
|---|---|---|---|---|---|
| | | AMP | V | | |
| J-1 | SEE PLANS | 20 | 120 | JACE 8000 | SEE NOTES |

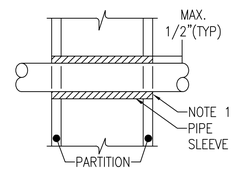
NOTES: 1. PROVIDE W/ MEMORY UPGRADE TO 4GB 2. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.




1. CONDENSING UNIT
2. LIQUID LINE
3. INSULATED SUCTION LINE
4. BALL SHUT-OFF VALVES
5. SOLENOID VALVE
6. SIGHT GLASS
7. THERMAL EXPANSION VALVE WITH EQUALIZER
8. FILTER DRYER
9. COOLING COIL
10. DRAIN PAN
11. DRAIN LINE-TRAP & ROUTE TO NEAREST DRAIN
12. HOT GAS BYPASS LINE & VALVE
13. TRAP

NOTE:
1. PIPE SIZES BYPASS CIRCUIT & CONTROL EQUIPMENT AND TRAPS AS REQUIRED BY UNIT MANUFACTURER (SUBMIT IN SHOP DRAWING).

## REFRIGERANT PIPING LARGE COMPONENT DIAGRAM




NOTES:
1. AT FIRE RATED PARTITIONS ADD LAYER OF FIRE SAFING INSULATION AROUND PENETRATIONS SO AS TO FILL CAVITY.
2. PIPE PENETRATIONS THROUGH CORRIDOR WALLS ABOVE THE CEILING ARE TO BE FIRE STOPPED AROUND THE PENETRATION.
3. CONTRACTOR REPSONSIBLE FOR DETERMINING REQUIRED HOUR RATING TO MATCH EXISTING WALL ASSEMBLY.

## PIPE PENETRATIONS

| APPR | DATE | DESCRIPTION | STM |
|---|---|---|---|
| DM | 08/07/2015 | 100% SUBMISSION | 4 |
| DM | 07/24/2015 | 100% REVIEW SUBMISSION | 3 |
| DM | 06/04/2015 | 90% SUBMISSION | 2 |
| DM | 04/24/2015 | 80% SUBMISSION | 1 |
| DM | 02/23/2015 | 35% SUBMISSION | 0 |

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
SEAL


THE CONSTRUCTION CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY AND CORRECTNESS OF THE DIMENSIONS, NOTES AND SCALES SHOWN ON THESE DRAWINGS. ANY ERRORS, OMISSIONS OR DISCREPANCIES FOUND IN THESE DRAWINGS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER. ANY WORK PERFORMED BY THE CONTRACTOR AFTER THE DISCOVERY OF SUCH ERRORS, OMISSIONS OR DISCREPANCIES SHALL BE DONE AT THE CONTRACTOR'S RISK. THE CONTRACTOR SHALL NOT SCALE THE DRAWINGS FOR ANY PURPOSE WHATSOEVER. IF ANY PARTY REQUIRES ANY ADDITIONAL DIMENSIONS, THEY SHALL BE REQUESTED FROM THE ENGINEER. THE CONTRACTOR SHALL NOT USE THESE DRAWINGS FOR SHOP DRAWING PURPOSES UNLESS SPECIFICALLY AUTHORIZED TO DO SO IN WRITING BY THE ENGINEER. THE CONTRACTOR SHALL NOT USE THESE DRAWINGS FOR ANY PURPOSE WHATSOEVER IF ANY MONIES ARE OWED TO THE ENGINEER.



CSI ENGINEERING
FIRE PROTECTION
999 Broadway, Suite 206
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781-233-2020
215 Hanover Ave, Ste 204
Lancaster, PA 17603
717-435-1424


APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 79 HVAC SCHEDULES AND DETAILS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703627

SHEET 174 OF 506

M4.0 | 79-15-581

DRAWFORM REVISION: 10 OCTOBER 2014

# TYPICAL FLASH PROTECTION WARNING LABEL

**WARNING**

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

| | |
|---|---|
| EQUIPMENT TYPE: | |
| GROUNDING: | Y/N GROUNDED |
| WORK DISTANCE: | INCHES |
| AVAILABLE 3ϕ BOLTED CURRENT: | kA |
| FLASH PROTECTION BOUNDARY: | INCHES |
| INCIDENT ENERGY AT 23 INCHES: | cal/cm² |
| PPE LEVEL: | 4 |
| DATE: | xx/xx/xxxx |

NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. PROVIDE ON ALL IN-LINE METER SOCKETS, SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS AND MOTOR CONTROL CENTERS IN ACCORDANCE WITH NEC 110.16.

# TYPICAL NAMEPLATE DETAIL

NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. NAMEPLATE TO BE 1/16" THICK PLASTIC WITH WHITE CENTER LAMINATION. FACE SHALL BE BLACK, ENGRAVED LETTERS SHALL BE WHITE.
3. SECURE NAMEPLATE TO SURFACES WITH HIGH STRENGTH ADHESIVE CEMENT. UTILIZE MECHANICAL FASTENERS FOR ALL EXTERIOR LOCATIONS.
4. TYPICAL FOR "STARTERS", "DISCONNECTS", AND "TRANSFORMERS".

# RECEPTACLE LABEL REQUIREMENTS

# TYPICAL DEVICE MOUNTING HEIGHTS DETAIL

NOTES:

1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE EXCEPT EXIT SIGNS, CLOCKS, EMERGENCY LIGHTING AND FIRE ALARM A/V DEVICES.
2. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE.
3. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL UNLESS OTHERWISE NOTED.
4. STROBE HEIGHT ILLUSTRATED AT MAXIMUM HEIGHT. STROBE SHALL BE 80" AFF OR 6" BELOW CEILING, WHICHEVER IS LOWER.

# ELECTRIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| A/AMP | AMPERE | LTG | LIGHTING |
| AC | ALTERNATING CURRENT | MCB | MAIN CIRCUIT BREAKER |
| ADA | AMERICAN WITH DISABILITIES ACT | MEC | MASSACHUSETTS ELECTRIC CODE |
| AF | AMPERE FRAME | MH | MANHOLE |
| AFF | ABOVE FINISHED FLOOR | MLO | MAIN LUGS ONLY |
| AFG | ABOVE FINISHED GRADE | MTD | MOUNTED |
| AIC | AMPERE INTERRUPTING CAPACITY | MTG | MOUNTING |
| AL | ALUMINUM | NEC | NATIONAL ELECTRIC CODE |
| AT | AMPERE TRIP | NTS | NOT TO SCALE |
| ATS | AUTOMATIC TRANSFER SWTICH | # | NUMBER |
| AWG | AMERICAN WIRE GAUGE | PVC | POLYVINYL CHLORIDE |
| C | CONDUIT | PWR | POWER |
| CATV | CABLE TELEVISION | RGS | RIGID GALVANIZED STEEL |
| CCTV | CLOSED CIRCUIT TELEVISION | SWBD | SWITCHBOARD |
| CB | CIRCUIT BREAKER | TEL | TELEPHONE |
| CKT | CIRCUIT | TERM | TERMINAL |
| ℄ | CENTERLINE | TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSION |
| DWG | DRAWING | TSP | TWISTED SHIELDED PAIR |
| EC | ELECTRICAL CONTRACTOR | TYP | TYPICAL |
| EMT | ELECTRICAL METALLIC TUBING | UNO | UNLESS OTHERWISE NOTED |
| FLMT | FLEXIBLE LIQUID TIGHT METALLIC TUBING | UPS | UNINTERRUPTIBLE POWER SUPPLY |
| GFI | GROUND FAULT INTERRUPTING | UTP | UNSHIELDED TWISTED PAIR |
| GND | GROUND | V | VOLT |
| HH | HANDHOLE | VA | VOLT AMPERE |
| HP | HORSEPOWER | VFD | VARIABLE FREQUENCY DRIVE |
| HVAC | HEATING, VENTILATION AND AIR CONDITIONING | W | WATT |
| HZ | HERTZ | WP | WEATHERPROOF |
| IG | ISOLATED GROUND | | |
| KVA | KILOVOLT – AMPERE | | |
| KW | KILOWATT | | |

# MOTOR & CONTROLS LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| 30AS 3R | DISCONNECT SWITCH RATED 30AMP, 3–POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED "3R" – INDICATES NEMA TYPE 3R ENCLOSURE "30AS" – INDICATES 30A SWITCH |
| JCB | DDC CONTROL JACE BOX. PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION. |

# ELECTRIC SYSTEM TAGS OR CALL OUT SYMBOLS

| SYMBOL | |
|---|---|
| (circle) | DETAIL LETTER; DWG NUMBER ON WHICH SECTION IS SHOWN |
| EUH # (hexagon) | EQUIPMENT SYMBOLS (REFER TO EQUIPMENT SCHEDULES); EQUIPMENT DESIGNATION; EQUIPMENT REFERENCE NUMBER (TYP) |
| # (square) | NEW WORK NOTE TAG |
| # (hexagon) | DEMOLITION NOTE TAG |

# WIRING DEVICES

| SYMBOL | DESCRIPTION |
|---|---|
| # GFI | DUPLEX RECEPTACLE, GROUNDING TYPE, RATED 20A, 125V "#" – INDICATES CIRCUIT NUMBER (TYP) "WP" – INDICATES WEATHERPROOF (TYP) "GFI" – INDICATES GROUND FAULT INTERRUPTER |

# POWER DISTRIBUTION LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| (solid bar) | 208Y/120 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS |
| (hatched bar) | 480Y/277 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS |
| T | DRY TYPE TRANSFORMER |

# BRANCH CIRCUIT & FEEDER LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| PP1–(X) / PP1–(X) | BRANCH CIRCUIT HOME RUN. TYPICAL 2#12 & 1#12G IN ¾"C MINIMUM. PP1–(1) INDICATES PANEL AND CIRCUIT DESIGNATION FROM WHICH HOME RUN SHALL ORIGINATE. EACH CIRCUIT SHALL BE 20A–1P (20AMP SINGLE POLE) UNLESS NOTED OTHERWISE. |

# EXISTING EQUIPMENT LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| XM | EXISTING EQUIPMENT TO REMAIN |
| XR | EXISTING EQUIPMENT TO BE REMOVED |
| (light box) | EXISTING EQUIPMENT TO REMAIN FOR INFORMATION ONLY – (XM) INDICATED BY SYMBOL WITH LIGHT OUT OF FUNCTION LINE TYPE |
| (dashed box) | EXISTING EQUIPMENT TO BE REWORKED – (XN, XL, XE, XR) INDICATED BY SYMBOL WITH DASHED AND IN FUNCTION LINE TYPE |

# FIRE ALARM LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| XXXX | FIRE ALARM DEVICE "RTS" – INDICATES REMOTE TEST STATION |
| S | DUCT MOUNTED SMOKE DETECTOR |

# ELECTRIC GENERAL NOTES

1. THE ELECTRICAL DEMOLITION PLANS AND DETAILS INDICATE THE GENERAL INTENT AND ARE NOT INTENDED TO SHOW ALL ITEMS TO BE REMOVED OR RETAINED. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO THE SUBMISSION OF BIDS TO BECOME FAMILIAR WITH THE ACTUAL CONDITIONS AND EXTENT OF WORK. DEVICES AND EQUIPMENT LOCATED ON WALLS AND/OR CEILINGS TO BE REMOVED SHALL BE DISCONNECTED AND MADE SAFE FOR REMOVAL. THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY UNANTICIPATED HIDDEN CONDITIONS ENCOUNTERED DURING DEMOLITION.
2. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL SYSTEMS OR BUILDING COMPONENTS DAMAGED DURING THE EXECUTION OF WORK. DAMAGE SHALL INCLUDE BUT NOT LIMITED TO THE DESTRUCTION OR DISPOSAL OF ITEMS INTENDED TO REMAIN OR BE SALVAGED.
3. THE ELECTRICAL CONTRACTOR SHALL DE–ENERGIZE AND REMOVE ALL CONDUCTORS AND RACEWAYS TO THEIR POINT OF ORIGIN WITHIN THE AREA OF DEMOLITION SCOPE. ITEMS IDENTIFIED FOR DEMOLITION SHALL NOT BE ABANDONED IN PLACE. RACEWAYS THAT ENTER MASONRY WALLS AND FLOORS SHALL BE CUT FLUSH AT THE SURFACE FOR PATCHING BY TRADE CONTRACTOR. ALL CIRCUIT BREAKERS ASSOCIATED WITH THE DEMOLITION SCOPE SHALL BE DE–ENERGIZED AND LABELED AS SPARE.
4. ALL REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF UNLESS IDENTIFIED FOR REUSE OR TURNED OVER TO OWNER. THE OWNER'S REPRESENTATIVE SHALL INSPECT ALL RETAINED ITEMS PRIOR TO PLACEMENT IN THE IDENTIFIED STORAGE LOCATION BY THE ELECTRICAL CONTRACTOR.
5. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS–BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. CIRCUITRY HAS BEEN DETERMINED BASED UPON INFORMATION GATHERED, ASSUMPTIONS, AND INFORMATION OBTAINED FROM NAVFAC. EXACT CIRCUITING, EQUIPMENT SIZES, AND CONDUIT AND WIRING SIZES MAY DIFFER IN THE FIELD FROM WHAT IS SHOWN ON THE DRAWINGS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TRACING ALL CIRCUITS BEING DEMOLISHED AND REUSED PRIOR TO DISCONNECTING, VERIFYING EXISTING CIRCUITRY AND EQUIPMENT SIZES, AND SHALL SIZE ALL NEW EQUIPMENT AND BRANCH CIRCUITRY ACCORDINGLY IF ACTUAL CONDITIONS DIFFER FROM WHAT IS SHOWN ON THE DRAWINGS. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY. INTERCONNECTING BRANCH WIRING SHALL BE SIZED EQUAL TO THE HOMERUN UNLESS NOTED OTHERWISE.
6. VOLTAGE DROP HAS BEEN CONSIDERED IN THE DESIGN OF ALL BRANCH CIRCUITRY AND FEEDER SIZES BASED UPON THE ILLUSTRATED EQUIPMENT LAYOUTS AND SHORTEST CONDUCTOR/RACEWAY ROUTING. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR DEVIATIONS TAKEN THAT WILL INCREASE CONDUCTOR/RACEWAY ROUTING LENGTHS. BRANCH CIRCUITS LONGER THAN 75' FOR 120V FROM PANEL TO LAST OUTLET SHALL BE INCREASED A MINIMUM OF ONE SIZE ABOVE THAT SPECIFIED TO LIMIT VOLTAGE DROP TO LESS THAN 3%. FEEDERS SHALL FOLLOW SIMILAR GUIDELINES AND BE LIMITED TO 2% DROP.
7. THE ELECTRICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE ELECTRICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL ADDITIONAL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.
8. ROUTING IS DIAGRAMMATIC. CONTRACTOR SHALL DETERMINE ROUTING IN FIELD AND RE–USE EXISTING PENETRATIONS WHERE POSSIBLE.
9. SEE PWD–ME DRAWING NUMBERS;
   - 9.1. 43–15–67 FOR TITLE SHEET
   - 9.2. 43–15–68 FOR LIST OF DRAWINGS
   - 9.3. 43–15–69 FOR GENERAL NOTES & LEGENDS
   - 9.4. 43–15–72 FOR CHASE AND SOFFIT DETAILS
   - 9.5. 43–15–74 FOR STRUCTURAL NOTES AND SUPPORTS

# SCHEDULE OF DRAWINGS

| DWG# | DESCRIPTION |
|---|---|
| E1.0 | BUILDING 79 ELECTRICAL LEGEND |
| ED2.0A | BUILDING 79 ELECTRICAL SECOND FLOOR DEMOLITION PLAN PART A |
| ED2.1A | BUILDING 79 ELECTRICAL THIRD FLOOR DEMOLITION PLAN PART A |
| ED2.2A | BUILDING 79 ELECTRICAL ROOF DEMOLITION PLAN PART A |
| E2.0A | BUILDING 79 ELECTRICAL SECOND FLOOR PLAN PART A |
| E2.1A | BUILDING 79 ELECTRICAL THIRD FLOOR PLAN PART A |
| E2.2A | BUILDING 79 ELECTRICAL ROOF PLAN PART A |
| E3.0 | BUILDING 79 ELECTRICAL SCHEDULES & ONE–LINE DIAGRAM |

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE – CHARLES E. MACE No. 13078 LICENSED PROFESSIONAL ENGINEER

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A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

DES TM | DRW TM | CHK JO
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

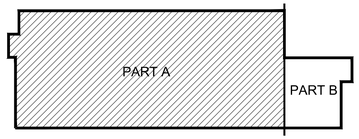
BUILDING 79 ELECTRICAL LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703628
SHEET 175 OF 506

E1.0 | 79-15-582

DRAWFORM REVISION: 10 OCTOBER 2014

## KEY PLAN

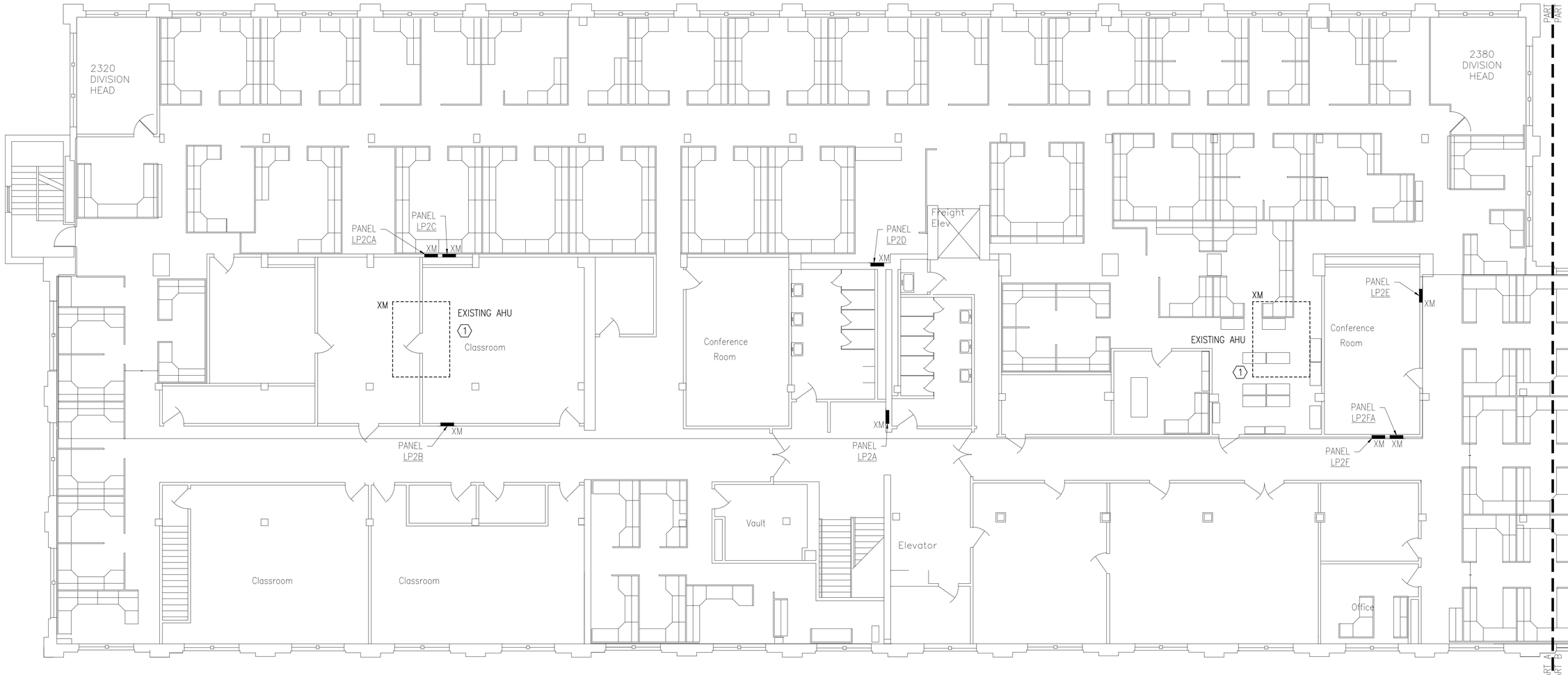



## GENERAL SHEET NOTES

1. REFER TO DRAWING E1.0 FOR LEGEND, SYMBOLS AND GENERAL NOTES.
2. THE ELECTRICAL CONTRACTOR SHALL CIRCUIT TRACE AND LABEL ALL EXISTING BRANCH CIRCUITS AND FEEDERS SCHEDULED TO BE REMOVED WITHIN THE AREA OF DEMOLITION SCOPE PRIOR TO DE-ENERGIZING AND DISCONNECTION. ALL CIRCUITS WITHIN PANELBOARDS IDENTIFIED FOR REMOVAL SHALL BE TRACED AND LABELED TO ENSURE THAT NO AREA OUTSIDE THE DEMOLITION SCOPE LIMIT IS AFFECTED.
3. THE ELECTRICAL CONTRACTOR SHALL IDENTIFY ALL BRANCH CIRCUITS, FEEDERS AND SYSTEM COMPONENTS, WHICH ARE TO REMAIN WITHIN THE AREA OF DEMOLITION SCOPE. THERE SHALL BE NO INTERRUPTION OF SERVICE TO ANY AREA OUTSIDE THE SCOPE LIMITS WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE. EXISTING EQUIPMENT TO REMAIN SHALL BE LEFT IN A CODE COMPLIANT MANNER.
4. THE ELECTRICAL CONTRACTOR SHALL TEMPORARILY SUPPORT ALL ITEMS TO REMAIN THAT ARE AFFECTED BY THE DEMOLITION OF BUILDING STRUCTURAL COMPONENTS (WALLS, CEILINGS, ETC.). TEMPORARILY SUPPORTED ITEMS SHALL BE PERMANENTLY SUPPORTED AND INSTALLED WHEN FINALIZED STRUCTURES ARE IN PLACE.

