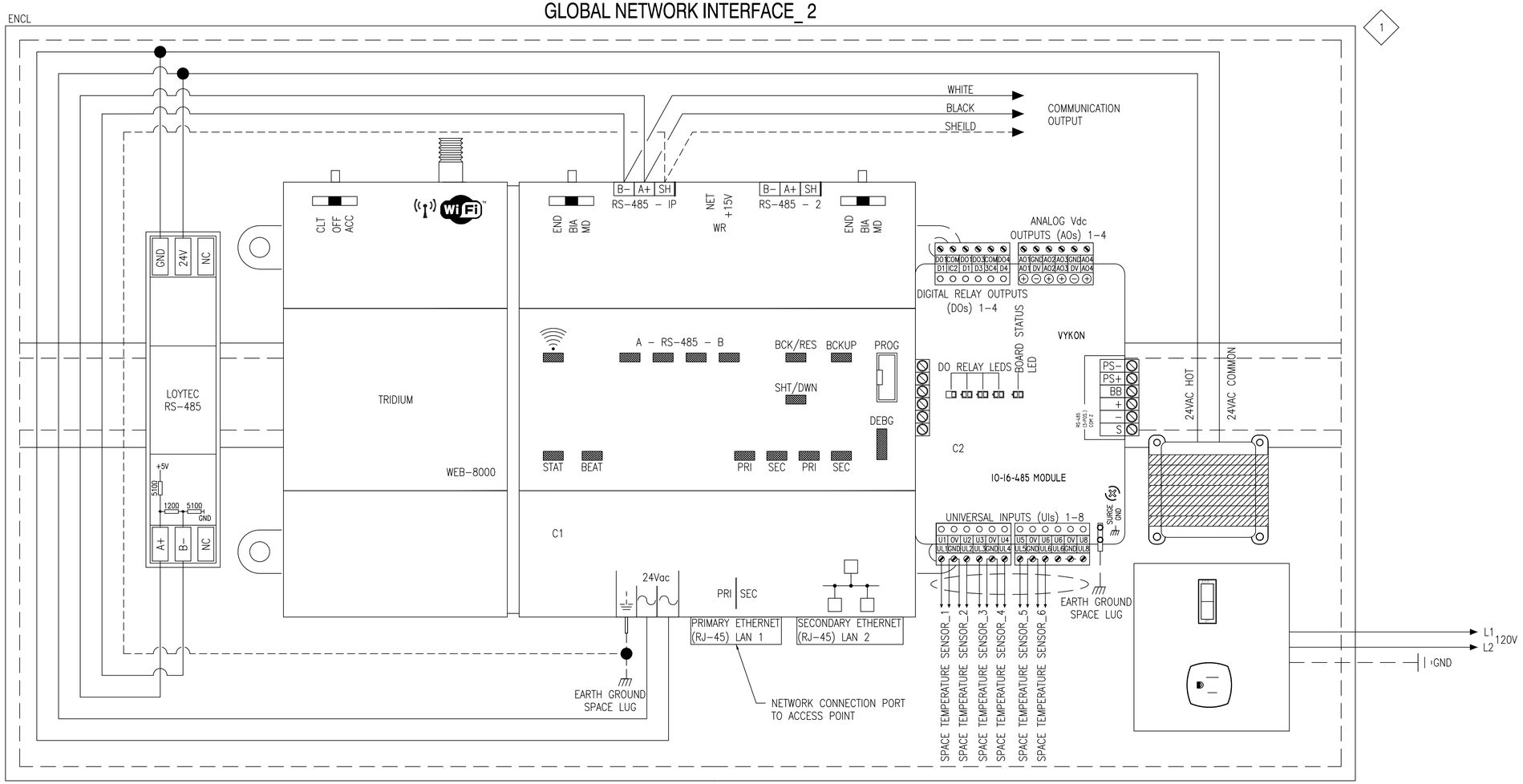
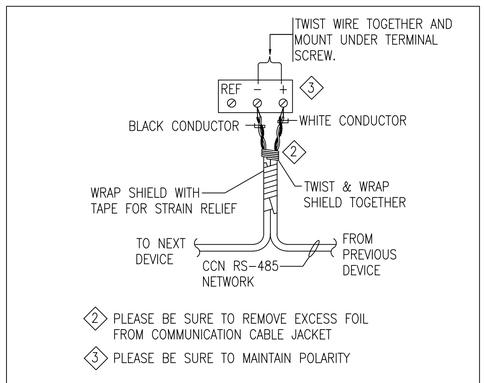
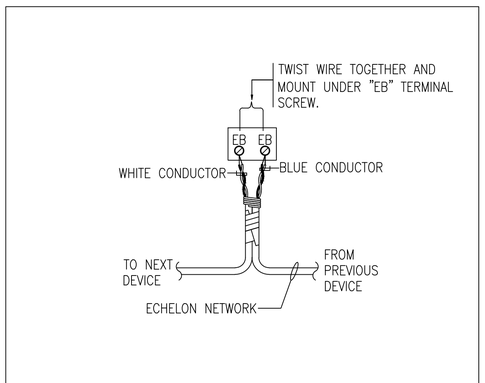
GLOBAL NETWORK INTERFACE_ 2





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

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 ENGINEERING PLLC 999 Islington Street, Ste 206 Portsmouth, NH 03801 TEL 603-319-5024 N.H. CERTIFICATE OF AUTHORITY NO. 29733

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 308 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703854
SHEET 401 OF 506
M3.2 308-15-59
DRAWFORM REVISION: 10 OCTOBER 2014

AIR-COOLED WATER CHILLER SCHEDULE

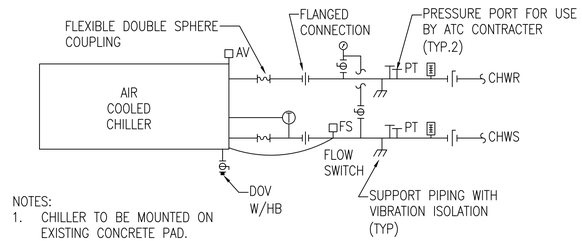
TAG	SERVICE	LOCATION	MINIMUM CAPACITY (TONS)	EVAPORATOR					REFRIG. TYPE	COMPRESSOR(S)			AMBIENT (°F)	CONDENSER FAN			ELECTRIC SERVICE					WEIGHT (LBS)	DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
				GPM	% GLYCOL	EWT (°F)	LWT (°F)	P.D.(FT.)		QTY.	POWER (KW)	TYPE	MAX	QTY.	POWER (KW)	RPM	MAX kW	MCA (AMP)	MOP (AMP)	V	PH			
CH-308-1	BLDG 308	GROUND FLOOR	30	70.4	35	55	44	23	R-410A	2	28.5	SCROLL	95	3	3.7	840	32.4	66.3	90	460	3	2880	TRANE CGAM030F	SEE NOTES

NOTES: 1. PROVIDE W/ BACNET INTERFACE. 2. PROVIDE WITH LOW-TEMPERATURE PROCESSING. 3. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 4. 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.



NOTES:
1. CHILLER TO BE MOUNTED ON EXISTING CONCRETE PAD.

AIR COOLED CHILLER PIPING 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

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

SEAL

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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 308 HVAC SCHEDULES AND DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703855

SHEET 402 OF 506

M4.0 308-15-60

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.

RECEPTACLE LABEL REQUIREMENTS

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".

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 30AMP SWITCH
30AS/15AF 3R	FUSED DISCONNECT SWITCH, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED "3R" – INDICATES NEMA TYPE 3R ENCLOSURE "30AS" – INDICATES 30AMP SWITCH "15AF" – INDICATES 15AMP FUSES
JCB	DDC CONTROL JACE BOX. PROVIDED BY OTHERS. FIELD COORDINATE EXACT LOCATION.
100AF 3P	ENCLOSED CIRCUIT BREAKER "100AF" – INDICATES FRAME SIZE "80AT" – INDICATES TRIP

ELECTRICAL 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

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
▬	208Y/120 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS
T	DRY TYPE TRANSFORMER
M	UTILITY METER AND SOCKET

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
XE	EXISTING EQUIPMENT TO BE REMOVED AND NEW EQUIPMENT TO BE INSTALLED ON EXISTING BRANCH/FEEDER
☐	EXISTING EQUIPMENT TO REMAIN FOR INFORMATION ONLY – (XM) INDICATED BY SYMBOL WITH LIGHT OUT OF FUNCTION LINE TYPE
⬚	EXISTING EQUIPMENT TO BE REWORKED – (XN, XL, XE, XR) INDICATED BY SYMBOL WITH DASHED AND IN FUNCTION LINE TYPE

ONE-LINE LEGEND

SYMBOL	DESCRIPTION
60AS/50AF	DISCONNECT SWITCH, FUSED "60AS" – INDICATES SWITCH SIZE "50AF" INDICATES FUSE SIZE
80A 3P	CIRCUIT BREAKER, FIXED "80A" – INDICATES TRIP RATING "3P" – INDICATES NUMER OF POLES
100AF 3P	ENCLOSED CIRCUIT BREAKER "100AF" – INDICATES FRAME SIZE "3P" – INDICATES NUMBER OF POLES
	GROUND CONNECTION
M	CURRENT TRANSFORMER & METER
480V 120/208V	TRANSFORMER, 480V INDICATES PRIMARY VOLTAGE, 120/208V INDICATES SECONDARY VOLTAGE
Δ	3 PHASE, 3 WIRE DELTA CONNECTION
Y	3 PHASE, 4 WIRE WYE SOLIDLY GROUNDED
PANEL PP1	PANELBOARD "PP1" – INDICATES PANELBOARD NAME REFER TO PANELBOARD SCHEDULES FOR ADDITIONAL INFORMATION

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 308 ELECTRICAL LEGEND
ED2.0	BUILDING 308 ELECTRICAL BASEMENT AND FIRST FLOOR DEMOLITION PLANS
E2.0	BUILDING 308 ELECTRICAL BASEMENT AND FIRST FLOOR PLANS
E3.0	BUILDING 308 ELECTRICAL ONE-LINE DIAGRAM, MECHANICAL EQUIPMENT SCHEDULE, & PANELBOARD SCHEDULE

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

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A/E INFO

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DES TM	DRW TM	CHK JO

PM/DM PETER STOCKLESS
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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

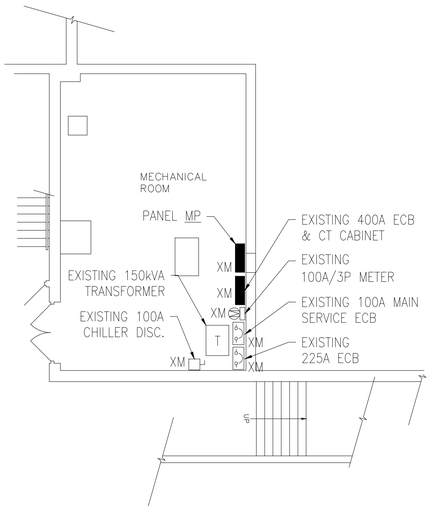
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 308 ELECTRICAL LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703856
SHEET 403 OF 506

E1.0 308-15-61

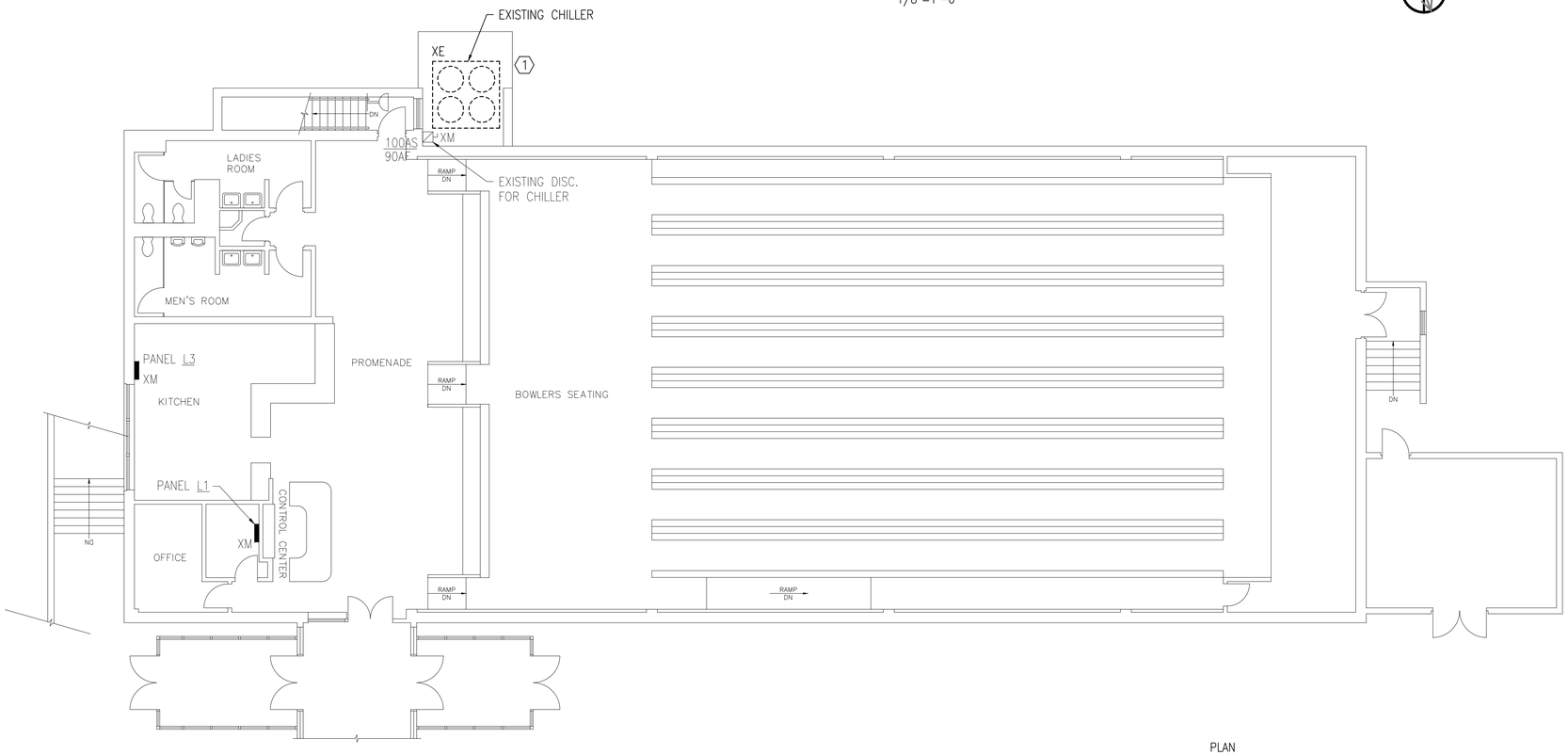
DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 308 ELECTRICAL BASEMENT DEMOLITION PLAN

1/8"=1'-0"

PLAN NORTH



BUILDING 308 ELECTRICAL FIRST FLOOR DEMOLITION PLAN

1/8"=1'-0"

PLAN NORTH

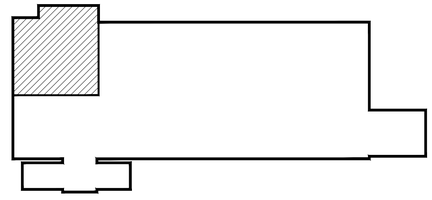
GENERAL SHEET NOTES

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 CHILLER. MAINTAIN EXISTING BRANCH CIRCUITRY, DISCONNECT IRCUIT BREAKER FOR REUSE.

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
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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 308 ELECTRICAL BASEMENT AND FIRST FLOOR DEMOLITION PLANS

EPROJECT NO.: 1350913

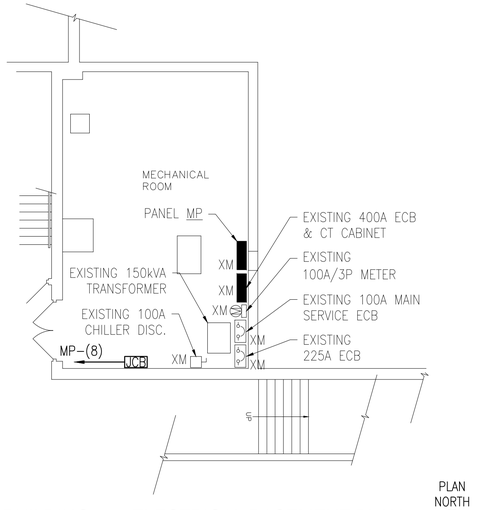
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703857

SHEET 404 OF 506

ED2.0 | 308-15-62

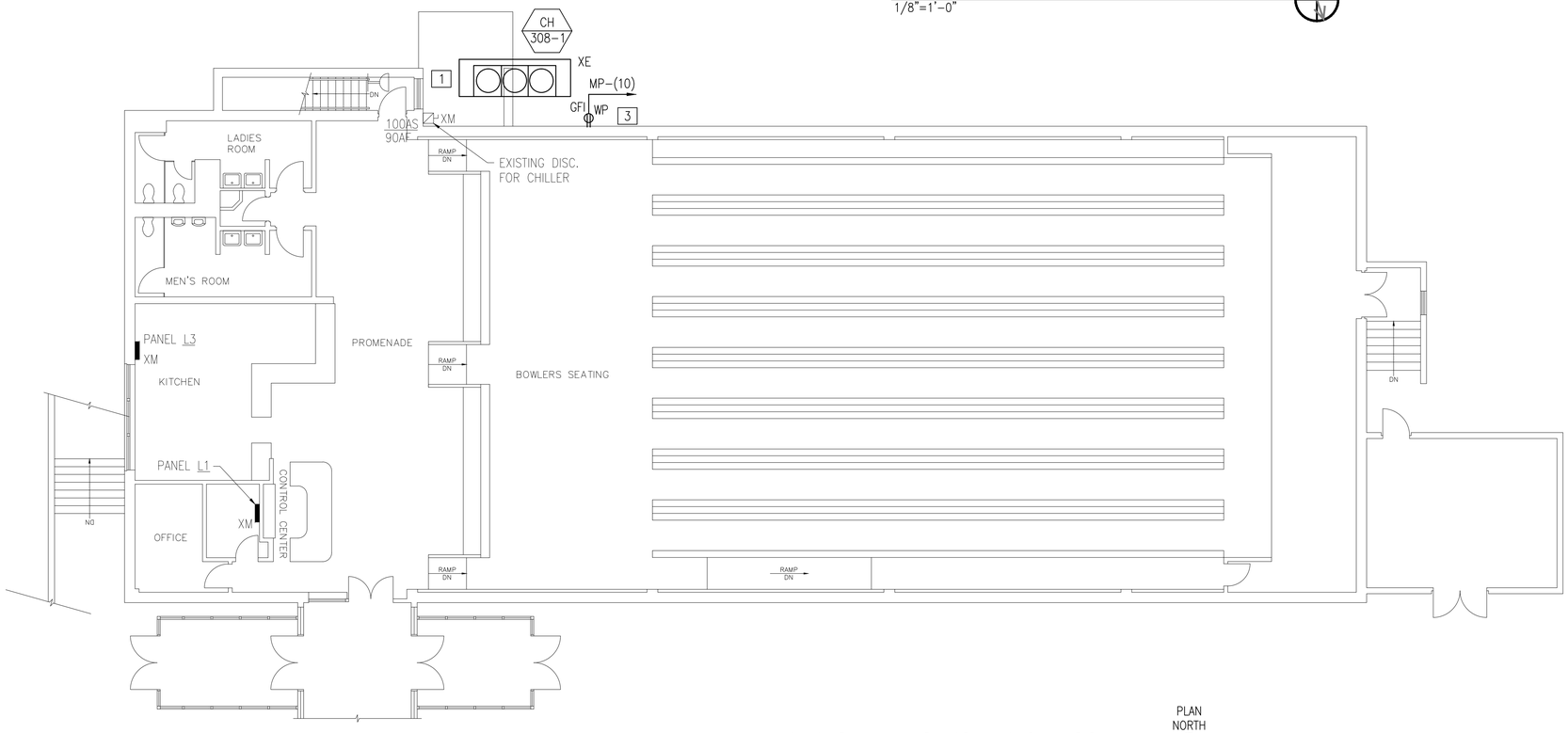
DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 308 ELECTRICAL BASEMENT PLAN

1/8"=1'-0"

PLAN NORTH



BUILDING 308 ELECTRICAL FIRST FLOOR PLAN

1/8"=1'-0"

PLAN NORTH

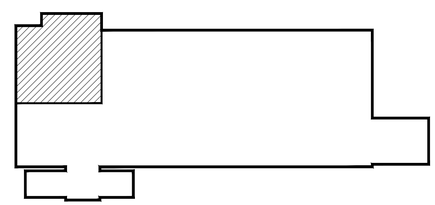
GENERAL SHEET NOTES

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.

NEW WORK KEYNOTES

1. CONNECT NEW CHILLER TO EXISTING BRANCH CIRCUITRY DISCONNECT AND CIRCUIT BREAKER MAINTAINED DURING DEMOLITION. REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR ADDITIONAL INFORMATION.
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 ACCU. IF NO RECEPTACLE EXISTS, PROVIDE NEW AS SHOWN. REFER TO PANELBOARD SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.

KEY PLAN



GRAPHIC SCALE

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

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A/E INFO

APPROVED

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 308 ELECTRICAL BASEMENT AND FIRST FLOOR PLANS

EPROJECT NO.: 1350913

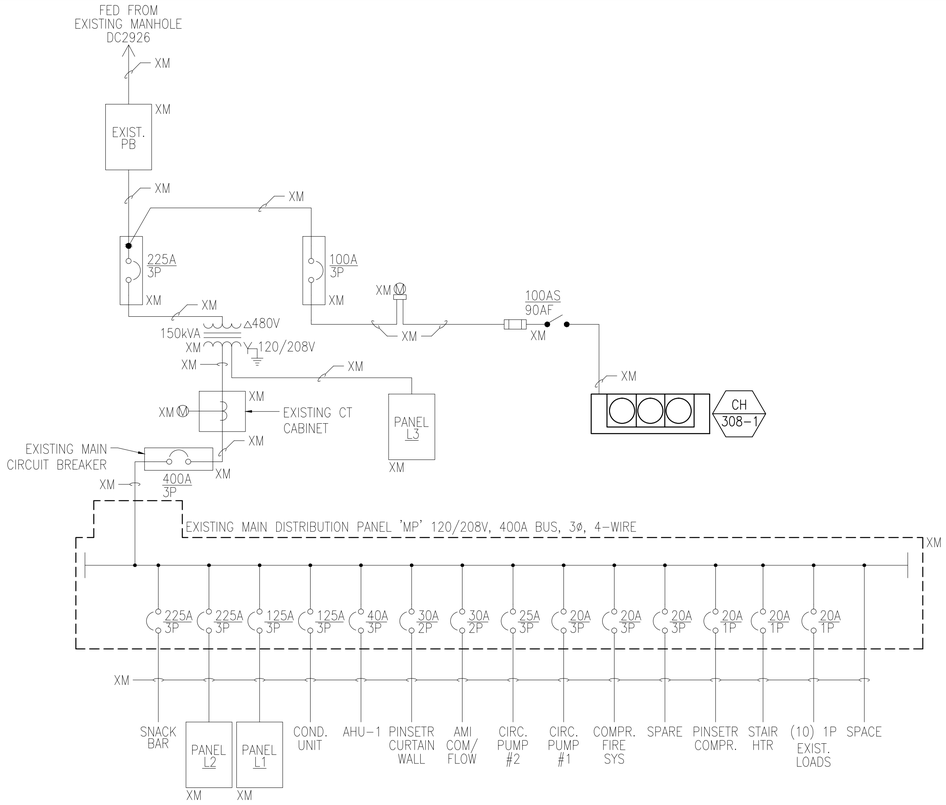
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703858

SHEET 405 OF 506

E2.0 | 308-15-63

DRAWFORM REVISION: 10 OCTOBER 2014



ELECTRICAL ONE-LINE DIAGRAM
SCALE: NTS

PANELBOARD SCHEDULE

PANEL: MP	VOLTS: 120/ 208		NEW/EXISTING.: EXISTING
MAIN: MLO	BUS AMPS: 400A		MOUNT.: SURFACE
PH/WIRE: 3ø/4W	AIC: 10K		LOC: BLDG 308 MECHANICAL ROOM

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	MECHANICAL ROOM LIGHTING	0	–	–	0	MECH & EXT. LTS/REC.	20/1	2
3	20/1	STAIRWAY HEATER	0	–	–	0	MECH. RM REC.	20/1	4
5	20/1	REC. MECHANICAL ROOM	0	–	–	0	HVAC CONTROL PANEL	20/1	6
7	20/1	PINSETTER COMPRESSOR	0	–	1	0.2	JACE BOX	20/1	8
9	30/1	ICE MACHINE	0	–	1	.18	CHILLER GFI RECEPTACLE	20/1	10
11	30/2	AMI COM/FLOW	0	–	–		SPACE		12
13									
15	30/2	PINSETTER CURTAIN WALL	0	–	–	0	CIRC. PUMP #1	15/3	14
17	40/3	AHU-1	0	–	–	0	COMPRESSOR FIRE SYSTEM	30/3	16
19	25/3	CIRC. PUMP #2	0	–	–	0	SPARE	30/3	18
21	125/3	PANEL L1	0	–	–	0	CONDENSER	90/3	22
23	225/3	PANEL L2	0	–			SNAK BAR (PANEL KP)	90/3	24
			0.00			0.38	TOTAL CONNECTED kVA:	0.38	
							TOTAL CONNECTED AMPERES:	1.06	

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.

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
CH 308-1	CHILLER	–	52.8	460	3	–	–	–	X			X	NOTE 11,12

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 OTHERS.
10. INTEGRAL CONVENIENCE RECEPTACLE PROVIDED PREWIRED TO EQUIPMENT BY TRADE CONTRACTOR.
11. UNIT IS FED VIA EXISTING TAP OFF OF EXISTING 225A ECB.
12. CONNECT NEW UNIT TO EXISTING BRANCH CIRCUITRY AND DISCONNECTS MAINTAINED DURING DEMOLITION.

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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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

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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

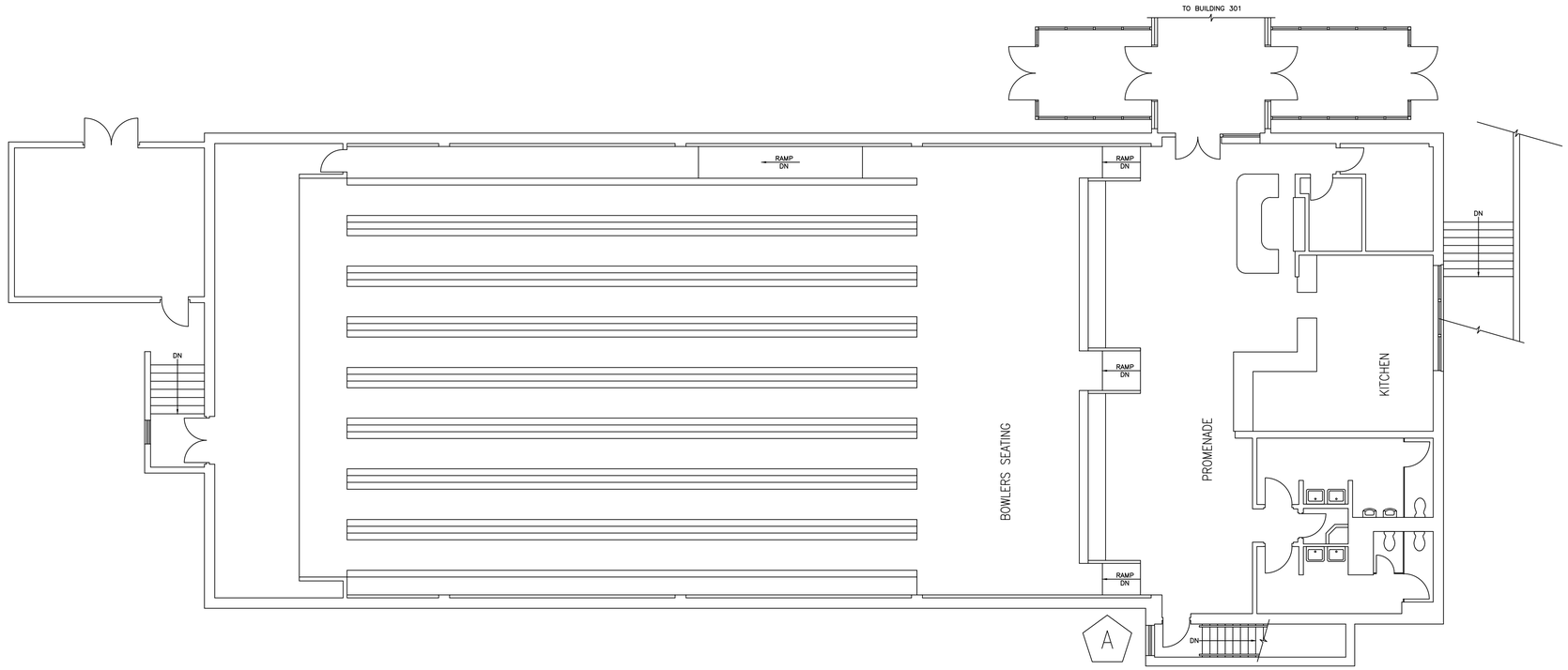
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 308 ELECTRICAL ONE-LINE DIAGRAM, MECHANICAL EQUIPMENT SCHEDULE, AND PANELBOARD SCHEDULES

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085-XX-C-XXXX
NAVFAC DRAWING NO.: 12703859
SHEET 406 OF 506

E3.0 | 308-15-64

DRAWFORM REVISION: 10 OCTOBER 2014



B308 ANTENNA LOCATION - FIRST 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	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

A NEW WORK KEYNOTES

1. CONTRACTOR SHALL MOUNT RF ACCESS POINT ON EXTERIOR CORNER OF STAIRWELL ON SOUTH WALL; MOUNT APPROX. 24" ABOVE ROOF LINE TO ENSURE CLEAR LINE-OF-SIGHT TO B170 ACCESS POINT.
2. WALL MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS.
3. CAT5 SHALL BE ROUTED BETWEEN JACE AND RF ACCESS POINT ALONG THE EXISTING CHILLED WATER LINE PATH. ADDITIONAL NOTES FOR ROUTE CAT5:
    1. FOLLOW EXISTING CONDUIT ALONG SOUTH-FACING WALL (S STAIRS ARE ON OTHER SIDE OF MECHANICAL ROOM WALL)
    2. DETERMINE BEST WAY TO BREACH WALL BY DRILLING HOLE LARGE ENOUGH TO FACILITATE 90 DEGREE BEND, OR REMOVING ONE OR BOTH CINDER BLOCKS CURRENTLY SEALING THE EXISTING CHASE UNDER THE STAIRWAY)
    3. BREACH REMAINING WALL FROM THE OUTSIDE AND ROUTE CABLE THROUGH IT
    4. RUN THROUGH CONDUIT UP INSIDE CORNER OF BUILDING TO ANTENNA LOCATED ON EXTERIOR SOUTH WALL

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

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aecom architects|engineers
13 WATER ST NEWMARKET NH
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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

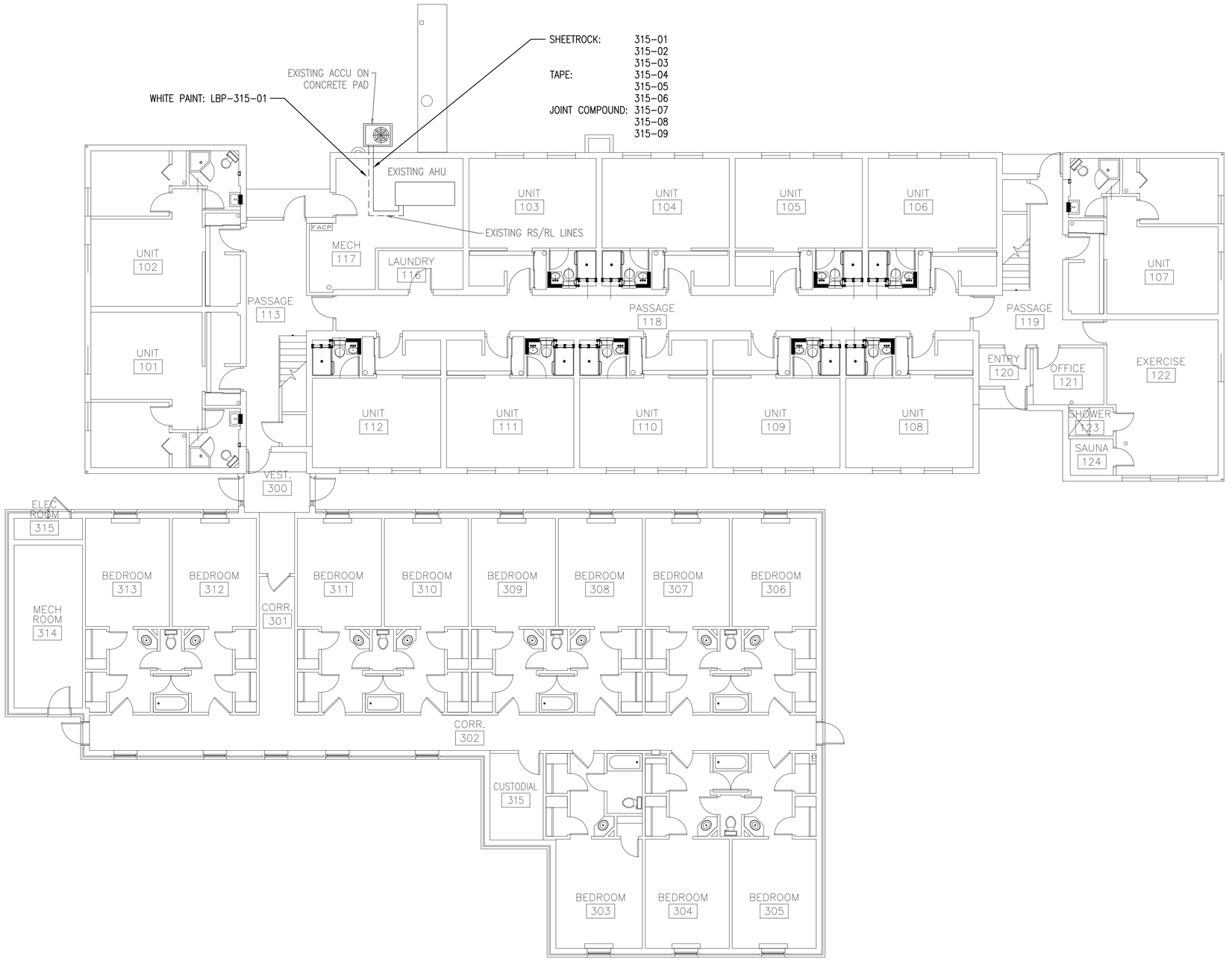
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

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

B308 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703860
SHEET 407 OF 506
ET1.0 308-15-65

DRAWFORM REVISION: 10 OCTOBER 2014



B315 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 B315 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
315-01	ND	NS
315-02	ND	NS
315-03	ND	NS
315-04	ND	NS
315-05	ND	NS
315-06	ND	NS
315-07	ND	NS
315-08	ND	NS
315-09	ND	NS
LBP-315-01	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

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

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

B315 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703861

SHEET 408 OF 506

H1.0 | 315-15-45

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\HazMat\s\DWG\A1066_2_H2MT_R22.dwg LAYOUT NAME: B315-H1.0 PLOTTED: Friday, August 07, 2015 - 2:37pm 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
- J / 1 — JACE BOX
- ACCU / 1 — AIR COOLED CONDENSING UNIT
- PTAC / 1 — PACKAGE TERMINAL AIR CONDITIONER

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 315 HVAC LEGEND
MD2.0	BUILDING 315 HVAC FIRST FLOOR DEMOLITION PLAN
MD2.1	BUILDING 315 HVAC SECOND FLOOR DEMOLITION PLAN
M2.0	BUILDING 315 HVAC FIRST FLOOR PLAN
M2.1	BUILDING 315 HVAC SECOND FLOOR PLAN
M3.0	BUILDING 315 HVAC CONTROLS
M3.1	BUILDING 315 HVAC CONTROLS
M3.2	BUILDING 315 HVAC CONTROLS
M4.0	BUILDING 315 HVAC SCHEDULES, DETAILS, AND 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

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

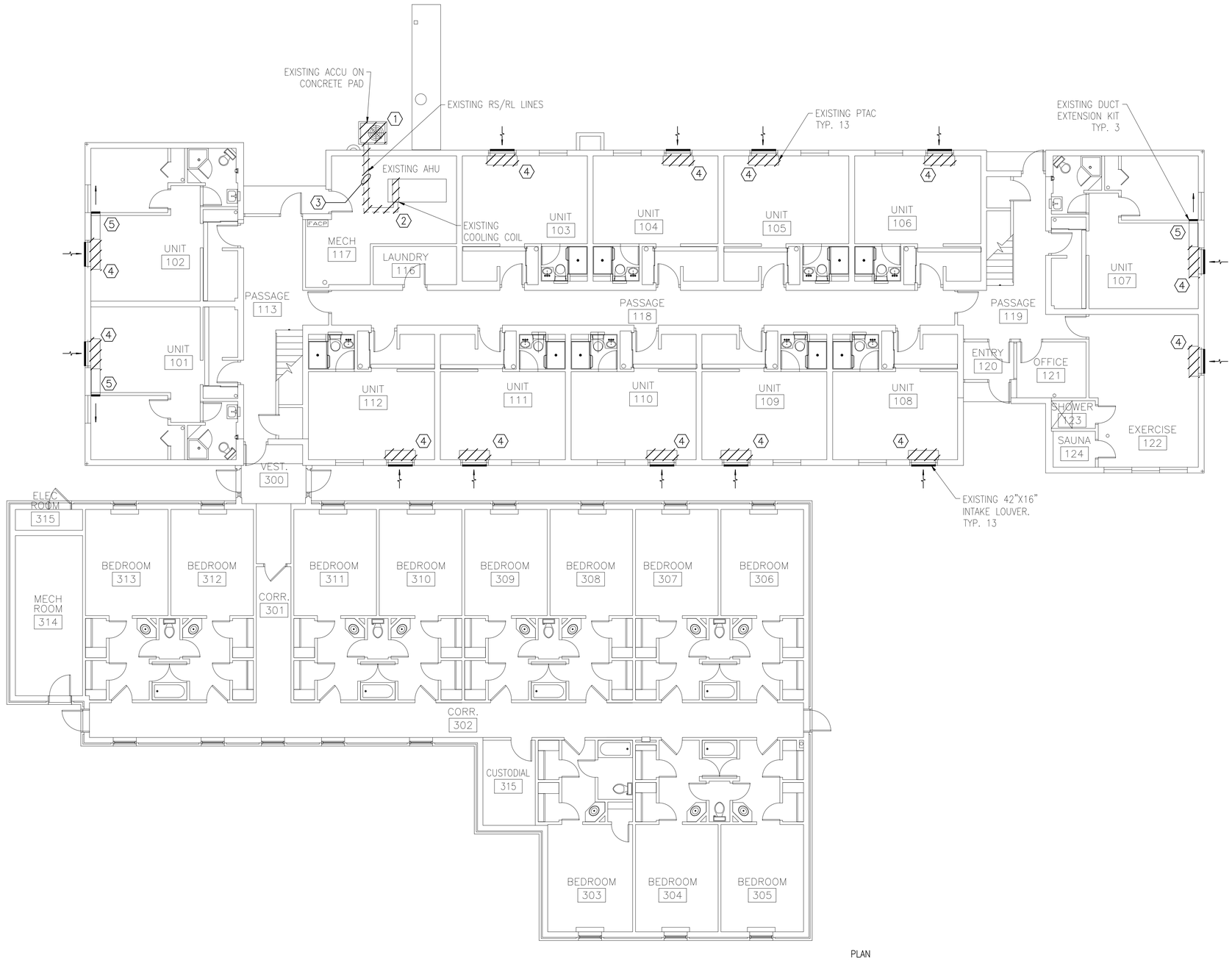
DES JC | DRW SV | CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

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 315 HVAC LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703862
SHEET 409 OF 506
M1.0 315-15-46



BUILDING 315 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. REMOVE EXISTING COOLING COIL AND ASSOCIATED THERMOSTAT. EXISTING AHU, CONDENSATE LINES, CONTROL WIRING, DUCTWORK, AND HW COIL TO REMAIN AND BE DISCONNECTED. EXISTING AHU TO BE CLEANED AND REFURBISHED TO LIKE NEW CONDITION. PROVIDE THE FOLLOWING SERVICES ON EXISTING AHU INDICATED TO BE REUSED: 1) FILTER CHANGES, 2) BALANCING, 3) LUBRICATION.
3. ACCESSIBLE EXISTING RS/RL LINES TO BE REMOVED. ANY REMAINING RS/RL CONCEALED TO BE EVACUATED, CAPPED AND ABANDONED IN PLACE.
4. REMOVE EXISTING PTAC CHASSIS AND ASSOCIATED THERMOSTAT. EXISTING WALL SLEEVE, ROOM CABINET, HYDRONIC HEAT SECTION, CONTROL BOX, AND OUTDOOR LOUVER TO REMAIN.
5. EXISTING DUCT EXTENSION KITS AND WALL GRILLES TO REMAIN.

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

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

THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. NOTIFY THE ENGINEER OF ANY DISCREPANCIES. DO NOT SCALE DRAWINGS. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND AUTHORITIES HAVING JURISDICTION OVER THE PROJECT. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK. COVID-2015-08 EXPIRES 6/30/16

PLUMBING FIRE PROTECTION

CSI ENGINEERING — 919 BASKIN ROAD, STE 204, LAFAYETTE, LA 70508, 337.313.2400, 337.313.2403, 225.317.9424

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 315 HVAC FIRST FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913

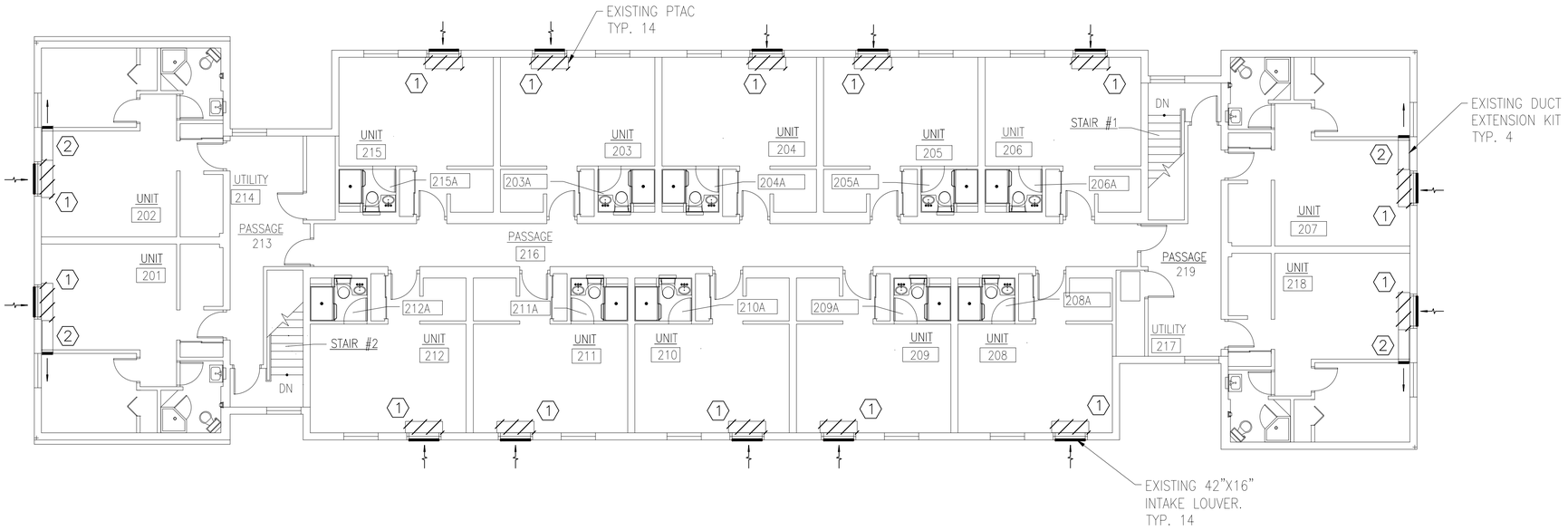
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703863

SHEET 410 OF 506

MD2.0 315-15-47

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 315 HVAC SECOND 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 PTAC CHASSIS AND ASSOCIATED THERMOSTAT. EXISTING WALL SLEEVE, ROOM CABINET, HYDRONIC HEAT SECTION, CONTROL BOX, AND OUTDOOR LOUVER TO REMAIN.
2. EXISTING DUCT EXTENSION KITS AND WALL GRILLES TO REMAIN.

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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999 BOULDER BLVD, STE 206
BUILDING 3A, 2ND FLOOR
TEL (303)-2-3-0208
25 AVENTURA AVE, STE 324
PORTSMOUTH, NH 03801
603-319-9244
A/E INFO

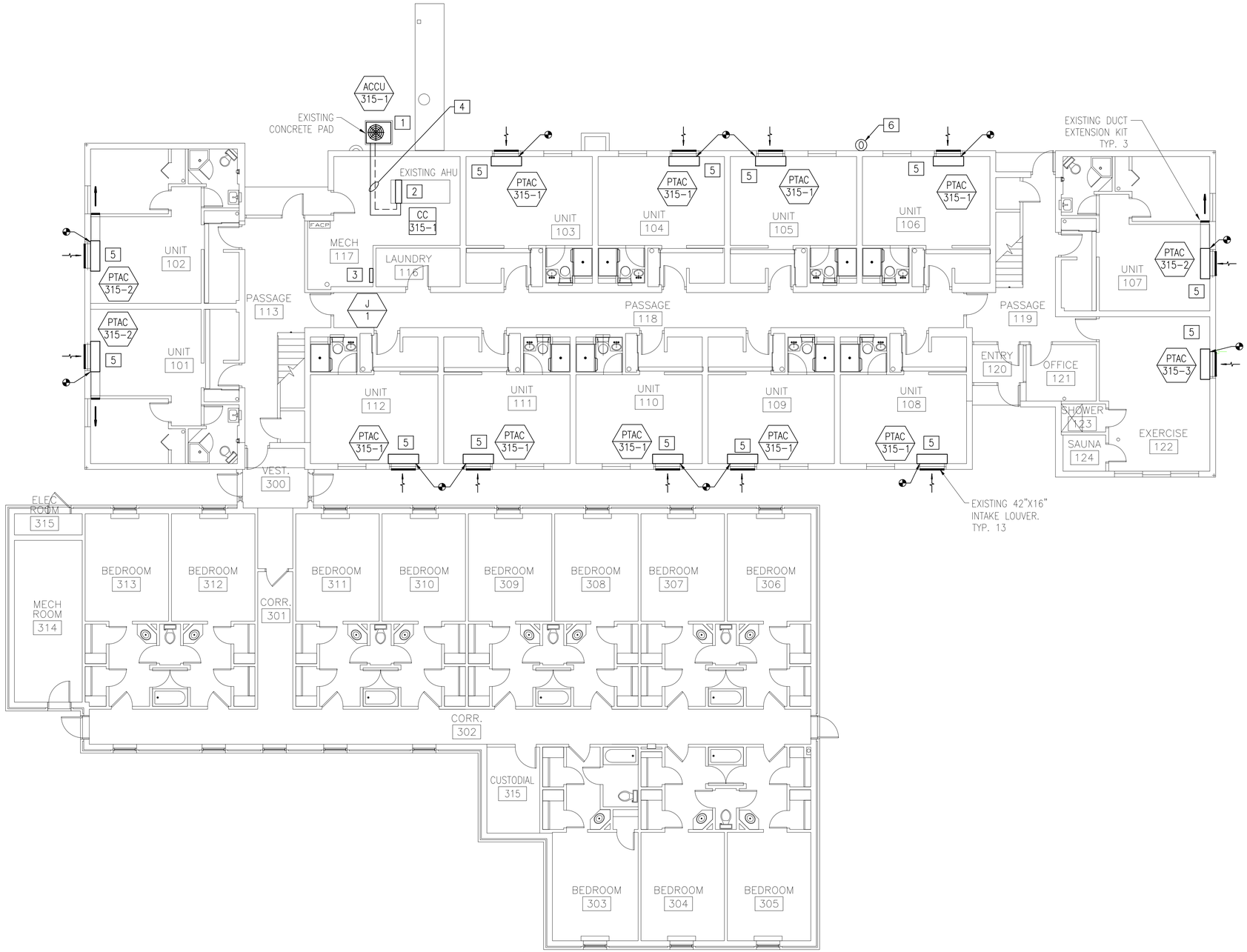
APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES JC DRW SV CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
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 315 HVAC SECOND FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703864
SHEET 411 OF 506
MD2.1 315-15-48
DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 315 HVAC FIRST FLOOR PLAN

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 ACCU AND IT'S ASSOCIATED RS/RL LINES. NEW ACCU TO BE PLACED ON EXISTING CONCRETE PAD.
2. FURNISH AND INSTALL NEW COOLING COIL IN EXISTING AHU AND CONNECT TO ASSOCIATED ACCU. EXISTING CONDENSATE LINES, CONTROL WIRING, AND DUCTWORK TO BE RECONNECTED. EXISTING AHU TO BE CLEANED AND REFURBISHED TO LIKE NEW CONDITION. 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.
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.
5. FURNISH AND INSTALL NEW PTAC CHASSIS AND PLACE IN EXISTING WALL SLEEVE. CONNECT TO EXISTING OUTDOOR LOUVER, CONTROL BOX, DUCT EXTENSION KITS, HYDRONIC HEAT SECTION, AND ROOM CABINET. PROVIDE WITH NEW DDC COMPATIBLE THERMOSTAT AND CONNECT TO EXISTING CONTROL WIRING, FIELD COORDINATE EXACT LOCATION WITH NAVFAC.
6. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF OUTDOOR AIR SENSOR WITH NAVFAC.

