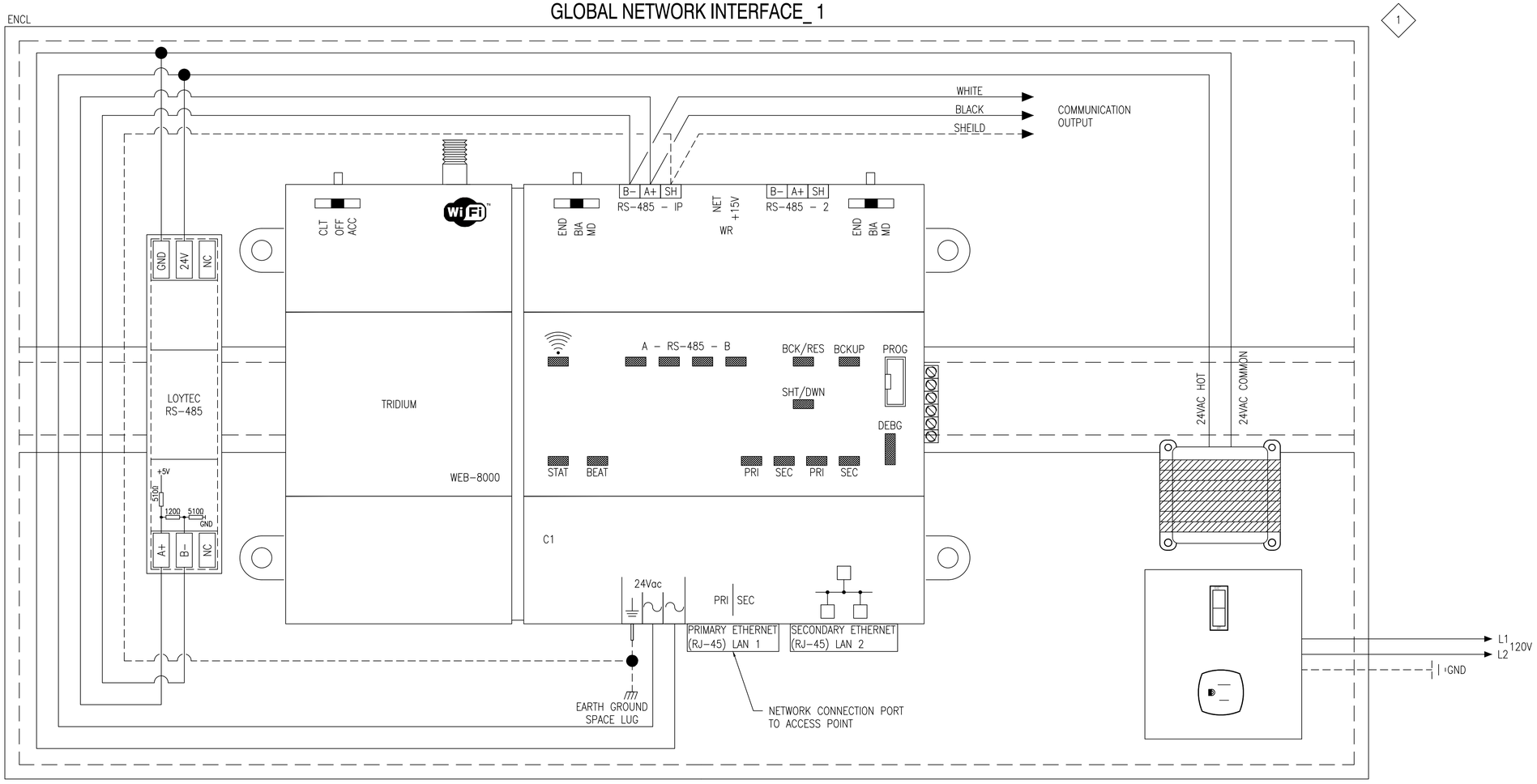
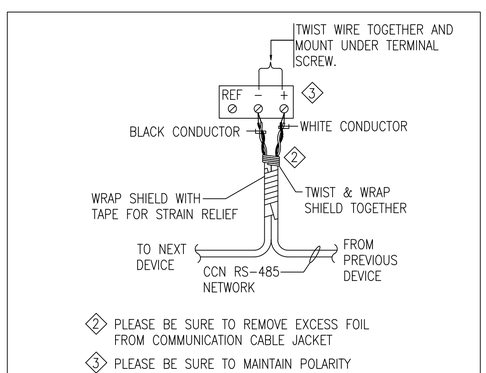
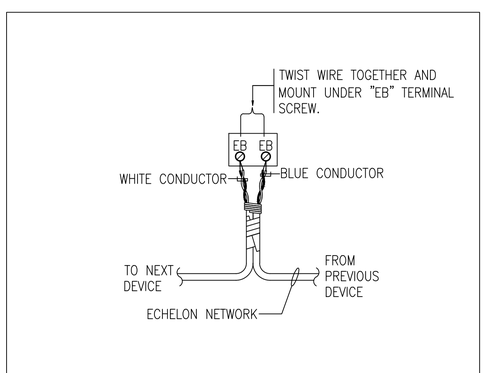
GLOBAL NETWORK INTERFACE_ 1



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

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ENGINEERING

CSI ENGINEERING

FIRE PROTECTION

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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
KITTERY, MAINE

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

BUILDING 170 HVAC CONTROLS

EPROJECT NO.: 1350913

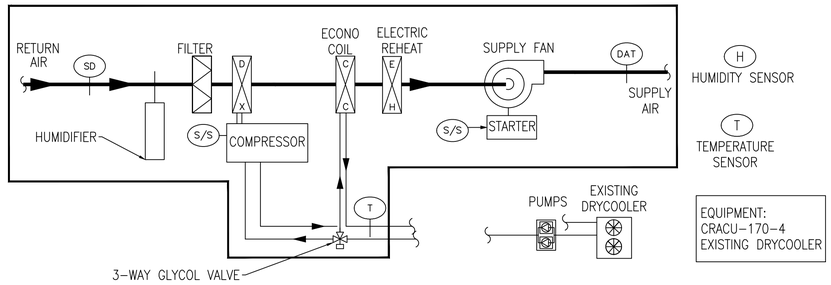
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703754

SHEET 301 OF 506

M3.2 | 170-15-733

DRAWFORM REVISION: 10 OCTOBER 2014



OFF MODE
- SUPPLY FAN IS OFF
- PUMP OFF
- COMPRESSOR IS OFF
- ELECTRIC REHEAT COIL IS OFF
- 3-WAY GLYCOL VALVE CLOSED
- DRY COOLER IS OFF
- HUMIDIFIER IS OFF

COOLING MODE
- SUPPLY FAN IS ON
- PUMP ON
- COMPRESSOR IS ON
- DRY COOLER IS ON
- 3-WAY GLYCOL VALVE OPEN TO COMPRESSOR
- HUMIDIFIER IS OFF
- ELECTRIC REHEAT COIL IS OFF
- SETPOINT IS 70°F(ADJ)

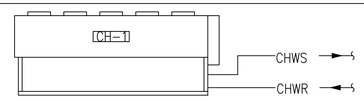
ECONOMIZER COOLING MODE
- SUPPLY FAN IS ON
- PUMP ON
- COMPRESSOR IS OFF
- DRY COOLER IS ON
- 3-WAY GLYCOL VALVE OPEN TO ECONO COIL
- HUMIDIFIER IS OFF
- ELECTRIC REHEAT COIL IS OFF
- SETPOINT IS 70°F(ADJ)
- IF CONDENSATE SUPPLY WATER IS LESS THAN 42°F ECONO MODE STARTS

HUMIDIFY MODE
- SUPPLY FAN IS ON
- PUMP ON
- COMPRESSOR IS ON IF IN COOLING MODE
- DRY COOLER IS ON
- GLYCOL VALVE IS OPEN TO EITHER COMPRESSOR OR ECONO COIL
- ELECTRIC REHEAT COIL IS OFF
- SETPOINT IS 70°F(ADJ)
- IF ROOM RELATIVE HUMIDITY (RH) DROPS BELOW 45% (ADJ) FOR TEN MINUTES AS MEASURED BY HSTAT, HUMIDIFICATION CYCLE SHALL BE ACTIVATED.
- HUMIDIFIER IS ON
- HUMIDIFICATION CYCLE ENDS WHEN SPACE HUMIDITY RISES ABOVE 55% (ADJ).

DEHUMDIFICATION MODE
- SUPPLY FAN IS ON
- PUMP ON
- COMPRESSOR IS ON IF IN COOLING MODE
- DRY COOLER IS ON
- GLYCOL VALVE IS OPEN TO EITHER COMPRESSOR OR ECONO COIL
- HUMIDIFIER IS OFF
- SETPOINT IS 70°F(ADJ)
- IF ROOM RELATIVE HUMIDITY (RH) RISES ABOVE 55% (ADJ) FOR TEN MINUTES AS MEASURED BY HSTAT, DEHUMIDIFICATION CYCLE SHALL BE ACTIVATED.
- ELECTRIC REHEAT COIL IS ON
- DEHUMIDIFICATION CYCLE ENDS WHEN SPACE HUMIDITY DROPS BELOW 45%

ALARMS & SAFETIES
- WHEN SMOKE DETECTOR IS ACTIVATED, CRAC AND ACCU IS SHUTDOWN
- WHEN WATER SENSOR ACTIVATED UNIT SHUTS DOWN
- WHEN FAN FAILS UNIT SHUTS DOWN WHEN PUMP 1 OF THE DUAL PUMP SYSTEM FAILS PUMP 2 WILL ASSUME DUTY AND ALARM SENT
- WHEN CONDENSATE WATER SUPPLY IS ABOVE 115°F UNIT SHUTS DOWN

CRAC CONTROL SEQUENCE



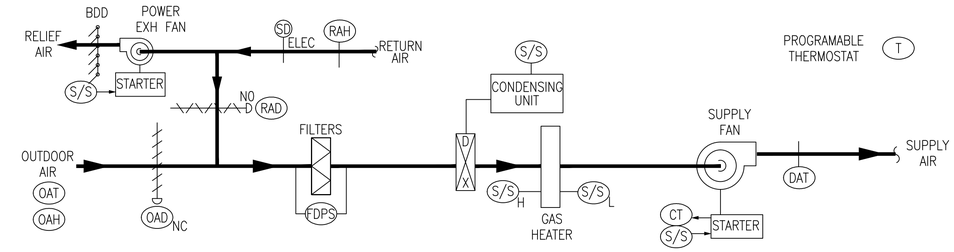
GENERAL:
- PACKAGED CHILLER IS MONITORED AND ON/OFF CONTROLLED BY THE NEW NIAGRA BUILDING DDC SYSTEM

OFF MODE:
- PACKAGED CHILLER IS DE-ENERGIZED

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

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

PACKAGED CHILLER SEQUENCE OF OPERATION



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

UNOCCUPIED HEATING
- SF IS ON
- EF IS OFF
- 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
- EF IS OFF
- 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
- EF IS LOW
- 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

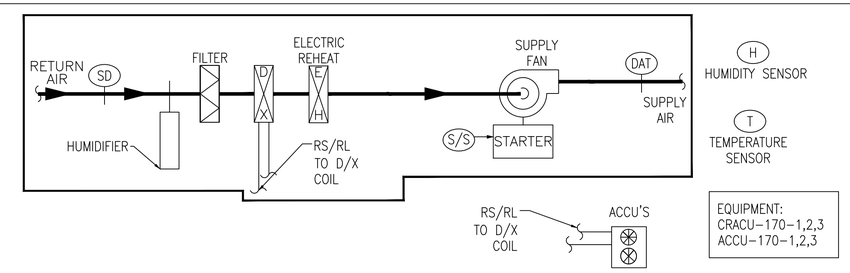
OCCUPIED HEATING
- SF IS ON
- EF IS LOW
- OAD IS OPEN TO MINIMUM POSITION
- EAD IS OPEN TO MINIMUM POSITION
- RAD IS OPEN TO MINIMUM POSITION
- GAS HEATER IS ON
- COOLING SYSTEM IS DE-ENERGIZED
- ROOM TEMPERATURE SET POINT IS 70°F (ADJ)
- DAT MIN 95°F & MAX 110°F

OCCUPIED COOLING
- SF IS ON
- EF IS LOW
- 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
- EF IS HIGH

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



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

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

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

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

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

CRAC CONTROL SEQUENCE

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

ENGINEER: CSI ENGINEERING, 919 Sanborn Road, Suite 204, Yarmouth, Maine 04096, 781-23-2-8828; 215 Ayrshire Ave, Ste 204, Lancaster, PA 17603, 623-313-924-4

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 170 HVAC CONTROLS

EPROJECT NO.: 1350913

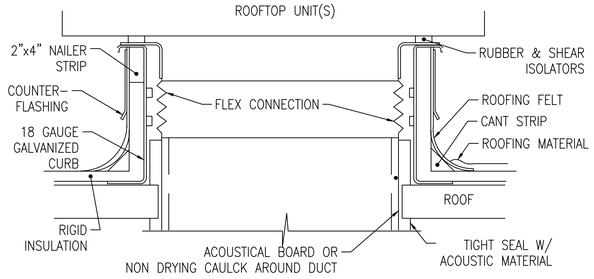
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703755

SHEET 302 OF 506

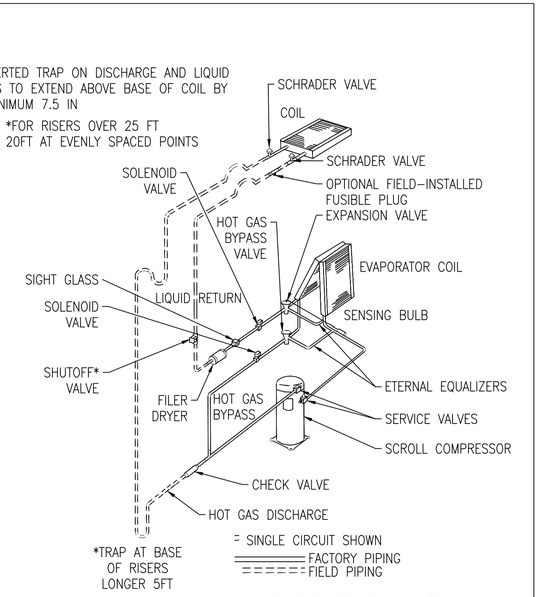
M3.3 | 170-15-734

DRAWFORM REVISION: 10 OCTOBER 2014



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

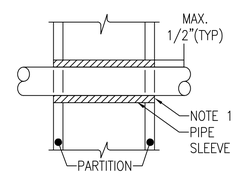
ROOFTOP UNIT MOUNTING W/ CURB



* COMPONENTS ARE NOT SUPPLIED BY MANUFACTURER, BUT ARE TO BE PROVIDED AND INSTALLED BY CONTRACTOR

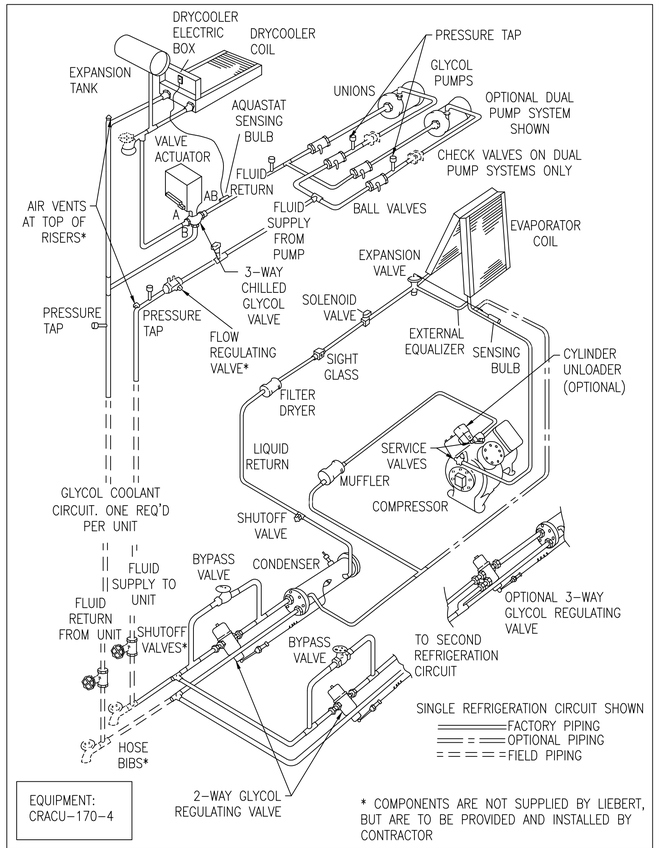
EQUIPMENT:
CRACU-170-1,2,3

CRAC 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.

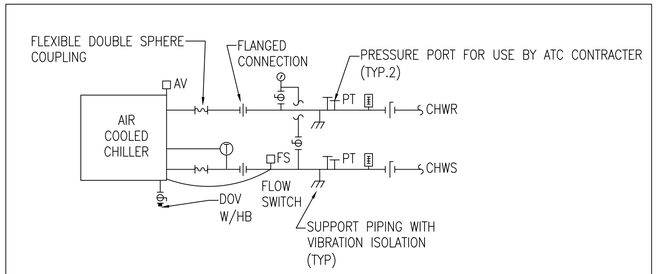
PIPE PENETRATIONS



EQUIPMENT:
CRACU-170-4

* COMPONENTS ARE NOT SUPPLIED BY LIEBERT, BUT ARE TO BE PROVIDED AND INSTALLED BY CONTRACTOR

CRAC GLYCOL PIPING SMALL COMPONENT SCHEMATIC



AIR COOLED CHILLER PIPING DETAIL

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

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

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CSI ENGINEERING TECHNOLOGIES
CSI PROJECT NO. 1350913
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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
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 170 HVAC DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703756

SHEET 303 OF 506

M3.4 | 170-15-735

DRAWFORM REVISION: 10 OCTOBER 2014

PACKAGED DX ROOFTOP AIR HANDLING UNIT SCHEDULE

TAG NO.	MIN. O.A. CONDITIONS			BUILDING R.A. CONDITIONS			SUPPLY FAN					UNIT COOLING COIL				AIR-COOLED CONDENSING UNIT				HEATING COIL (HOT WATER)									ENERGY RECOVERY							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)		UNIT LAT (°F)		COMPRESSOR(S)		CONDENSER FAN		CAPACITY (MBH)	GPM	P.D. (IM.WG.)	AIR DATA		HOT WATER DATA			ROWS	FPI	OA CFM	EA CFM	WHEEL P.D. (IN.WG.)	MOTOR HP	MOTOR FLA	NUMBER OF WHEELS	WHEEL DEPTH	HZ	V	PH	MCA	MOP				
	CFM	DB (°F)	WB (°F)	CFM	DB (°F)	WB (°F)	TOTAL	EXTERNAL	DIA (IN)	RPM	HP	TOTAL	SENS.	DB	WB	TYPE	NO.	NO.	FLA				EAT (°F)	LAT (°F)	GPM	EWT (°F)	LWT (°F)																		
RTU-170-1	SEE NOTE 3.	87	71	SEE NOTE 3.	75	63	11,000	2.0	20	2424	15	324	275	53	52.4	SCROLL	3	3	2.1	469	24.1	0.5	70	109	24.1	180	141	2	9	3,000	3,000	0.48	0.75	1.6	1	4"	60	460	3	91	110	2" PREFILTER	11,768	MCQUAY RPS030D	SEE NOTES
RTU-170-2	SEE NOTE 3.	87	71	SEE NOTE 3.	75	63	11,000	2.0	20	2424	15	324	275	53	52.4	SCROLL	3	3	2.1	469	24.1	0.5	70	109	24.1	180	141	2	9	3,000	3,000	0.48	0.75	1.6	1	4"	60	460	3	91	110	2" PREFILTER	11,768	MCQUAY RPS030D	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 W/ BACNET INTERFACE. 5. PROVIDE WITH POWER EXHAUST. 6. PROVIDE UNIT CONTROL PANEL WITH MAIN DISCONNECT SWITCH. 7. PROVIDE ADJUSTABLE BELT DRIVE BLOWER. 8. PROVIDE OUTSIDE AIR INTAKE HOOD. 9. PROVIDE WITH RETURN AIR FROST PROTECTION. 10. PROVIDE WITH HOT GAS BY-PASS. 11. PROVIDE WITH HUMIDITY SENSOR. 12. PROVIDE WITH SPACE SENSOR WITH TENANT OVERRIDE. 13. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 14. PROVIDE WITH ROOF CURB ADAPTOR IF REQUIRED. 15. PROVIDE WITH SEACOAST RATED COATING FOR CONDENSER COIL.

COMPUTER ROOM AIR-CONDITIONING UNIT SCHEDULE

TAG No.	SERVICE	ASSOCIATED OUTDOOR UNIT	CFM	SUPPLY FAN		COMPRESSOR	DX EVAPORATOR COIL				REHEAT			HUMIDIFIER							FILTER DATA (SEE FILTER SCHEDULE)	DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
			TOTAL	STATIC PRESS. (IN.WG)	MOTOR	TYPE	CAPACITY (MBH)		EDB (°F)	EWB (°F)	CAPACITY (MBH)	ELECTRIC		TYPE	CAPACITY LB./HR	ELEC. (KW)	V	PH	FLA	OPD			
				EXTERNAL			TOTAL	SENS.				STAGES	kW										
CRACU-170-1	BLDG 170	ACCU-170-1	10,400	0.3	EC FAN MOTOR	SCROLL	239	210	75	61	85	2	25	STEAM GEN.	22	10	460	3	61	80	MERV8	LIEBERT DS077-AAEI	1-10
CRACU-170-2	BLDG 170	ACCU-170-2	8,000	0.3	EC FAN MOTOR	DIGITAL SCROLL	189	173	75	61	85	2	25	STEAM GEN.	22	10	460	3	57	70	MERV8	LIEBERT DS053-AAEI	1-8,10
CRACU-170-3	BLDG 170	ACCU-170-3	5,200	0.3	EC FAN MOTOR	DIGITAL SCROLL	130	113	75	61	51	2	15	STEAM GEN.	11	5	460	3	33	45	MERV8	LIEBERT DS035-AAEI	1-10
CRACU-170-4	BLDG 170	EXISTING DRYCOOLER	9,000	0.3	EC FAN MOTOR	DIGITAL SCROLL	201	184	72	61	51	2	15	STEAM GEN.	11	5	460	3	59	80	MERV8	LIEBERT VS070-KOEI	1-3, 5-10

NOTES: 1. PROVIDE W/ BACNET INTERFACE. 2. PROVIDE WITH CABLE LEAK DETECTION. 3. PROVIDE WITH EC PLUG FANS. 4. CONTRACTOR TO VERIFY IF THERE IS A RAISED FLOOR AND RAISED FLOOR DEPTH. PROVIDE WITH PROPER HEIGHT FLOOR STAND IF NECESSARY. 5. PROVIDE WITH ELECTRIC REHEAT. 6. PROVIDE WITH DUAL-FLOAT CONDENSATE PUMPS. 7. PROVIDE WITH STEAM GENERATING HUMIDIFIER. 8. PROVIDE WITH SMOKE DETECTOR IN UNIT RETURN. 9. PROVIDE WITH LOCKING DISCONNECT. 10. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 11. PROVIDE WITH SOUND JACKETS ON DIGITAL SCROLLS.

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-170-1	BLDG 170	ROOF	80	193.6	35	54	44	18.9	R-410A	4	81.6	SCROLL	95	6	7.2	840	89.3	162.2	175	460	3	5,692	TRANE CGAM080F	1,2,3,8
CH-170-2	BLDG 170	ROOF	13	32	35	54	44	4.0	R-407C	-	-	SCROLL	95	2	0.75	1140	48.2	39	50	460	3	1,190	MCQUAY AGZ013B	1,3,4,5,6,7,8

NOTES: 1. PROVIDE W/ BACNET INTERFACE. 2. PROVIDE WITH LOW-TEMPERATURE PROCESSING. 3. PROVIDE WITH SEACOAST RATED COATING FOR CONDENSER COIL. 4. PROVIDE WITH HOT GAS BYPASS. 5. PROVIDE WITH THERMAL EXPANSION VALVE. 6.PROVIDE WITH SINGLE EVAPORATOR PUMP – SINGLE CONTROL OUTPUT. 7. PROVIDE WITH DOUBLE EVAPORATOR INSULATION. 8. 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.	NOMINAL CONDENSER CAPACITY (KW)	ELECTRIC DATA				NOTES
					VOLTS	PHASE	FLA	OPD	
ACCU-170-1	BLDG-170	LIEBERT	MCM080E	80	460	3	2.8	15	SEE NOTES
ACCU-170-2	BLDG-170	LIEBERT	MCS056	56	460	3	2.8	15	SEE NOTES
ACCU-170-3	BLDG-170	LIEBERT	MCS056	56	460	3	2.8	15	SEE NOTES

NOTES: 1. PROVIDE WITH DIGITAL SCROLL COMPRESSOR. 2. PROVIDE WITH LOCKING DISCONNECT. 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.

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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ENGINEERING

MAGE CSI ENGINEERING

FIRE PROTECTION

979 Islington Street, P.O. Box 5152 Portsmouth, NH 03802 TEL: 603-436-8020

25 Ayer's Way, Ste. 204 Lee, NH 03861 TEL: 603-659-2414

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

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

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

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

BUILDING 170 HVAC SCHEDULES

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703757

SHEET 304 OF 506

M4.0 | 170-15-736

DRAWFORM REVISION: 10 OCTOBER 2014

TYPICAL FLASH PROTECTION WARNING LABEL

WARNING

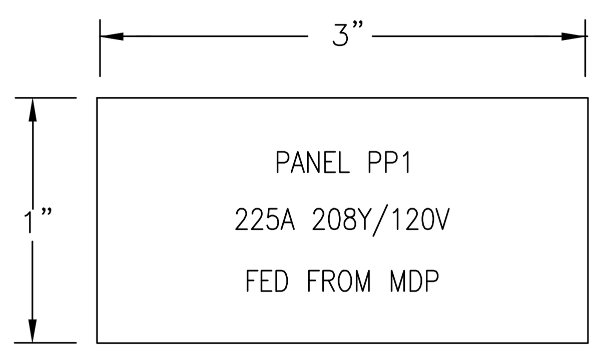
ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

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

NOTES:

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

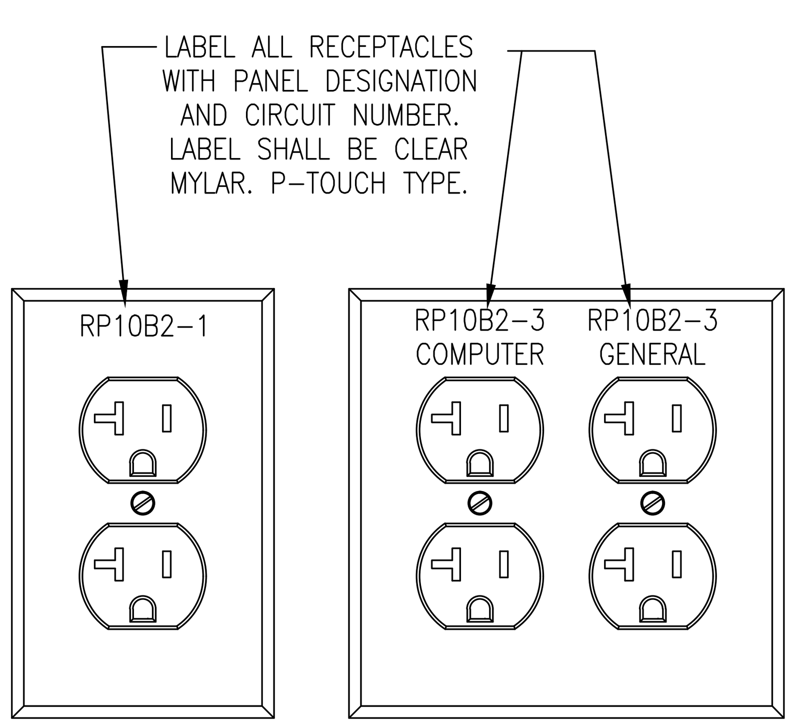
TYPICAL NAMEPLATE DETAIL



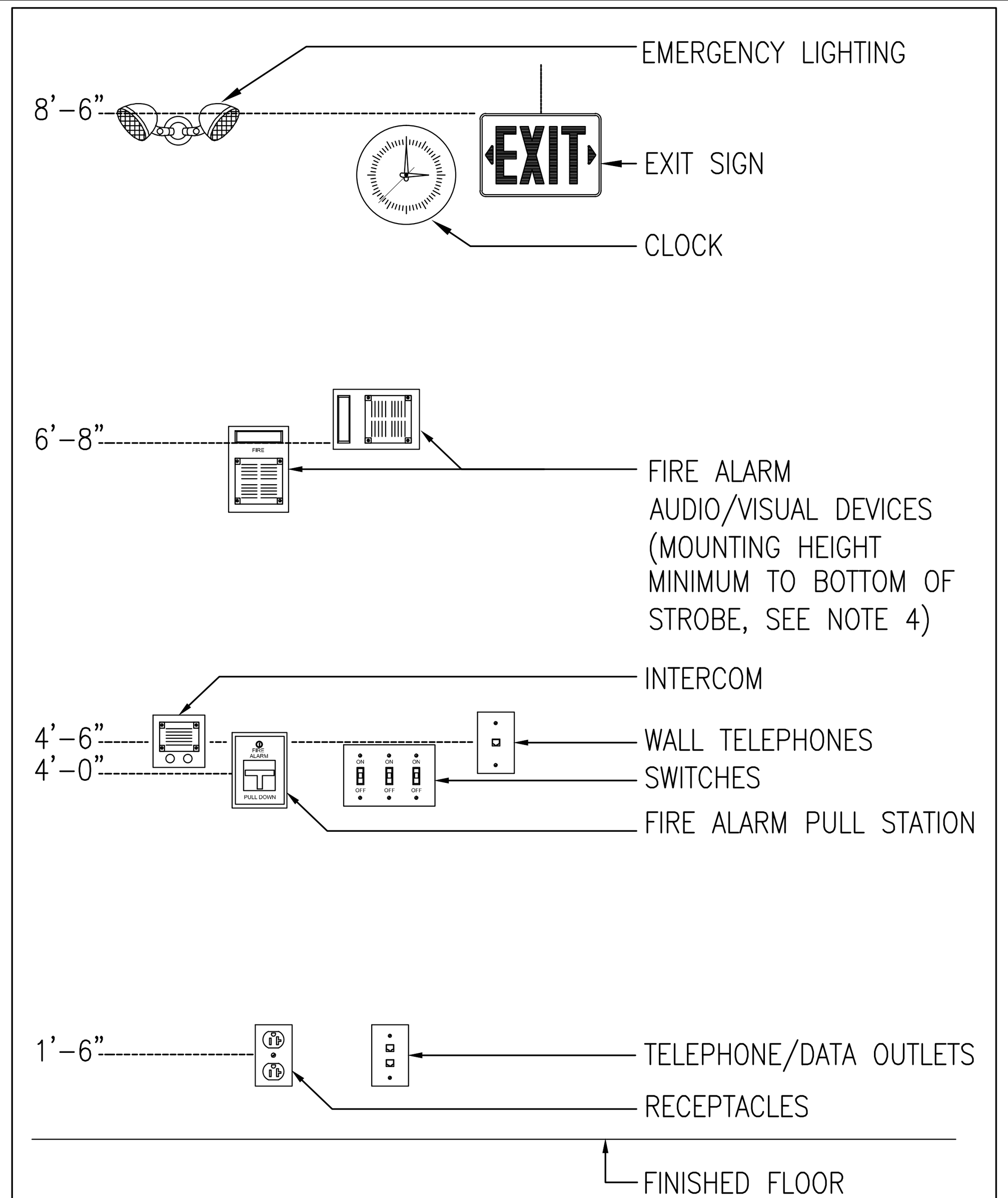
NOTES:

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

RECEPTACLE LABEL REQUIREMENTS



TYPICAL DEVICE MOUNTING HEIGHTS DETAIL



NOTES:

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

ELECTRIC ABBREVIATIONS

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

MOTOR & CONTROLS LEGEND

SYMBOL	DESCRIPTION
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 TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION.
100AF 3P	ENCLOSED CIRCUIT BREAKER IN NEMA TYPE 1 ENCLOSURE UNLESS OTHERWISE NOTED. "100AF" – INDICATES 100A, 3-POLE FRAME CIRCUIT BREAKER "80AT" – INDICATES TRIP RATING

ELECTRIC SYSTEM TAGS OR CALL OUT SYMBOLS

SYMBOL	
EUH #	EQUIPMENT SYMBOLS (REFER TO EQUIPMENT SCHEDULES) EQUIPMENT DESIGNATION EQUIPMENT REFERENCE NUMBER (TYP)
# (square)	NEW WORK NOTE TAG
# (hexagon)	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

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
(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

ONE-LINE LEGEND

SYMBOL	DESCRIPTION
PANEL PP1	PANELBOARD "PP1" – INDICATES PANELBOARD NAME REFER TO PANELBOARD SCHEDULES FOR ADDITIONAL INFORMATION
100AF 3P	ENCLOSED CIRCUIT BREAKER "100AF" – INDICATES TRIP RATING "3P" – INDICATES NUMBER OF POLES
480V 120/208V	TRANSFORMER, 480V INDICATES PRIMARY VOLTAGE REFER TO PANELBOARD SCHEDULES FOR ADDITIONAL INFORMATION

WIRING DEVICES

SYMBOL	DESCRIPTION
# GFI	DUPLEX RECEPTACLE, GROUNDING TYPE, RATED 20A, 125V "#" – INDICATES CIRCUIT NUMBER (TYP FOR WIRING DEVICES) "WP" – INDICATES WEATHERPROOF (TYP FOR WIRING DEVICES) "C" – INDICATES COUNTER HEIGHT (TYP FOR WIRING DEVICES) "GFI" – INDICATES GROUND FAULT INTERRUPTER

ELECTRIC GENERAL NOTES

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

SCHEDULE OF DRAWINGS

DWG#	DESCRIPTION
E1.0	BUILDING 170 ELECTRICAL LEGEND
ED2.0B	BUILDING 170 ELECTRICAL SIXTH FLOOR DEMOLITION PLAN PART B
ED2.1A	BUILDING 170 ELECTRICAL ROOF DEMOLITION PLAN PART A
ED2.1B	BUILDING 170 ELECTRICAL ROOF DEMOLITION PLAN PART B
ED2.1C	BUILDING 170 ELECTRICAL ROOF DEMOLITION PLAN PART C
E2.0B	BUILDING 170 ELECTRICAL SIXTH FLOOR PLAN PART B
E2.1A	BUILDING 170 ELECTRICAL ROOF PLAN PART A
E2.1B	BUILDING 170 ELECTRICAL ROOF PLAN PART B
E2.1C	BUILDING 170 ELECTRICAL ROOF PLAN PART C
E3.0	BUILDING 170 ELECTRICAL ONE-LINE & MECHANICAL SCHEDULE
E4.0	BUILDING 170 ELECTRICAL 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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CSI ENGINEERING – HVAC, PLUMBING, FIRE PROTECTION, ELECTRICAL
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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

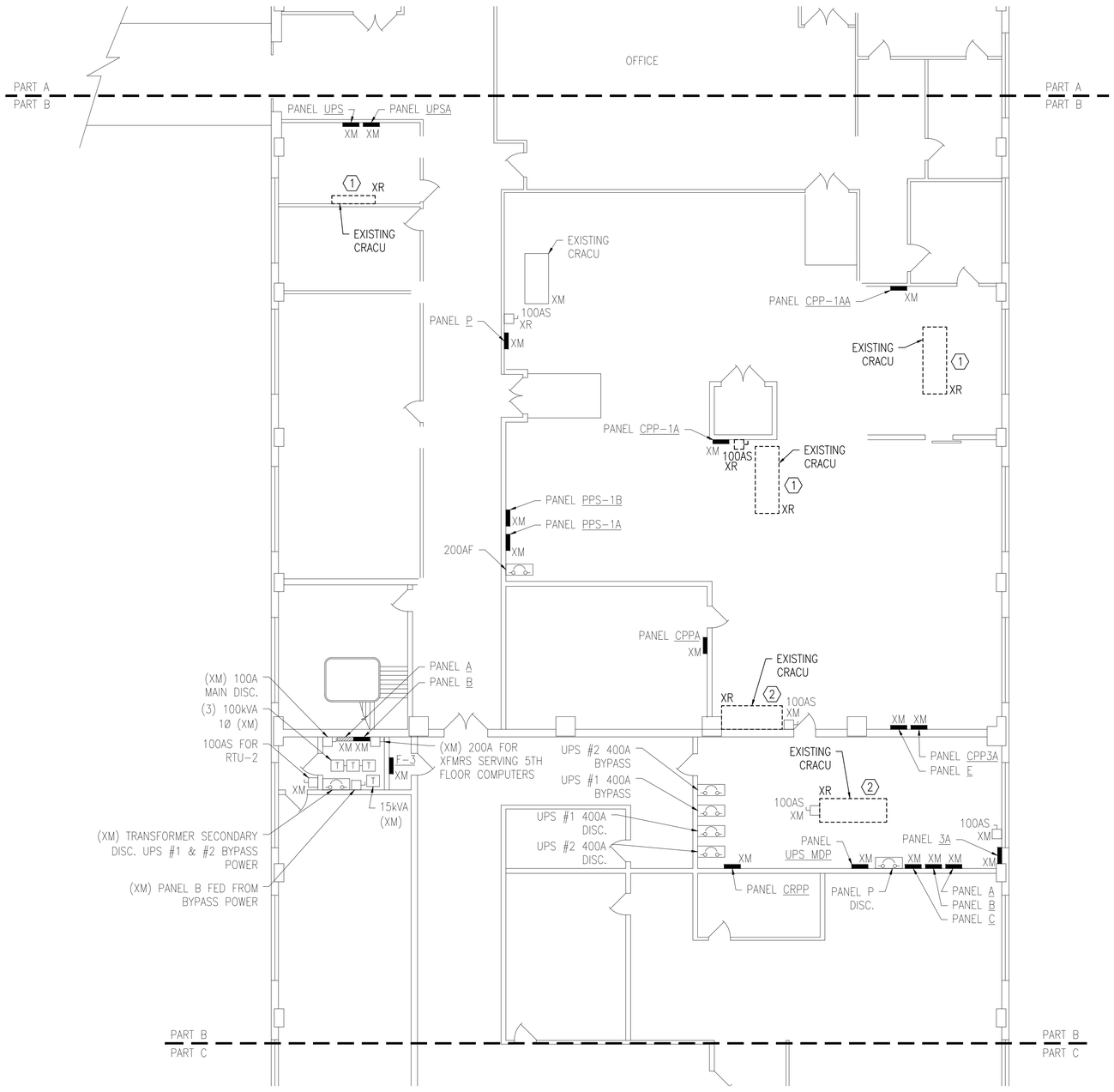
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 170 ELECTRICAL LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703758
SHEET 305 OF 506

E1.0 | 170-15-737

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 170 ELECTRICAL SIXTH FLOOR DEMOLITION PLAN - PART B

1/8"=1'-0"

PLAN NORTH

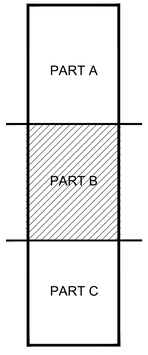
GENERAL SHEET NOTES

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 CRACU. DEMOLISH ALL ASSOCIATED BRANCH CIRCUITRY AND DISCONNECT IN THEIR ENTIRETY. MAINTAIN EXISTING CIRCUIT BREAKER AND LABEL AS "SPARE" FOR FUTURE USE.
2. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING CRACU. DEMOLISH ASSOCIATED BRANCH CIRCUITRY IN ITS ENTIRETY. MAINTAIN ASSOCIATED DISCONNECT AND CIRCUIT BREAKER. LABEL EXISTING CIRCUIT BREAKER AS "SPARE" FOR FUTURE USE.

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

DESIGN CONSULTANT: CSI TECHNOLOGY, 959 Backman Ave, Suite 236, Portsmouth, NH 03801, 781-329-4600, 23 Ayrshire Ave, Ste 304, Lynn, MA 01902, 603-319-9214

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 170 ELECTRICAL SIXTH FLOOR DEMOLITION PLAN PART B

EPROJECT NO.: 1350913

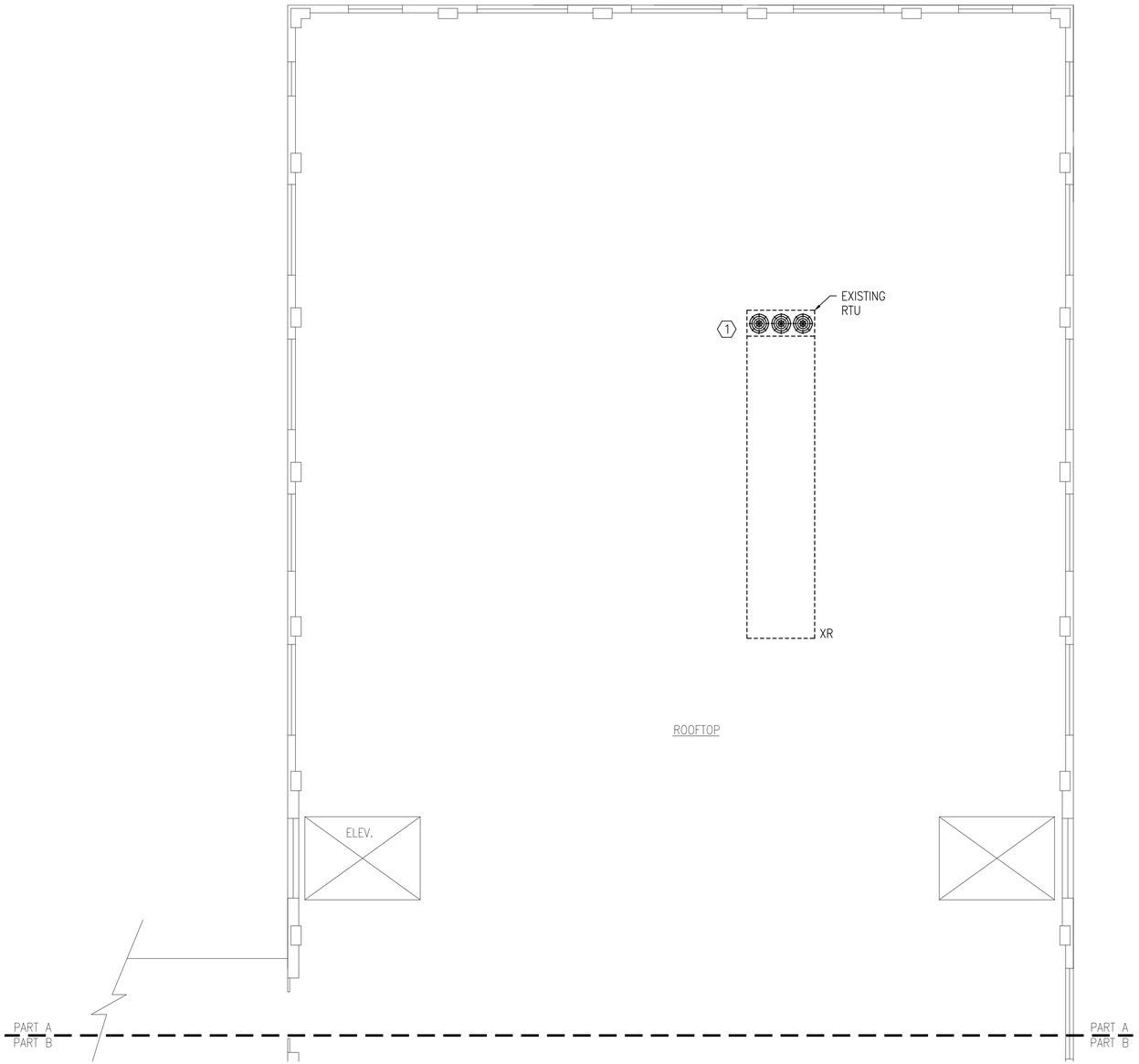
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703759

SHEET 306 OF 506

ED2.0B 170-15-738

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 170 ELECTRICAL ROOF DEMOLITION PLAN - PART A

1/8"=1'-0"

PLAN NORTH

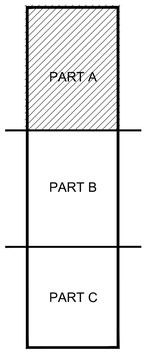
GENERAL SHEET NOTES

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 EXISTING CIRCUIT BREAKER AND LABEL AS "SPARE" FOR FUTURE USE.

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
CHARLES E. MACE
No. 13078
LICENSED
PROFESSIONAL ENGINEER
SEAL

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PROVIDER
CSI
ENGINEERING
FIRE PROTECTION
999 Bedford Street, 7th Floor
Stamford, CT 06905
781-329-8828
215 Haverhill Rd, Ste 304
Portsmouth, NH 03801
603-319-9214
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

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

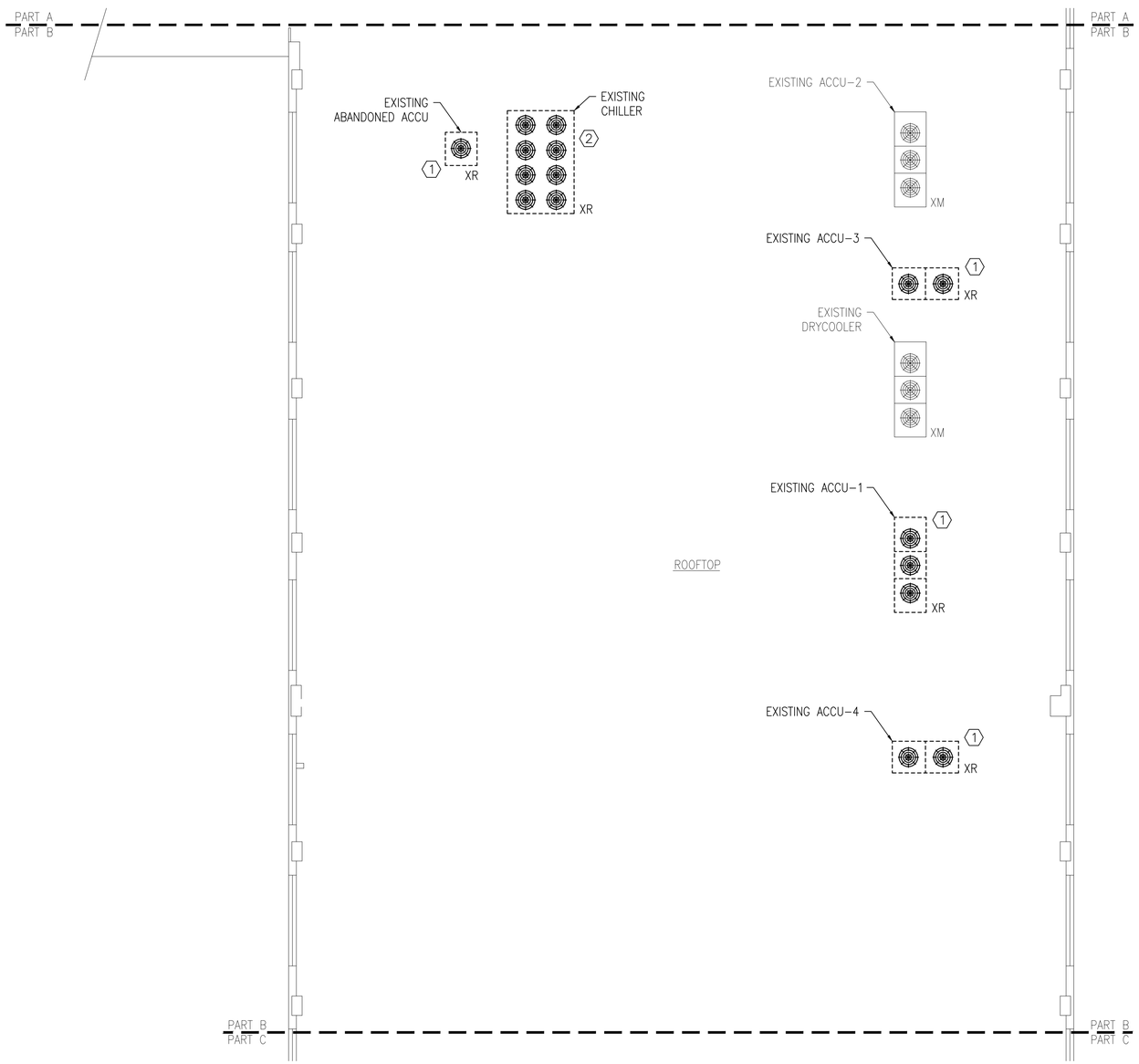
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

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

BUILDING 170 ELECTRICAL ROOF DEMOLITION PLAN PART A

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703760
SHEET 307 OF 506
ED2.1A | 170-15-739

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 170 ELECTRICAL ROOF DEMOLITION PLAN - PART B

1/8"=1'-0"

PLAN NORTH

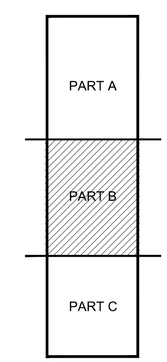
GENERAL SHEET NOTES

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 UNIT. DEMOLISH ALL ASSOCIATED BRANCH CIRCUITRY AND DISCONNECT IN THEIR ENTIRETY. MAINTAIN ASSOCIATED CIRCUIT BREAKER AND LABEL AS "SPARE" FOR FUTURE USE.
2. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING CHILLER. DEMOLISH ASSOCIATED BRANCH CIRCUITRY, DISCONNECT AND CIRCUIT BREAKER IN THEIR ENTIRETY.

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
CHARLES E. MACE
No. 13078
LICENSED
PROFESSIONAL ENGINEER
SEAL

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CONTRACTOR

PREPARED

CSI ENGINEERING

CSI PROFESSIONAL SERVICES, PC
959 BANDMAN BLVD, STE 204
FORT WALTON BEACH, FL 32547
TEL: 850-243-0828

CAGE CODE: 3TJ56
DUNS: 079-232-9224
UEI: FCSJ3T9JEA4
TAX ID: 82-0371924

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 170 ELECTRICAL ROOF DEMOLITION PLAN PART B

EPROJECT NO.: 1350913

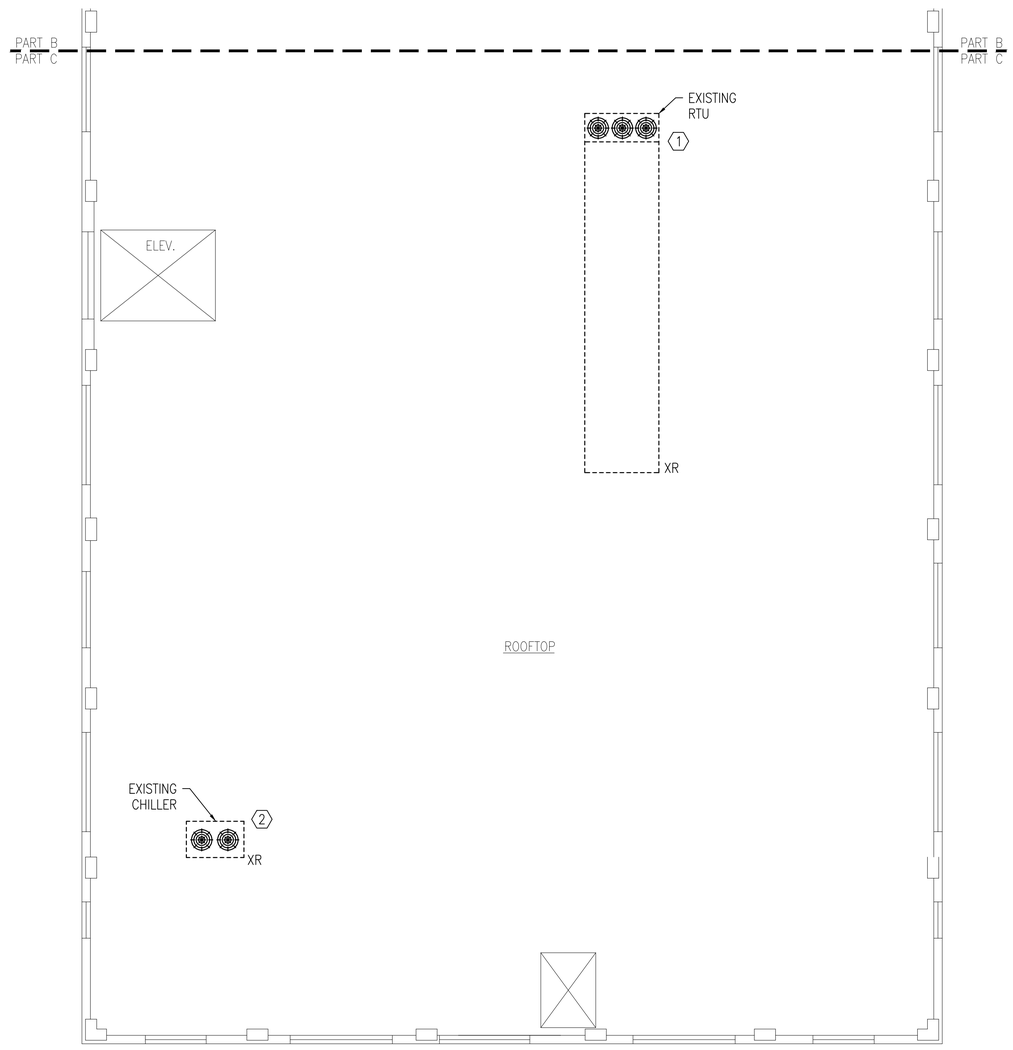
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703761

SHEET 308 OF 506

ED2.1B | 170-15-740

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 170 ELECTRICAL ROOF DEMOLITION PLAN - PART C

1/8"=1'-0"

PLAN NORTH

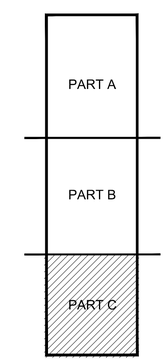
GENERAL SHEET NOTES

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 ALL ASSOCIATED BRANCH CIRCUITRY & DISCONNECT IN THEIR ENTIRETY. MAINTAIN EXISTING CIRCUIT BREAKER AND LABEL AS "SPARE" FOR FUTURE USE.
2. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING CHILLER. DEMOLISH ALL ASSOCIATED BRANCH CIRCUITRY AND DISCONNECT IN THEIR ENTIRETY. MAINTAIN ASSOCIATED CIRCUIT BREAKER AND LABEL AS "SPARE" FOR FUTURE USE.

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
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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
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SEAL

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CSI ARCHITECTS

CIVIL INFRASTRUCTURE, INC.
978 BOSTON ST, STE 204
SALEM, MA 01970
978-740-2000

215 AUSTIN AVE, STE 204
BEDFORD, NH 03110
603-471-9424

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 170 ELECTRICAL ROOF DEMOLITION PLAN PART C

EPROJECT NO.: 1350913

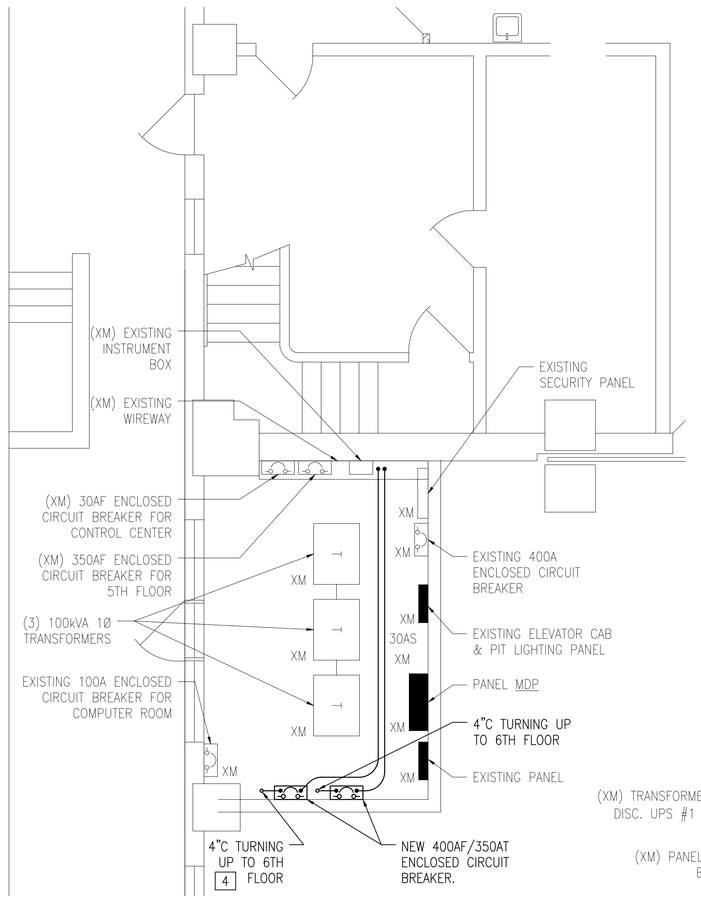
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703762

SHEET 309 OF 506

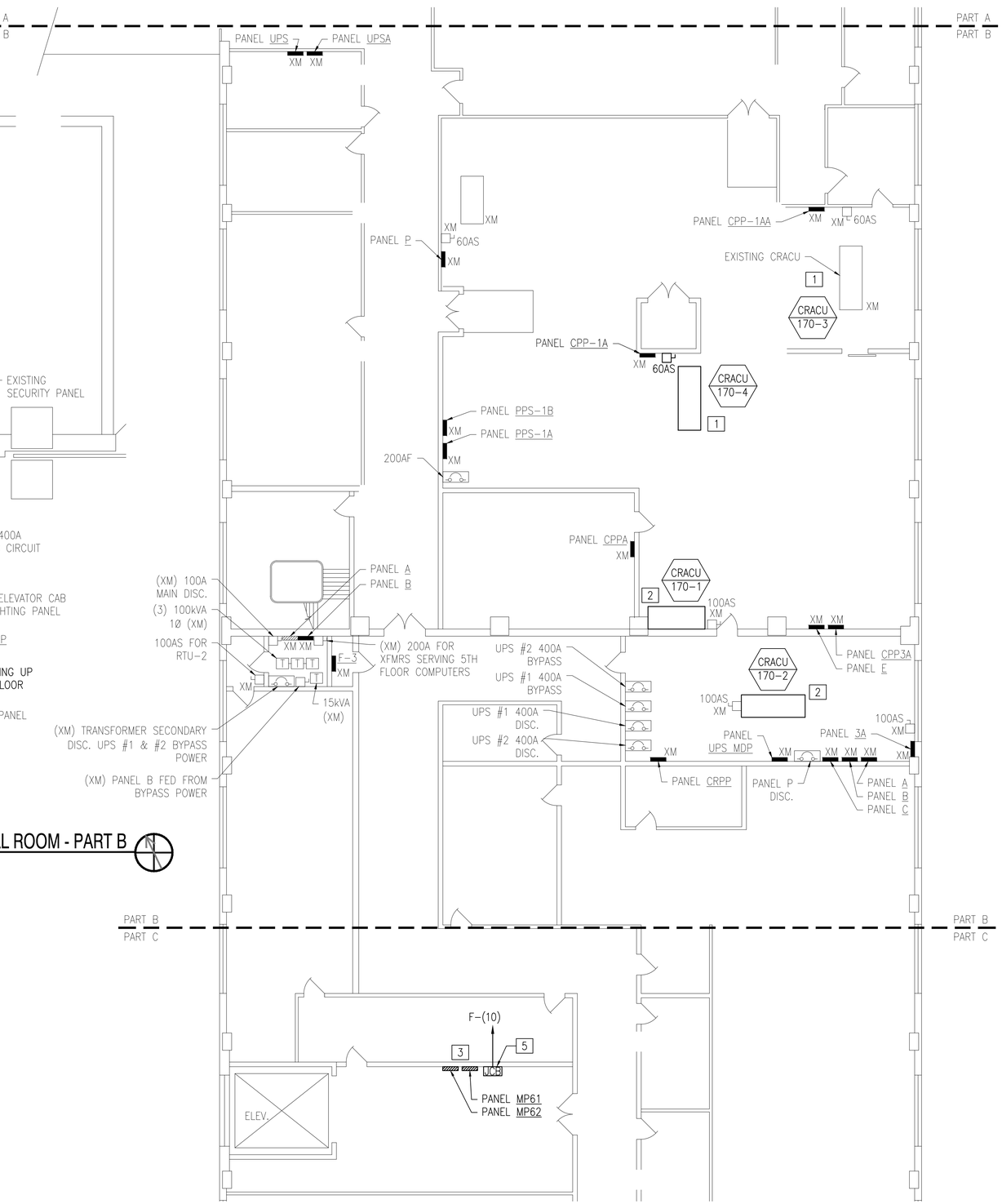
ED2.1C 170-15-741

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 170 ELECTRICAL FIRST FLOOR MAIN ELECTRICAL ROOM - PART B

1/4"=1'-0"