## DEMOLITION KEYNOTES

1. EXISTING AHU TO REMAIN AND UNIT TO BE REFURBISHED. COORDINATE WITH MECHANICAL CONTRACTOR TO DETERMINE WHAT IS BEING REPLACED INSIDE AHU. DISCONNECT AND MAKE SAFE FOR REMOVAL ALL POWERED EQUIPMENT THAT IS TO BE REPLACED (MOTORS, STARTERS, ETC.) IN AHU. MAINTAIN UNIT DISCONNECT, BRANCH CIRCUITRY, AND ASSOCIATED CIRCUIT BREAKER.




# BUILDING 79 ELECTRICAL SECOND FLOOR DEMOLITION PLAN PART A

1/8"=1'-0"

PLAN NORTH

## GRAPHIC SCALE

1/8" = 1' scale 8 4 0 8 16 24 feet

CHECK GRAPHIC SCALE BEFORE USING

| | STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|---|
| | 4 | 100% SUBMISSION | 08/07/2015 | DM |
| | 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| | 2 | 90% SUBMISSION | 06/04/2015 | DM |
| | 1 | 80% SUBMISSION | 04/24/2015 | DM |
| | 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE
CHARLES E. MACE
No. 13078
LICENSED PROFESSIONAL ENGINEER
SEAL

THE CONTRACTOR SHALL REVIEW AND APPROVE SHOP DRAWINGS, SAMPLES, AND SIMILAR SUBMITTALS PRIOR TO SUBMISSION TO THE GOVERNMENT. EACH SUBMITTAL SHALL BEAR THE STAMP OF APPROVAL OF THE CONTRACTOR AND SHALL INDICATE THAT THE CONTRACTOR HAS DETERMINED AND VERIFIED ALL FIELD MEASUREMENTS, FIELD CONSTRUCTION CRITERIA, MATERIALS, CATALOG NUMBERS, AND SIMILAR DATA, AND THAT THE CONTRACTOR HAS CHECKED AND COORDINATED EACH SHOP DRAWING WITH THE REQUIREMENTS OF THE WORK AND THE CONTRACT DOCUMENTS. DATED: 2015-08-04

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915 BROADWAY, SUITE 206
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215 SAXTON AVE, STE 203
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DES TM DRW TM CHK JO
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FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 79 ELECTRICAL SECOND FLOOR DEMOLITION
PLAN PART A

EPROJECT NO.: 1350913
CONSTR. CNTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703629
SHEET 176 OF 506
ED2.0A 79-15-583

DRAWFORM REVISION: 10 OCTOBER 2014

SHEET TAKEN OUT OF PROJECT

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

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A/E INFO

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FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: TM | DRW: TM | CHK: JO

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH

PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 79 ELECTRICAL THIRD FLOOR DEMOLITION PLAN PART A

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.
N40085-XX-C-XXXX

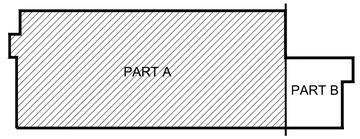
NAVFAC DRAWING NO.
12703630

SHEET 177 OF 506

ED2.1A | 79-15-584

DRAWFORM REVISION: 10 OCTOBER 2014

## KEY PLAN

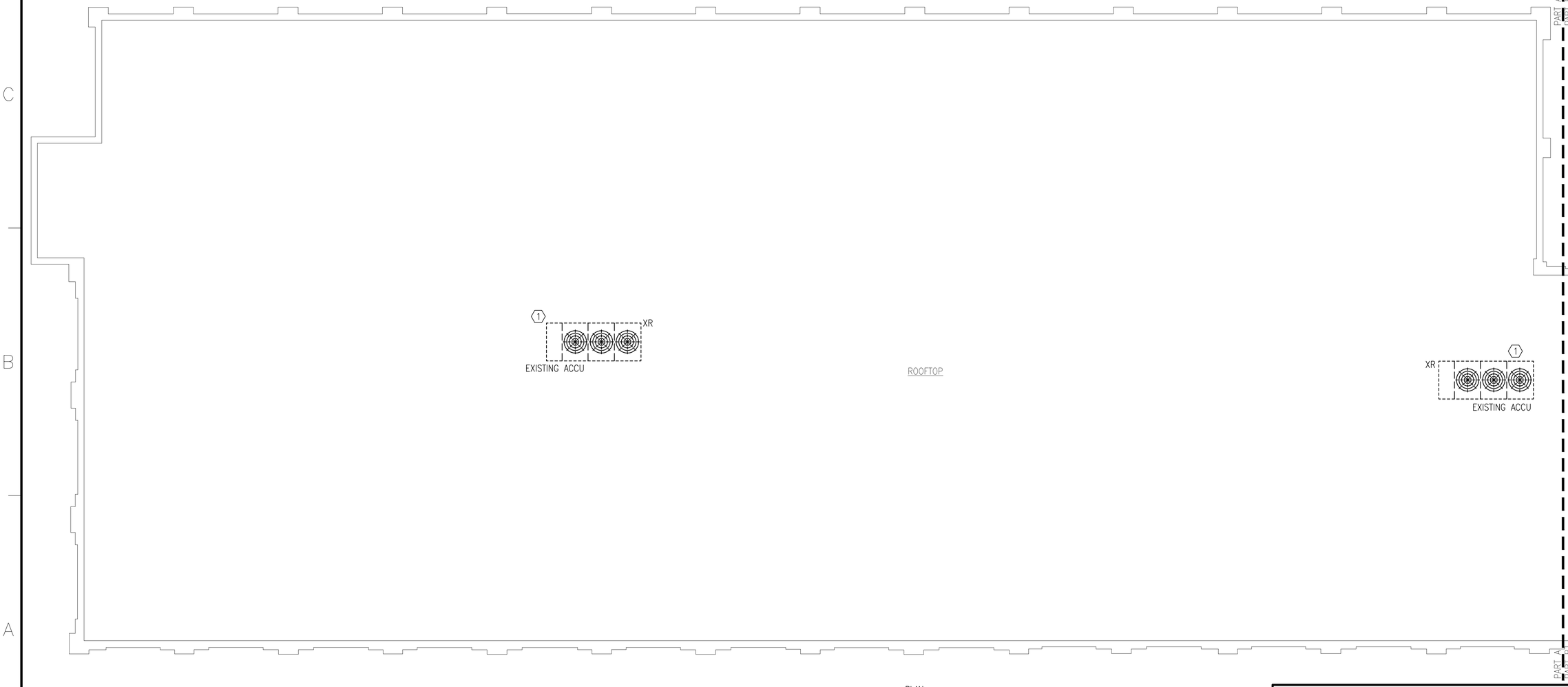



## GENERAL SHEET NOTES

1. REFER TO DRAWING E1.0 FOR LEGEND, SYMBOLS AND GENERAL NOTES.
2. THE ELECTRICAL CONTRACTOR SHALL CIRCUIT TRACE AND LABEL ALL EXISTING BRANCH CIRCUITS AND FEEDERS SCHEDULED TO BE REMOVED WITHIN THE AREA OF DEMOLITION SCOPE PRIOR TO DE-ENERGIZING AND DISCONNECTION. ALL CIRCUITS WITHIN PANELBOARDS IDENTIFIED FOR REMOVAL SHALL BE TRACED AND LABELED TO ENSURE THAT NO AREA OUTSIDE THE DEMOLITION SCOPE LIMIT IS AFFECTED.
3. THE ELECTRICAL CONTRACTOR SHALL IDENTIFY ALL BRANCH CIRCUITS, FEEDERS AND SYSTEM COMPONENTS, WHICH ARE TO REMAIN WITHIN THE AREA OF DEMOLITION SCOPE. THERE SHALL BE NO INTERRUPTION OF SERVICE TO ANY AREA OUTSIDE THE SCOPE LIMITS WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE. EXISTING EQUIPMENT TO REMAIN SHALL BE LEFT IN A CODE COMPLIANT MANNER.
4. THE ELECTRICAL CONTRACTOR SHALL TEMPORARILY SUPPORT ALL ITEMS TO REMAIN THAT ARE AFFECTED BY THE DEMOLITION OF BUILDING STRUCTURAL COMPONENTS (WALLS, CEILINGS, ETC.). TEMPORARILY SUPPORTED ITEMS SHALL BE PERMANENTLY SUPPORTED AND INSTALLED WHEN FINALIZED STRUCTURES ARE IN PLACE.

## DEMOLITION KEYNOTES

1. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING ACCU. DEMOLISH ALL ASSOCIATED BRANCH CIRCUITRY, DISCONNECT AND ASSOCIATED CIRCUIT BREAKER IN THEIR ENTIRETY.




BUILDING 79 ELECTRICAL ROOF PLAN DEMOLITION PLAN PART A
1/8"=1'-0"

PLAN NORTH

## GRAPHIC SCALE

1/8" = 1' scale — 8 4 0 8 16 24 feet

CHECK GRAPHIC SCALE BEFORE USING

| | | DM | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | |
| 2 | 90% SUBMISSION | 06/04/2015 | |
| 1 | 80% SUBMISSION | 04/24/2015 | |
| 0 | 35% SUBMISSION | 02/23/2015 | |
| STM | DESCRIPTION | DATE | |

NAVFAC

STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER – CHARLES E. MACE No. 13078 LICENSED

SEAL

THE CONTRACTOR SHALL REVIEW AND APPROVE SHOP DRAWINGS, SAMPLES, AND SIMILAR SUBMITTALS PRIOR TO SUBMISSION TO THE GOVERNMENT. SUBMITTALS NOT STAMPED AND SIGNED BY THE CONTRACTOR MAY BE REJECTED WITHOUT REVIEW. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR DEVIATIONS FROM REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE GOVERNMENT'S APPROVAL OF SHOP DRAWINGS, SAMPLES, OR SIMILAR SUBMITTALS UNLESS THE CONTRACTOR HAS SPECIFICALLY INFORMED THE GOVERNMENT IN WRITING OF SUCH DEVIATION AT THE TIME OF SUBMISSION AND THE GOVERNMENT HAS GIVEN WRITTEN APPROVAL TO THE SPECIFIC DEVIATION. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR ERRORS OR OMISSIONS IN SHOP DRAWINGS, SAMPLES, OR SIMILAR SUBMITTALS BY THE GOVERNMENT'S APPROVAL THEREOF.

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A/E INFO

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FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: TM | DRW: TM | CHK: JO

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

FEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 79 ELECTRICAL ROOF DEMOLITION PLAN PART A

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.: N40085-XX-C-XXXX

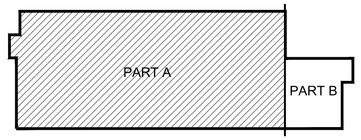
NAVFAC DRAWING NO.: 12703631

SHEET 178 OF 506

ED2.2A | 79-15-585

DRAWFORM REVISION: 10 OCTOBER 2014

## KEY PLAN

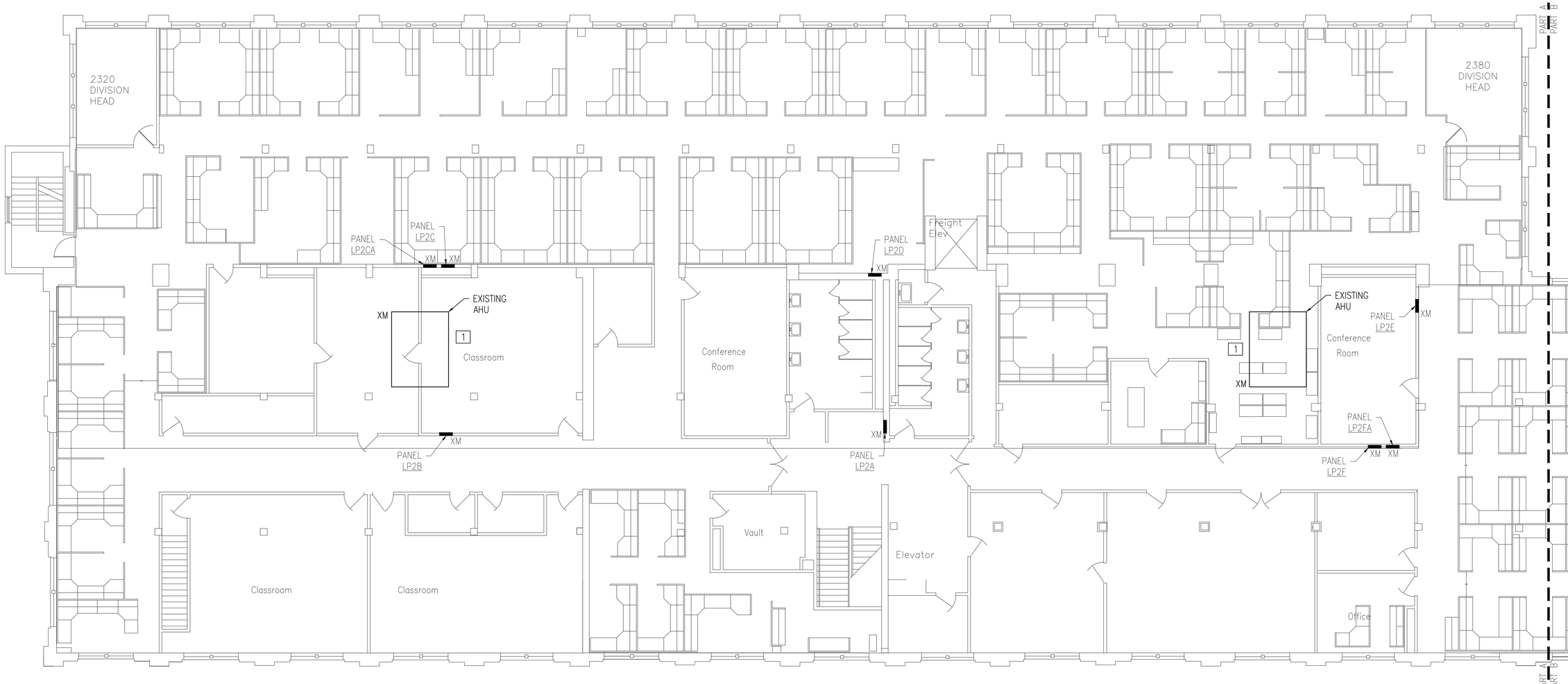



## GENERAL SHEET NOTES

1. REFER TO DRAWING E1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. POWER BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. POWER BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
3. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING POWER DEVICES TO REMAIN.

## NEW WORK KEYNOTES

1. RECONNECT ALL POWERED EQUIPMENT (MOTORS, STARTERS, ETC.) INSIDE AHU BEING REPLACED TO EXISTING BRANCH CIRCUITRY. REUSE AS MUCH EXISTING CONDUIT AND WIRING AS POSSIBLE AND EXTEND AS NEEDED. NEW CONDUIT AND WIRING TO MATCH EXISTING IN ALL RESPECTS. COORDINATE WITH MECHANICAL CONTRACTOR TO DETERMINE WHAT POWERED EQUIPMENT IS BEING REPLACED.




BUILDING 79 ELECTRICAL SECOND FLOOR PLAN PART A
1/8"=1'-0"

PLAN NORTH

GRAPHIC SCALE
1/8" = 1' 8 4 0 8 16 24
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| APPR | DATE | DESCRIPTION | STM |
|---|---|---|---|
| DM | 08/07/2015 | 100% SUBMISSION | 4 |
| DM | 07/24/2015 | 100% REVIEW SUBMISSION | 3 |
| DM | 06/04/2015 | 90% SUBMISSION | 2 |
| DM | 04/24/2015 | 80% SUBMISSION | 1 |
| DM | 02/23/2015 | 35% SUBMISSION | 0 |

NAVFAC

STATE OF NEW HAMPSHIRE
CHARLES E. MACE No. 13078
LICENSED PROFESSIONAL ENGINEER
SEAL

THE CONSTRUCTION CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL JOB SITE SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS AND NOTIFICATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE OR INJURY TO PERSONS OR PROPERTY THAT OCCURS AS A RESULT OF CONTRACTOR'S FAILURE TO COMPLY WITH THE AFOREMENTIONED. CONTRACT DOCUMENTS 12/03/2014

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PRIME PROFESSIONAL
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WESTBROOK, ME 04092
207.317.9224
INFO

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FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

| DES | DRW | CHK |
|---|---|---|
| TM | TM | JO |

PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD

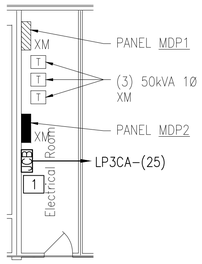
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 79 ELECTRICAL SECOND FLOOR PLAN PART A

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703632
SHEET 179 OF 506
E2.0A | 79-15-586

DRAWFORM REVISION: 10 OCTOBER 2014

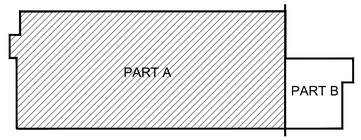



## BUILDING 79 THIRD FLOOR ELECTRICAL ROOM

1/8"=1'-0"

2D E2.1

## KEY PLAN

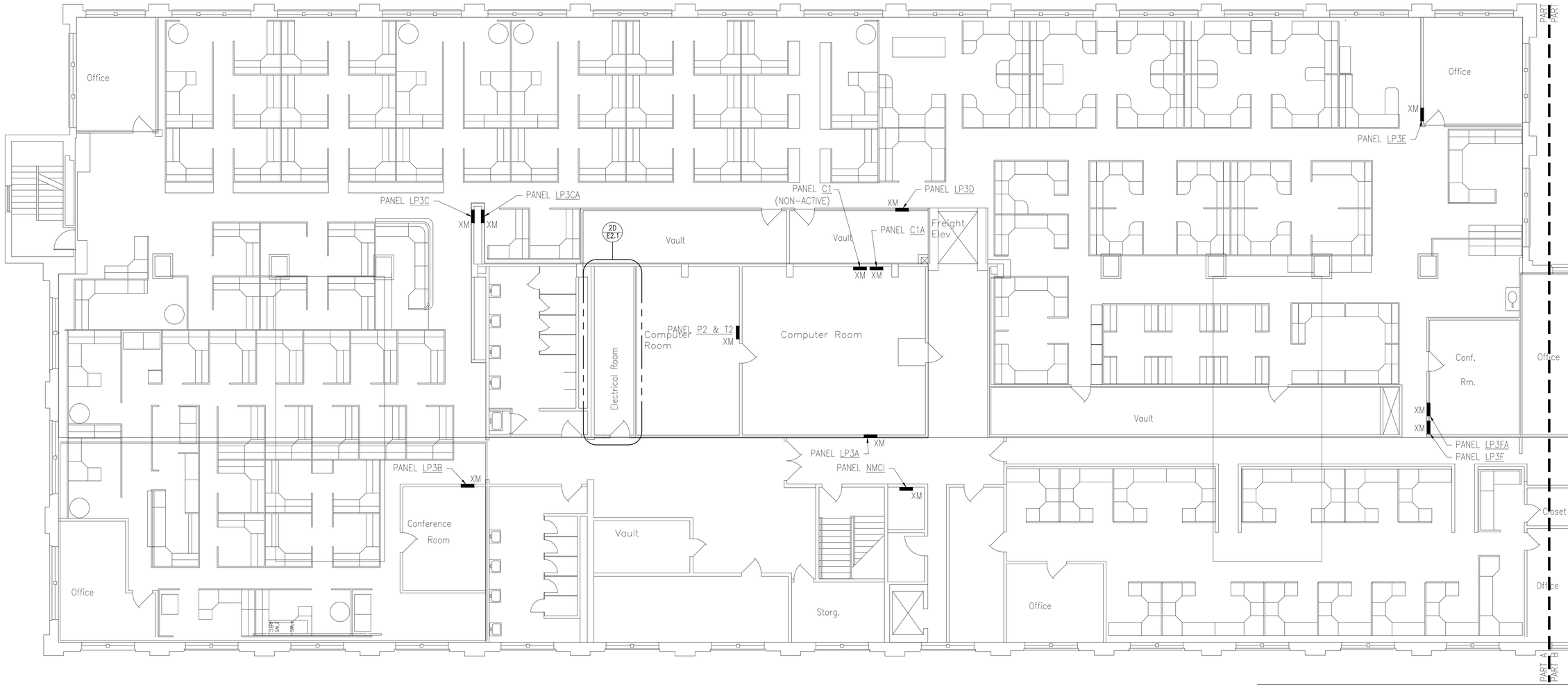



## GENERAL SHEET NOTES

1. REFER TO DRAWING E1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. POWER BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. POWER BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
3. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING POWER DEVICES TO REMAIN.
4. FINAL LOW-VOLTAGE CONNECTIONS TO BE MADE BY CONTROLS CONTRACTOR. FIELD COORDINATE EXACT LOCATION OF EQUIPMENT WITH CONTROLS CONTRACTOR AND NAVFAC.
5. FIRE ALARM BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. FIRE ALARM BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
6. MC CABLE FOR FIRE ALARM SERVICE SHALL HAVE A RED IDENTIFIER ALONG ITS ENTIRE LENGTH. JUNCTION BOX COVERS AND CONDUIT COUPLINGS FOR ALL FIRE ALARM WIRING RACEWAYS SHALL BE PAINTED RED PRIOR TO INSTALLATION.
7. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING FIRE ALARM DEVICES TO REMAIN.