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

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

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CSI ENGINEERING

PREPARED BY: CSI ENGINEERING 999 BROADWAY #400, STE 206 SAUGUS, MA 01906 781.233.9933

23 JUVENTAS AVE, STE 204 PORTSMOUTH, NH 03801 603.319.9244

W/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 315 HVAC FIRST FLOOR PLAN

EPROJECT NO.: 1350913

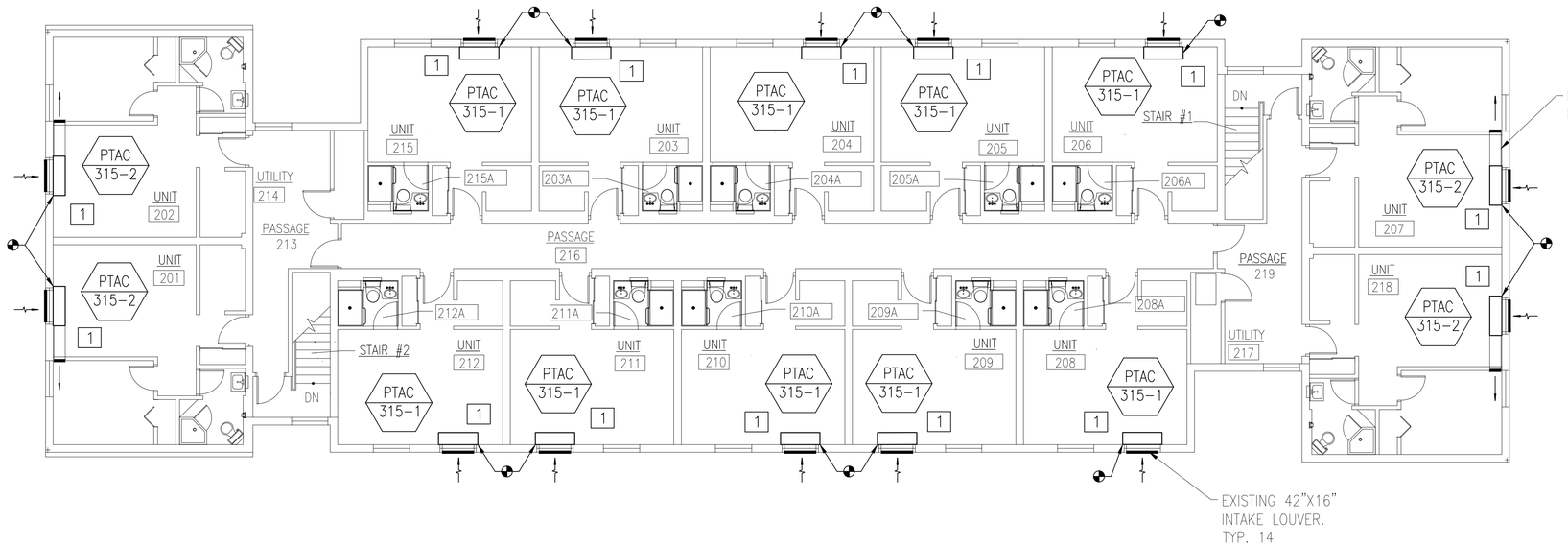
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703865

SHEET 412 OF 506

M2.0 | 315-15-49

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 315 HVAC SECOND FLOOR PLAN

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 PTAC CHASSIS AND PLACE IN EXISTING WALL SLEEVE. CONNECT TO EXISTING OUTDOOR LOUVER, CONTROL BOX, DUCT EXTENSION KITS, HYDRONIC HEAT SECTION, AND ROOM CABINET. PROVIDE WITH NEW DDC COMPATIBLE THERMOSTAT AND CONNECT TO EXISTING CONTROL WIRING, FIELD COORDINATE EXACT LOCATION WITH NAVFAC.

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

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

CSI ENGINEERING PLLC 999 BROADWAY SUITE 306 SOMERVILLE, MA 02144 781.333.9555 23 JULIA PATH AVE, STE 204 YORK, ME 03909 603.910.9424 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
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 315 HVAC SECOND FLOOR PLAN

EPROJECT NO.: 1350913

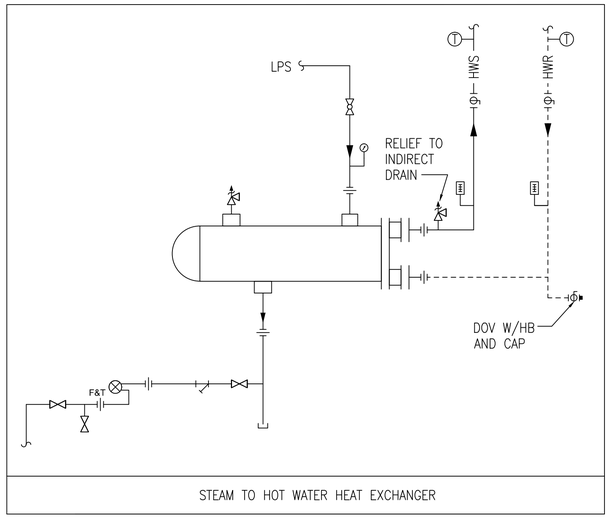
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703866

SHEET 413 OF 506

M2.1 | 315-15-50

DRAWFORM REVISION: 10 OCTOBER 2014



STEAM TO HOT WATER HEAT EXCHANGER

PORTSMOUTH NAVAL SHIPYARD (BUILDING 315 _ UOPH "OFFICERS QUARTERS")
EXISTING INVENSYS INTEGRATED DDC SYSTEM ARCHITECTURE

NETWORK CONNECTION TO ACCESS POINT

120V 20AMP CIRCUIT

JACE-8000

NEW TRIDIUM JACE INTEGRATION

EXISTING DDC SYSTEM

1

EXISTING PROGRAMMABLE BACNET CONTROLLER

CUH-4 CONTROL

TYPICAL OF ALL CUH

EXISTING PROGRAMMABLE BACNET CONTROLLER

CUH-1 CONTROL

1

EXISTING PROGRAMMABLE BACNET CONTROLLER

FC-13 CONTROL

TYPICAL OF ALL FC

EXISTING PROGRAMMABLE BACNET CONTROLLER

FC-1 CONTROL

BUILDING 315 BACNET COMMUNICATION

EXISTING PROGRAMMABLE BACNET CONTROLLER

HEATING CONTROL SYSTEM

2

EXISTING INVENSYS UNC-500 JACE

BUILDING 315 OUTDOOR AIR SENSOR
MOUNT ON NORTH SIDE OF BUILDING OUT OF DIRECT SUNLIGHT

BUILDING 315 CHILLED WATER RETURN TEMPERATURE

BUILDING 315 CHILLED WATER RETURN TEMPERATURE

BUILDING 315 HOT WATER RETURN TEMPERATURE

BUILDING 315 HOT WATER SUPPLY TEMPERATURE

BACNET COMMUNICATIONS TO R410 EQUIPMENT

NEW BACNET CONTROLLER

TYPICAL FOR ALL PTAC UNITS

NEW BACNET CONTROLLER

ACCU-315-1

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	
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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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 315 HVAC CONTROLS

EPROJECT NO.: 1350913

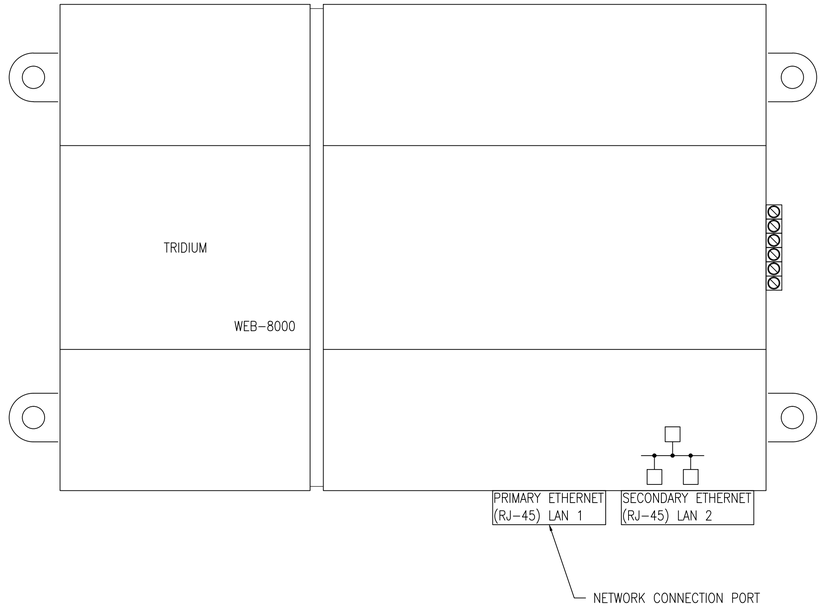
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703867

SHEET 414 OF 506

M3.0 | 315-15-51

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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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
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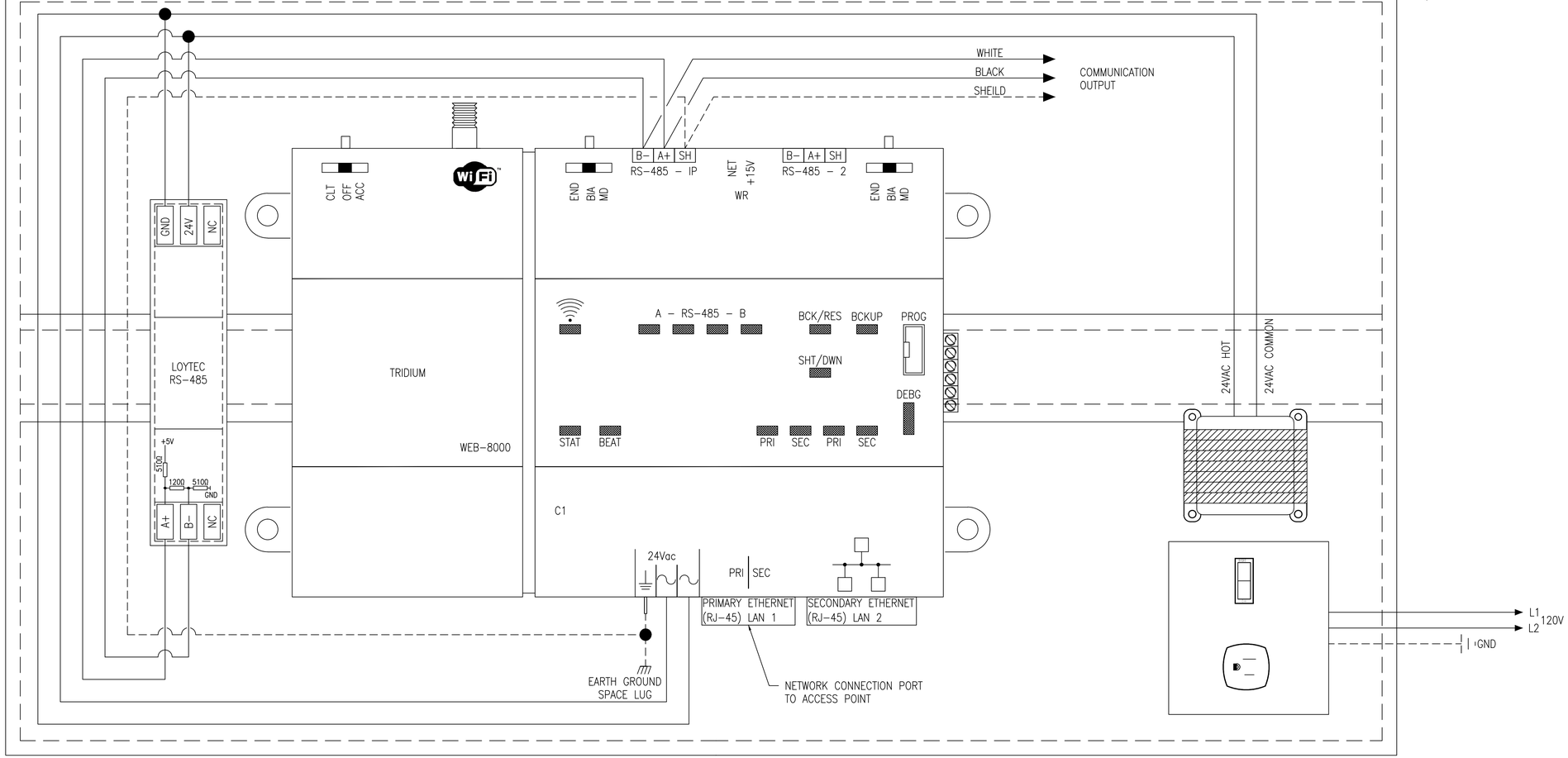
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

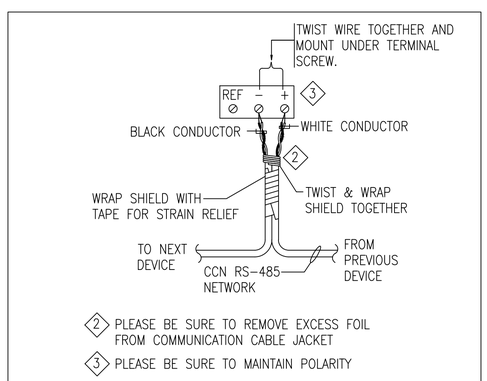
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 315 HVAC CONTROLS

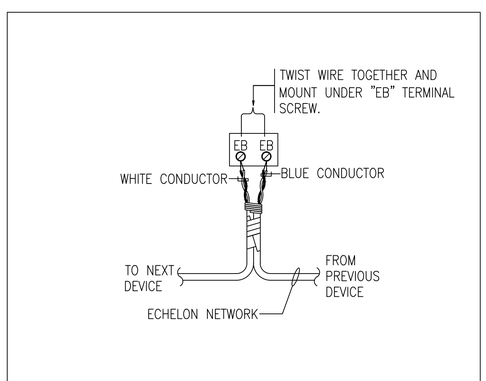
EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703868
SHEET 415 OF 506
M3.1 315-15-52
DRAWFORM REVISION: 10 OCTOBER 2014

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

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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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 315 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703869
SHEET 416 OF 506
M3.2 315-15-53

DRAWFORM REVISION: 10 OCTOBER 2014

COOLING COIL SCHEDULE

TAG	ASSOCIATED OUTDOOR UNIT	DESIGN BASED ON MANUFACTURER	REFRIGERANT TYPE	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	AIR DATA				NOTES
						EAT DB(°F)	EAT WB(°F)	LAT DB(°F)	LAT WB(°F)	
CC-315-1	ACCU-315-1	TRANE	R-410A	87.1	54.1	85	70	55	51	SEE NOTES

NOTES: 1. PROVIDE COOLING COIL TO FIT IN EXISTING AHU. 2. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.

PACKAGED TERMINAL AIR CONDITION UNIT SCHEDULE

TAG NO.	QTY.	FAN		HEATING			COOLING				UNIT ELECTRICAL SERVICE					DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
		CFM COOL HI/LOW	O.A. (CFM)	MBH	GPM	WPD (FT.WG.)	TOTAL MBH	SENSIBLE MBH	REFRIGERANT	MIN. EER	MCA	MOCP	HZ	V	PH		
PTAC-315-1	19	440/350	30	EXISTING			9.3	7.7	R-410A	10.2	6.4	15	60	208	1	ADIRONDACK AIRE EK-09	SEE NOTES
PTAC-315-2	7	440/330	60	EXISTING			11.8	8.5	R-410A	9.3	8.3	15	60	208	1	ADIRONDACK AIRE EK-12	SEE NOTES
PTAC-315-3	1	550/405	70	EXISTING			16.1	11.7	R-410A	10.1	10.9	15	60	208	1	ADIRONDACK AIRE EK-14	SEE NOTES

NOTES: 1. PROVIDE WITH BACNET INTERFACE. 2. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 3. PROVIDE WITH SPACE THERMOSTAT. 4. PROVIDE WITH CORROSION RESISTANT CONSTRUCTION. 5. PROVIDE WITH MOTORIZED FRESH AIR DAMPER.

JACE BOX

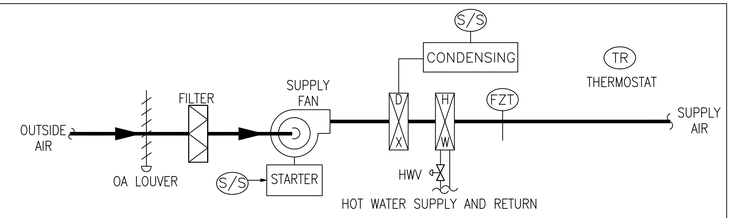
TAG NO.	LOCATION	ELECTRICAL		DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
		AMP	V		
J-1	SEE PLANS	20	120	JACE 8000	SEE NOTES

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-315-1	BLDG 315	TRANE	TTA090D3	90	208	60	3	3.1	34.4	45	SEE NOTES

NOTES: 1. PROVIDE W/ BACNET INTERFACE. 2. PROVIDE WITH SEACOAST RATED COATING FOR CONDENSER COIL. 3. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 4. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.



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

OFF
1. SF DEENERGIZED
2. HWV IS OPEN

UNOCCUPIED COOLING CONTROL

1. SF ENERGIZED
2. PTAC IS STAGED ON TO MAINTAIN THE COOLING TEMPERATURE SETPOINT OF 80°F(ADJ).
3. HWV IS CLOSED.

OCCUPIED COOLING CONTROL

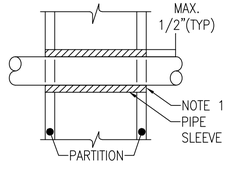
1. SF ENERGIZED
2. PTAC IS STAGED ON TO MAINTAIN THE COOLING TEMPERATURE SETPOINT OF 75°F(ADJ).
3. HWV IS CLOSED.

UNOCCUPIED HEATING CONTROL
1. SF IS ENERGIZED
2. COOLING SYSTEM IS OFF
3. HWV IS MODULATING TO MAINTAIN THE HEATING TEMPERATURE SETPOINT OF 62°F (ADJ).

OCCUPIED HEATING CONTROL
1. SF IS ENERGIZED
2. COOLING SYSTEM IS OFF
3. HWV IS MODULATING TO MAINTAIN THE HEATING TEMPERATURE SETPOINT OF 70°F (ADJ).

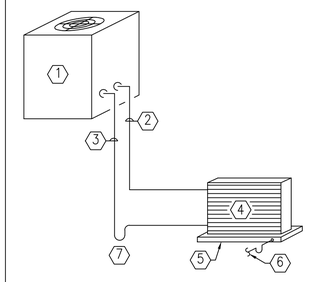
FREEZESTAT CONTROL
1. A FREEZESTAT LOCATED ON THE DISCHARGE OF THE HEATING COIL SHALL DE-ENERGIZE THE PTAC WHEN IT SENSES A TEMPERATURE BELOW 35 DEG. F (ADJ).

PACKAGE TERMINAL AIR CONDITIONER SEQUENCE OF OPERATION



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.

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

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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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
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 315 HVAC SCHEDULES, DETAILS, AND CONTROLS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703870

SHEET 417 OF 506

M4.0 | 315-15-54

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.

RECEPTACLE LABEL REQUIREMENTS

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".

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 30AMP SWITCH
JCB	DDC CONTROL JACE BOX. PROVIDED BY OTHERS. FIELD COORDINATE EXACT LOCATION.

ELECTRIC SYSTEM TAGS OR CALL OUT SYMBOLS

SYMBOL

- 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
▬	208Y/120 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS
T	DRY TYPE TRANSFORMER
M	UTILITY METER AND SOCKET

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
XE	EXISTING EQUIPMENT TO BE REMOVED AND NEW EQUIPMENT TO BE INSTALLED ON EXISTING BRANCH/FEEDER
☐	EXISTING EQUIPMENT TO REMAIN FOR INFORMATION ONLY – (XM) INDICATED BY SYMBOL WITH LIGHT OUT OF FUNCTION LINE TYPE
⬚	EXISTING EQUIPMENT TO BE REWORKED – (XN, XL, XE, XR) INDICATED BY SYMBOL WITH DASHED AND IN FUNCTION LINE TYPE

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 315 ELECTRICAL LEGEND
ED2.0	BUILDING 315 ELECTRICAL FIRST FLOOR DEMOLITION PLAN
ED2.1	BUILDING 315 ELECTRICAL SECOND FLOOR DEMOLITION PLAN
E2.0	BUILDING 315 ELECTRICAL FIRST FLOOR PLAN
E2.1	BUILDING 315 ELECTRICAL SECOND FLOOR PLAN
E3.0	BUILDING 315 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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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 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 315 ELECTRICAL LEGEND

EPROJECT NO.: 1350913

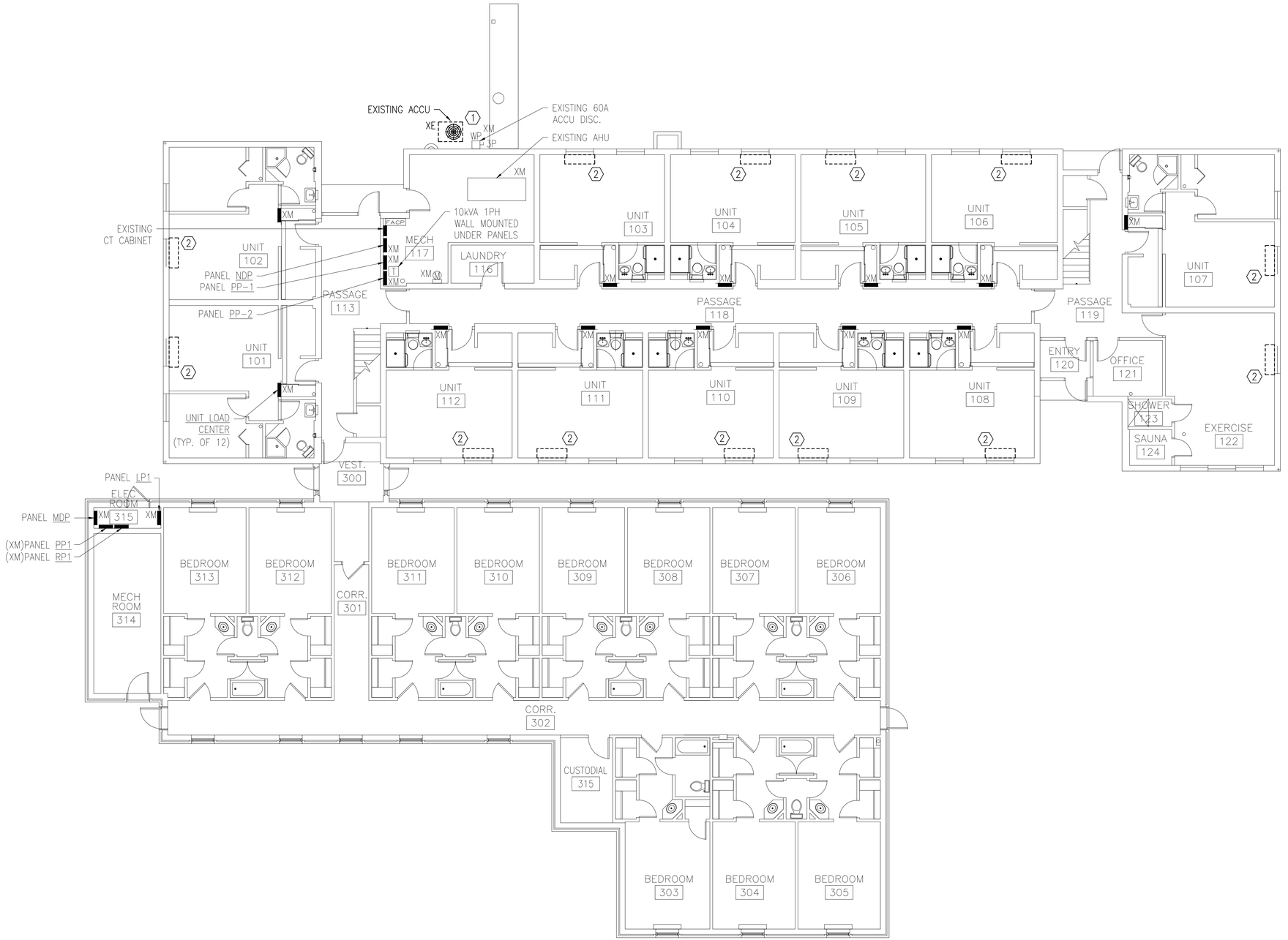
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703871

SHEET 418 OF 506

E1.0 | 315-15-55

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 315 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 OF EXISTING ACCU. MAINTAIN EXISTING BRANCH CIRCUITRY, DISCONNECT, AND CIRCUIT BREAKER FOR REUSE.
2. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING PTAC UNIT. MAINTAIN ASSOCIATED BRANCH CIRCUITRY, DISCONNECT AND CIRCUIT BREAKER FOR REUSE.

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	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	

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

THE CONTRACTOR SHALL REVIEW AND APPROVE SHOP DRAWINGS, FABRICATION AND ERECTION PROCEDURES, AND OTHER SUBMITTALS FOR THIS PROJECT PRIOR TO SUBMISSION TO THE GOVERNMENT. APPROVAL SHALL BE INDICATED BY THE CONTRACTOR'S STAMP, DATE AND SIGNATURE ON THE SUBMITTAL. THE GOVERNMENT WILL REVIEW ONLY THOSE SUBMITTALS THAT HAVE BEEN APPROVED BY THE CONTRACTOR. SUBMITTALS NOT REQUIRED BY THE CONTRACT DOCUMENTS MAY BE RETURNED WITHOUT REVIEW. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS, SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATING HIS WORK WITH THAT OF ALL OTHER TRADES AND PERFORMING HIS WORK IN A SAFE AND SATISFACTORY MANNER. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AT THE JOB SITE. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER'S REPRESENTATIVE.

CSI ENGINEERING, PLLC – FIRE PROTECTION – 919 BRACKETT SHORE, 206, DURHAM, NC 27705, 919.312.2828, 23 AVENTRY AVE, STE 204, PORTSMOUTH, NH 03801, 603.319.9824

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 315 ELECTRICAL FIRST FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913

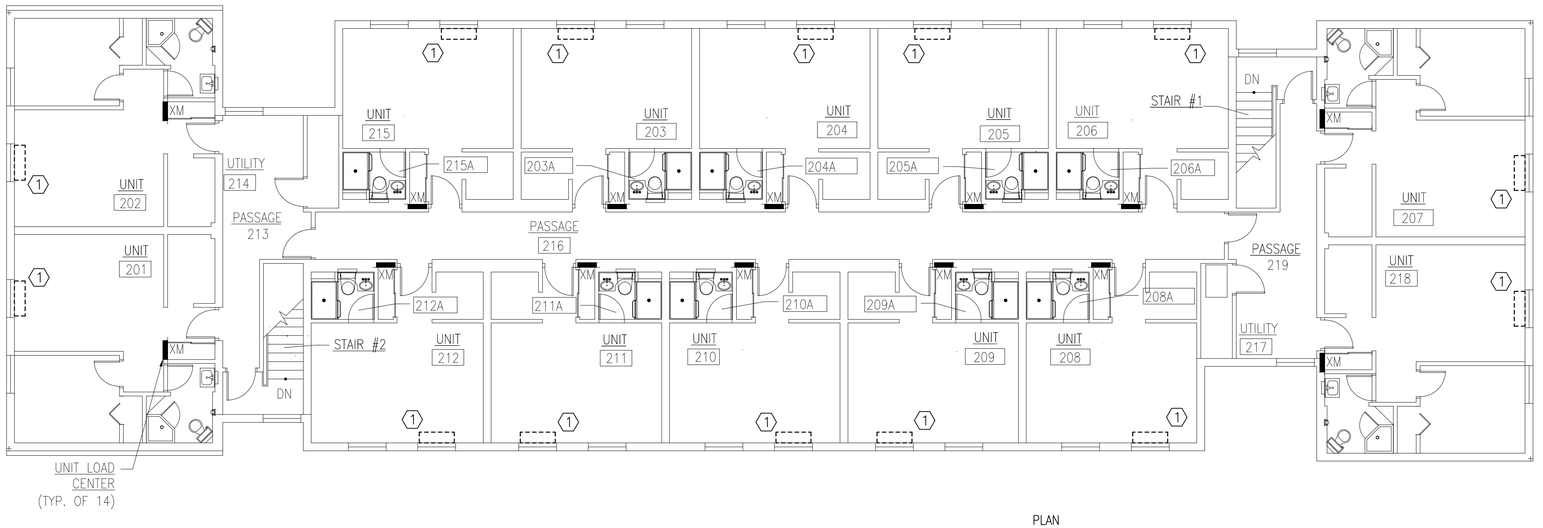
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703872

SHEET 419 OF 506

ED2.0 315-15-56

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 315 ELECTRICAL SECOND 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 PTAC UNIT. MAINTAIN EXISTING BRANCH CIRCUITRY, DISCONNECT, AND CIRCUIT BREAKER FOR REUSE.

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

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

THE CAD/D-SIZE PLOT FILE AND ELECTRONIC DATA FOR THIS PROJECT ARE CONTRACT DELIVERABLES. THE AUTHORIZED RECIPIENT AGREES TO ASSUME RESPONSIBILITY FOR THE ACCURACY AND CONTROL OF CHANGES TO THE ELECTRONIC DATA AFTER ACCEPTANCE. ANY REUSE OF THE ELECTRONIC DATA FOR ANY PURPOSE OTHER THAN THE ORIGINAL CONTRACT WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT/ENGINEER IS PROHIBITED. ANY SUCH REUSE OR MODIFICATION WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY THE ARCHITECT/ENGINEER FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO THE ARCHITECT/ENGINEER. THE USER SHALL INDEMNIFY AND HOLD HARMLESS THE ARCHITECT/ENGINEER AGAINST ALL CLAIMS, COSTS, LOSSES, AND DAMAGES ARISING OUT OF OR RESULTING THEREFROM. CONTRACT NO. N62470-10-D-3000 CTO JM15

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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

LEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

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NAVAL FACILITIES ENGINEERING COMMAND
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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 315 ELECTRICAL SECOND FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913

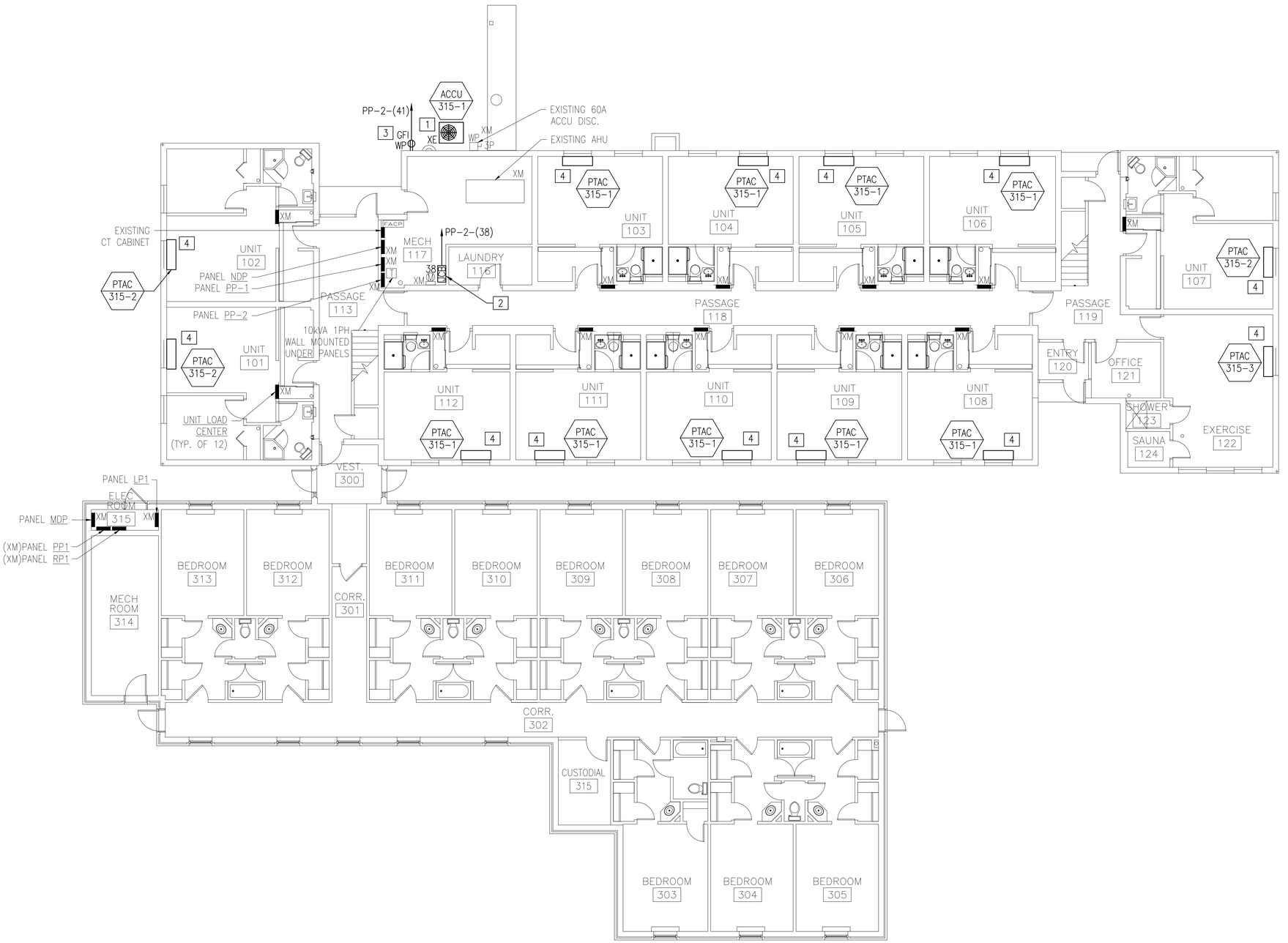
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703873

SHEET 420 OF 506

ED2.1 | 315-15-57

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 315 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. CONNECT NEW ACCU TO EXISTING BRANCH CIRCUITRY, DISCONNECT, AND CIRCUIT BREAKER MAINTAINED DURING DEMOLITION. REUSE AS MUCH EXISTING CONDUIT AND WIRING AS POSSIBLE AND EXTEND AS NEEDED. NEW CONDUIT AND WIRING TO MATCH EXISTING IN ALL RESPECTS. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
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 ACCU. IF NO RECEPTACLE EXISTS, PROVIDE NEW RECEPTACLE AS SHOWN. REFER TO PANELBOARD SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
4. CONNECT NEW PTAC UNIT TO EXISTING BRANCH CIRCUITRY, DISCONNECT AND CIRCUIT BREAKER MAINTAINED DURING DEMOLITION.

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

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FANWOOD, NJ 07023
908.233.2626
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FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY Y/O 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

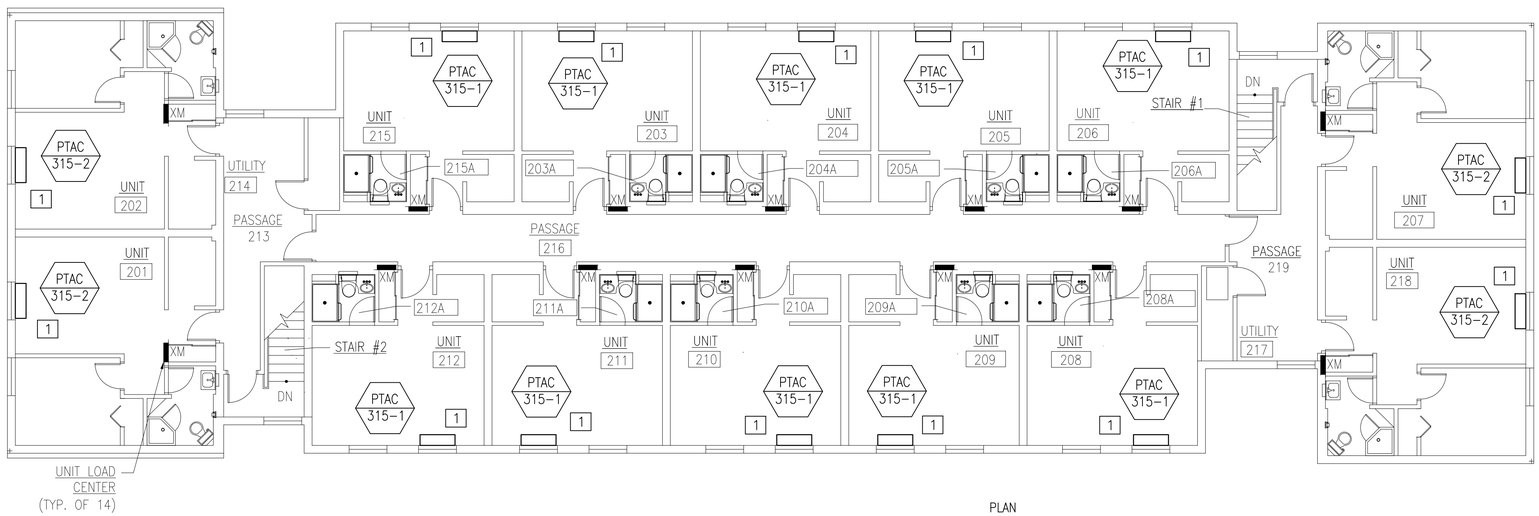
KITTERY, MAINE

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

BUILDING 315 ELECTRICAL FIRST FLOOR PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703874
SHEET 421 OF 506
E2.0 315-15-58

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 315 ELECTRICAL SECOND 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.

NEW WORK KEYNOTES

1. CONNECT NEW PTAC UNIT TO EXISTING BRANCH CIRCUITRY MAINTAINED DURING DEMOLITION.

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

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

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FIRE PROTECTION
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BURLINGTON, NC 27505
781-223-4800
23 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 315 ELECTRICAL SECOND FLOOR PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703875
SHEET 422 OF 506
E2.1 315-15-59

MECHANICAL EQUIPMENT SCHEDULE

EQUIP TAG	DESCRIPTION	QUANTITY	LOAD					PANEL SOURCE		BRANCH CIRCUIT	CONNECTION				NOTES
			HP	KVA	VOLT	PH	MCA	PANEL	C/B		FLEX	JB	REC	DISC	
ACCU 315-1	CONDENSING UNIT	1	–	12.39	208	3	34.4	NDP-(2,4,6)	45A/3P	–				X	NOTE 11
PTAC 315-1	PORTABLE AIR CONDITIONING UNIT	19	–	2.31	208	3	6.4	REFER TO TYPICAL UNIT LOAD CENTER PANEL SCHEDULE	–	–					NOTE 11
PTAC 315-2	PORTABLE AIR CONDITIONING UNIT	7	–	2.99	208	3	8.3	REFER TO TYPICAL UNIT LOAD CENTER PANEL SCHEDULE	–	–					NOTE 11
PTAC 315-3	PORTABLE AIR CONDITIONING UNIT	1	–	3.93	208	2	10.9	PP SEC. 2-(37,39)	–	–					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 OTHERS.
10. INTEGRAL CONVENIENCE RECEPTACLE PROVIDED PREWIRED TO EQUIPMENT BY TRADE CONTRACTOR.
11. RECONNECT TO EXISTING BRANCH CIRCUITRY AND DISCONNECT.
12. RECONNECT TO EXISTING BRANCH CIRCUITRY. PROVIDE NEW DISCONNECT AS SHOWN ON DRAWING E2.0.

PANELBOARD SCHEDULE

PANEL: UNIT LOAD CENTER | VOLTS: 120/ 240 | NEW/EXISTING.: EXISTING
MAIN: 100A MCB | BUS AMPS: 100A | MOUNT.: SURFACE
PH/WIRE: 1ø/3W | AIC: | LOC: BLDG 315 UNIT CLOSET (TYPICAL OF 26)

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	100/2	MAIN	0	–	–	0	RANGE	50/2	2
3	20/1	LIGHTS	0	–	–	0	REC. HALL, DINING, KITCHEN	20/1	4
5	20/1	BED, LIVING	0	–	–	0	HEAT VENT HIGH	20/1	6
7	20/1	GFI – KITCHEN	0	–	–	0	MICROWAVE	20/1	8
9	20/1	SPARE	0	–					
11	20/1	REFRIGERATOR	0	–					
13	20/2	PTAC-315-1 (OR 2)	2.31	2					
			2.31			0.00	TOTAL CONNECTED kVA:	2.31	
							TOTAL CONNECTED AMPERES:	5.56	

NOTES:
1. SCHEDULE TYPICAL OF 26. LAYOUT OF PANELBOARD MAY DIFFER FROM UNIT TO UNIT.
2. 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: PP SECTION 2 | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING
MAIN: MLO | BUS AMPS: 225A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC: BLDG 315 UTILITY 114/MECH 117

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
31					–	0	HOT WATER CIRC. PUMP	20/1	32
33	20/3	MECH. RM. FRONT CIRC. PUMP	0	–	–	0	?	20/1	34
35					–	0	?	20/1	36
37	20/2	PTAC-315-3	3.93	1	1	0.2	DDC JACE BOX	20/1	38
39					–	0	?	20/1	40
41	20/1	ACCU GFI RECEPTACLE	.18	1	–	0	?	20/1	42
43									44
45	20/3	SPARE	0	–	–	0	SPARE	20/3	46
47									48
49	20/1	WALL EXHAUST FAN MECH. RM.	0	–					50
51	20/1	WASHER REC.	0	–	–	0	MECH. RM. BACK CIRC. PUMP	20/3	52
53	20/1	WASHER REC.	0	–					54
55	30/2	DRYER REC.	0	–	–	0	KITCHENETTE RANGE – LOUNGE	50/2	56
57									58
59	20/1	HEATING CONTROL PANEL	0	–					60
61	20/1	?	0	–	–	0	DRYER REC.	30/2	62
63	20/1	LIGHTS	0	–	–		SPACE		64
65		SPACE		–	–		SPACE		66
67	20/1	COIL & TEMP.?	0	–	–		SPACE		68
69		SPACE		–	–		SPACE		70
71		SPACE		–	–		SPACE		72
73		SPACE		–	–		SPACE		74
			4.11			0.20	TOTAL CONNECTED kVA:	4.31	
							TOTAL CONNECTED AMPERES:	11.98	

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: NDP | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING
MAIN: 600A MCB | BUS AMPS: 600A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC: BLDG 315 UTILITY 114/MECH 117

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1									2
3	225/3	PANEL PP	0	–	1	12.4	ACCU-315-1	45/3	4
5									6
7					–	0	EF-1 & EF-2	20/1	8
9	20/3	AHU-315-1	0	–	–	0	EF-3 & EF-4	20/1	10
11					–	0	EF-5, EF-6, & EF-7	20/1	12
13	20/1	SPARE	0	–	–	0	SPARE	20/1	14
15		SPACE		–	–		SPACE		16
17	125/2	UNITS 101 & 201	0	–	–	0	UNITS 108 & 208	125/2	18
19									20
21	125/2	UNITS 102 & 202	0	-	–	0	UNITS 109 & 209	125/2	22
23									24
25	125/2	UNITS 103 & 203	0	–	–	0	UNITS 110 & 210	125/2	26
27									28
29	125/2	UNITS 104 & 204	0	–	–	0	UNITS 111 & 211	125/2	30
31									32
33	125/2	UNITS 105 & 205	0	–	–	0	UNITS 112 & 212	125/2	34
35									36
37	125/2	UNITS 106 & 206	0	–	–	0	UNITS 215	125/2	38
39									40
41	125/2	UNITS 107 & 207	0	–	–	0	UNITS 218	125/2	42
43									44
			0.0			12.4	TOTAL CONNECTED kVA:	12.40	
							TOTAL CONNECTED AMPERES:	34.46	

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.

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

CSI ENGINEERING – 999 Broadway, Suite 206, Saugus, MA 01906, 781.233.9933 – 215 Haverhill Ave, Ste 204, Portsmouth, NH 03801, 603.319.9924 – 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
PORTSMOUTH NAVAL SHIPYARD

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

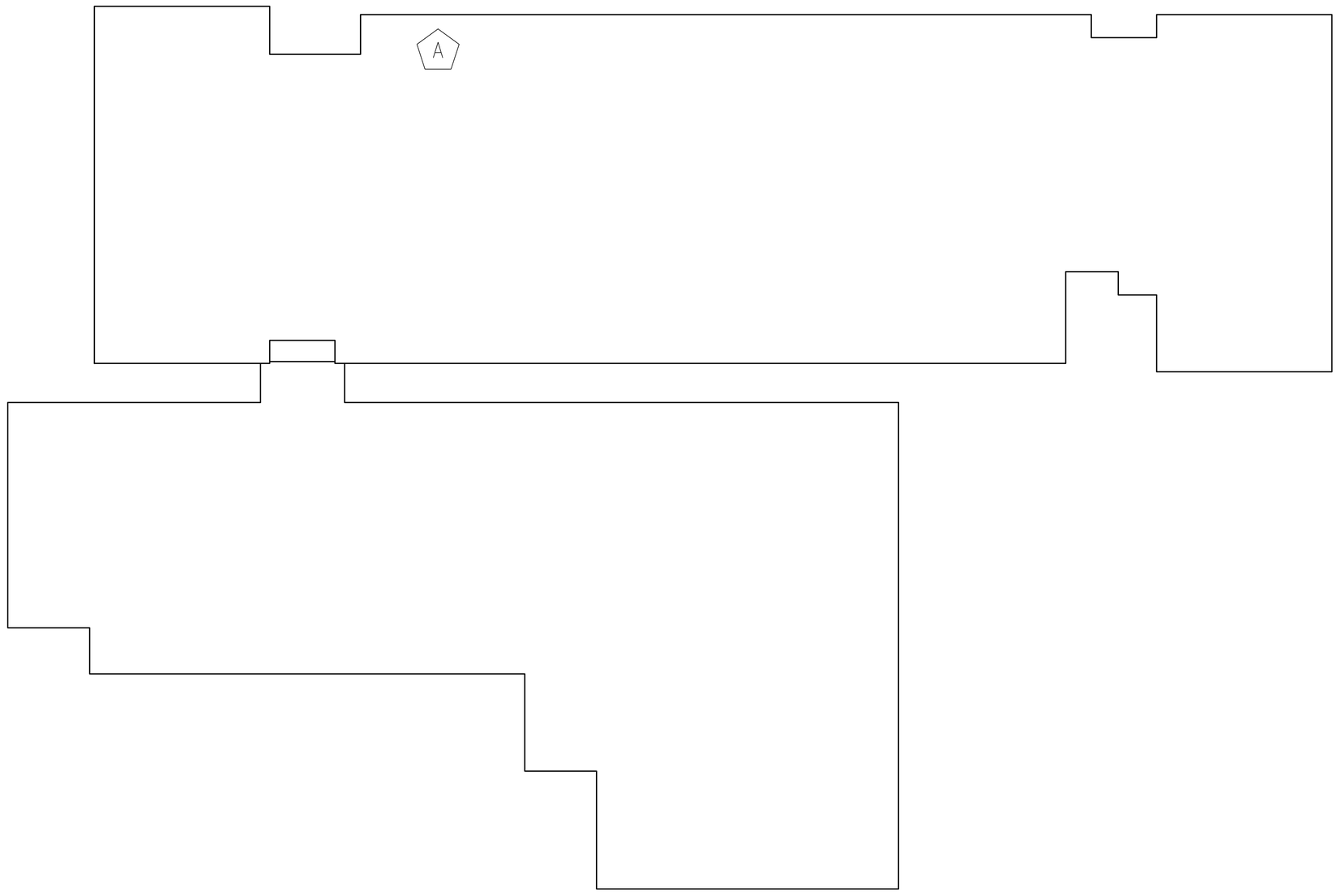
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 315 ELECTRICAL SCHEDULES

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703876
SHEET 423 OF 506

E3.0 | 315-15-60

DRAWFORM REVISION: 10 OCTOBER 2014



B315 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 TO POLE MOUNT RF ACCESS POINT ON EXISTING 2" PIPE LOCATED ON NORTH END OF ROOF
2. CONTRACTOR SHALL ENSURE CLEAR LINE-OF-SIGHT TO B86A ACCESS POINT
3. ROOF MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS.
4. CAT5 SHALL BE ROUTED ALONG EXISTING PATHS AND PENETRATIONS BETWEEN JACE AND RF ACCESS POINT.