BUILDING 170 ELECTRICAL SIXTH FLOOR PLAN - PART B EXTENDED

1/8"=1'-0"

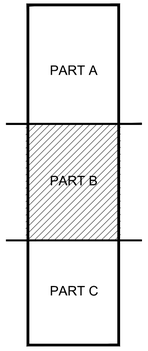
GENERAL SHEET NOTES

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

NEW WORK KEYNOTES

1. PROVIDE NEW CIRCUIT BREAKER IN PANEL "MP61" FOR NEW CRACU PROVIDE NEW DISCONNECT AS SHOWN. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
2. PROVIDE NEW CIRCUIT BREAKER IN NEW PANEL "MP61" FOR NEW CRACU. REUSE EXISTING DISCONNECT MAINTAINED DURING DEMOLITION. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
3. NEW PANELS "MP61" AND "MP62" FOR NEW MECHANICAL EQUIPMENT LOCATED ON ROOF. TAP EXISTING 480V SERVICE FROM LC8-(25) AND PROVIDE NEW 400AF/350AT ENCLOSED CIRCUIT BREAKERS IN FIRST FLOOR MAIN ELECTRICAL ROOM AS SHOWN. REFER TO RISER DIAGRAM ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
4. EXACT ROUTING OF CONDUIT SHALL BE DETERMINED IN THE FIELD. CONDUIT TO BE CONCEALED WHERE EVER POSSIBLE WHEN PASSING THROUGH FINISHED SPACES.
5. 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

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

SEAL

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ENGINEERING

CSI TECHNOLOGIES

FIRE PROTECTION

999 Bedford St. Suite 205
Stamford, CT 06905
TEL: 203-323-8925

25 Ayer Rd. Suite 204
Harvard, MA 01451
TEL: 978-772-7700

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 170 ELECTRICAL SIXTH FLOOR PLAN PART B

EPROJECT NO.: 1350913

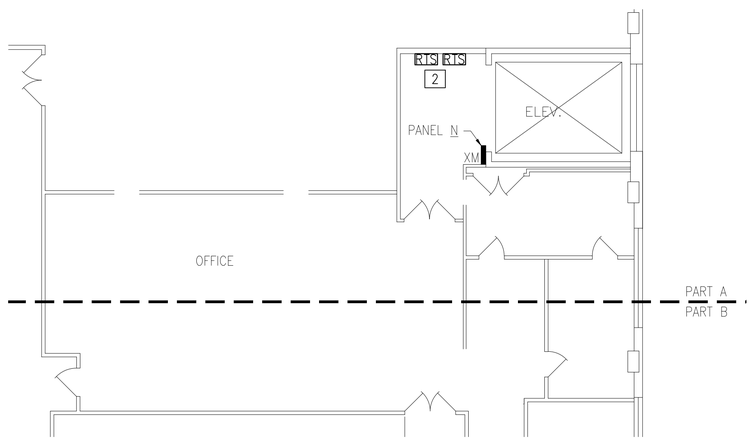
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703763

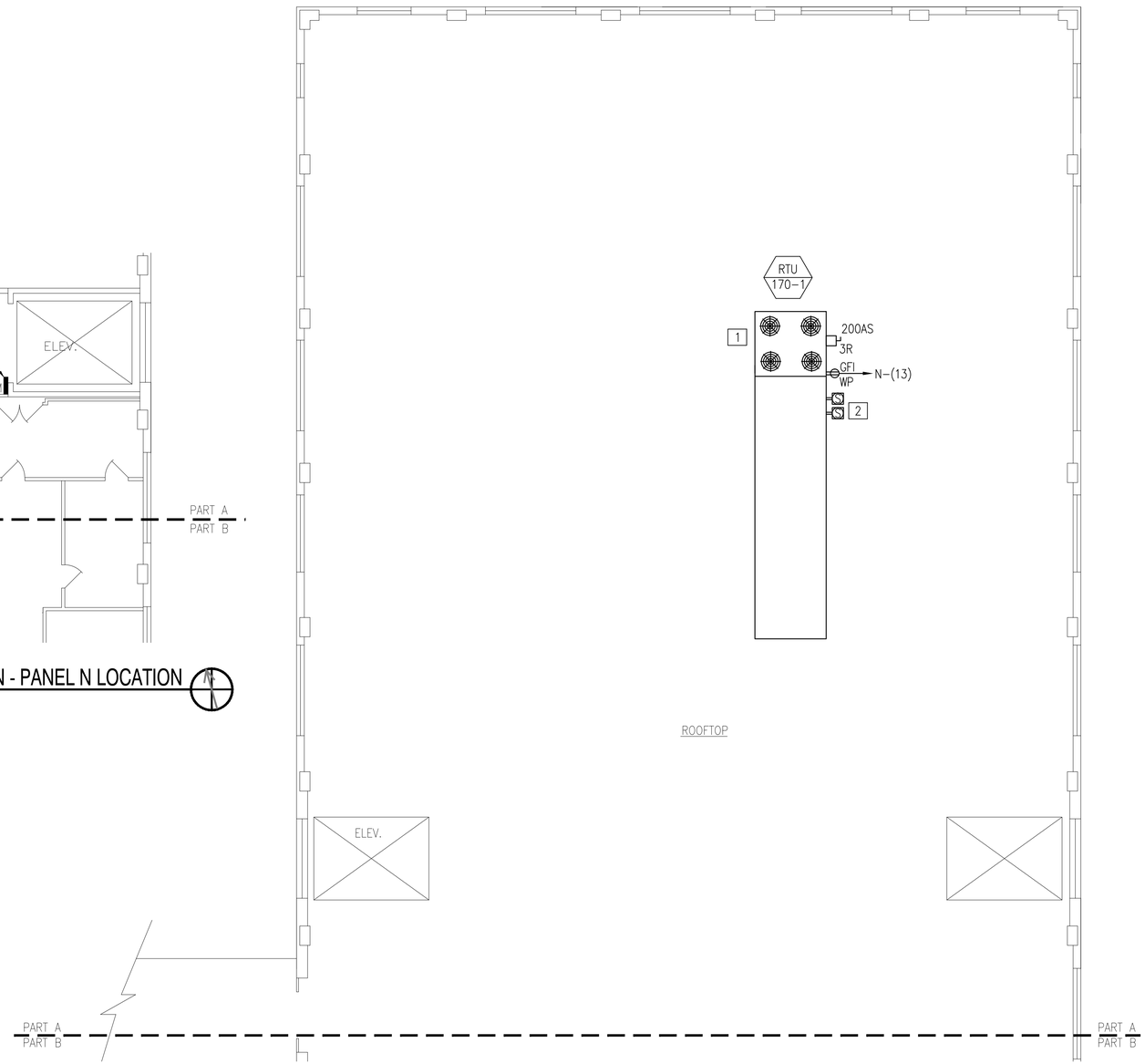
SHEET 310 OF 506

E2.0B | 170-15-742

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 170 ELECTRICAL 6TH FLOOR PART PLAN - PANEL N LOCATION
1/8"=1'-0"



BUILDING 170 ELECTRICAL ROOF PLAN - PART A
1/8"=1'-0"

PLAN NORTH

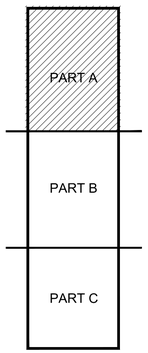
GENERAL SHEET NOTES

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. FIRE ALARM BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. FIRE ALARM BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
5. MC CABLE FOR FIRE ALARM SERVICE SHALL HAVE A RED IDENTIFIER ALONG ITS ENTIRE LENGTH. JUNCTION BOX COVERS AND CONDUIT COUPLINGS FOR ALL FIRE ALARM WIRING RACEWAYS SHALL BE PAINTED RED PRIOR TO INSTALLATION.
6. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING FIRE ALARM DEVICES TO REMAIN.

NEW WORK KEYNOTES

1. PROVIDE NEW CIRCUIT BREAKER IN NEW PANEL "MP6" FOR NEW RTU. PROVIDE NEW DISCONNECT AS SHOWN. REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR ADDITIONAL INFORMATION.
2. 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.

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
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0	35% SUBMISSION	02/23/2015	DM

NAVFAC

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

ENGINEER
CSI
CONSTRUCTION SERVICES INC.
999 Bridgeport Ave, Ste 204
Shelton, CT 06484
781-313-4600
P.O. Box 1 Wilton, CT 06897
CSI Project No. 2014-108
Contact: Ed Kelly
Cell: 203-912-9414
ENGINEER

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

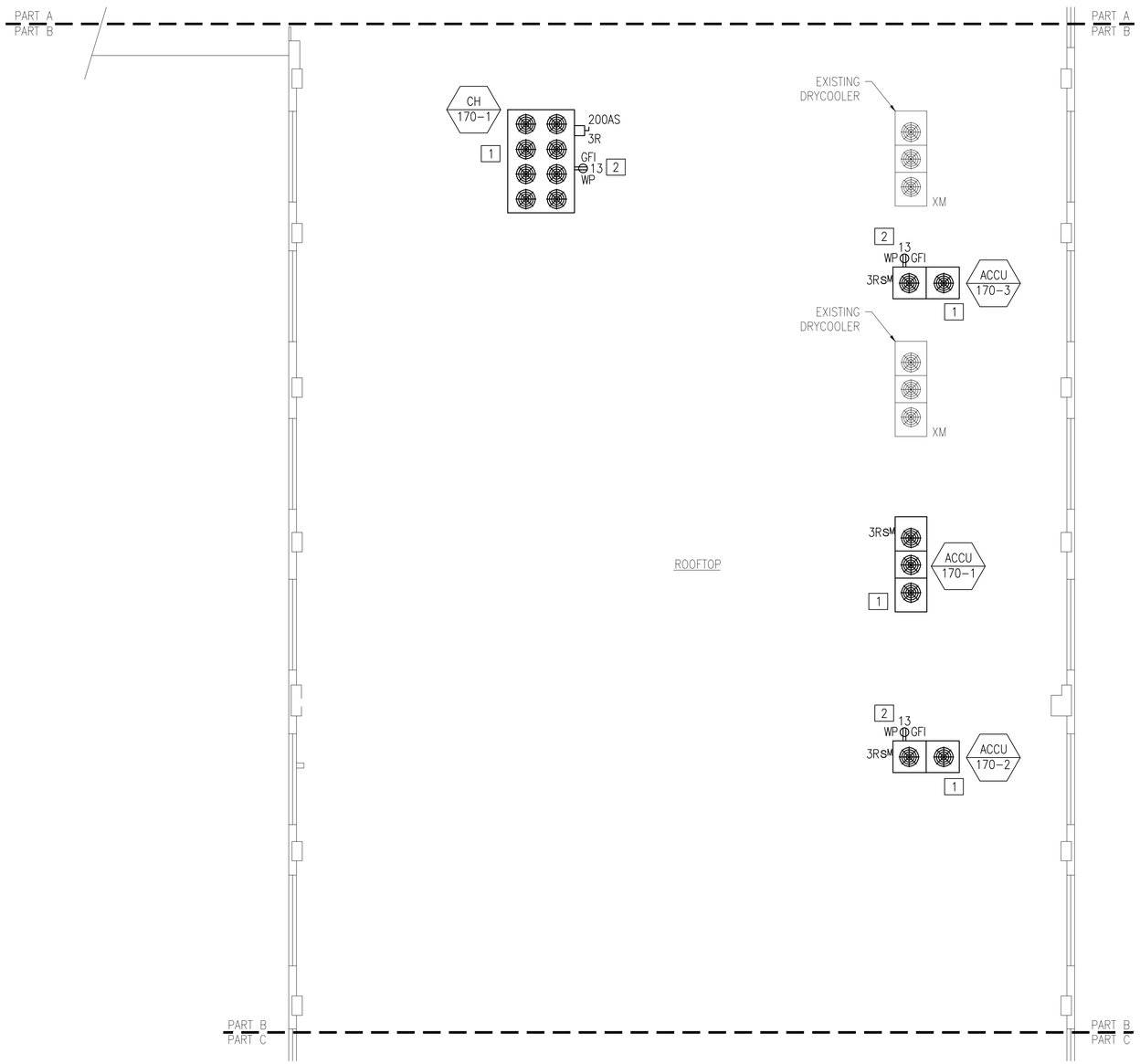
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 170 ELECTRICAL ROOF PLAN PART A

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703764
SHEET 311 OF 506
E2.1A 170-15-743

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 170 ELECTRICAL ROOF PLAN - PART B

1/8"=1'-0"

PLAN NORTH

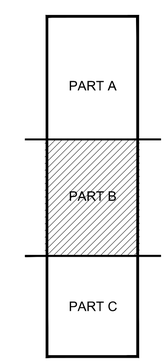
GENERAL SHEET NOTES

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.

NEW WORK KEYNOTES

1. PROVIDE NEW CIRCUIT BREAKER IN NEW PANEL "MP6" FOR NEW UNIT. PROVIDE NEW DISCONNECT AS SHOWN. REFER TO DRAWING E2.0 FOR PANEL MP6 LOCATION. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
2. NEW RECEPTACLE TO BE POWERED FROM NEW ROOFTOP UNIT RECEPTACLE CIRCUIT AS SHOWN ON DRAWING E2.1.

KEY PLAN



GRAPHIC SCALE

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scale feet
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0	35% SUBMISSION	02/23/2015	DM

NAVFAC

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

PROPRIETARY
CSI
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999 Bedford St., Ste. 206
Stamford, CT 06905
781-293-8135
P.O. Box 1553
Ashburn, VA 20041-1553
703-707-6612
703-707-6024 - Fax
www.csinet.org
CSI MEMBER
NO. INFO

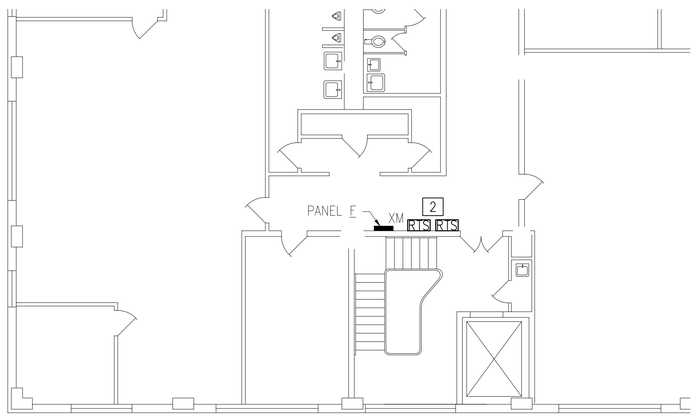
APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

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

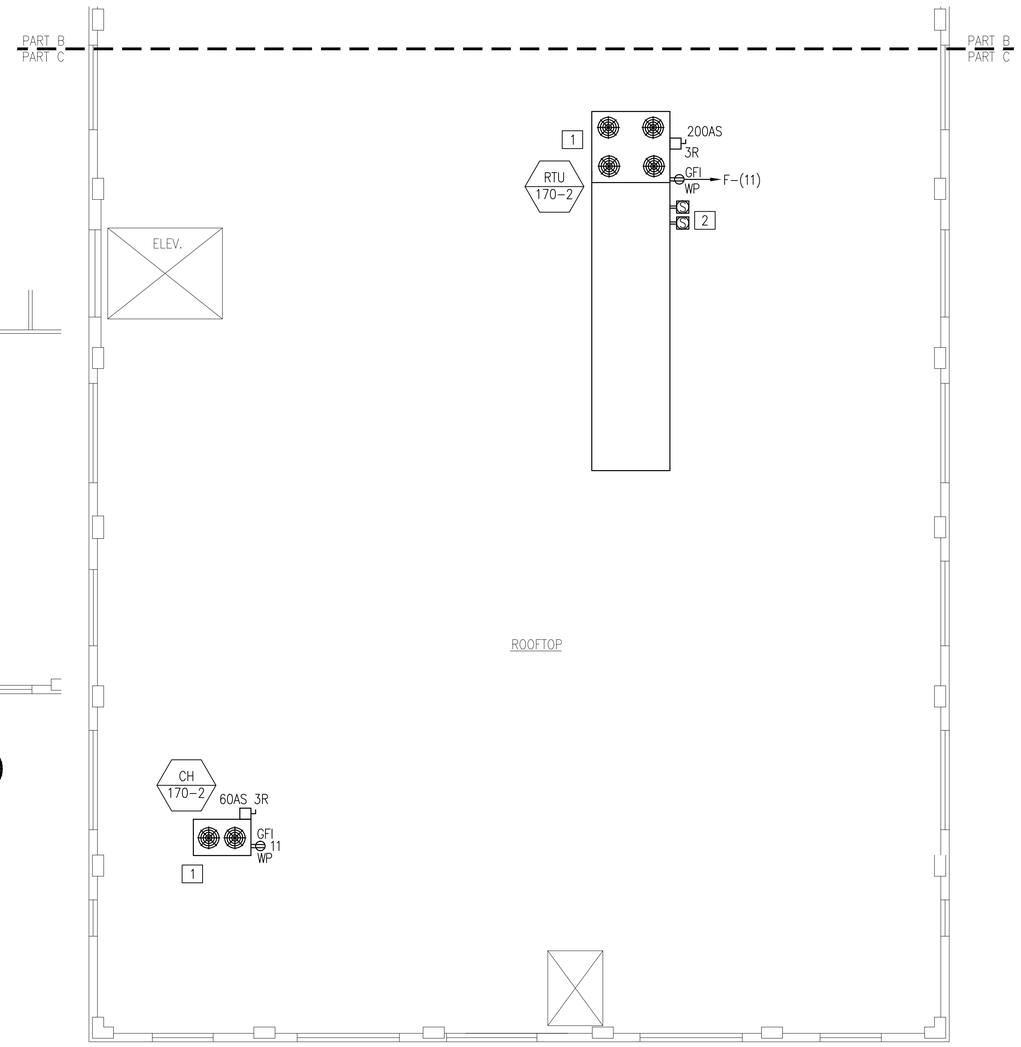
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
FY 16 ENERGY PROJECT
TASK 1-B-R-22
BUILDING 170 ELECTRICAL ROOF PLAN PART B

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703765
SHEET 312 OF 506
E2.1B | 170-15-744

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 170 ELECTRICAL 6TH FLOOR PART PLAN - PART C
1/8"=1'-0"



BUILDING 170 ELECTRICAL ROOF PLAN - PART C
1/8"=1'-0"

PLAN NORTH

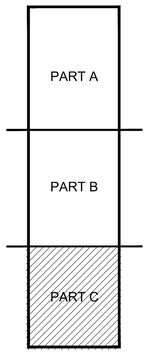
GENERAL SHEET NOTES

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. FIRE ALARM BRANCH CIRCUITRY SHALL BE INSTALLED IN CONDUIT FROM THE PANEL TO THE FIRST DEVICE AND/OR WHERE EXPOSED. FIRE ALARM BRANCH CIRCUITRY MAY BE TYPE MC CABLE WHERE CONCEALED ABOVE SUSPENDED CEILINGS AND IN METAL STUD WALLS.
5. MC CABLE FOR FIRE ALARM SERVICE SHALL HAVE A RED IDENTIFIER ALONG ITS ENTIRE LENGTH. JUNCTION BOX COVERS AND CONDUIT COUPLINGS FOR ALL FIRE ALARM WIRING RACEWAYS SHALL BE PAINTED RED PRIOR TO INSTALLATION.
6. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING FIRE ALARM DEVICES TO REMAIN.

NEW WORK KEYNOTES

1. PROVIDE NEW CIRCUIT BREAKER IN NEW PANEL "MP6" FOR NEW RTU. PROVIDE NEW DISCONNECT AS SHOWN. REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR ADDITIONAL INFORMATION.
2. 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.

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
CHARLES E. MACE
No. 13078
LICENSED
PROFESSIONAL ENGINEER
SEAL

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A/E INFO

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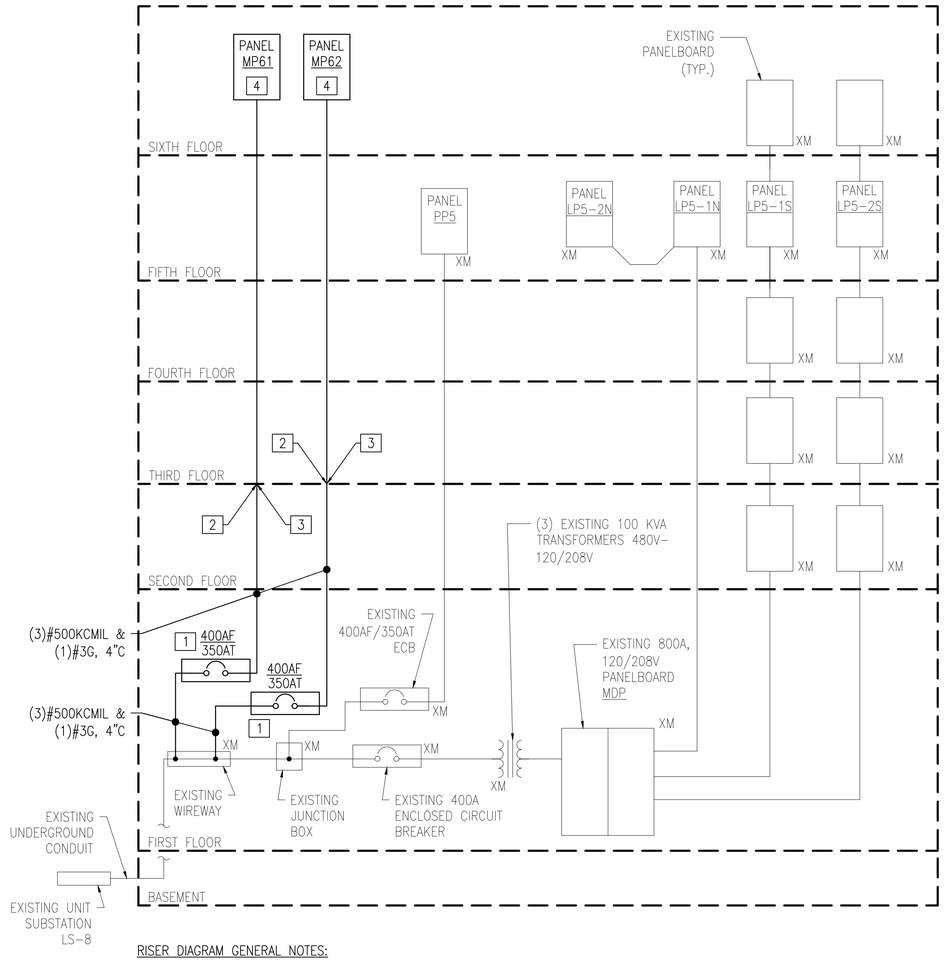
DES TM | DRW TM | CHK JO
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
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 170 ELECTRICAL ROOF PLAN PART C

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703766
SHEET 313 OF 506
E2.1C | 170-15-745

DRAWFORM REVISION: 10 OCTOBER 2014



RISER DIAGRAM GENERAL NOTES:

1. ALL NEW CONDUIT AND WIRING SHALL MATCH EXISTING IN ALL RESPECTS.
2. CONCEAL ALL CONDUIT WHERE POSSIBLE WHEN PASSING THROUGH FINISHED SPACES. ANY CONDUIT PASSING THROUGH AN UNFINISHED SPACE SHALL BE RATED FOR SUCH APPLICATIONS (DAMP/WET LOCATION, TEMPERATURE RATING, ETC.) AND CONFORM TO NEC 2014.

RISER DIAGRAM KEYED NOTES:

1. PROVIDE NEW MOLDED CASE ENCLOSED CIRCUIT BREAKER IN A NEMA TYPE 1 ENCLOSURE AS SHOWN. REFER TO DRAWING E2.0 FOR EXACT LOCATION. FIELD ROUTING OF CONDUIT SHALL BE DETERMINED IN THE FIELD AND SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. COORDINATE EXACT ROUTING WITH NAVFAC AND THE BUILDING OWNER.
2. PROVIDE FIRESTOPPING AROUND EACH CONDUIT (TYPICAL EACH FLOOR).
3. CORE DRILL EXISTING REINFORCED CONCRETE SLAB (TYPICAL EACH FLOOR).
4. PROVIDE NEW 42-POLE PANEL. 277/480V, 3Ø/3W, 400A BUS, 350A MAIN BREAKER. REFER TO DRAWING E2.0 FOR EXACT LOCATION.

ELECTRICAL PARTIAL RISER DIAGRAM - NEW PANEL MP61 & MP62 FEED

N.T.S.

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 170-1	CONDENSING UNIT	–	2.8	460	3	MP61-(7,9,11)	15A/3P	(3)#12, (1)#12G, 3/4"C	X			X	NOTE 7,8
ACCU 170-2	CONDENSING UNIT	–	2.8	460	3	MP61-(13,15,17)	15A/3P	(3)#12, (1)#12G, 3/4"C	X			X	NOTE 7,8
ACCU 170-3	CONDENSING UNIT	–	2.8	460	3	MP61-(14,16,18)	15A/3P	(3)#12, (1)#12G, 3/4"C	X			X	NOTE 7,8
CH 170-1	CHILLER	–	129.2	460	3	MP62-(1,3,5)	175A/3P	(3)#2/0, (1)#6G, 2"C	X			X	NOTE 7
CH 170-2	CHILLER	–	31.1	460	3	MP62-(2,4,6)	50A/3P	(3)#8, (1)#10G, 3/4"C	X			X	NOTE 7
CRACU 170-1	COMPUTER ROOM A/C UNIT	–	48.6	460	3	MP61-(1,3,5)	80A/3P	(3)#4, (1)#8G, 1"C	X			X	NOTE 7
CRACU 170-2	COMPUTER ROOM A/C UNIT	–	45.4	460	3	MP61-(2,4,6)	70/3P	(3)#4, (1)#8G, 1"C	X			X	NOTE 7
CRACU 170-3	COMPUTER ROOM A/C UNIT	–	26.3	460	3	MP61-(19,21,23)	45A/3P	(3)#8, (1)#10G, 3/4"C	X			X	NOTE 7
CRACU 170-4	COMPUTER ROOM A/C UNIT	–	23.9	460	3	MP61-(20,22,24)	40A/3P	(3)#8, (1)#10G, 3/4"C	X			X	NOTE 7
RTU 170-1	ROOFTOP UNIT	–	72.5	460	3	MP61-(8,10,12)	110A/3P	(3)#2, (1)#6G, 1-1/4"C	X			X	NOTE 7
RTU 170-2	ROOFTOP UNIT	–	72.5	460	3	MP62-(8,10,12)	110A/3P	(3)#2, (1)#6G, 1-1/4"C	X			X	NOTE 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
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

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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 170 ELECTRICAL ONE-LINE & MECHANICAL EQUIPMENT SCHEDULE

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703767

SHEET 314 OF 506

E3.0 170-15-746

DRAWFORM REVISION: 10 OCTOBER 2014

PANELBOARD SCHEDULE

PANEL: N	VOLTS: 120/ 208	NEW/EXISTING.: EXISTING	
MAIN: MLO	BUS AMPS: 225A	MOUNT.: SURFACE	
PH/WIRE:	AIC:	LOC:	

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	CODE 320	0	–	–	0	CODE 320	20/1	2
3	20/1	CODE 320	0	–	–	0	VAN FEED XFMR	20/1	4
5	20/1	CODE 320	0	–	–	0	AC UNIT ROOF GFI RECEPT.	20/1	6
7	20/2	HEAT IN CORNER OFFICE	0	–	–	0	FURNITURE RECEPT.	20/1	8
9					–	0	FURNITURE RECEPT.	20/1	10
11	20/1	FURNITURE	0	–	–	0	FURNITURE RECEPT.	20/1	12
13	20/1	ROOF EQUIP. RECEPTACLES	.54	1	–	0	SPACE	20/1	14
15	20/1	SPARE	0	–	–	0	SPACE	20/1	16
17	20/1	SPARE	0	–	–	0	SPACE	20/1	18
19	20/1	SPARE	0	–	–	0	SPACE	20/1	20
21	20/1	SPARE	0	–	–	0	SPACE	20/1	22
23	20/1	SPARE	0	–	–	0	SPACE	20/1	24
25	20/1	SPARE	0	–	–	0	SPACE	20/1	26
27	20/1	SPARE	0	–	–	0	SPACE	20/1	28
29	20/1	SPARE	0	–	–	0	SPACE	20/1	30
			0.54			0.00	TOTAL CONNECTED kVA:	0.54	
							TOTAL CONNECTED AMPERES:	1.50	

NOTES:
1. VERIFY AND REUSE EXISTING CIRCUIT BREAKER AS INDICATED FOR NEW LOAD.