## NEW WORK KEYNOTES

1. NEW DDC JACE BOX PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.




## BUILDING 79 ELECTRICAL THIRD FLOOR PLAN PART A

1/8"=1'-0"

PLAN NORTH

## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24

scale feet

CHECK GRAPHIC SCALE BEFORE USING

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE — CHARLES E. MACE No. 13078 LICENSED PROFESSIONAL ENGINEER — SEAL

THE CADD/GRAPHICS FOR THIS PROJECT WERE PREPARED AND PROCESSED UTILIZING THE FOLLOWING HARDWARE AND SOFTWARE: AUTODESK REVIT ARCHITECTURE 2015 AUTODESK AUTOCAD 2015 ADOBE ACROBAT PRO DC 2015 MICROSOFT OFFICE 2013 PROFESSIONAL PLUS

ENGINEER: CSI ENGINEERING, PLLC — 999 BASKAHEGAN STREET, SUITE 206, JACKSONVILLE, FLORIDA 32211, TEL: 1.833.3.NAVFAC, WWW.CSIENGINEERING.COM, CERTIFICATE OF AUTHORIZATION NO. 30013, EXPIRATION DATE: 02/28/2017

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

| DES | TM | DRW | TM | CHK | JO |
|---|---|---|---|---|---|

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 79 ELECTRICAL THIRD FLOOR PLAN PART A

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

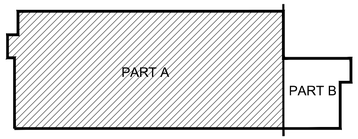
NAVFAC DRAWING NO. 12703633

SHEET 180 OF 506

E2.1A | 79-15-587

DRAWFORM REVISION: 10 OCTOBER 2014

## KEY PLAN

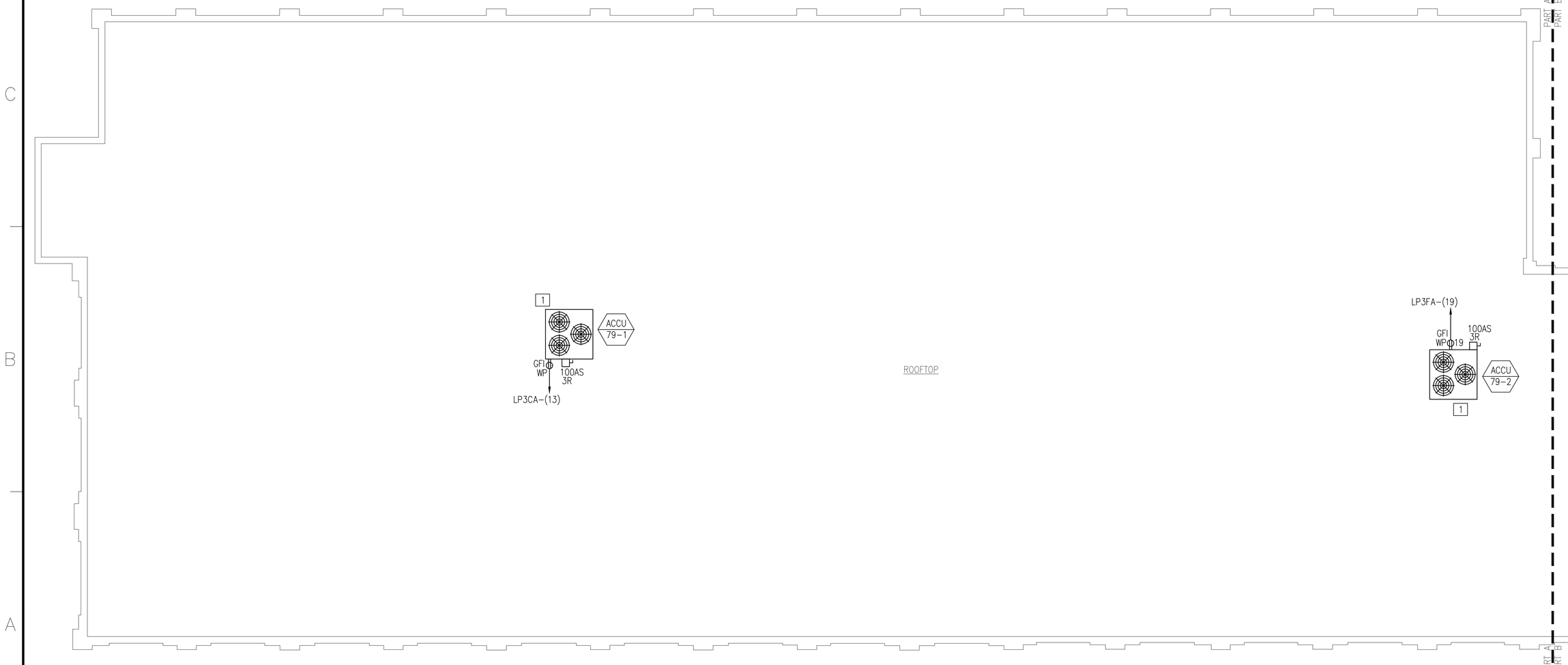



## GENERAL SHEET NOTES

1. REFER TO DRAWING E1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. POWER BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. POWER BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
3. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING POWER DEVICES TO REMAIN.
4. FIRE ALARM BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. FIRE ALARM BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
5. MC CABLE FOR FIRE ALARM SERVICE SHALL HAVE A RED IDENTIFIER ALONG ITS ENTIRE LENGTH. JUNCTION BOX COVERS AND CONDUIT COUPLINGS FOR ALL FIRE ALARM WIRING RACEWAYS SHALL BE PAINTED RED PRIOR TO INSTALLATION.
6. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING FIRE ALARM DEVICES TO REMAIN.

## NEW WORK KEYNOTES

1. PROVIDE NEW CIRCUIT IN PANEL "MDP1" FOR NEW ACCU. PROVIDE NEW DISCONNECT AS SHOWN. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.




PLAN NORTH

BUILDING 79 ELECTRICAL ROOF PLAN PART A
1/8"=1'-0"

## GRAPHIC SCALE

1/8" = 1'
8 4 0 8 16 24
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE
CHARLES E. MACE
No. 13078
LICENSED
PROFESSIONAL ENGINEER
SEAL

CSI ENGINEERING
FIRE PROTECTION
999 BANCROFT WAY, STE 204
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PORTSMOUTH, NH 03801
603/319-9214
LLC
CODE CONSULTING
CONSTRUCTION
COST ESTIMATING
FIRE PROTECTION
ENGINEERING
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES TM DRW TM CHK JO
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 79 ELECTRICAL ROOF PLAN PART A

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703634
SHEET 181 OF 506
E2.2A 79-15-588

DRAWFORM REVISION: 10 OCTOBER 2014

## PANELBOARD SCHEDULE

PANEL: LP3FA | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING
MAIN: MLO | BUS AMPS: 100A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC: BLDG. 79 THIRD FLOOR

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20/1 | COFFEE GFCI | 0 | – | | – | 0 | POWER POLE | 20/1 | 2 |
| 3 | 20/1 | XEROX | 0 | – | | – | 0 | POWER POLE | 20/1 | 4 |
| 5 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 6 |
| 7 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 8 |
| 9 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 10 |
| 11 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 12 |
| 13 | 20/1 | POWER POLE | 0 | – | | – | 0 | XEROX | 20/1 | 14 |
| 15 | 20/1 | POWER POLE XEROX | 0 | – | | – | 0 | PROJECTOR REC. 2340 | 20/1 | 16 |
| 17 | 20/1 | CAROL'S LIGHTS | 0 | – | | – | 0 | PROJECTOR & TV REC. | 20/1 | 18 |
| 19 | 20/1 | ROOFTOP ACCU RECPT. | .18 | 1 | | – | 0 | RECPTS. | 20/1 | 20 |
| 21 | 20/1 | SPARE | 0 | – | | – | 0 | RECPTS. | 20/1 | 22 |
| 23 | 20/1 | SPARE | 0 | – | | – | 0 | RECPTS. | 20/1 | 24 |
| 25 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 26 |
| 27 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 28 |
| 29 | 20/1 | SPARE | 0 | – | | – | 0 | SPARE | 20/1 | 30 |
| | | | 0.18 | | | | 0.0 | TOTAL CONNECTED kVA: | 0.18 | |
| | | | | | | | | TOTAL CONNECTED AMPERES: | 0.50 | |

NOTES:
1. VERIFY AND REUSE EXISTING CIRCUIT BREAKER AS INDICATED FOR NEW LOAD.
2. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

## PANELBOARD SCHEDULE

PANEL: LP3CA | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING
MAIN: MLO | BUS AMPS: 100A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC: BLDG. 79 THIRD FLOOR

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 2 |
| 3 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 4 |
| 5 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 6 |
| 7 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 8 |
| 9 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 10 |
| 11 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 12 |
| 13 | 20/1 | ROOFTOP ACCU RECPTS. | .36 | 1 | | – | 0 | POWER POLE | 20/1 | 14 |
| 15 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 16 |
| 17 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 18 |
| 19 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 20 |
| 21 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 22 |
| 23 | 20/1 | POWER POLE | 0 | – | | – | 0 | POWER POLE | 20/1 | 24 |
| 25 | 20/1 | JACE BOX | .02 | 2 | | – | | SPACE | | 26 |
| 27 | | SPARE | | – | | – | | SPACE | | 28 |
| 29 | | SPARE | | – | | – | | SPACE | | 30 |
| | | | 0.38 | | | | 0.0 | TOTAL CONNECTED kVA: | 0.38 | |
| | | | | | | | | TOTAL CONNECTED AMPERES: | 1.06 | |

NOTES:
1. VERIFY AND REUSE EXISTING CIRCUIT BREAKER AS INDICATED FOR NEW LOAD.
2. PROVIDE NEW CIRCUIT BREAKER SIZED AS INDICATED FOR NEW LOAD.
3. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

## PANELBOARD SCHEDULE

PANEL: MDP1 | VOLTS: 277/ 480 | NEW/EXISTING.: EXISTING
MAIN: 600A MCB | BUS AMPS: 600A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC: BLDG. 79 THIRD FLOOR ELECTRICAL RM

| CIR. | AMPS/ POLES | DESCRIPTION OF LOAD | LOAD kVA | NOTE | | NOTE | LOAD kVA | DESCRIPTION OF LOAD | AMPS/ POLES | CIR. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 30/3 | SPARE | 0 | – | | – | 0 | SPARE | 30/3 | 2 |
| 3 | 30/3 | AHU-1 | 0 | – | | – | 0 | AHU-2 | 30/3 | 4 |
| 5 | 70/3 | ? | 0 | – | | 1 | 66.8 | ACCU-79-2 | 100/3 | 6 |
| 7 | 100/3 | RTU-4 | 0 | – | | 1 | 66.8 | ACCU-79-1 | 100/3 | 8 |
| 9 | 200/3 | MDP2 VIA (3) 50kVA TRANSFORMERS | .56 | – | | – | 0 | LIEBERT #1 BACK ROOM AIR CONDENSER | 40/3 | 10 |
| 11 | 40/3 | LIEBERT #2 FRONT ROOM AIR CONDENSER | 0 | – | | – | 0 | RTU-3 | 100/3 | 12 |
| 13 | | SPACE | | – | | – | 0 | ELEVATOR | 40/3 | 14 |
| 15 | | SPACE | | – | | – | | SPACE | | 16 |
| | | | 0.56 | | | | 133.6 | TOTAL CONNECTED kVA: | 134.16 | |
| | | | | | | | | TOTAL CONNECTED AMPERES: | 161.56 | |

NOTES:
1. REMOVE EXISTING CIRCUIT BREAKER AND PROVIDE NEW SIZED AS INDICATED FOR NEW LOAD.
2. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

## MECHANICAL EQUIPMENT SCHEDULE

| EQUIP TAG | DESCRIPTION | LOAD | | | | PANEL SOURCE | | BRANCH CIRCUIT | CONNECTION | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | HP | KVA | VOLT | PH | PANEL | C/B | | FLEX | JB | REC | DISC | |
| ACCU 79-1 | CONDENSING UNIT | – | 66.77 | 460 | 3 | MDP1-(8) | 100/3 | (3)#3 & (1)#8G, 1-1/4"C | X | | | X | NOTES 7 |
| ACCU 79-2 | CONDENSING UNIT | – | 66.77 | 460 | 3 | MDP1-(6) | 100/3 | (3)#3 & (1)#8G, 1-1/4"C | X | | | X | NOTES 7 |

NOTES:

1. BRANCH CIRCUIT WIRING METHODS SHALL BE AS NOTED ON THE DRAWINGS AND/OR SPECIFICATIONS FOR THE APPLICABLE LOCATION.
2. "FLEX" – DENOTES FINAL THREE FEET (MAXIMUM) OF RACEWAY SHALL BE FLEXIBLE METAL OR LIQUIDTIGHT METAL CONDUIT.
3. "JB" – JUNCTION BOX DENOTES FINAL CONNECTION TO BOX OR CONTROL PANEL PREWIRED TO THE EQUIPMENT.
4. "REC" – PROVIDE RECEPTACLE IN THE NEMA CONFIGURATION NOTED.
5. NOTES 6–9 ARE OPTIONS WHICH SHALL BE SPECIFICALLY NOTED IN REMARKS FOR INCLUSION.
6. DISCONNECT SHALL BE FUSIBLE.
7. DISCONNECT SHALL BE NEMA "3R"
8. DISCONNECT SHALL BE MOTOR-RATED SWITCH WITH THERMAL OVERLOAD ELEMENT.
9. DISCONNECT PROVIDED INTEGRAL (PREWIRED) TO EQUIPMENT BY TRADE CONTRACTOR.
10. INTEGRAL CONVENIENCE RECEPTACLE PROVIDED PREWIRED TO EQUIPMENT BY BY TRADE CONTRACTOR.

| APPR | DATE | DESCRIPTION | STA |
|---|---|---|---|
| DM | 08/07/2015 | 100% SUBMISSION | 4 |
| DM | 07/24/2015 | 100% REVIEW SUBMISSION | 3 |
| DM | 07/10/2015 | 90% SUBMISSION | 2 |
| DM | 04/24/2015 | 80% SUBMISSION | 1 |
| DM | 01/20/2015 | 35% SUBMISSION | 0 |

NAVFAC

CHARLES E. MACE No. 13078 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE – SEAL

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CSI ENGINEERING – FIRE PROTECTION – 999 Rockville Pike, Suite 204, Rockville, MD 20852, 301.315.0600 – 715 Auburn Ave, Suite 204, Atlanta, GA 30312, 404.373.9924 – WWW.CSIENG.NET – INFO@CSIENG.NET

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: TM | DRW: TM | CHK: JO
PM/DM: PETER STOCKLESS
BRANCH MANAGER: BRUCE LITALIEN
LEAD/PM&E: AMIN BAHROUR PM&E
FIRE PROTECTION: X

NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD | KITTERY, MAINE

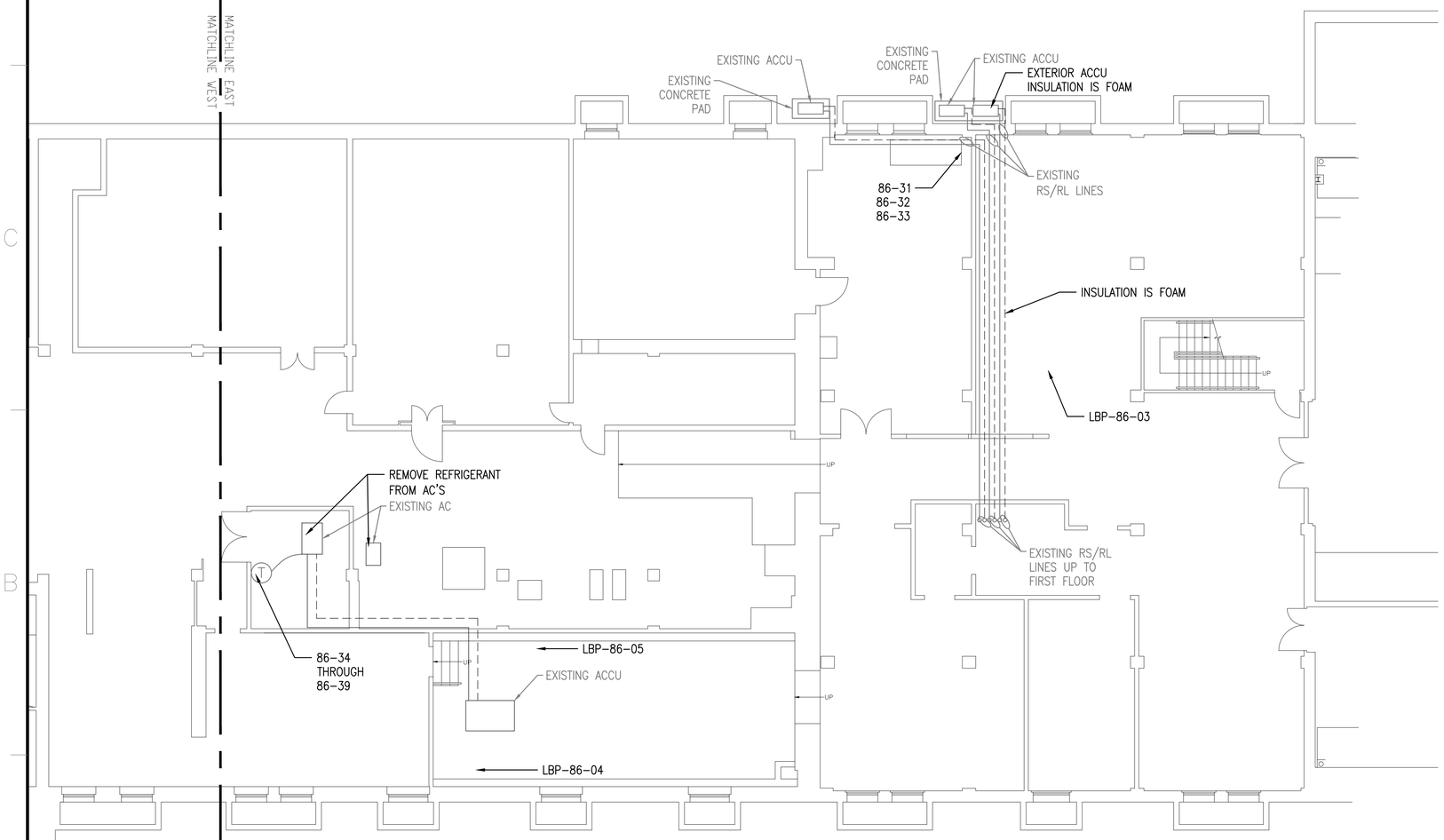
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 79 ELECTRICAL SCHEDULES & ONE-LINE DIAGRAM

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXX
NAVFAC DRAWING NO. 12703635
SHEET 182 OF 506

E3.0 | 79-15-589

DRAWFORM REVISION: 10 OCTOBER 2014




## B86 BASEMENT HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 1/8" = 1'

PLAN NORTH

## GENERAL SHEET NOTES

1. ALL PACM (PRESUMED ASBESTOS CONTAINING MATERIAL), LBP (LEAD BASED PAINT), PCB, AND OTHER HAZARDOUS BUILDING MATERIALS MAY NOT BE IDENTIFIED IN THIS SURVEY, PARTICULARLY THOSE HIDDEN IN WALLS, CEILINGS, FLOORS, ETC. AND IN AREAS DESCRIBED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, WHICH WERE INACCESSIBLE DURING THE SURVEY. ASSESSMENT EFFORTS DID INCLUDE, TO THE EXTENT FEASIBLE, ACCESS TO INTERIOR AND EXTERIOR OF THE STRUCTURE. HOWEVER, THE ABSENCE OF ALL PACM, LBP, PCB, AND OTHER HAZARDOUS BUILDING MATERIALS IN HIDDEN OR INACCESSIBLE PORTIONS CANNOT BE DEFINITIVELY ENSURED.

2. RENOVATION AND/OR DEMOLITION ACTIVITIES SHOULD BE MONITORED BY PERSONNEL CAPABLE OF IDENTIFYING PACM, LBP, PCB AND OTHER HAZARDOUS BUILDING MATERIALS. IF PACM, LBP, PCB OR OTHER HAZARDOUS BUILDING MATERIALS ARE ENCOUNTERED, THESE MATERIALS SHOULD BE BULK SAMPLED BY A LICENSED INSPECTOR AND DISPOSED OF IN ACCORDANCE WITH PNSY AND ALL OTHER APPLICABLE REGULATIONS.

3. SEE B86 ASBESTOS, LEAD, PCB, AND TCLP INVENTORY TABLES LOCATED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, DATED JUNE 22, 2015, FOR ADDITIONAL INFORMATION.