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
(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

B315 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO.: 12703877

SHEET 424 OF 506

ET1.0 | 315-15-61

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
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

RTU 1 — ROOF TOP 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 337 HVAC LEGEND
MD2.0B	BUILDING 337 HVAC ROOF DEMOLITION PLAN PART B
M2.0B	BUILDING 337 HVAC ROOF PLAN & FIRST FLOOR MECHANICAL ROOM PART B
M3.0	BUILDING 337 HVAC CONTROLS
M3.1	BUILDING 337 HVAC CONTROLS
M3.2	BUILDING 337 HVAC CONTROLS
M4.0	BUILDING 337 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

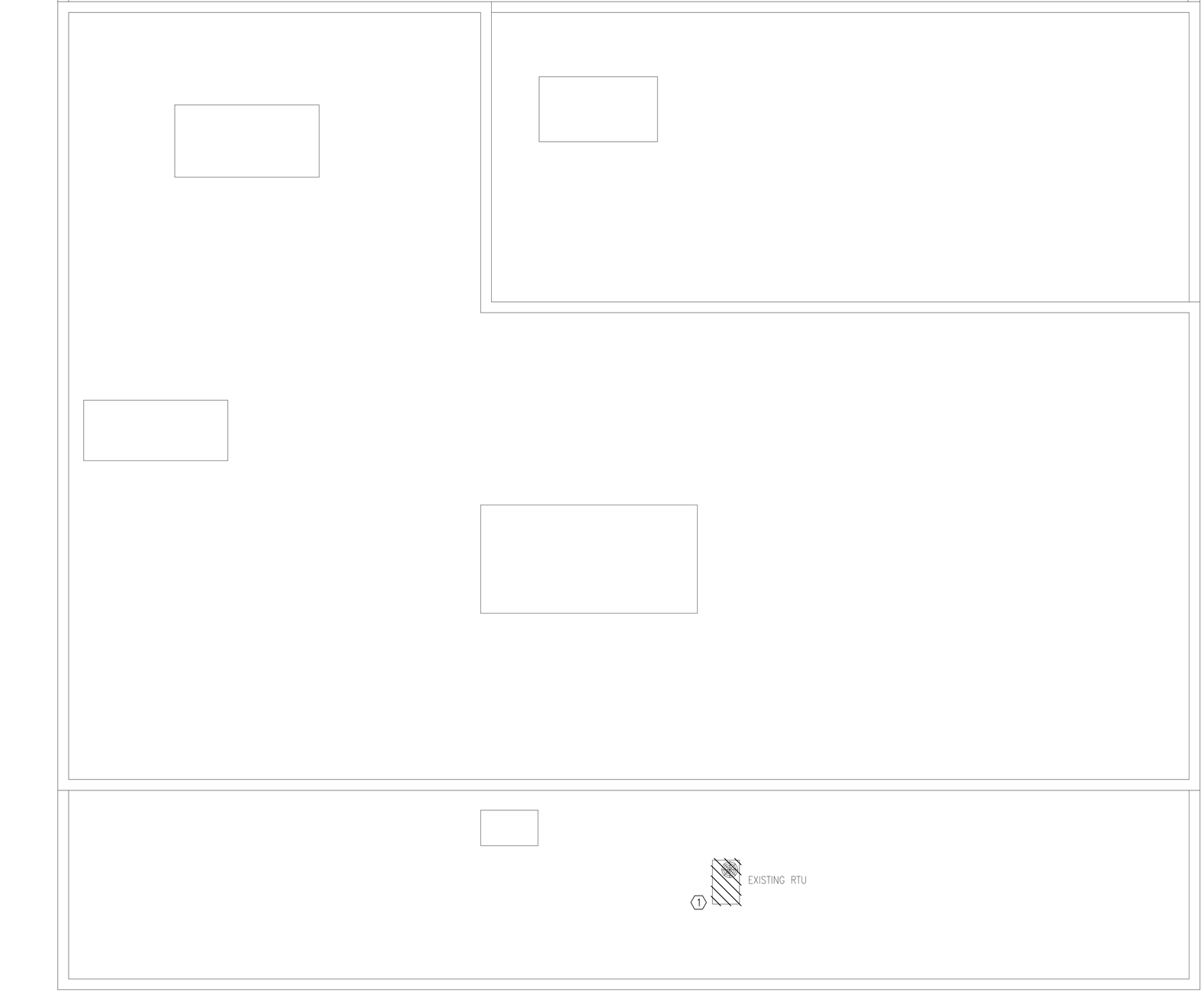
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 337 HVAC LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703878
SHEET 425 OF 506
M1.0 337-15-240

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 337 HVAC ROOF DEMOLITION PLAN PART B
1/8"=1'-0"

PLAN NORTH

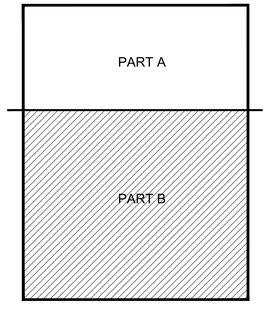
GENERAL SHEET NOTES

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 RTU AND ASSOCIATED THERMOSTAT. EXISTING DUCTWORK AND CONTROL WIRING TO REMAIN AND BE DISCONNECTED. LICENSED PLUMBING CONTRACTOR TO DISCONNECT GAS AND PREPARE FOR NEW EQUIPMENT.

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

MECHANICAL
THE MECHANICAL SYSTEMS DESIGN FOR THIS PROJECT HAS BEEN PREPARED BY ME OR UNDER MY SUPERVISION AND I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MAINE. I HEREBY CERTIFY THAT THE ATTACHED DESIGN COMPLIES WITH THE MECHANICAL PROVISIONS OF THE 2009 INTERNATIONAL ENERGY CONSERVATION CODE AS AMENDED BY THE STATE OF MAINE UNIFORM BUILDING AND ENERGY CODE.
DAVID H. MAHONEY
No. 12370
LICENSED PROFESSIONAL ENGINEER
DATE: 10/01/2015

PLUMBING
FIRE PROTECTION
CSI ENGINEERING
999 Broadway, Suite 206
Saugus, MA 01906
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213 Hamilton Ave, STE 204
Portsmouth, NH 03801
603-319-2424
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SATISFACTORY TO DATE

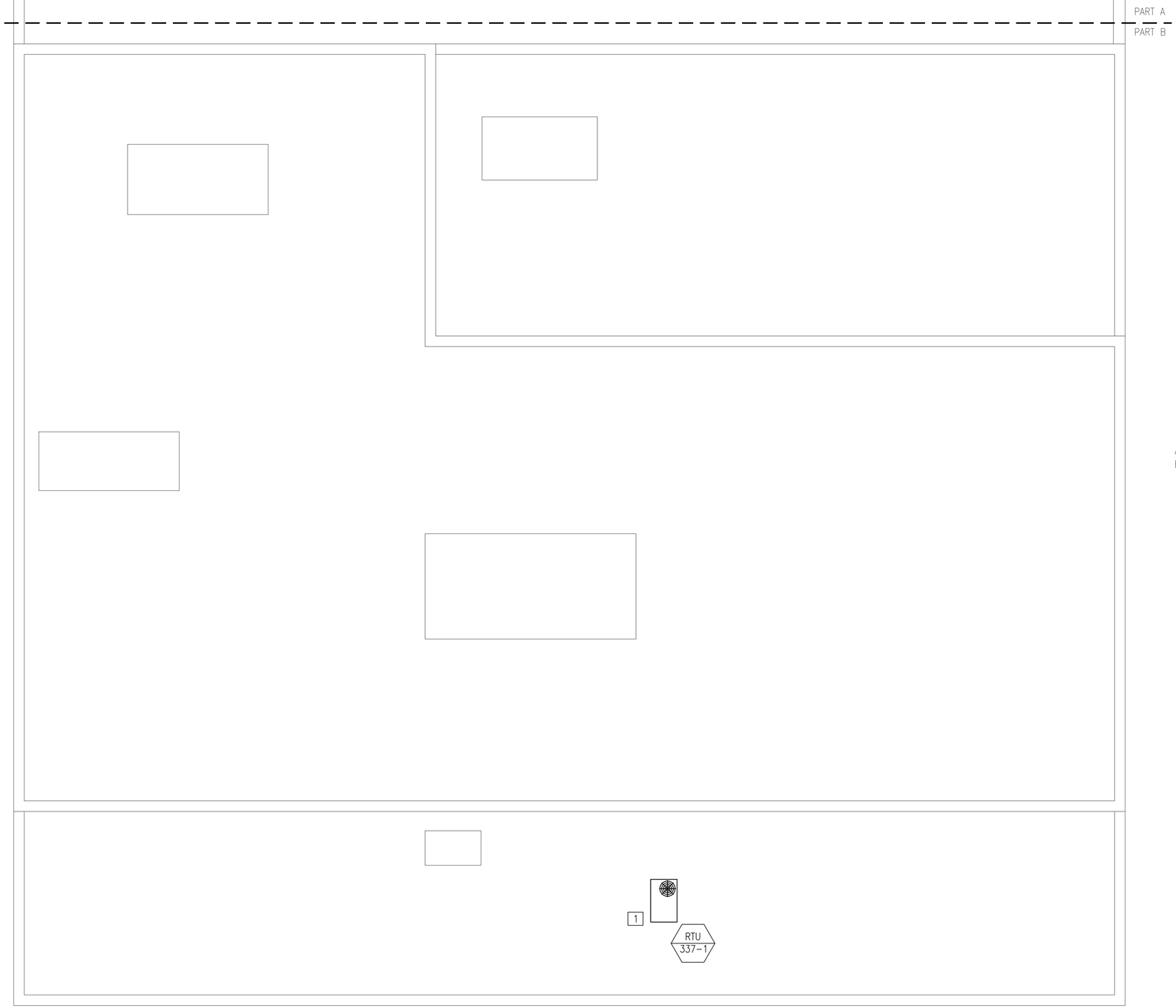
DES JC | DRW SV | CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
LEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

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

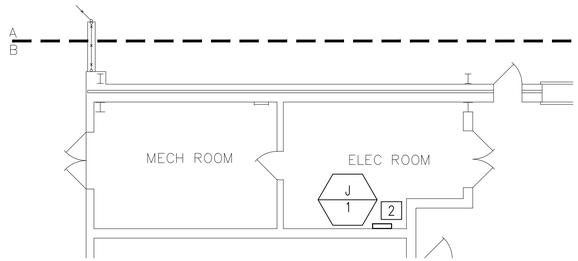
BUILDING 337 HVAC ROOF DEMOLITION PLAN PART B

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703879
SHEET 426 OF 506
MD2.0B | 337-15-241

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 337 HVAC ROOF PLAN PART B
1/8"=1'-0"
PLAN NORTH



BUILDING 337 HVAC FIRST FLOOR MECHANICAL ROOM
1/8"=1'-0"
PLAN NORTH

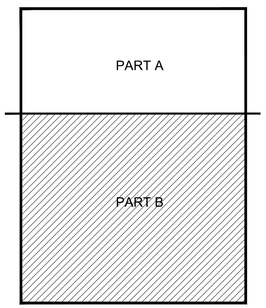
GENERAL SHEET NOTES

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

NEW WORK KEYNOTES

1. FURNISH AND INSTALL NEW RTU. EXISTING DUCTWORK AND CONTROL WIRING TO BE RECONNECTED. PROVIDE WITH NEW DUCTWORK WHERE NECESSARY TO CONNECT TO NEW EQUIPMENT. LICENSED PLUMBING CONTRACTOR TO RECONNECT EXISTING GAS. PROVIDE WITH NEW DDC COMPATABLE THERMOSTAT AND CONNECT TO EXISTING CONTROL WIRING, FIELD COORDINATE EXACT LOCATION WITH NAVFAC.
2. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF NEW DDC JACE BOX WITH NAVFAC.

KEY PLAN



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
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NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY
No. 12370
LICENSED
PROFESSIONAL ENGINEER
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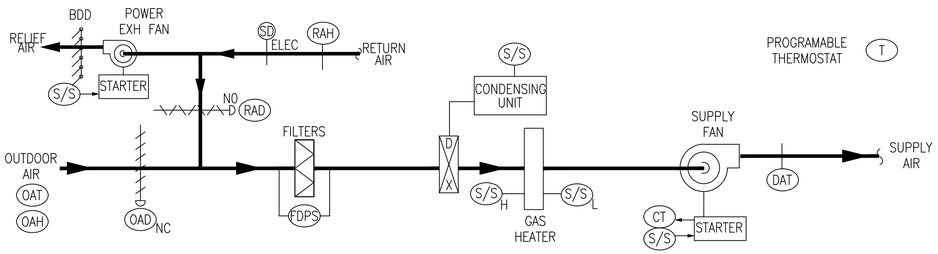
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES JC DRW SV CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
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 337 HVAC ROOF PLAN &
FIRST FLOOR MECHANICAL ROOM PART B

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703880
SHEET 427 OF 506
M2.0B 337-15-242
DRAWFORM REVISION: 10 OCTOBER 2014



GENERAL

- ROOFTOP UNIT IS STARTED AND STOPPED VIA DDC THERMOSTATS.
- COORDINATE OCCUPIED/UNOCCUPIED SCHEDULES WITH OWNER.
- ONCE THE UNIT IS STARTED, THE ROOFTOP UNIT'S PACKAGED CONTROLS CONTROL RTU'S FUNCTIONS.
- ALL ACTUATORS ARE ELECTRONIC

UNOCCUPIED
- SF IS OFF
- OAD IS CLOSED
- EAD IS CLOSED
- RAD IS OPEN
- GAS HEATER IS OFF
- COOLING SYSTEM IS OFF

UNOCCUPIED HEATING
- SF IS ON
- OAD IS CLOSED
- EAD IS CLOSED
- RAD IS OPEN
- COOLING SYSTEM IS OFF
- GAS HEATER IS ON
- NIGHT SET POINT IS 60°F(ADJ)

UNOCCUPIED COOLING
- SF IS ON
- OAD IS CLOSED
- EAD IS CLOSED
- RAD IS OPEN
- COOLING SYSTEM IS ENERGIZED
- GAS HEATER IS OFF
- NIGHT SETPOINT IS 80°F(ADJ)

OCCUPIED MODE
- SF IS ON
- OAD IS OPEN TO MINIMUM POSITION
- EAD IS OPEN TO MINIMUM POSITION
- RAD IS OPEN TO MINIMUM POSITION
- GAS HEATER IS OFF
- COOLING SYSTEM IS DE-ENERGIZED

OCCUPIED HEATING
- SF IS ON
- OAD IS OPEN TO MINIMUM POSITION
- EAD IS OPEN TO MINIMUM POSITION
- RAD IS OPEN TO MINIMUM POSITION
- GAS HEATER IS ON
- COOLING SYSTEM IS DE-ENERGIZED
- ROOM TEMPERATURE SET POINT IS 70°F (ADJ)
- DAT MIN 95°F & MAX 110°F

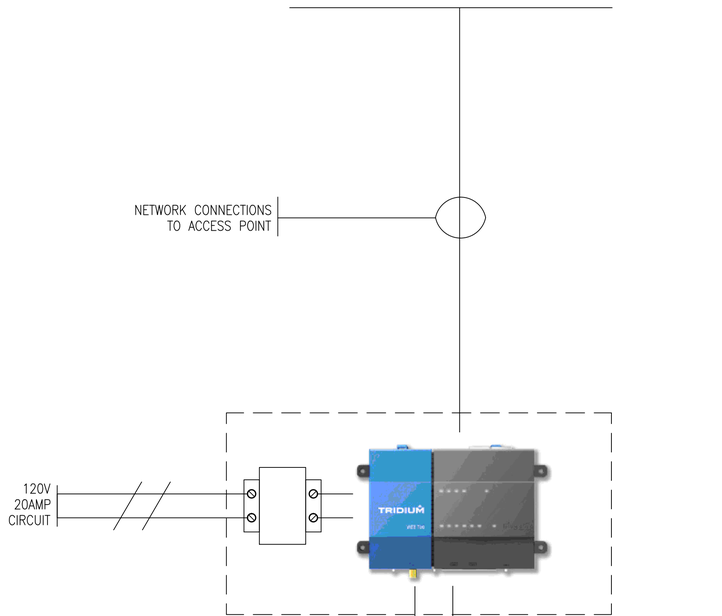
OCCUPIED COOLING
- SF IS ON
- OAD IS OPEN TO MINIMUM POSITION
- EAD IS OPEN TO MINIMUM POSITION
- RAD IS OPEN TO MINIMUM POSITION
- GAS HEATER IS OFF
- COOLING SYSTEM IS ENERGIZED
- ROOM TEMPERATURE SET POINT IS 75°F(ADJ)
- DAT AT 55°F

ECONOMIZER MODE
- IF OUTSIDE AIR ENTHALPY IS BELOW ROOM ENTHALPY THE OAD, AND RAD MODULATE UP TO 100% OA
- CONDENSING UNITS AND COMPRESSORS ARE STAGED ON IF ADDITIONAL COOLING IS REQUIRED
- DAT OVERRIDES TO LIMIT SUPPLY AIR TEMP TO 50°F MINIMUM
- IF OA ENTHALPY RISES ABOVE ROOM ENTHALPY, UNIT RETURNS TO OCCUPIED COOLING MODE

ALARMS AND SAFETIES
- SAFETIES HAVE MANUAL RESET BUTTON
- SAFETIES SHUT DOWN RTU VIA HARDWARE BEFORE H-O-A
- WHEN SMOKE DETECTOR IS ACTIVATED RTU IS SHUTDOWN
- IF FAN FAILS, THE UNIT CONTROLLER SHALL SHOW FAILURE STATUS.
- IF FILTER PRESSURE DROP EXCEEDS SETPOINT FOR 10 MINUTES, THE UNIT CONTROLLER SHALL GIVE A DETAILED SIGNAL.

ROOFTOP UNIT CONTROL SEQUENCES

PORTSMOUTH NAVAL SHIPYARD (BUILDING 337 _ HAZ/FLAMMABLE STORAGE FACILITY)
EXISTING INVENSYS INTEGRATED DDC SYSTEM ARCHITECTURE



NEW TRIDIUM JACE INTEGRATION
EXISTING DDC SYSTEM

NEW TRIDIUM JACE INTEGRATION
EXISTING DDC SYSTEM

BACNET COMMUNICATION

1

TYPICAL OF ALL UNIT HEATER

EXISTING PROGRAMMABLE BACNET CONTROLLER — UH-5
EXISTING PROGRAMMABLE BACNET CONTROLLER — UH-1
EXISTING PROGRAMMABLE BACNET CONTROLLER — RTU-1
EXISTING PROGRAMMABLE BACNET CONTROLLER — ERV-5
EXISTING PROGRAMMABLE BACNET CONTROLLER — ERV-4
EXISTING PROGRAMMABLE BACNET CONTROLLER — ERV-3
EXISTING PROGRAMMABLE BACNET CONTROLLER — ERV-2
EXISTING PROGRAMMABLE BACNET CONTROLLER — ERV-1
EXISTING PROGRAMMABLE BACNET CONTROLLER — HEATING SYSTEM CONTROL

2

EXISTING TRIDIUM J-600E

BACNET COMMUNICATIONS TO R410 EQUIPMENT

NEW BACNET CONTROLLER

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

CSI ENGINEERING — 978-232-8828 — 23 SAUNDERS AVE, STE 204, KITTERY, ME 03904 — 603-319-8244

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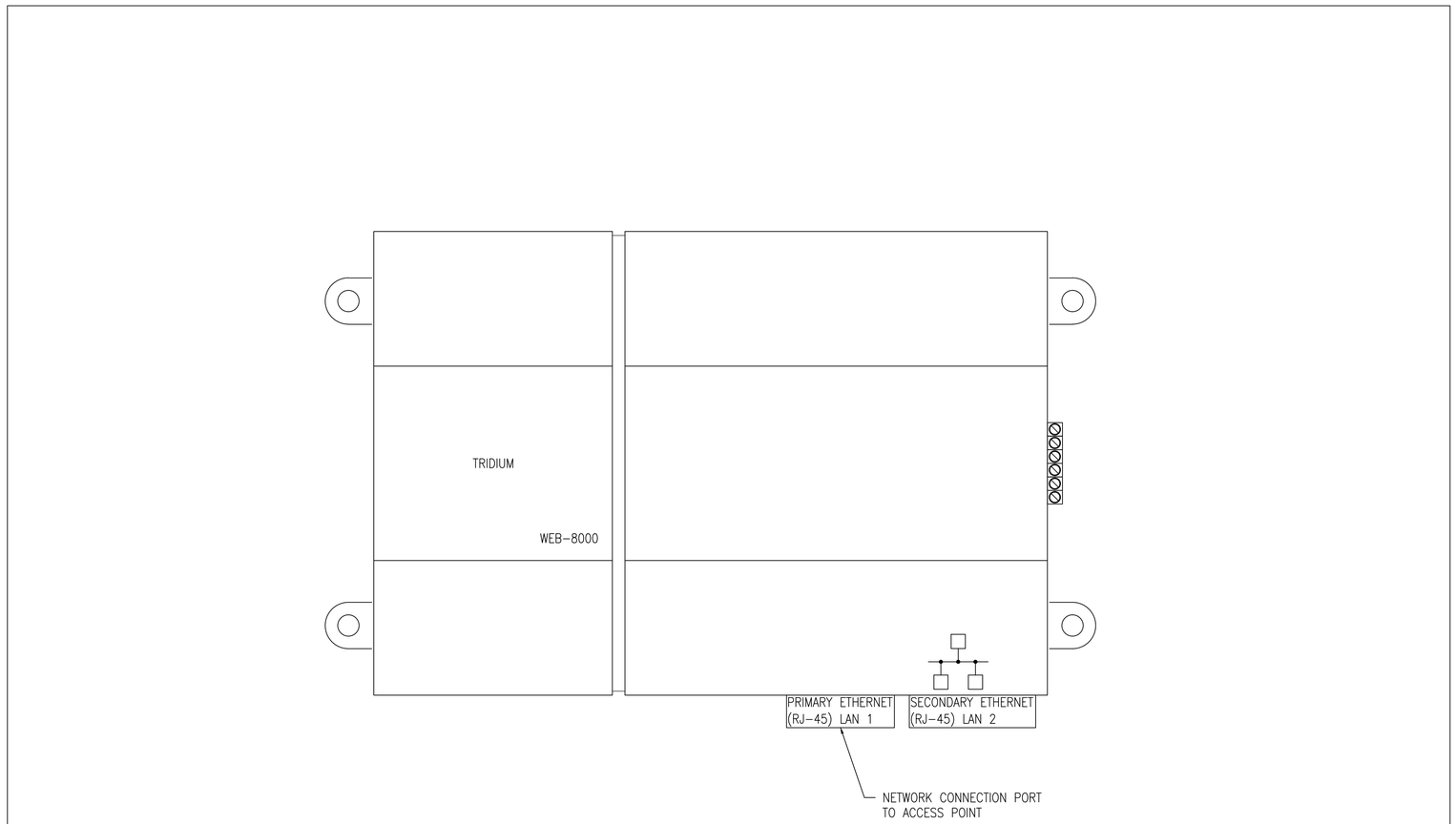
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

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 337 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703881
SHEET 428 OF 506
M3.0 | 337-15-243

DRAWFORM REVISION: 10 OCTOBER 2014



ETHERNET CONNECTION TO RF ACCESS POINT

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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

PREPARED BY:
CSI ENGINEERING
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Saugus, MA 01906
781-233-9888
23 Mayfield Ave, STE 204
Newburyport, MA 01950
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
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 337 HVAC CONTROLS

EPROJECT NO.: 1350913

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

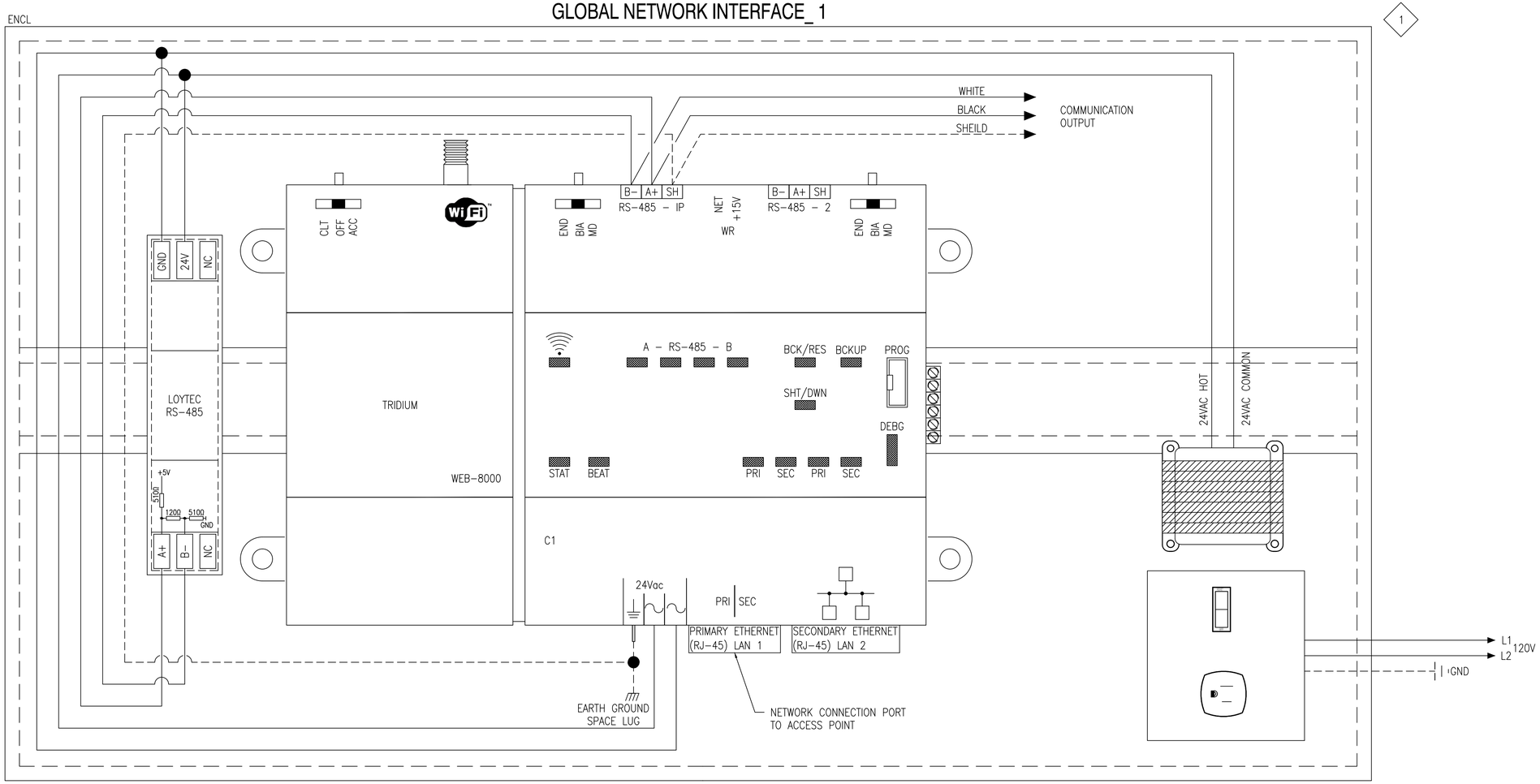
NAVFAC DRAWING NO.
12703882

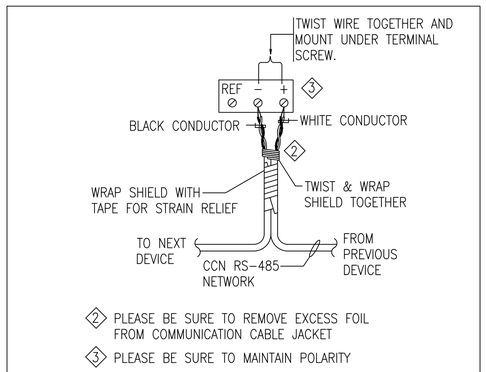
SHEET 429 OF 506

M3.1 | 337-15-244

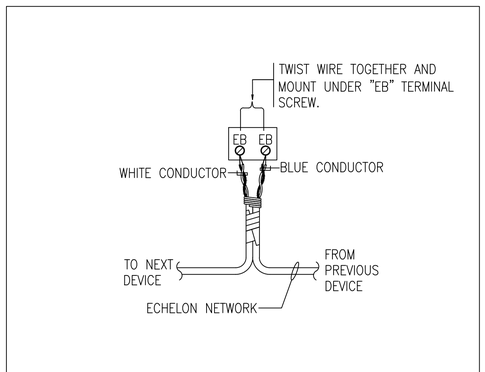
DRAWFORM REVISION: 10 OCTOBER 2014

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
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0	35% SUBMISSION	02/23/2015	DM

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

CSI ENGINEERING PLLC 919 Middle St. Suite 206 Portsmouth, NH 03801 TEL (603) 319-5924 FAX (603) 319-5924

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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
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
FY 16 ENERGY PROJECT
TASK 1–B–R–22
BUILDING 337 HVAC CONTROLS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085–XX–C–XXXX

NAVFAC DRAWING NO. 12703883

SHEET 430 OF 506

M3.2 | 337-15-245

DRAWFORM REVISION: 10 OCTOBER 2014

PACKAGED DX ROOFTOP AIR HANDLING UNIT SCHEDULE

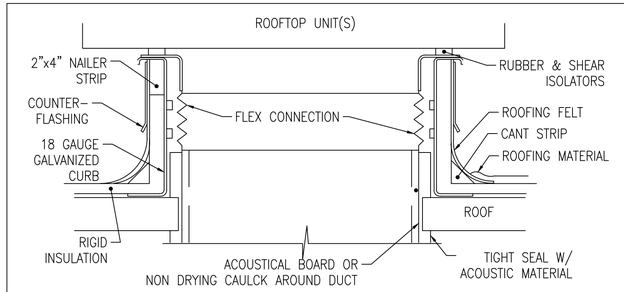
TAG NO.	LOCATION	MIN. O.A. CONDITIONS			BUILDING R.A. CONDITIONS			SUPPLY FAN						UNIT COOLING COIL		AIR-COOLED CONDENSING UNIT				INDIRECT GAS-FIRED HEATER				ELECTRICAL DATA					FILTER DATA	WEIGHT (LBS)	DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
								CFM	STATIC PRESS. (IN.WG)	WHEEL		MOTOR		CAPACITY (MBH)		COMPRESSOR(S)		CONDENSER FAN		CAPACITY (MBH)		AIR DATA		HZ	V	PH	MCA	MOP				
		CFM	DB (°F)	WB (°F)	CFM	DB (°F)	WB (°F)	TOTAL	EXTERNAL	DIA (IN)	TYPE	RPM	BHP	TOTAL	SENS.	TYPE	NO.	NO.	HP	INPUT	OUTPUT	EAT (F)	LAT(F)									
RTU-337-1	ROOF	SEE NOTE 3.	87	71	SEE NOTE 3.	75	63	2,000	1.0	10	CENT.	1442	1.64	61.9	47.7	SCROLL	1	1	¼	115	93	70	113	60	460	3	14	20	TA-2"	638	CARRIER 48TCEA06A2B6-6F0A0	SEE NOTES

NOTES: 1. PROVIDE W/ ENTHALPY CONTROLLED ECONOMIZER. 2. MECHANICAL CONTRACTOR TO VERIFY SMOKE DETECTOR IN RETURN AIR DUCTWORK. 3. CONTRACTOR TO VERIFY EXISTING OUTDOOR AIR INTAKE, RETURN AIR FLOW, AND PRESSURE REQUIREMENTS BEFORE DEMO WITH A TAB REPORT AND BALANCE AS REQUIRED. 4.PROVIDE UNIT CONTROL PANEL WITH MAIN DISCONNECT SWITCH. 5. PROVIDE ADJUSTABLE BELT DRIVE BLOWER. 6. PROVIDE OUTSIDE AIR INTAKE HOOD. 7. PROVIDE WITH MEDIUM STATIC OPTION. 8. PROVIDE WITH ELECTROMECHANICAL CONTROLS W/ W7220 ECONO CONTROLLER. 9. PROVIDE WITH POWER EXHAUST. 10. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 11. PROVIDE WITH ROOF CURB ADAPTOR IF REQUIRED. 12. 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.



NOTE:
1. LINE ROOF UNDER CURB AND SIDES OF CURB W/ 4" THICK ACOUSTICAL BOARD.

ROOFTOP UNIT MOUNTING W/ CURB

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

THE LANDTECH GROUP, INC.
MECHANICAL • PLUMBING • FIRE PROTECTION
ENGINEERING • DESIGN
PROJECT MANAGEMENT
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781-233-9933
CSI ENGINEERING
FIRE PROTECTION
315 MAYFLOWER AVE, STE 203
MOBILE, AL 36607
251-479-1924

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 337 HVAC SCHEDULES AND DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO.
12703884

SHEET 431 OF 506

M4.0 | 337-15-246

DRAWFORM REVISION: 10 OCTOBER 2014

TYPICAL FLASH PROTECTION WARNING LABEL

⚠ 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.

RECEPTACLE LABEL REQUIREMENTS

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".

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 30AMP SWITCH
G	GENERATOR
JCB	DDC CONTROL JACE BOX. PROVIDED BY OTHERS. FIELD COORDINATE EXACT LOCATION.
ATS	AUTO-MATIC TRANSFER SWITCH

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

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
	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
XE	EXISTING EQUIPMENT TO BE REMOVED AND NEW EQUIPMENT TO BE INSTALLED ON EXISTING BRANCH/FEEDER
	EXISTING EQUIPMENT TO REMAIN FOR INFORMATION ONLY – (XM) INDICATED BY SYMBOL WITH LIGHT OUT OF FUNCTION LINE TYPE
	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

ONE-LINE LEGEND

SYMBOL	DESCRIPTION
60A 3R	DISCONNECT SWITCH, UNFUSED "3R" – INDICATES NEMA TYPE 3R ENCLOSURE
100A 3P	CIRCUIT BREAKER, FIXED "100A" – INDICATES TRIP RATING "3P" – INDICATES NUMBER OF POLES
	GROUND CONNECTION
480V 120/208V	TRANSFORMER, 480V INDICATES PRIMARY VOLTAGE, 120/208V INDICATES SECONDARY VOLTAGE
Δ	3 PHASE, 3 WIRE DELTA CONNECTION
Y	3 PHASE, 4 WIRE WYE SOLIDLY GROUNDED
PANEL PP1	PANELBOARD "PP1" – INDICATES PANELBOARD NAME REFER TO PANELBOARD SCHEDULES FOR ADDITIONAL INFORMATION

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	BULDING 337 ELECTRICAL LEGEND
ED2.0A	BULDING 337 ELECTRICAL ROOF DEMOLITION PLAN PART B
E2.0A	BULDING 337 ELECTRICAL PARTIAL FIRST FLOOR & ROOF PLAN PART B
E3.0	BULDING 337 ELECTRICAL ONE-LINE DIAGRAM, MECHANICAL EQUIPMENT SCHEDULE, AND PANELBOARD 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

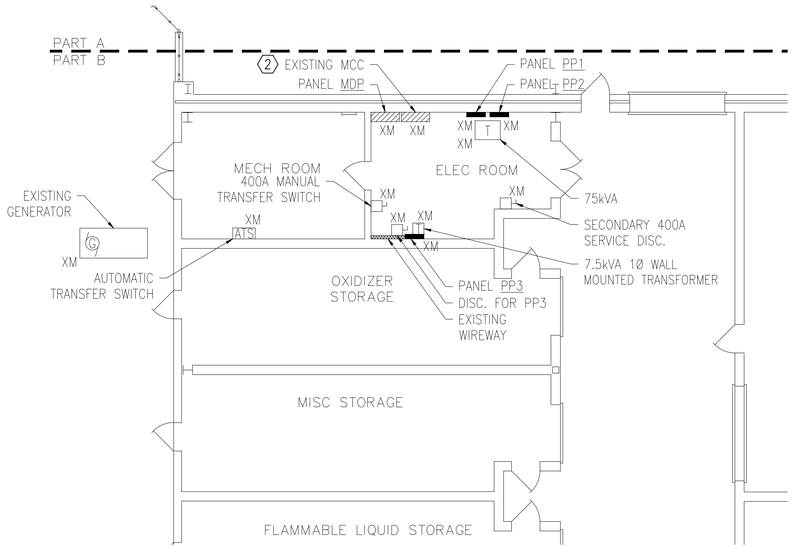
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

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

BUILDING 337 ELECTRICAL LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703885
SHEET 432 OF 506
E1.0 | 337-15-247

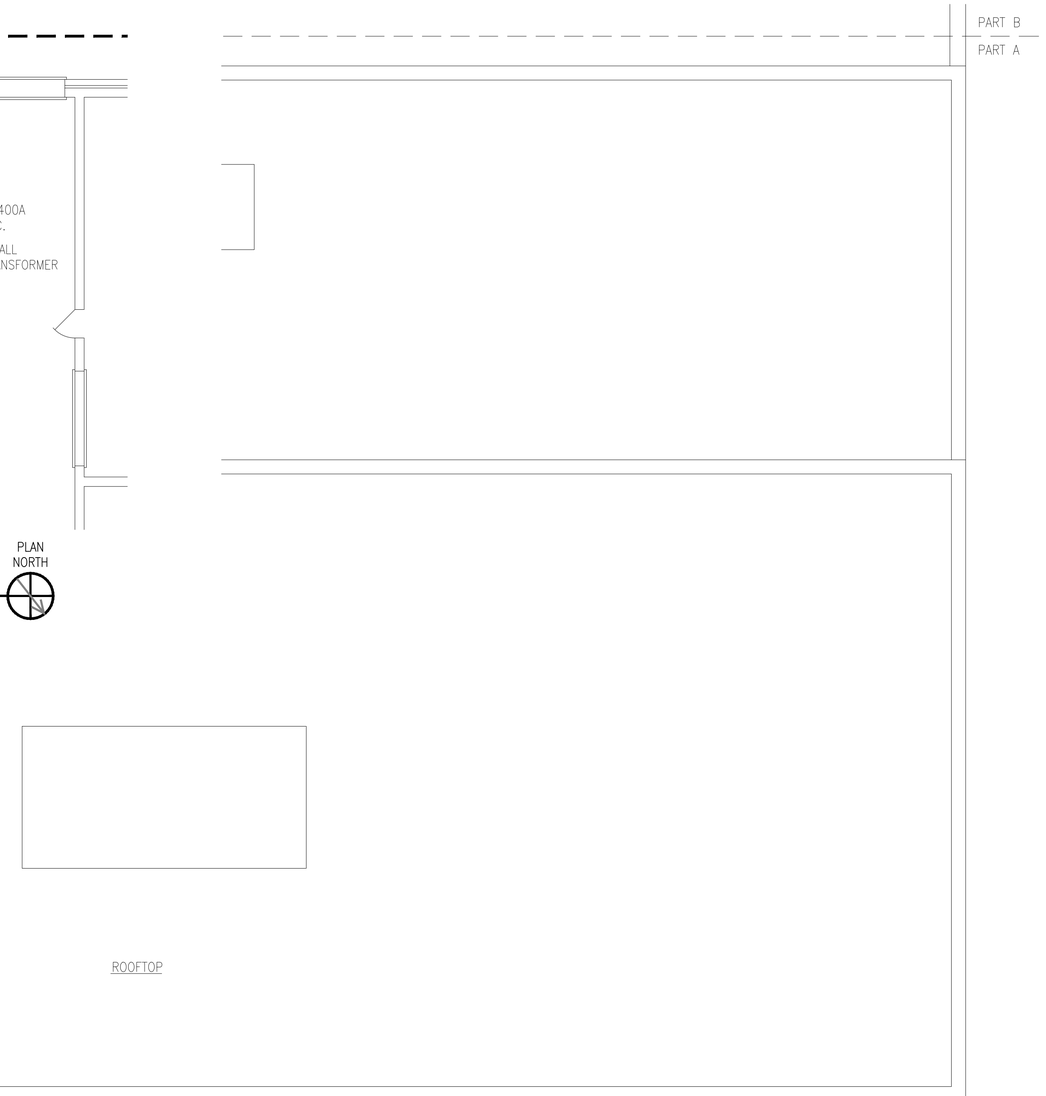
DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 337 ELECTRICAL FIRST FLOOR DEMOLITION PLAN - PART B

1/8" = 1'-0"

PLAN NORTH



BUILDING 337 ELECTRICAL ROOF DEMOLITION PLAN - PART B

1/8" = 1'-0"

PLAN NORTH

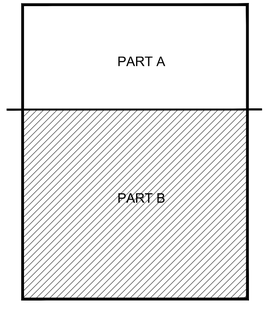
GENERAL SHEET NOTES

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 RTU. MAINTAIN EXISTING BRANCH CIRCUITRY AND MCC BREAKER FOR REUSE. DEMOLISH EXISTING DISCONNECT IN ITS ENTIRETY.
2. DISCONNECT EXISTING RTU FROM MCC. PREPARE EXISTING MCC SLOT FOR INSTALLATION OF NEW RTU UNIT.

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	08/07/2015
3	100% REVIEW SUBMISSION	07/24/2015
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STM DESCRIPTION APPR

NAVFAC

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

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 337 ELECTRICAL ROOF DEMOLITION PLAN PART B

EPROJECT NO.: 1350913

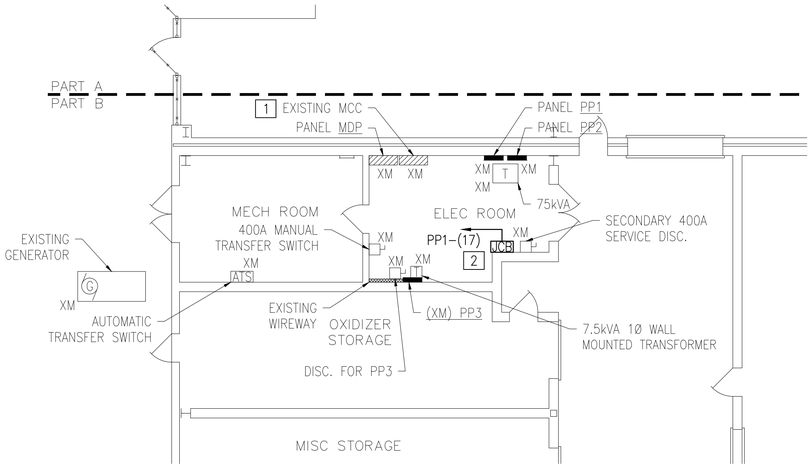
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703886

SHEET 433 OF 506

ED2.0A | 337-15-248

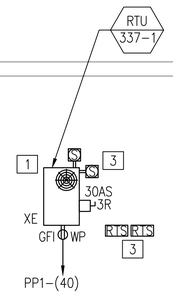
DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 337 ELECTRCIAL FIRST FLOOR PLAN - PART B

1/8" = 1'-0"

PLAN NORTH



BUILDING 337 ELECTRCIAL ROOF PLAN - PART B

1/8" = 1'-0"

PLAN NORTH

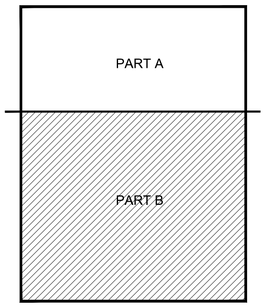
GENERAL SHEET NOTES

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. CONNECT NEW RTU TO EXISTING BRANCH CIRCUITRY AND MCC BREAKER MAINTAINED DURING DEMOLITION. PROVIDE NEW DISCONNECT AS SHOWN FOR NEW RTU. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
2. NEW DDC JACE BOX PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.
3. NEW DUCT SMOKE DETECTOR PROVIDED BY OTHERS. 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.