PANELBOARD SCHEDULE

PANEL: MP61	VOLTS: 277/ 480	NEW/EXISTING.: NEW	
MAIN: 350A MCB	BUS AMPS: 400A	MOUNT.: SURFACE	
PH/WIRE: 3ø/3W	AIC:	LOC: 6TH FLOOR STORAGE ROOM NEAR ELEVATOR	

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1									2
3	80/3	CRACU-170-1	48.6	–	–	45.4	CRACU-170-2	70/3	4
5									6
7									8
9	15/3	ACCU-170-1	2.8	–	–	72.5	RTU-170-1	110/3	10
11									12
13									14
15	15/3	ACCU-170-2	2.8	–	–	2.8	ACCU-170-3	15/3	16
17									18
19									20
21	45/3	CRACU-170-3	26.3		–	23.9	CRACU-170-4	40/3	22
23									24
25									26
27		SPACE			–		SPACE		28
29									30
31		SPACE		–	–		SPACE		32
33		SPACE		–	–		SPACE		34
35		SPACE		–	–		SPACE		36
37		SPACE		–	–		SPACE		38
39		SPACE		–	–		SPACE		40
41		SPACE		–	–		SPACE		42
			80.5			144.6	TOTAL CONNECTED kVA:	225.10	
							TOTAL CONNECTED AMPERES:	271.07	

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

PANELBOARD SCHEDULE

PANEL: MP62	VOLTS: 277/ 480	NEW/EXISTING.: NEW	
MAIN: 350A MCB	BUS AMPS: 400A	MOUNT.: SURFACE	
PH/WIRE: 3ø/3W	AIC:	LOC: 6TH FLOOR STORAGE ROOM NEAR ELEVATOR	

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1									2
3	175/3	CH-170-1	129.2	–	–	31.1	CH-170-2	50/3	4
5									6
7									8
9		SPACE			–	72.5	RTU-170-2	110/3	10
11									12
13									14
15		SPACE			–		SPACE		16
17									18
19		SPACE		–	–		SPACE		20
21		SPACE		–	–		SPACE		22
23		SPACE		–	–		SPACE		24
25		SPACE		–	–		SPACE		26
27		SPACE		–	–		SPACE		28
29		SPACE		–	–		SPACE		30
31		SPACE		–	–		SPACE		32
33		SPACE		–	–		SPACE		34
35		SPACE		–	–		SPACE		36
37		SPACE		–	–		SPACE		38
39		SPACE		–	–		SPACE		40
41		SPACE		–	–		SPACE		42
			129.2			103.6	TOTAL CONNECTED kVA:	232.80	
							TOTAL CONNECTED AMPERES:	280.35	

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

PANELBOARD SCHEDULE

PANEL: F	VOLTS: 120/ 208	NEW/EXISTING.: EXISTING	
MAIN: MLO	BUS AMPS: 100A	MOUNT.: SURFACE	
PH/WIRE: 3ø/4W	AIC:	LOC: 6TH FLOOR	

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	RECEPT.	0	–	–	0	OFFICE LIGHTS	20/1	2
3	20/1	LIGHTS ROW #3	0	–	–	0	LIGHT ROW #4	20/1	4
5	20/1	LIGHTS ROW #5	0	–	–	0	LIGHT ROW #5	20/1	6
7	20/1	LIGHTS ROW #6	0	–	–	0	LIGHT ROW #7	20/1	8
9	20/1	LIGHTS STORAGE	0	–	1	.02	JACE BOX	20/1	10
11	20/1	ROOF EQUIP. RECEPTACLES	.36	1	–	0	SPARE	20/1	12
13	20/1	OFFICE RECEPT. 110 CORNER	0	–	–	0	CODE 600 & 601	20/1	14
15	20/1	RECEPT. MACHINE ROOM/COMP.	0	–	–	0	SPARE	20/1	16
17	20/1	OFFICE RECEPT.	0	–	–	0	CODE 601, 602, 610	20/1	18
19	20/1	–	0	–	–	0	110 OFFICE	20/1	20
			0.36			0.02	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.

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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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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 170 ELECTRICAL PANELBOARD SCHEDULES

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703768
SHEET 315 OF 506
E4.0 170-15-747

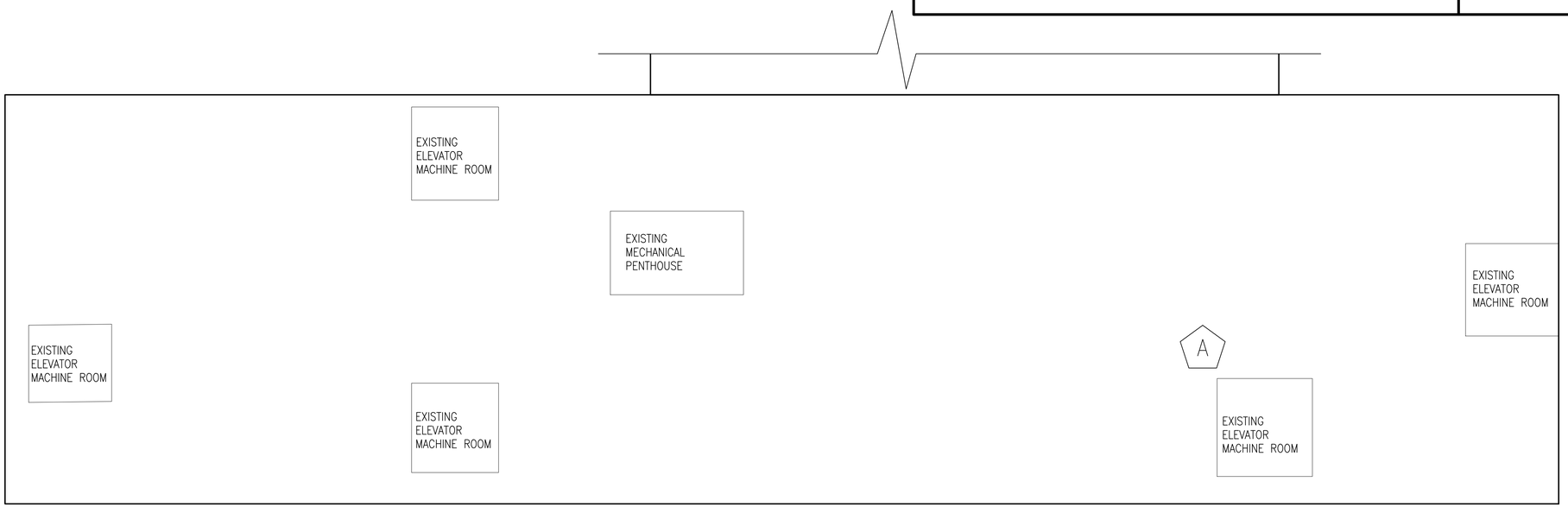
DRAWFORM REVISION: 10 OCTOBER 2014

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 ATTACH RF ACCESS POINT AS HIGH AS PRACTICABLE ON EXISTING MAST.
2. ACCESS POINT MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS. MOUNTING HEIGHT TO BE DETERMINED BY CONTRACTOR TO MINIMIZE GROUND–LEVEL VISIBILITY WHILE MAINTAINING ACCESS POINT LINE–OF–SIGHT.
3. CAT5 CABLE SHALL BE ROUTED THROUGH EXISTING ROOF PENETRATION TO SIXTH FLOOR JACE.



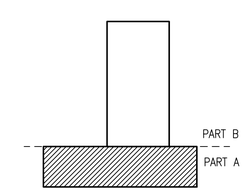
B170 ANTENNA LOCATION - ROOF PLAN
1/16" = 1'=0"

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.

KEY PLAN



GRAPHIC SCALE

1/16" = 1' 1 6" 0 1 2 3
scale feet
CHECK GRAPHIC SCALE BEFORE USING

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

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STATE OF NEW HAMPSHIRE KEITH CHRISTOPHER LICENSED PROFESSIONAL ENGINEER No. 13914
SEAL

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

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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

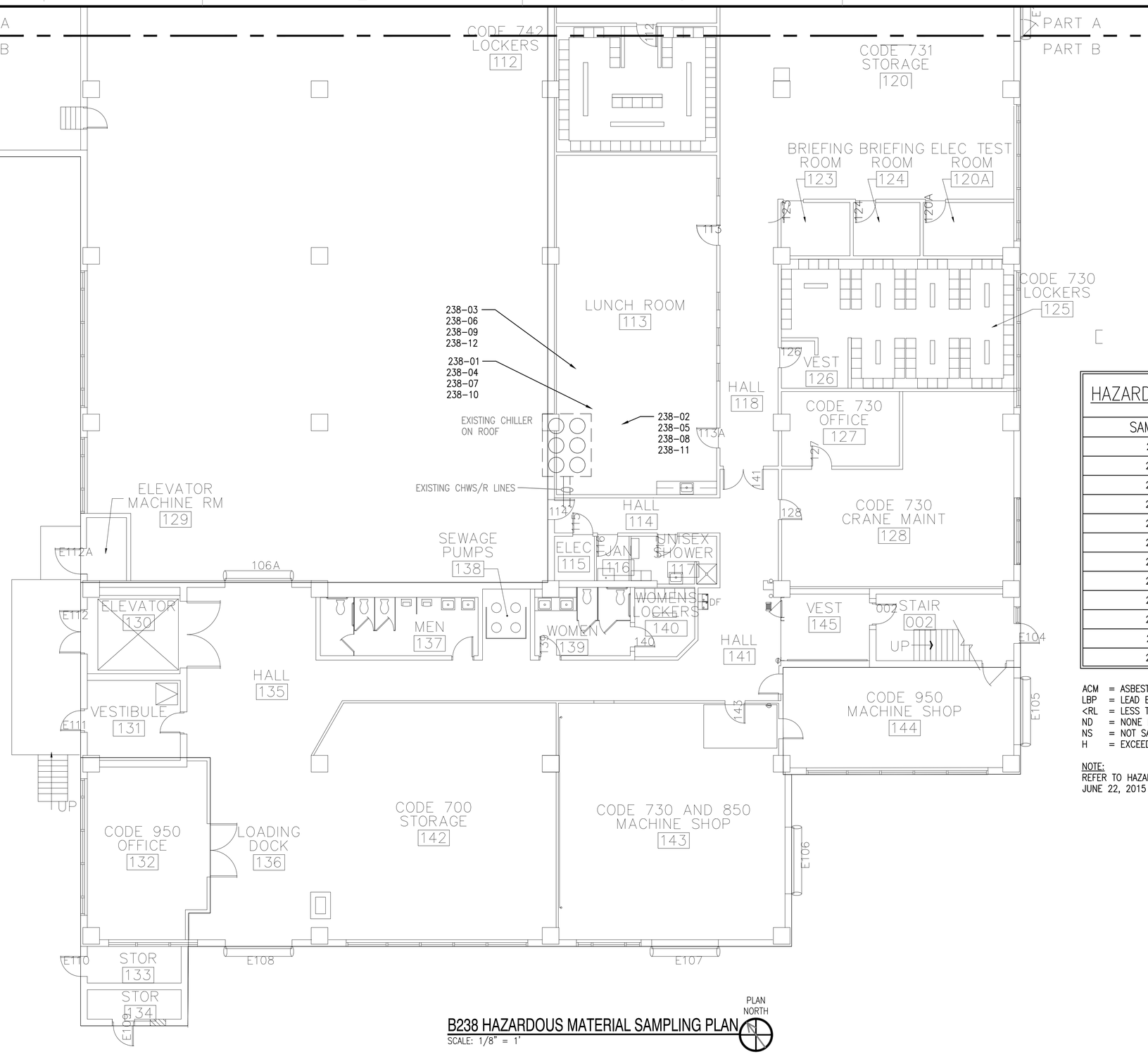
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

B170 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703769
SHEET 316 OF 506
ET1.0 | 170-15-748

DRAWFORM REVISION: 10 OCTOBER 2014



B238 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 B238 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
238-01	ND	NS
238-02	ND	NS
238-03	ND	NS
238-04	ND	NS
238-05	ND	NS
238-06	ND	NS
238-07	ND	NS
238-08	ND	NS
238-09	ND	NS
238-10	ND	NS
238-11	ND	NS
238-12	ND	NS

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

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

GRAPHIC SCALE

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

CHECK GRAPHIC SCALE BEFORE USING

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

NAVFAC

STATE OF MAINE Bradlee Mazquita 9410 LICENSED PROFESSIONAL ENGINEER SEAL

Tighe&Bond
Consulting Engineers
177 Corporate Drive
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(603) 433-8818
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A/E INFO

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

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

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

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

B238 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703770
SHEET 317 OF 506
H1.0 | 238-15-446

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\HazMats\DWG\A1066_2_HZMT_B22.dwg LAYOUT NAME: B238-H1.0 PLOTTED: Friday, August 07, 2015 - 2:36pm 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
- COOLING COIL
- CENTRIFUGAL FAN
- INLINE CENTRIFUGAL FAN

HVAC SYSTEM TAGS

- CH 1 — CHILLER
- J 1 — JACE BOX

CALL OUT SYMBOLS

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

EQUIPMENT TAG SYMBOLS & ABBREVIATIONS

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

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

AIR SYSTEM SPECIFIC ABBREVIATIONS

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

HYDRONIC SYSTEM SPECIFIC ABBREVIATIONS

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

HVAC GENERAL NOTES

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

SCHEDULE OF DRAWINGS

DWG#	DESCRIPTION
M1.0	BUILDING 238 HVAC LEGEND
MD2.0	BUILDING 238 HVAC ROOF DEMOLITION PLAN PART B AND SECOND FLOOR MECHANICAL ROOM
M2.0	BUILDING 238 HVAC ROOF PLAN PART B
M3.0	BUILDING 238 HVAC CONTROLS
M3.1	BUILDING 238 HVAC CONTROLS
M3.2	BUILDING 238 HVAC CONTROLS
M4.0	BUILDING 238 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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STATE OF NEW HAMPSHIRE — DAVID H. MAHONEY No. 12370 — LICENSED PROFESSIONAL ENGINEER — SEAL

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PREPARED BY: CSI ENGINEERING — FIRE PROTECTION — 919 Baltimore Avenue, Suite 206, Towson, MD 21204 — TEL: 410-337-9000 — FAX: 410-337-9004 — 8/23/15 — 8/24/15

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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

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

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 238 HVAC LEGEND

EPROJECT NO.: 1350913

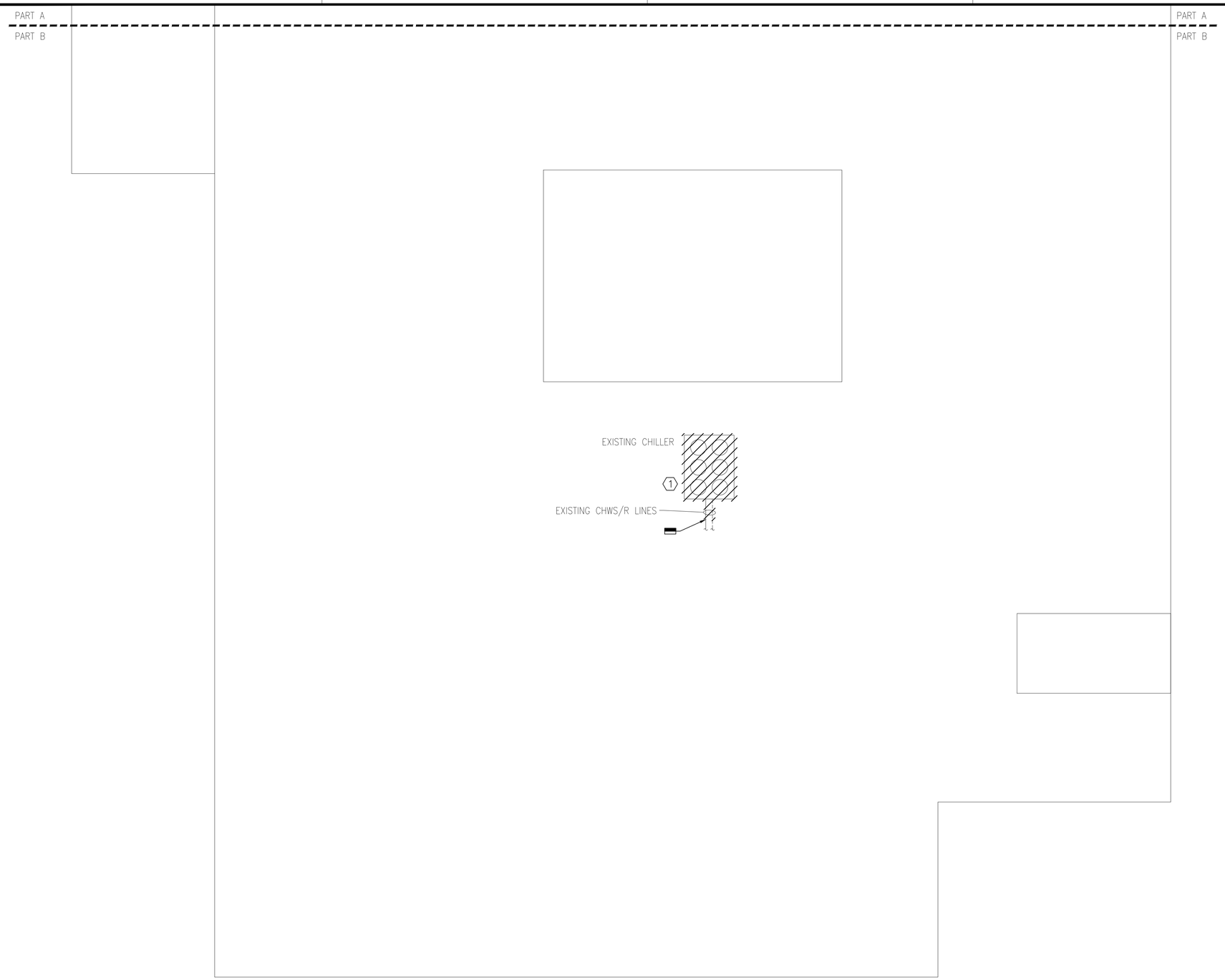
CONSTR. CONTR. NO. N40085–XX–C–XXXX

NAVFAC DRAWING NO. 12703771

SHEET 318 OF 506

M1.0 | 238-15-447

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 238 HVAC ROOF DEMOLITION PLAN PART B
1/8"=1'-0"

PLAN NORTH

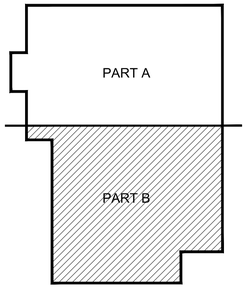
GENERAL SHEET NOTES

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 CHILLER AND ASSOCIATED CHWS/R LINES UP TO POINT OF DEMOLITION AS INDICATED ON THE DRAWING. SEE STRUCTURAL DRAWINGS FOR ANY ROOF CURB MODIFICATIONS.

KEY PLAN



GRAPHIC SCALE

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

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

NAVFAC

STATE OF NEW HAMPSHIRE
DAVID H. MAHONEY
No. 12370
LICENSED
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Santee, CA 92071
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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 ~ 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 238 HVAC ROOF DEMOLITION PLAN PART B

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703772

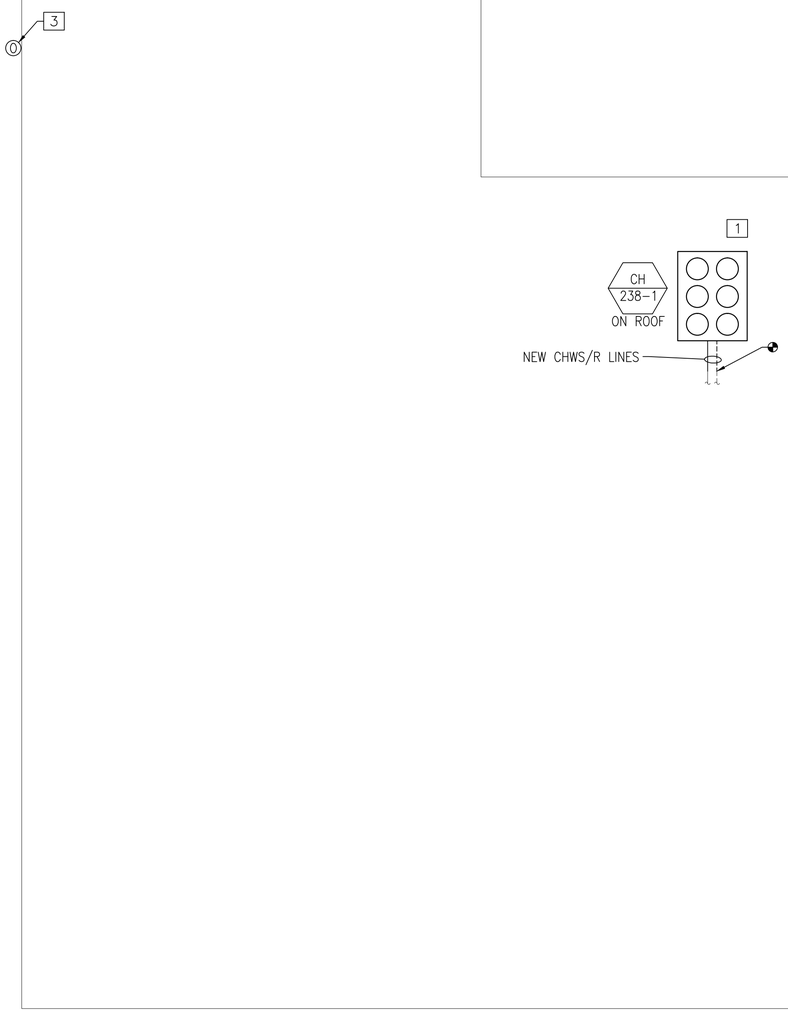
SHEET 319 OF 506

MD2.0 | 238-15-448

DRAWFORM REVISION: 10 OCTOBER 2014

PART A

PART B



BUILDING 238 HVAC ROOF PLAN PART B

1/8"=1'-0"

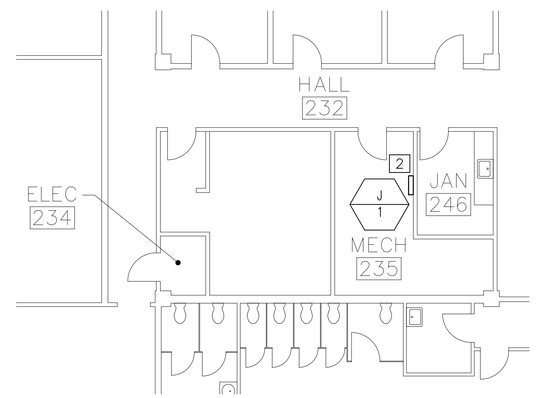
PLAN NORTH

GENERAL SHEET NOTES

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

NEW WORK KEYNOTES

1. FURNISH AND INSTALL NEW CHILLER AND ASSOCIATED CHWS/R LINES. NEW CHILLER TO BE CONNECTED TO EXISTING SYSTEM. SEE STRUCTURAL DRAWINGS FOR ANY ROOF CURB MODIFICATIONS.
2. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF NEW DDC JACE BOX WITH NAVFAC.
3. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF OUTDOOR AIR SENSOR WITH NAVFAC.

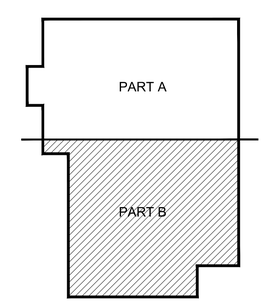


BUILDING 238 HVAC SECOND FLOOR MECHANICAL ROOM

1/8" = 1'-0"

PLAN NORTH

KEY PLAN



GRAPHIC SCALE

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

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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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 238 HVAC ROOF PLAN PART B
& SECOND FLOOR MECHANICAL ROOM

EPROJECT NO.: 1350913

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

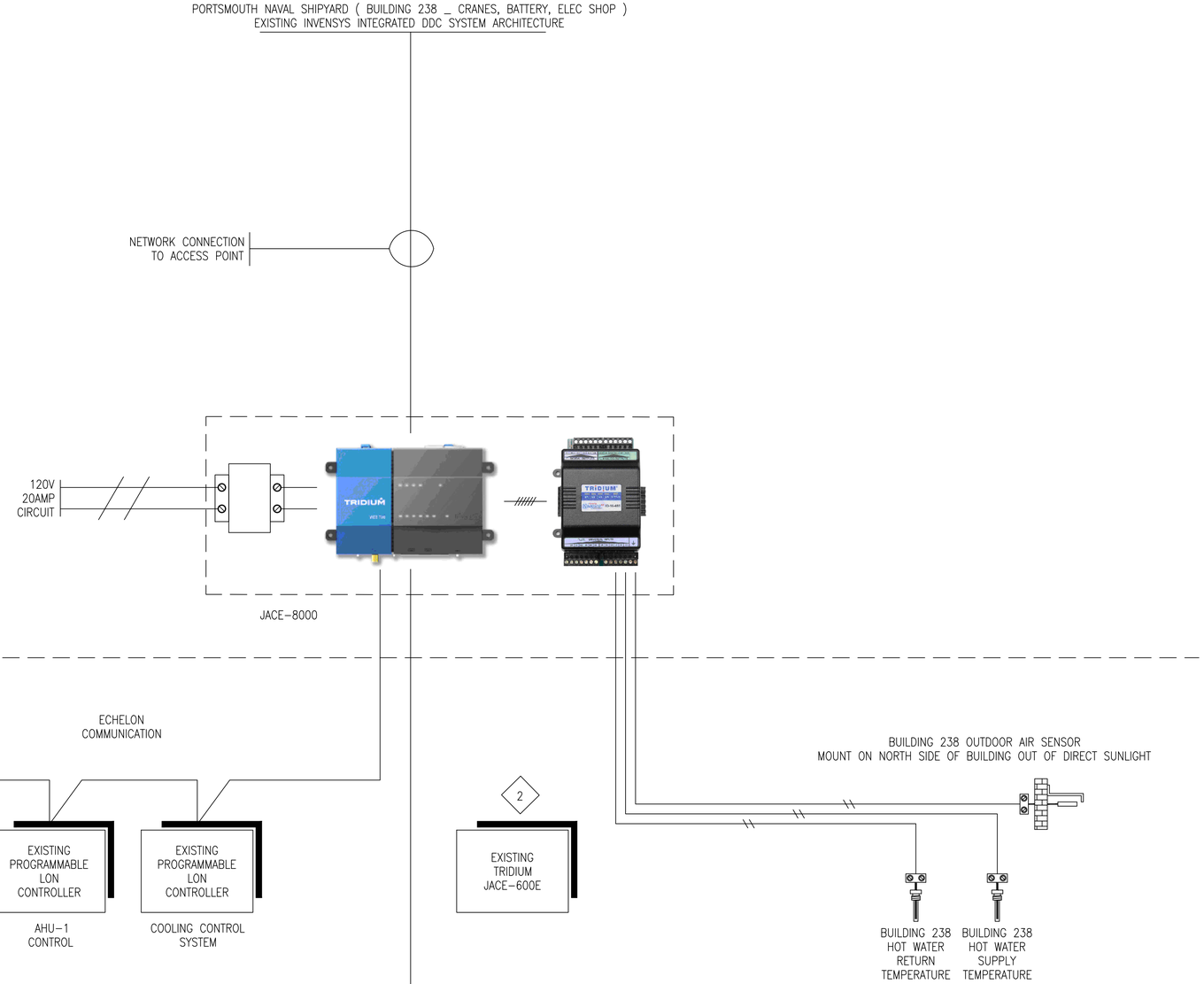
NAVFAC DRAWING NO. 12703773

SHEET 320 OF 506

M2.0 | 238-15-449

DRAWFORM REVISION: 10 OCTOBER 2014

PORTSMOUTH NAVAL SHIPYARD (BUILDING 238 _ CRANES, BATTERY, ELEC SHOP)
EXISTING INVENSYS INTEGRATED DDC SYSTEM ARCHITECTURE



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
		MEMORY UPGRADE TO 4GB	1
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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BRANCH MANAGER BRUCE LITALIEN
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PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

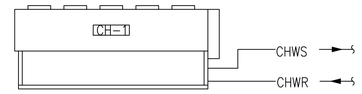
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 238 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703774
SHEET 321 OF 506

M3.0 | 238-15-450

DRAWFORM REVISION: 10 OCTOBER 2014



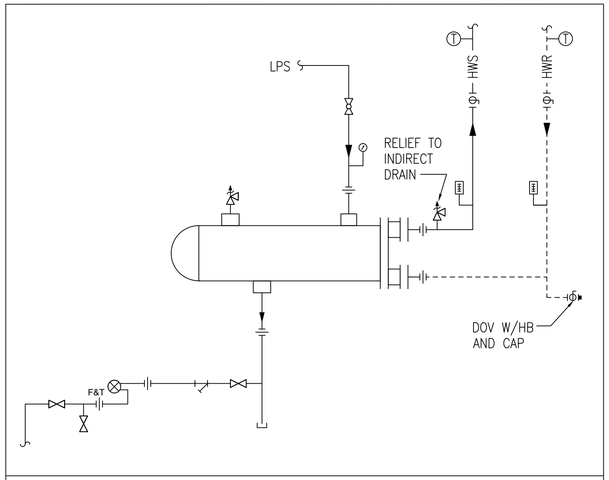
GENERAL:
- PACKAGED CHILLER IS MONITORED AND ON/OFF CONTROLLED BY THE NEW NIAGRA BUILDING DDC SYSTEM

OFF MODE:
- PACKAGED CHILLER IS DE-ENERGIZED

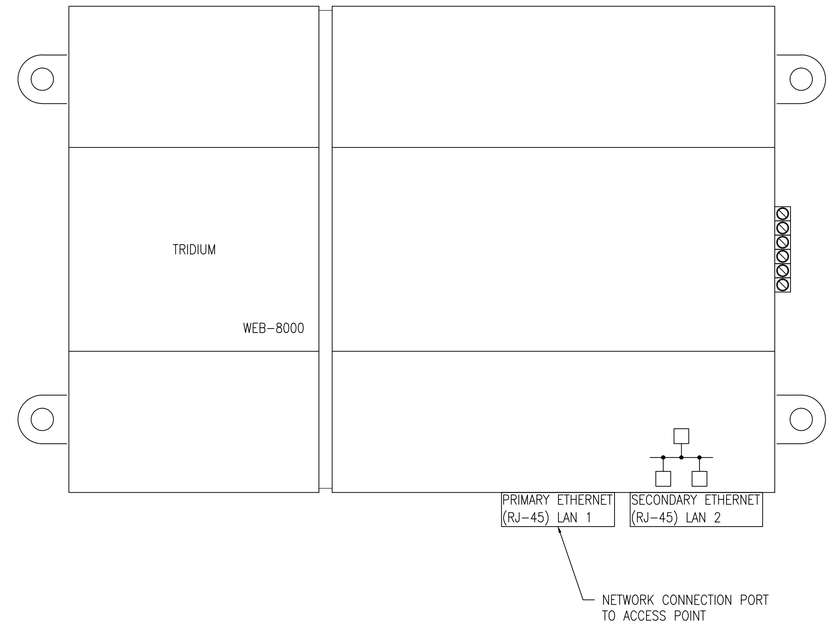
ON MODE:
- CHILLED WATER PUMPS ARE ENERGIZED AND FLOW ESTABLISHED
- PACKAGED CHILLER IS ENERGIZED
- SCROLL COMPRESSORS STAGE ON TO MAINTAIN DISCHARGE WATER TEMPERATURE OF 44°F (ADJ.)