## HAZARDOUS MATERIAL SAMPLING SUMMARY

| SAMPLE ID | ACM | LBP |
|---|---|---|
| 86-31 | ND | NS |
| 86-32 | ND | NS |
| 86-33 | ND | NS |
| 86-34 | ND | NS |
| 86-35 | ND | NS |
| 86-36 | ND | NS |
| 86-37 | ND | NS |
| 86-38 | ND | NS |
| 86-39 | ND | NS |
| LBP-86-03 | NS | 0.095 |
| LBP-86-04 | NS | 0.34 |
| LBP-86-05 | NS | 0.24 |

ACM = ASBESTOS CONTAINING MATERIALS
LBP = LEAD BASED PAINT
<RL = LESS THAN REPORTING LIMIT
ND = NONE DETECTED
NS = NOT SAMPLED
H = EXCEEDS REGULATORY STANDARDS FOR HAZARDOUS CONCENTRATION

NOTE:
REFER TO HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT DATED JUNE 22, 2015 FOR COMPLETE SAMPLING INFORMATION AND DATA.

## GRAPHIC SCALE

1/8" = 1' scale 8 4 0 8 16 24 feet

CHECK GRAPHIC SCALE BEFORE USING

| NO | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
| 1 | 90% SUBMISSION | 06/05/2015 | BLM |

NAVFAC

STATE OF MAINE — Bradlee Mezquita 9410 — LICENSED PROFESSIONAL ENGINEER — SEAL

Tighe&Bond
Consulting Engineers
177 Corporate Drive
Portsmouth, New Hampshire
(603) 433-8818
www.tighebond.com

A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

DES: A/E DRW: REP CHK: BLM
PM/DM: PETER STOCKLESS
BRANCH MANAGER: BRUCE LITALIEN
FEAD/PMAE: AMIN BAHROUR PM&E
FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

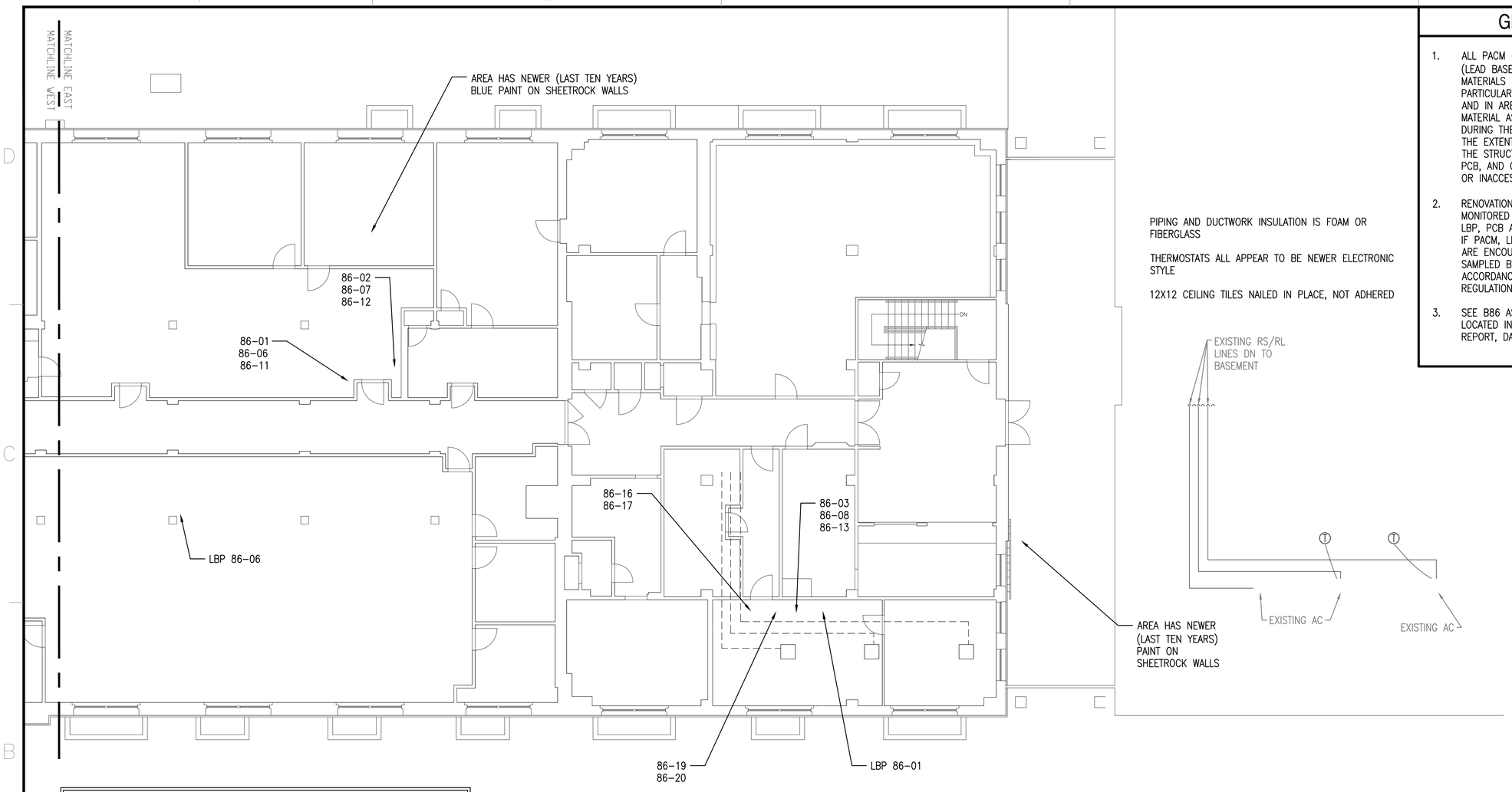
FY 16 ENERGY PROJECT
TASK 1-B-R-22

# B86 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703637
SHEET 184 OF 506
H1.0 | 86-15-918

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\HazMat\DWG\A1066_2_H2MF_R22.dwg LAYOUT NAME: B86-H1.0 PLOTTED: Friday, August 07, 2015 - 2:35pm USER: REP




## B86 FIRST FLOOR EAST HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 1/8" = 1'

PLAN NORTH

## HAZARDOUS MATERIAL SAMPLING SUMMARY

| SAMPLE ID | ACM | LBP |
|---|---|---|
| 86-01 | ND | NS |
| 86-02 | ND | NS |
| 86-03 | ND | NS |
| 86-06 | ND | NS |
| 86-07 | ND | NS |
| 86-08 | ND | NS |
| 86-11 | ND | NS |
| 86-12 | ND | NS |
| 86-13 | ND | NS |
| 86-16 | ND | NS |
| 86-17 | ND | NS |
| 86-19 | ND | NS |
| 86-20 | ND | NS |
| LBP-86-01 | NS | 0.086 |
| LBP-86-06 | NS | 0.22 |

ACM = ASBESTOS CONTAINING MATERIALS
LBP = LEAD BASED PAINT
<RL = LESS THAN REPORTING LIMIT
ND = NONE DETECTED
NS = NOT SAMPLED
H = EXCEEDS REGULATORY STANDARDS FOR HAZARDOUS CONCENTRATION

NOTE:
REFER TO HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT DATED JUNE 22, 2015 FOR COMPLETE SAMPLING INFORMATION AND DATA.

## GENERAL SHEET NOTES

1. ALL PACM (PRESUMED ASBESTOS CONTAINING MATERIAL), LBP (LEAD BASED PAINT), PCB, AND OTHER HAZARDOUS BUILDING MATERIALS MAY NOT BE IDENTIFIED IN THIS SURVEY, PARTICULARLY THOSE HIDDEN IN WALLS, CEILINGS, FLOORS, ETC. AND IN AREAS DESCRIBED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, WHICH WERE INACCESSIBLE DURING THE SURVEY. ASSESSMENT EFFORTS DID INCLUDE, TO THE EXTENT FEASIBLE, ACCESS TO INTERIOR AND EXTERIOR OF THE STRUCTURE. HOWEVER, THE ABSENCE OF ALL PACM, LBP, PCB, AND OTHER HAZARDOUS BUILDING MATERIALS IN HIDDEN OR INACCESSIBLE PORTIONS CANNOT BE DEFINITIVELY ENSURED.
2. RENOVATION AND/OR DEMOLITION ACTIVITIES SHOULD BE MONITORED BY PERSONNEL CAPABLE OF IDENTIFYING PACM, LBP, PCB AND OTHER HAZARDOUS BUILDING MATERIALS. IF PACM, LBP, PCB OR OTHER HAZARDOUS BUILDING MATERIALS ARE ENCOUNTERED, THESE MATERIALS SHOULD BE BULK SAMPLED BY A LICENSED INSPECTOR AND DISPOSED OF IN ACCORDANCE WITH PNSY AND ALL OTHER APPLICABLE REGULATIONS.
3. SEE B86 ASBESTOS, LEAD, PCB, AND TCLP INVENTORY TABLES LOCATED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, DATED JUNE 22, 2015, FOR ADDITIONAL INFORMATION.

## GRAPHIC SCALE

1/8" = 1' scale 8 4 0 8 16 24 feet

CHECK GRAPHIC SCALE BEFORE USING

| NO | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
| 1 | 90% SUBMISSION | 06/05/2015 | BLM |

NAVFAC

STATE OF MAINE — Bradlee Mezquita — 9410 — LICENSED PROFESSIONAL ENGINEER — SEAL

Tighe&Bond
*Consulting Engineers*
177 Corporate Drive
Portsmouth, New Hampshire
(603) 433-8818
*www.tighebond.com*

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: A/E | DRW: REP | CHK: BLM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

LEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH

KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

B86 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

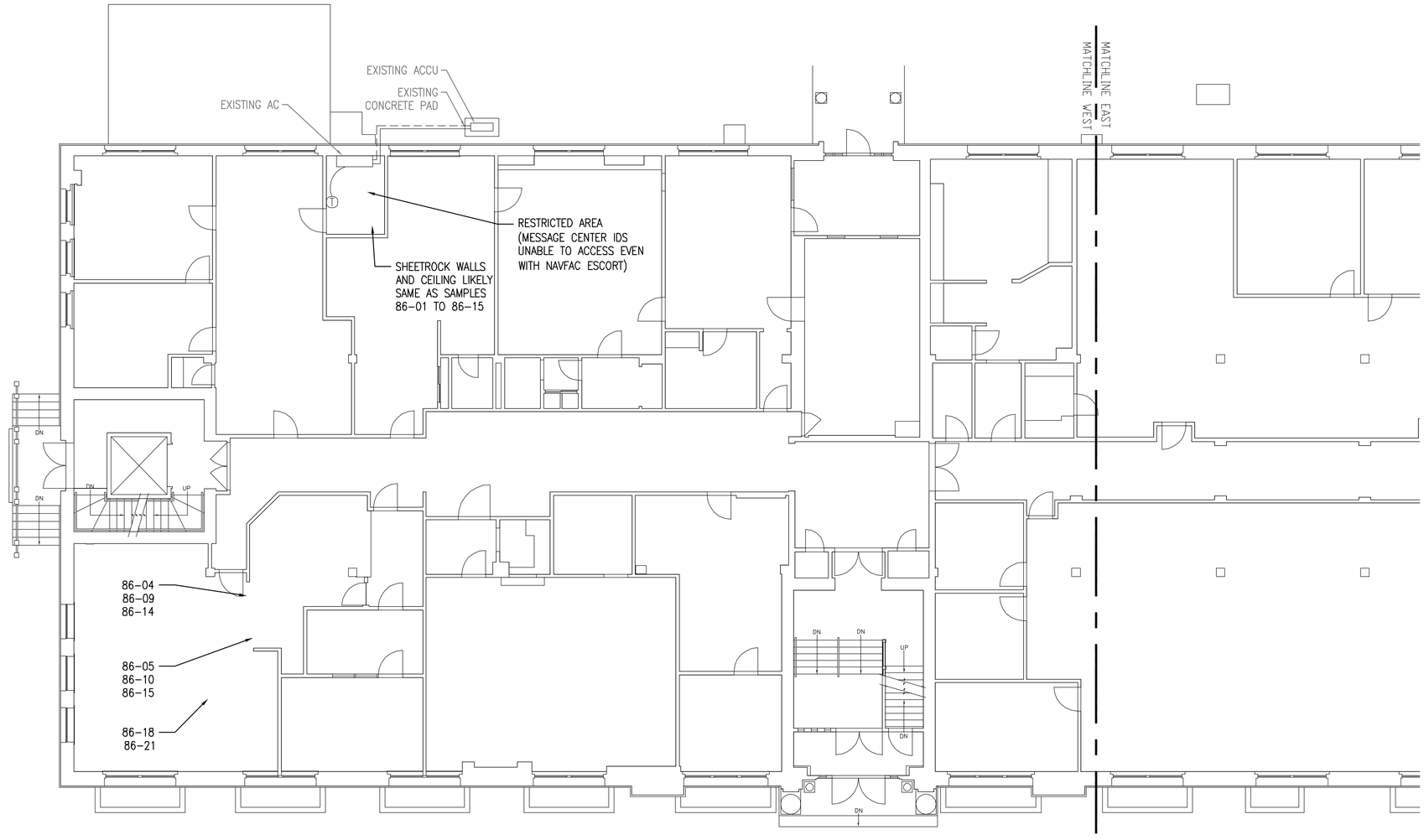
NAVFAC DRAWING NO. 12703638

SHEET 185 OF 506

H1.1 | 86-15-919

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\HazMats\DWG\A1066_2_HZMT_R22.dwg LAYOUT NAME: B86-H1.1 PLOTTED: Friday, August 07, 2015 - 2:35pm USER: REP




B86 FIRST FLOOR WEST HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 1/8" = 1'

PLAN NORTH

## GENERAL SHEET NOTES

1. ALL PACM (PRESUMED ASBESTOS CONTAINING MATERIAL), LBP (LEAD BASED PAINT), PCB, AND OTHER HAZARDOUS BUILDING MATERIALS MAY NOT BE IDENTIFIED IN THIS SURVEY, PARTICULARLY THOSE HIDDEN IN WALLS, CEILINGS, FLOORS, ETC. AND IN AREAS DESCRIBED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, WHICH WERE INACCESSIBLE DURING THE SURVEY. ASSESSMENT EFFORTS DID INCLUDE, TO THE EXTENT FEASIBLE, ACCESS TO INTERIOR AND EXTERIOR OF THE STRUCTURE. HOWEVER, THE ABSENCE OF ALL PACM, LBP, PCB, AND OTHER HAZARDOUS BUILDING MATERIALS IN HIDDEN OR INACCESSIBLE PORTIONS CANNOT BE DEFINITIVELY ENSURED.
2. RENOVATION AND/OR DEMOLITION ACTIVITIES SHOULD BE MONITORED BY PERSONNEL CAPABLE OF IDENTIFYING PACM, LBP, PCB AND OTHER HAZARDOUS BUILDING MATERIALS. IF PACM, LBP, PCB OR OTHER HAZARDOUS BUILDING MATERIALS ARE ENCOUNTERED, THESE MATERIALS SHOULD BE BULK SAMPLED BY A LICENSED INSPECTOR AND DISPOSED OF IN ACCORDANCE WITH PNSY AND ALL OTHER APPLICABLE REGULATIONS.
3. SEE B86 ASBESTOS, LEAD, PCB, AND TCLP INVENTORY TABLES LOCATED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, DATED JUNE 22, 2015, FOR ADDITIONAL INFORMATION.

## HAZARDOUS MATERIAL SAMPLING SUMMARY

| SAMPLE ID | ACM | LBP |
|---|---|---|
| 86-04 | ND | NS |
| 86-05 | ND | NS |
| 86-09 | ND | NS |
| 86-10 | ND | NS |
| 86-14 | ND | NS |
| 86-15 | ND | NS |
| 86-18 | ND | NS |
| 86-21 | ND | NS |

ACM = ASBESTOS CONTAINING MATERIALS
LBP = LEAD BASED PAINT
<RL = LESS THAN REPORTING LIMIT
ND = NONE DETECTED
NS = NOT SAMPLED
H = EXCEEDS REGULATORY STANDARDS FOR HAZARDOUS CONCENTRATION

NOTE:
REFER TO HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT DATED JUNE 22, 2015 FOR COMPLETE SAMPLING INFORMATION AND DATA.

GRAPHIC SCALE

1/8" = 1' (8 4 0 8 16 24 scale feet)

CHECK GRAPHIC SCALE BEFORE USING

| NO. | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
| 1 | 90% SUBMISSION | 06/05/2015 | BLM |

NAVFAC

STATE OF MAINE Bradley Marquis 9410 LICENSED PROFESSIONAL ENGINEER SEAL

Tighe&Bond
Consulting Engineers
177 Corporate Drive
Portsmouth, New Hampshire
(603) 433-8818
www.tighebond.com
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES: A/E DRW: REP CHK: BLM
PM/DM: PETER STOCKLESS
BRANCH MANAGER: BRUCE LITALIEN
FEAD/PM&E: AMIN BAHROUR PM&E
FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

B86 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703639
SHEET 186 OF 506
H1.2 | 86-15-920

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\AA\1066 AEC Subconsulting Support\HazMats\DWG\A1066_2_H2MT_R22.dwg LAYOUT NAME: B86-H1.2 PLOTTED: Friday, August 07, 2015 - 2:40pm USER: REP

PLAN NORTH

## B86 ROOF EAST HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 1/8" = 1'

## GENERAL SHEET NOTES

1. ALL PACM (PRESUMED ASBESTOS CONTAINING MATERIAL), LBP (LEAD BASED PAINT), PCB, AND OTHER HAZARDOUS BUILDING MATERIALS MAY NOT BE IDENTIFIED IN THIS SURVEY, PARTICULARLY THOSE HIDDEN IN WALLS, CEILINGS, FLOORS, ETC. AND IN AREAS DESCRIBED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, WHICH WERE INACCESSIBLE DURING THE SURVEY. ASSESSMENT EFFORTS DID INCLUDE, TO THE EXTENT FEASIBLE, ACCESS TO INTERIOR AND EXTERIOR OF THE STRUCTURE. HOWEVER, THE ABSENCE OF ALL PACM, LBP, PCB, AND OTHER HAZARDOUS BUILDING MATERIALS IN HIDDEN OR INACCESSIBLE PORTIONS CANNOT BE DEFINITIVELY ENSURED.

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3. SEE B86 ASBESTOS, LEAD, PCB, AND TCLP INVENTORY TABLES LOCATED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, DATED JUNE 22, 2015, FOR ADDITIONAL INFORMATION.

## GRAPHIC SCALE

1/8" = 1' scale 8 4 0 8 16 24 feet

CHECK GRAPHIC SCALE BEFORE USING

| MK | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
| 1 | 90% SUBMISSION | 06/05/2015 | BLM |

NAVFAC

STATE OF MAINE
Bradlee Mezquita
9410
LICENSED PROFESSIONAL ENGINEER
SEAL

Tighe&Bond
*Consulting Engineers*
177 Corporate Drive
Portsmouth, New Hampshire
(603) 433-8818
*www.tighebond.com*

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: A/E | DRW: REP | CHK: BLM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

FEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

B86 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085-XX-C-XXXX

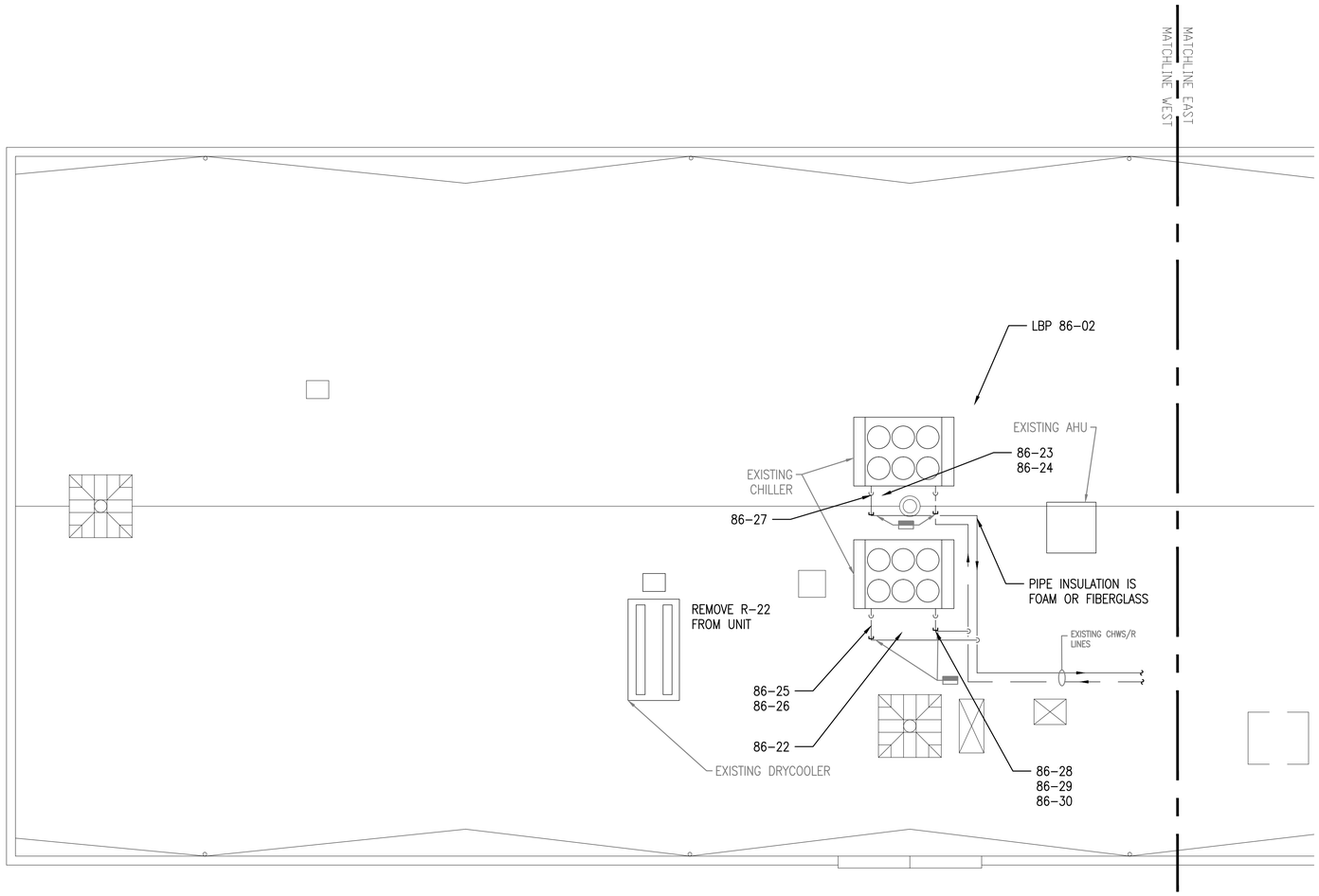
NAVFAC DRAWING NO. 12703640

SHEET 187 OF 506

H1.3 | 86-15-921

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\HazMats\DWG\A1066_2_HZMT_R22.dwg LAYOUT NAME: B86-H1.3 PLOTTED: Friday, August 07, 2015 - 2:35pm USER: REP




## B86 ROOF WEST HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 1/8" = 1'

PLAN NORTH

## GENERAL SHEET NOTES

1. ALL PACM (PRESUMED ASBESTOS CONTAINING MATERIAL), LBP (LEAD BASED PAINT), PCB, AND OTHER HAZARDOUS BUILDING MATERIALS MAY NOT BE IDENTIFIED IN THIS SURVEY, PARTICULARLY THOSE HIDDEN IN WALLS, CEILINGS, FLOORS, ETC. AND IN AREAS DESCRIBED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, WHICH WERE INACCESSIBLE DURING THE SURVEY. ASSESSMENT EFFORTS DID INCLUDE, TO THE EXTENT FEASIBLE, ACCESS TO INTERIOR AND EXTERIOR OF THE STRUCTURE. HOWEVER, THE ABSENCE OF ALL PACM, LBP, PCB, AND OTHER HAZARDOUS BUILDING MATERIALS IN HIDDEN OR INACCESSIBLE PORTIONS CANNOT BE DEFINITIVELY ENSURED.