KEY PLAN



GRAPHIC SCALE

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

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

STM

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 THEIR INCORPORATION INTO THE WORK. APPROVAL SHALL MEAN THAT THE CONTRACTOR HAS DETERMINED AND VERIFIED ALL QUANTITIES, DIMENSIONS, FIELD CONSTRUCTION CRITERIA, MATERIALS, CATALOG NUMBERS, AND SIMILAR DATA AND THAT THE CONTRACTOR HAS REVIEWED AND COORDINATED EACH SHOP DRAWING, SAMPLE, OR SIMILAR SUBMITTAL WITH THE REQUIREMENTS OF THE WORK AND OF THE CONTRACT DOCUMENTS. CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING OF ANY DEVIATION IN A SHOP DRAWING, SAMPLE, OR SIMILAR SUBMITTAL FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

CSI ENGINEERING
FIRE PROTECTION
WWW.CSIENGINEERING.COM
919 BRICKYARD WAY, STE 204
ALBUQUERQUE, NM 87102
TEL: 505.314.0800
FAX: 505.314.0824
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
PORTSMOUTH NAVAL SHIPYARD

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

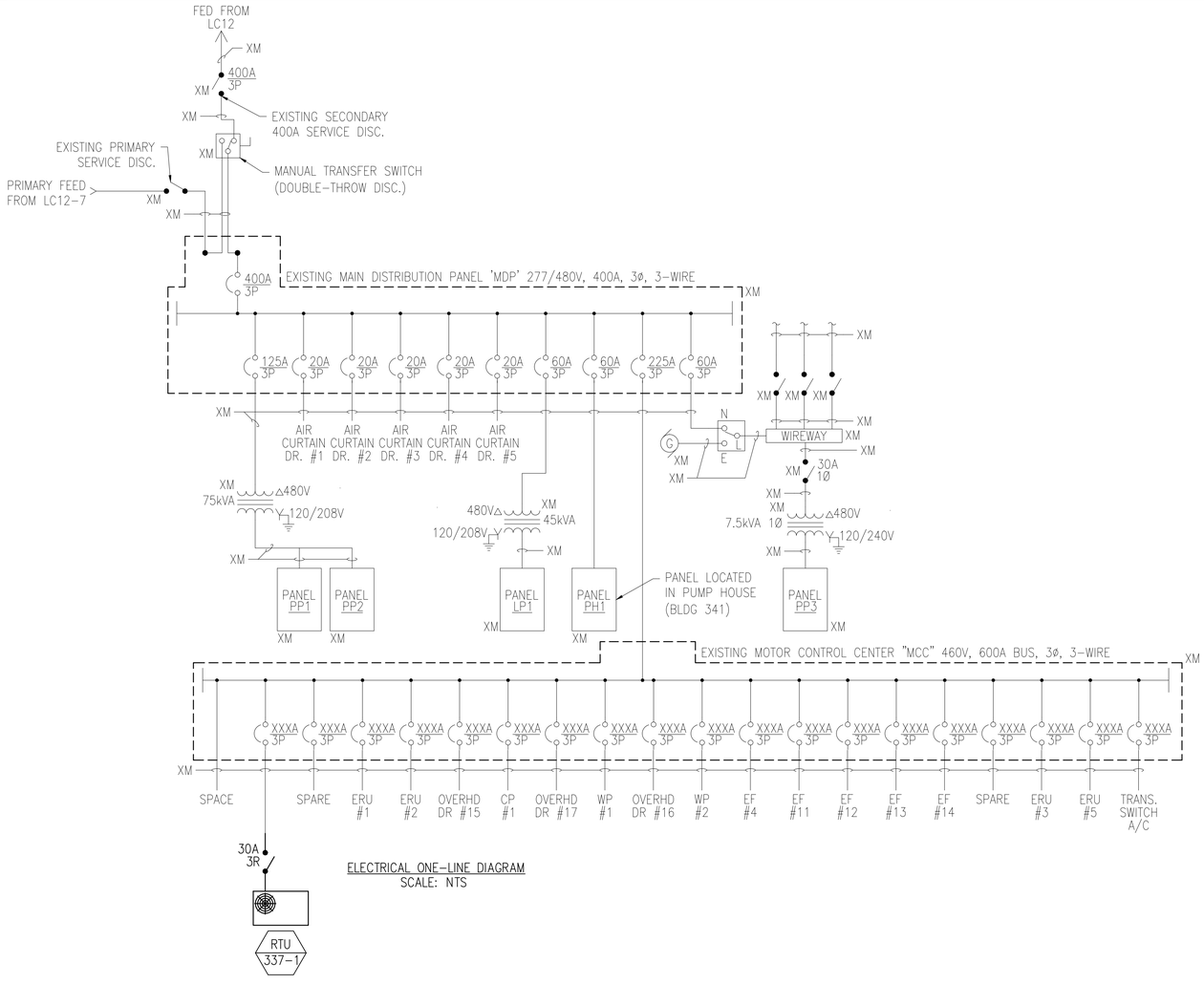
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 337 ELECTRICAL PARTIAL FIRST FLOOR & ROOF PLAN PART B

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085-XX-C-XXXX
NAVFAC DRAWING NO.: 12703887
SHEET 434 OF 506

E2.0A | 337-15-249

DRAWFORM REVISION: 10 OCTOBER 2014



ELECTRICAL ONE-LINE DIAGRAM
SCALE: NTS

PANELBOARD SCHEDULE

PANEL: MDP	VOLTS: 277/ 480		NEW/EXISTING.: EXISTING
MAIN: 400A MCB	BUS AMPS: 400A		MOUNT.: SURFACE
PH/WIRE: 3ø/4W	AIC:		LOC: BLDG 337 ELEC. ROOM

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	225/3	MCC	11.12	1	–	.2	PANELS PP1 & PP2 VIA 75kVA TRANSFORMER	125/3	2
3	20/3	AIR CURTAIN DOOR #1	0	–	–	0	AIR CURTAIN DOOR #2	20/3	4
5	20/3	AIR CURTAIN DOOR #4	0	–	–	0	AIR CURTAIN DOOR #5	20/3	6
7	60/3	PANEL PH1	0	–	–	0	PANEL LP1	60/3	8
9	20/3	AIR CURTAIN DOOR #3	0	–	–	0	PANEL PP3 VIA ATS & 7.5kVA TRANSFORMER	60/3	10
			11.12			0.20	TOTAL CONNECTED kVA:	11.32	
							TOTAL CONNECTED AMPERES:	13.63	

NOTES:
1. NEW LOAD FROM NEW RTU. REFER TO ONE-LINE DIAGRAM ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
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.: EXISTING
MAIN: MLO	BUS AMPS: 225A		MOUNT.: SURFACE
PH/WIRE: 3ø/4W	AIC:		LOC: BLDG 337 ELEC. ROOM

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	OFFICE REC.	0	–	–	0	RECIEVING AREA REC.	20/1	22
2	20/1	WELD RM NMCI REC.	0	–	–	0	ACCESS AREA REC.	20/1	23
3	20/1	OFFICE REC.	0	–	–	0	CORR. & WATER REACT. REC.	20/1	24
4	20/1	REST RM GFI REC.	0	–	–	0	FLAM. RM REC.	20/1	25
5	20/1	HAZ. STOR. REC. RM A	0	–	–	0	MISC. & STOR. REC.	20/1	26
6	20/1	BAD BREAKER	0	–	–	0	?	20/1	27
7	20/1	BATT. CHARGER RM REC.	0	–	–	0	REC.	20/1	28
8	20/1	REC.	0	–	–	0	OVERHEAD DOOR #26	20/1	29
9	20/1	OVERHEAD DOOR #15	0	–	–	0	OVERHEAD DOOR #27	20/1	30
10	20/1	OVERHEAD DOOR #16	0	–	–	0	OVERHEAD DOOR #32	20/1	31
11	20/1	OVERHEAD DOOR #17	0	–	–	0	OVERHEAD DOOR #34	20/1	32
12	20/1	OVERHEAD DOOR #18	0	–	–	0	OVERHEAD DOOR #54	20/1	33
13	20/1	OVERHEAD DOOR #19	0	–	–	0	OVERHEAD DOOR #33	20/1	34
14	20/1	OVERHEAD DOOR #21	0	–	–	0	OVERHEAD DOOR #42	20/1	35
15	20/1	OVERHEAD DOOR #44	0	–	–	0	OVERHEAD DOOR #53	20/1	36
16	20/1	OVERHEAD DOOR #41	0	–	OFF	0	OVERHEAD DOOR #48	20/1	37
17	20/1	JACE BOX	.02	1	–	0	OVERHEAD DOOR #50	20/1	38
18	20/1	BATT. CHARGER FOR GEN.	0	–	–	0	EXT. TEMP. CNTRL HW PUMPS	20/1	39
19	20/1	SPARE	0	–	1	.18	RTU-337-1 RECEPTACLE	20/1	40
20	20/1	SPARE	0	–	–	0	SPARE	20/1	41
21	20/1	FLAM. STOR. REC.	0	–	–	0	SPARE	20/1	42
			0.02			0.18	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.

MECHANICAL EQUIPMENT SCHEDULE

EQUIP TAG	DESCRIPTION	LOAD				PANEL SOURCE		BRANCH CIRCUIT	CONNECTION				NOTES
		HP	KVA	VOLT	PH	PANEL	C/B		FLEX	JB	REC	DISC	
RTU 337-1	ROOFTOP UNIT	–	11.15	460	3	MCC	–	–	X			X	NOTES 7,11,12

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 OTHERS.
10. INTEGRAL CONVENIENCE RECEPTACLE PROVIDED PREWIRED TO EQUIPMENT BY TRADE CONTRACTOR.
11. REUSE EXISTING BRANCH CIRCUITRY AND CIRCUIT BREAKER.
12. PROVIDE NEW DISCONNECT AS SHOWN ON DRAWING E2.0

GENERAL NOTES:

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

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

CSI ENGINEERING – FIRE PROTECTION – PLUMBING

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

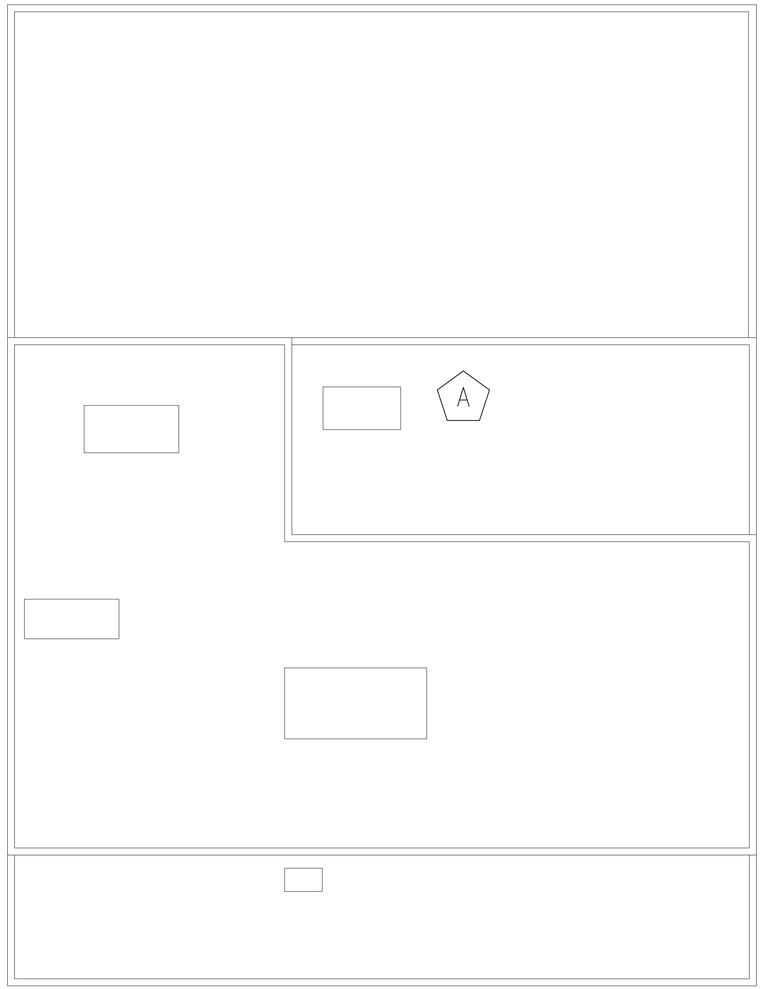
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 337 ELECTRICAL ONE-LINE DIAGRAM, MECHANICAL EQUIPMENT SCHEDULES AND PANELBOARD SCHEDULES

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703888
SHEET 435 OF 506

E3.0 | 337-15-250

DRAWFORM REVISION: 10 OCTOBER 2014



B337 ANTENNA LOCATION - ROOF PLAN

1/16" = 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
2. CONTRACTOR TO DETERMINE BEST LOCATION TO ENSURE CLEAR LINE-OF-SIGHT TO B170 ACCESS POINT.
3. ROOF MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS.
4. CAT5 CABLE SHALL BE ROUTED ALONG EXISTING PATHS TO JACE; ROUTE THROUGH ROOF PENETRATION ASSOCIATED WITH ERU-1 UNIT LOCATED ON ROOF.

GRAPHIC SCALE

1/16" = 1'

1 6" 0 1 2 3

scale feet

CHECK GRAPHIC SCALE BEFORE USING

STM	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
(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 - MID-ATLANTIC
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
FY 16 ENERGY PROJECT
TASK 1-B-R-22

B337 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO.
12703889

SHEET 436 OF 506

ET1.0 | 337-15-251

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
- 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

- (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 342 HVAC LEGEND
MD2.0	BUILDING 342 HVAC FIRST FLOOR DEMOLITION PLAN
M2.0	BUILDING 342 HVAC FIRST FLOOR PLAN
M3.0	BUILDING 342 HVAC CONTROLS
M3.1	BUILDING 342 HVAC CONTROLS
M3.2	BUILDING 342 HVAC CONTROLS
M4.0	BUILDING 342 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
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STATE OF NEW HAMPSHIRE – DAVID H. MAHONEY No. 12370 – LICENSED PROFESSIONAL ENGINEER

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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
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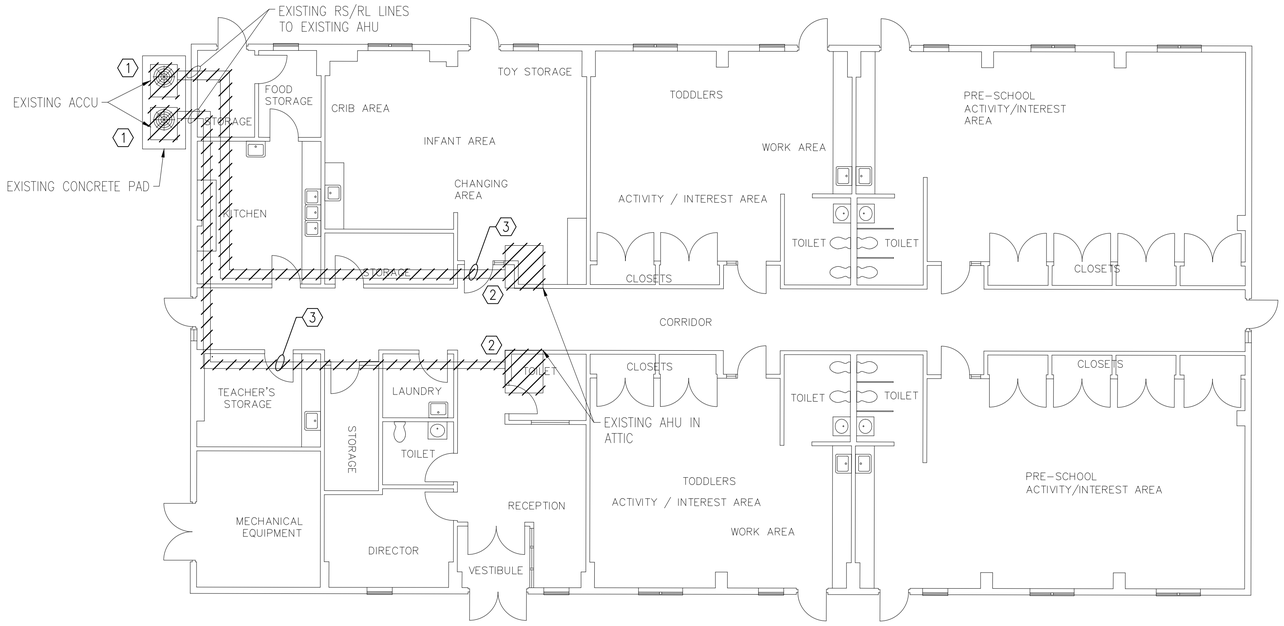
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

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

BUILDING 342 HVAC LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703890
SHEET 437 OF 506
M1.0 | 342-15-50

DRAWFORM REVISION: 10 OCTOBER 2014



PLAN NORTH

BUILDING 342 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. SHUTDOWN OF EXISTING SYSTEMS FOR REPLACEMENT 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 TWO 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 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. EXISTING ACCESSIBLE 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
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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

FEAD/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 342 HVAC FIRST FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703891

SHEET 438 OF 506

MD2.0 | 342-15-51

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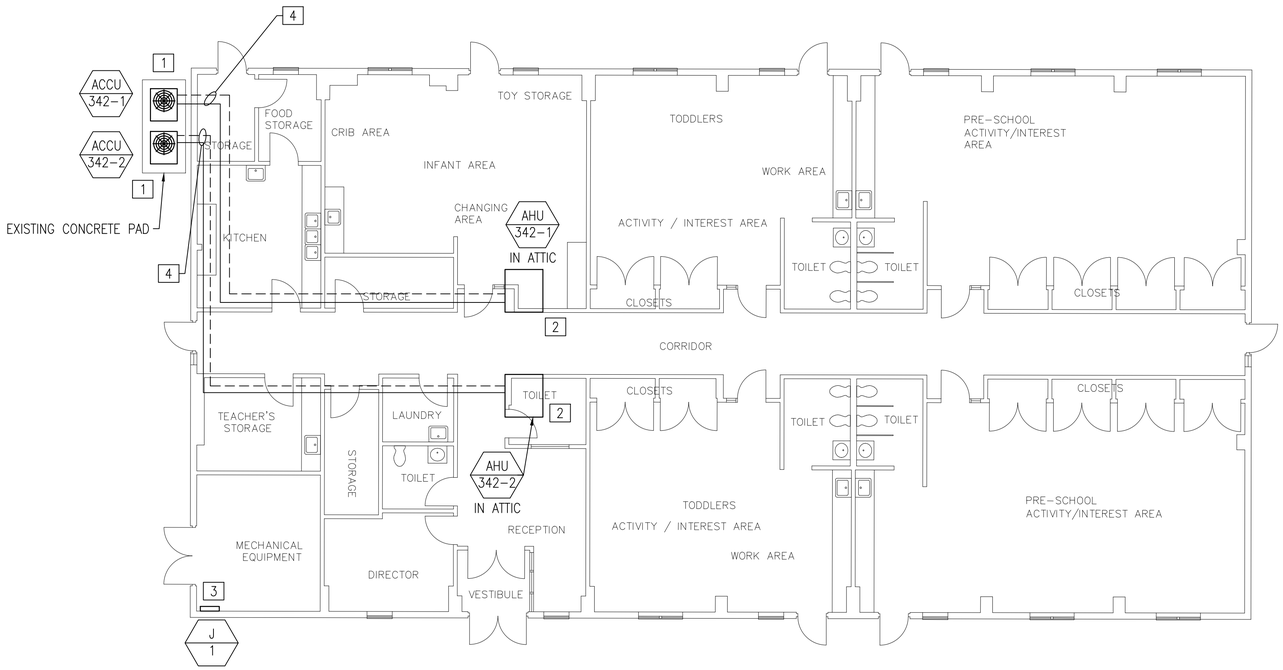

BUILDING 342 HVAC FIRST FLOOR PLAN

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 ACCU AND IT'S ASSOCIATED RS/RL LINES. NEW ACCU TO BE PLACED ON EXISTING CONCRETE PAD.
2. FURNISH AND INSTALL NEW AHU AND IT'S RS/RL LINES AND CONNECT 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 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

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CONTRACT NO. GS-10F-0316M
DELIVERY ORDER NO. N62583-15-F-0508

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ACTIVITY

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DES: JC | DRW: SV | CHK: DM

PM/DM: PETER STOCKLESS

BRANCH MANAGER: BRUCE LITALIEN

FEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: Y

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

BUILDING 342 HVAC FIRST FLOOR PLAN

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703892

SHEET 439 OF 506

M2.0 | 342-15-52

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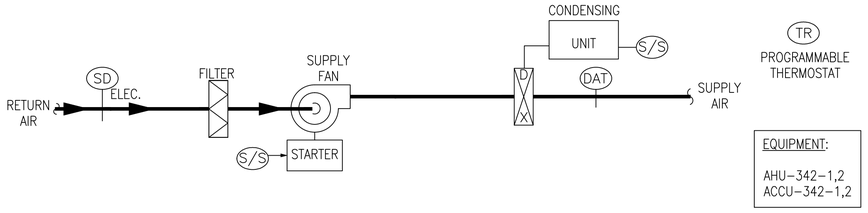


GENERAL
1. THE EQUIPMENT IS STARTED AND STOPPED VIA DCC THERMOSTAT. COORDINATE OCCUPIED AND UNOCCUPIED SCHEDULES WITH OWNER.

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.

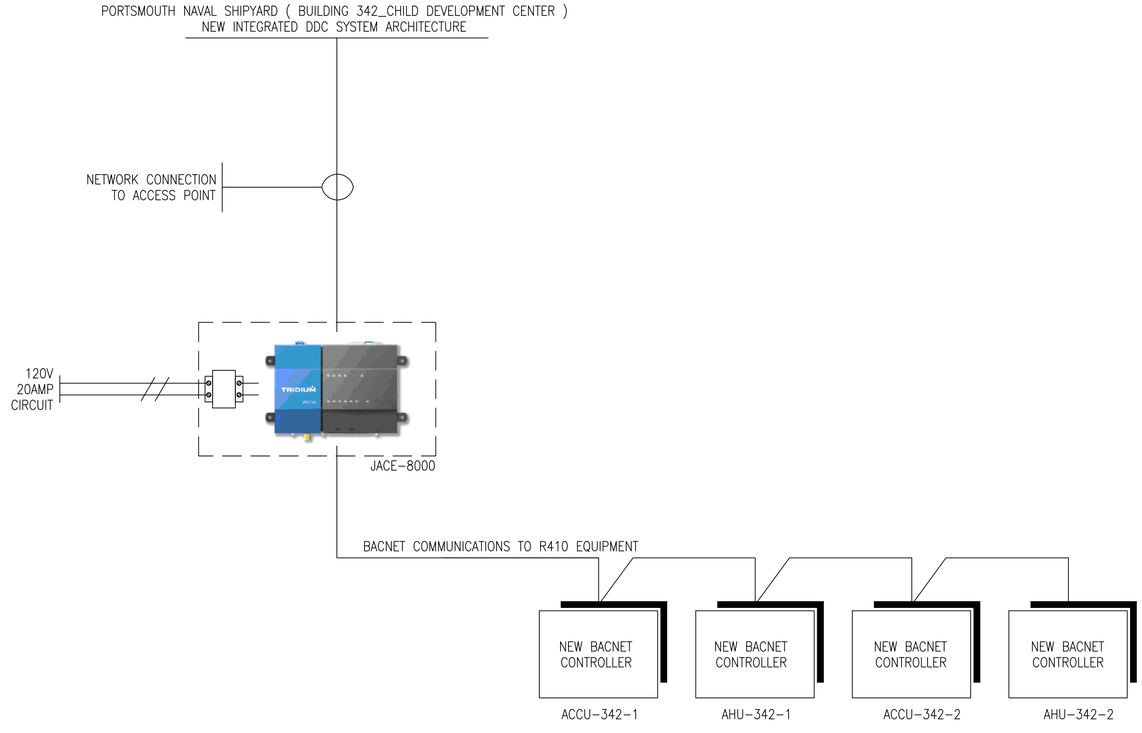
OCCUPIED COOLING CONTROL

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

PANEL MATERIAL

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



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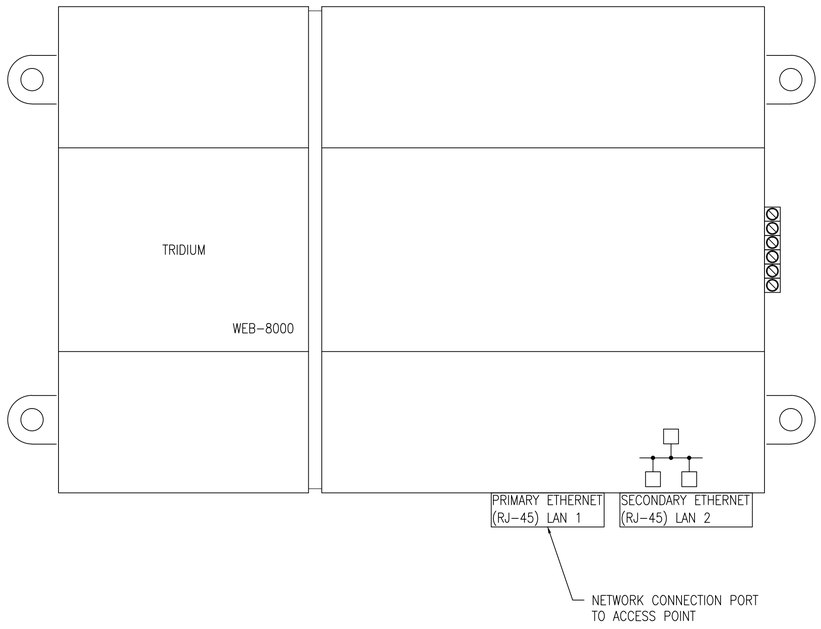
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 342 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703893
SHEET 440 OF 506
M3.0 342-15-53
DRAWFORM REVISION: 10 OCTOBER 2014



ETHERNET CONNECTION TO RF ACCESS POINT

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KITTERY, MAINE

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

BUILDING 342 HVAC CONTROLS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO.
12703894

SHEET 441 OF 506

M3.1 | 342-15-54

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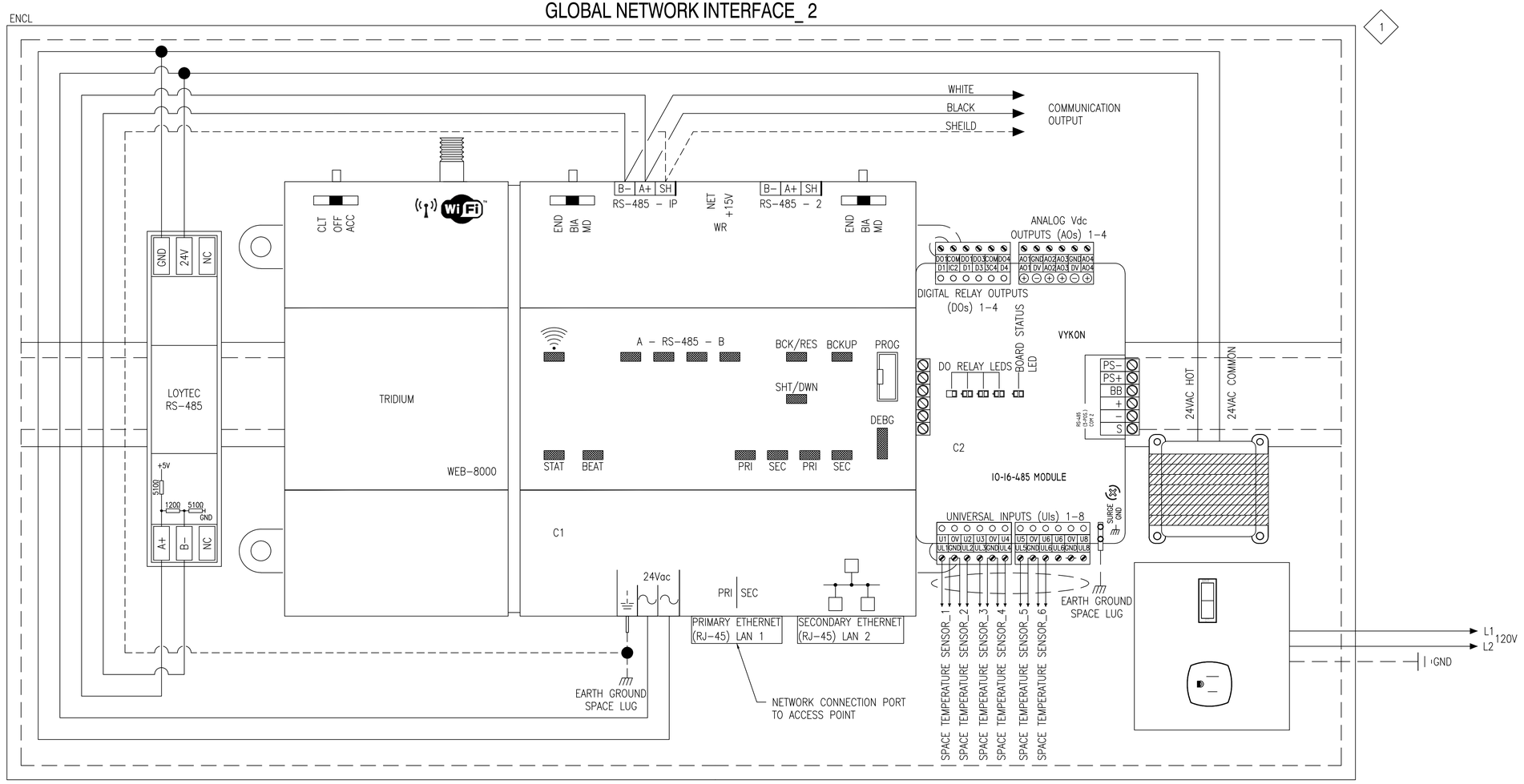
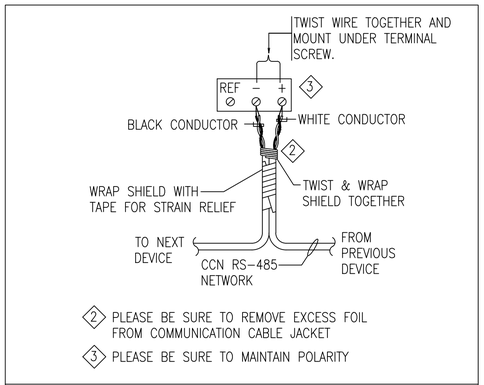
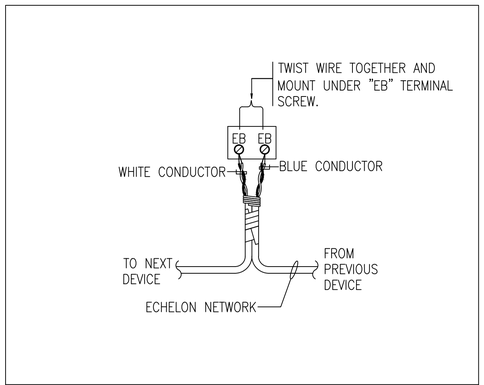
GLOBAL NETWORK INTERFACE_ 2



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
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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 342 HVAC CONTROLS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703895

SHEET 442 OF 506

M3.2 | 342-15-55

DRAWFORM REVISION: 10 OCTOBER 2014

AIR HANDLING UNIT SCHEDULE

TAG	SERVICE	LOCATION	CFM	FAN DATA				DX COOLING COIL								FLA	LRA	MCA	MOCP	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	SENS.		DB	WB	DB	WB							
AHU-342-1	BLDG 342	ATTIC	3000	1725	1.5	460	3	90.9	69.52	R-410A	80	67	59	57	2.5	17	3.1	15	TRANE TWE090D4	SEE NOTES
AHU-342-2	BLDG 342	ATTIC	3000	1725	1.5	460	3	90.9	69.52	R-410A	80	67	59	57	2.5	17	3.1	15	TRANE TWE090D4	SEE NOTES

NOTES: 1. PROVIDE WITH BACNET INTERFACE. 2. PROVIDE WITH SMOKE DETECTORS IN RA DUCTWORK. 3. PROVIDE WITH MOUNTING HARDWARE AS REQUIRED. 4. PROVIDE WITH BELT DRIVE MOTORS. 5. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.

AIR COOLED CONDENSING UNIT SCHEDULE

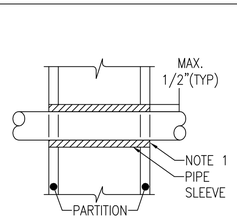
TAG	SERVES	DESIGN BASED ON MANUFACTURER	DESIGN BASED ON MODEL No.	COOLING DATA	ELECTRIC DATA						NOTES
				COOLING (MBH)	VOLTS	HZ	PHASE	FLA	MCA	MOCP	
ACCU-342-1	BLDG 342	TRANE	TTA090D4	90	460	60	3	1.6	17.7	25	SEE NOTES
ACCU-342-2	BLDG 342	TRANE	TTA090D4	90	460	60	3	1.6	17.7	25	SEE NOTES

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

JACE BOX

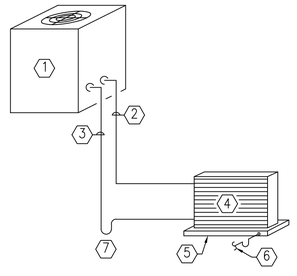
TAG NO.	LOCATION	ELECTRICAL		DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
		AMP	V		
J-1	SEE PLANS	20	120	JACE 8000	SEE NOTES

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



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

4	100% SUBMISSION	08/07/2015	DM
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2	90% SUBMISSION	06/04/2015	DM
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STM	DESCRIPTION	DATE	APPR

NAVFAC

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

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 342 HVAC SCHEDULES AND DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO.: 12703596

SHEET 443 OF 506

M4.0 | 342-15-56

DRAWFORM REVISION: 10 OCTOBER 2014

TYPICAL FLASH PROTECTION WARNING LABEL

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 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".

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 3R	DISCONNECT SWITCH RATED 30AMP, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED "3R" – INDICATES NEMA TYPE 3R ENCLOSURE "30AS" – INDICATES 30AMP SWITCH
JCB	DDC CONTROL JACE BOX. PROVIDED BY OTHERS. 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

FIRE ALARM LEGEND

SYMBOL	DESCRIPTION
XXXX	FIRE ALARM DEVICE "RTS" – INDICATES REMOTE TEST STATION
S	DUCT MOUNTED SMOKE DETECTOR

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
M	UTILITY METER AND SOCKET

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) 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

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 342 ELECTRICAL LEGEND
ED2.0	BUILDING 342 ELECTRICAL FIRST FLOOR DEMOLITION PLAN
E2.0	BUILDING 342 ELECTRICAL FIRST FLOOR PLAN
E3.0	BUILDING 342 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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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

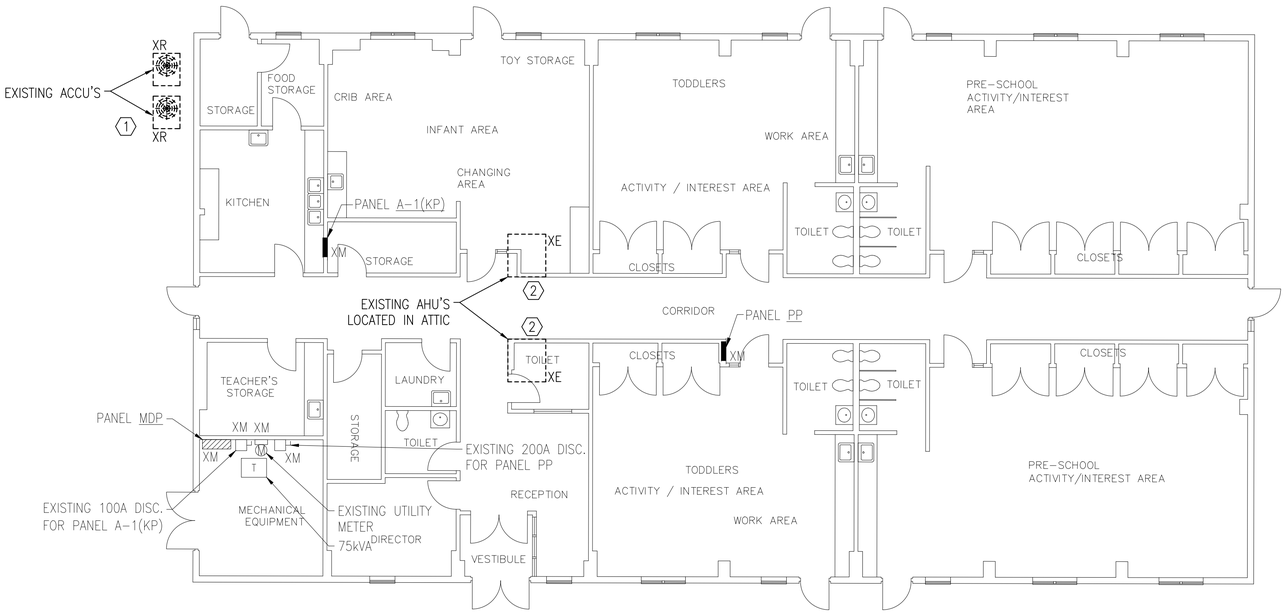
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

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

BUILDING 342 ELECTRICAL LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703897
SHEET 444 OF 506
E1.0 342-15-57

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 342 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'S. DEMOLISH EXISTING BRANCH CIRCUITRY, DISCONNECT, AND CIRCUIT BREAKER IN THEIR ENTIRETY.
2. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING AHU'S. 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

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

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

BUILDING 342 ELECTRICAL FIRST FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913

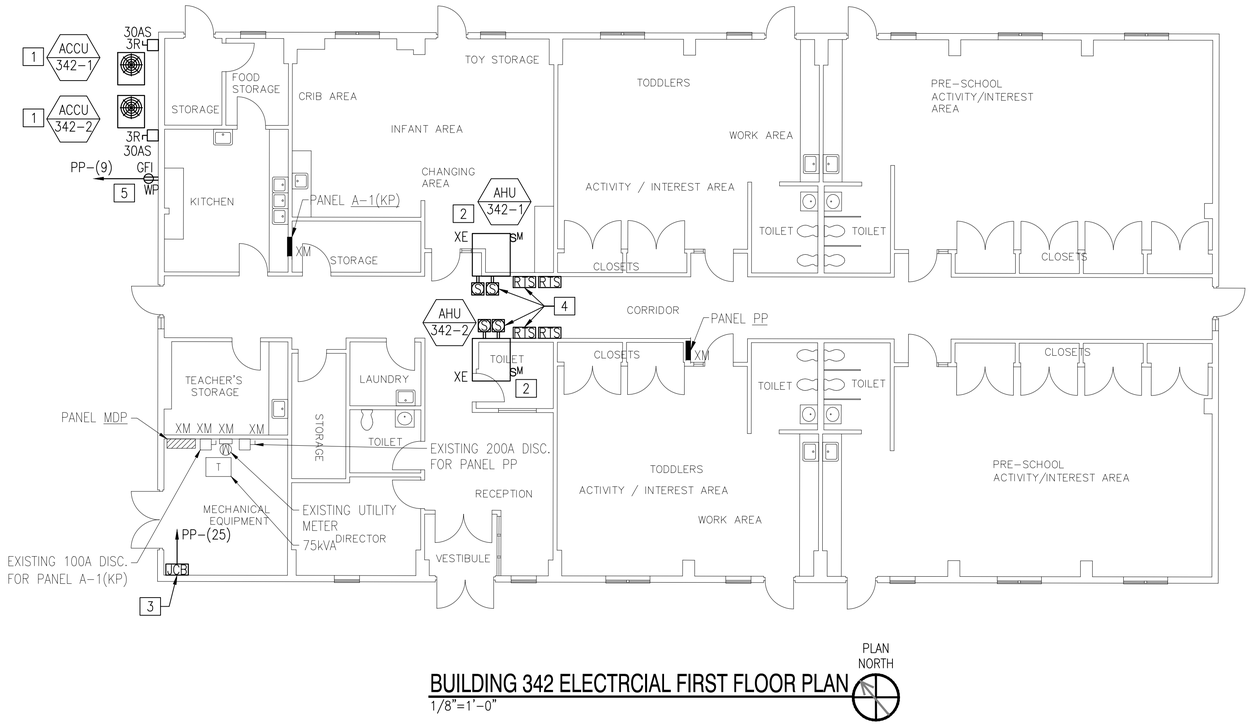
CONSTR. CONTR. NO.: N40085-XX-C-XXXX

NAVFAC DRAWING NO.: 12703898

SHEET 445 OF 506

ED2.0 | 342-15-58

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 342 ELECTRCIAL 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 DISCONNECT AS SHOWN FOR NEW ACCU. PROVIDE NEW CIRCUIT BREAKER IN PANEL "MDP" FOR NEW ACCU. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 OR ADDITIONAL INFORMATION.
2. CONNECT NEW AHU 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 WIRING SHALL MATCH EXISTING IN ALL RESPECTS.
3. NEW DDC JACE BOX PROVIDED BY TRADE CONTRACTOR. COORDINATE EXACT LOCATION WITH NAVFAC AND MECHANICAL 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 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.
5. ELECTRICAL CONTRACTOR TO FIELD VERIFY IF A RECEPTACLE EXISTS WITHIN 6' OF NEW CONDENSING UNITS. IF NO RECEPTACLE EXISTS, PROVIDE NEW RECEPTACLE 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

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

THE CONSTRUCTOR SHALL REVIEW AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB, AND THIS OFFICE MUST BE NOTIFIED OF ANY VARIATIONS FROM THE DIMENSIONS AND CONDITIONS SHOWN BY THESE PLANS. ALL WORK SHALL CONFORM TO APPLICABLE CODES AND ORDINANCES. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS. DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY. ALL DRAWINGS AND SPECIFICATIONS ARE COPYRIGHTED. USE OF THESE DRAWINGS AND SPECIFICATIONS FOR ANY WORK OTHER THAN THE SPECIFIED PROJECT IS PROHIBITED. COPYRIGHT © 2015 CSI ENGINEERING

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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
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 342 ELECTRCIAL FIRST FLOOR PLAN

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703899

SHEET 446 OF 506

E2.0 342-15-59

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 342-1	CONDENSING UNIT	–	14.10	460	3	MDP-(26,28,30)	25A/3P	(3)#10 & (1)#10G, 3/4"C	X			X	NOTE 7
ACCU 342-2	CONDENSING UNIT	–	14.10	460	3	MDP-(20,22,24)	25A/3P	(3)#10 & (1)#10G, 3/4"C	X			X	NOTE 7
AHU 342-1	AIR HANDLING UNIT	1.5	2.47	460	3	MDP-(14,16,18)	15A/3P	–	X			X	NOTE 8,11
AHU 342-2	AIR HANDLING UNIT	1.5	2.47	460	3	MDP-(14,16,18)	15A/3P	–	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 FOR UNIT.

PANELBOARD SCHEDULE

PANEL: PP | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING
MAIN: MLO | BUS AMPS: 125A | MOUNT.: RECESSED
PH/WIRE: 3ø/4W | AIC: | LOC: BLDG 342 CORR. 22 NEAR TODDLERS 12

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE		NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	REC. RM 5	0	–		–	0	REC. RM 3	20/1	2
3	20/1	REC. RM 20	0	–		–	0	REC. RM 9	20/1	4
5	20/1	REC. RM 12	0	–		–	0	REC. RM 14	20/1	6
7	20/1	REC. RM 13, 17-21	0	–		–	0	REC. RM 22	20/1	8
9	20/1	REC. RM 16	0	–		–	0	REC. W/MACHINE	15/1	10
11						–	0	VERISON POS	15/1	12
13	15/3	WASHER	0	–		–	0	HVAC CONTROL PANEL	20/1	14
15						–	0	WATER CIRC. PUMP	20/1	16
17	20/1	REC. RM 1/AIR CLEANER	0	–		–	0	TELEPHONE REC.	20/1	18
19	20/1	EXIT LIGHTING	0	–		–	0	TV REC.	20/1	20
21	20/1	CAB. HEATER	0	–		–	0	REFRIGERATOR TEACHERS PREP	20/1	22
23	15/1	INFANT REFRIGERATOR	0	–		–	0	EF-2	20/1	24
25	20/1	JACE BOX	.02	1		–	0	CCTV SEA	20/1	26
27	20/1	EWC	0	–		–	0	MECH. DECK REC. & LT	20/1	28
29	20/1	ACCU GFI RECEPTACLE	.18	2		–		SPACE		30
			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. 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: MDP | VOLTS: 277/ 480 | NEW/EXISTING.: EXISTING
MAIN: 200A MCB | BUS AMPS: 225A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC: BLDG 342 MECH. 21

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE		NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1						–		SPACE		2
3	30/3	WATER HEATER	0	–		–		SPACE		4
5						–	0	SPARE	20/1	6
7	20/1	RM 5 LTS, SUN. RM & EM. LT	0	–		–	0	LTS RM 9 & 12	20/1	8
9	20/1	LTS RM 13, 16-21	0	–		–	0	LTS RM 6,7,8, 22 & 23	20/1	10
11	20/1	EXTERIOR LTS	0	–		–	0	LTS RM 1 & 3	20/1	12
13										14
15	15/3	CIRC. #112 HEATING	0	–		1	4.94	AHU-342-1 & 2	15/3	16
17										18
19										20
21	15/3	SPARE	0	–		2	14.1	ACCU-342-2	25/3	22
23										24
25										26
27	30/3	HUMIDIFIER AHU #2	0	–		2	14.1	ACCU-342-1	25/3	28
29										30
31										32
33	30/3	HUMIDIFIER AHU #1	0	–		–	0	75kVA TRANSFORMER – FEEDS PANEL A-1(KP) & PP	90/3	34
35										36
			0.00				33.14	TOTAL CONNECTED kVA:	33.14	
								TOTAL CONNECTED AMPERES:	39.91	

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

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

MEP/FP DESIGNER
CSI ENGINEERING
FIRE PROTECTION
PLUMBING
999 Bedford Street, Ste. 206
Stamford, CT 06905
781-213-8888
213 Hutton Val. Ste. 200
Knoxville, TN 37923
423-579-9224
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
PORTSMOUTH NAVAL SHIPYARD

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

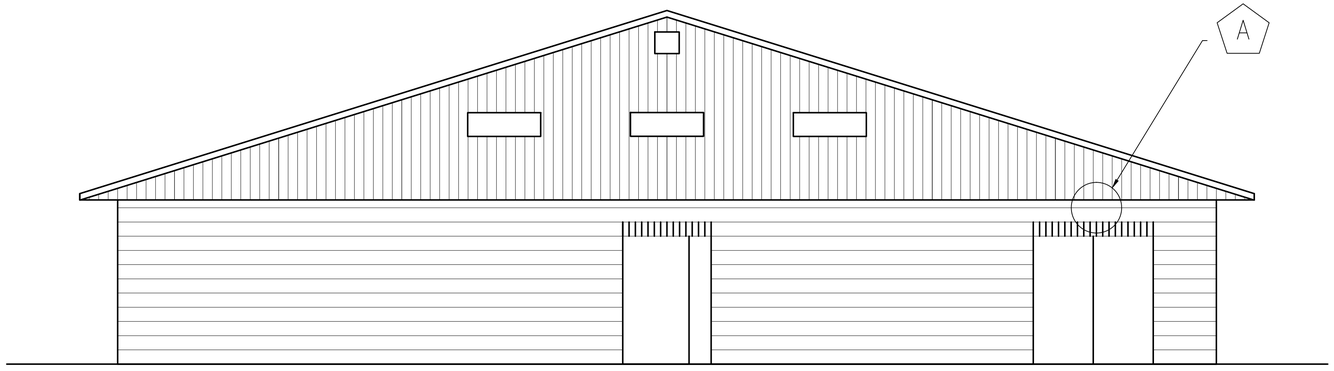
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 342 ELECTRICAL SCHEDULES

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085-XX-C-XXXX
NAVFAC DRAWING NO.: 12703900
SHEET 447 OF 506

E3.0 | 342-15-60

DRAWFORM REVISION: 10 OCTOBER 2014



B342 ANTENNA LOCATION - NORTH ELEVATION

1/4" = 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

(A) NEW WORK KEYNOTES

1. CONTRACTOR TO WALL MOUNT RF ACCESS POINT TO NORTH EXTERIOR ELEVATION
2. CONTRACTOR TO DETERMINE BEST HEIGHT AND LOCATION TO ENSURE CLEAR LINE-OF-SIGHT TO B170 ACCESS POINT.
3. WALL MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS.
4. CONTRACTOR TO DRILL NEW PENETRATION TO ROUTE NEW CAT5 BETWEEN JACE AND RF ACCESS POINT.