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

PACKAGED CHILLER SEQUENCE OF OPERATION



STEAM TO HOT WATER HEAT EXCHANGER



ETHERNET CONNECTION TO RF ACCESS POINT

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

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

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

BUILDING 238 HVAC CONTROLS

EPROJECT NO.: 1350913

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

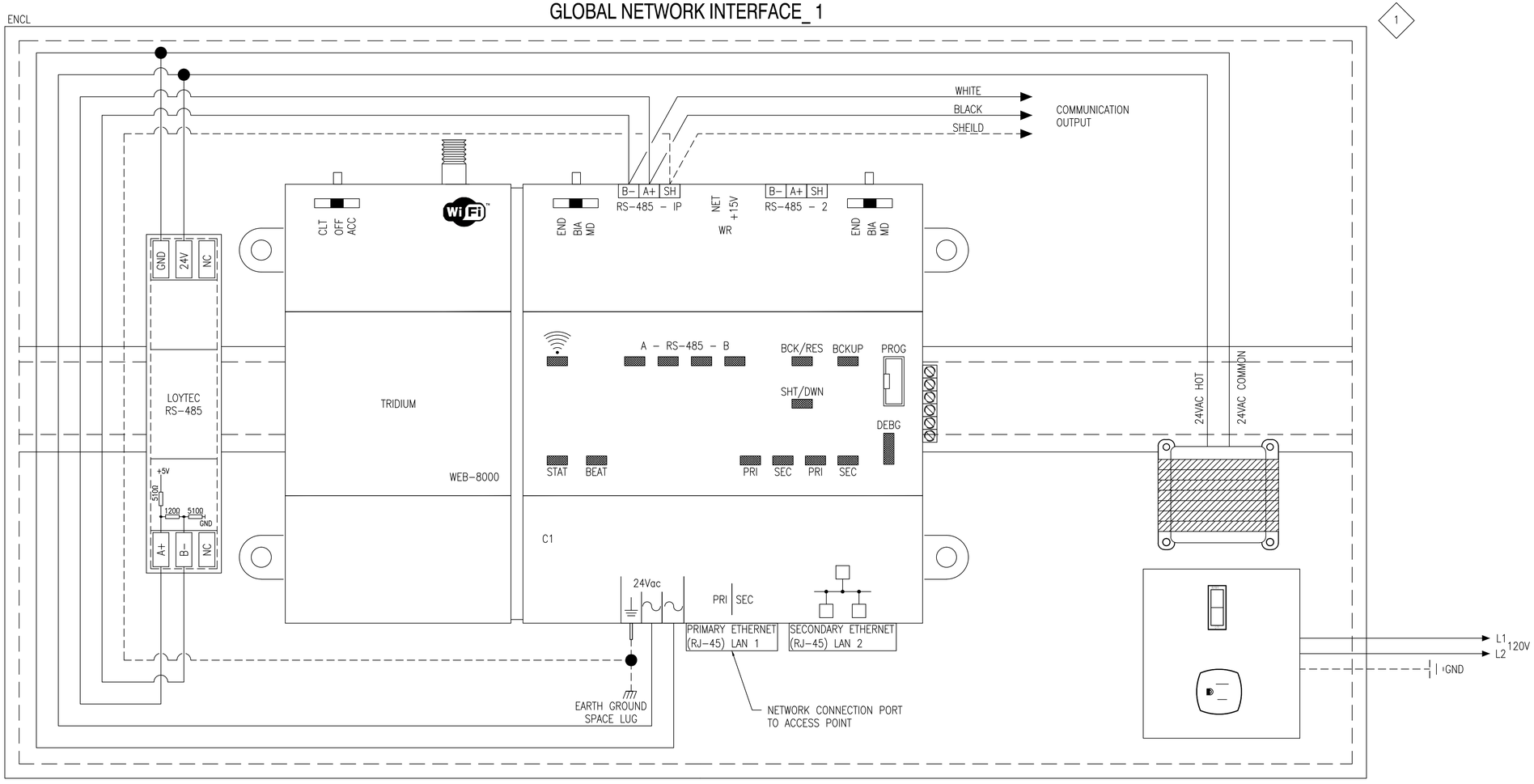
NAVFAC DRAWING NO. 12703775

SHEET 322 OF 506

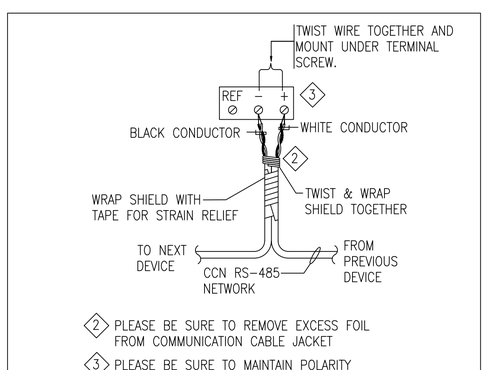
M3.1 | 238-15-451

DRAWFORM REVISION: 10 OCTOBER 2014

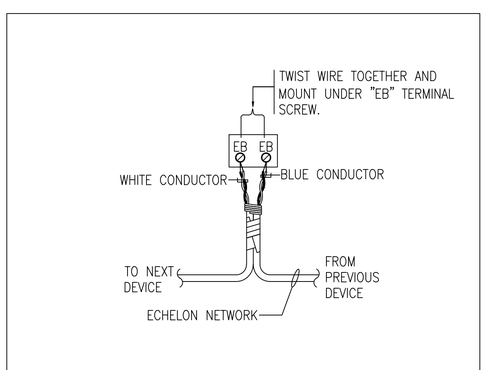
GLOBAL NETWORK INTERFACE_ 1



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

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PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

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

BUILDING 238 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703776
SHEET 323 OF 506

M3.2 | 238-15-452

DRAWFORM REVISION: 10 OCTOBER 2014

AIR-COOLED WATER CHILLER SCHEDULE

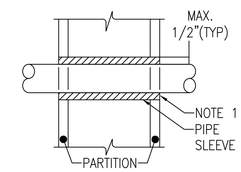
TAG	SERVICE	LOCATION	MINIMUM CAPACITY (TONS)	EVAPORATOR					REFRIG. TYPE	COMPRESSOR(S)			AMBIENT (°F)	CONDENSER FAN			ELECTRIC SERVICE					WEIGHT (LBS)	DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
				GPM	% GLYCOL	EWT (°F)	LWT (°F)	P.D.(FT.)		QTY.	POWER (KW)	TYPE	MAX	QTY.	POWER (KW)	RPM	MAX kW	MCA (AMP)	MOP (AMP)	V	PH			
CH-238-1	BLDG 238	ROOF	60	142.2	35	54	44	16.8	R-410A	4	58.6	SCROLL	95	6	7.4	840	66.4	124.8	125	460	3	5,033	TRANE CGAM060F	SEE NOTES

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

JACE BOX

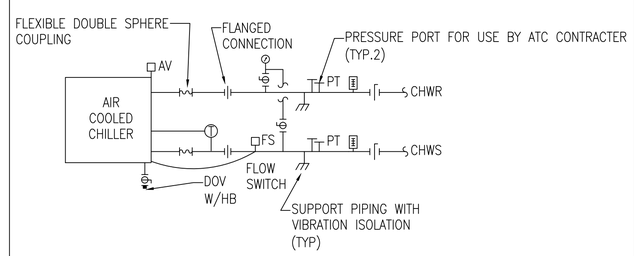
TAG NO.	LOCATION	ELECTRICAL		DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
		AMP	V		
J-1	SEE PLANS	20	120	JACE 8000	SEE NOTES

NOTES: 1. PROVIDE W/ MEMORY UPGRADE UP 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



AIR COOLED CHILLER PIPING DETAIL

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
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CONTRACT NO. N40085-12-D-1800 DO/CLIN 0014 AND 0015

PREPARED BY
MADE: CSI
CONSULTING ENGINEERS
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BRANCH MANAGER BRUCE LITALIEN		
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NAVAL SHIPYARD ~ PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

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

BUILDING 238 HVAC SCHEDULES AND DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO.
12703777

SHEET 324 OF 506

M4.0 | 238-15-453

DRAWFORM REVISION: 10 OCTOBER 2014

WARNING

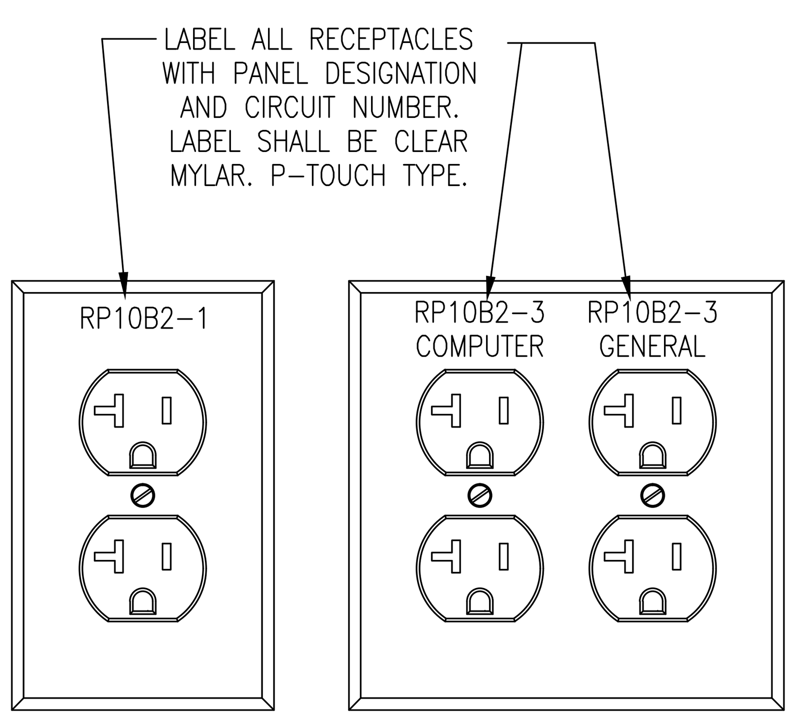
ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

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

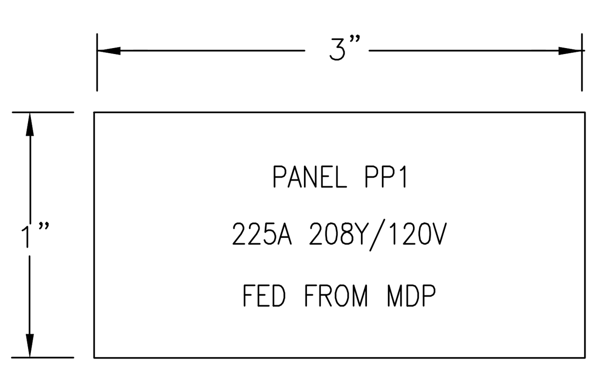
NOTES:

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 FLASH PROTECTION WARNING LABEL



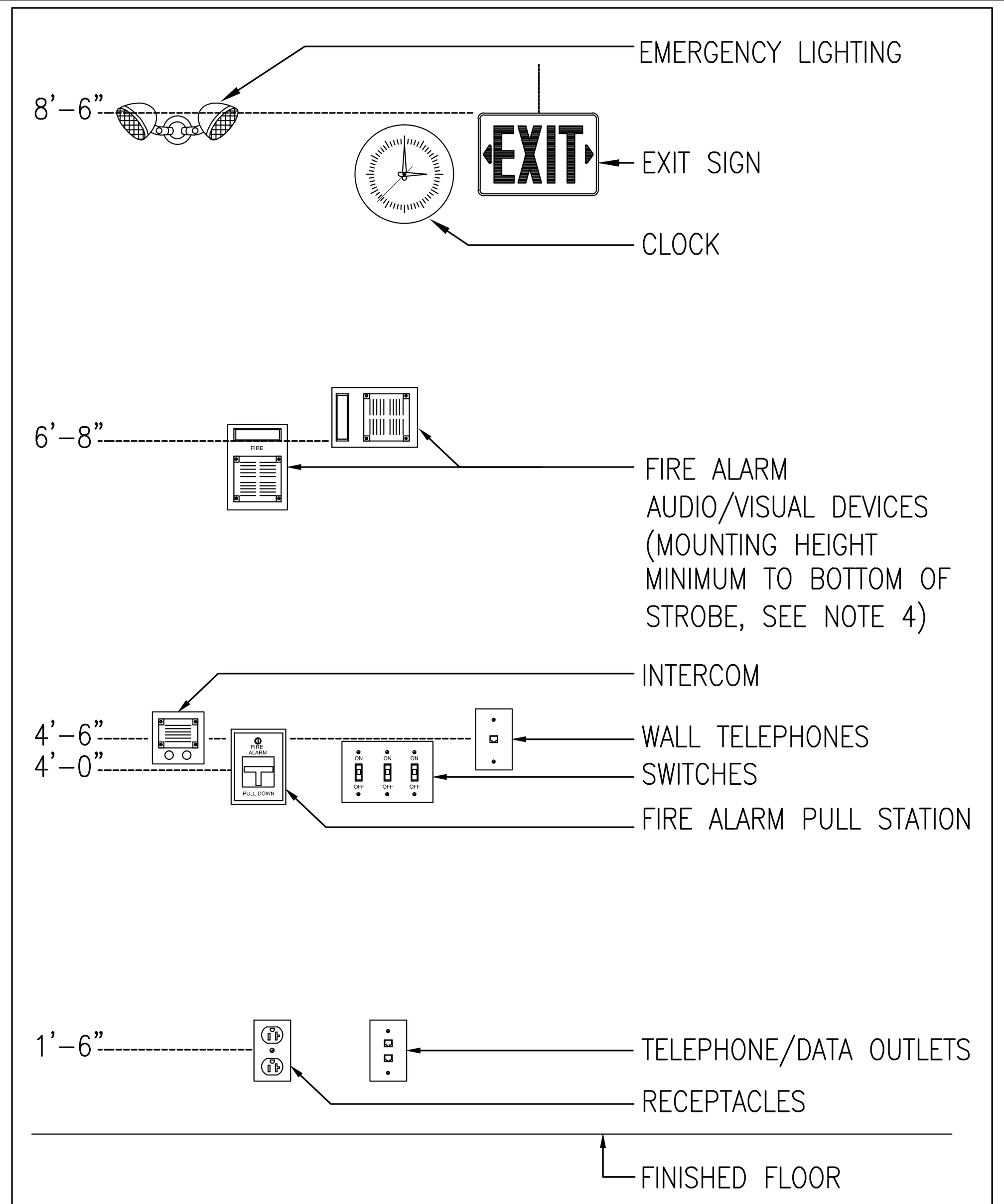
RECEPTACLE LABEL REQUIREMENTS



NOTES:

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

TYPICAL NAMEPLATE DETAIL



NOTES:

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

TYPICAL DEVICE MOUNTING HEIGHTS DETAIL

ELECTRIC ABBREVIATIONS

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

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 TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION.

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.

WIRING DEVICES

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

POWER DISTRIBUTION LEGEND

SYMBOL	DESCRIPTION
(solid bar)	208Y/120 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS
(hatched bar)	480Y/277 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS

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
(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 SYSTEM TAGS OR CALL OUT SYMBOLS

SYMBOL

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

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 238 ELECTRICAL LEGEND
ED2.0B	BUILDING 238 ELECTRICAL ROOF DEMOLITION PLAN PART B & SECOND FLOOR PARTIAL PLAN PART B
E2.0B	BUILDING 238 ELECTRICAL ROOF FLOOR PLAN PART B
E3.0	BUILDING 238 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
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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

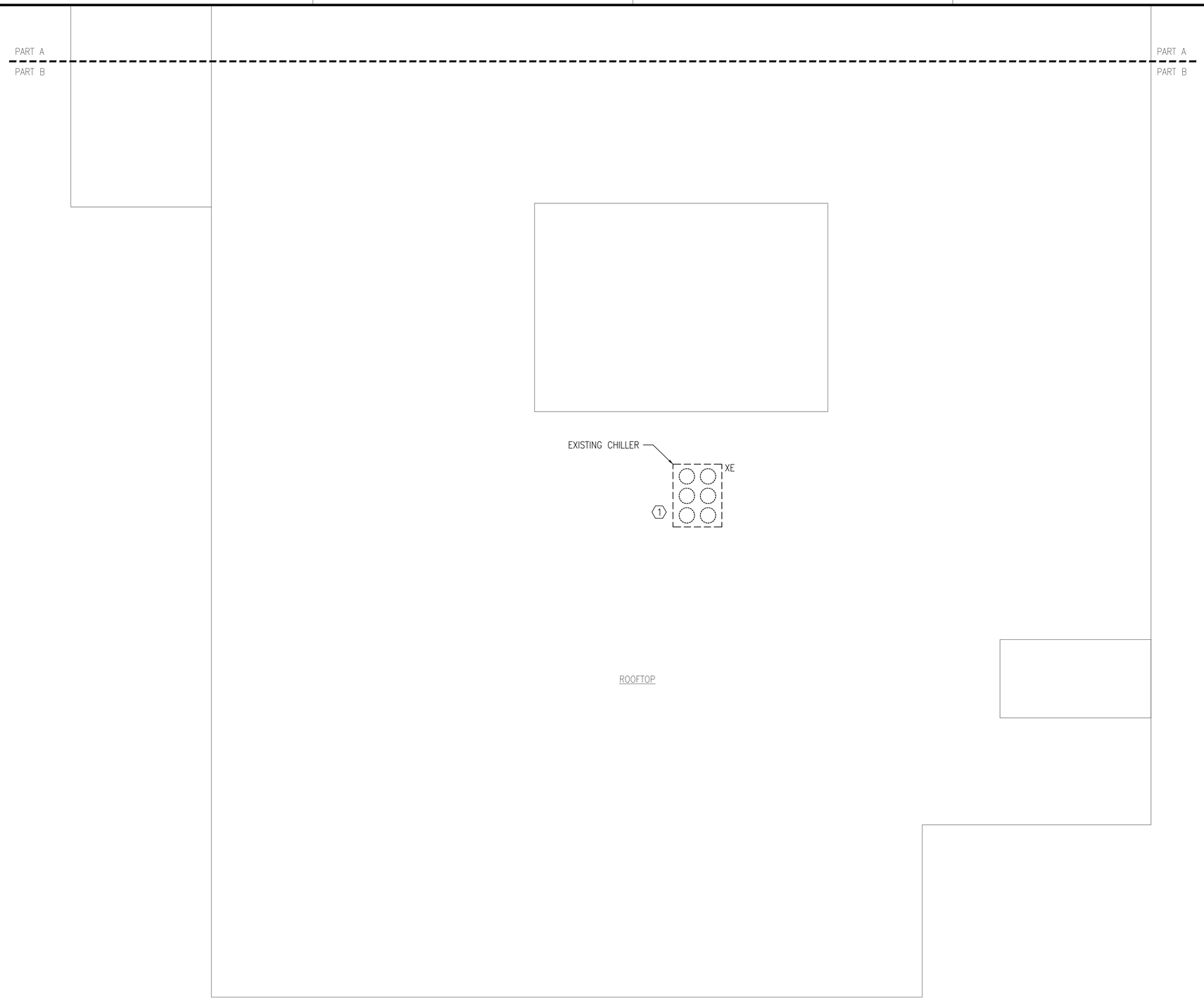
DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT – MAINE — NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD — KITTERY, MAINE

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

BUILDING 238 ELECTRICAL LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703778
SHEET 325 OF 506
E1.0 238-15-454

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 238 ELECTRICAL ROOF DEMOLITION PLAN - PART B
1/8" = 1'-0"

PLAN NORTH

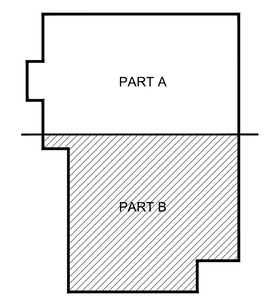
GENERAL SHEET NOTES

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 CHILLER. MAINTAIN EXISTING BRANCH CIRCUITRY AND ASSOCIATED CIRCUIT BREAKER FOR REUSE. DEMOLISH EXISTING DISCONNECT IN IT'S ENTIRETY.

KEY PLAN



GRAPHIC SCALE

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

SYM	DESCRIPTION	DATE	APPR
4	100% SUBMISSION	08/07/2015	DM
3	100% REVIEW SUBMISSION	07/24/2015	DM
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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Harvard, MA 01451
978-772-9224
CONTRACT NO. N40085-12-D-1300
DELIVERY ORDER NO. 0203
REVISIONS
N/A 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

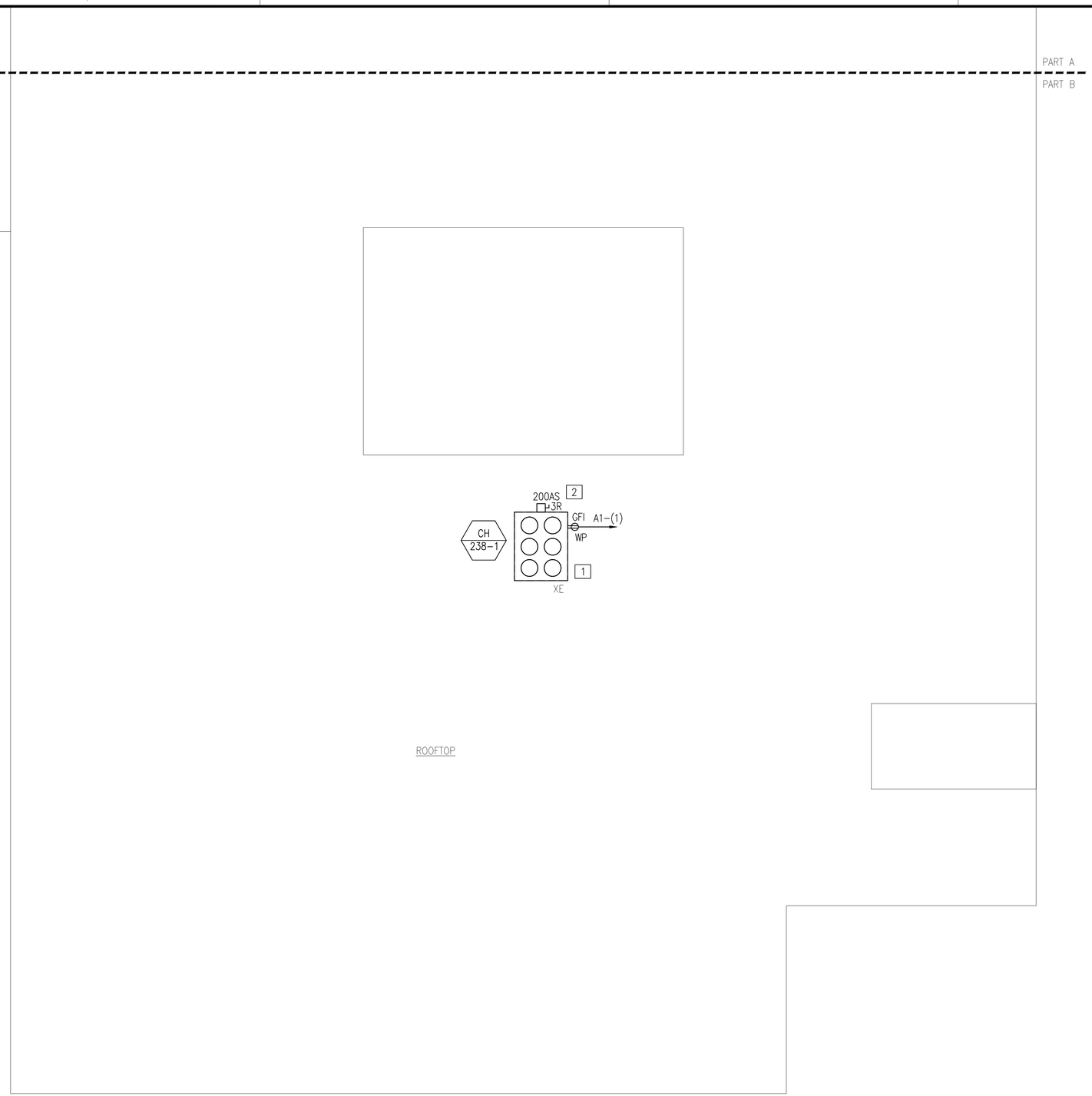
DEPARTMENT OF THE NAVY
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22
BUILDING 238 ELECTRICAL ROOF DEMOLITION PLAN PART B

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703779
SHEET 326 OF 506
ED2.0B 238-15-455

DRAWFORM REVISION: 10 OCTOBER 2014

PART A

PART B



BUILDING 238 ELECTRICAL FIRST FLOOR PLAN - PART B

1/8" = 1'-0"

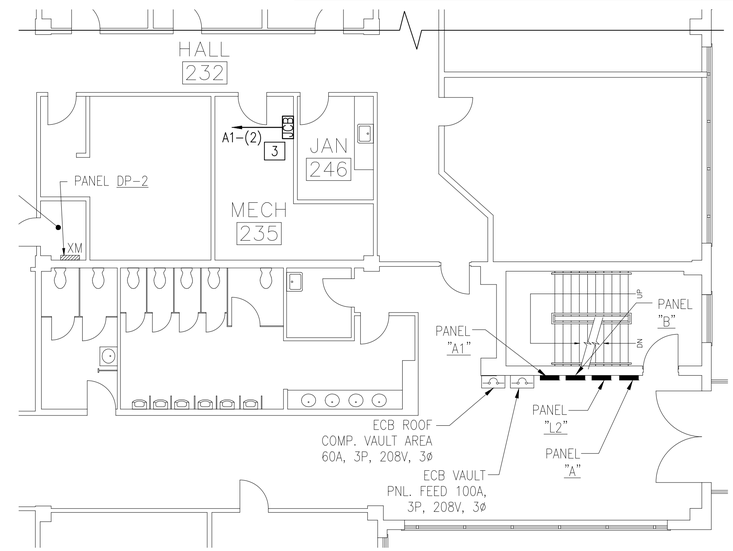
PLAN NORTH

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.

NEW WORK KEYNOTES

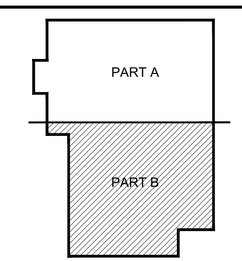
1. CONNECT NEW CHILLER TO EXISTING BRANCH CIRCUITRY AND ASSOCIATED CIRCUIT BREAKER MAINTAINED DURING DEMOLITION. PROVIDE NEW DISCONNECT AS SHOWN. REUSE AS MUCH EXISTING CONDUIT AND WIRING AS POSSIBLE AND EXTEND AS NEEDED. FIELD COORDINATE EXACT LOCATION OF NEW CHILLER WITH MECHANICAL CONTRACTOR. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
2. PROVIDE NEW CIRCUIT BREAKER IN PANEL "41" FOR NEW CHILLER RECEPTACLE.
3. NEW JACE BOX PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.



BUILDING 238 ELECTRICAL SECOND FLOOR PARTIAL PLAN - PART B

1/8" = 1'-0"

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

SEAL

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CSI ENGINEERING

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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

LEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

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

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

BUILDING 238 ELECTRICAL ROOF PLAN PART B
& SECOND FLOOR PARTIAL PLAN PART B

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703780

SHEET 327 OF 506

E2.0B 238-15-456

DRAWFORM REVISION: 10 OCTOBER 2014

PANELBOARD SCHEDULE

PANEL: A1	VOLTS: 120/ 208	NEW/EXISTING.: EXISTING	
MAIN: MCB 200A	BUS AMPS: 225	MOUNT.: SURFACE	
PH/WIRE: 3ø/4W	AIC: 22K	LOC:	

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	CH-238-1 GFI RECEPTACLE	0.18	1	1	.02	JACE BOX	20/1	2
3	20/1	SPARE	0	–	–	0	SPARE	20/1	4
5	20/1	SPARE	0	–	–	0	SPARE	20/1	6
7	20/1	223A LIGHTS	0	–	–	0	SPARE	20/1	8
9	20/1	223A RECEPTACLES	0	–	–	0	A/C SPLIT UNIT	20/2	10
11	20/1	223A GFI	0	–					12
13	20/1	223B RECEPTACLES	0	–	–	0	FEEDS 4 PANELS	100/3	14
15	20/1	HUMIDIFIER	0	–					16
17	20/1	HUMIDIFIER							18
19	60/3	SPARE	0	–	–	0	CONFERENCE ROOM	20/3	20
21									22
23					–	0			24
			0.18			0.02	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	
CH 238-1	CHILLER	–	99.43	460	3	DP-2-(7,9,11)	125A/3P	–	X			X	NOTE 6,7,11

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.