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3. SEE B86 ASBESTOS, LEAD, PCB, AND TCLP INVENTORY TABLES LOCATED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, DATED JUNE 22, 2015, FOR ADDITIONAL INFORMATION.

## HAZARDOUS MATERIAL SAMPLING SUMMARY

| SAMPLE ID | ACM | LBP |
|---|---|---|
| 86-22 | ND | NS |
| 86-23 | ND | NS |
| 86-23 | ND | NS |
| 86-24 | ND | NS |
| 86-25 | ND | NS |
| 86-26 | ND | NS |
| 86-27 | ND | NS |
| 86-28 | ND | NS |
| 86-29 | ND | NS |
| 86-30 | ND | NS |
| LBP-86-02 | NS | <RL |

ACM = ASBESTOS CONTAINING MATERIALS
LBP = LEAD BASED PAINT
<RL = LESS THAN REPORTING LIMIT
ND = NONE DETECTED
NS = NOT SAMPLED
H = EXCEEDS REGULATORY STANDARDS FOR HAZARDOUS CONCENTRATION

NOTE:
REFER TO HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT DATED JUNE 22, 2015 FOR COMPLETE SAMPLING INFORMATION AND DATA.

## GRAPHIC SCALE

1/8" = 1' scale 8 4 0 8 16 24 feet

CHECK GRAPHIC SCALE BEFORE USING

| NO | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 2 | 100% SUBMISSION | 08/07/2015 | BLM |
| 1 | 90% SUBMISSION | 06/05/2015 | BLM |

NAVFAC

STATE OF MAINE — Bradlee Mezquita 9410 — LICENSED PROFESSIONAL ENGINEER — SEAL

Tighe&Bond
Consulting Engineers
177 Corporate Drive
Portsmouth, New Hampshire
(603) 433-8818
www.tighebond.com

A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

DES: A/E DRW: REP CHK: BLM
PM/DM: PETER STOCKLESS
BRANCH MANAGER: BRUCE LITALIEN
FEAD/PMAE: AMIN BAHROUR PM&E
FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

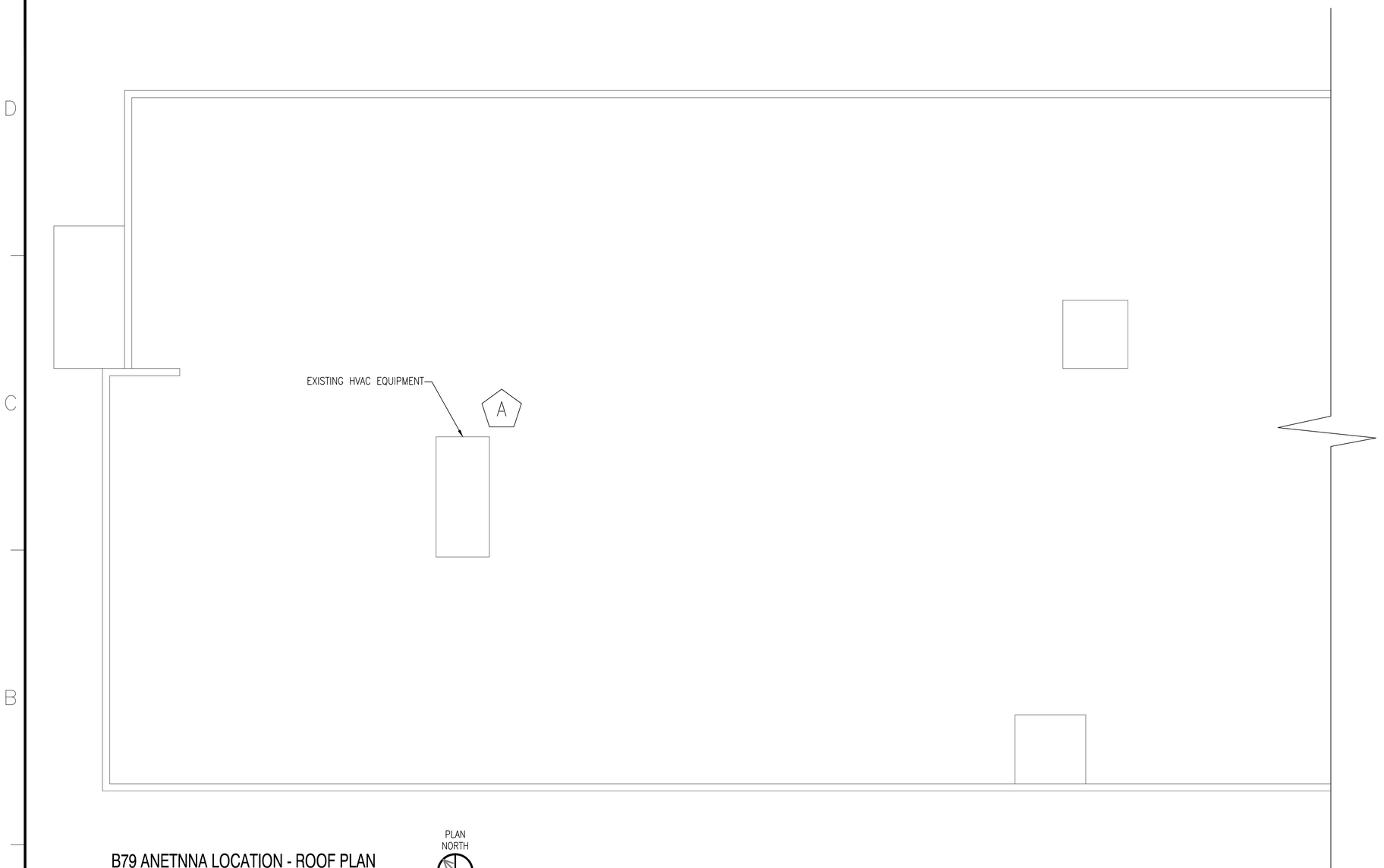
FY 16 ENERGY PROJECT
TASK 1-B-R-22

# B86 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703641
SHEET 188 OF 506
H1.4 | 86-15-922

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\HazMat\DWG\A1066_2_HZMT_R22.dwg LAYOUT NAME: B86-H1.4 PLOTTED: Friday, August 07, 2015 - 2:35pm USER: REP




B79 ANETNNA LOCATION - ROOF PLAN
1/8" = 1'-0"

PLAN NORTH

| EQUIPMENT | WIRELESS STANDARD | ANTENNA | FREQUENCY | DIMENSIONS | WEIGHT | INPUT POWER | MANUFACTURER | DESIGN BASED ON MODEL |
|---|---|---|---|---|---|---|---|---|
| WIRELESS ACCESS POINT | 802.11n | INTEGRATED | 2.4 GHZ & 5.8 GHZ | 9 X 7 X 4 INCHES | 5 LBS | AIR-PWRINJ4 | CISCO AIRONET | AIR-AP1532I-UXK9 |

NOTE: PROVIDE POWER INJECTOR FOR POWER OF ETHERNET TO WIRELESS ACCESSS POINT. DESIGN BASED ON CISCO MODEL AIR-PWRINJ4.

## GENERAL SHEET NOTES

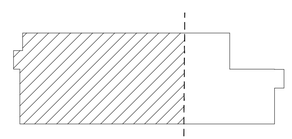
1. FASTENERS SHALL BE ATTACHED TO MORTAR IN MASONRY BUILDINGS, AVOIDING DAMAGE TO THE BRICK WHEREVER PRACTICAL.
2. EXTERIOR CONDUIT SHALL BE INSTALLED IN SHADOW-LINES OR ADJACENT TO EXISTING CONDUIT; CONDUIT COLOR TO BE COORDINATED WITH CULTURAL RESOURCE MANAGER AND A-E.
3. REFER TO MECHANICAL DRAWINGS FOR JACE LOCATION AND INFORMATION.
4. EXISTING ROOF AND WALL PENETRATIONS SHALL BE USED WHEREVER PRACTICAL.
5. INTERIOR, WINDOW-MOUNTED ACCESS POINTS SHALL BE MOUNTED IN AN OBSCURE LOCATION THAT IS LEAST VISIBLE FROM INTERIOR & EXTERIOR.
6. ACCESS POINT MOUNTS SHALL NOT OBSTRUCT EGRESS, EXISTING WALKWAYS, STAIRWELLS, MECHANICAL EQUIPMENT CLEARANCES, OR OTHER APPURTANANCES.
7. UNLESS OTHERWISE NOTED, ROOFTOP ACCESS POINTS SHALL BE CENTRALIZED ON THE ROOF TO MINIMIZE VISIBILITY FROM GROUND LEVEL.
8. CONTRACTOR TO FIELD-VERIFY COMMUNICATION ACCESS POINTS ARE ALIGNED AND LINE OF SIGHT IS UNOBSTRUCTED.
9. IF A FIELD CHANGE IS REQUIRED, CONTRACTOR SHALL COORDINATE WITH CULTURAL RESOURCE MANAGER AND A-E PRIOR TO RELOCATING EQUIPMENT.
10. ANY PROPOSED CHANGES (PENETRATIONS, CONDUIT, ETC.) NOT ALREADY INDICATED ON DRAWINGS MADE TO HISTORIC BUILDINGS OR BUILDINGS LOCATED IN HISTORIC DISTRICT MUST BE REVIEWED AND APPROVED BY SHPO THROUGH NAVFAC CULTURAL RESOURCES DEPARTMENT PRIOR TO INSTALLATION.
11. CONTRACTOR TO VERIFY RF SIGNAL STRENGTH AND CONNECTIVITY FROM/TO ALL ACCESS POINTS.
12. SEE PWD-ME DRAWING NUMBERS;
    - 12.1. 43-15-67 FOR TITLE SHEET
    - 12.2. 43-15-68 FOR LIST OF DRAWINGS
    - 12.3. 43-15-69 FOR GENERAL NOTES AND LEGEND
    - 12.4. 43-15-72 FOR CHASE AND SOFFIT DETAILS
    - 12.5. 43-15-74 FOR STRUCTURAL NOTES AND SUPPORT

## NEW WORK KEYNOTES

A

1. CONTRACTOR SHALL ATTACH ACCESS POINT MAST TO EXISTING HVAC EQUIPMENT FRAME FOR RF ACCESS POINT.
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT TO B086A ACCESS POINT.
3. ACCESS POINT MAST SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS. MOUNTING HEIGHT TO BE DETERMINED BY CONTRACTOR TO MINIMIZE GROUND-LEVEL VISIBILITY WHILE MAINTAINING ACCESS POINT LINE-OF-SIGHT.
4. CAT5 CABLE SHALL BE ROUTED THROUGH EXISTING ROOF PENETRATION AND PATH ALONGSIDE HVAC CONTROL WIRING.

## KEY PLAN



## GRAPHIC SCALE

1/8" = 1' scale 8 4 0 8 16 24 feet

CHECK GRAPHIC SCALE BEFORE USING

| | | | | |
|---|---|---|---|---|
| 0 | 90% SUBMISSION | 07/15/15 | DM | APPR |
| | 100% SUBMISSION | 07/31/15 | | |

DESCRIPTION | DATE

NAVFAC

STATE OF NEW HAMPSHIRE KEITH CHRISTOPHER No. 13414 REGISTERED PROFESSIONAL ENGINEER
SEAL

aecom architects|engineers
13 WATER ST NEWMARKET NH
(603) 200-0096 AECOM.COM
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

DES VSL | DRW SRR | CHK KLC
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE
DEPARTMENT OF THE NAVY
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

FY 16 ENERGY PROJECT
TASK 1-B-R-22

# B079 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXX
NAVFAC DRAWING NO. 12703636
SHEET 183 OF 506

ET1.0 | 79-15-590

DRAWFORM REVISION: 10 OCTOBER 2014

# HVAC ABBREVIATIONS

| | | | |
|---|---|---|---|
| °F | DEGREES FAHRENHEIT | ID | INSIDE DIAMETER |
| °C | DEGREES CELSIUS | IN | INCHES |
| ø | DIAMETER | INSUL | INSULATION |
| ACV | AUTOMATIC CONTROL VALVE | KW | KILOWATT |
| AD | ACCESS DOOR | KVA | KILOVOLT AMPERE |
| ADJ | ADJUSTABLE | L | LENGTH |
| ADDL | ADDITIONAL | LB | POUND |
| AFF | ABOVE FINISHED FLOOR | LF | LINEAR FEET |
| AFG | ABOVE FINISHED GRADE | LVG | LEAVING |
| ALT | ALTERNATE | M | ONE THOUSAND |
| AP | ACCESS PANEL | MAX | MAXIMUM |
| ARCH | ARCHITECT | MBH | THOUSAND BRITISH THERMAL UNITS PER HOUR |
| ATC | AUTOMATIC TEMPERATURE CONTROL | MCA | MINIMUM CIRCUIT AMPS |
| AS | AIR SEPARATOR | MCC | MOTOR CONTROL CENTER |
| AVG | AVERAGE | MECH | MECHANICAL |
| BAS | BUILDING AUTOMATION SYSTEM | MEZZ | MEZZANINE |
| BFF | BELOW FINISHED FLOOR | MFR | MANUFACTURER |
| BHP | BRAKE HORSEPOWER | MIN | MINIMUM |
| BLDG | BUILDING | MTD | MOUNTED |
| BLR | BOILER | MU | MAKEUP WATER |
| BOD | BOTTOM OF DUCT | N/A | NOT APPLICABLE |
| BOP | BOTTOM OF PIPE | NC | NORMALLY CLOSED |
| BSMY | BASEMENT | NC | NOISE CRITERIA |
| BTU | BRITISH THERMAL UNIT | NIC | NOT IN CONTRACT |
| BTUH | BRITISH THERMAL UNIT PER HOUR | NO | NORMALLY OPEN |
| C | CONVECTOR | NO. | NUMBER |
| CF | CEILING FAN | NOM | NOMINAL |
| CL | CENTERLINE | NTS | NOT TO SCALE |
| CLG | CEILING | OB | OCTAVE BAND |
| CO | CLEAN–OUT | OC | ON CENTER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COL | COLUMN | OD | OUTSIDE DIAMETER |
| COMP | COMPRESSOR | ODP | OPEN DRIP PROOF |
| CONC | CONCRETE | OFCI | OWNER FURNISHED CONTRACTOR INSTALLED |
| CONN | CONNECTION | OFOI | OWNER FURNISHED OWNER INSTALLED |
| CONTR | CONTRACTOR | OV | OUTLET VELOCITY |
| CORR | CORRIDOR | PCF | POUNDS PER CUBIC FOOT |
| CUF | CUBIC FEET | PD | PRESSURE DROP |
| CUH | CABINET UNIT HEATER | PH | PHASE |
| CYL | CYLINDER | PLMB | PLUMBING |
| D | DRAIN | POS | PROVIDED BY OTHER SECTION(S) |
| DB | DRY BULB TEMPERATURE | PRESS | PRESSURE |
| DDC | DIRECT DIGITAL CONTROL | PRIM | PRIMARY |
| DDCFP | DIRECT DIGITAL CONTROL FIELD PANEL | PSIA | POUNDS PER SQUARE INCH ABSOLUTE |
| DIA | DIAMETER | PSID | POUNDS PER SQUARE INCH DIFFERENTIAL |
| DIM | DIMENSION | PSIG | POUNDS PER SQUARE INCH GAUGE |
| DN | DOWN | PVC | POLYVINYL CHLORIDE |
| DWG | DRAWING | REP | REPRESENTATIVE |
| EA | EACH | RET | RETURN |
| EAT | ENTERING AIR TEMPERATURE | REQD | REQUIRED |
| EFF | EFFICIENCY | REQS | REQUIREMENTS |
| ECUH | ELECTRIC CABINET UNIT HEATER | RH | RELATIVE HUMIDITY |
| ELEC | ELECTRICAL | RM | ROOM |
| ELEV | ELEVATION | RPM | REVOLUTIONS PER MINUTE |
| EMER | EMERGENCY | SCH | SCHEDULE |
| ENT | ENTERING | SOV | SOLENOID OPERATED VALVE |
| EQUIP | EQUIPMENT | SPECS | SPECIFICATIONS |
| EXH | EXHAUST | SQ | SQUARE |
| EXP | EXPANSION | SQFT | SQUARE FEET |
| FTR | FINNED TUBE RADIATION | SS | STAINLESS STEEL |
| FCV | FLOW CONTROL VALVE | STD | STANDARD |
| FG | FIBERGLASS | STDBY | STANDBY |
| FLEX | FLEXIBLE | STL | STEEL |
| FLR | FLOOR | SUCT | SUCTION |
| FLRDR | FLOOR DRAIN | SUP | SUPPLY |
| FP | FIRE PROTECTION | TA | THROW–AWAY |
| FPM | FEET PER MINUTE | TAV | THERMOSTATIC AIR VENT |
| FT | FEET | TEFC | TOTALLY ENCLOSED FAN COOLED |
| FT/SEC | FEET PER SECOND | TEL | TELEPHONE |
| FURN | FURNISHED | TEMP | TEMPERATURE |
| FVNR | FULL VOLTAGE NON–REVERSING | TOD | TOP OF DUCT |
| GA | GAUGE | TOP | TOP OF PIPE |
| GAL | GALLONS | TYP | TYPICAL |
| GALV | GALVANIZED | UH | UNIT HEATER |
| GC | GENERAL CONTRACTOR | V | VENT |
| GND | GROUND | VEL | VELOCITY |
| GPH | GALLONS PER HOUR | VERT | VERTICAL |
| GPM | GALLONS PER MINUTE | VFD | VARIABLE FREQUENCY DRIVE |
| GRD | GRADE (GROUND LEVEL) | VTR | VENT THROUGH ROOF |
| GWB | GYPSUM WALL BOARD | W | WIDTH |
| H | HEIGHT | W/ | WITH |
| HD | HEAD | W/O | WITHOUT |
| HP | HORSEPOWER | WB | WET BULB TEMPERATURE |
| HR | HOUR | WF | WIDE FLANGE |
| HZ | HERTZ | WG | WATER GAUGE |
| | | WRT | WITH RESPECT TO |

# PIPING LEGEND

- RISE (SINGLE LINE – PLAN VIEW)
- DROP (SINGLE LINE – PLAN VIEW)
- TOP TAKEOFF
- BOTTOM TAKEOFF
- PIPE BREAK (SINGLE LINE)

# FLOW DIAGRAM & CONTROL DIAGRAM EQUIP. SYMBOLS

FILTER BANK

COOLING COIL

CENTRIFUGAL FAN

# HVAC SYSTEM TAGS

CH 1 — CHILLER

AC 1 — AIR CONDITIONING UNIT

ACCU 1 — AIR COOLED CONDENSING UNIT

# CALL OUT SYMBOLS

THERMOSTAT

CONNECT TO EXISTING

LIMIT OF NEW WORK

REFER TO DRAWINGS (  ) FOR CONTINUATION

SYMBOL DESIGNATES ASSOCIATED SYSTEM OR SERVICE (ie LPS)