GRAPHIC SCALE

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

CHECK GRAPHIC SCALE BEFORE USING

STM	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
(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 – MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

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

B342 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO.: 12703901

SHEET 448 OF 506

ET1.0 | 342-15-61

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

- T — THERMOSTAT
- CONNECT TO EXISTING
- REFER TO DRAWINGS ( ) FOR CONTINUATION
- SYMBOL DESIGNATES ASSOCIATED SYSTEM OR SERVICE (ie LPS)
- SA–2 / 200: DIFFUSER, GRILLE, REGISTER LETTER DESIGNATION (See Schedule for ATD type); 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 343 HVAC LEGEND
M2.0	BUILDING 343 HVAC FOURTH FLOOR PARTIAL PLAN & SCHEDULE
M3.0	BUILDING 343 HVAC CONTROLS
M3.1	BUILDING 343 HVAC CONTROLS
M3.2	BUILDING 343 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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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
NAVAL SHIPYARD – PORTSMOUTH, NH
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 343 HVAC LEGEND

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085–XX–C–XXXX

NAVFAC DRAWING NO. 12703902

SHEET 449 OF 506

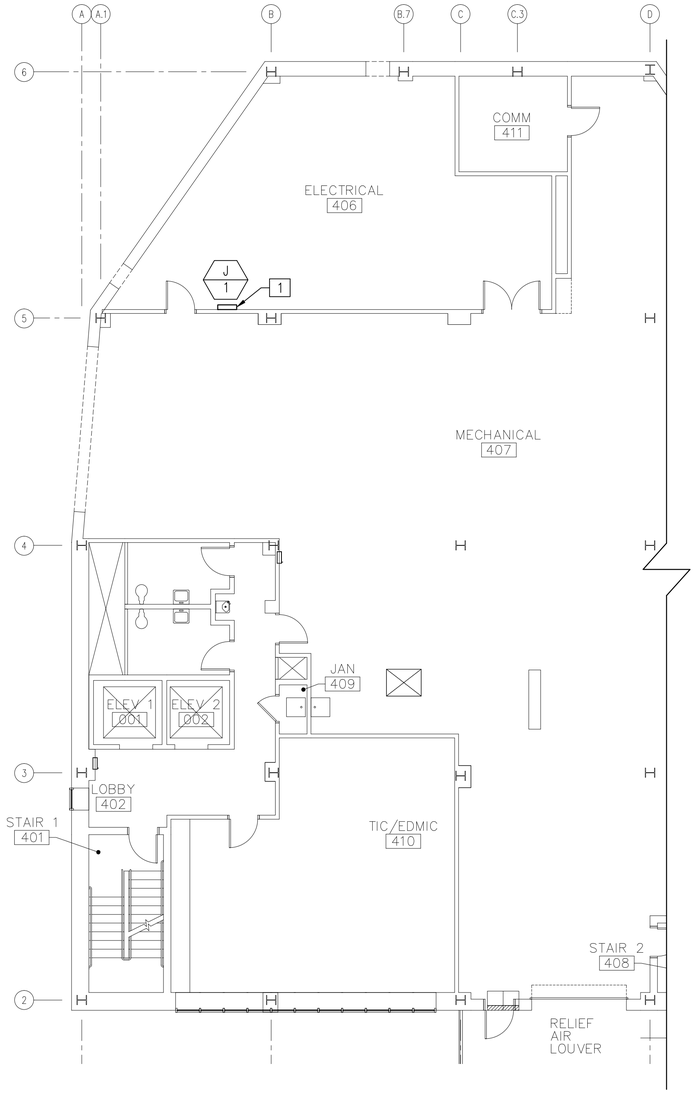
M1.0 | 343-15-336

DRAWFORM REVISION: 10 OCTOBER 2014

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 343 HVAC FOURTH FLOOR PARTIAL PLAN
1/8"=1'-0"

PLAN NORTH

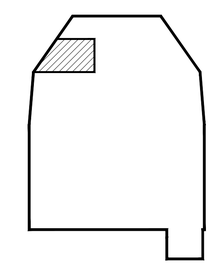
GENERAL SHEET NOTES

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

NEW WORK KEYNOTES

1. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF NEW DDC JACE BOX WITH NAVFAC.

KEY PLAN



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

PLUMBING
CSI ENGINEERING
FIRE PROTECTION
999 MIDDLEWAY SUITE 206
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781-233-4600
25 AVIATION AVE SITE 201
PORTSMOUTH, NH 03801
603-319-6244
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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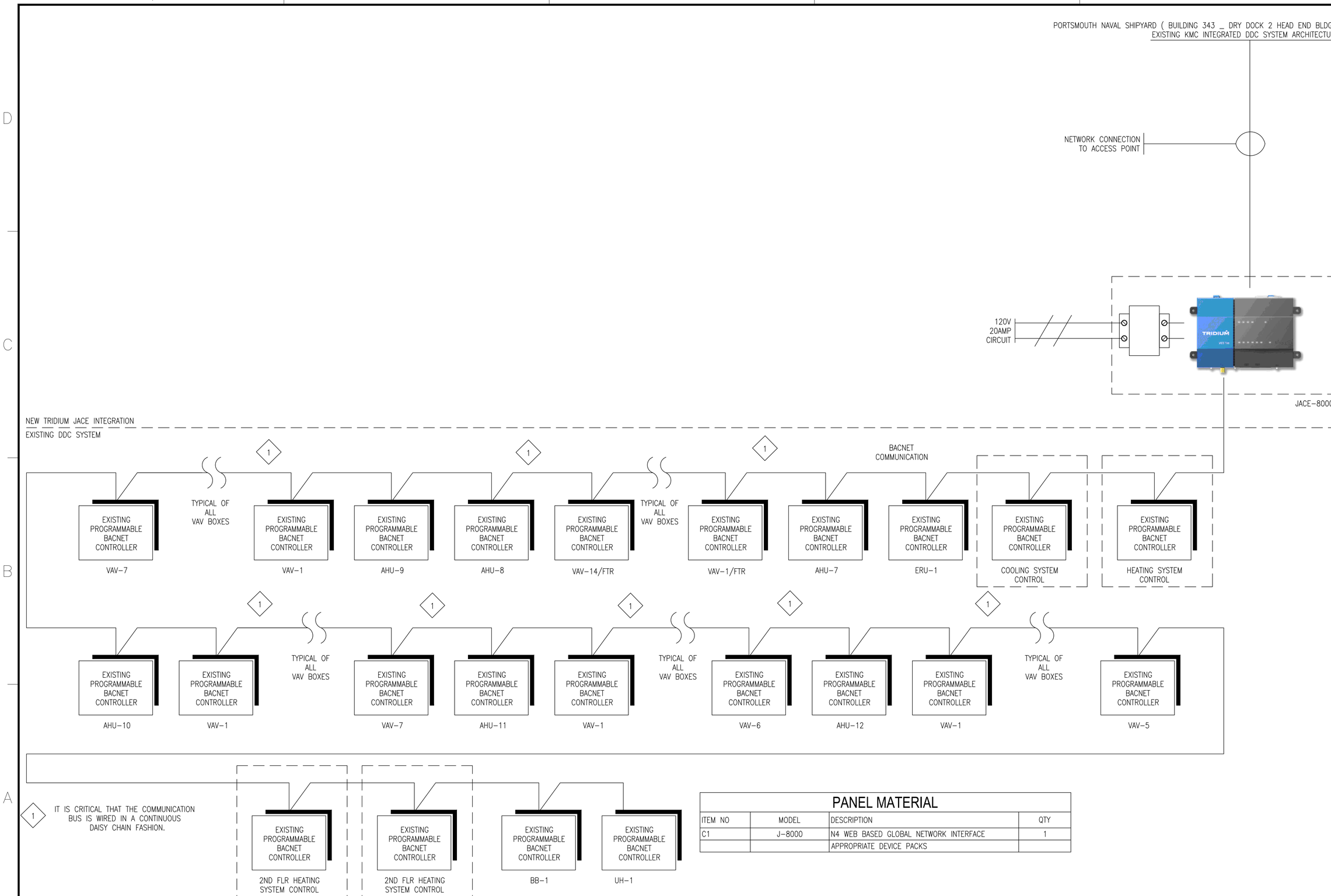
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT ~ MAINE
NAVAL SHIPYARD ~ PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

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

BUILDING 343 HVAC FOURTH FLOOR PARTIAL PLAN & SCHEDULE

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703903
SHEET 450 OF 506
M2.0 343-15-337
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	

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
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FIRE PROTECTION X

DEPARTMENT OF THE NAVY
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KITTERY, MAINE

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

BUILDING 343 HVAC CONTROLS

EPROJECT NO.: 1350913

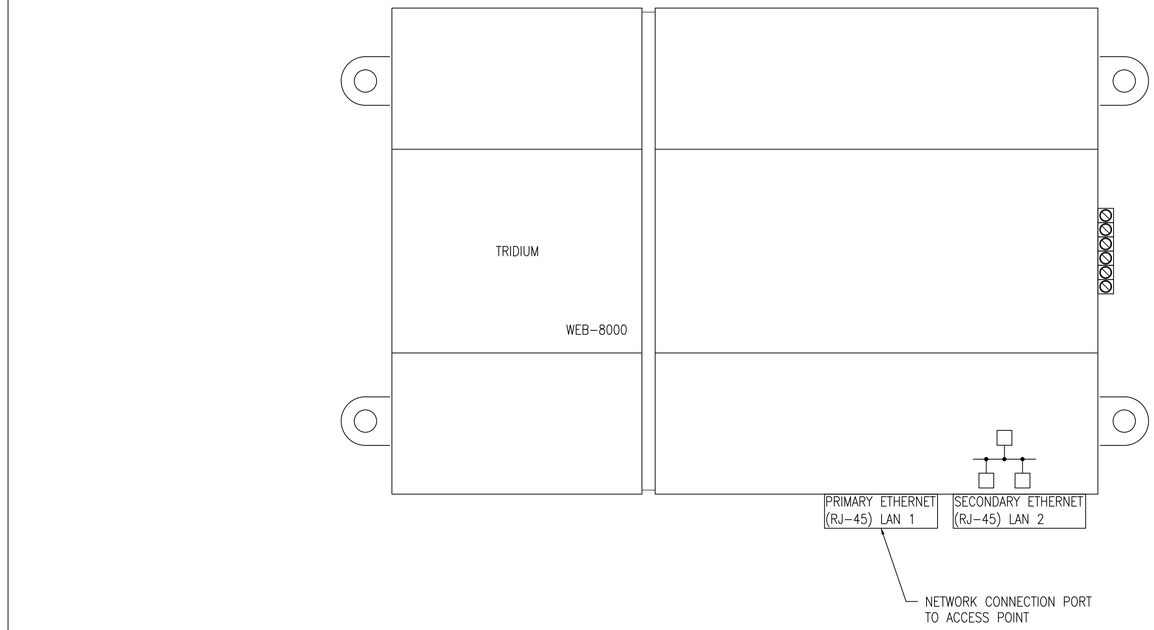
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703904

SHEET 451 OF 506

M3.0 | 343-15-338

DRAWFORM REVISION: 10 OCTOBER 2014



ETHERNET CONNECTION TO RF ACCESS POINT

STM	DESCRIPTION	DATE	APPR
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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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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
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NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 343 HVAC CONTROLS

EPROJECT NO.: 1350913

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

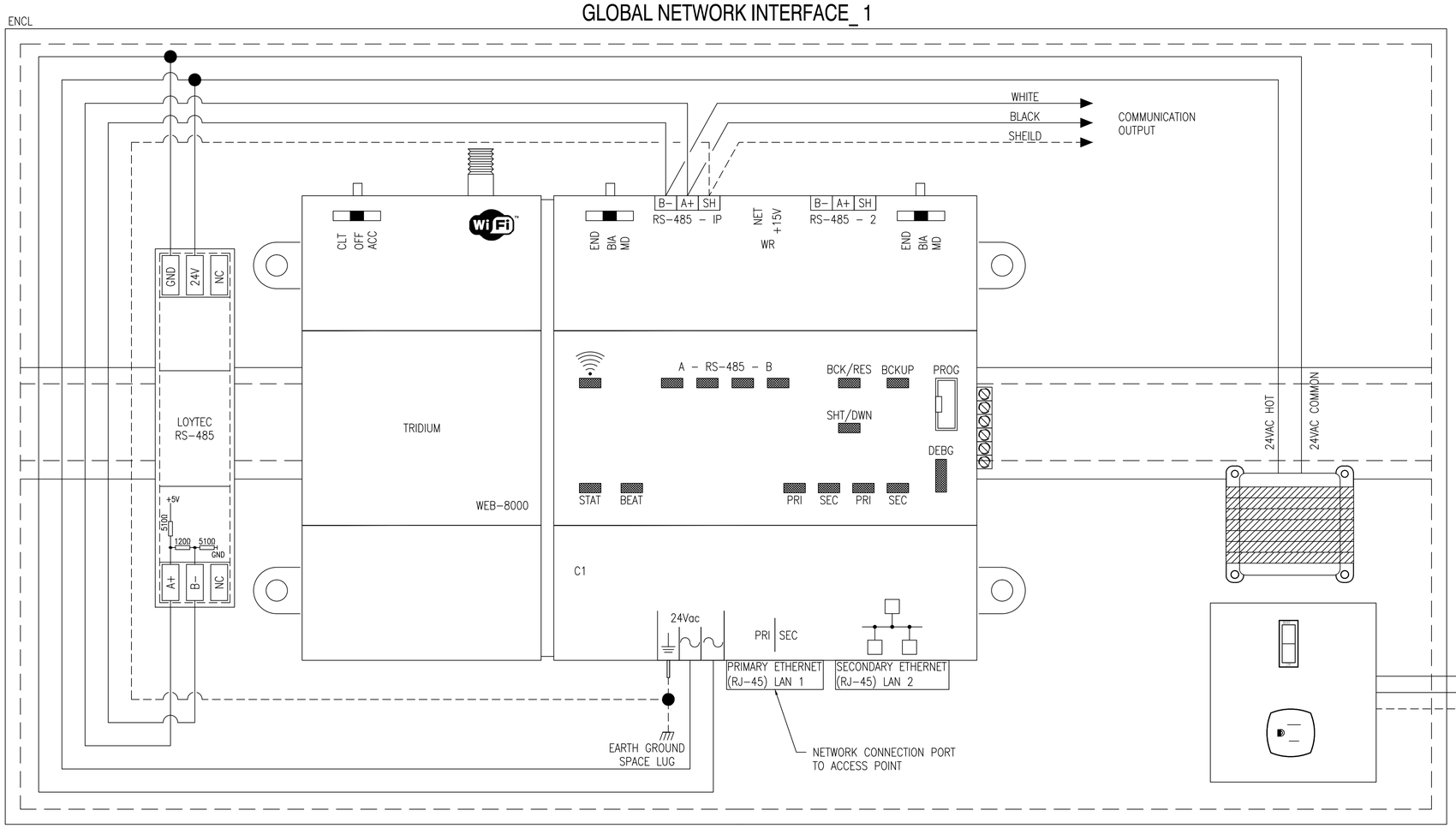
NAVFAC DRAWING NO.
12703905

SHEET 452 OF 506

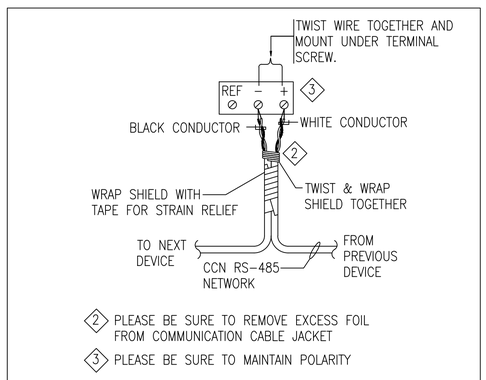
M3.1 | 343-15-339

DRAWFORM REVISION: 10 OCTOBER 2014

GLOBAL NETWORK INTERFACE_1



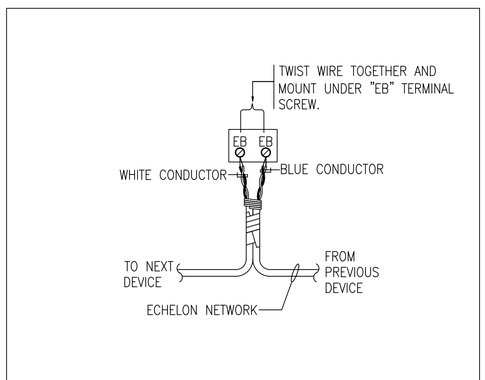
1 LOCATION OF CONTROLLER TO BE FIELD VERIFIED



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
4	100% SUBMISSION	08/07/2015	DM
3	100% REVIEW SUBMISSION	07/24/2015	DM
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CSI ENGINEERING

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

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

BUILDING 343 HVAC CONTROLS

EPROJECT NO.: 1350913

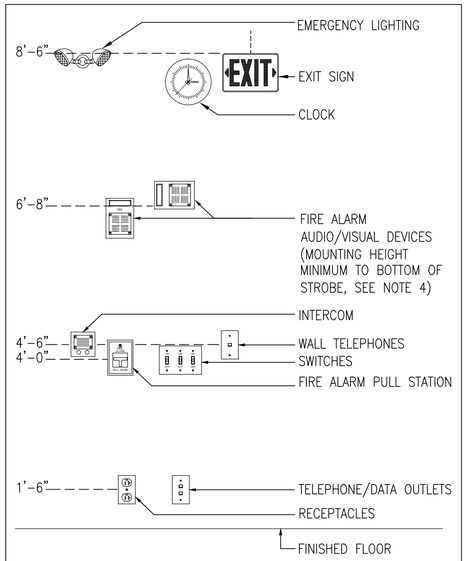
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703906

SHEET 453 OF 506

M3.2 343-15-340

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

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) INDICATED BY SYMBOL WITH LIGHT OUT OF FUNCTION LINE TYPE

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

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		

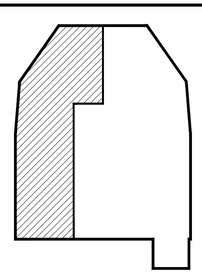
ELECTRICAL GENERAL SYMBOLS

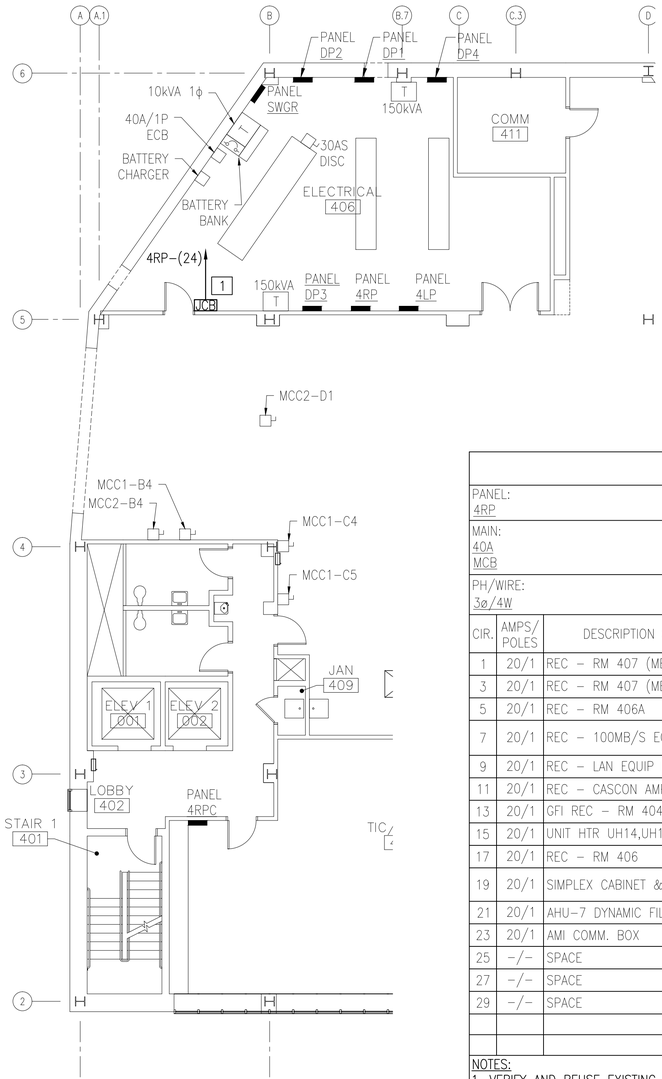
SYMBOL	
[#]	NEW WORK NOTE TAG

MOTOR & CONTROLS LEGEND

SYMBOL	DESCRIPTION
JCB	DDC CONTROL JACE BOX. PROVIDED BY OTHERS. FIELD COORDINATE EXACT LOCATION.
30AS 3R	DISCONNECT SWITCH RATED 30AMP, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED "3R" - INDICATES NEMA TYPE 3R ENCLOSURE "30AS" - INDICATES 30AMP SWITCH

KEY PLAN





BUILDING 343 ELECTRICAL FOURTH FLOOR PARTIAL 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 JACE BOX AND FIBER OPTIC SWITCH TO BE MADE BY CONTROLS CONTRACTOR. FIELD COORDINATE EXACT LOCATION OF EQUIPMENT WITH CONTROLS CONTRACTOR AND NAVFAC.
5. 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. JACE BOX AND FIBER OPTIC SWITCH PROVIDED BY OTHERS. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.

PANELBOARD SCHEDULE

PANEL: 4RP	VOLTS: 120/ 208		NEW/EXISTING.: EXISTING
MAIN: 40A MCB	BUS AMPS: -		MOUNT.: SURFACE
PH/WIRE: 3ø/4W	AIC:		LOC: BLDG 343 4TH FLOOR ELEC. RM 406

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	REC - RM 407 (MECH)	0	-	-	0	REC - RM 407 (MECH)	20/1	2
3	20/1	REC - RM 407 (MECH)	0	-	-	0	REC - RM 407 (MECH)	20/1	4
5	20/1	REC - RM 406A	0	-	-	0	REC - RM 406 (MECH)	20/1	6
7	20/1	REC - 100MB/S EQUIP RM 406A	0	-	-	0	REC - RM 406 (MECH)	20/1	8
9	20/1	REC - LAN EQUIP RM 406A	0	-	-	0	CLEANING REC RM 401,402	20/1	10
11	20/1	REC - CASCON AMPL RM 406A	0	-	-	0	AHU-8 DYNAMIC FILTER	20/1	12
13	20/1	GFI REC - RM 404,405	0	-	-	0	ELECTRIC WATER COOLER RM 403	20/1	14
15	20/1	UNIT HTR UH14,UH15,UH16,UH17	0	-	-	0	REC RM 408, OUTDOOR PLATFORM	20/1	16
17	20/1	REC - RM 406	0	-	-	0	REC - RM 407 (MECH)	20/1	18
19	20/1	SIMPLEX CABINET & PWR SUPPLY	0	-	-	0	REC - RM 407 (MECH)	20/1	20
21	20/1	AHU-7 DYNAMIC FILTER	0	-	-	0	REC - HVAC COMPUTER	20/1	22
23	20/1	AMI COMM. BOX	0	-	1	0.2	JACE BOX	20/1	24
25	-/-	SPACE	0	-	-	0	ROLL UP DOOR RM 407	20/3	26
27	-/-	SPACE	0	-					28
29	-/-	SPACE	0	-					30
			0.00			0.20	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.

SCHEDULE OF DRAWINGS

DWG#	DESCRIPTION
E1.0	BUILDING 343 ELECTRICAL LEGEND, FOURTH FLOOR PARTIAL PLAN & PANELBOARD SCHEDULE

GRAPHIC SCALE

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

CHECK GRAPHIC SCALE BEFORE USING

APPR	DATE	DESCRIPTION	STA
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

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

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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 343 ELECTRICAL LEGEND, FOURTH FLOOR PARTIAL PLAN & PANELBOARD SCHEDULE

EPROJECT NO.: 1350913

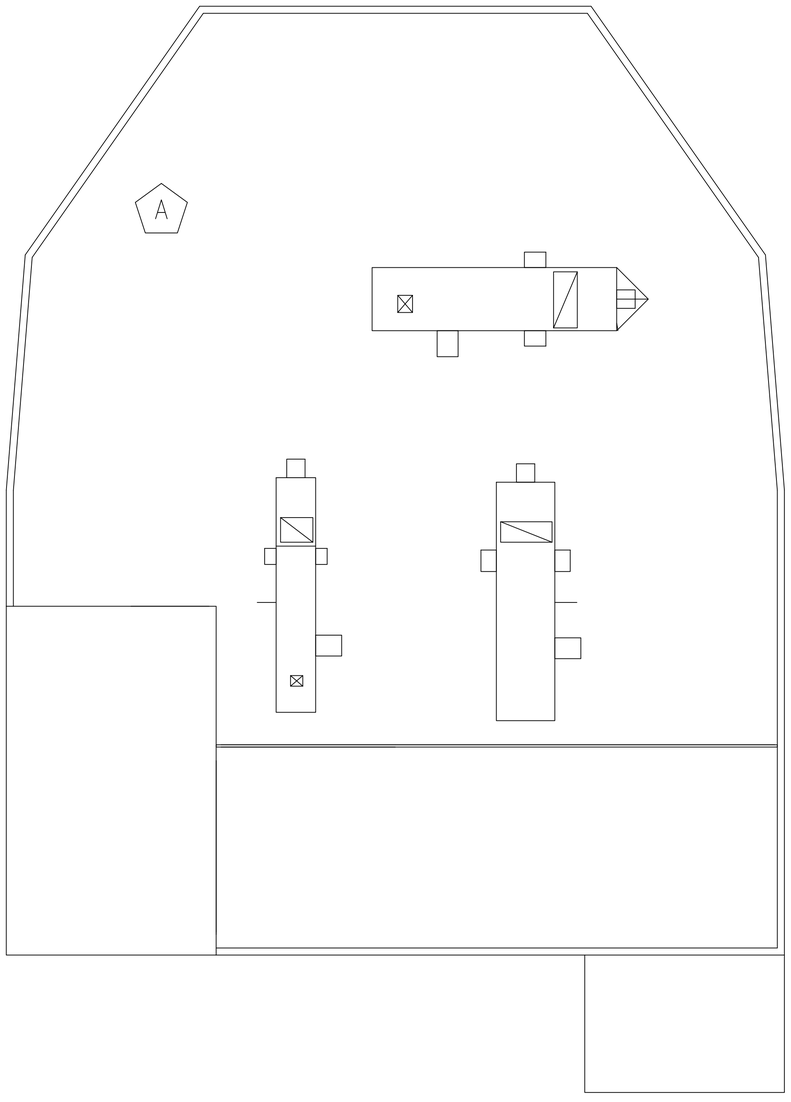
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703907

SHEET 454 OF 506

E1.0 343-15-341

DRAWFORM REVISION: 10 OCTOBER 2014



B343 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 RF ACCESS POINT ON ROOF USING ANY MOUNTING SYSTEM HE/SHE DEEMS MOST PRACTICABLE.
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT TO B86A ACCESS POINT.
3. ROOF MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS.
4. CAT5 CABLE SHALL BE ROUTED ALONG EXISTING CONDUITS AND USE EXISTING ROOF PENETRATIONS.

GRAPHIC SCALE

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

CHECK GRAPHIC SCALE BEFORE USING

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

NAVFAC

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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 – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22

B343 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703908
SHEET 455 OF 506
ET1.0 343-15-342

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
- 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

- RTU 1 — ROOF TOP 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 375 HVAC LEGEND
MD2.0	BUILDING 375 HVAC ROOF DEMOLITION PLAN
M2.0	BUILDING 375 HVAC FIRST FLOOR PART PLAN & ROOF PLAN
M3.0	BUILDING 375 HVAC CONTROLS
M3.1	BUILDING 375 HVAC CONTROLS
M3.2	BUILDING 375 HVAC CONTROLS
M4.0	BUILDING 375 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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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

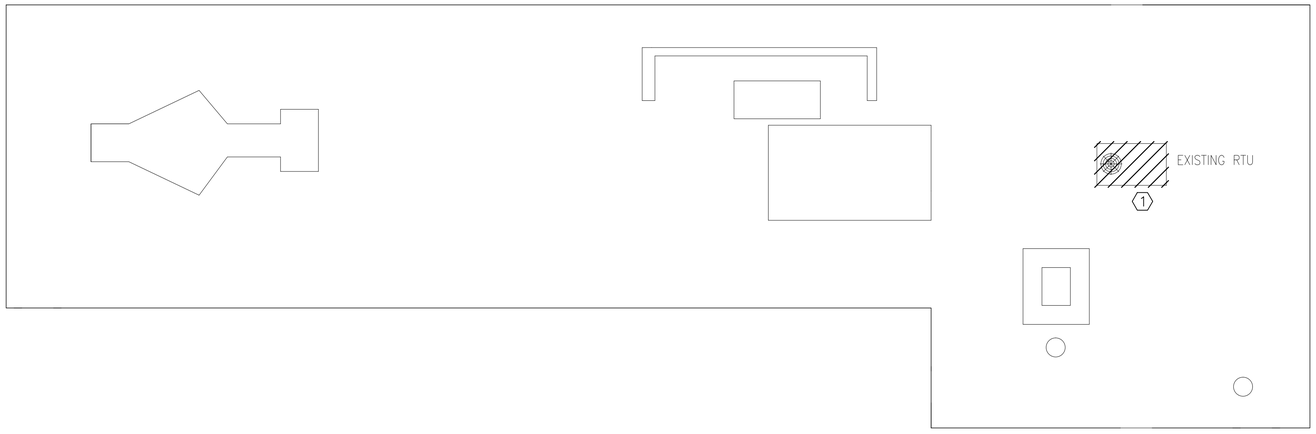
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 375 HVAC LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703909
SHEET 456 OF 506
M1.0 375-15-34

DRAWFORM REVISION: 10 OCTOBER 2014



PLAN NORTH

BUILDING 375 HVAC ROOF 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 RTU AND ASSOCIATED THERMOSTAT. EXISTING DUCTWORK AND CONTROL WIRING TO REMAIN AND BE DISCONNECTED FROM RTU. LICENSED PLUMBING CONTRACTOR TO DISCONNECT GAS AND PREPARE FOR NEW EQUIPMENT.

GRAPHIC SCALE

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

CHECK GRAPHIC SCALE BEFORE USING

STM	DESCRIPTION	DATE	APPR
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 CONSTRUCTOR SHALL REVIEW AND APPROVE SHOP DRAWINGS, SAMPLES, AND SIMILAR SUBMITTALS PRIOR TO SUBMISSION TO THE GOVERNMENT. THE CONSTRUCTOR SHALL DETERMINE AND VERIFY ALL QUANTITIES, DIMENSIONS, FIELD CONSTRUCTION CRITERIA, MATERIALS, CATALOG NUMBERS, AND SIMILAR DATA. THE CONSTRUCTOR SHALL COORDINATE EACH SUBMITTAL WITH THE REQUIREMENTS OF THE WORK AND THE CONTRACT DOCUMENTS. THE CONSTRUCTOR SHALL NOTIFY THE GOVERNMENT IN WRITING OF ANY DEVIATION IN A SUBMITTAL FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONSTRUCTOR SHALL PROVIDE A WRITTEN STATEMENT THAT THE CONSTRUCTOR HAS PERFORMED THE ABOVE REQUIRED ACTIONS WITH EACH SUBMITTAL. THE GOVERNMENT WILL REVIEW AND APPROVE SUBMITTALS WITH REASONABLE PROMPTNESS FOR CONFORMANCE WITH DESIGN CONCEPT AND COMPLIANCE WITH CONTRACT DOCUMENTS. THE GOVERNMENT'S APPROVAL SHALL NOT RELIEVE THE CONSTRUCTOR OF RESPONSIBILITY FOR ANY DEVIATION FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS UNLESS THE CONSTRUCTOR HAS IN WRITING CALLED THE GOVERNMENT'S ATTENTION TO THE DEVIATION AT THE TIME OF SUBMISSION AND THE GOVERNMENT HAS GIVEN WRITTEN APPROVAL TO THE DEVIATION. THE GOVERNMENT SHALL NOT BE RESPONSIBLE FOR ANY OMISSION OR ERROR IN THE APPROVAL OF A SUBMITTAL UNLESS THE CONSTRUCTOR HAS IN WRITING CALLED THE GOVERNMENT'S ATTENTION TO THE OMISSION OR ERROR AT THE TIME OF SUBMISSION AND THE GOVERNMENT HAS GIVEN WRITTEN APPROVAL TO THE OMISSION OR ERROR. THE CONSTRUCTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR ERRORS OR OMISSIONS IN SHOP DRAWINGS BY THE GOVERNMENT'S APPROVAL OF SHOP DRAWINGS.

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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

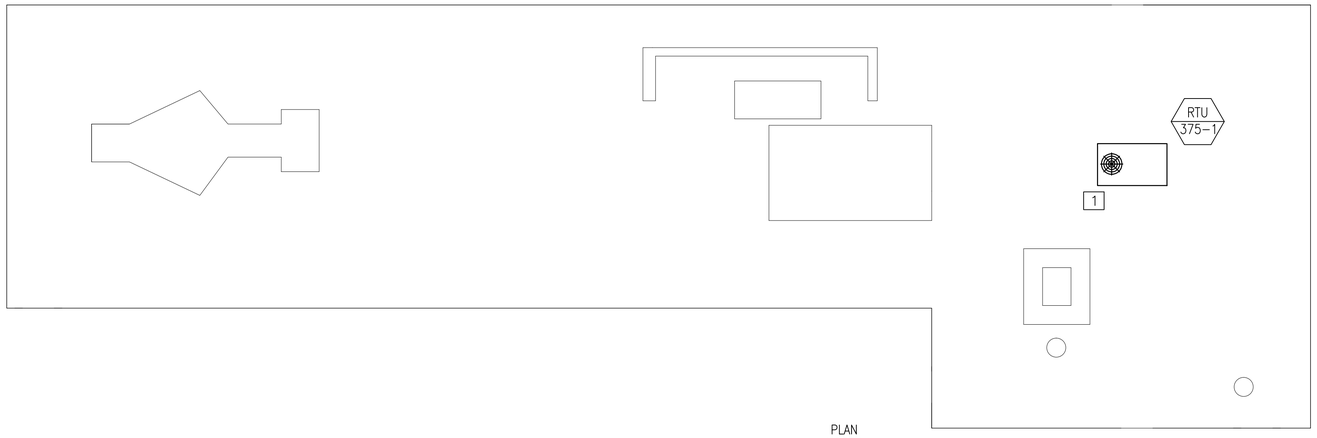
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 375 HVAC ROOF DEMOLITION PLAN

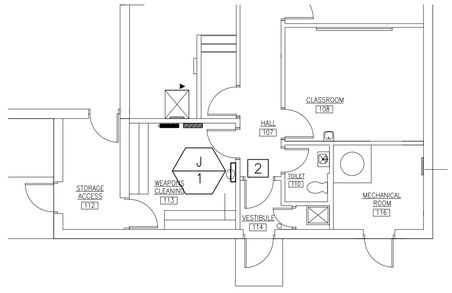
EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-11-D-0502
NAVFAC DRAWING NO. 12703910
SHEET 457 OF 506
MD2.0 | 375-15-35

DRAWFORM REVISION: 10 OCTOBER 2014



PLAN NORTH

BUILDING 375 HVAC ROOF PLAN
1/8"=1'-0"



PLAN NORTH

BUILDING 375 FIRST FLOOR PART PLAN
1/8"=1'-0"

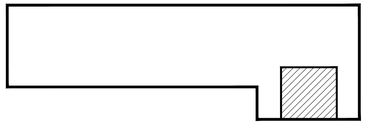
GENERAL SHEET NOTES

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

NEW WORK KEYNOTES

1. FURNISH AND INSTALL NEW RTU. EXISTING DUCTWORK AND CONTROL WIRING TO BE RECONNECTED. PROVIDE WITH NEW DUCTWORK WHERE NECESSARY TO CONNECT TO NEW EQUIPMENT. LICENSED PLUMBING CONTRACTOR TO RECONNECT EXISTING GAS. PROVIDE WITH NEW DDC COMPATABLE THERMOSTAT AND CONNECT TO EXISTING CONTROL WIRING, FIELD COORDINATE EXACT LOCATION WITH NAVFAC.
2. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF NEW DDC JACE BOX WITH NAVFAC.

KEY PLAN



GRAPHIC SCALE

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

STM	DESCRIPTION	DATE	APPR
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

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 375 HVAC FIRST FLOOR PART PLAN & ROOF PLAN

PROJECT NO.: 1350913

CONSTR. CONTR. NO.: N40085-11-D-0502

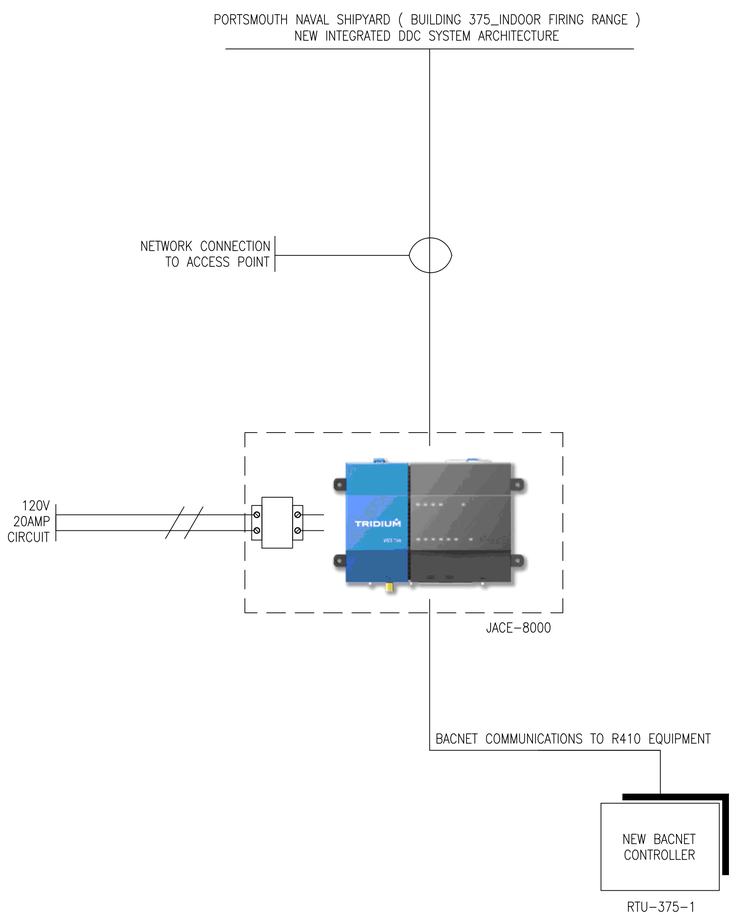
NAVFAC DRAWING NO.: 12703911

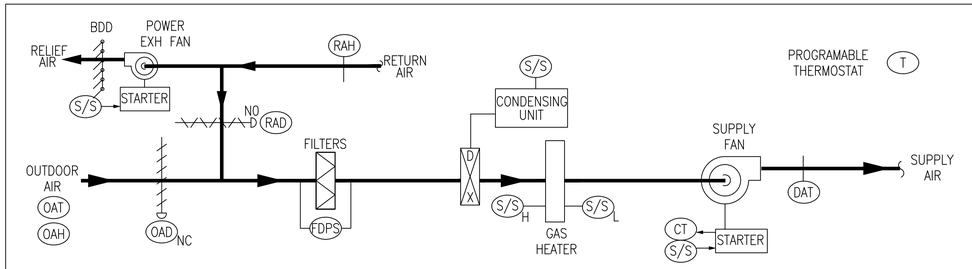
SHEET 458 OF 506

M2.0 | 375-15-36

DRAWFORM REVISION: 10 OCTOBER 2014

PORTSMOUTH NAVAL SHIPYARD (BUILDING 375_INDOOR FIRING RANGE)
NEW INTEGRATED DDC SYSTEM ARCHITECTURE





GENERAL

- ROOFTOP UNIT IS STARTED AND STOPPED VIA DDC THERMOSTATS.
- COORDINATE OCCUPIED/UNOCCUPIED SCHEDULES WITH OWNER.
- ONCE THE UNIT IS STARTED, THE ROOFTOP UNIT'S PACKAGED CONTROLS CONTROL RTU'S FUNCTIONS.
- ALL ACTUATORS ARE ELECTRONIC

UNOCCUPIED

- SF IS OFF
- OAD IS CLOSED
- EAD IS CLOSED
- RAD IS OPEN
- GAS HEATER IS OFF
- COOLING SYSTEM IS OFF

UNOCCUPIED HEATING

- SF IS ON
- OAD IS CLOSED
- EAD IS CLOSED
- RAD IS OPEN
- COOLING SYSTEM IS OFF
- GAS HEATER IS ON
- NIGHT SET POINT IS 60°F(ADJ)

UNOCCUPIED COOLING

- SF IS ON
- OAD IS CLOSED
- EAD IS CLOSED
- RAD IS OPEN
- COOLING SYSTEM IS ENERGIZED
- GAS HEATER IS OFF
- NIGHT SETPOINT IS 80°F(ADJ)

OCCUPIED MODE

- SF IS ON
- OAD IS OPEN TO MINIMUM POSITION
- EAD IS OPEN TO MINIMUM POSITION
- RAD IS OPEN TO MINIMUM POSITION
- GAS HEATER IS OFF
- COOLING SYSTEM IS DE-ENERGIZED

OCCUPIED HEATING

- SF IS ON
- OAD IS OPEN TO MINIMUM POSITION
- EAD IS OPEN TO MINIMUM POSITION
- RAD IS OPEN TO MINIMUM POSITION
- GAS HEATER IS ON
- COOLING SYSTEM IS DE-ENERGIZED
- ROOM TEMPERATURE SET POINT IS 70°F (ADJ)
- DAT MIN 95°F & MAX 110°F

OCCUPIED COOLING

- SF IS ON
- OAD IS OPEN TO MINIMUM POSITION
- EAD IS OPEN TO MINIMUM POSITION
- RAD IS OPEN TO MINIMUM POSITION
- GAS HEATER IS OFF
- COOLING SYSTEM IS ENERGIZED
- ROOM TEMPERATURE SET POINT IS 75°F(ADJ)
- DAT AT 55°F

ECONOMIZER MODE

- IF OUTSIDE AIR ENTHALPY IS BELOW ROOM ENTHALPY THE OAD, AND RAD MODULATE UP TO 100% OA
- CONDENSING UNITS AND COMPRESSORS ARE STAGED ON IF ADDITIONAL COOLING IS REQUIRED
- DAT OVERRIDES TO LIMIT SUPPLY AIR TEMP TO 50°F MINIMUM
- IF OA ENTHALPY RISES ABOVE ROOM ENTHALPY, UNIT RETURNS TO OCCUPIED COOLING MODE

ALARMS AND SAFETIES

- SAFETIES HAVE MANUAL RESET BUTTON
- SAFETIES SHUT DOWN RTU VIA HARDWARE BEFORE H-O-A
- WHEN SMOKE DETECTOR IS ACTIVATED RTU IS SHUTDOWN
- IF FAN FAILS, THE UNIT CONTROLLER SHALL SHOW FAILURE STATUS.
- IF FILTER PRESSURE DROP EXCEEDS SETPOINT FOR 10 MINUTES, THE UNIT CONTROLLER SHALL GIVE A DETAILED SIGNAL.

ROOFTOP UNIT CONTROL SEQUENCES

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

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NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
FY 16 ENERGY PROJECT
TASK 1-B-R-22
BUILDING 375 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703912
SHEET 459 OF 506

M3.0 | 375-15-37

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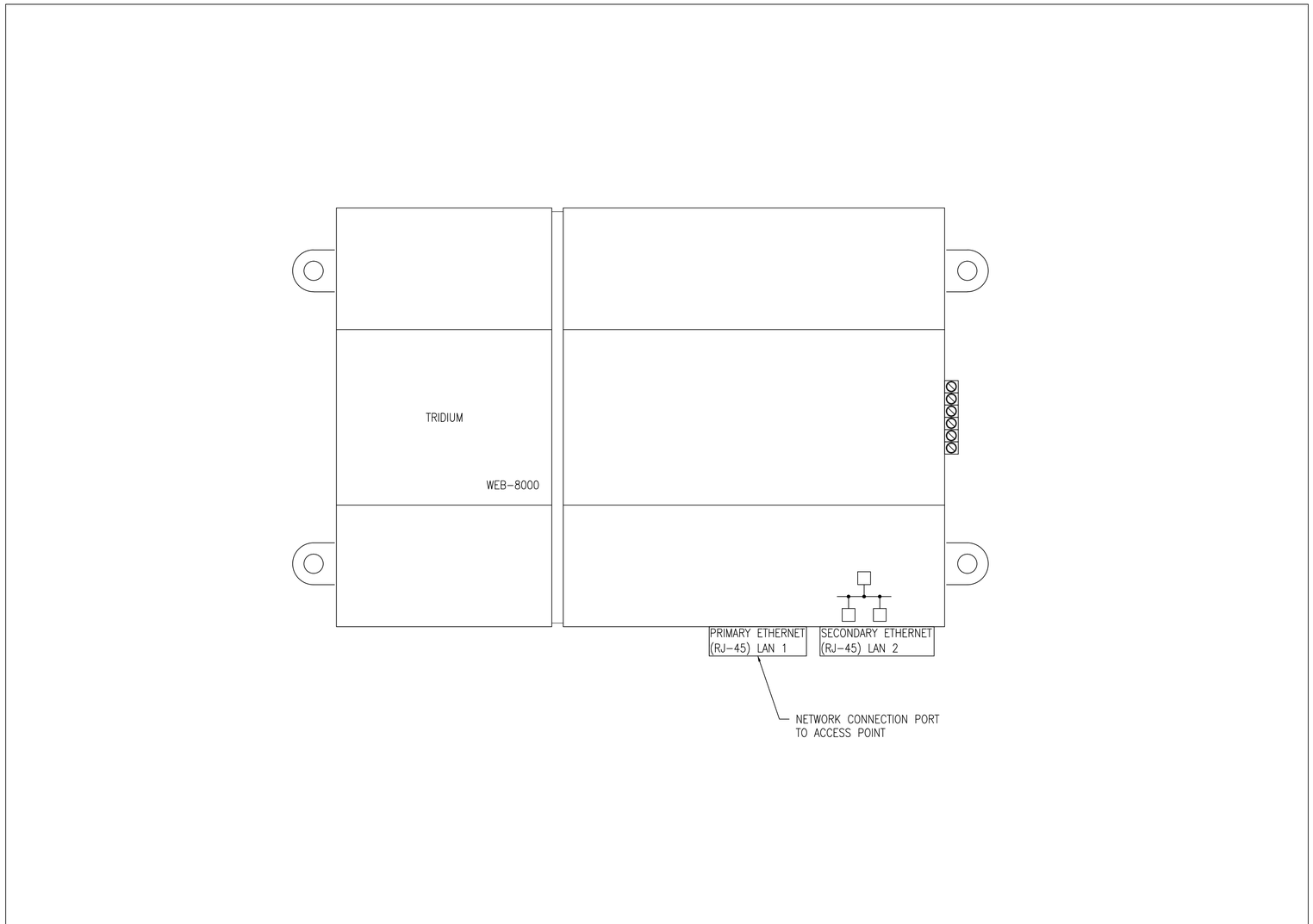

ETHERNET CONNECTION TO RF ACCESS POINT

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

BUILDING 375 HVAC CONTROLS

EPROJECT NO.: 1350913

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

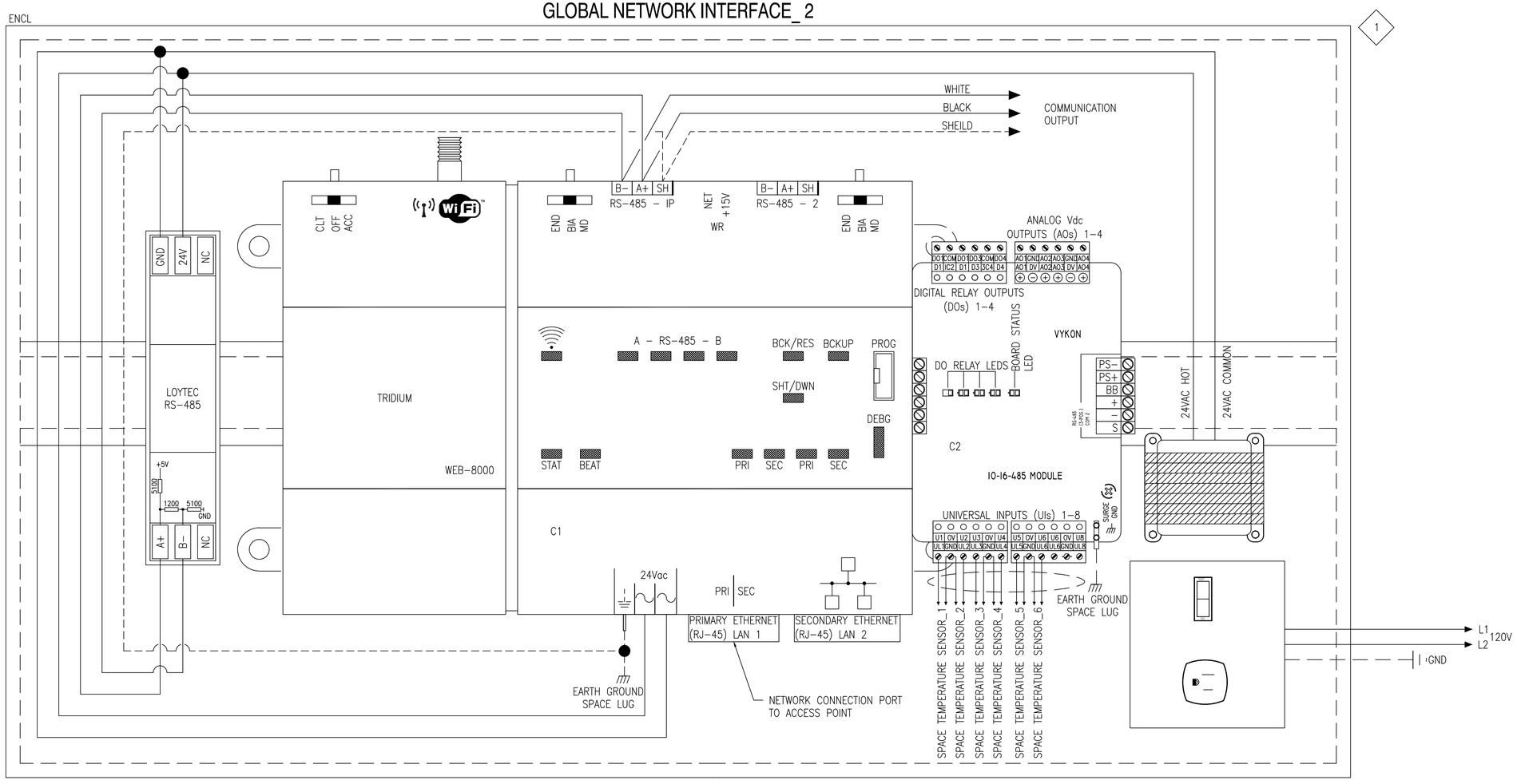
NAVFAC DRAWING NO.
12703913

SHEET 460 OF 506

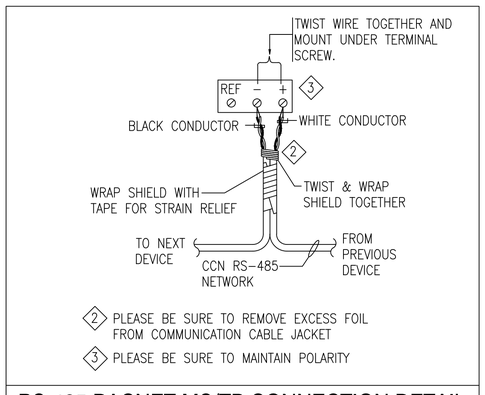
M3.1 | 375-15-38

DRAWFORM REVISION: 10 OCTOBER 2014

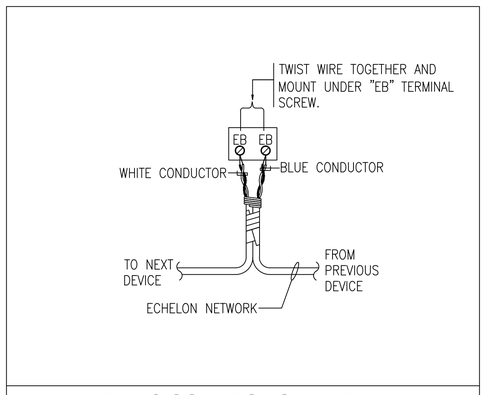
GLOBAL NETWORK INTERFACE_ 2



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

STM	DESCRIPTION	DATE	APPR
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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
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1–B–R–22
BUILDING 375 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703914
SHEET 461 OF 506
M3.2 375-15-39
DRAWFORM REVISION: 10 OCTOBER 2014

PACKAGED DX ROOFTOP AIR HANDLING UNIT SCHEDULE

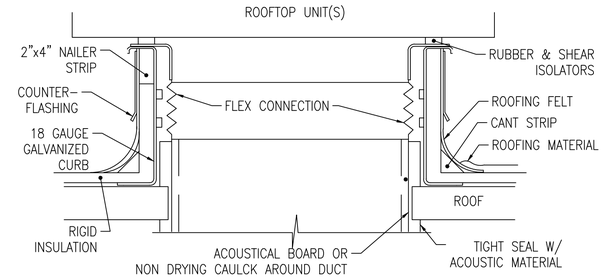
TAG NO.	LOCATION	MIN. O.A. CONDITIONS			BUILDING R.A. CONDITIONS			SUPPLY FAN						UNIT COOLING COIL		AIR-COOLED CONDENSING UNIT				INDIRECT GAS-FIRED HEATER				ELECTRICAL DATA					FILTER DATA	WEIGHT (LBS)	DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
								CFM	STATIC PRESS. (IN.WG)	WHEEL		MOTOR		CAPACITY (MBH)		COMPRESSOR(S)		CONDENSER FAN		CAPACITY (MBH)		AIR DATA											
		CFM	DB (°F)	WB (°F)	CFM	DB (°F)	WB (°F)	TOTAL	EXTERNAL	DIA (IN)	TYPE	RPM	HP	TOTAL	SENS.	TYPE	NO.	NO.	HP	INPUT	OUTPUT	EAT (F)	LAT(F)	HZ	V	PH	MCA	MOP				
RTU-375-1	ROOF	SEE NOTE 1.	87	71	SEE NOTE 1.	75	63	1,600	1.0	11	CENT.	VAR.	1	48	35	SCROLL	1	1	0.4	120	96	45	100.7	60	460	3	11.3	15	TA-2"	711	TRANE YHC048F4	SEE NOTES

NOTES: 1. CONTRACTOR TO VERIFY EXISTING OUTDOOR AIR INTAKE, RETURN AIR FLOW, AND PRESSURE REQUIREMENTS BEFORE DEMO WITH A TAB REPORT AND BALANCE AS REQUIRED. 2. PROVIDE UNIT CONTROL PANEL WITH MAIN DISCONNECT SWITCH. 3. PROVIDE ADJUSTABLE BELT DRIVE BLOWER. 4. PROVIDE OUTSIDE AIR INTAKE HOOD. 5. PROVIDE WITH BACNET INTERFACE. 6. PROVIDE WITH POWER EXHAUST. 7. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 8. PROVIDE WITH ROOF CURB ADAPTOR. 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.