PANELBOARD SCHEDULE

PANEL: DP-2	VOLTS: 277/ 480	NEW/EXISTING.: EXISTING	
MAIN: 225A MCB	BUS AMPS: 225A	MOUNT.: SURFACE	
PH/WIRE: 3ø/4W	AIC:	LOC: BLDG 238 2ND FLOOR ELECTRICAL ROOM	

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	30/3	PENTHOUSE EF-3	0	–	–	0	HRU-1 SUPPLY & SHUNT TRIP	40/4	2
3									4
5									6
7									8
9	125/3	CH-238-1	99.4	1	–	0	HRU-1 RETURN/HEAT WHEEL & SHUNT TRIP	40/4	10
11									12
13	20/3	P1, P2	0	–					14
15									16
17					–	0	LTS RMS 223,233-236,244, 246,247, VEST 252	20/1	18
19	60/3	?	0	–	–	0	LTS HALL 224, 232, 237, 220	20/1	20
21					–	0	LTS RMS 261, 221, 222	20/1	22
23					–	0	?	20/1	24
25	20/3	PENTHOUSE P3	0	–	–	0	LTS RMS 227-230	20/1	26
27					–	0	LTS RMS 242, 243	20/1	28
29					–	0	LTS RMS 260, 213-219	20/1	30
31	20/3	PENTHOUSE P4	0	–	–	0	PENTHOUSE HRU-3E	40/3	32
33									34
35									36
37	40/3	PENTHOUSE HRU-3S	0	–	–	0	LTS RMS 238-241	20/1	38
39					–	0	PENDANT LTS HALL 224, 237 PEASE OFFICE	20/1	40
41					–	0	LS RMS 225, 226	20/1	42
			99.4			0.00	TOTAL CONNECTED kVA:	99.40	
							TOTAL CONNECTED AMPERES:	119.70	

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

SYM	DESCRIPTION	DATE	APPR.
4	100% SUBMISSION	08/07/2015	DM
3	100% REVIEW SUBMISSION	07/24/2015	DM
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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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MECH. PLUMBING FIRE PROTECTION ELECTRICAL STRUCTURAL

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207.594.9414
www.csieng.com
CSI ID: 20110-00108
CSI ID: 20110-00109

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 238 ELECTRICAL SCHEDULES

EPROJECT NO.: 1350913

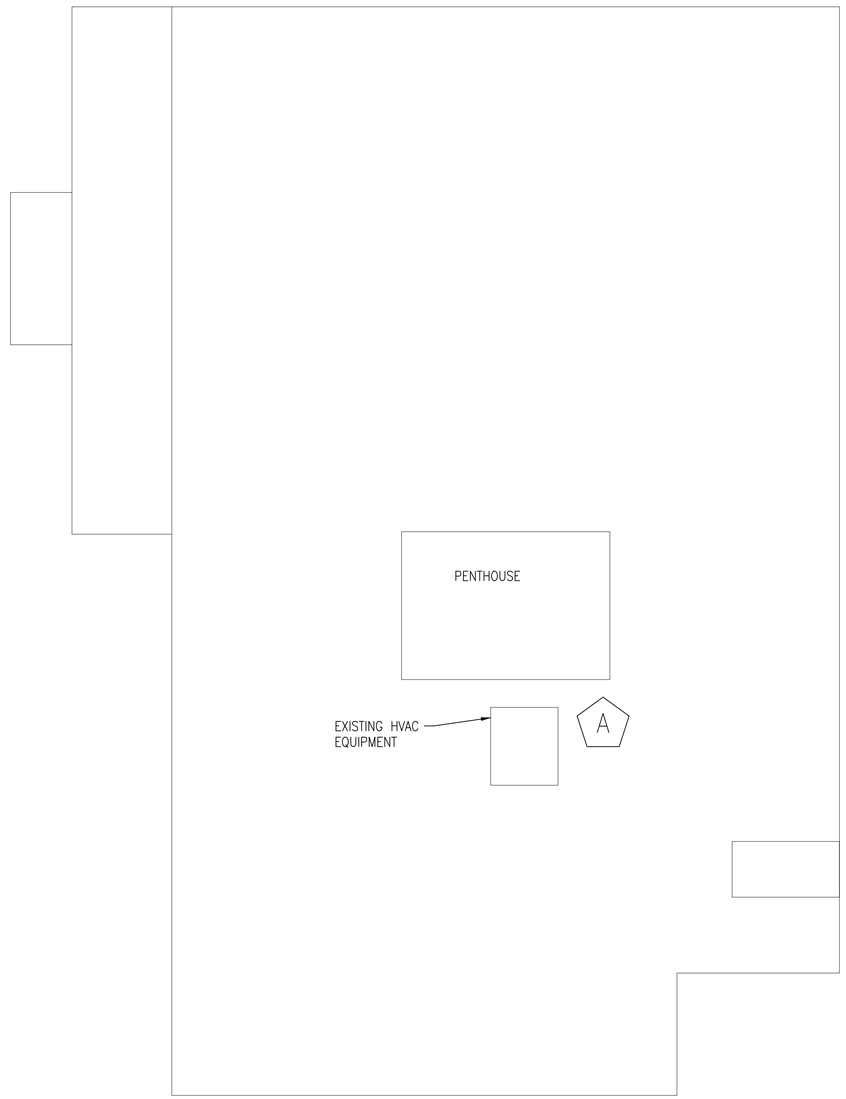
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703781

SHEET 328 OF 506

E3.0 | 238-15-457

DRAWFORM REVISION: 10 OCTOBER 2014



B238 ANTENNA LOCATION - ROOF PLAN PART B

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 ATTACH MAST TO EXISTING HVAC EQUIPMENT FRAME ON ROOF FOR RF ACCESS POINT.
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT TO B170 ACCESS POINT.
3. ACCESS POINT MAST SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS. MOUNTING HEIGHT TO BE DETERMINED BY CONTRACTOR TO MINIMIZE GROUND-LEVEL VISIBILITY WHILE MAINTAINING ACCESS POINT LINE-OF-SIGHT.
4. CAT5 CABLE SHALL BE ROUTED THROUGH EXISTING ROOF PENETRATION AND PATH ALONGSIDE HVAC CONTROL

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. 13914 LICENSED PROFESSIONAL ENGINEER

SEAL

aecom architects|engineers

13 WATER ST NEWMARKET NH
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A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES VSL | DRW SRR | CHK KLC

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

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

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

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

B238 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703782

SHEET 329 OF 506

ET1.0 | 238-15-485

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)
- 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 291 HVAC LEGEND
M2.0	BUILDING 291 HVAC FIRST FLOOR PARTIAL PLAN AND SCHEDULE
M3.0	BUILDING 291 HVAC CONTROLS
M3.1	BUILDING 291 HVAC CONTROLS
M3.2	BUILDING 291 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
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 291 HVAC LEGEND

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085–XX–C–XXXX

NAVFAC DRAWING NO. 12703783

SHEET 330 OF 506

M1.0 | 291-15-364

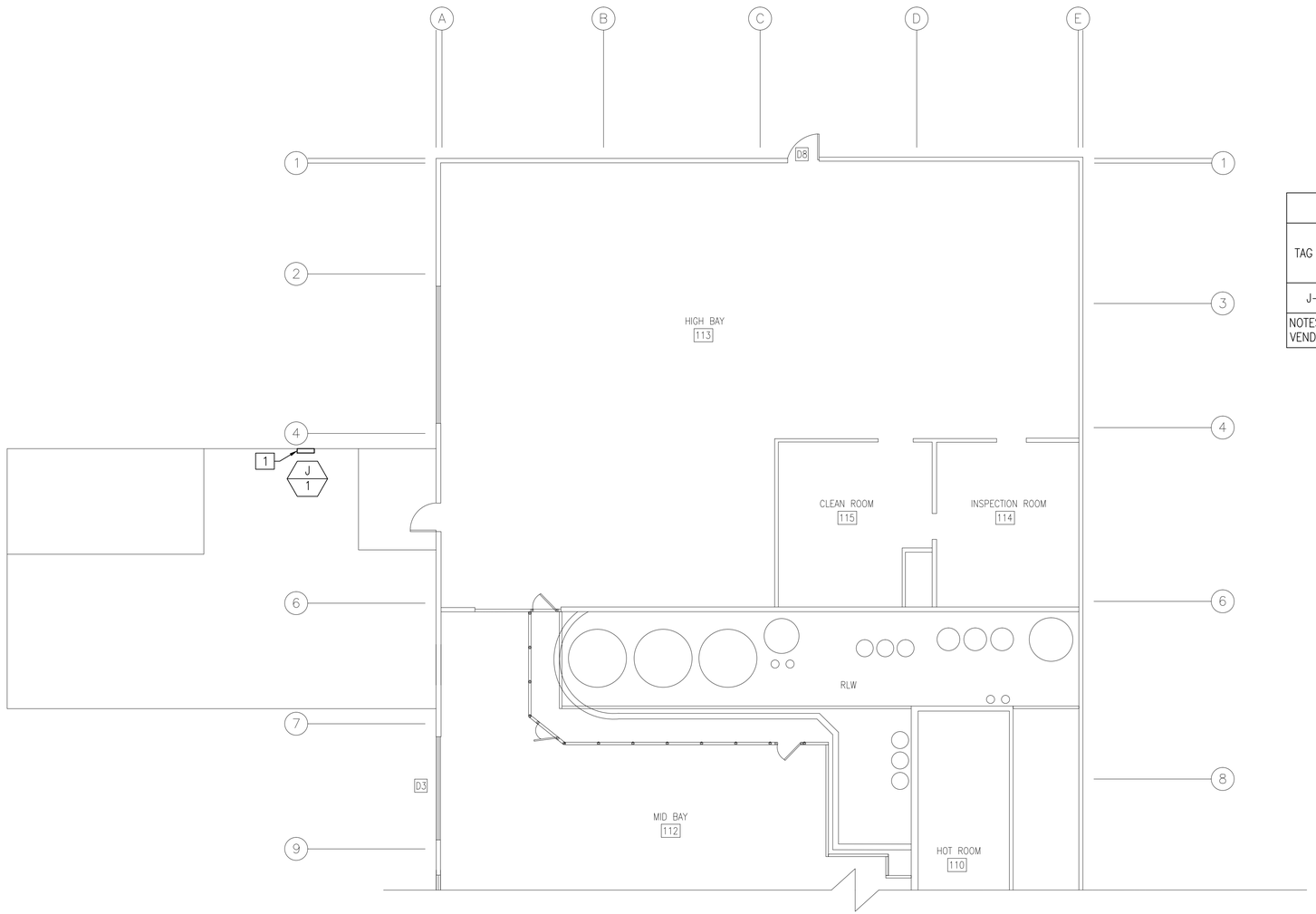
DRAWFORM REVISION: 10 OCTOBER 2014

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.



PLAN NORTH

BUILDING 291 HVAC FIRST FLOOR PARTIAL PLAN

1/8"=1'

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 AND TRAINING FOR EACH PIECE OF EQUIPMENT.

GRAPHIC SCALE

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

CHECK GRAPHIC SCALE BEFORE USING

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

NAVFAC

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APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

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

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

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

BUILDING 291 HVAC FIRST FLOOR PARTIAL PLAN AND SCHEDULE

EPROJECT NO.: 1350913

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

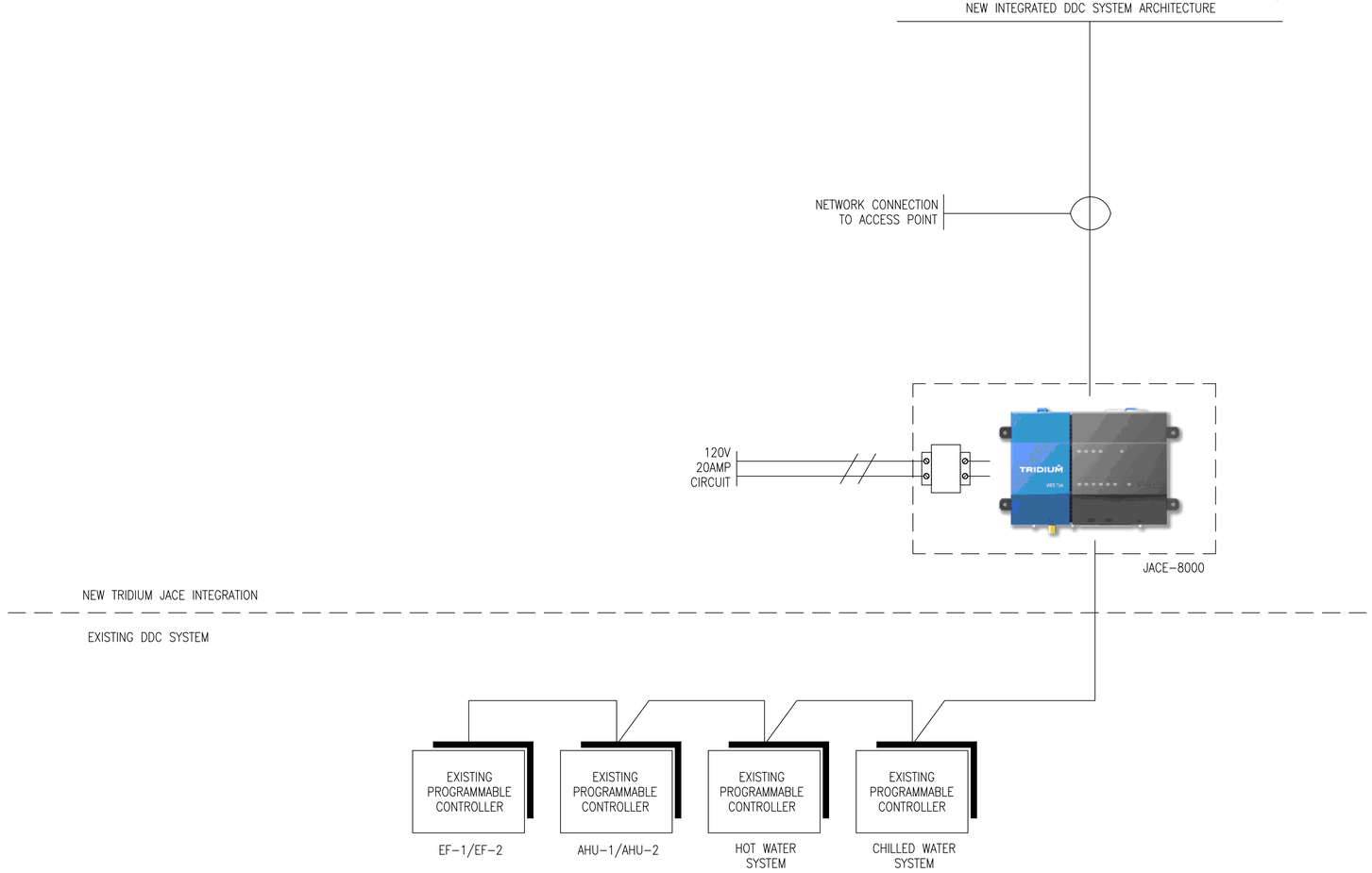
NAVFAC DRAWING NO. 12703784

SHEET 331 OF 506

M2.0 | 291-15-365

DRAWFORM REVISION: 10 OCTOBER 2014

PORTSMOUTH NAVAL SHIPYARD (BUILDING 291_CONTROL FACILITY)
NEW INTEGRATED DDC SYSTEM ARCHITECTURE



PANEL MATERIAL

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

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

NAVFAC

STATE OF NEW HAMPSHIRE
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INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

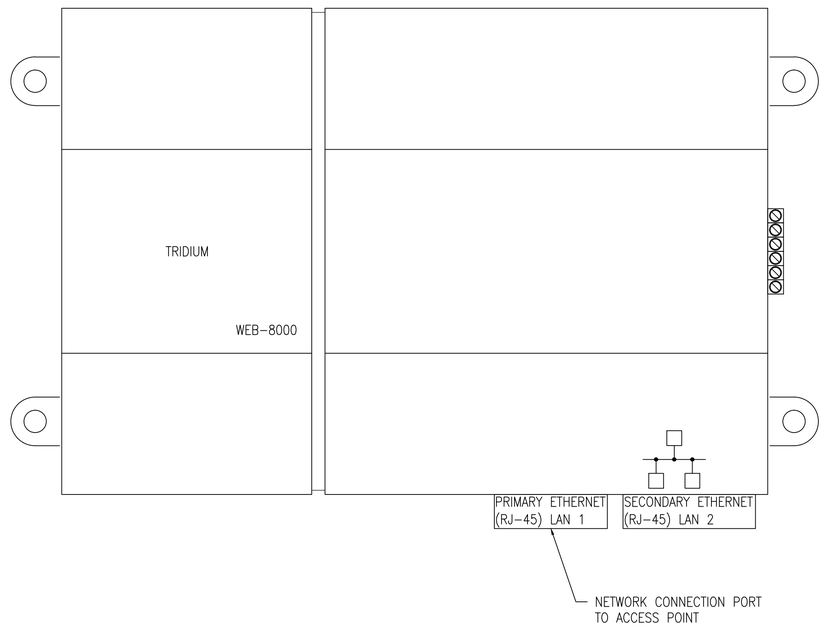
SATISFACTORY TO DATE

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

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22
BUILDING 291 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703785
SHEET 332 OF 506
M3.0 | 291-15-366

DRAWFORM REVISION: 10 OCTOBER 2014



ETHERNET CONNECTION TO RF ACCESS POINT

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

NAVFAC

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

"I HEREBY CERTIFY THAT THE ENGINEERING WORK SHOWN ON THIS DOCUMENT WAS PERFORMED BY ME OR UNDER MY SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MAINE."

PROJECT MANAGER: CSI ENGINEERING
JOINT VENTURE PARTNERS: 995 Bellevue Avenue, Suite 204, Portland, Maine 04103, 781-23-24828
215 Alvarado Avenue, Suite 2300, Longmont, Colorado 80501, 303-219-9214
N.E. INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

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

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

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

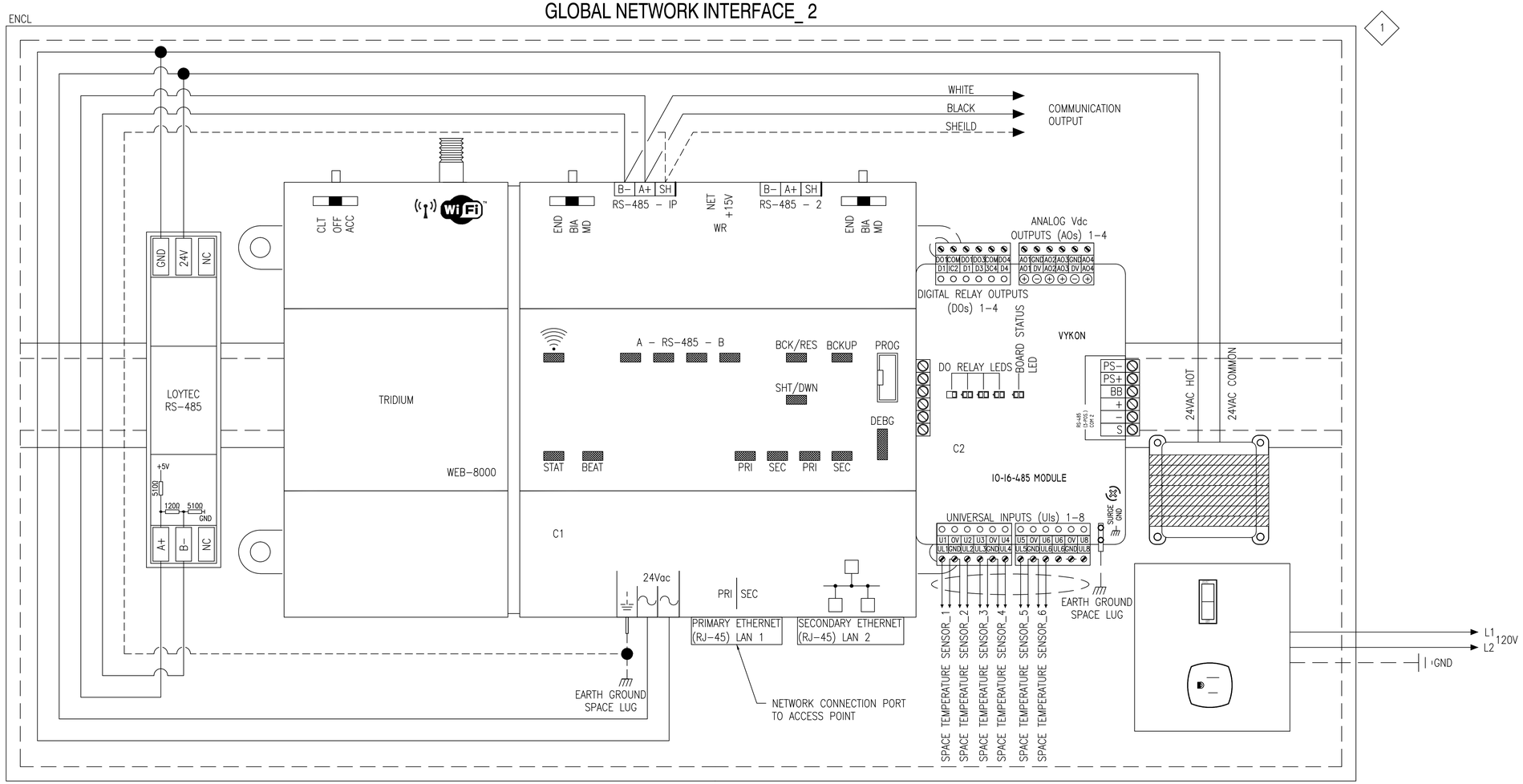
BUILDING 291 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 127037786
SHEET 333 OF 506

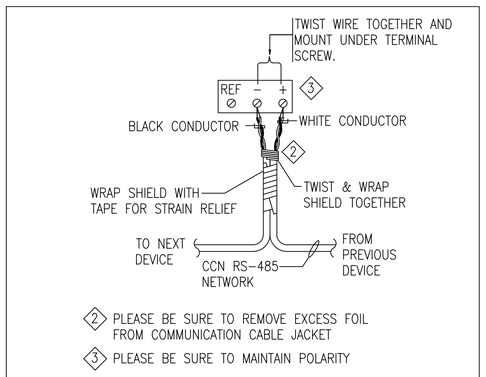
M3.1 | 291-15-367

DRAWFORM REVISION: 10 OCTOBER 2014

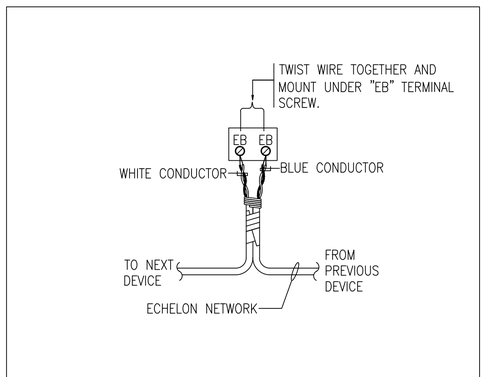
GLOBAL NETWORK INTERFACE_ 2



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
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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 PROFESSIONAL ENGINEER

SEAL

CSI

APPROVED

FOR COMMANDER NAVFAC

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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
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PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 291 HVAC CONTROLS

EPROJECT NO.: 1350913

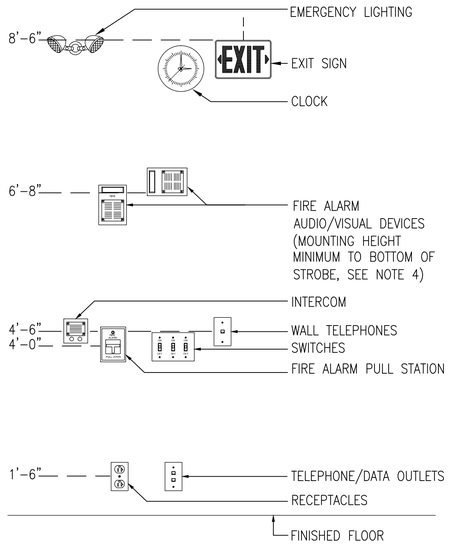
CONSTR. CONTR. NO. N40085–XX–C–XXXX

NAVFAC DRAWING NO. 12703787

SHEET 334 OF 506

M3.2 291-15-368

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

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		

GENERAL SYMBOLS

SYMBOL	
#	NEW WORK NOTE TAG

MOTOR & CONTROLS LEGEND

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

POWER DISTRIBUTION LEGEND

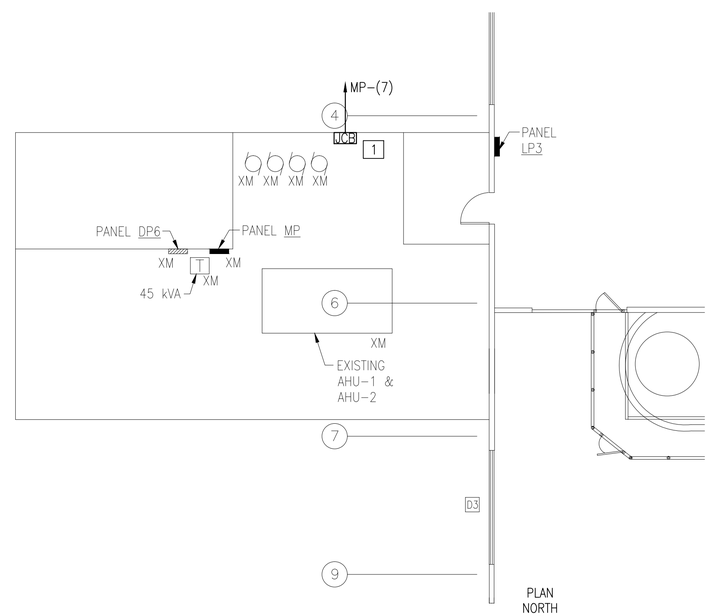
SYMBOL	DESCRIPTION
	208Y/120 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS
	480Y/277 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS
T	DRY TYPE TRANSFORMER

PANELBOARD SCHEDULE

PANEL: MP	VOLTS: 120/ 208	NEW/EXISTING.: EXISTING
MAIN: MCB 150A	BUS AMPS: -	MOUNT.: SURFACE
PH/WIRE: 3ø/4W	AIC: 22K	LOC: BLDG 320 MECH. RM.

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	RECEPTACLES	0	-	-	0	RECEPTACLES	20/1	2
3	20/1	PLUMBING TRAP	0	-	-	0	RECEPTACLES	20/1	4
5	20/1	RECEPTACLES	0	-	-	0	RECEPTACLES	20/1	6
7	20/1	JACE BOX	.02	1	-	0	LIGHTING	20/1	8
9	20/1	RECEPTACLES	0	-	-	0	LIGHTING	20/1	10
11	20/1	RECEPTACLES	0	-	-	0	SPARE	20/1	12
13	20/1	SPARE	0	-	-	0	SPARE	20/1	14
15	20/2	HEAT TRACE	0	-	-	0	SPARE	20/1	16
17					-	0	SPARE	20/1	18
19	20/2	SPARE	0	-	-	0	SPARE	20/1	20
21					-	0	SPARE	20/1	22
23	20/1	SPARE	0	-	-	0	SPARE	20/1	24
25	20/2	SPARE	0	-	-	0	SPARE	20/1	26
27					-	0	SPARE	20/1	28
29	20/1	SPARE	0	-	-	0	SPARE	20/1	30
31	20/1	SPARE	0	-	-	0	SPARE	20/1	32
33	20/1	SPARE	0	-	-	0	SPARE	20/1	34
35	20/1	SPARE	0	-	-	0	SPARE	20/1	36
37	20/1	SPARE	0	-	-	0	SPARE	20/1	38
39	20/2	SPARE	0	-	-	0	SPARE	20/1	40
41					-	0	SPARE	20/1	42
			0.02			0.00	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 291 ELECTRICAL FIRST FLOOR PARTIAL PLAN
1/8"=1'-0"

SCHEDULE OF DRAWINGS

DWG#	DESCRIPTION
E1.0	BUILDING 291 ELECTRICAL LEGEND, FIRST FLOOR PARTIAL PLAN & PANELBOARD SCHEDULES

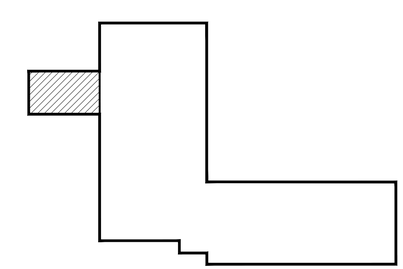
GENERAL SHEET NOTES

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

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

NAVFAC

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

NH LICENSED ENGINEER
NO PART OF THIS PLAN MAY BE REPRODUCED IN ANY FORM OR BY ANY MEANS WITHOUT PERMISSION OF THE ENGINEER. ALTERATIONS TO THIS DOCUMENT MAY BE MADE ONLY BY AUTHORIZED LICENSEES. ALTERATIONS TO THIS DOCUMENT MAY ALSO INCREASE THE LIABILITY OF THE ENGINEER.