DIFFUSER, GRILLE, REGISTER LETTER DESIGNATION (See Schedule for ATD type)

SA–2
200

DESIGN CFM

# EQUIPMENT TAG SYMBOLS & ABBREVIATIONS

EQUIPMENT NOT REQUIRING ELECTRIC SERVICE → TAG NO / TAG DATA DATA → SEE SCHEDULE FOR PERFORMANCE REQUIREMENTS ← TAG NO / TAG DATA DATA ← EQUIPMENT REQUIRING ELECTRIC SERVICE

NOTE:REFER TO SCHEDULES FOR DEFINITION OF EQUIPMENT SPECIFIC DATA LISTED WITHIN TAG BLOCKS

# AIR SYSTEM SPECIFIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| AC | AIR CONDITIONING | LVDR | LOUVERED DOOR |
| ACD | AUTOMATIC CONTROL DAMPER | OA | OUTSIDE AIR |
| ACU | AIR CONDITIONING UNIT | OAI | OUTSIDE AIR INTAKE |
| AF | AIR FOIL | OBD | OPPOSED BLADE DAMPER |
| AHU | AIR HANDLING UNIT | OED | OPEN END DUCT |
| ALD | ACOUSTICALLY LINED DUCTWORK | RA | RETURN AIR |
| ATD | AIR TERMINAL DEVICE | RF | RETURN FAN |
| AVS | AIR VOLUME TRAVERSE STATION | RG | RETURN GRILLE |
| BDD | BACKDRAFT DAMPER | RHC | REHEAT COIL |
| BI | BACKWARD INCLINED | RLF | RELIEF |
| CC | COOLING COIL | RR | RETURN REGISTER |
| CD | CEILING DIFFUSER | RV | ROOF VENT |
| CFM | CUBIC FEET PER MINUTE | SA | SUPPLY AIR |
| CG | CEILING GRILLE | SATT | SOUND ATTENUATOR |
| DIFF | DIFFUSER | SCR | SCREEN |
| DWDI | DOUBLE WIDTH DOUBLE INLET | SD | SMOKE DAMPER |
| DWSI | DOUBLE WIDTH SINGLE INLET | SDET | SMOKE DETECTOR |
| DX | DIRECT EXPANSION | SEF | SMOKE EXHAUST FAN |
| EF | EXHAUST FAN | SF | SUPPLY FAN |
| EG | EXHAUST GRILLE | SFD | COMBINATION AUTOMATIC SMOKE/FIRE DAMPER WITH ACCESS DOOR |
| ESP | EXTERNAL STATIC PRESSURE | | |
| F | FAN | SG | SUPPLY GRILLE |
| FC | FORWARD CURVED | SM | SHEETMETAL |
| FA | FREE AREA | SP | STATIC PRESSURE |
| FCU | FAN COIL UNIT | SR | SUPPLY REGISTER |
| FD | FIRE DAMPER (W/ ACCESS DOOR) | SWDI | SINGLE WIDTH DOUBLE INLET |
| FLTR | FILTER | SWSI | SINGLE WIDTH SINGLE INLET |
| FPI | FINS PER INCH | TE | TOILET EXHAUST |
| FPT | FAN POWERED TERMINAL BOX | TF | TRANSFER FAN |
| GE | GENERAL EXHAUST | TG | TRANSFER GRILLE |
| GIH | GRAVITY INTAKE HOOD | TR | TRANSFER |
| GRH | GRAVITY RELIEF HOOD | TSP | TOTAL STATIC PRESSURE |
| HC | HEATING COIL | UC | UNDERCUT DOOR |
| LAT | LEAVING AIR TEMPERATURE | VD | VOLUME DAMPER |
| LD | LINEAR DIFFUSER | VV | VARIABLE VOLUME SUPPLY AIR TERMINAL BOX |
| LUVR | LOUVER | WMS | WIRE MESH SCREEN |

# HYDRONIC SYSTEM SPECIFIC ABBREVIATIONS

| | | | |
|---|---|---|---|
| AS | AIR SEPARATOR | ET | EXPANSION TANK |
| AAV | AUTOMATIC AIR VENT | EWT | ENTERING WATER TEMPERATURE |
| CH | CHILLER | LWT | LEAVING WATER TEMPERATURE |
| CHW | CHILLED WATER | MAV | MANUAL AIR VENT |
| CHWR | CHILLED WATER RETURN | NPSH | NET POSITIVE SUCTION HEAD |
| CHWS | CHILLED WATER SUPPLY | PU | PUMP |

# HVAC GENERAL NOTES

1. GENERAL NOTES APPLY TO ALL HVAC DRAWINGS.

2. THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID, ARE DEEMED TO BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITIONS OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. ABSOLUTELY NO CLAIMS FOR EXTRA COMPENSATION WILL BE CONSIDERED FOR EXISTING CONDITIONS VISIBLE OR REASONABLY INFERABLE FROM A CAREFUL EXAMINATION OF THE EXISTING BUILDING.

3. THIS CONTRACTOR SHALL INSPECT THE EXISTING FIELD CONDITIONS AT THE SITE AND THE "AS–BUILT" BASE BUILDING CONTRACT DOCUMENTS PRIOR TO THE START OF ANY WORK TO DETERMINE WHAT EFFECT THE EXISTING CONDITIONS WILL HAVE ON HIS WORK. POTENTIAL PROBLEM AREAS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER IMMEDIATELY.

4. THIS CONTRACTOR SHALL CONNECT HIS WORK TO VARIOUS EXISTING PIPING, DUCTWORK, AND CONTROL SYSTEMS IN THE BASE BUILDING. THE NEW WORK SHALL BE COMPATIBLE WITH THE EXISTING SYSTEMS. LOCATION OF EQUIPMENT OR THE ROUTING OF THE VARIOUS SYSTEMS AS WELL AS OPENINGS IN FLOOR SLABS OR WALLS SHALL BE GOVERNED BY THE EXISTING CONDITIONS AS THEY APPEAR IN THE FIELD OR ON THE "AS–BUILT" DRAWINGS.

5. CARE SHALL BE TAKEN DURING THE INSTALLATION TO NOT DAMAGE OR INTERRUPT BUILDING SYSTEMS AND SERVICES THAT ARE ALREADY INSTALLED. DAMAGE TO SUCH SYSTEMS OR EQUIPMENT CAUSED BY THIS CONTRACTOR DURING INSTALLATION SHALL BE REPAIRED AND/OR REPLACED AT THIS CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE BUILDING OWNER.

6. SHUTDOWN OF EXISTING SYSTEMS FOR CONNECTION TO EXISTING SERVICES SHALL BE COORDINATED WITH THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR AND BUILDING OWNER. THIS CONTRACTOR SHALL SUBMIT REQUESTS, WHERE THEY AFFECT THE OPERATION OF THE BUILDING SYSTEMS, AT LEAST FIFTEEN DAYS IN ADVANCE OF ANY REQUIRED SHUTDOWN. THE ACTUAL SHUTDOWN PERIOD SHALL BE AS SHORT AS POSSIBLE AND AT A TIME MUTUALLY AGREEABLE TO THE BUILDING OWNER AND THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR.

7. DRAWINGS ARE DIAGRAMMATIC, THEREFORE DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS, AS WELL AS ROUTING PATHS, IN FIELD.

8. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER, AND SHOULD BE KEPT TO A MINIMUM FOR SYSTEM EFFICIENCIES.

9. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT AND/OR PIPE TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION. VERIFY ACCESS IS PROVIDED FOR SERVICING EQUIPMENT AS REQUIRED.

10. ALL MATERIALS AND EQUIPMENT UNLESS SPECIFICALLY INDICATED AS REUSED, SHALL BE NEW.

11. ACCESS PANELS SHALL BE PROVIDED TO ALLOW FOR CLEANING OF COILS AND SERVICING OF DAMPERS, HEATERS, VALVES, AND ALL CONCEALED MECHANICAL EQUIPMENT.

12. INSTALL NEW THERMOSTATS 4 FEET AFF OR AS DIRECTED OTHERWISE BY ENGINEER.

13. GENERAL CONTRACTOR TO PATCH ALL EFFECTED INTERIOR AND EXTERIOR EXISTING FLOOR, WALL, AND CEILING SURFACES TO MATCH EXISTING. PROVIDE ESCUTCHEON PLATES.

14. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.

15. ANY AND ALL WALLS, CEILINGS AND FLOORS THAT ARE ANTICIPATED TO BE DISTURBED DURING THE DEMOLITION OR INSTALLATIONS PROCESS, AS INDICATED ON THE DRAWINGS, SHALL BE TESTED FOR HAZARDOUS MATERIALS PRIOR TO DISTURBING THE SURFACES. ROUTING OF PIPING HAS BEEN INDICATED TO DEPICT THE INTENT OF THE WORK. ACTUAL ROUTING MAY DIFFER IN THE FIELD DUE TO BUILDING CONSTRUCTION. COORDINATE TESTING OF ALL SURFACES TO BE DISTURBED, ALONG THE ACTUAL INSTALLATION ROUTE, WITH THE HAZARDOUS MATERIALS CONTRACTOR. REFER TO EXISTING HAZMAT REPORT FOR TESTING RESULTS.

16. MECHANICAL CONTRACTOR TO REMOVE ALL IDENTIFIED R–22 EQUIPMENT AND ASSOCIATED APPURTENANCES AND REPLACE IN KIND WITH A R410A OR R407C SYSTEM.

17. REFRIGERANT PIPING IS DIAGRAMMATIC, CONTRACTOR TO DETERMINE ROUTING IN FIELD AND RE–USE EXISTING PENETRATIONS. ANY EXPOSED PIPING TO BE CONCEALED IN A CHASE. CONTRACTOR RESPONSIBLE FOR ROUTING PIPE AND PERFORMING PRESSURE LOSS CALCULATIONS TO SIZE PIPE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

18. SEE CIVIL DRAWINGS FOR DEMOLISHED AND NEW CONCRETE PADS.

19. THE MECHANICAL NEW WORK PLANS DO NOT SHOW ALL ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION AMONG TRADES TO DETERMINE ALL ACCESSORIES AND COMPONENTS REQUIRED TO FORM A COMPLETE AND FUNCTIONAL SYSTEM. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ACCESSORIES AND COMPONENTS NEEDED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM AND SHALL BE RESPONSIBLE TO ENSURE THE INTEGRITY AND SAFETY OF THE SYSTEM AFTER COMPLETION. THE MECHANICAL CONTRACTOR SHALL TAKE ALL NECESSARY STEPS AND PROVIDE ALL ADDITIONAL COMPONENTS NEEDED TO ENSURE THE SYSTEM IS SAFE UPON COMPLETION OF THE PROJECT.

20. SEE PWD–ME DRAWING;
 43–15–67 FOR TITLE SHEET
 43–15–68 FOR LIST OF DRAWINGS
 43–15–69 FOR GENERAL NOTES & LEGENDS
 43–15–72 FOR CHASE AND SOFFIT DETAILS
 43–15–74 FOR STRUCTURAL NOTES AND SUPPORTS

# SCHEDULE OF DRAWINGS

| DWG# | DESCRIPTION |
|---|---|
| M1.0 | BUILDING 86 HVAC LEGEND |
| MD2.0E | BUILDING 86 HVAC BASEMENT FLOOR DEMOLITION PLAN EAST |
| MD2.1E | BUILDING 86 HVAC FIRST FLOOR DEMOLITION PLAN EAST |
| MD2.1W | BUILDING 86 HVAC FIRST FLOOR DEMOLITION PLAN WEST |
| MD2.2W | BUILDING 86 HVAC ROOF DEMOLTION PLAN WEST |
| M2.0E | BUILDING 86 HVAC BASEMENT FLOOR PLAN EAST |
| M2.1E | BUILDING 86 HVAC FIRST FLOOR PLAN EAST |
| M2.1W | BUILDING 86 HVAC FIRST FLOOR PLAN WEST |
| M2.2W | BUILDING 86 HVAC ROOF PLAN WEST |
| M3.0 | BUILDING 86 HVAC CONTROLS |
| M3.1 | BUILDING 86 HVAC CONTROLS |
| M3.2 | BUILDING 86 HVAC CONTROLS |
| M3.3 | BUILDING 86 HVAC CONTROLS & DETAILS |
| M4.0 | BUILDING 86 HVAC SCHEDULES |

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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25 AVIATION AVE STE 204 PORTSMOUTH, NH 03801 603-319-8244
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PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

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PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 86 HVAC LEGEND

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085–XX–C–XXXX

NAVFAC DRAWING NO. 12703642

SHEET 189 OF 506

M1.0 | 86-15-923

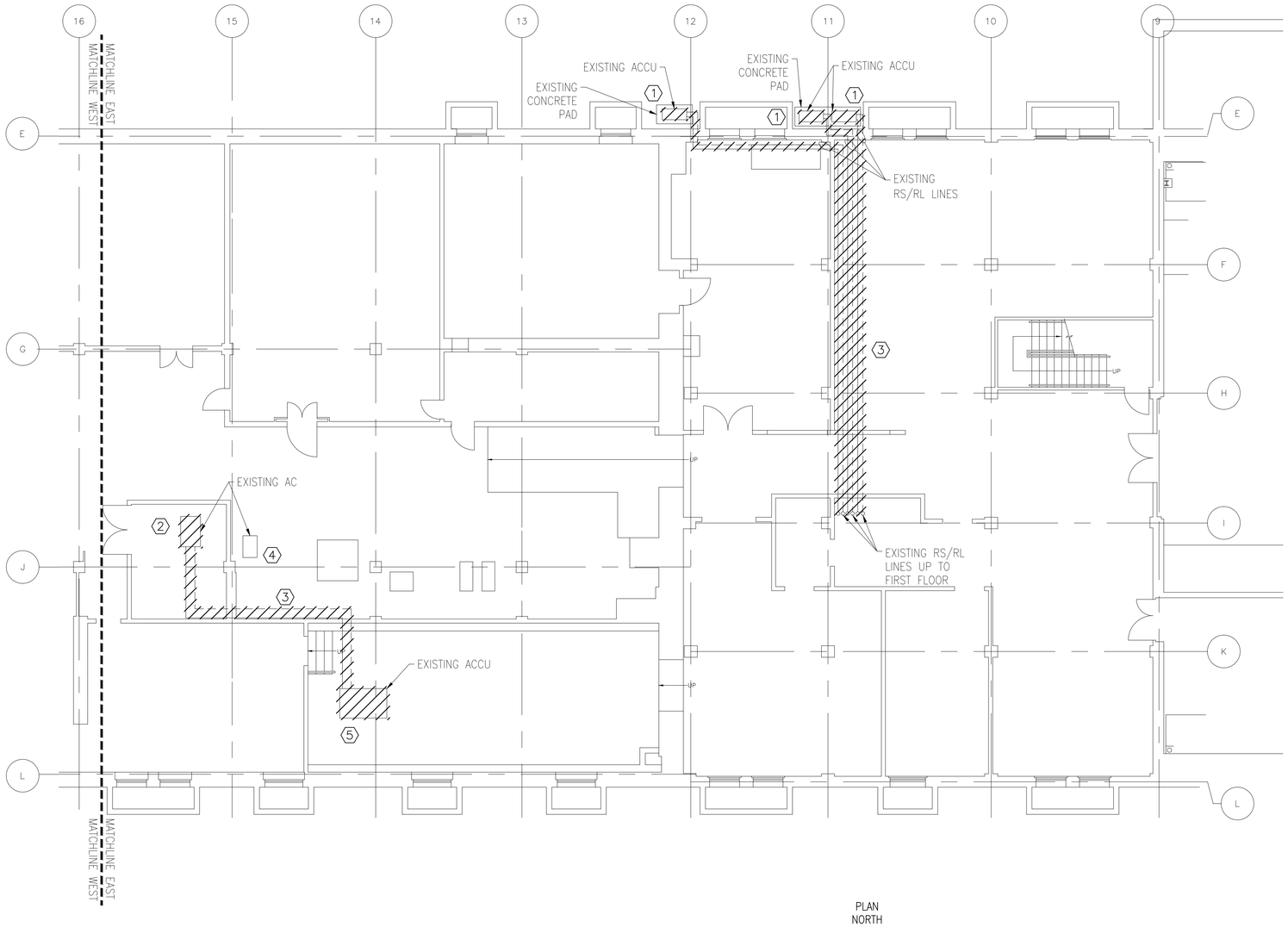
DRAWFORM REVISION: 10 OCTOBER 2014

## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES. .
2. CONTRACTOR RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL EQUIPMENT AND MATERIALS AT PERMITTED WASTE FACILITY.
3. CONTRACTOR TO COORDINATE R-22 DISPOSAL WITH PSNY ENVIRONMENTAL GROUP.

## DEMOLITION KEYNOTES

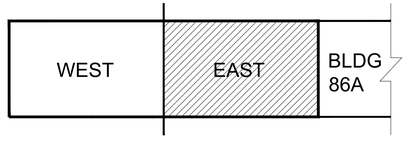
1. REMOVE EXISTING AIR COOLED CONDENSING UNIT. EXISTING CONCRETE PAD TO REMAIN.
2. REMOVE EXISTING AC AND ALL ASSOCIATED APPURTENANCES.
3. ACCESSIBLE EXISTING RS/RL LINES TO BE REMOVED. ANY REMAINING RS/RL CONCEALED TO BE EVACUATED, CAPPED, AND ABANDONED IN PLACE.
4. EXISTING AC TO REMAIN.
5. REMOVE EXISTING ACCU AND ALL ASSOCIATED APPURTENANCES.




BUILDING 86 HVAC BASEMENT FLOOR DEMOLITION PLAN - EAST
1/8" = 1'-0"

PLAN NORTH

## KEY PLAN




## GRAPHIC SCALE

1/8" = 1' scale 8 4 0 8 16 24 feet

CHECK GRAPHIC SCALE BEFORE USING

| APPR | DATE | DESCRIPTION | SYM |
|---|---|---|---|
| DM | 08/07/2015 | 100% SUBMISSION | 4 |
| DM | 07/24/2015 | 100% REVIEW SUBMISSION | 3 |
| DM | 06/04/2015 | 90% SUBMISSION | 2 |
| DM | 04/24/2015 | 80% SUBMISSION | 1 |
| DM | 02/23/2015 | 35% SUBMISSION | 0 |

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DES: JC DRW: SV CHK: DM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

LEAD/PM&E: AMIN BAHROUR PM&E

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FY 16 ENERGY PROJECT
TASK 1-B-R-22

# BUILDING 86 HVAC BASEMENT FLOOR DEMOLITION PLAN EAST

EPROJECT NO.: 1350913

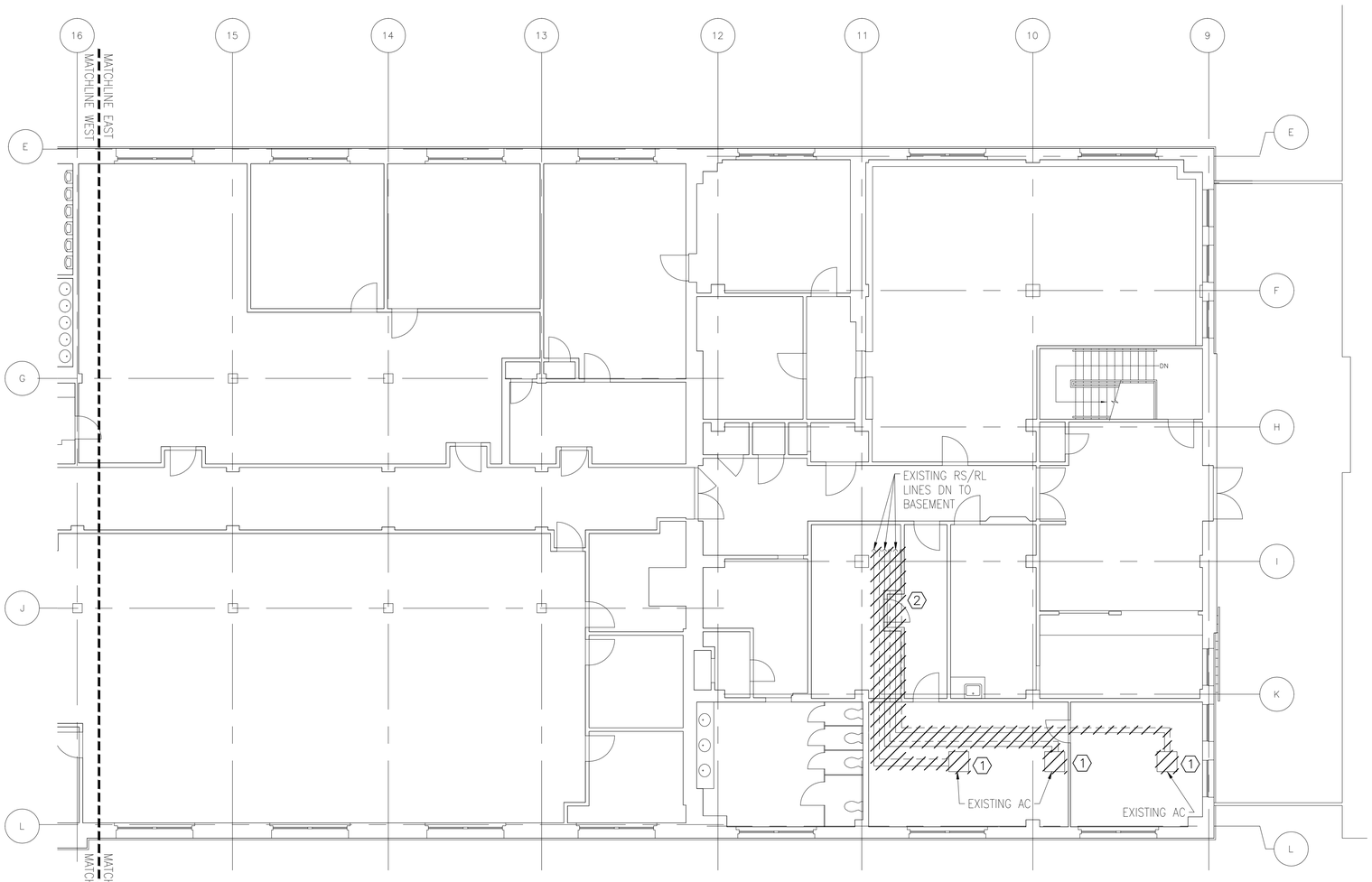
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703643

SHEET 190 OF 506

MD2.0E | 86-15-924

DRAWFORM REVISION: 10 OCTOBER 2014




## BUILDING 86 HVAC FIRST FLOOR DEMOLITION PLAN - EAST

1/8" = 1'-0"

PLAN NORTH

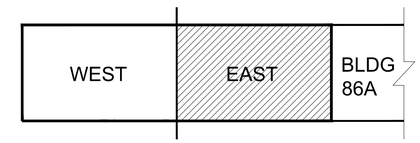
## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES. .
2. CONTRACTOR RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL EQUIPMENT AND MATERIALS AT PERMITTED WASTE FACILITY.
3. CONTRACTOR TO COORDINATE R-22 DISPOSAL WITH PSNY ENVIRONMENTAL GROUP.