NOTE:
1. LINE ROOF UNDER CURB AND SIDES OF CURB W/ 4" THICK ACOUSTICAL BOARD.

ROOFTOP UNIT MOUNTING W/ CURB

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
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0	35% SUBMISSION	02/23/2015	DM

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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
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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

BUILDING 375 HVAC SCHEDULES AND DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703915

SHEET 462 OF 506

M4.0 | 375-15-40

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".

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 "60AS" - INDICATES 60A SWITCH
FS	FIBER OPTIC SWITCH. PROVIDED BY OTHERS. 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 OTHERS.
JCB	DDC CONTROL JACE BOX. PROVIDED BY OTHERS. 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

WIRING DEVICES

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

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

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

RECEPTACLE LABEL REQUIREMENTS

SCHEDULE OF DRAWINGS

DWG#	DESCRIPTION
E1.0	BUILDING 375 ELECTRICAL LEGEND
ED2.0	BUILDING 375 ELECTRICAL FIRST FLOOR AND ROOF DEMOLITION PLANS
E2.0	BUILDING 375 ELECTRICAL FIRST FLOOR AND ROOF PLAN
E3.0	BUILDING 375 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

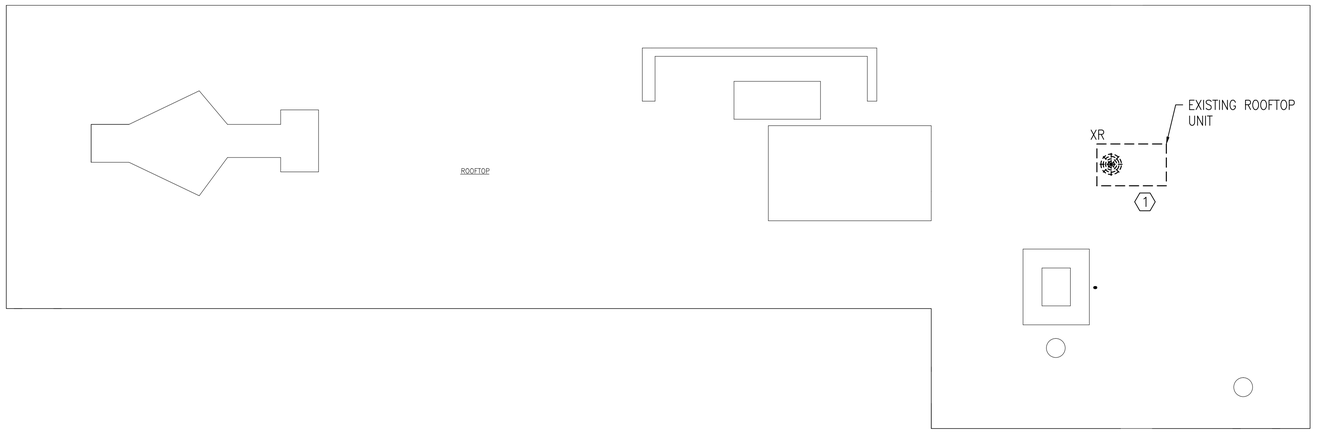
DES TM | DRW TM | CHK JO
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY 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

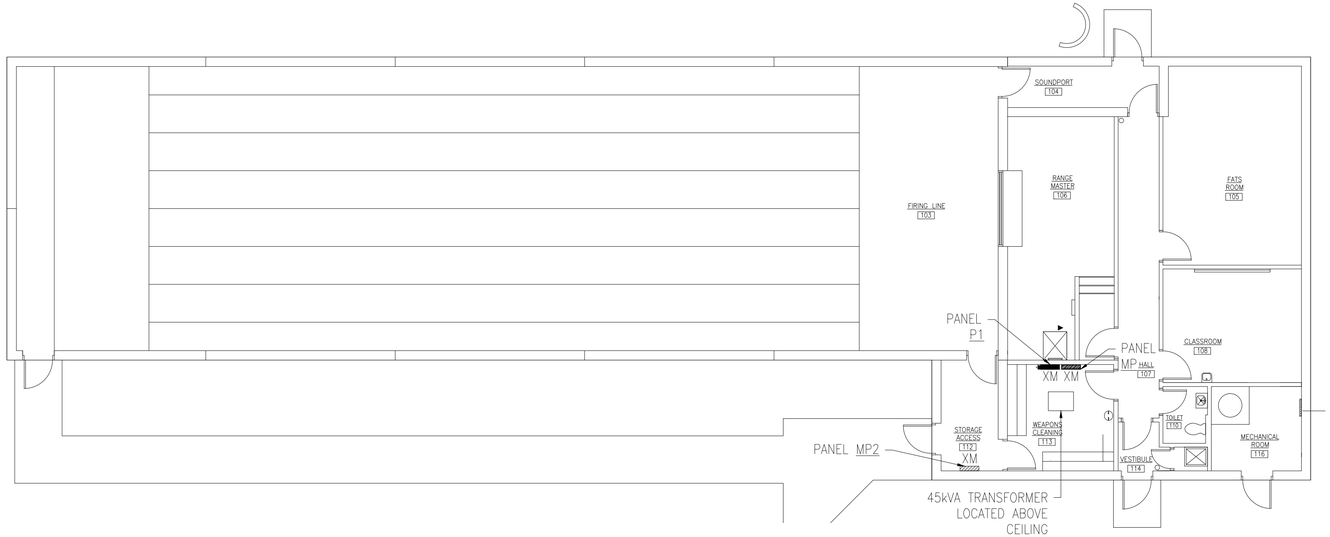
BUILDING 375 ELECTRICAL LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703916
SHEET 463 OF 506
E1.0 375-15-41



BUILDING 375 ELECTRICAL ROOF DEMOLITION PLAN
1/8" = 1'-0"

PLAN NORTH



BUILDING 375 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 RTU. DEMOLISH ASSOCIATED BRANCH CIRCUITRY AND DISCONNECT IN THEIR ENTIRETY. MAINTAIN ASSOCIATED CIRCUIT BREAKER AND LABEL AS "SPARE" FOR FUTURE USE.

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
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0	35% SUBMISSION	02/23/2015	DM

NAVFAC

STATE OF NEW HAMPSHIRE
CHARLES E. MACE
No. 13078
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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	

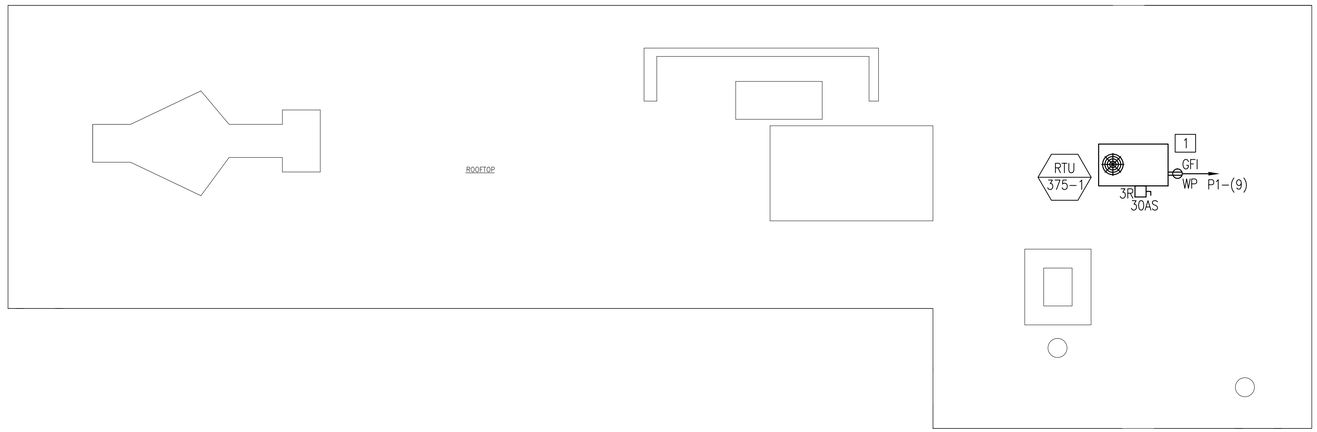
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

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

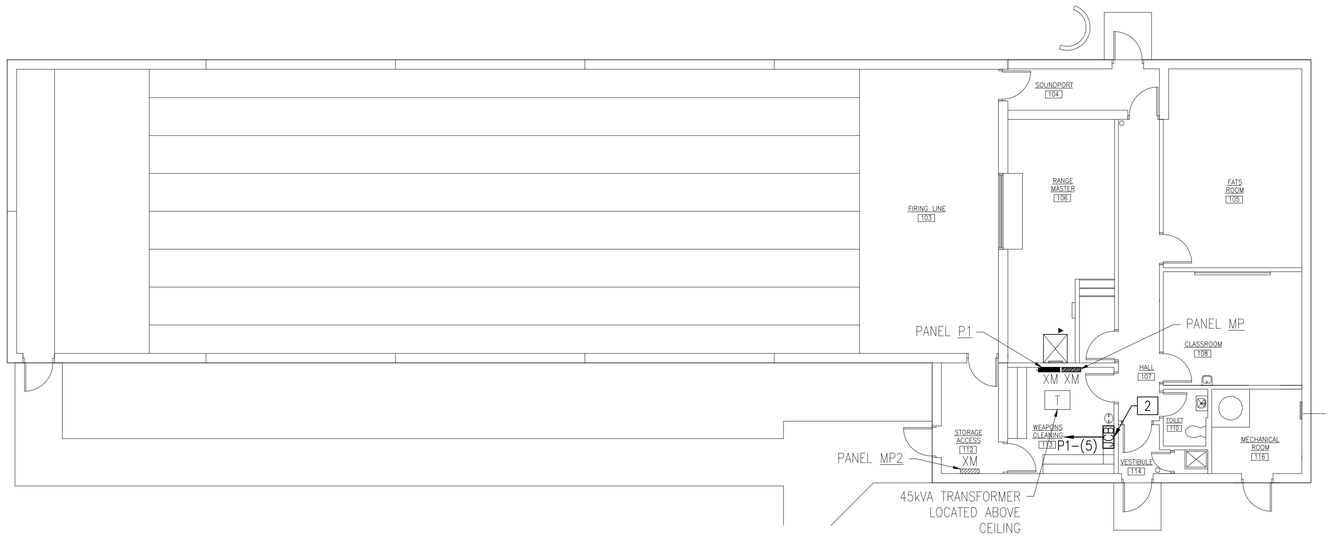
ELECTRICAL FIRST FLOOR AND ROOF DEMOLTION PLANS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703917
SHEET 464 OF 506
ED2.0 375-15-42

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 375 ELECTRICAL ROOF PLAN
1/8" = 1'-0"
PLAN NORTH



BUILDING 375 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.

NEW WORK KEYNOTES

1. PROVIDE NEW CIRCUIT BREAKER IN PANEL "MP" FOR NEW ROOFTOP UNIT. PROVIDE NEW DISCONNECT AS SHOWN. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
2. NEW DDC JACE BOXPROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.

GRAPHIC SCALE

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

SYM	DESCRIPTION	DATE	APPR
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STATE OF NEW HAMPSHIRE
CHARLES E. MACE
No. 13078
LICENSED
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603-319-8244
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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
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NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

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

BUILDING 375 ELECTRICAL FIRST FLOOR AND ROOF PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703918
SHEET 465 OF 506
E2.0 375-15-43
DRAWFORM REVISION: 10 OCTOBER 2014

PANELBOARD SCHEDULE

PANEL: MP | VOLTS: 277/ 480 | NEW/EXISTING.: EXISTING
MAIN: 200A MCB | BUS AMPS: 200A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC: BLDG 375 WEAPONS CLEANING

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE		NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1										2
3	100/3	RANGE EXHAUST FAN & PANEL MP2	0	–		–	.2	PANEL P1 VIA 45kVA TRANSFORMER ABOVE CEILING	70/3	4
5										6
7										8
9	40/3	MAKEUP AIR UNIT	0	–		–	0	SPARE	30/3	10
11										12
13										14
15	20/3	PH1	0	–		–	0	BLDG 341 (PUMP HOUSE)	60/3	16
17										18
19										20
21	15/3	RTU-375-1	9.00	1		–		SPACE		22
23										24
25										26
27		SPACE		–		–		SPACE		28
29										30
			9.00				0.20	TOTAL CONNECTED kVA:	9.20	
								TOTAL CONNECTED AMPERES:	11.08	

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: P1 | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING
MAIN: 150A MCB | BUS AMPS: 225A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC: BLDG 375 WEAPONS CLEANING

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE		NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	3yd TARGET FLOODS	0	–		–	0	TEMP. CONTRACTOR POWER	100/2	22
3	20/1	25yd TARGET FLOODS	0	–						23
5	20/1	DDC JACE BOX	.02	1		–	0	REC. TOILET RM 110	20/1	24
7	20/1	7yd TARGET FLOODS	0	–		–	0	REC. RM 104,107,114 & EXT.	20/1	25
9	20/1	RTU-375-1 RECEPTACLE	.18	1		–	0	REC. PHONES	20/1	26
11	20/1	SPARE	0	–		–	0	REC. RM 113	20/1	27
13	20/1	15yd TARGET FLOODS	0	–		–	0	LTS FIRING LINE, UPRANGE	20/1	28
15	20/1	SPARE	0	–		–	0	REC. RM 106	20/1	29
17	20/1	SPARE	0	–		–	0	REC. RM 108	20/1	30
19	20/1	20yd TARGET FLOODS	0	–		–	0	REC. RM 105	20/1	31
21	20/1	LTS RM 106,112,113, & EF-2	0	–		–	0	FIRE ALARM PANEL	20/1	32
23	20/1	LTS RM 104,107,114 & HALL	0	–		–	0	TARGET MOTORS, 2 LFT LANES	20/1	33
25	20/1	LTS RM 105 & 108	0	–		–	0	TARGET MTRS 2 CNTR LANES	20/1	34
27	20/1	LTS RM 110 & 116	0	–		–	0	TARGET MTRS 2 RT LANES	20/1	35
29						–	0	RANGE VENT CNTRL PANEL	20/1	36
31	30/3	TRAP RECYCLING MACHINE	0	–		–	0	LTS DOWN RNGE BEHIND TRAP	20/1	37
33						–	0	EF-4 MECH. RM REC. & EF-1	20/1	38
35	20/1	BLDG EXTERIOR LTS	0	–		–	0	REC. FIRING LINE	20/1	39
37	20/1	WATER COOLER	0	–		–	0	MASTER STATION	20/1	40
39	20/1	SPARE	0	–		–	0	ELEC. WATER HEATER	30/2	41
41	20/1	SIMPLEX ISTAR	0	OFF						42
			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.

MECHANICAL EQUIPMENT SCHEDULE

EQUIP TAG	DESCRIPTION	LOAD				PANEL SOURCE		BRANCH CIRCUIT	CONNECTION				NOTES
		HP	KVA	VOLT	PH	PANEL	C/B		FLEX	JB	REC	DISC	
RTU 375-1	ROOFTOP UNIT	–	9.00	460	3	MP-(19,21,23)	15A/3P	(3)#12 & (1)#12G, 3/4"C	X			X	NOTE 6,7

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 TRADE CONTRACTOR.

STM	DESCRIPTION	DATE	APPR
4	100% SUBMISSION	08/07/2015	DM
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0	35% SUBMISSION	02/23/2015	DM

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

THE LEAD DESIGNER FOR THIS PROJECT IS EMPLOYED BY CSI ENGINEERING. THE DESIGNER IS RESPONSIBLE FOR THE PREPARATION OF THE CONTRACT DOCUMENTS, CONTRACT DRAWINGS, SPECIFICATIONS, AND ARCHITECTURAL CERTIFICATIONS AUTHORIZED, SIGNED AND SEALED BY THE LICENSED PROFESSIONAL ENGINEER IDENTIFIED BELOW. CONTRACT DOCUMENTS PREPARED BY THIS DESIGNER ARE IN COMPLIANCE WITH THE APPLICABLE CODES AND STANDARDS ADOPTED BY THE JURISDICTION IN WHICH THE PROJECT IS LOCATED.

PLUMBING
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ELECTRICAL

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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

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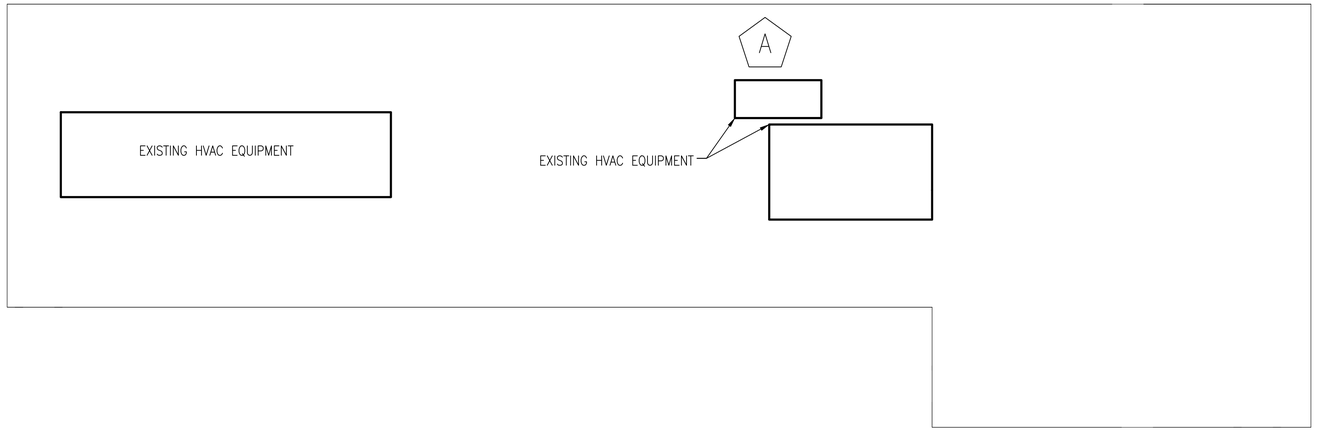
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22
BUILDING 375 ELECTRICAL SCHEDULES

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703919
SHEET 466 OF 506
E3.0 | 375-15-44

DRAWFORM REVISION: 10 OCTOBER 2014



B375 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 TO INSTALL 12'-14' PIPE ON EXISTING HVAC HANDRAIL STRUCTURE WITH MINIMUM OF 2 CONNECTION POINTS; MOUNT RF ACCESS POINT TO NEW PIPE TO ENSURE CLEAR LINE-OF-SIGHT TO B170.
2. MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS.
3. CAT 5 SHALL BE ROUTED BETWEEN JACE AND NEW RF ACCESS POINT; ROUTE ALONG EXISTING PATHS IN DROP CEILING TO EXISTING ROOF PENETRATION.

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

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

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

B375 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

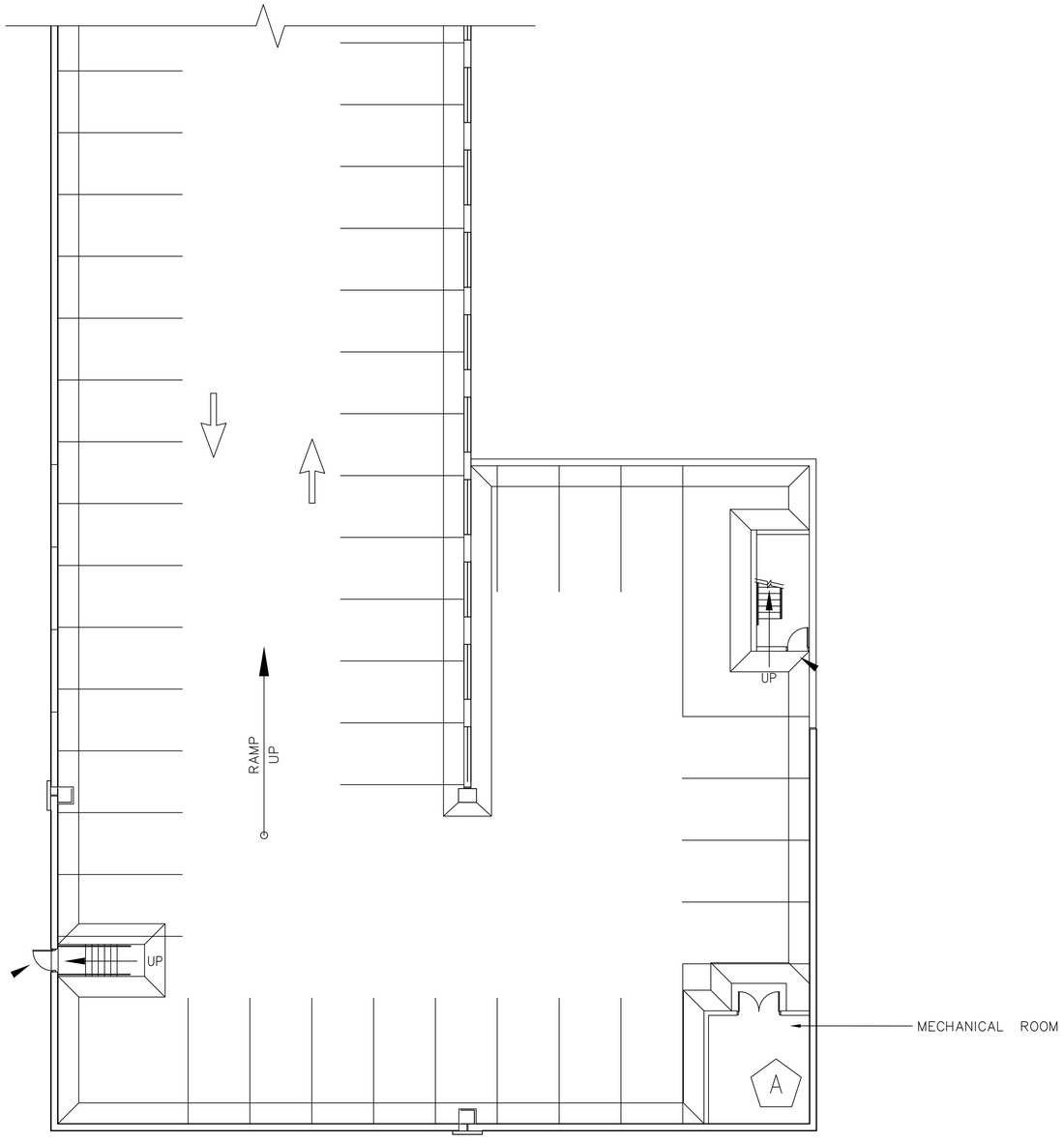
CONSTR. CONTR. NO. N40085-14-D-0022

NAVFAC DRAWING NO. 12703920

SHEET 467 OF 506

ET1.0 375-15-44

DRAWFORM REVISION: 10 OCTOBER 2014



B376 ANTENNA LOCATION - SIXTH FLOOR PLAN

3/32" = 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 TO PIPE MOUNT WITH STAND OFF RF ACCESS POINT TO EXISTING MAST (WATER SCADA ALSO LOCATED ON THIS EXISTING MAST) LOCATED ON SOUTHWEST CORNER ON TOP FLOOR OF WEST WING.
2. CONTRACTOR TO ENSURE LINE-OF-FIGHT TO B86A ACCESS POINT CONTRACTOR SHALL INSTALL THREADED COUPLING TO EXTEND HEIGHT OF POLE MOUNT IF NECESSARY.
3. MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS.
4. CAT5 SHALL BE ROUTED BETWEEN JACE AND NEW RF ACCESS POINT; ROUTE ALONG INSIDE CORNER OF WEST SIDE BUILDING TRIM TO STAY CONCEALED.

GRAPHIC SCALE

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

CHECK GRAPHIC SCALE BEFORE USING

STM	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

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DES VSL | DRW SRR | CHK KLC

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

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FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
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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

B376 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO.
12703921

SHEET 468 OF 506

ET1.0 376-15-113

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

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 384 HVAC LEGEND
MD2.0	BUILDING 384 HVAC BASEMENT DEMOLITION PLAN
M2.0	BUILDING 384 HVAC BASEMENT PLAN
M3.0	BUILDING 384 HVAC CONTROLS
M3.1	BUILDING 384 HVAC CONTROLS
M3.2	BUILDING 384 HVAC CONTROLS
M4.0	BUILDING 384 HVAC SCHEDULES & 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

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

SEAL

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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

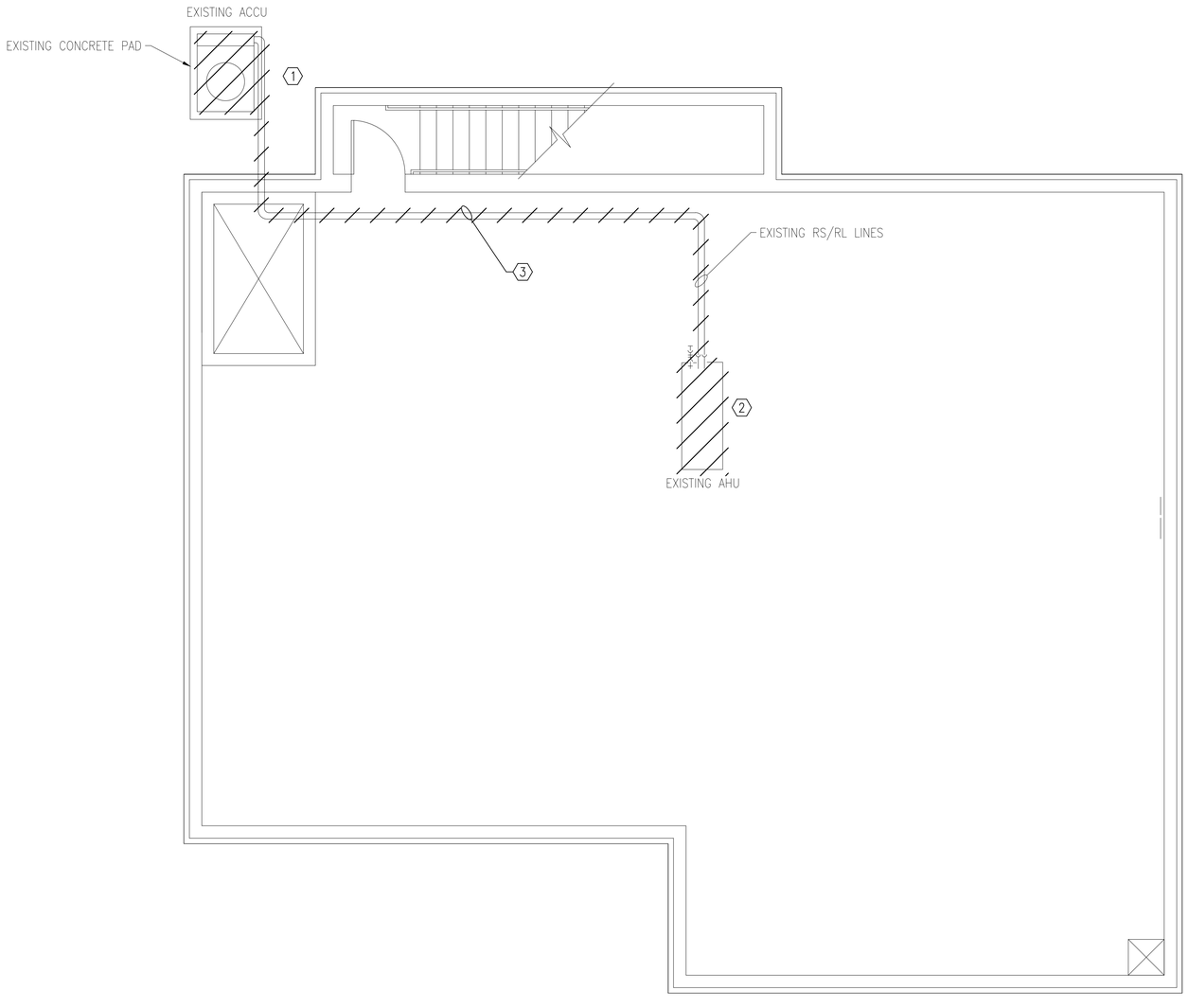
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 384 HVAC LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703922
SHEET 469 OF 506

M1.0 | 384-15-105

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 384 HVAC BASEMENT DEMOLITION PLAN
1/4"=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 AHU AND ASSOCIATED THERMOSTAT. EXISTING CONDENSATE LINES, CONTROL WIRING, AND DUCTWORK TO REMAIN AND BE DISCONNECTED.
3. EXISTING ACCESSIBLE RS/RL LINES TO BE REMOVED. ANY REMAINING RS/RL CONCEALED TO BE EVACUATED, CAPPED, AND ABANDONED IN PLACE.

GRAPHIC SCALE

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

CSI ENGINEERING
FIRE PROTECTION
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25 AVENTON AVE, STE 201
PORTSMOUTH, NH 03801
603-319-9244
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

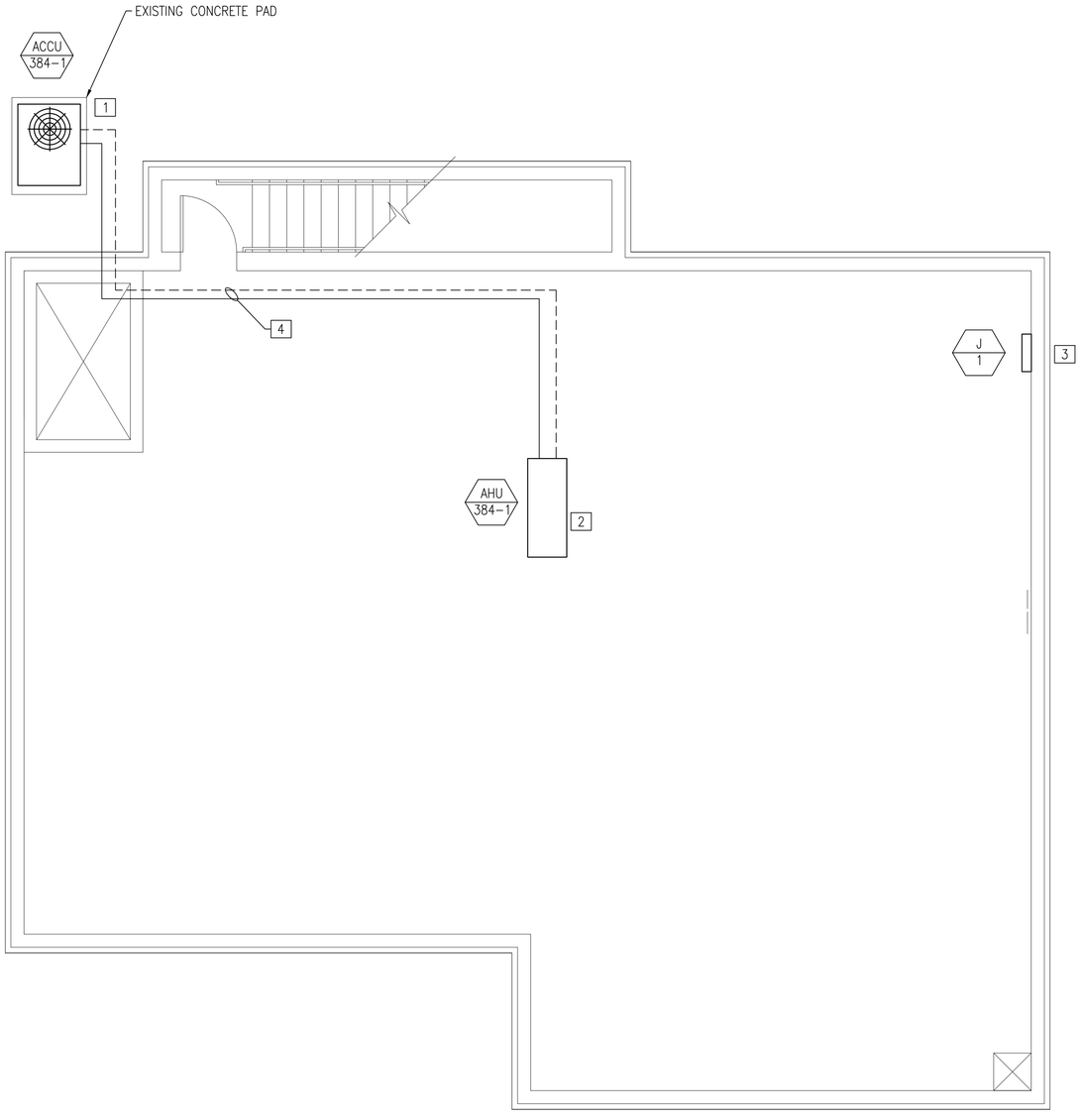
DES JC	DRW SV	CHK DM
PM/DM	PETER STOCKLESS	
BRANCH MANAGER	BRUCE LITALIEN	
FEAD/PM&E	AMIN BAHROUR PM&E	
FIRE PROTECTION	X	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
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 384 HVAC BASEMENT DEMOLITION PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703923
SHEET 470 OF 506
MD2.0 384-15-106
DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 384 HVAC BASEMENT PLAN
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 EXISTING CONCRETE PAD.
2. FURNISH AND INSTALL NEW AHU AND IT'S RS/RL LINES AND CONNECT TO ASSOCIATED ACCU. EXISTING CONDENSATE LINES, CONTROL WIRING, AND DUCTWORK TO BE RECONNECTED. PROVIDE WITH NEW DUCTWORK WHERE NECESSARY TO CONNECT TO NEW UNIT. 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

1/4" = 1' 4 2 0 4 8 12
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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STATE OF NEW HAMPSHIRE
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APPROVED
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ACTIVITY
SATISFACTORY TO DATE

DES	DRW	CHK
JC	SV	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

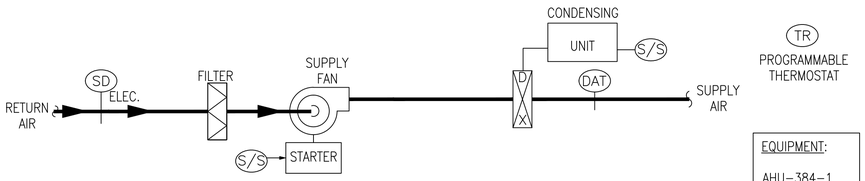
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 384 HVAC BASEMENT PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703924
SHEET 471 OF 506
M2.0 384-15-107

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

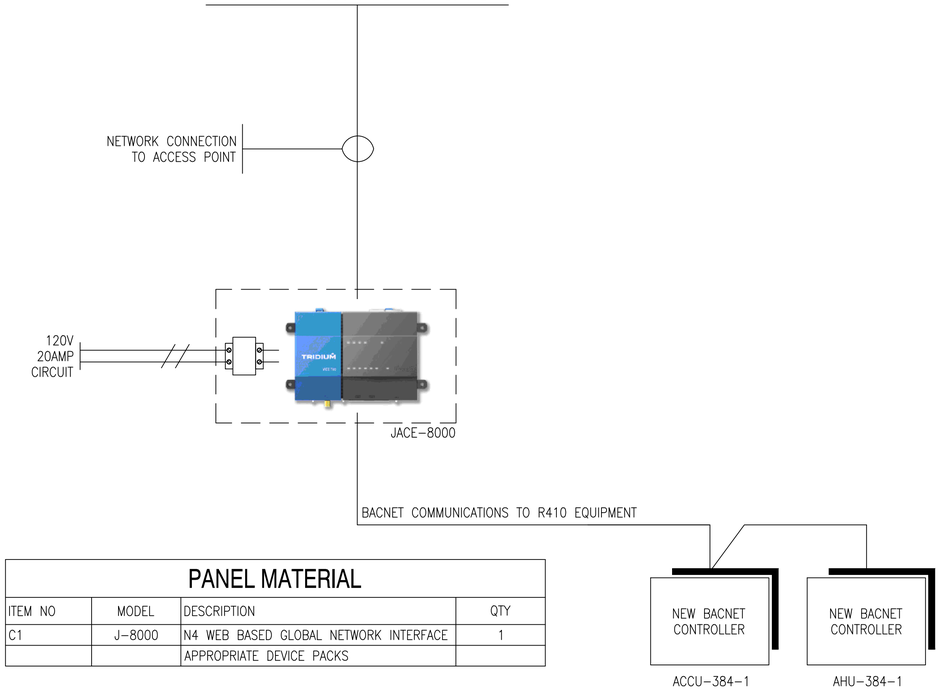
1. SF ENERGIZED
2. ACCU IS STAGED ON TO MAINTAIN THE SPACE TEMPERATURE SETPOINT OF 80°F(ADJ).
3. DISCHARGE AIR TEMPERATURE SENSOR DAT SHALL LIMIT SUPPLY AIR TO 53°F MINIMUM.

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 384_PASS & ID OFFICE)
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	

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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STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
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APPROVED
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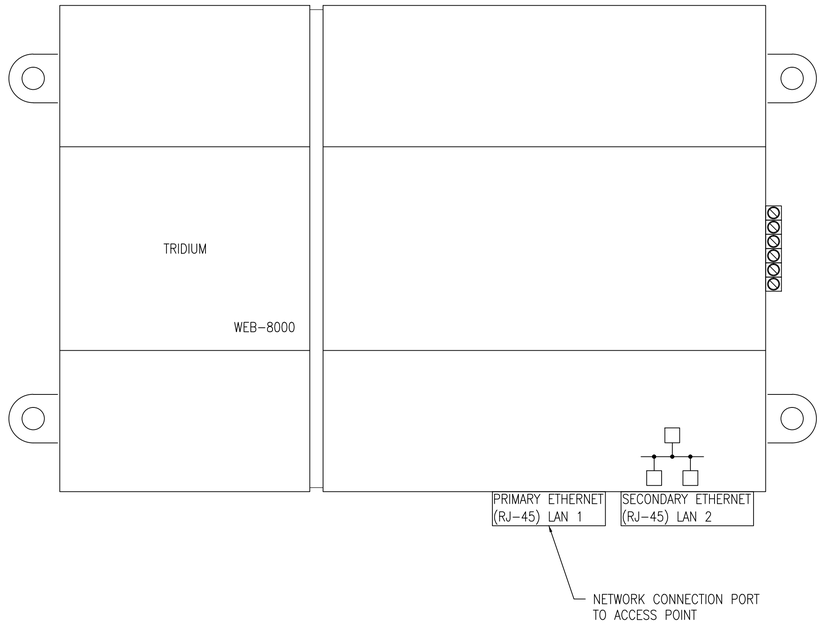
ACTIVITY
SATISFACTORY TO DATE
DES JC DRW SV CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
LEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

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 384 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703925
SHEET 472 OF 506
M3.0 384-15-108

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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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

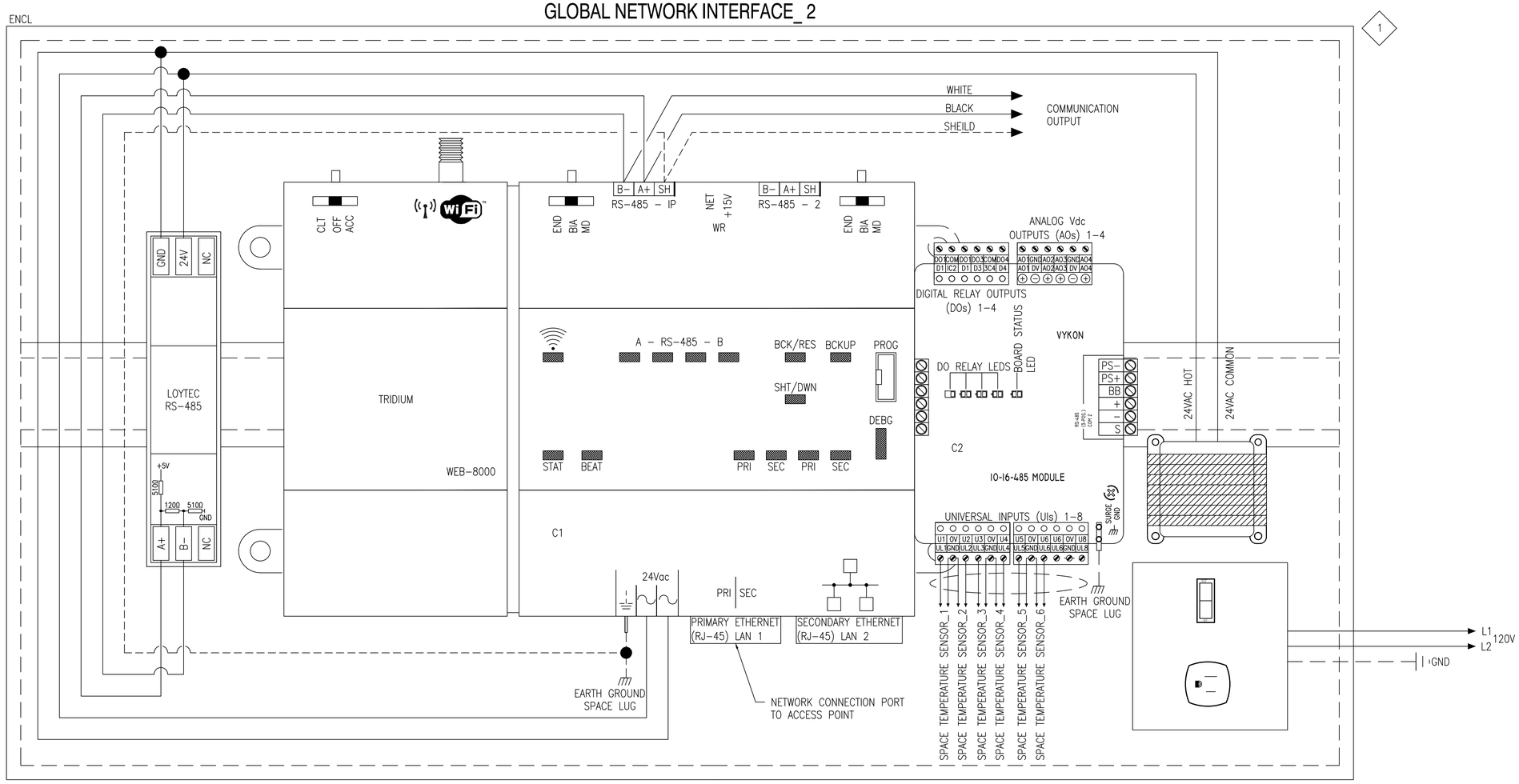
BUILDING 384 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703926
SHEET 473 OF 506

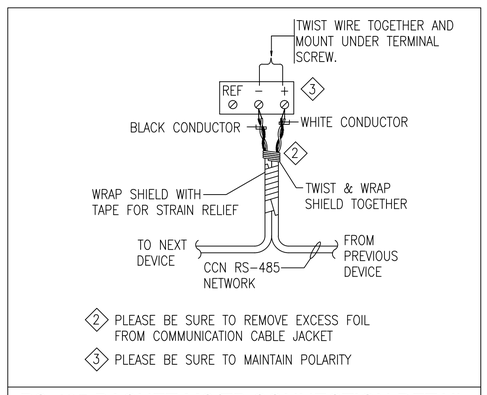
M3.1 | 384-15-109

DRAWFORM REVISION: 10 OCTOBER 2014

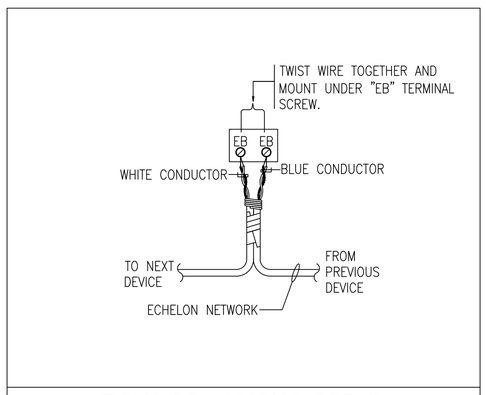
GLOBAL NETWORK INTERFACE_ 2



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

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
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CSI JOB NO. 2015-104

APPROVED
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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 – 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 384 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085–XX–C–XXXX
NAVFAC DRAWING NO.: 12703927
SHEET 474 OF 506
M3.2 384-15-110
DRAWFORM REVISION: 10 OCTOBER 2014

AIR HANDLING UNIT SCHEDULE

TAG	SERVICE	LOCATION	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	SENS.		DB	WB	DB	WB			
AHU-384-1	BLDG 384	BASEMENT	4000	1725	2	460	3	120.5	95.46	R-410A	80	67	59	57.9	TRANE TWE120E4	SEE NOTES	

NOTES: 1. PROVIDE WITH BACNET INTERFACE. 2. PROVIDE WITH SMOKE DETECTORS IN RA DUCTWORK. 3. PROVIDE WITH MOUNTING HARDWARE AS REQUIRED. 4. PROVIDE WITH BELT DRIVE MOTORS. 5. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.