ENGINEERING
MAGE CSI ENGINEERING
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NAPERVILLE, IL 60563
TEL: 312-313-0028
23 A WATTON AVE, STE 204
BARRINGTON, IL 60010
TEL: 312-313-0028
CSI ID: 2011-0118
CSI ID: 2014-0118
CERTIFICATE OF AUTHORITY
TYPE 1 CERTIFICATE OF AUTHORITY

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
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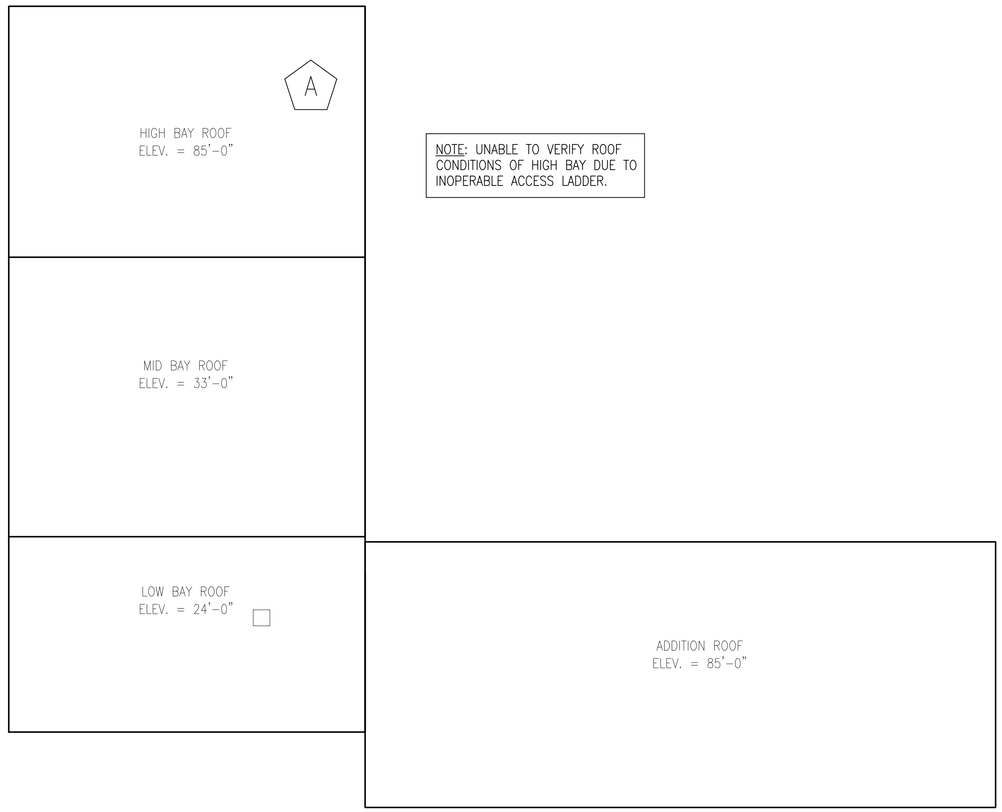
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
LEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND ~ 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 291 ELECTRICAL LEGEND, FIRST FLOOR PARTIAL PLAN AND PANELBOARD SCHEDULE

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703788
SHEET 335 OF 506
E1.0 291-15-396
DRAWFORM REVISION: 10 OCTOBER 2014



NOTE: UNABLE TO VERIFY ROOF CONDITIONS OF HIGH BAY DUE TO INOPERABLE ACCESS LADDER.

B291 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 INSTALL NON-PENETRATING ROOF-MOUNT FOR RF ACCESS POINT ON HIGHEST ROOF LOCATION.
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT TO B086A ACCESS POINT.
3. ROOF MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS. MOUNTING HEIGHT TO BE DETERMINED BY CONTRACTOR TO MINIMIZE GROUND-LEVEL VISIBILITY WHILE MAINTAINING ACCESS POINT LINE-OF-SIGHT.
4. CAT5 CABLE SHALL BE ROUTED THROUGH EXISTING ROOF PENETRATION AND ALONG EXISTING PATH TO JACE.

GRAPHIC SCALE

1/16" = 1' 1 6" 0 1 2 3
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. 13914 LICENSED PROFESSIONAL ENGINEER
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APPROVED
FOR COMMANDER NAVFAC
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SATISFACTORY TO DATE

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FIRE PROTECTION X

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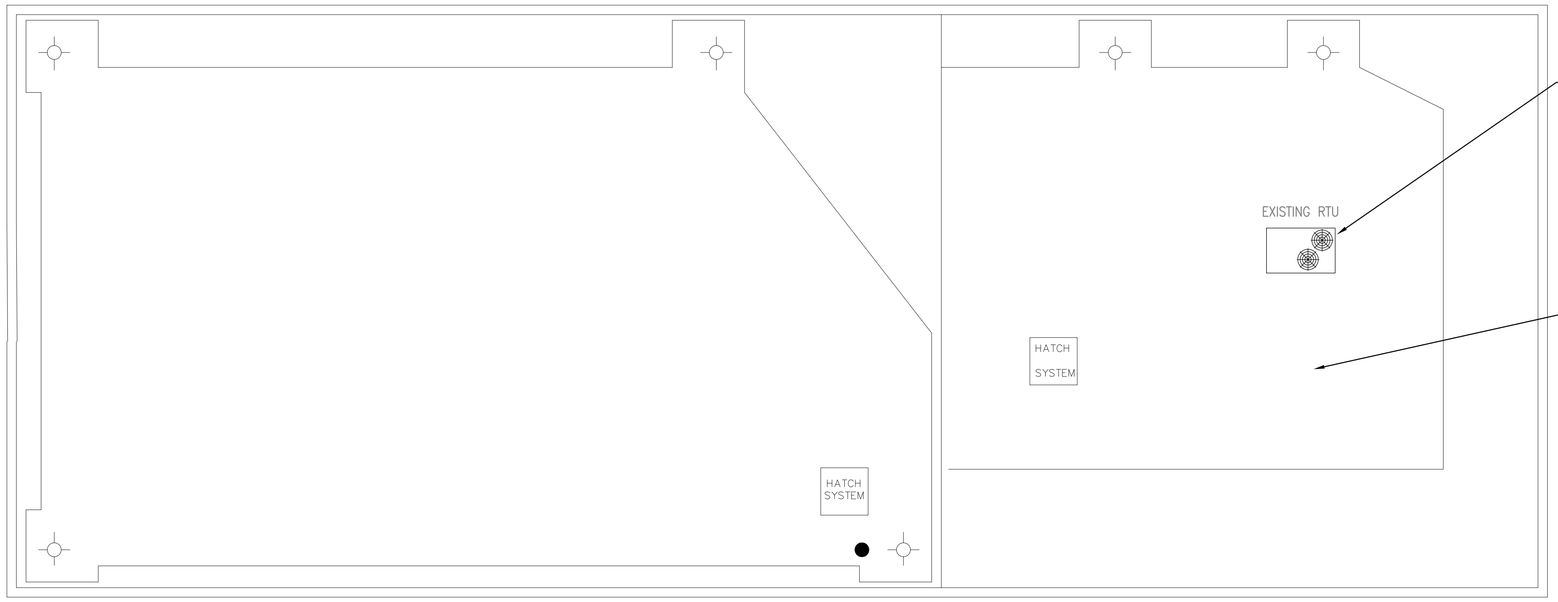
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
FY 16 ENERGY PROJECT
TASK 1-B-R-22
B291 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703789
SHEET 336 OF 506
ET1.20 291-15-370

DRAWFORM REVISION: 10 OCTOBER 2014



ALL ROOFING LAYERS:
SHINGLES: 299-01, 299-02, 299-03
FIRST LAYER: 299-04, 299-05, 299-06
SECOND LAYER: 299-07, 299-08, 299-09
ROOFING CEMENT: 299-10, 299-11, 299-12

COLLECTED INSIDE BUILDING ON DUCKTWORK:
299-13
299-14

B299 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 B299 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
299-01	ND	NS
299-02	ND	NS
299-03	ND	NS
299-04	ND	NS
299-05	ND	NS
299-06	ND	NS
299-07	ND	NS
299-08	ND	NS
299-09	ND	NS
299-10	ND	NS
299-11	ND	NS
299-12	ND	NS
299-13	ND	NS
299-14	ND	NS

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

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

GRAPHIC SCALE

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

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

NAVFAC

STATE OF MAINE
Bradlee Mezquita
8410
LICENSED
PROFESSIONAL ENGINEER
SEAL

Tighe&Bond
Consulting Engineers
177 Corporate Drive
Portsmouth, New Hampshire
(603) 433-8818
www.tighebond.com

A/E INFO

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

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22
B299 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703790
SHEET 337 OF 506
H1.0 299-15-45

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\HazMats\DWG\A1066_2_HZMT_R22.dwg LAYOUT NAME: B299-H1.0 PLOTTED: Friday, August 07, 2015 - 2:36pm 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

- RTU 1 — ROOF TOP UNIT
- J 1 — JACE BOX

CALL OUT SYMBOLS

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

EQUIPMENT TAG SYMBOLS & ABBREVIATIONS

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

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

AIR SYSTEM SPECIFIC ABBREVIATIONS

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

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 299 HVAC LEGEND
MD2.0	BUILDING 299 HVAC ROOF DEMOLITION PLAN
M2.0	BUILDING 299 HVAC FIRST FLOOR PLAN AND ROOF PLAN
M3.0	BUILDING 299 HVAC CONTROLS
M3.1	BUILDING 299 HVAC CONTROLS
M3.2	BUILDING 299 HVAC CONTROLS
M4.0	BUILDING 299 HVAC SCHEDULES AND DETAILS

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

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FEAD/PM&E AMIN BAHROUR PM&E

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FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 299 HVAC LEGEND

EPROJECT NO.: 1350913

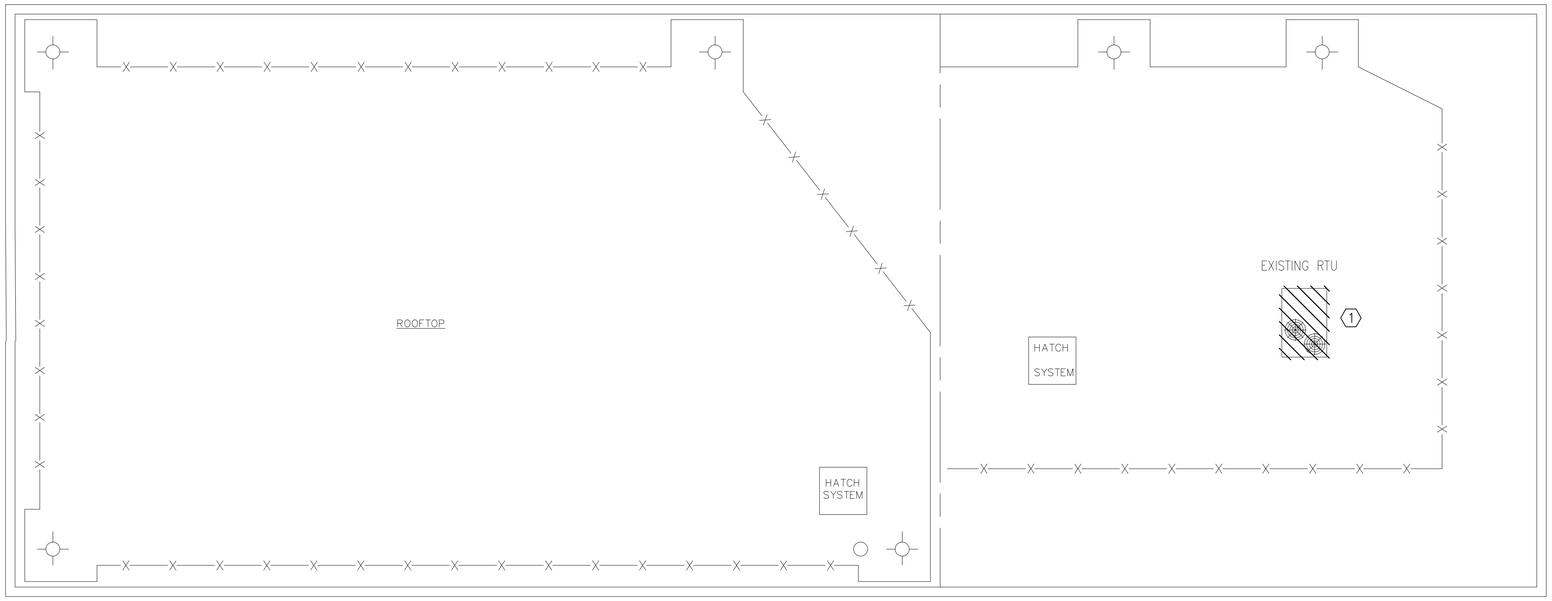
CONSTR. CONTR. NO. N40085–XX–C–XXXX

NAVFAC DRAWING NO. 12703791

SHEET 338 OF 506

M1.0 | 299-15-46

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 299 HVAC ROOF 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 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' 8 4 0 8 16 24 scale feet

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

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PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

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DEPARTMENT OF THE NAVY
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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 299 HVAC ROOF DEMOLITION PLAN

EPROJECT NO.: 1350913

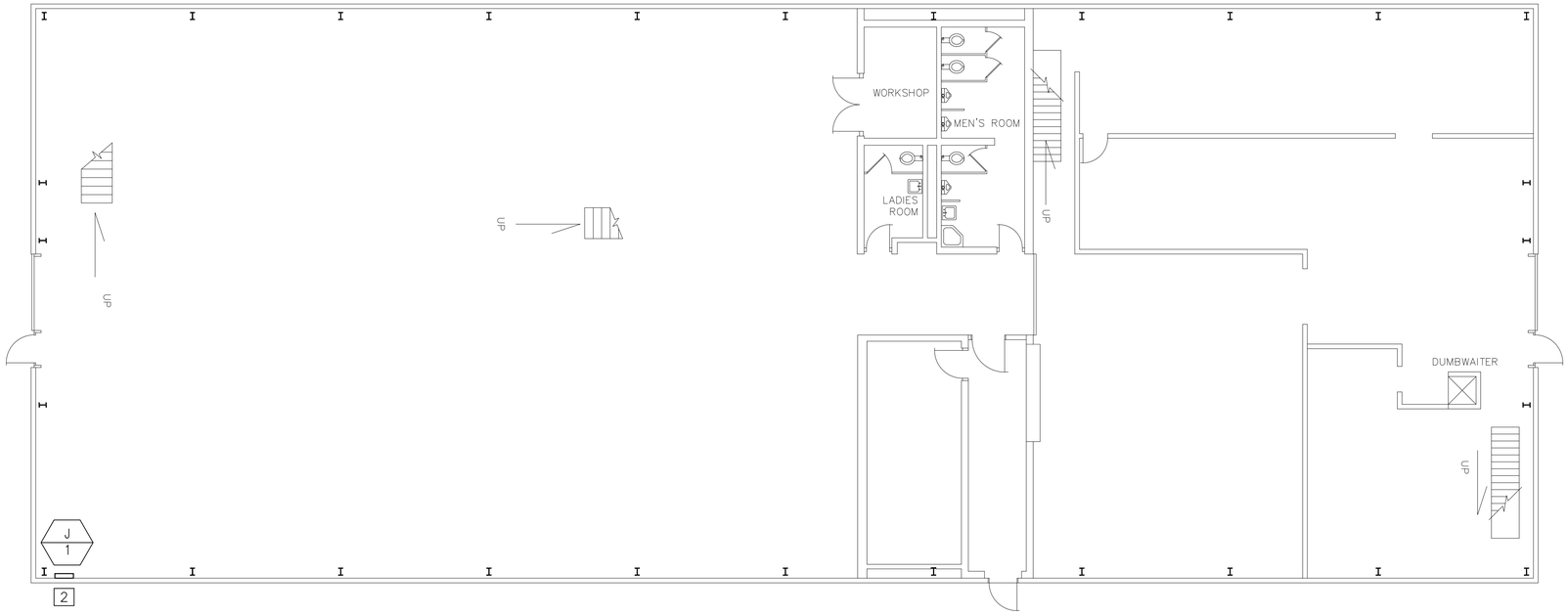
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703792

SHEET 339 OF 506

MD2.0 | 299-15-47

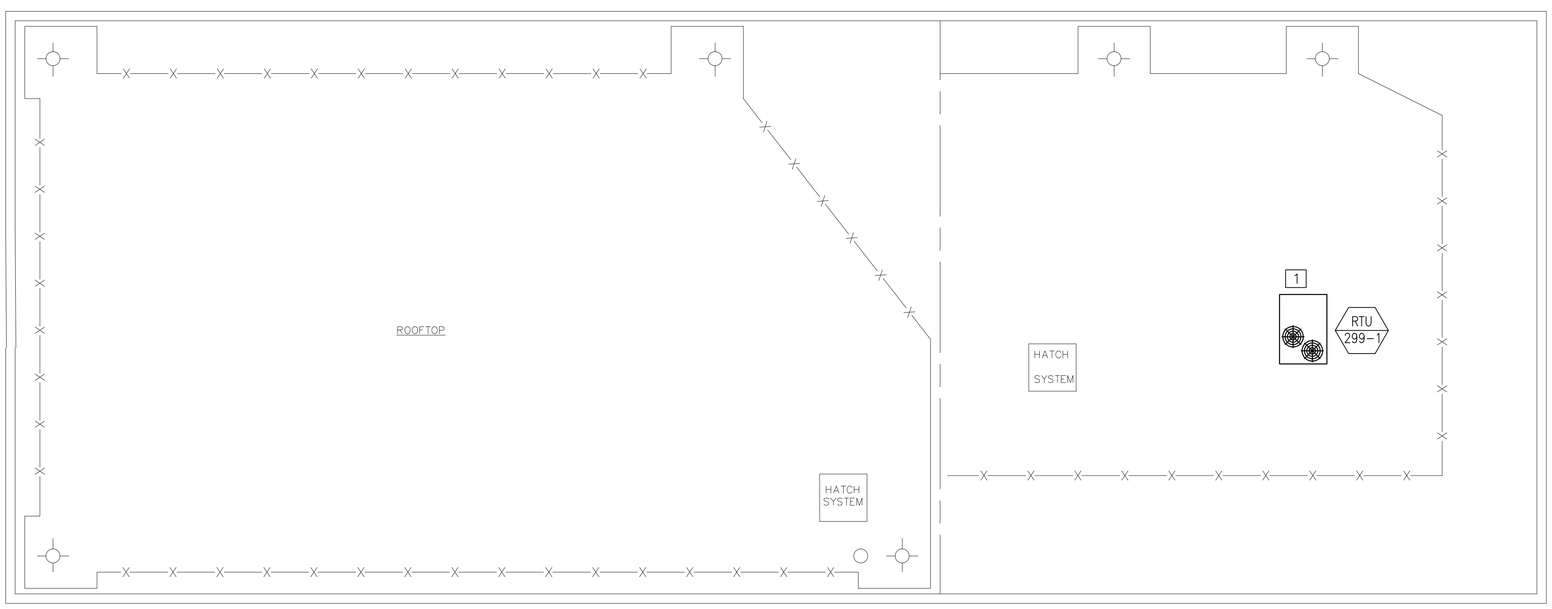
DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 299 HVAC FIRST FLOOR PLAN

1/8"=1'-0"

PLAN NORTH



BUILDING 299 HVAC ROOF 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 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 EXISTING CONTROL WIRING, FIELD COORDINATE EXACT LOCATION WITH NAVFAC.
2. MECHANICAL CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF NEW DDC JACE BOX WITH NAVFAC.

GRAPHIC SCALE

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

STM	DESCRIPTION	DATE	APPR
4	100% SUBMISSION	08/07/2015	DM
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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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HVAC / PLUMBING / ELECTRICAL
CSI ENGINEERING
FIRE PROTECTION
999 BOSTON POST RD.
SUITE 204
25 AVENTINO AVE, STE 203
PORTSMOUTH, NH 03801
781.233.0925
PORTLAND, ME 04103
207.523.0404

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

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

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

BUILDING 299 HVAC FIRST FLOOR PLAN & ROOF PLAN

EPROJECT NO.: 1350913

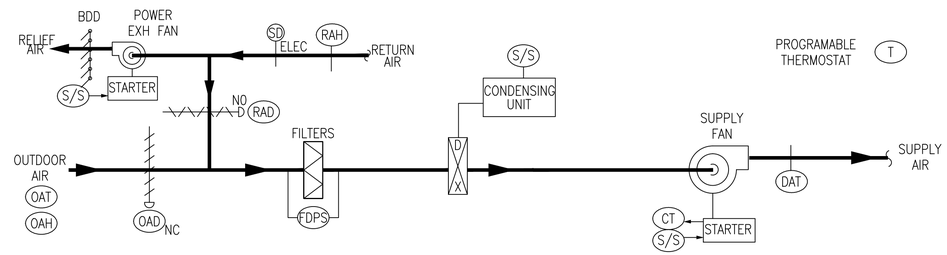
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703793

SHEET 340 OF 506

M2.0 | 299-15-48

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
- EF IS OFF
- OAD IS CLOSED
- EAD IS CLOSED
- RAD IS OPEN
- COOLING SYSTEM IS OFF

UNOCCUPIED COOLING

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

OCCUPIED MODE

- SF IS ON
- EF IS LOW
- OAD IS OPEN TO MINIMUM POSITION
- EAD IS OPEN TO MINIMUM POSITION
- RAD IS OPEN TO MINIMUM POSITION
- COOLING SYSTEM IS DE-ENERGIZED

OCCUPIED COOLING

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

ECONOMIZER MODE

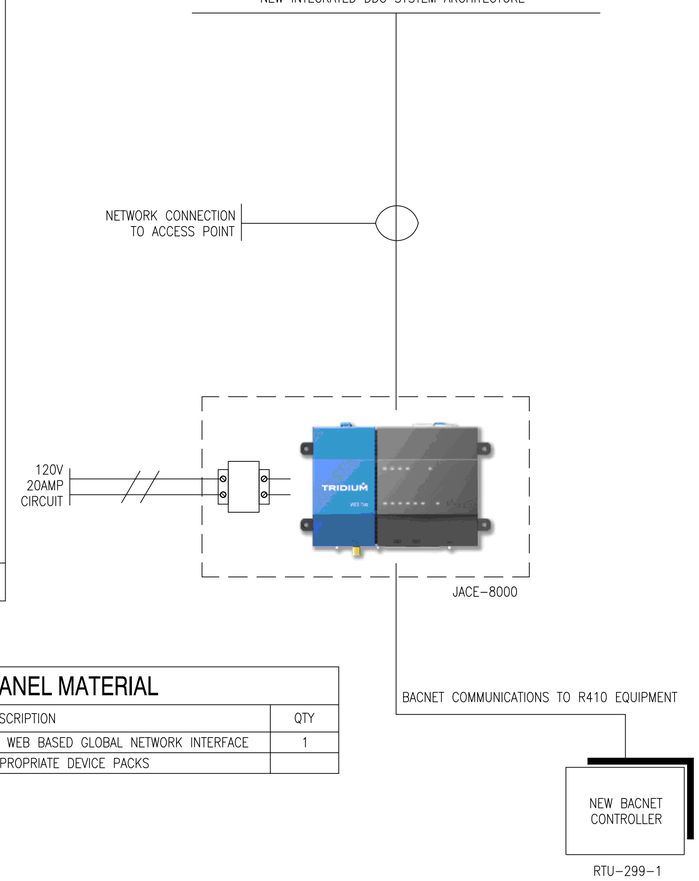
- IF OUTSIDE AIR ENTHALPY IS BELOW ROOM ENTHALPY THE OAD, AND RAD MODULATE UP TO 100% OA
- CONDENSING UNITS AND COMPRESSORS ARE STAGED ON IF ADDITIONAL COOLING IS REQUIRED
- DAT OVERRIDES TO LIMIT SUPPLY AIR TEMP TO 50°F MINIMUM
- IF OA ENTHALPY RISES ABOVE ROOM ENTHALPY, UNIT RETURNS TO OCCUPIED COOLING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

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 299_WATERFRONT SUPPORT FACILITY)
NEW INTEGRATED DDC SYSTEM ARCHITECTURE



PANEL MATERIAL

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

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

NAVFAC

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

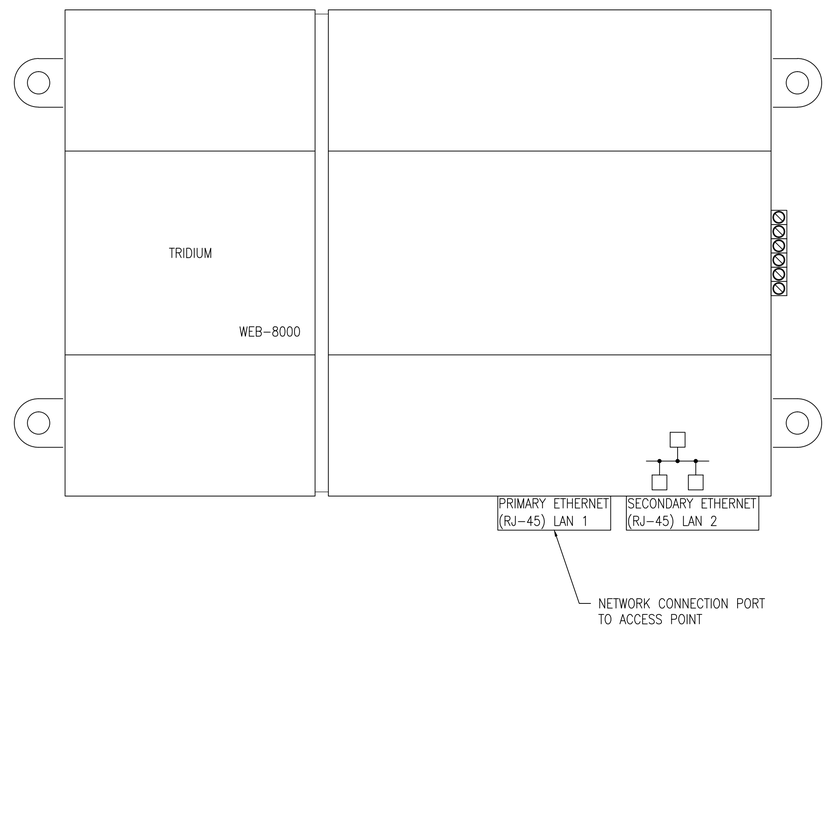
DESIGN FIRM
CSI
CONSTRUCTION SPECIALISTS, INC.
978-232-9905
CSI INVITATION A/E RFQ 3304
CONTRACT N62470-15-D-8001
DELIVERY ORDER 0013
APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

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

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
FY 16 ENERGY PROJECT
TASK 1-B-R-22
BUILDING 299 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703794
SHEET 341 OF 506
M3.0 | 299-15-49

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
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0	35% SUBMISSION	02/23/2015	DM

NAVFAC

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

I HEREBY CERTIFY THAT THE PLANS, SPECIFICATIONS, AND ESTIMATES FOR THE PROJECT DESIGNED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MAINE.
DATE: 07/24/2015
CSI ENGINEERING, LLC
999 BROADWAY, SUITE 206
SAUGUS, MA 01906
781-233-2800
CAGE CODE: 4DZ63
DUNS NO.: 829319044

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 299 HVAC CONTROLS

EPROJECT NO.: 1350913

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

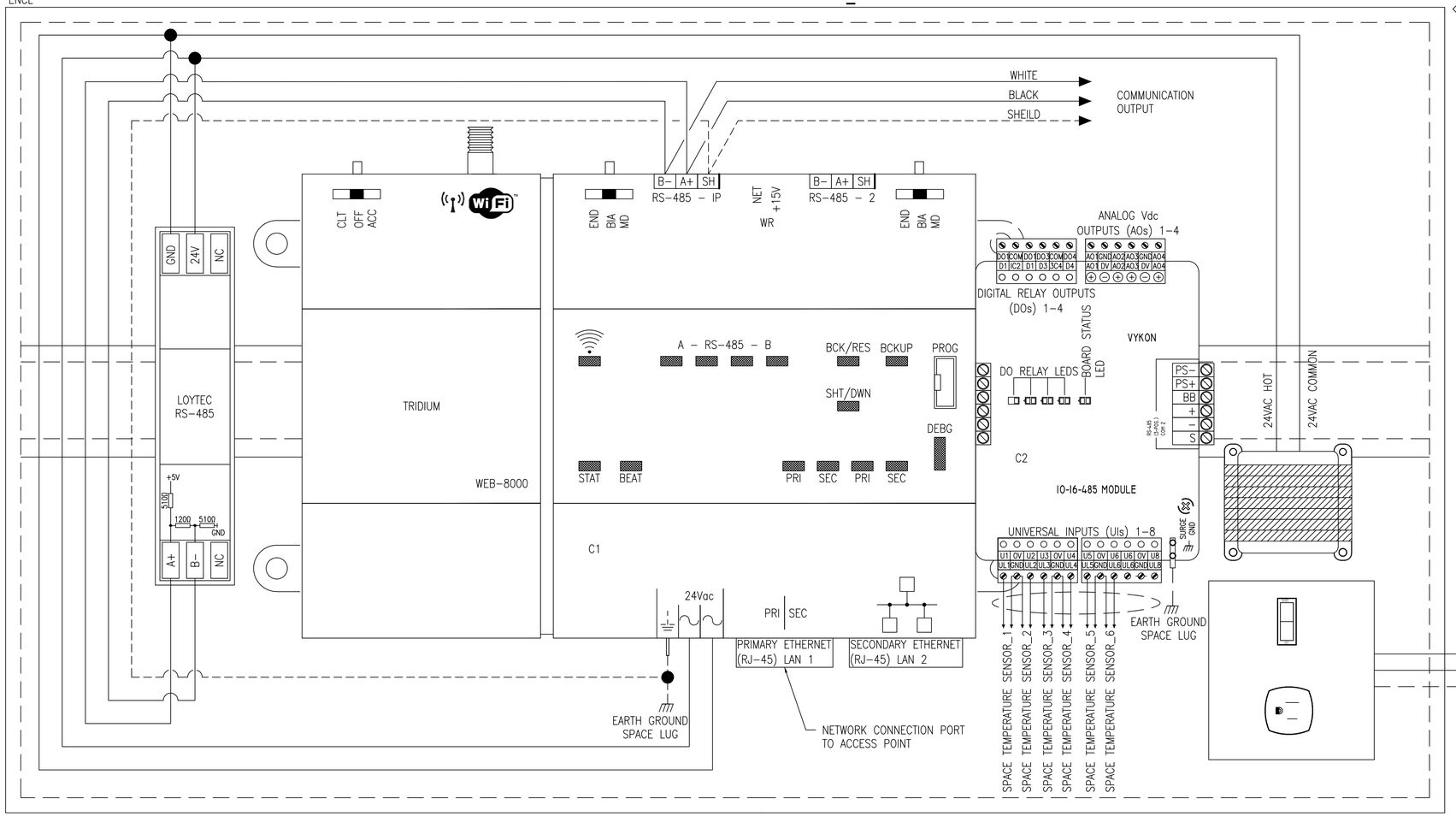
NAVFAC DRAWING NO.
12703795

SHEET 342 OF 506

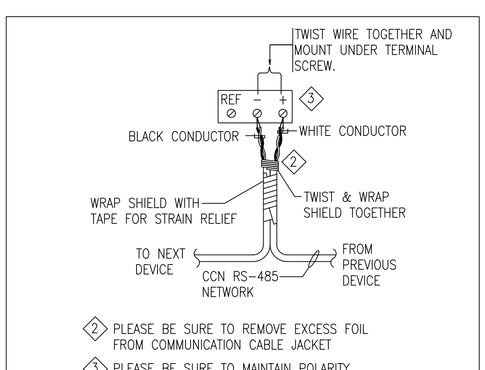
M3.1 | 299-15-50

DRAWFORM REVISION: 10 OCTOBER 2014

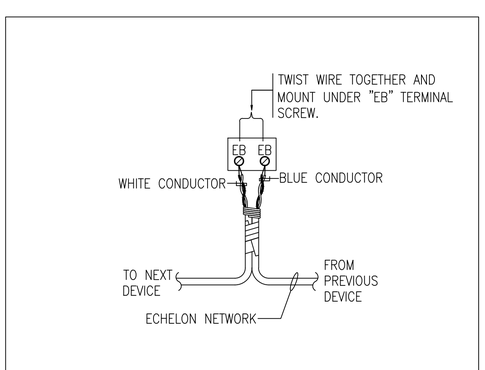
GLOBAL NETWORK INTERFACE_ 2



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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0	35% SUBMISSION	02/23/2015	DM