## DEMOLITION KEYNOTES

1. REMOVE EXISTING AC AND ASSOCIATED THERMOSTAT. EXISTING CONTROL WIRING AND CONDENSATE LINES TO REMAIN AND BE DISCONNECTED.
2. ACCESSIBLE EXISTING RS/RL LINES TO BE REMOVED. ANY REMAINING RS/RL CONCEALED TO BE EVACUATED, CAPPED, AND ABANDONED IN PLACE.

## KEY PLAN




## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24

scale feet

CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
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| 1 | 80% SUBMISSION | 04/24/2015 | DM |
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KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 86 HVAC FIRST FLOOR DEMOLITION PLAN EAST

EPROJECT NO.: 1350913

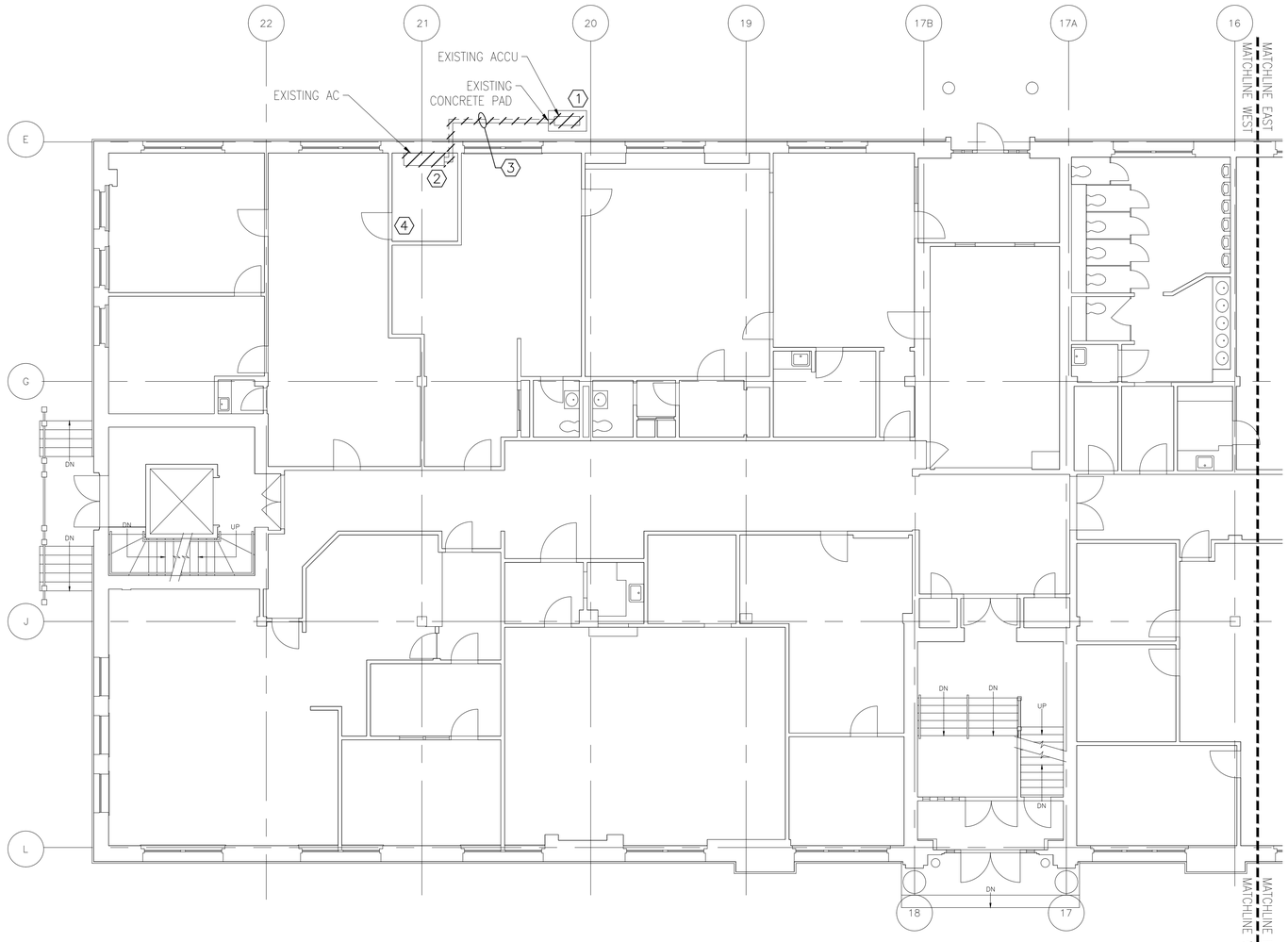
CONSTR. CONTR. NO.: N40085-XX-C-XXXX

NAVFAC DRAWING NO.: 12703644

SHEET 191 OF 506

MD2.1E | 86-15-925

DRAWFORM REVISION: 10 OCTOBER 2014




BUILDING 86 HVAC FIRST FLOOR DEMOLITION PLAN - WEST
1/8" = 1'-0"

PLAN NORTH

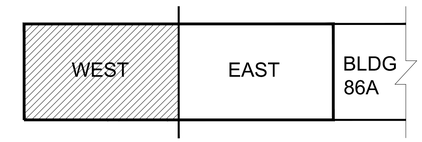
## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES. .
2. CONTRACTOR RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL EQUIPMENT AND MATERIALS AT PERMITTED WASTE FACILITY.
3. CONTRACTOR TO COORDINATE R-22 DISPOSAL WITH PSNY ENVIRONMENTAL GROUP.

## DEMOLITION KEYNOTES

1. REMOVE EXISTING ACCU. EXISTING CONCRETE PAD TO REMAIN.
2. REMOVE EXISTING AC AND ASSOCIATED THERMOSTAT. EXISTING CONTROL WIRING AND CONDENSATE LINES TO REMAIN AND BE DISCONNECTED.
3. ACCESSIBLE EXISTING RS/RL LINES TO BE REMOVED. ANY REMAINING RS/RL CONCEALED TO BE EVACUATED, CAPPED, AND ABANDONED IN PLACE.
4. MESSAGE ROOM HAS INCREASED SECURITY REQUIREMENTS, CONTRACTOR TO COORDINATE SECURITY REQUIREMENTS WITH BUILDING OWNER.

## KEY PLAN




## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet
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| APPR | DATE | DESCRIPTION | STM |
|---|---|---|---|
| DM | 08/07/2015 | 100% SUBMISSION | 4 |
| DM | 07/24/2015 | 100% REVIEW SUBMISSION | 3 |
| DM | 06/04/2015 | 90% SUBMISSION | 2 |
| DM | 04/24/2015 | 80% SUBMISSION | 1 |
| DM | 02/23/2015 | 35% SUBMISSION | 0 |

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AS INFO

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PM/DM: PETER STOCKLESS
BRANCH MANAGER: BRUCE LITALIEN
FEAD/PM&E: AMIN BAHROUR PM&E
FIRE PROTECTION: X

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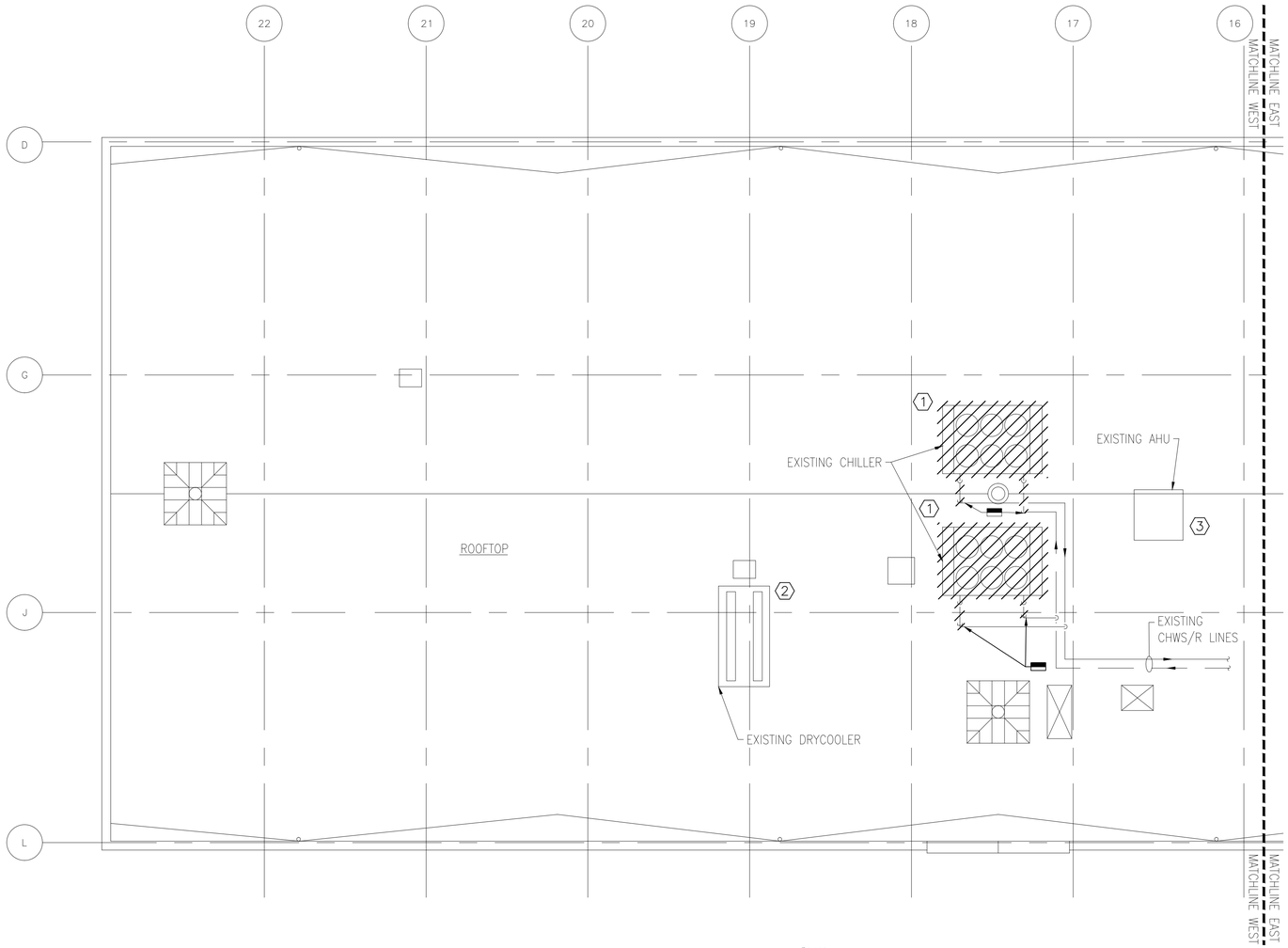
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22

# BUILDING 86 HVAC FIRST FLOOR DEMOLITION PLAN WEST

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085-XX-C-XXXX
NAVFAC DRAWING NO.: 12703645
SHEET 192 OF 506
MD2.1W | 86-15-926

DRAWFORM REVISION: 10 OCTOBER 2014




## BUILDING 86 HVAC ROOF DEMOLITION PLAN - WEST

1/8" = 1'-0"

PLAN NORTH

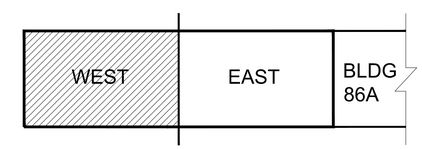
## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES. .
2. CONTRACTOR RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL EQUIPMENT AND MATERIALS AT PERMITTED WASTE FACILITY.
3. CONTRACTOR TO COORDINATE R-22 DISPOSAL WITH PSNY ENVIRONMENTAL GROUP.

## DEMOLITION KEYNOTES

1. REMOVE EXISTING CHILLER. EXISTING CHWS/R LINES TO BE REMOVED UP TO POINT OF DEMOLITION AS INDICATED ON DRAWING. SEE STRUCTURAL DRAWINGS FOR ANY ROOF CURB MODIFICATIONS.
2. EXISTING DRYCOOLER TO REMAIN
3. EXISTING AHU TO REMAIN.

## KEY PLAN




## GRAPHIC SCALE

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scale feet
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| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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THE CONTRACTOR IS RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE THE COMMENCEMENT OF WORK. DO NOT SCALE DRAWINGS. WORK SHALL COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS. THE CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. THE CONTRACTOR SHALL PROVIDE OPERATING INSTRUCTIONS AND TRAIN OWNER'S PERSONNEL IN THE OPERATION OF ALL EQUIPMENT. THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS TO THE OWNER AT THE COMPLETION OF THE PROJECT. CONTRACT NO. N62472-12-D-1008 CTO#015-2013-008 ADMIN#0001-02

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215 Haverhill Ave, STE 204 Portsmouth, NH 03801 603-319-9244
A/E INFO

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FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

| DES | JC | DRW | SV | CHK | DM |
|---|---|---|---|---|---|
| PM/DM | PETER STOCKLESS | | | | |
| BRANCH MANAGER | BRUCE LITALIEN | | | | |
| FEAD/PM&E | AMIN BAHROUR PM&E | | | | |
| FIRE PROTECTION | X | | | | |

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PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

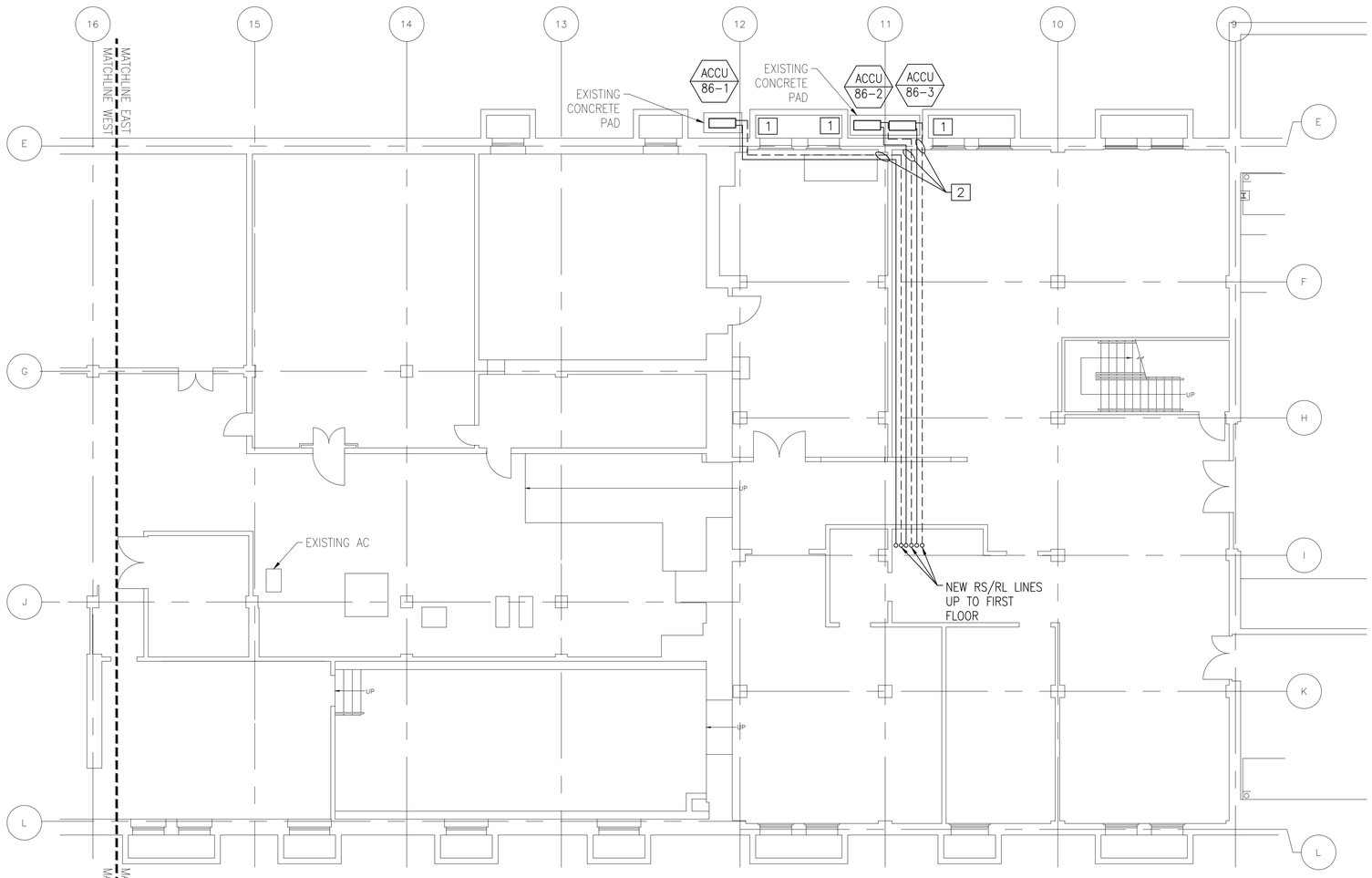
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 86 HVAC ROOF DEMOLITION PLAN WEST

| | |
|---|---|
| EPROJECT NO.: | 1350913 |
| CONSTR. CONTR. NO. | N40085-XX-C-XXXX |
| NAVFAC DRAWING NO. | 12703646 |
| SHEET | 193 OF 506 |
| MD2.2W | 86-15-927 |

DRAWFORM REVISION: 10 OCTOBER 2014




## BUILDING 86 HVAC BASEMENT FLOOR PLAN - EAST

1/8" = 1'-0"

PLAN NORTH

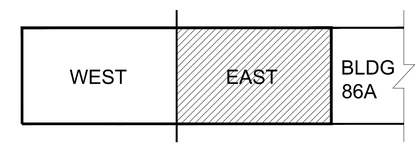
## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

## NEW WORK KEYNOTES

1. FURNISH AND INSTALL A NEW ACCU AND IT'S ASSOCIATED RS/RL LINES. NEW ACCU TO BE PLACED ON EXISTING CONCRETE PAD.
2. SEE HVAC GENERAL NOTE 17 ON SHEET M1.0 FOR PIPING INFORMATION.