AIR COOLED CONDENSING UNIT SCHEDULE

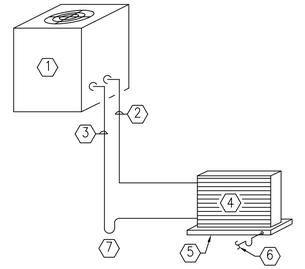
TAG	SERVES	DESIGN BASED ON MANUFACTURER	DESIGN BASED ON MODEL No.	COOLING DATA	ELECTRIC DATA						NOTES
				COOLING (MBH)	VOLTS	HZ	PHASE	FLA	MCA	MOCP	
ACCU-384-1	BLDG 384	TRANE	TTA120E4	120.5	460	60	3	2.5	20.1	25	SEE NOTES

NOTES: 1. PROVIDE WITH BACNET INTERFACE. 2. PROVIDE WITH HIGH PRESSURE CONTROL. 3. PROVIDE LIQUID LINE REFRIGERANT DRIER. 4. PROVIDE WITH LOW AMBIENT COOLING TO 50°F ON ELECTROMECHANICAL MODELS. 5. PROVIDE WITH SCROLL COMPRESSORS. 6. PROVIDE WITH THERMAL EXPANSION VALVE. 7. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 8. 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

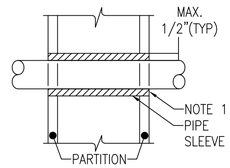
NOTES: 1. PROVIDE W/ MEMORY UPGRADE TO 4GB. 2. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.



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

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
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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 384 HVAC SCHEDULES AND DETAILS

EPROJECT NO.:	1350913
CONSTR. CONTR. NO.	N40085-XX-C-XXXX
NAVFAC DRAWING NO.	12703928
SHEET	475 OF 506
M4.0	384-15-111

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 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.

RECEPTACLE LABEL REQUIREMENTS

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".

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	DISCONNECT SWITCH RATED 30AMP, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED "30AS" - INDICATES 30AMP SWITCH
30AS/15AF	FUSED DISCONNECT SWITCH, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED "30AS" - INDICATES 30AMP SWITCH "15AF" - INDICATES 15AMP FUSES
JCB	DDC CONTROL JACE BOX. PROVIDED BY OTHERS. FIELD COORDINATE EXACT LOCATION.
	ENCLOSED CIRCUIT BREAKER

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) 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

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

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 384 ELECTRICAL LEGEND
ED2.0	BUILDING 384 ELECTRICAL BASEMENT DEMOLITION PLAN
E2.0	BUILDING 384 ELECTRICAL BASEMENT PLAN
E3.0	BUILDING 384 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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STATE OF NEW HAMPSHIRE - CHARLES E. MACE No. 13078 LICENSED PROFESSIONAL ENGINEER - SEAL

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A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

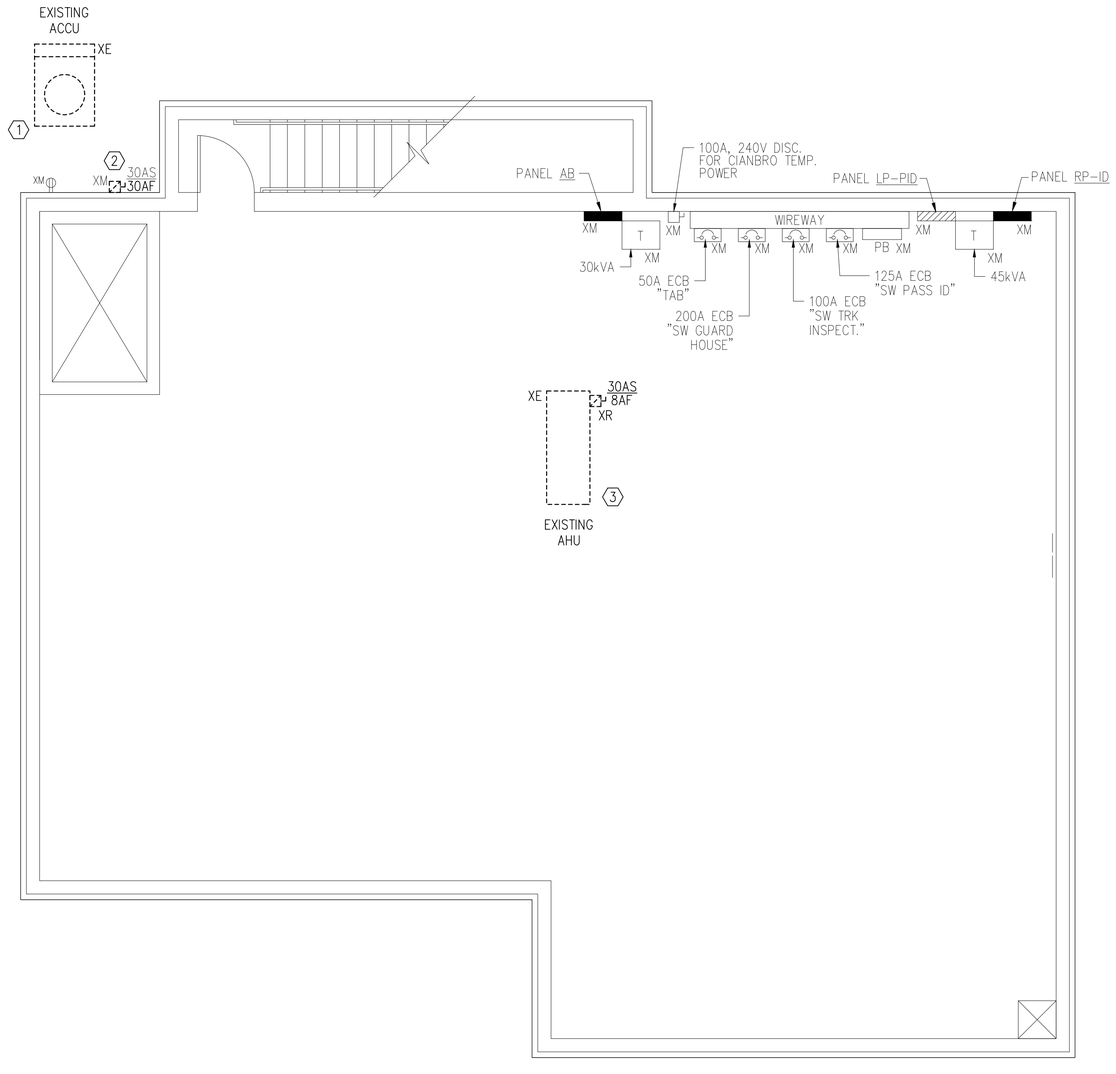
DES TM | DRW TM | CHK JO
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

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 384 ELECTRICAL LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703929
SHEET 476 OF 506
E1.0 | 384-15-112



BUILDING 384 ELECTRICAL BASEMENT DEMOLITION PLAN

1/4" = 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. MAINTAIN EXISTING BRANCH CIRCUITRY, DISCONNECT AND CIRCUIT BREAKER FOR REUSE.
2. EXISTING NEMA 4X FUSED DISCONNECT FOR EXISTING ACCU "CU-1". MAINTAIN DISCONNECT FOR REUSE. REMOVE EXISTING 30A FUSE. NEW FUSE TO BE INSTALLED DURING NEW WORK PHASE.
3. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING AHU. MAINTAIN EXISTING BRANCH CIRCUITRY AND CIRCUIT BREAKER FOR REUSE. DEMOLISH EXISTING DISCONNECT IN ITS ENTIRETY.

GRAPHIC SCALE

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

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SEAL

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ME LEAD FIRM
ME BRANCH OFFICE
NH LEAD FIRM
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CONTRACT NO.
TASK ORDER NO.
DELIVERY ORDER NO.

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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
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 384 ELECTRICAL BASEMENT DEMOLITION PLAN

EPROJECT NO.: 1350913

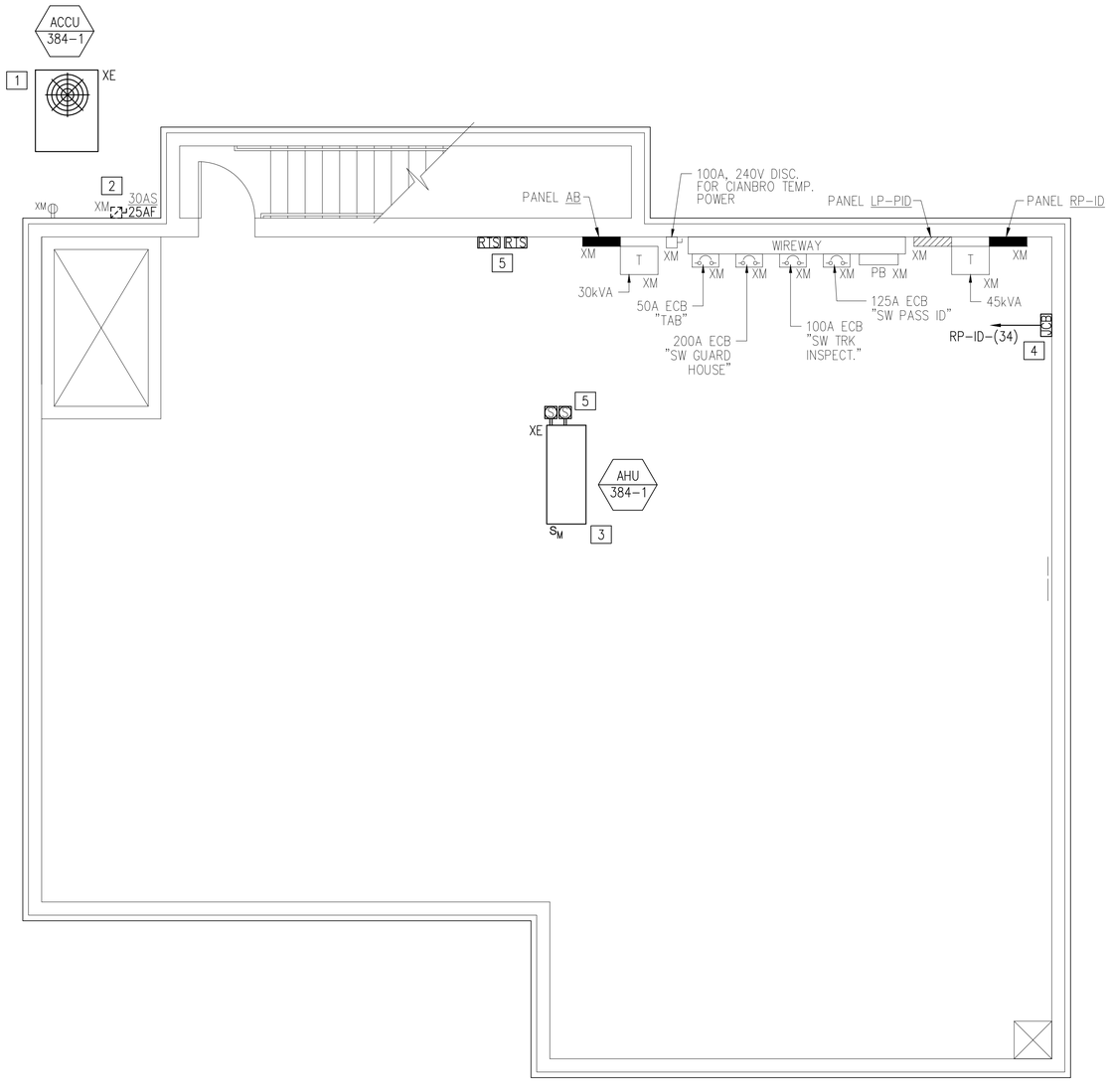
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703930

SHEET 477 OF 506

ED2.0 | 384-15-113

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 384 ELECTRICAL BASEMENT PLAN

1/4" = 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.

NEW WORK KEYNOTES

1. CONNECT NEW ACCU TO EXISTING BRANCH CIRCUITRY, DISCONNECT, AND CIRCUIT BREAKER MAINTAINED DURING DEMOLITION. REUSE AS MUCH EXISTING CONDUIT AND WIRING AS POSSIBLE AND EXTEND AS NEEDED. NEW CONDUIT AND WIRING SHALL MATCH EXISTING IN ALL RESPECTS. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
2. PROVIDE NEW 25 AMP FUSE IN EXISTING DISCONNECT FOR NEW ACCU.
3. CONNECT NEW AHU TO EXISTING BRANCH CIRCUITRY AND CIRCUIT BREAKER MAINTAINED DURING DEMOLITION. PROVIDE NEW DISCONNECT AS SHOWN. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
4. NEW DDC JACE BOX PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.
5. NEW DUCT SMOKE DETECTOR PROVIDED BY OTHERS. 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 ACCU. IF NO RECEPTACLE EXISTS, PROVIDE NEW RECEPTACLE AS SHOWN. REFER TO PANELBOARD SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.

GRAPHIC SCALE

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

CHECK GRAPHIC SCALE BEFORE USING

STM	DESCRIPTION	DATE	APPR
4	100% SUBMISSION	08/07/2015	DM
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0	35% SUBMISSION	02/23/2015	DM

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

LEAD/PM&E: AMIN BAHROUR PM&E

FIRE PROTECTION: X

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PUBLIC WORKS DEPARTMENT - MAINE
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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 384 ELECTRICAL BASEMENT PLAN

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703931

SHEET 478 OF 506

E2.0 | 384-15-114

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 384-1	CONDENSING UNIT	–	16.01	460	3	–	–	–	X			X	NOTE 11
AHU 384-1	AIR HANDLING UNIT	2	3.67	460	3	–	–	–	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, DISCONNECT, AND CIRCUIT BREAKER UNLESS NOTED OTHERWISE.

PANELBOARD SCHEDULE

PANEL: LP–PID | VOLTS: 277/ 480 | NEW/EXISTING.: EXISTING
MAIN: 125A MCB | BUS AMPS: 125A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC: BLDG 384 BASEMENT

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE		NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	BASEMENT LIGHTING	0	–		–	0	T–PID (PANEL RP–PID VIA 30kVA XFMR)	45/3	2
3	20/1	1ST FLOOR LIGHTING	0	–						4
5	20/1	1ST FLOOR LIGHTING	0	–						6
7	20/1	EXTERIOR WALL PACKS	0	–						8
9	20/1	SPARE	0	–		1	3.7	AHU–384–1	15/3	10
11	20/1	SPARE	0	–						12
13	20/1	SPARE	0	–						14
15	20/1	SPARE	0	–		1	16.0	ACCU–384–1	30/3	16
17										18
19	40/3	BLDG. 102	0	–						20
21						–	0	WATER HEATER	15/3	22
23										24
25	50/3	TEMP. POWER CIANBRO	0	–						26
27						–	0	SURGE PROTECTION DEVICE	60/3	28
29		SPACE		–						30
31		SPACE		–		–		SPACE		32
33		SPACE		–		–		SPACE		34
35		SPACE		–		–		SPACE		36
37		SPACE		–		–		SPACE		38
39		SPACE		–		–		SPACE		40
41		SPARE		–		–		SPACE		42
			0.00				19.70	TOTAL CONNECTED kVA:	19.70	
								TOTAL CONNECTED AMPERES:	23.72	

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: RP–PID | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING
MAIN: 125A MCB | BUS AMPS: 125A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: 18K | LOC: BLDG 384 BASEMENT

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE		NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	BASEMENT REC. & NMCI	0	–		–	0	EXIT/CONF. ROOM REC.	20/1	2
3	20/1	BSMNT REC., NMCI, & SIGN	0	–		–	0	CONF. RM. REC.	20/1	4
5	20/1	JANITOR'S CLOSET/RR REC.	0	–		–	0	OPEN OFFICE REC.	20/1	6
7	20/1	TRANSPORTATION ADMIN REC.	0	–		–	0	OPEN OFFICE REC.	20/1	8
9	20/1	KITCHENETTE REC.	0	–		–	0	WAITING RM REC.	20/1	10
11	20/1	FRIDGE/VENDING REC.	0	–		–	0	WAITING RM REC. (EXT. GFI)	20/1	12
13	20/1	CONF. RM COMP. REC.	0	–		–	0	WAITING RM. COMP. REC.	20/1	14
15	20/1	OPEN OFFICE AREA REC.	0	–		–	0	COMM. BACKBOARD REC.	20/1	16
17	20/1	OPEN OFFICE AREA REC.	0	–		–	0	BOILER	20/1	18
19	20/1	OPEN OFFICE AREA REC.	0	–		–	0	GFI AT CU–1	20/1	20
21	20/1	OPEN OFFICE AREA REC.	0	–		–	0	EF–1	20/1	22
23	20/1	OPEN OFFICE AREA REC.	0	–		–	0	CH–1	20/1	24
25	20/1	EWC REC.	0	–		–	0	MICROWAVE REC.	20/1	26
27	20/1	TRANSPRT ADMIN COMP. REC.	0	–		–	0	SUMP PUMP	20/1	28
29	20/1	FACP	0	–		–	0	ISC ACCESS CNTRL CAMERAS	20/1	30
31	20/1	FRONT ENT. ADA DOORS	0	–		–	0	CAMERA TOWERS	20/1	32
33	20/1	SIGN GATE #1 BY FENCE	0	–		1	.02	JACE BOX	20/1	34
35		SPACE		–		–		SPACE		36
37		SPACE		–		–		SPACE		38
39		SPACE		–		–		SPACE		40
41		SPACE		–		–		SPACE		42
			0.00				0.02	TOTAL CONNECTED kVA:	0.02	
								TOTAL CONNECTED AMPERES:	0.06	

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.

STM	DESCRIPTION	DATE	APPR
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0	35% SUBMISSION	02/23/2015	DM

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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
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NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD – KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 384 ELECTRICAL SCHEDULES

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.: N40085–XX–C–XXXX

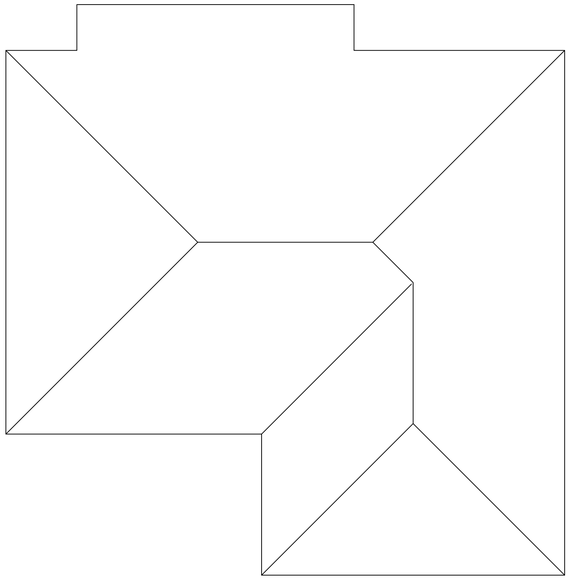
NAVFAC DRAWING NO.: 12703932

SHEET 479 OF 506

E3.0 | 384-15-115

DRAWFORM REVISION: 10 OCTOBER 2014

A — APPROXIMATE LOCATION OF GROUND MOUNTED MAST



B384 ANTENNA PLACEMENT - 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

1. CONTRACTOR TO PIPE MOUNT RF ACCESS POINT TO CCTV TOWER LOCATED NORTHEAST OF BUILDING.
2. CONTRACTOR TO ENSURE LINE-OF-SIGHT TO B376 ACCESS POINT.
3. MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS.
4. CAT5 CABLE SHALL BE ROUTED ALONG EXISTING PATHS FROM JACE LOCATION TO NEW RF ACCESS POINT; NEW WALL PENETRATION MAY BE REQUIRED.

GRAPHIC SCALE

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

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

NAVFAC

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ACTIVITY
SATISFACTORY TO DATE
DES VSL | DRW RSR | 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
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NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22

B384 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085-XX-C-XXXX
NAVFAC DRAWING NO.: 12703933
SHEET 480 OF 506
ET1.0 384-15-116
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
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 386 HVAC LEGEND
MD2.0	BUILDING 386 HVAC FIRST FLOOR DEMOLITION PLAN
M2.0	BUILDING 386 HVAC FIRST FLOOR PLAN
M3.0	BUILDING 386 HVAC CONTROLS
M3.1	BUILDING 386 HVAC CONTROLS
M3.2	BUILDING 386 HVAC CONTROLS
M4.0	BUILDING 386 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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BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

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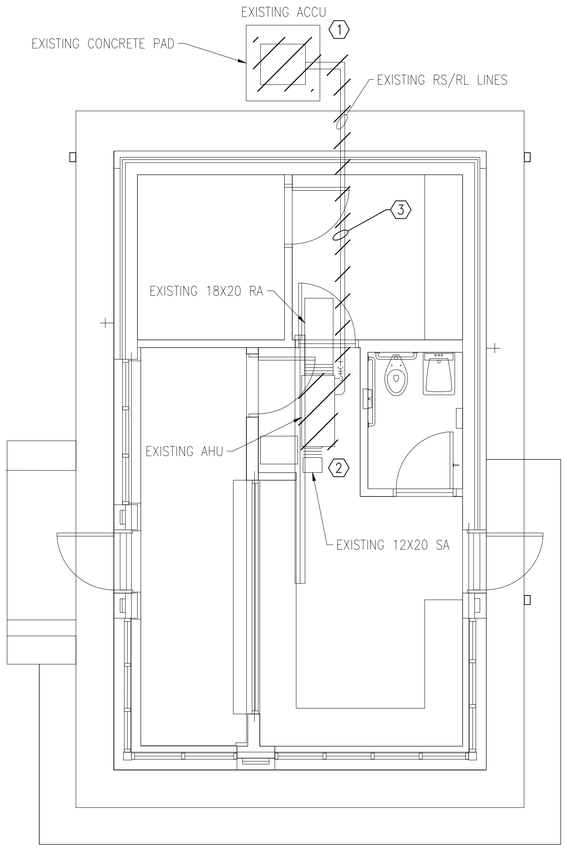
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

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

BUILDING 386 HVAC LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703934
SHEET 481 OF 506

M1.0 386-15-001



BUILDING 386 HVAC FIRST FLOOR DEMOLITION PLAN
1/4"=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 AHU AND ASSOCIATED THERMOSTAT. EXISTING CONDENSATE LINES, CONTROL WIRING, AND DUCTWORK TO REMAIN AND BE DISCONNECTED.
3. EXISTING ACCESSIBLE RS/RL LINES TO BE REMOVED. ANY REMAINING RS/RL CONCEALED TO BE EVACUATED, CAPPED, AND ABANDONED IN PLACE.

GRAPHIC SCALE

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

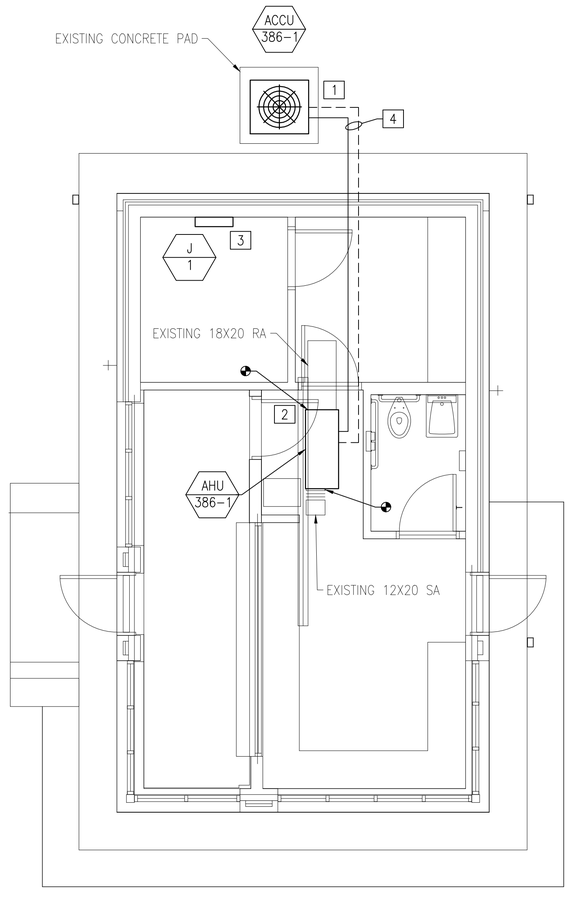
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 386 HVAC FIRST FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703935
SHEET 482 OF 506
MD2.0 | 386-15-002

DRAWFORM REVISION: 10 OCTOBER 2014



PLAN NORTH

BUILDING 386 HVAC FIRST FLOOR PLAN

1/4"=1'-0"

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 EXISTING CONCRETE PAD.
2. FURNISH AND INSTALL NEW AHU AND IT'S RS/RL LINES AND CONNECT 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.
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

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

THE CAD/DGN STANDARDS USED FOR THIS PROJECT ARE NAVFAC P-307 AND DM-2.08. THE USER IS RESPONSIBLE FOR THE CONTENT, ACCURACY, AND MAINTENANCE OF ALL ELECTRONIC DESIGN FILES AFTER THEY ARE TRANSFERRED TO THE GOVERNMENT. USE OF THESE ELECTRONIC DESIGN FILES IS SUBJECT TO THE TERMS OF THE CONTRACT.

CONSULTANT: CSI ENGINEERING, PLLC. FIRE PROTECTION. 999 Bedford St. Ste. 206, Stamford, CT 06905, 781.333.3828, 212.XXX.7824 x XX, 203.XXX.7824 x XX, 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 386 HVAC FIRST FLOOR PLAN

EPROJECT NO.: 1350913

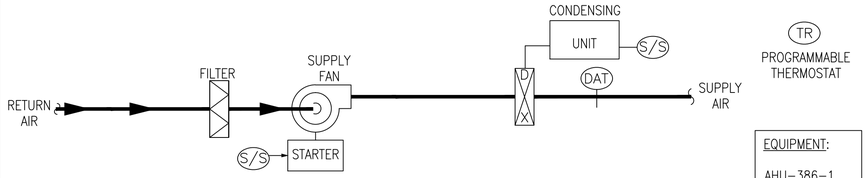
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703936

SHEET 483 OF 506

M2.0 | 386-15-003

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.

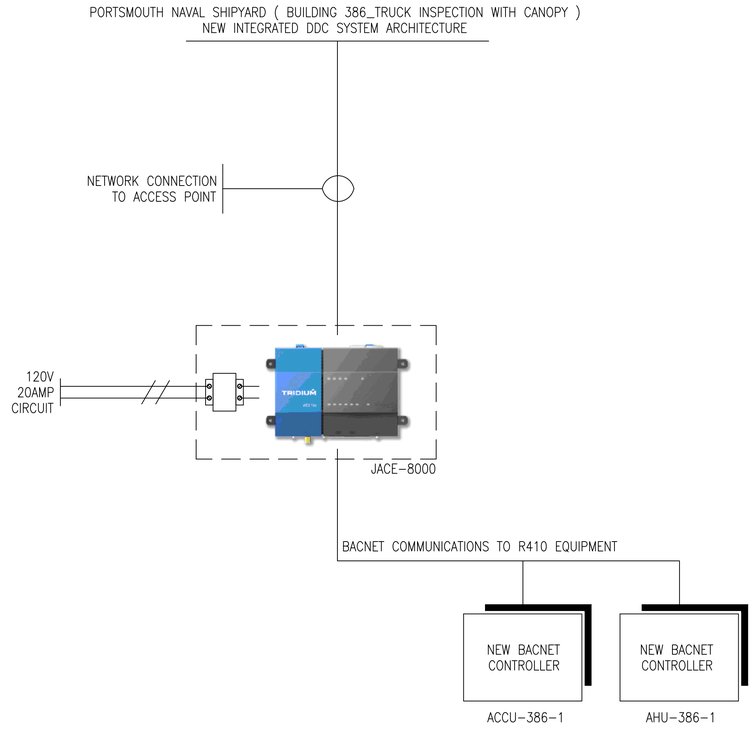
OCCUPIED COOLING CONTROL

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

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

NAVFAC

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

THE UNDERSIGNED HEREBY CERTIFY THAT THE ATTACHED PLANS AND SPECIFICATIONS HAVE BEEN PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND ARE APPROVED FOR CONSTRUCTION. THE ATTACHED PLANS AND SPECIFICATIONS ARE NOT APPROVED FOR BIDDING PURPOSES UNLESS SIGNED AND DATED BY THE CONTRACTING OFFICER. THE ATTACHED PLANS AND SPECIFICATIONS ARE NOT APPROVED FOR CONSTRUCTION UNLESS SIGNED AND DATED BY THE PUBLIC WORKS OFFICER. CONTRACT NO. N40085-XX-C-XXXX

CSI ENGINEERING
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NEW HAMPSHIRE: 23 Raymond Way, Ste 204, Hooksett, NH 03106, 603-210-9224
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

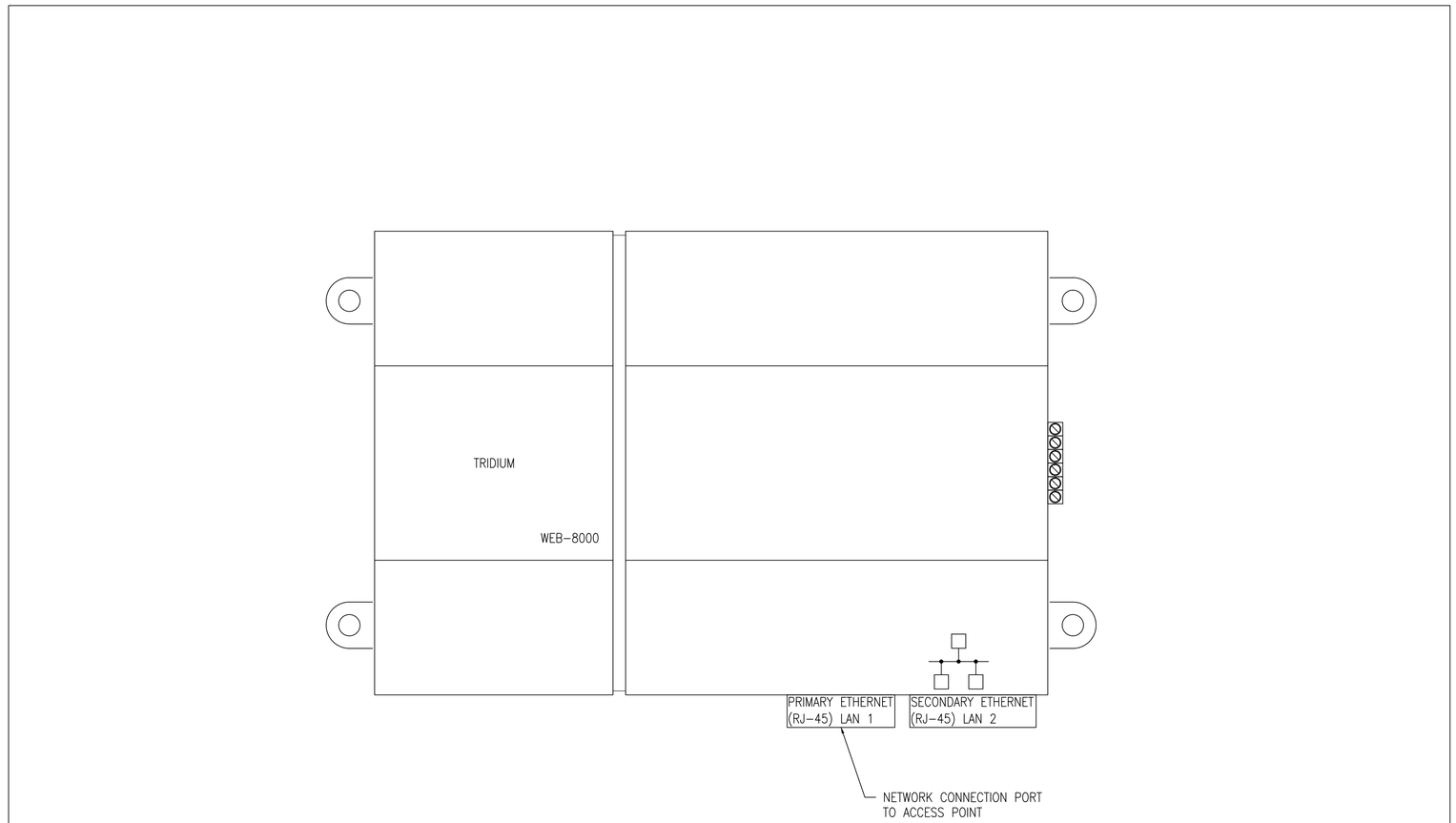
NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 386 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085-XX-C-XXXX
NAVFAC DRAWING NO.: 12703937
SHEET 484 OF 506
M3.0 | 386-15-004

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
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PREPARED

CSI ENGINEERING

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SAUGUS, MA 01906
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215 HAVEN AVE, STE 2041
PORTSMOUTH, NH 03801
603.319.9924

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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

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 386 HVAC CONTROLS

EPROJECT NO.: 1350913

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

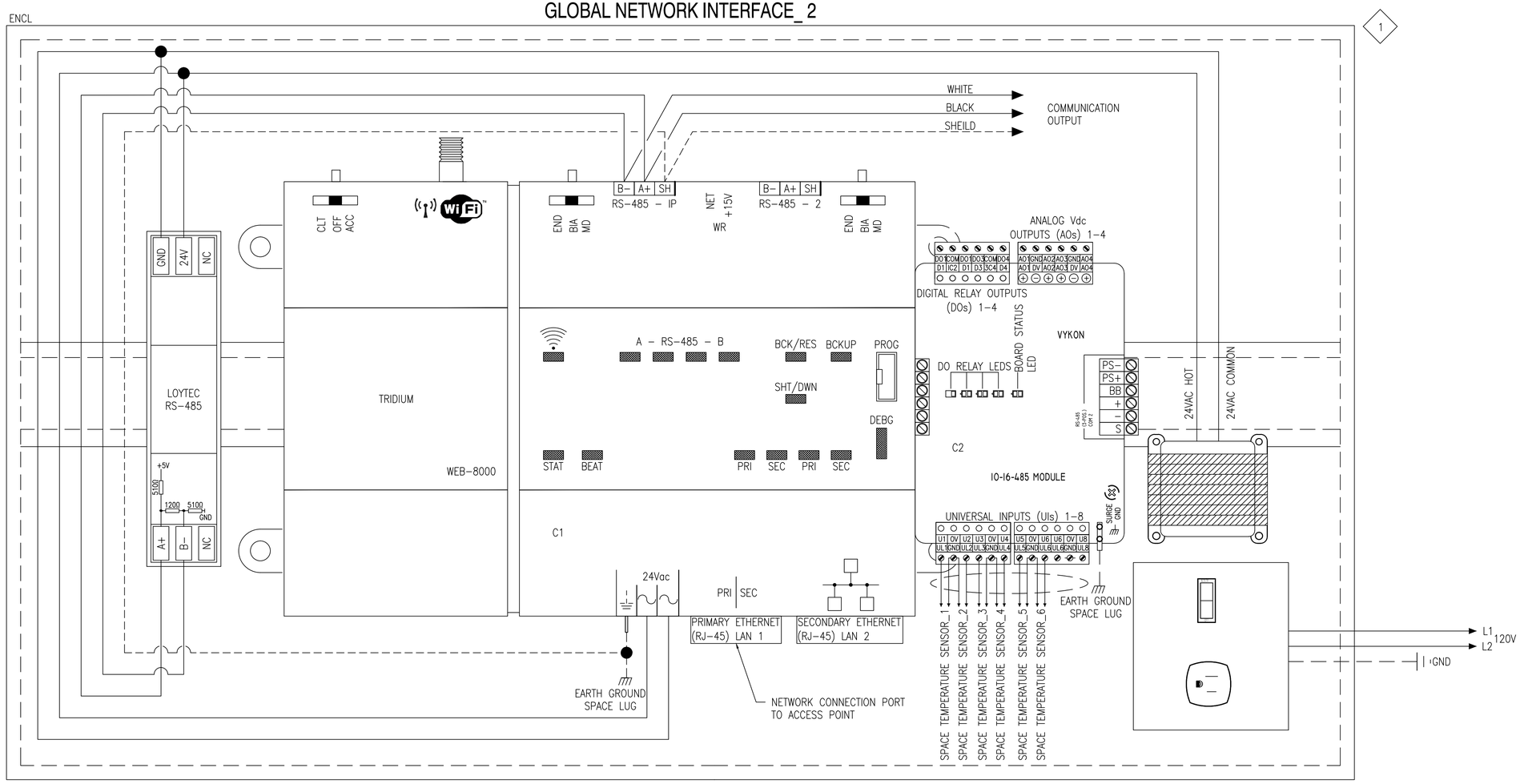
NAVFAC DRAWING NO.
12703938

SHEET 485 OF 506

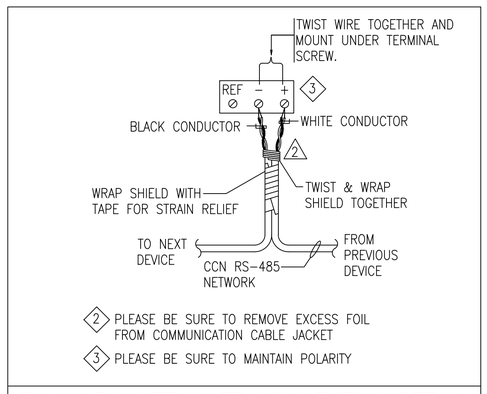
M3.1 | 386-15-005

DRAWFORM REVISION: 10 OCTOBER 2014

GLOBAL NETWORK INTERFACE_ 2



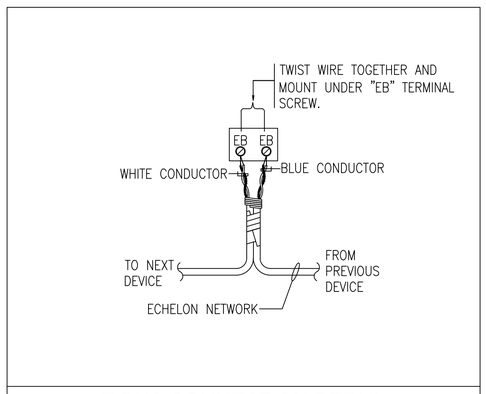
1 LOCATION OF CONTROLLER TO BE FIELD VERIFIED



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

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

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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SEAL

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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 386 HVAC CONTROLS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703939

SHEET 486 OF 506

M3.2 386-15-006

DRAWFORM REVISION: 10 OCTOBER 2014

AIR HANDLING UNIT SCHEDULE

TAG	SERVICE	CFM	FAN DATA				DX COOLING COIL						DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS
			MOTOR				CAPACITY (MBH)	REFRIGERANT TYPE	AIR DATA					
			RPM	HP	V	PH	TOTAL		EAT (°F)		LAT (°F)			
									DB	WB	DB	WB		
AHU-386-1	BLDG 386	1400	1075	½	208	1	42	R-410A	80	67	59	57	TRANE TAM4A0B42S31SC	SEE NOTES

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

AIR COOLED CONDENSING UNIT SCHEDULE

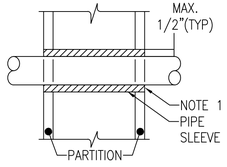
TAG	SERVES	DESIGN BASED ON MANUFACTURER	DESIGN BASED ON MODEL No.	COOLING DATA	ELECTRIC DATA						REMARKS
				COOLING (MBH)	VOLTS	HZ	PHASE	FLA	MCA	MOCP	
ACCU-386-1	BLDG 386	TRANE	4TTR6030B1000	30	208	60	1	0.93	12	20	SEE NOTES

NOTES: 1. PROVIDE WITH BACNET INTERFACE. 2. PROVIDE WITH HIGH PRESSURE CONTROL. 3. PROVIDE LIQUID LINE REFRIGERANT DRIER. 4. PROVIDE WITH LOW AMBIENT COOLING TO 50°F ON ELECTROMECHANICAL MODELS. 5. PROVIDE WITH SCROLL COMPRESSORS. 6. PROVIDE WITH 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

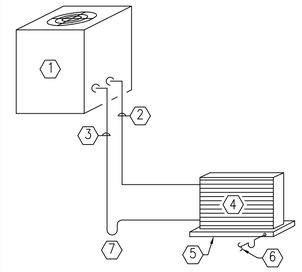
TAG NO.	LOCATION	ELECTRICAL		DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
		AMP	V		
J-1	SEE PLANS	20	120	JACE 8000	SEE NOTES

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



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

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

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MEP/FP ENGINEER: CSI ENGINEERING 999 Bedford Street, Suite 206 Stamford, CT 06905 781.333.8828

FIRE PROTECTION: 23 Alverton Ave, Ste 204 Lynn, MA 01902 781.333.8828

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 386 HVAC SCHEDULES AND DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703940

SHEET 487 OF 506

M4.0 | 386-15-007

DRAWFORM REVISION: 10 OCTOBER 2014

TYPICAL FLASH PROTECTION WARNING LABEL

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 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".

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 2P 3R	DISCONNECT SWITCH RATED 30AMP, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED "3R" – INDICATES NEMA TYPE 3R ENCLOSURE "2P" – INDICATES 2 POLE SINGLE PHASE DISCONNECT "30AS" – INDICATES 30AMP SWITCH
FS	FIBER OPTIC SWITCH. PROVIDED BY OTHERS. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.

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

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
▬	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
XE	EXISTING EQUIPMENT TO BE REMOVED AND NEW EQUIPMENT TO BE INSTALLED ON EXISTING BRANCH/FEEDER
☐	EXISTING EQUIPMENT TO REMAIN FOR INFORMATION ONLY – (XM) INDICATED BY SYMBOL WITH LIGHT OUT OF FUNCTION LINE TYPE
⬚	EXISTING EQUIPMENT TO BE REWORKED – (XN, XL, XE, XR) INDICATED BY SYMBOL WITH DASHED AND IN FUNCTION LINE TYPE

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 386 ELECTRICAL LEGEND
ED2.0	BUILDING 386 ELECTRICAL FIRST FLOOR DEMOLITION PLAN
E2.0	BUILDING 386 ELECTRICAL FIRST FLOOR PLAN
E3.0	BUILDING 386 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

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

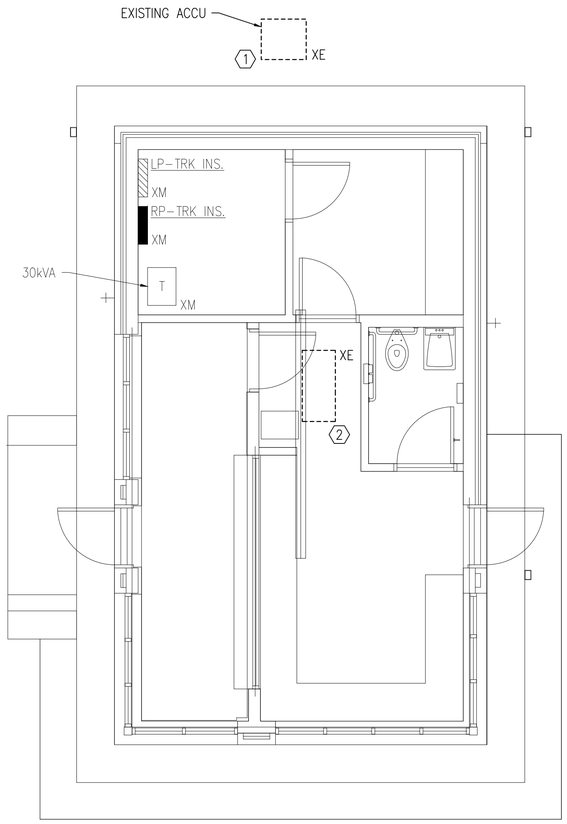
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

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

BUILDING 386 ELECTRICAL LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703941
SHEET 488 OF 506
E1.0 386-15-8

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 386 ELECTRICAL FIRST FLOOR DEMOLITION PLAN

1/4" = 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. ELECTRICAL CONTRACTOR SHALL 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. ELECTRICAL CONTRACTOR SHALL 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.

GRAPHIC SCALE

1/4" = 1' 4 2 0 4 8 12
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	
SYM	DESCRIPTION	DATE	APPR	

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. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THESE REQUIREMENTS SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE ARCHITECT/ENGINEER AND THEIR CONSULTANTS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ARCHITECT/ENGINEER AND THEIR CONSULTANTS.

ENGINEER: CSI ENGINEERING, FIRE PROTECTION, 999 BROADWAY, SUITE 206, SAUGUS, MA 01906, 781-233-9925, 23 S AVIATION AVE, STE 204, PORTSMOUTH, NH 03801, 603-501-7924, 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
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 386 ELECTRICAL FIRST FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913

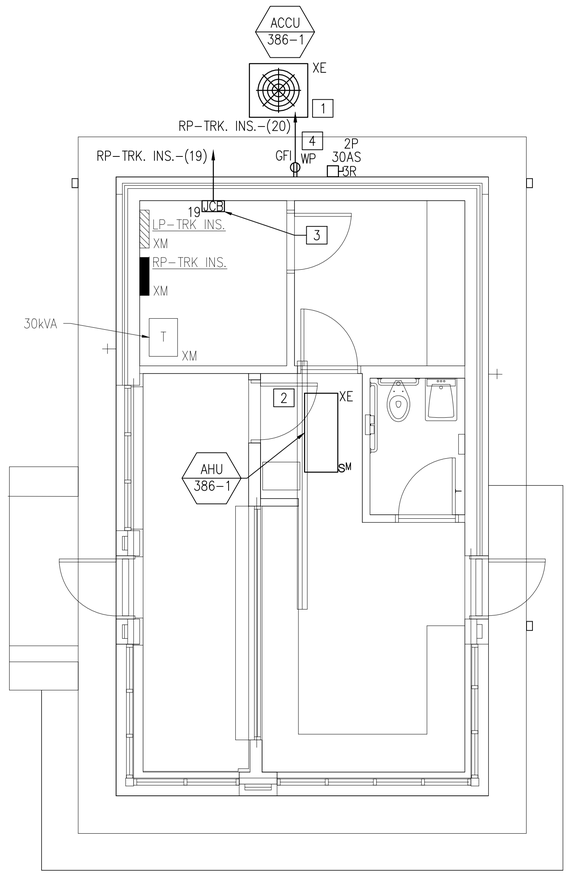
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703942

SHEET 489 OF 506

ED2.0 | 386-15-9

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 386 ELECTRICAL FIRST FLOOR PLAN

1/4" = 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.

NEW WORK KEYNOTES

1. PROVIDE NEW DISCONNECT AS SHOWN FOR NEW ACCU. PROVIDE NEW CIRCUIT BREAKER IN PANEL "RP-TRK INS." FOR NEW ACCU. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
2. PROVIDE NEW CIRCUIT BREAKER IN PANEL "RP-TRK INS." FOR NEW AHU. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
3. NEW DDC JACE BOXPROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND MECHANICAL CONTRACTOR.
4. ELECTRICAL CONTRACTOR TO FIELD VERIFY IF A RECEPTACLE EXISTS WITHIN 6' OF ACCU. IF NO RECEPTACLE EXISTS, PROVIDE NEW RECEPTACLE AS SHOWN. REFER TO PANELBOARD SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.

GRAPHIC SCALE

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

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 386 ELECTRICAL FIRST FLOOR PLAN

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO.: 12703943

SHEET 490 OF 506

E2.0 | 386-15-10

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 386-1	CONDENSING UNIT	–	2.5	208	1	RP-TRK INS.-(25,27)	20A/2P	(2)#12, (1)#12G, 3/4"C	X			X	NOTE 6,7
AHU 386-1	AIR HANDLING UNIT	–	1.1	208	1	RP-TRK INS.-(26,28)	20A/2P	(2)#12, (1)#12G, 3/4"C	X			X	NOTE 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.

PANELBOARD SCHEDULE

PANEL: RP-TRK INS. | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING

MAIN: 125A MCB | BUS AMPS: 125A | MOUNT.: SURFACE

PH/WIRE: 3ø/4W | AIC: 10K | LOC: BLDG 386 ELECTRICAL ROOM

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	REC. ELEC. & STORAGE	0	–	–	0	REC. VEST. & FRONT DESK	20/1	2
3	20/1	REC. ELEC., STOR. & BATHRM	0	–	–	0	REC. OFFICE AREA S, E, & N	20/1	4
5	20/1	QUAD REC. OFFICE & ELEC.	0	–	–	0	GFI REC. OUTSIDE & ISLAND	20/1	6
7	20/1	OFFICE AREA REC. S&E WALLS	0	–	–	0	GFI REC. EXT. & ISLAND	20/1	8
9	20/1	COMPUTER REC.	0	–	–	0	SPARE	40/2	10
11									12
13	20/3	SPARE	0	–	–	0	EF BATHRM	20/1	14
15									
17	20/1	WATER HEATER	0	–	–	0	CCTV POWER	20/1	16
19	20/1	DDC JACE BOX	0.2	1	–	0	IH-3 & 5 CNTRL POWER	20/1	18
21	20/1	LANE LIGHTS	0	–	1	.18	ACCU GFI RECEPTACLE	20/1	20
23	20/1	SPARE	0	OFF	–	0	POV	30/2	22
25	20/2	ACCU-386-1	2.5	2					24
27					2	1.1	AHU-386-1	20/2	26
29		SPACE		–					28
31		SPACE		–	–		SPACE		30
33		SPACE		–	–		SPACE		32
35		SPACE		–	–		SPACE		34
37		SPACE		–	–		SPACE		36
39		SPACE		–	–		SPACE		38
41		SPARE		–	–		SPACE		40
			2.70		–		SPACE		42
						1.28	TOTAL CONNECTED kVA:	3.98	
							TOTAL CONNECTED AMPERES:	11.06	

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

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 – PROFESSIONAL ENGINEER – CHARLES E. MACE No. 13078 LICENSED – SEAL

MECHANICAL/PLUMBING/FIRE PROTECTION ENGINEER
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Westbrook, ME 04092
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213 Hamilton Ave, Ste. 203
Portsmouth, NH 03801
603-319-9924

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 – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 386 ELECTRICAL SCHEDULES

EPROJECT NO.: 1350913

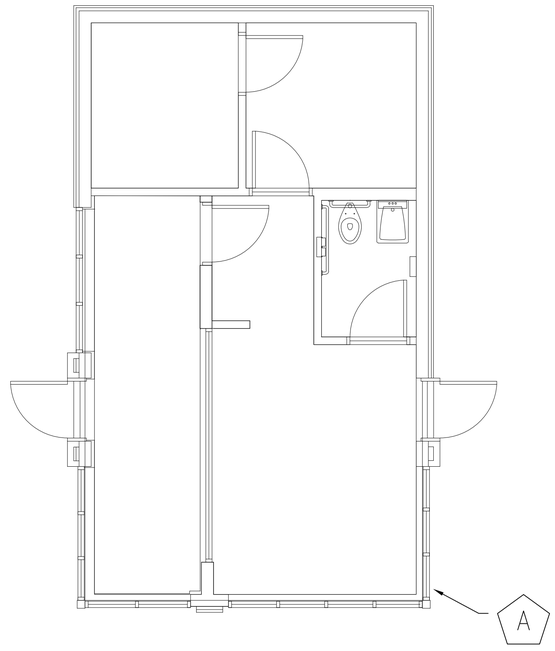
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703944

SHEET 491 OF 506

E3.0 | 386-15-11

DRAWFORM REVISION: 10 OCTOBER 2014



B386 ANTENNA LOCATION - FIRST FLOOR PLAN

1/4" = 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 TO INSTALL WALL/BULKHEAD MOUNT RF ACCESS POINT ON HIGH NORTHEAST CORNER OF EXTERIOR EAST WALL.
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT TO B376 ACCESS POINT.
3. MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS.
4. CAT5 CABLE SHALL BE ROUTED FROM JACE ALONG HIGH NORTHWALL TO DROP CEILING; NEW WALL PENETRATION MAY BE REQUIRED TO REACH RF ACCESS POINT. IF THIS OPTION PROVES UNVIABLE, ROUTE CAT5 FROM JACE ALONG EXISTING CONDUIT LOCATED ON EAST WALL UNDER SOFFIT TO NORTH WALL PENETRATION.

GRAPHIC SCALE

1/4" = 1' scale 4 2 0 4 8 12 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
NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22

B386 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO.: 12703945

SHEET 492 OF 506

ET1.0 | 386-15-12

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
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 389 HVAC LEGEND
M2.0	BUILDING 389 HVAC FIRST FLOOR PARTIAL PLAN & SCHEDULES
M3.0	BUILDING 389 HVAC CONTROLS
M3.1	BUILDING 389 HVAC CONTROLS
M3.2	BUILDING 389 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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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 389 HVAC LEGEND

EPROJECT NO.: 1350913

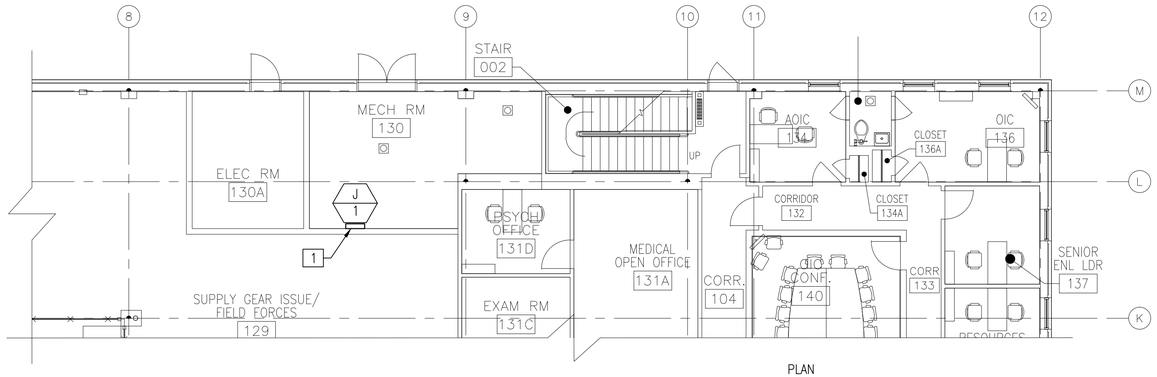
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703946

SHEET 493 OF 506

M1.0 | 389-15-213

DRAWFORM REVISION: 10 OCTOBER 2014



PLAN NORTH

BUILDING 389 HVAC FIRST FLOOR PARTIAL PLAN

1/8"=1'-0"

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.					

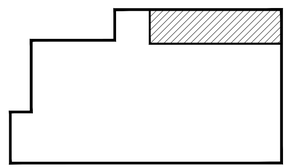
GENERAL SHEET NOTES

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.

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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STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
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THE CONSTRUCTOR SHALL REVIEW AND APPROVE SHOP DRAWINGS, SAMPLES, AND SIMILAR SUBMITTALS PRIOR TO SUBMITTING THEM TO THE GOVERNMENT. SUCH REVIEW AND APPROVAL SHALL BE INDICATED BY THE CONTRACTOR'S STAMP AND SIGNATURE ON THE SUBMITTAL. THE PURPOSE OF SUBMITTAL REVIEW BY THE GOVERNMENT IS TO VERIFY CONFORMANCE WITH THE DESIGN CONCEPT AND COMPLIANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DIMENSIONS TO BE CONFIRMED AND CORRECTED AT THE JOBSITE (FIELD MEASUREMENTS). FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION. COORDINATION OF HIS WORK WITH THAT OF ALL OTHER TRADES AND FOR SATISFACTORY PERFORMANCE OF HIS WORK. APPROVAL BY THE GOVERNMENT SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR ANY DEVIATION FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS UNLESS THE CONTRACTOR HAS CALLED THE GOVERNMENT'S ATTENTION TO SUCH DEVIATION AT THE TIME OF SUBMISSION AND THE GOVERNMENT HAS GIVEN WRITTEN APPROVAL TO THE DEVIATION. APPROVAL BY THE GOVERNMENT SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR ERRORS OR OMISSIONS IN THE SHOP DRAWINGS.

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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

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 389 HVAC FIRST FLOOR PARTIAL PLAN & SCHEDULE

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703947

SHEET 494 OF 506

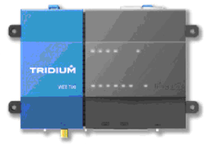
M2.0 | 389-15-214

DRAWFORM REVISION: 10 OCTOBER 2014

PORTSMOUTH NAVAL SHIPYARD (BUILDING 389_SERE APPLIED INSTRUCTION)
EXISTING DELTA INTEGRATED DDC SYSTEM ARCHITECTURE

NETWORK CONNECTION
TO ACCESS POINT

120V
20AMP
CIRCUIT



JACE-8000

NEW TRIDIUM JACE INTEGRATION
EXISTING DDC SYSTEM

NEW TRIDIUM JACE INTEGRATION
EXISTING DDC SYSTEM

BACNET
MS/TP
COMMUNICATION

1

EXISTING PROGRAMMABLE BACNET CONTROLLER
MAU-1

EXISTING PROGRAMMABLE BACNET CONTROLLER
RTU-3

TYPICAL OF
ALL RTU

1

EXISTING PROGRAMMABLE BACNET CONTROLLER
RTU-1

EXISTING PROGRAMMABLE BACNET CONTROLLER
CHILLED WATER
SYSTEM CONTROL

EXISTING PROGRAMMABLE BACNET CONTROLLER
HOT WATER SYSTEM
CONTROL

1

EXISTING PROGRAMMABLE BACNET CONTROLLER
VAV BOX
(VAV-40)

TYPICAL OF
ALL VAV BOXES

EXISTING PROGRAMMABLE BACNET CONTROLLER
VAV BOX
(VAV-1)

1

EXISTING PROGRAMMABLE BACNET CONTROLLER
VAV RTU-3

TYPICAL OF
ALL VAV
RTU

EXISTING PROGRAMMABLE BACNET CONTROLLER
VAV RTU-1

1

EXISTING PROGRAMMABLE BACNET CONTROLLER
UH-1

TYPICAL OF
ALL UH

EXISTING PROGRAMMABLE BACNET CONTROLLER
UH-9

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

PANEL MATERIAL

ITEM NO	MODEL	DESCRIPTION	QTY
C1	J-8000	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
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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

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 389 HVAC CONTROLS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO.
12703948

SHEET 495 OF 506

M3.0 | 389-15-215

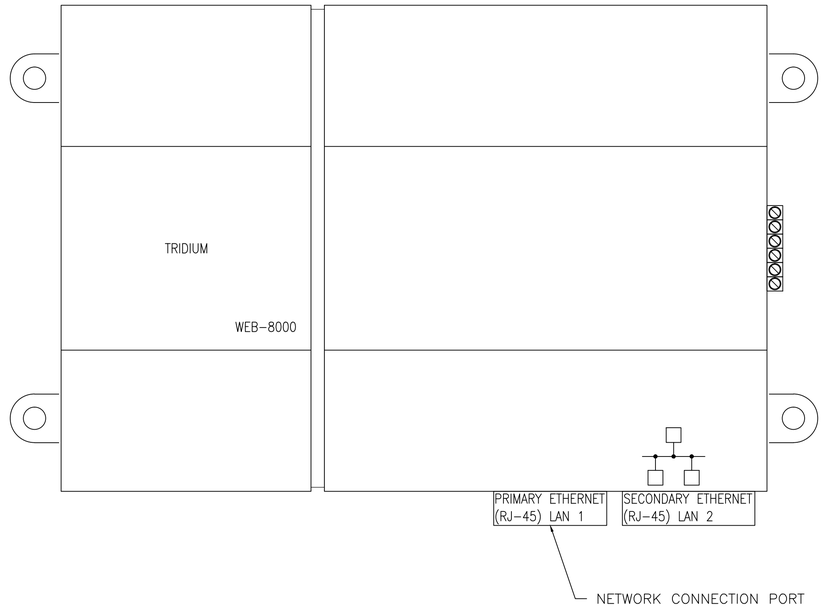
DRAWFORM REVISION: 10 OCTOBER 2014

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

SINGLE ZONE ROOFTOP UNIT							
POINT	AI	DI	DO	AO	STATUS POINT	CONTROL POINT	ALARM POINT
SPACE TEMPERATURE	1				1		1
SPACE TEMPERATURE SET POINT						1	
SUPPLY AIR TEMPERATURE	1				1		1
RETURN AIR TEMPERATURE	1				1		1
MIXED AIR TEMPERATURE	1				1		1
SUPPLY FAN START/STOP			1			1	
SUPPLY FAN STATUS		1			1		1
COOLING STAGE #1			1			1	
COOLING STAGE #2			1			1	
COOLING STAGE #1 STATUS		1			1		1
COOLING STAGE #2 STATUS		1			1		1
HEATING STAGE #1			1			1	
HEATING STAGE #2			1			1	
HEATING STAGE #1 STATUS		1			1		1
HEATING STAGE #2 STATUS		1			1		1
SMOKE DETECTOR		1			1		1
DIRTY AIR FILTER SWITCH		1			1		1
	4	7	5	0	11	6	11

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

UNIT HEATER							
POINT	AI	DI	DO	AO	STATUS POINT	CONTROL POINT	ALARM POINT
SPACE TEMPERATURE	1				1		1
SPACE TEMPERATURE SET POINT						1	
SUPPLY FAN START/STOP			1			1	
SUPPLY FAN STATUS		1			1		1
VALVE OPEN/CLOSED			1		1	1	1
VALVE POSITION					1		1
	1	1	2	0	4	3	4



ETHERNET CONNECTION TO RF ACCESS POINT

VAV RTU							
POINT	AI	DI	DO	AO	STATUS POINT	CONTROL POINT	ALARM POINT
DISCHARGE AIR TEMPARATURE	1				1		1
DISCHARGE AIR TEMPERATURE SET POINT						1	
RETURN AIR TEMPERATURE	1				1		1
MIXED AIR TEMPERATURE	1				1		1
DUCT STATIC PRESSURE	1					1	1
DUCT STATIC PRESSURE SET POINT						1	
SUPPLY FAN START/STOP			1			1	
SUPPLY FAN STATUS		1			1		1
SUPPLY FAN VFD SPEED CONTROL SIGNAL				1		1	
SUPPLY FAN VFD FEEDBACK IN AMPS	1				1		
SUPPLY FAN VFD FAULT		1			1		1
RETURN FAN START/STOP			1			1	
RETURN FAN STATUS		1			1		1
RETURN FAN VFD SPEED CONTROL SIGNAL				1		1	
RETURN FAN VFD FEEDBACK IN AMPS	1				1		
RETURN FAN VFD FAULT		1			1		1
COOLING STAGE #1 START/STOP			1			1	
COOLING STAGE #2 START/STOP			1			1	
COOLING STAGE #1 STATUS		1			1		1
COOLING STAGE #2 STATUS		1			1		1
HEATING CONTROL VALVE				1		1	
HEATING CONTROL VALVE POSITION					1		1
MIXED AIR DAMPERS (ECONOMIZER)				1		1	
MIXED AIR DAMPER POSITION					1		1
FREEZESTAT		1			1		1
DUCT SMOKE DETECTOR		1			1		1
DIRTY FILTER SWITCH		1			1		1
HIGH STATIC PRESSURE SWITCH		1			1		1
*** ONLY APPLICABLE IF AHU HAS CHILLED WATER	6	10	4	4	17	11	16

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 ENGINEERING PLLC 99 Bedford St, Suite 206 Boston, MA 02111 781.273.2500 FIRE PROTECTION 215 Hutton Ave, Ste 204 Carrboro, NC 27510 919.240.7424 NC 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 389 HVAC CONTROLS

EPROJECT NO.: 1350913

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

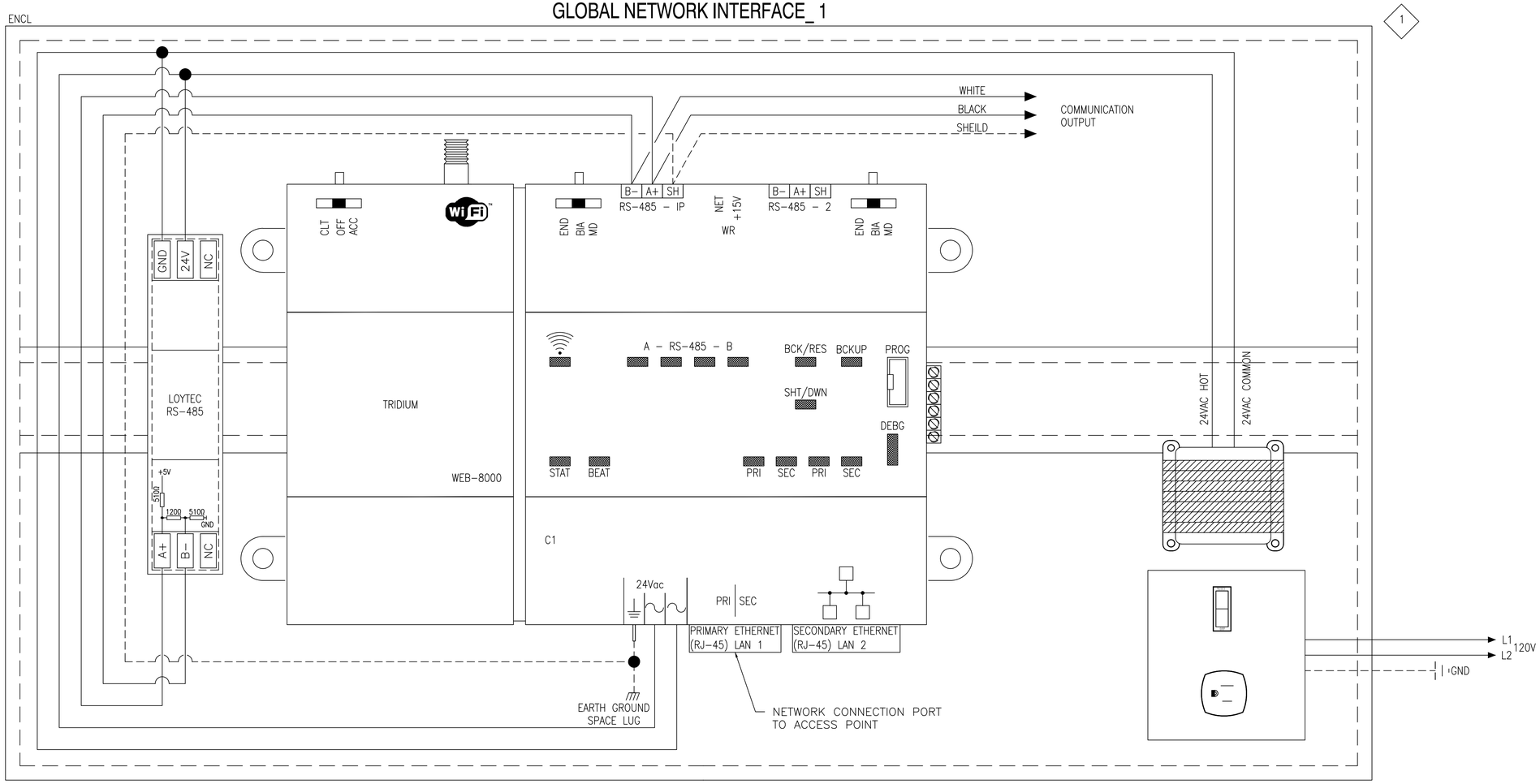
NAVFAC DRAWING NO. 12703949

SHEET 496 OF 506

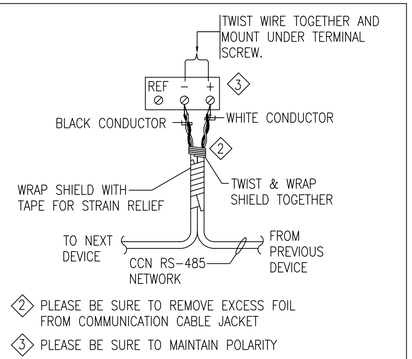
M3.1 | 389-15-216

DRAWFORM REVISION: 10 OCTOBER 2014

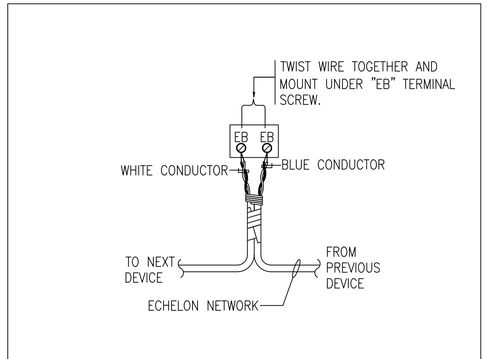
GLOBAL NETWORK INTERFACE_ 1



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

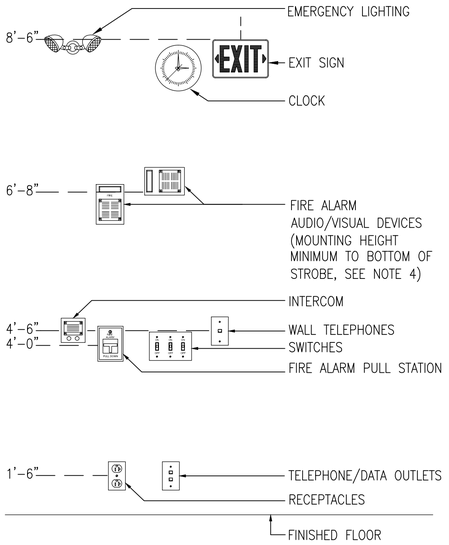
CSI
CONSTRUCTION SPECIFICATIONS INSTITUTE
AIA INFO

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
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
FY 16 ENERGY PROJECT
TASK 1–B–R–22
BUILDING 389 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703950
SHEET 497 OF 506
M3.2 | 389-15-217

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

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)	

EXISTING EQUIPMENT LEGEND

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

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		

ELECTRICAL SYMBOLS

SYMBOL	
#	NEW WORK NOTE TAG

MOTOR & CONTROLS LEGEND

SYMBOL	DESCRIPTION
JCB	DDC CONTROL JACE BOX. PROVIDED BY OTHERS. FIELD COORDINATE EXACT LOCATION.
M	METER

POWER DISTRIBUTION LEGEND

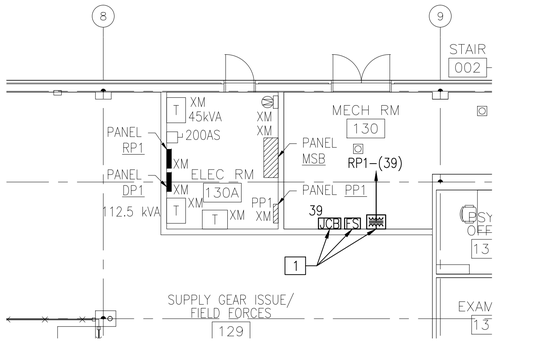
SYMBOL	DESCRIPTION
▬	208Y/120 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS
▨	480Y/277 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS
T	DRY TYPE TRANSFORMER

PANELBOARD SCHEDULE

PANEL: RP1 | VOLTS: 208/ 120 | NEW/EXISTING.: EXISTING
MAIN:225A MLO | BUS AMPS: 225A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: 10K | LOC: RM. 130A

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	VENDING MACHINE RM 119	0	–	–	0	OVERHEAD DOOR RM 126	20/1	2
3	20/1	VENDING MACHINE RM 119	0	–	–	0	OVERHEAD DOOR RM 125	20/1	4
5	25/1	AMI COMM. BOX & MTR	0	–	–	0	OVERHEAD DOOR RM 125	20/1	6
7	20/1	RECEPTACLES–RM 120 & UH–1	0	–	–	0	OVERHEAD DOOR RM 120	20/1	8
9	20/1	RECEPTACLES–RM 120	0	–	–	0	OVERHEAD DOOR RM 102	20/1	10
11	20/1	RECEPTACLES–RM 119,123,CP–6	0	–	–	0	RECEPTACLES RM 124	20/1	12
13	20/1	RECEPTACLES RMS 127 & 128B	0	–	–	0	RECEPTACLES RM 128A	20/1	14
15	20/1	RECEPTACLES– RM 117	0	–	–	0	RECEPTACLES RM130,GF–1,UH–1	20/1	16
17	20/1	RECEPTACLES– RM 117	0	–	–	0	MODULAR FUNITURE RM 118	20/1	18
19	20/1	EF–4, EF–8 & EWC (RM 103)	0	–	–	0	MODULAR FUNITURE RM 118	20/1	20
21	30/2	AC–4 & ACCU–4	0	–	–	0	MODULAR FUNITURE RM 118	20/1	22
23					–	0	MODULAR FUNITURE RM 118	20/1	24
25	30/2	AC–6 & ACCU–6	0	–	–	0	RECEPTACLES RM 118	20/1	26
27					–	0	WALK IN LIGHTS RMS 121&122	20/1	28
29	25/1	EF–3	0	–	–	0	B–1 RM 130	20/1	30
31	20/1	WH–1 RM 130	0	–	–	0	B–2 RM 130	20/1	32
33	20/1	B–3 RM 130	0	–	–	0	RP–1 RM 130	20/1	34
35	20/1	RECEPATACLES RMS 126,129,UH–1	0	–	–	0	RECEPTACLES EXT. & TIME CLOCK	20/1	36
37	20/1	CUH AT ENTRY 101	0	–	–	0	ELEV. SHUNT	20/1	38
39	20/1	JACE BOX	0.2	1	–	0	ICE MACHINE RM 119	30/2	40
41	20/1	CONTROL IRON	0	–					42
			0.00			0.00	TOTAL CONNECTED kVA:	0.00	
							TOTAL CONNECTED AMPERES:	0.00	

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.



BUILDING 389 ELECTRICAL FIRST FLOOR PARTIAL PLAN
1/8"=1'–0"

SCHEDULE OF DRAWINGS

DWG#	DESCRIPTION
E1.0	BUILDING 389 ELECTRICAL LEGEND, FIRST FLOOR PARTIAL PLAN & PANELBOARD SCHEDULE

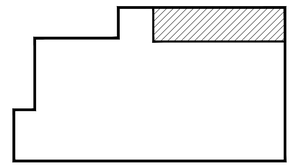
GENERAL SHEET NOTES

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

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

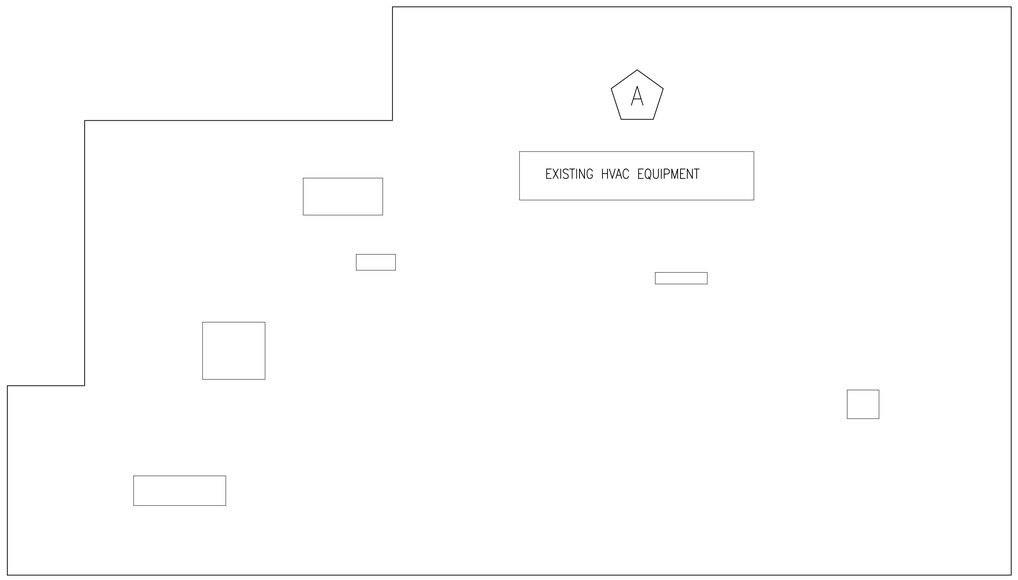
APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

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 – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1–B–R–22
BUILDING 389 ELECTRICAL LEGEND, FIRST FLOOR PARTIAL PLAN & PANELBOARD SCHEDULE

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703951
SHEET 498 OF 506
E1.0 | 389-15-218

DRAWFORM REVISION: 10 OCTOBER 2014



B389 ANTENNA LOCATION - ROOF PLAN

1/16" = 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

(A) NEW WORK KEYNOTES

1. CONTRACTOR SHALL PIPE MOUNT RF ACCESS POINT ON EXISTING HVAC MASTS/RAILS.
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT TO B86A ACCESS POINT.
3. MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS.
4. MOUNTING HEIGHT/LOCATION SHALL BE DETERMINED BY CONTRACTOR TO MINIMIZE GROUND-LEVEL VISIBILITY WHILE MAINTAINING ACCESS POINT LINE-OF-SIGHT.
5. CAT5 CABLE SHALL BE ROUTED ALONG EXISTING PATH TO JACE.

GRAPHIC SCALE

1/16" = 1' 1 6" 0 1 2 3 scale feet

CHECK GRAPHIC SCALE BEFORE USING

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

NAVFAC

STATE OF NEW HAMPSHIRE KEITH CHRISTOPHER No. 13414 LICENSED 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

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

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

B389 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO.
12703952

SHEET 499 OF 506

ET1.0 389-15-219

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
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 DD-1 HVAC LEGEND
M2.0	BUILDING DD-1 HVAC FIRST FLOOR PLAN AND SCHEDULE
M3.0	BUILDING DD-1 HVAC CONTROLS
M3.1	BUILDING DD-1 HVAC CONTROLS
M3.2	BUILDING DD-1 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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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 DD-1 HVAC LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703953
SHEET 500 OF 506

M1.0 DD1-15-787

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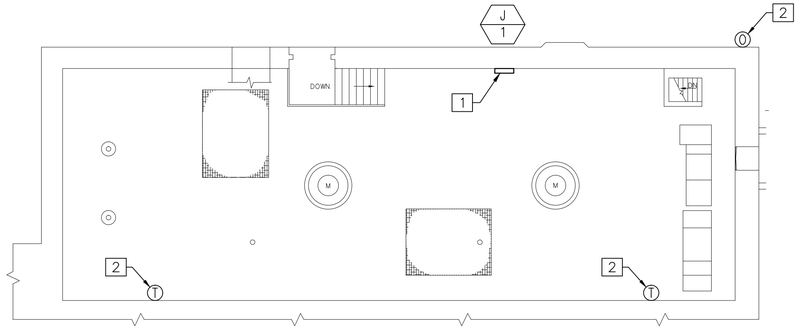

BUILDING DD-1 HVAC FIRST FLOOR PLAN
1/8"=1'-0"

PLAN NORTH

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.

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 SENSOR AND OUTDOOR AIR SENSOR WITH NAVFAC.

GRAPHIC SCALE

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

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NAVFAC

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

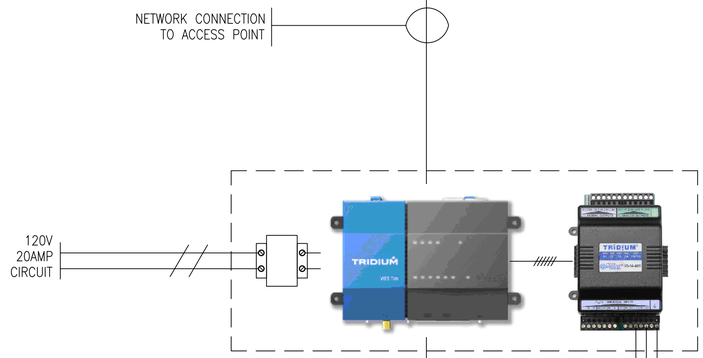
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

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

BUILDING DD-1 HVAC FIRST FLOOR PLAN & SCHEDULE

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703954
SHEET 501 OF 506
M2.0 DD1-15-788

PORTSMOUTH NAVAL SHIPYARD (BUILDING DD1 _ DRYDOCK 1)
EXISTING INVENSYS INTEGRATED DDC SYSTEM ARCHITECTURE



PANEL MATERIAL

ITEM NO	MODEL	DESCRIPTION	QTY
C1	J-8000	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
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2	90% SUBMISSION	06/04/2015	DM
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NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
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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 DD-1 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703955
SHEET 502 OF 506

M3.0 DD1-15-789

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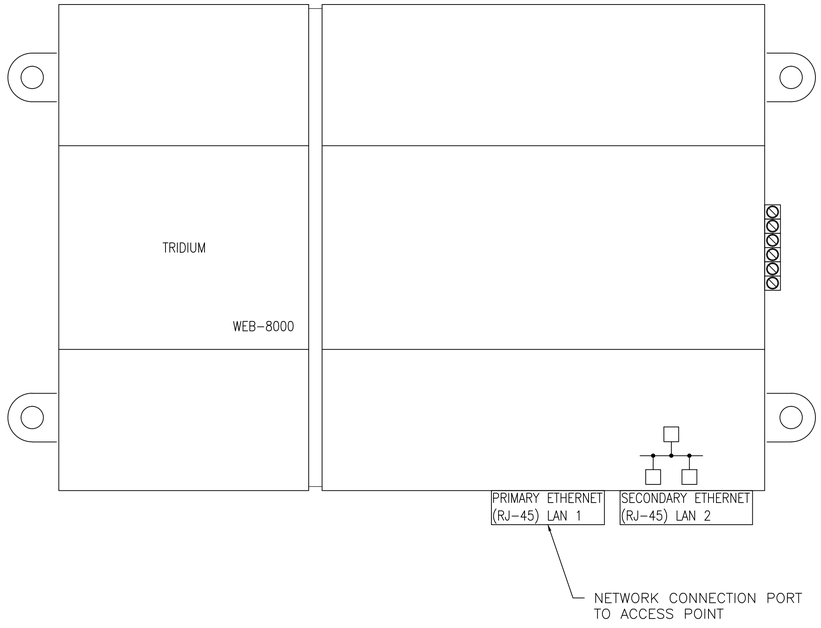

ETHERNET CONNECTION TO RF ACCESS POINT

STM	DESCRIPTION	DATE	APPR
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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
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603-319-6424
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
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

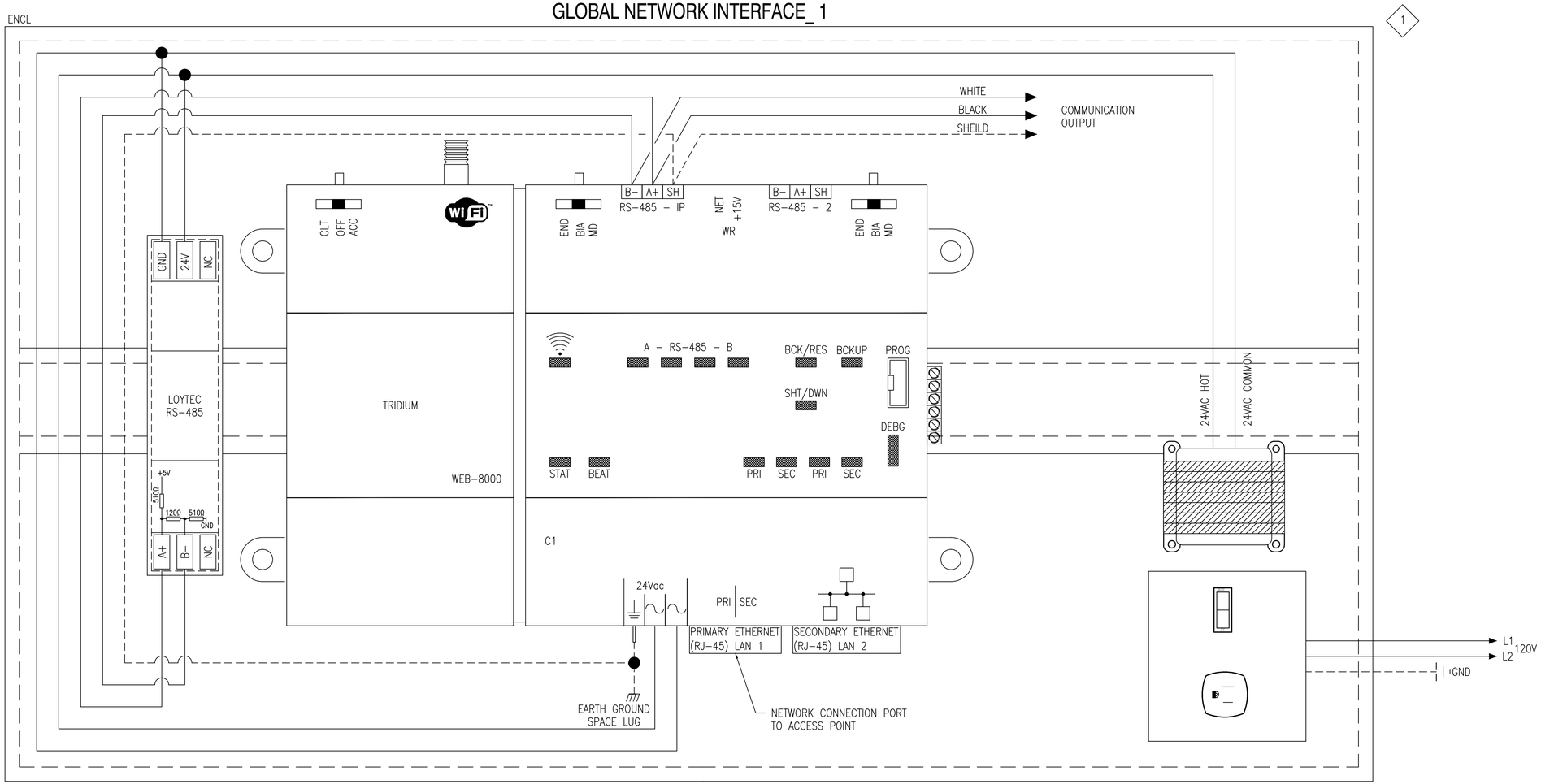
BUILDING DD-1 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO.: N40085-XX-C-XXXX
NAVFAC DRAWING NO.: 12703956
SHEET 503 OF 506

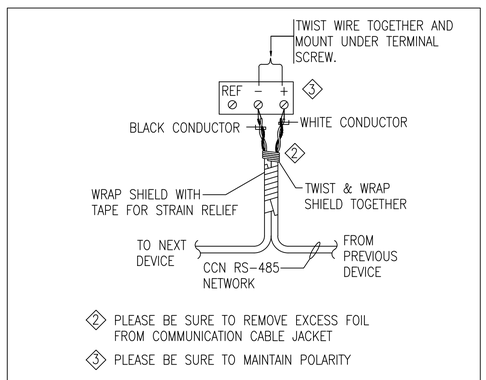
M3.1 | DD1-15-790

DRAWFORM REVISION: 10 OCTOBER 2014

GLOBAL NETWORK INTERFACE_1



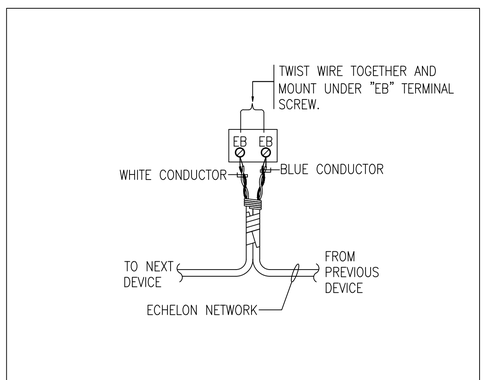
1 LOCATION OF CONTROLLER TO BE FIELD VERIFIED



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
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
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 DD-1 HVAC CONTROLS

EPROJECT NO.: 1350913

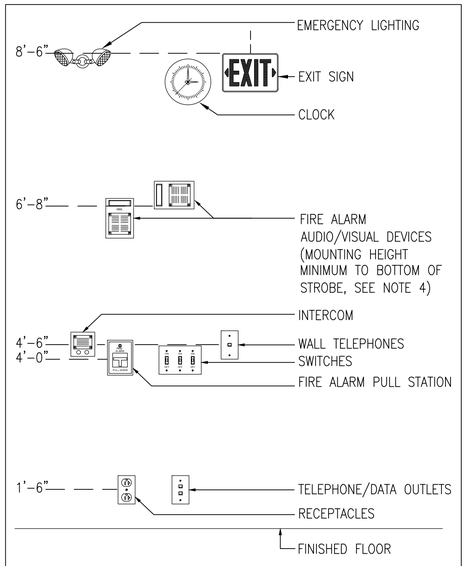
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703957

SHEET 504 OF 506

M3.2 DD1-15-791

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

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
□	EXISTING EQUIPMENT TO REMAIN FOR INFORMATION ONLY – (XM) INDICATED BY SYMBOL WITH LIGHT OUT OF FUNCTION LINE TYPE

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 SYSTEM TAGS OR CALLOUT SYMBOLS

SYMBOL	
#	NEW WORK NOTE TAG

MOTOR & CONTROLS LEGEND

SYMBOL	DESCRIPTION
JCB	DDC CONTROL JACE BOX. PROVIDED BY OTHERS. FIELD COORDINATE EXACT LOCATION.

POWER DISTRIBUTION LEGEND

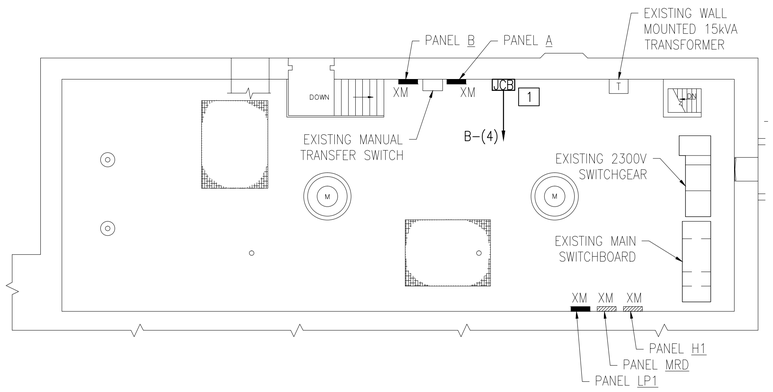
SYMBOL	DESCRIPTION
▬	208Y/120 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS
▨	480Y/277 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS
T	DRY TYPE TRANSFORMER

PANELBOARD SCHEDULE

PANEL: B — VOLTS: 120/ 208 — NEW/EXISTING.: EXISTING
MAIN: 100A MCB — BUS AMPS: 100A — MOUNT.: SURFACE
PH/WIRE: 3ø/4W — AIC: — LOC: NEAR STAIRS

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE		NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	HEATERS 230V MTR CONTROL	0	–		–	0	2ND LEVEL WALL LTS	20/1	2
3	20/2	CEILING LTS 2ND LEVEL	0	–		1	.02	JACE BOX	20/1	4
5						–	0	LTS IN PIT & EM FLOOD LTS	20/1	6
7	20/1	WALL LTS & CAB LTS	0	–		–		SPACE		8
9	20/1	HEATER 480V MTR CONTROL	0	–		–	0	EM. LTS	20/1	10
11		SPACE		–		–		SPACE		12
13		SPACE		–		–		SPARE		14
15		SPACE		–		–		SPARE		16
17		SPACE		–		–		SPARE		18
			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.



BUILDING DD-1 ELECTRICAL FIRST FLOOR PLAN
1/4"=1'-0"

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;
   374–15–211 FOR TITLE SHEET
   374–15–212 FOR LIST OF DRAWINGS
   374–15–213 FOR GENERAL NOTES & LEGENDS
   374–15–216 FOR CHASE AND SOFFIT DETAILS

NEW WORK KEYNOTES

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

SCHEDULE OF DRAWINGS

DWG#	DESCRIPTION
E1.0	BUILDING DD–1 DRY DOCK ELECTRICAL LEGEND, FIRST FLOOR PLAN, & PANELBOARD SCHEDULE

GRAPHIC SCALE

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

APPR	DATE	DESCRIPTION	STA
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 — 919 BASKIN AVE, STE 204, CHESAPEAKE, VA 23320, 757.313.9828

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

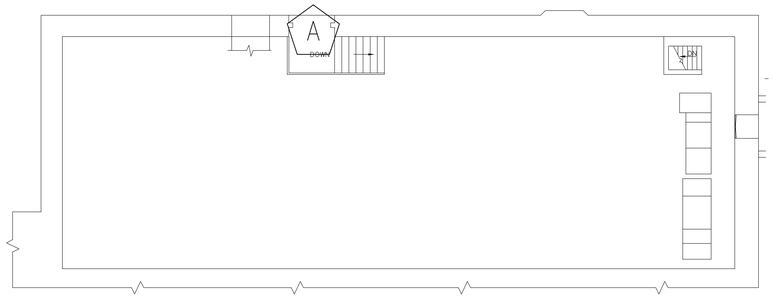
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING DD–1 DRY DOCK ELECTRICAL LEGEND, FIRST FLOOR PLAN & PANELBOARD SCHEDULE

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703958
SHEET 505 OF 506
E1.0 | DD1-15-792

DRAWFORM REVISION: 10 OCTOBER 2014



DD-1 ANTENNA LOCATION - FIRST 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	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 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 PIPE MOUNT RF ACCESS POINT ON FLAT ROOF OF "DOGHOUSE/BULKHEAD."
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT TO B86A ACCESS POINT.
3. PIPE MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS.
4. CAT5 CABLE SHALL BE ROUTED ALONG EXISTING PATH TO JACE; NEW PENETRATION MAY BE REQUIRED IF EXISTING PROVES UNSUITABLE.

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
(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

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FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
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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

DD1 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703959

SHEET 506 OF 506

ET1.0 | DD1-15-793

DRAWFORM REVISION: 10 OCTOBER 2014