## KEY PLAN




## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24

scale feet

CHECK GRAPHIC SCALE BEFORE USING

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

DAVID M. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE SEAL


Richard Dodge Engineers
Mechanical Engineers
and Energy Consultants
Two Chestnut Street, Suite 2
Yarmouth, Maine 04096
(207) 846-0600
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www.richarddodge.com

CSI ENGINEERING
FIRE PROTECTION
999 Broadway, Suite 206
Saugus, MA 01906
781.233.2600
23 Wyman Way, Ste 204
Westbrook, ME 04092
207.370.9924
A/E INFO


APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

| DES | JC | DRW | SV | CHK | DM |
|---|---|---|---|---|---|

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 86 HVAC BASEMENT FLOOR PLAN EAST

EPROJECT NO.: 1350913

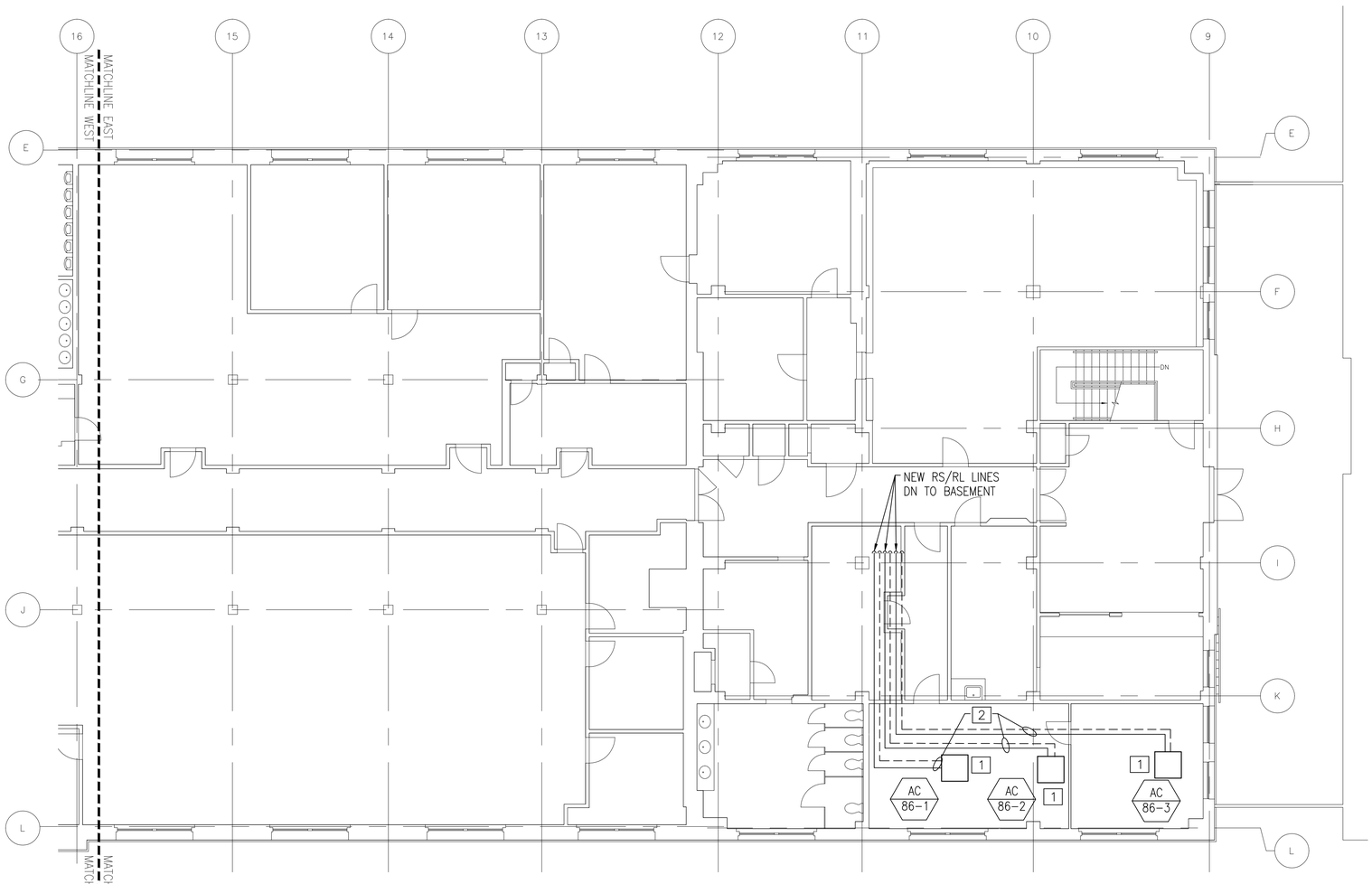
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703647

SHEET 194 OF 506

M2.0E | 86-15-928

DRAWFORM REVISION: 10 OCTOBER 2014




BUILDING 86 HVAC FIRST FLOOR PLAN - EAST
1/8" = 1'-0"

PLAN NORTH

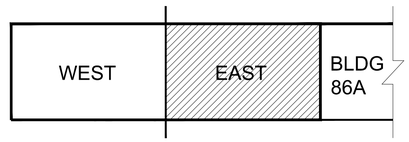
## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

## NEW WORK KEYNOTES

1. FURNISH AND INSTALL NEW AC AND RS/RL LINES AND CONNECT TO IT'S ASSOCIATED ACCU. EXISTING CONTROL WIRING AND CONDENSATE LINES TO BE RECONNECTED. PROVIDE WITH NEW DDC COMPATIBLE THERMOSTAT AND CONNECT TO EXISTING CONTROL WIRING, FIELD COORDINATE EXACT LOCATION WITH NAVFAC.
2. SEE HVAC GENERAL NOTE 17 ON SHEET M1.0 FOR PIPING INFORMATION.

## KEY PLAN




## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| STM | | DESCRIPTION | DATE | APPR |
|---|---|---|---|---|
| 4 | | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | | 35% SUBMISSION | 02/23/2015 | DM |

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID M. MAHONEY
No. 12370
LICENSED
PROFESSIONAL ENGINEER
SEAL

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CSI ENGINEERING
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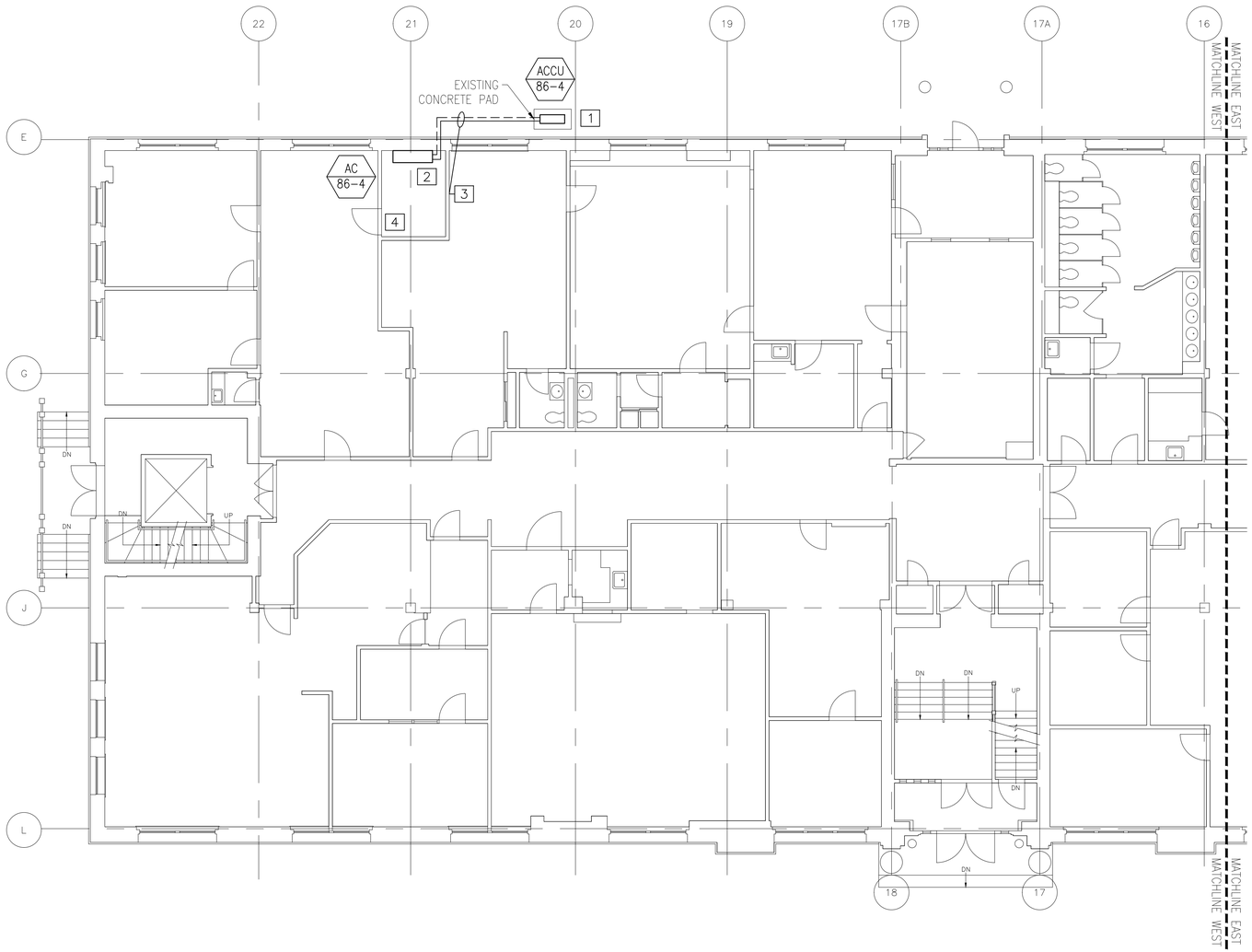
SAUGUS, MA 01906
781.233.0808
215 HAWTHORN AVE, STE 204
OAKLAND, NJ 07436
973.337.9224
M/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIMTY
SATISFACTORY TO DATE
DES JC DRW SV CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22
BUILDING 86 HVAC FIRST FLOOR PLAN EAST

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703648
SHEET 195 OF 506
M2.1E 86-15-929

DRAWFORM REVISION: 10 OCTOBER 2014




BUILDING 86 HVAC FIRST FLOOR PLAN - WEST

1/8" = 1'-0"

PLAN NORTH

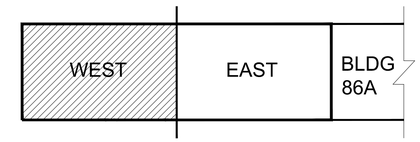
## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

## NEW WORK KEYNOTES

1. FURNISH AND INSTALL A NEW ACCU AND IT'S ASSOCIATED RS/RL LINES. NEW ACCU TO BE PLACED ON EXISTING CONCRETE PAD.
2. FURNISH AND INSTALL NEW AC UNIT AND RS/RL LINES AND CONNECT TO IT'S ASSOCIATED ACCU. EXISTING CONTROL WIRING AND CONDENSATE LINES TO BE RECONNECTED. PROVIDE WITH NEW DDC COMPATIBLE THERMOSTAT AND CONNECT TO EXISTING CONTROL WIRING, FIELD COORDINATE EXACT LOCATION WITH NAVFAC.
3. SEE HVAC GENERAL NOTE 17 ON SHEET M1.0 FOR PIPING INFORMATION.
4. MESSAGE ROOM HAS INCREASED SECURITY REQUIREMENTS, CONTRACTOR TO COORDINATE SECURITY REQUIREMENTS WITH BUILDING OWNER.

## KEY PLAN




## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24

scale feet

CHECK GRAPHIC SCALE BEFORE USING

| STM | | DESCRIPTION | DATE | APPR |
|---|---|---|---|---|
| 4 | | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | | 35% SUBMISSION | 02/23/2015 | DM |

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DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE SEAL

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ENGINEER: CSI ENGINEERING, PLLC, 999 BROADWAY, SUITE 206, SAUGUS, MA 01906, 781-233-9828, 23 SAVUTH AVE, STE 204, KITTERY, ME 03904, 603-319-9244, A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 86 HVAC FIRST FLOOR PLAN WEST

EPROJECT NO.: 1350913

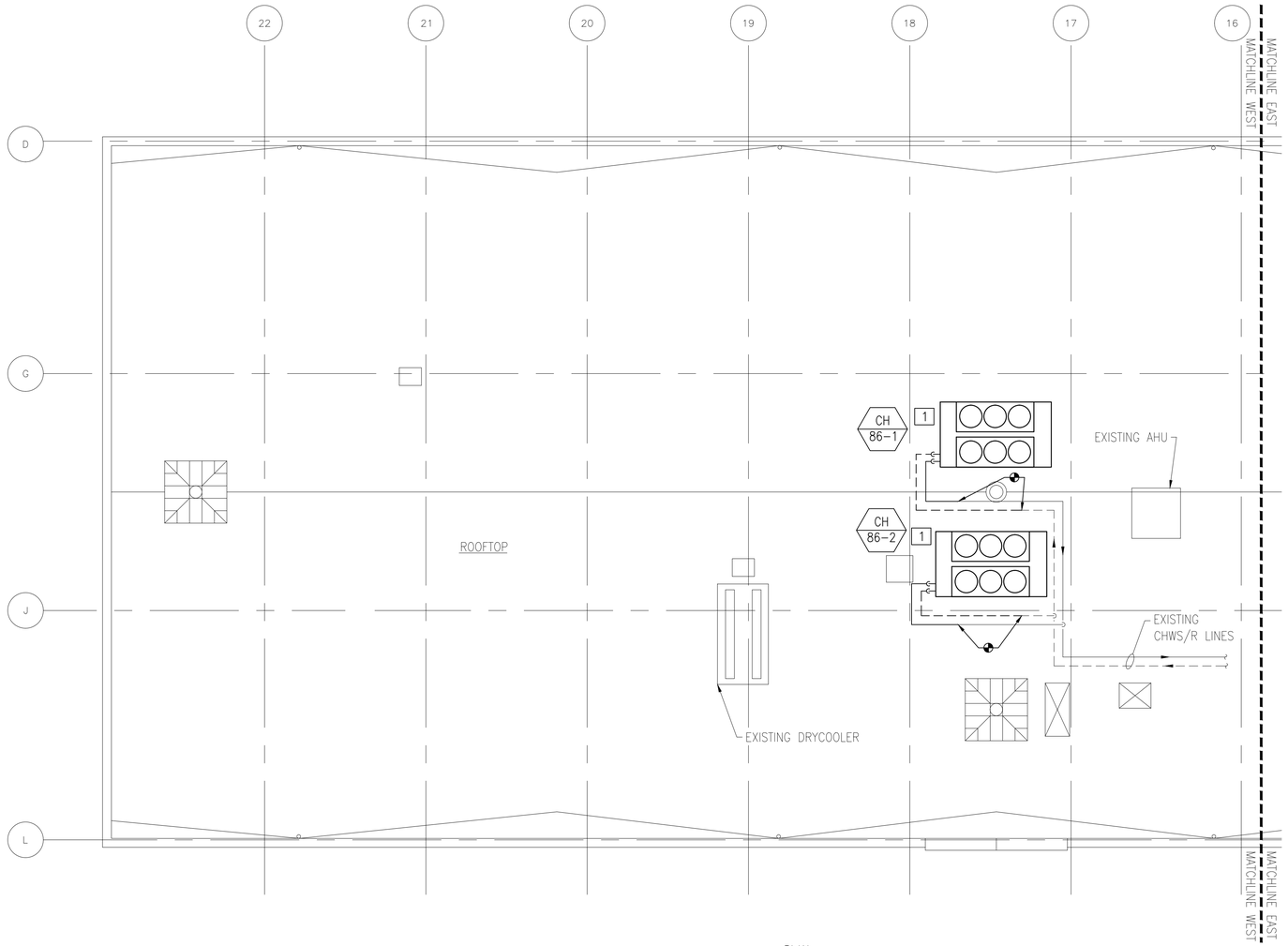
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703649

SHEET 196 OF 506

M2.1W | 86-15-930

DRAWFORM REVISION: 10 OCTOBER 2014




BUILDING 86 HVAC ROOF PLAN - WEST
1/8" = 1'-0"

PLAN NORTH

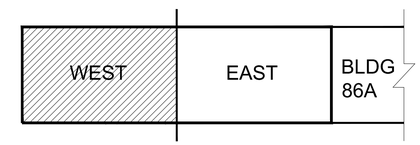
## GENERAL SHEET NOTES

1. REFER TO DRAWING M1.0 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.

## NEW WORK KEYNOTES

1. FURNISH AND INSTALL NEW CHILLER. NEW CHWS/R LINES TO BE CONNECTED TO EXISTING SYSTEM. SEE STRUCTURAL DRAWINGS FOR ANY ROOF CURB MODIFICATIONS.

## KEY PLAN




## GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet
CHECK GRAPHIC SCALE BEFORE USING

| | DM | DATE |
|---|---|---|
| 4 100% SUBMISSION | DM | 08/07/2015 |
| 3 100% REVIEW SUBMISSION | DM | 07/24/2015 |
| 2 90% SUBMISSION | DM | 06/04/2015 |
| 1 80% SUBMISSION | DM | 04/24/2015 |
| 0 35% SUBMISSION | DM | 02/23/2015 |
| STM DESCRIPTION | APPR | DATE |

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STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
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757.333.3800
23 Journey, Ste 204
Aliso Viejo, CA 92656
949.215.3800
A/E INFO


APPROVED
FOR COMMANDER NAVFAC

ACTIVITY
SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
LEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH

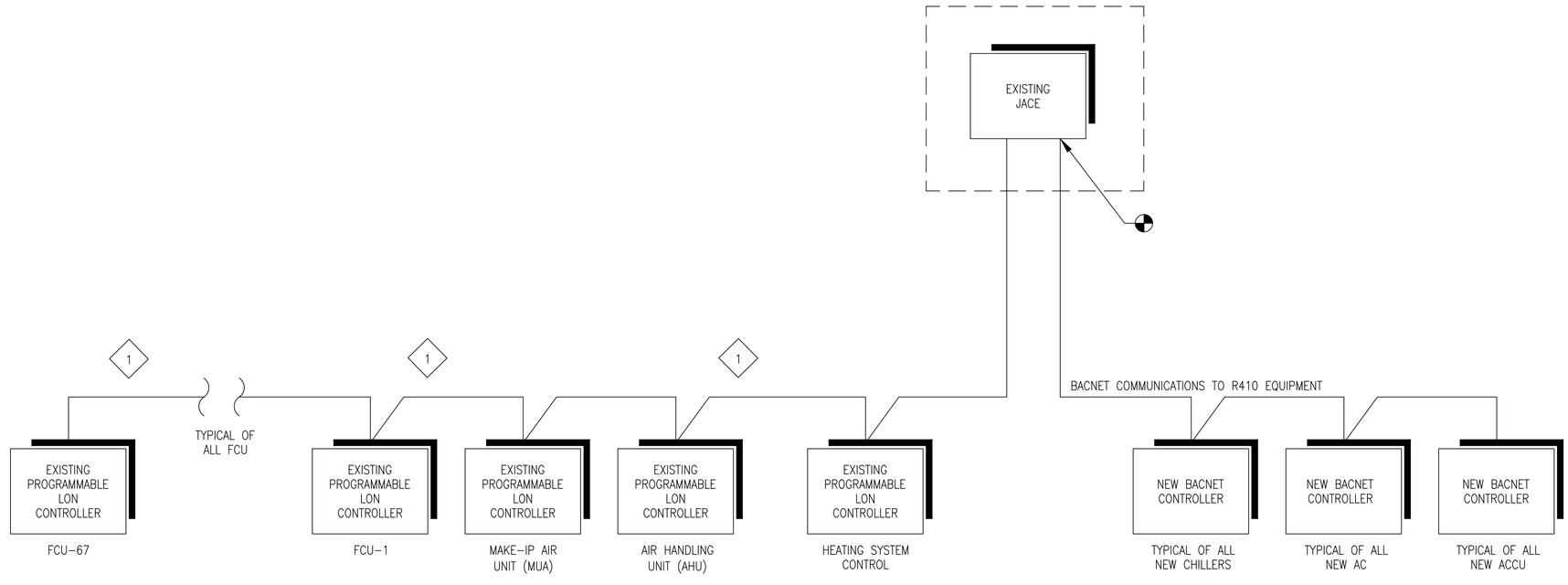
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 86 HVAC ROOF PLAN WEST

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703650
SHEET 197 OF 506
M2.2W | 86-15-931

DRAWFORM REVISION: 10 OCTOBER 2014




1 IT IS CRITICAL THAT THE COMMUNICATION BUS IS WIRED IN A CONTINUOUS DAISY CHAIN FASHION.

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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No. 12370
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Saugus, MA 01906
781.233.2626
215 Haverhill Ave, Ste 204
Portsmouth, NH 03801
603.570.6424
A/E INFO


APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: JC | DRW: SV | CHK: DM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

LEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

# BUILDING 86 HVAC CONTROLS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.
N40085-XX-C-XXXX

NAVFAC DRAWING NO.
12703651

SHEET 198 OF 506

M3.0 | 86-15-932

DRAWFORM REVISION: 10 OCTOBER 2014

SHEET TAKEN OUT OF PROJECT

| SYM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY
No. 12370
LICENSED
PROFESSIONAL ENGINEER

SEAL

CSI ENGINEERING
FIRE PROTECTION
999 BROADWAY SUITE 206
SAUGUS, MA 01906
781-233-4600
25 AVIATION AVE SITE 204
PORTSMOUTH, NH 03801
603-319-9244
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: JC DRW: SV CHK: DM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

FEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL SHIPYARD – PORTSMOUTH, NH

PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 86 HVAC CONTROLS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.
N40085-XX-C-XXXX

NAVFAC DRAWING NO.
12703652

SHEET 199 OF 506

M3.1 86-15-933

DRAWFORM REVISION: 10 OCTOBER 2014

SHEET TAKEN OUT OF PROJECT

| STM | DESCRIPTION | DATE | APPR |
|---|---|---|---|
| 4 | 100% SUBMISSION | 08/07/2015 | DM |
| 3 | 100% REVIEW SUBMISSION | 07/24/2015 | DM |
| 2 | 90% SUBMISSION | 06/04/2015 | DM |
| 1 | 80% SUBMISSION | 04/24/2015 | DM |
| 0 | 35% SUBMISSION | 02/23/2015 | DM |

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DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
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CONSULTING ENGINEERS
CSI
999 Broadway - Suite 206
Saugus, MA 01906
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23 Alverno Ave, Ste 204
Portland, ME 04103
207.517.0224
A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES: JC | DRW: SV | CHK: DM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

FEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
PORTSMOUTH NAVAL SHIPYARD

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1-B-R-22

# BUILDING 86 HVAC CONTROLS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.
N40085-XX-C-XXXX

NAVFAC DRAWING NO.
12703653

SHEET 200 OF 506

M3.2 | 86-15-934

DRAWFORM REVISION: 10 OCTOBER 2014