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

SEAL

PROJECT ENGINEER: CSI ENGINEERING, INC. 918 Breakwater Blvd. Ste 204 Corpus Christi, TX 78411 (361) 814-8000

ARCHITECT: CSI ENGINEERING, INC. 918 Breakwater Blvd. Ste 204 Corpus Christi, TX 78411 (361) 814-8000

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

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

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 299 HVAC CONTROLS

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085–XX–C–XXXX

NAVFAC DRAWING NO. 12703796

SHEET 343 OF 506

M3.2 | 299-15-51

DRAWFORM REVISION: 10 OCTOBER 2014

PACKAGED DX ROOFTOP AIR HANDLING UNIT SCHEDULE

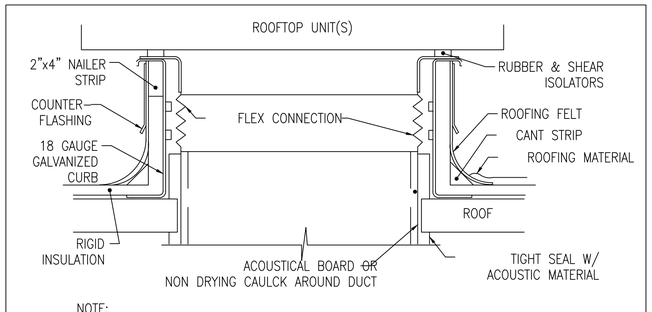
TAG NO.	LOCATION	MIN. O.A. CONDITIONS			BUILDING R.A. CONDITIONS			SUPPLY FAN						UNIT COOLING COIL		AIR-COOLED CONDENSING UNIT				ELECTRICAL DATA					FILTER DATA	WEIGHT (LBS)	DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
								CFM	STATIC PRESS. (IN.WG)	WHEEL		MOTOR		CAPACITY (MBH)		COMPRESSOR(S)		CONDENSER FAN		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									
RTU-299-1	ROOF	SEE NOTE 3.	87	71	SEE NOTE 3.	75	63	3,000	0.5	15	CENT.	690-936	0.96	89	72	SCROLL	2	2	¼	60	460	3	19	25	TA-2"	969	CARRIER 50HC-D08A2C6-0F1C0	SEE NOTES

NOTES: 1. PROVIDE W/ ENTHALPY CONTROLLED ECONOMIZER WITH BAROMETRIC RELIEF. 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 W/ BACNET INTERFACE. 5. PROVIDE WITH MEDIUM STATIC BELT DRIVE. 6. PROVIDE WITH E-COAT. 7. PROVIDE WITH BASE ELECTROMECHANICAL CONTROLS. 8. PROVIDE WITH UNPOWERED CONVENIENCE OUTLET. 9. PROVIDE WITH NON-FUSED DISCONNECT. 10. PROVIDE WITH POWER EXHAUST. 11. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 12. PROVIDE WITH ROOF CURB ADAPTOR IF REQUIRED. 13. 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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ENGINEER: THE CADD DISCIPLINE HAS BEEN REVIEWED AND DEEMED ACCURATE AND COMPLIANT WITH NAVFAC CADD STANDARDS. ANY NON-CONFORMANCE IS NOTED ON THE CONTRACT DRAWINGS. ANY UNCHECKED, UNAPPROVED, OR UNAUTHORIZED DISCIPLINE DESIGN IS NOT REVIEWED AND MAY BE INCORRECT. USE AT YOUR OWN RISK. CADD CHECK: DATE: 02/23/2015

ENGINEERING: CSI TECHNOLOGY, FIRE PROTECTION, 999 Bedford St. Suite 206, Stamford, CT 06905, 781-329-8888, 215 Haverhill Ave, STE 304, Lawrence, MA 01843, 603-313-9214, 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
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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 299 HVAC SCHEDULES AND DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703797

SHEET 344 OF 506

M4.0 | 299-15-52

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

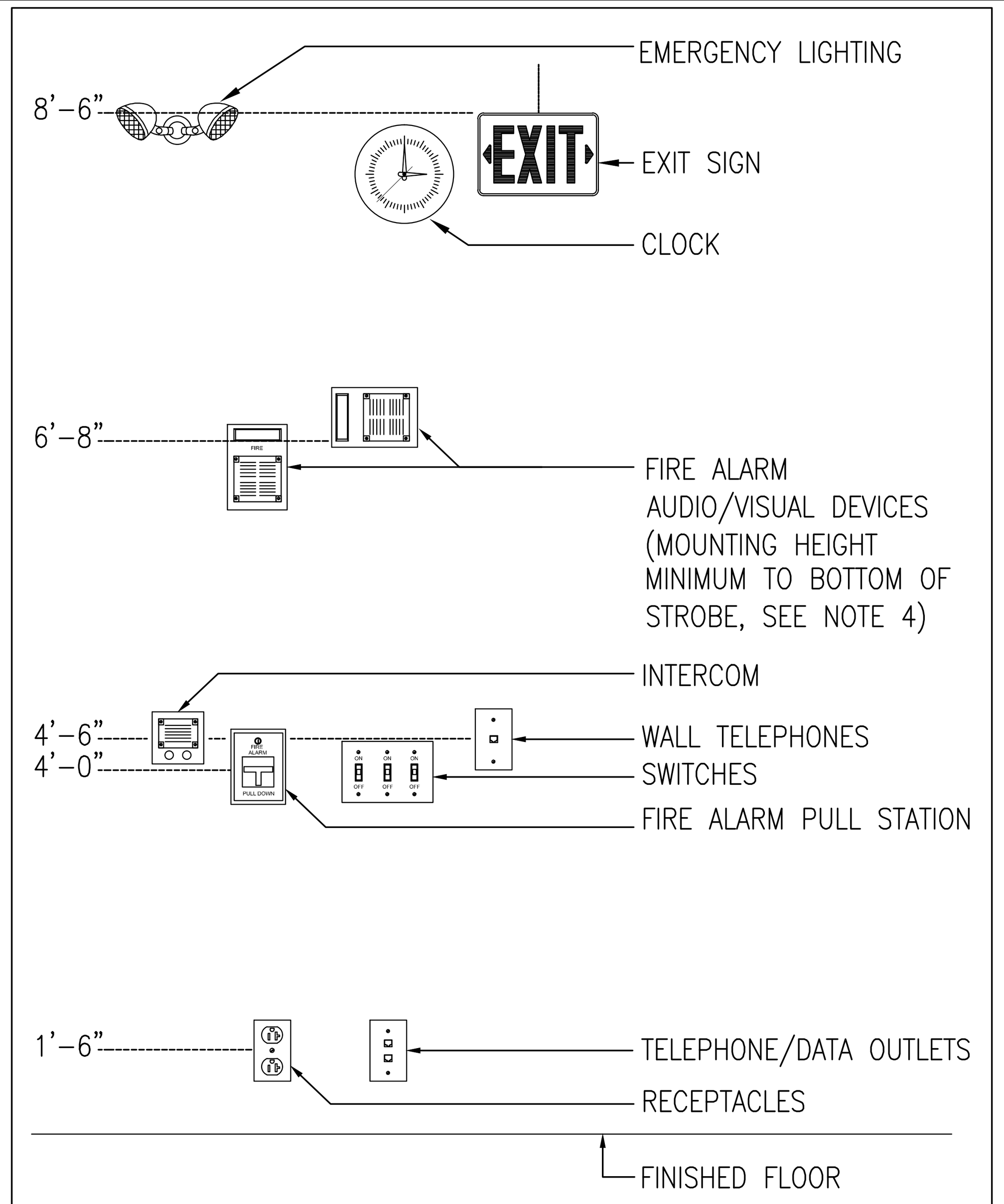
3" × 1"

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 "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
▬	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

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

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 299 ELECTRICAL LEGEND
ED2.0	BUILDING 299 ELECTRICAL ROOF DEMOLITION PLAN
E2.0	BUILDING 299 ELECTRICAL FIRST FLOOR PLAN & ROOF PLAN
E3.0	BUILDING 299 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

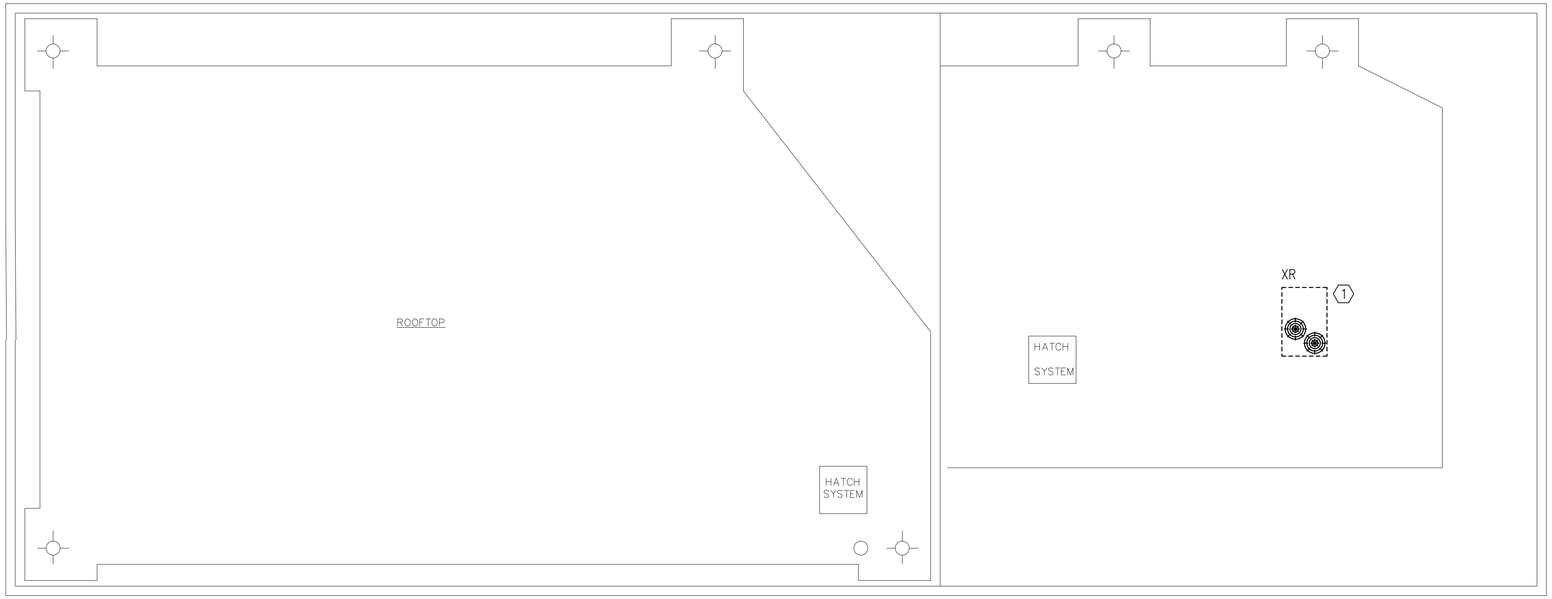
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL SHIPYARD - PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE

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

BUILDING 299 ELECTRICAL LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703798
SHEET 345 OF 506
E1.0 299-15-53

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 299 ELECTRICAL ROOF 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 EXISTING BRANCH CIRCUITRY AND DISCONNECT IN THEIR ENTIRETY. REMOVE EXISTING 60A FUSE FROM ASSOCIATED CIRCUIT BREAKER IN PANEL "PD-A5" POLE SPACE 5 AND MAINTAIN BREAKER FOR REUSE.

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

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CONTRACT NO. N40085-12-D-1800
DELIVERY ORDER 0029
CLIN 0101-2011-0108
CONTRACTOR: CSI ENGINEERING

AUTHORIZED

CSI ENGINEERING
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732-367-9424
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DES TM | DRW TM | CHK JO
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BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

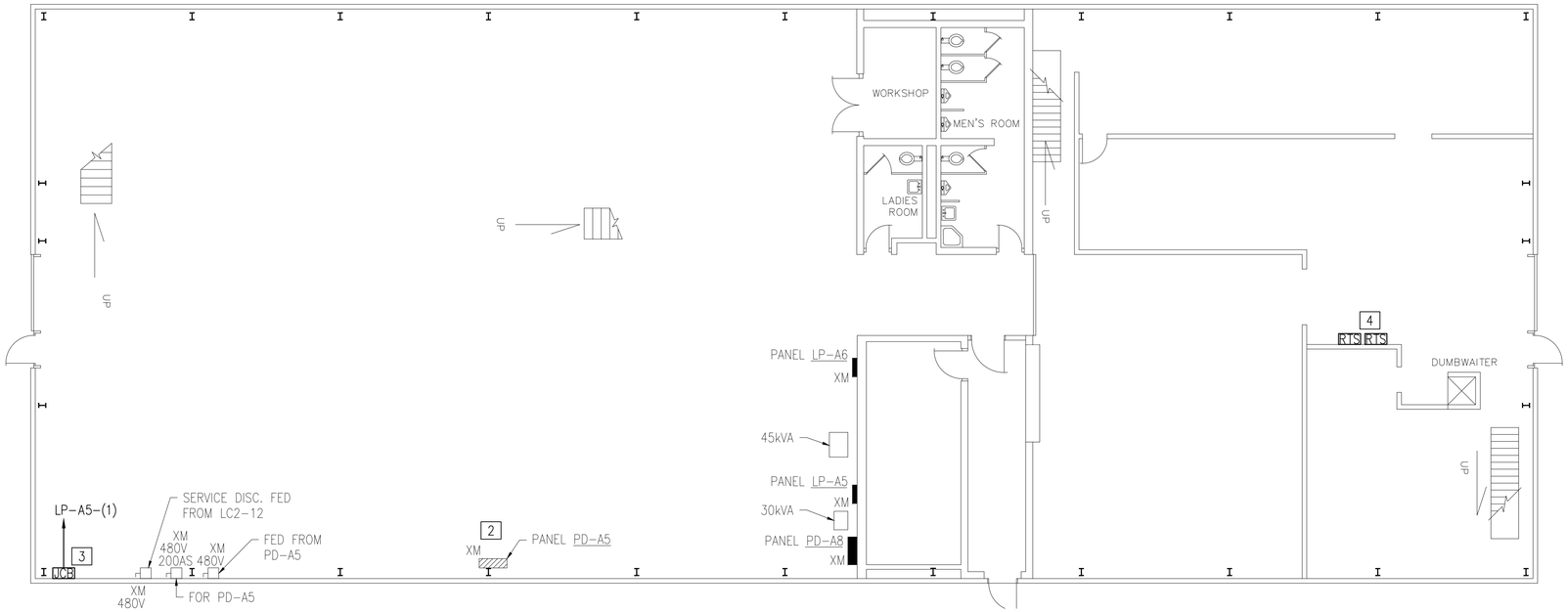
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
PUBLIC WORKS DEPARTMENT ~ MAINE
PORTSMOUTH NAVAL SHIPYARD
NAVAL SHIPYARD ~ PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 299 ELECTRICAL ROOF DEMOLITION PLAN

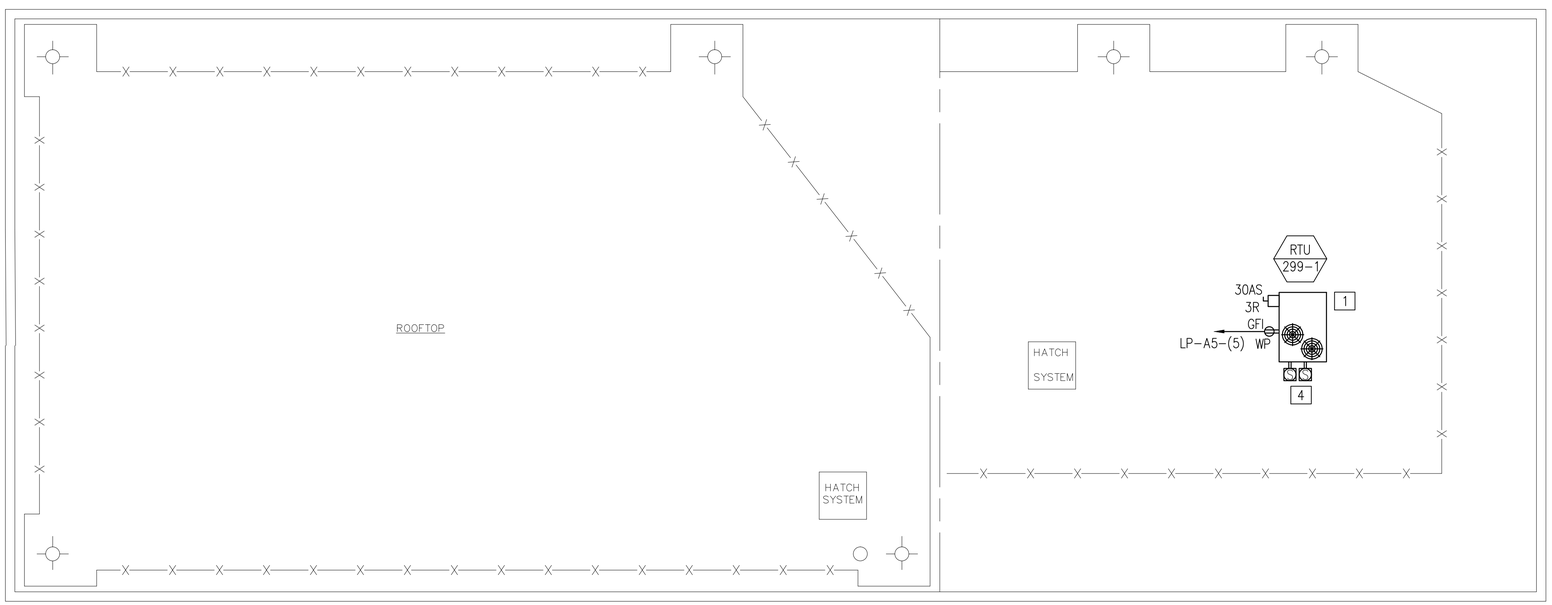
EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703799
SHEET 346 OF 506
ED2.0 | 299-15-54

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 299 ELECTRICAL FIRST FLOOR PLAN

1/8"=1'-0"



BUILDING 299 ELECTRICAL ROOF 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 ROOFTOP UNIT TO EXISTING CIRCUIT BREAKER IN PANEL "PD-A5" MAINTAINED DURING DEMOLITION. REFER TO THE MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
2. PROVIDE NEW 25A FUSE IN PANEL "PD-A5" POLE SPACE #5 FOR NEW ROOFTOP UNIT. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
3. NEW DDC JACE BOX PROVIDED BY OTHERS. COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.
4. NEW DUCT SMOKE DETECTOR PROVIDED BY TRADE CONTRACTOR. COORDINATE EXACT LOCATION OF DUCT SMOKE DETECTOR WITH MECHANICAL CONTRACTOR. PROVIDE NEW REMOTE TEST STATION. CONNECT NEW DUCT SMOKE DETECTOR TO EXISTING FIRE ALARM DETECTION CIRCUIT SERVING THE AREA. REUSE AS MUCH EXISTING CONDUIT AND WIRE AS POSSIBLE AND EXTEND AS NEEDED. NEW CONDUIT AND WIRING SHALL MATCH EXISTING IN ALL RESPECTS.

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
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1	80% SUBMISSION	04/24/2015	DM
0	35% SUBMISSION	02/23/2015	DM

NAVFAC

STATE OF NEW HAMPSHIRE
CHARLES E. MACE
No. 13078
LICENSED
PROFESSIONAL ENGINEER
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PREPARED BY: CSI ENGINEERING
FIRE PROTECTION
919 BANCROFT STREET, STE. 204
SAVANNAH, GA 31405
(912) 232-0202
25 AUVERGNE AVE, STE. 3301
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(732) 370-9424
A/E INFO

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ACTIVITY

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PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

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

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

BUILDING 299 ELECTRICAL FIRST FLOOR PLAN & ROOF PLAN

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703800

SHEET 347 OF 506

E2.0 | 299-15-55

DRAWFORM REVISION: 10 OCTOBER 2014

PANELBOARD SCHEDULE

PANEL: LP–A5 | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING
MAIN: MLO | BUS AMPS: 100A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC: BLDG 299 SHOP AREA

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	JACE BOX	0.2	1	–	0	HIGH BAY LTS	20/1	2
3	20/1	BALC. LTS	0	–	–	0	HIGH BAY LTS	20/1	4
5	20/1	RTU GFI RECEPTACLE	.18	1	–	0	HIGH BAY LTS	20/1	6
7	20/1	TRAINING RM & ADJ. HALL LTS	0	–	–	0	HIGH BAY LTS	20/1	8
9	20/1	LOCKER RM/SERV. BALC. LTS	0	–	–	0	BR/BRAZE RM LTS	20/1	10
11	20/1	HIGH BAY LTS	0	–	–	0	174 SIDE LOCKER RM REC.	20/1	12
13	20/1	TRAINING RM LTS/FAN	0	–	–	0	WATER BENCH REC.	20/1	14
15	20/1	REC. BY DRILL PRESS	0	–	–	0	SPARE	20/1	16
17	20/1	WATER COOLER REC.	0	–	–	0	TRANING RM REC.	20/1	18
19	20/1	BRAZE RM REC.	0	GFI	–	0	PLANER/NUC BRK SPRAY REC.	20/1	20
21	20/1	MEN'S BATHRM BLOWER	0	–	–	0	174 SIDE HIGH BAY REC.	20/1	22
23	20/1	DD1 SIDE HIGH BAY REC.	0	–	–	0	SPARE	20/1	24
25	20/1	REC. ADJ. TO WOMEN'S BR	0	–	–	0	EXTERIOR LTS	20/1	26
27	20/2	EXTERIOR LTS	0	–	–	0	NUC BREAK REC.	20/1	28
29					–	0	EXTERIOR LTS	20/1	30
			0.38			0.00	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.

PANELBOARD SCHEDULE

PANEL: PA–A5 | VOLTS: 480 | NEW/EXISTING.: EXISTING
MAIN: MLO | BUS AMPS: 600A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC: BLDG 299 SHOP AREA

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	400AS 400AF	EXISTING LOAD							
2	200AS 200AF	COMPENSATOR							
3	30/3	SPARE	0	–	–	0	SPARE	30/3	4
5	60AS 25AF	RTU–299–1	15.1	1	–	0	FEEDS 60A DISC. BY DOOR 2 FOR DRYER CIRCUIT	60AS 60AF	6
7	30AS 30AF	30A DISC. ON NORTH WALL	0	–	–	0	30A DISC. IN PUMP REPAIR	30AS 30AF	8
			15.1			0.00	TOTAL CONNECTED kVA:	15.10	
							TOTAL CONNECTED AMPERES:	18.18	

NOTES:
1. REMOVE EXISTING 60A FUSE AND PROVIDE NEW 25A FUSE 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
RTU 299–1	ROOFTOP UNIT	1/4	15.12	460	3	PD–A5–(5)	60AS/25AF	(3)#10 & (1)#10G, 3/4"C	X			X	NOTE 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

MECHANICAL ELECTRICAL PLUMBING FIRE PROTECTION
CSI TECHNOLOGIES
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215 MARTIN AVE. STE 204 SANTEE, CA 92071 (619) 210-1640 FAX (619) 210-1641
CONTRACT NO. N62470-10-D-3000 CTO 0010 DRAWING NO. E3.0 REV. 0 A/E INFO

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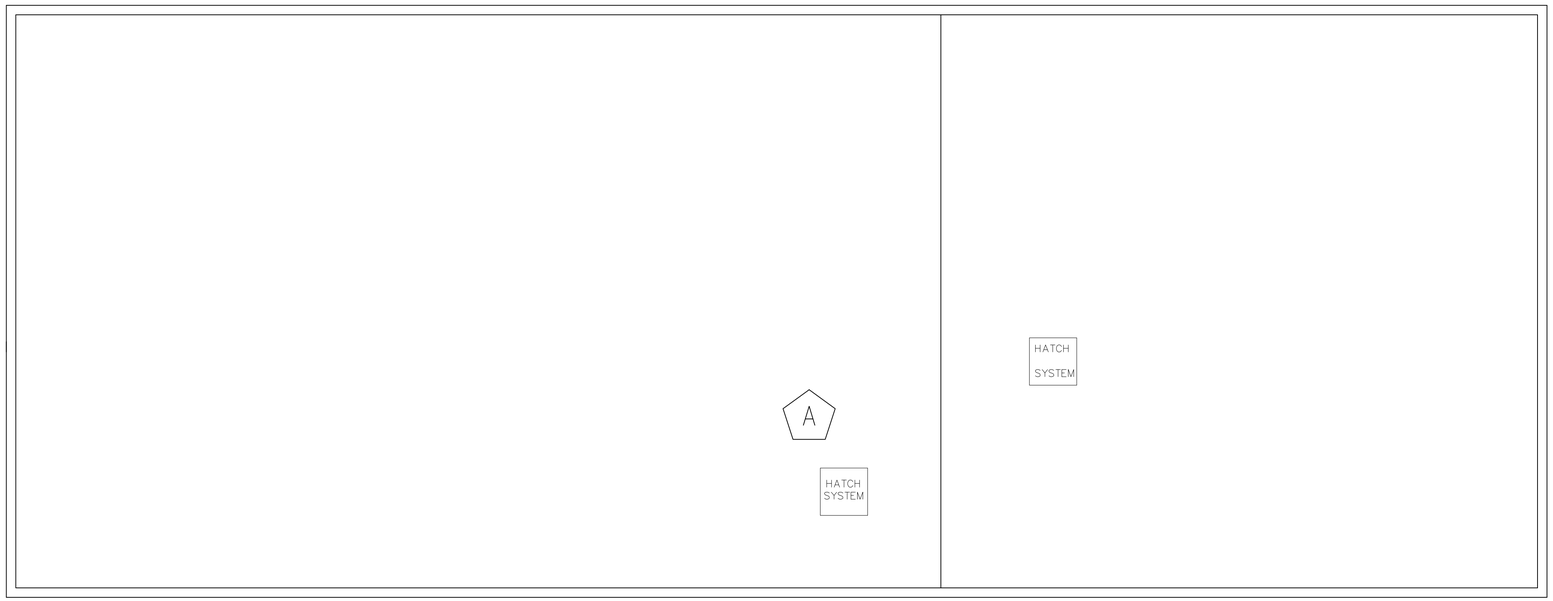
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
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 299 ELECTRICAL SCHEDULES

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703801
SHEET 348 OF 506
E3.0 | 299-15-56

DRAWFORM REVISION: 10 OCTOBER 2014



B299 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

A NEW WORK KEYNOTES

1. CONTRACTOR SHALL INSTALL NEW STRUCTURAL SUPPORT 48"-60" ABOVE ROOF LINE NEAR HATCH SYSTEM ON HIGHEST ROOF; INSTALL RF ACCESS POINT ON NEW STRUCTURE.
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT TO B086A ACCESS POINT.
3. ROOF MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS. MOUNTING HEIGHT TO BE DETERMINED BY CONTRACTOR TO MINIMIZE GROUND-LEVEL VISIBILITY WHILE MAINTAINING ACCESS POINT LINE-OF-SIGHT.
4. CAT5 CABLE SHALL BE ROUTED THROUGH EXISTING ROOF PENETRATION AND ALONG EXISTING PATH TO JACE.

GRAPHIC SCALE

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

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

NAVFAC

STATE OF NEW HAMPSHIRE KEITH CHRISTOPHER LICENSED PROFESSIONAL ENGINEER No. 13914
SEAL

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

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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

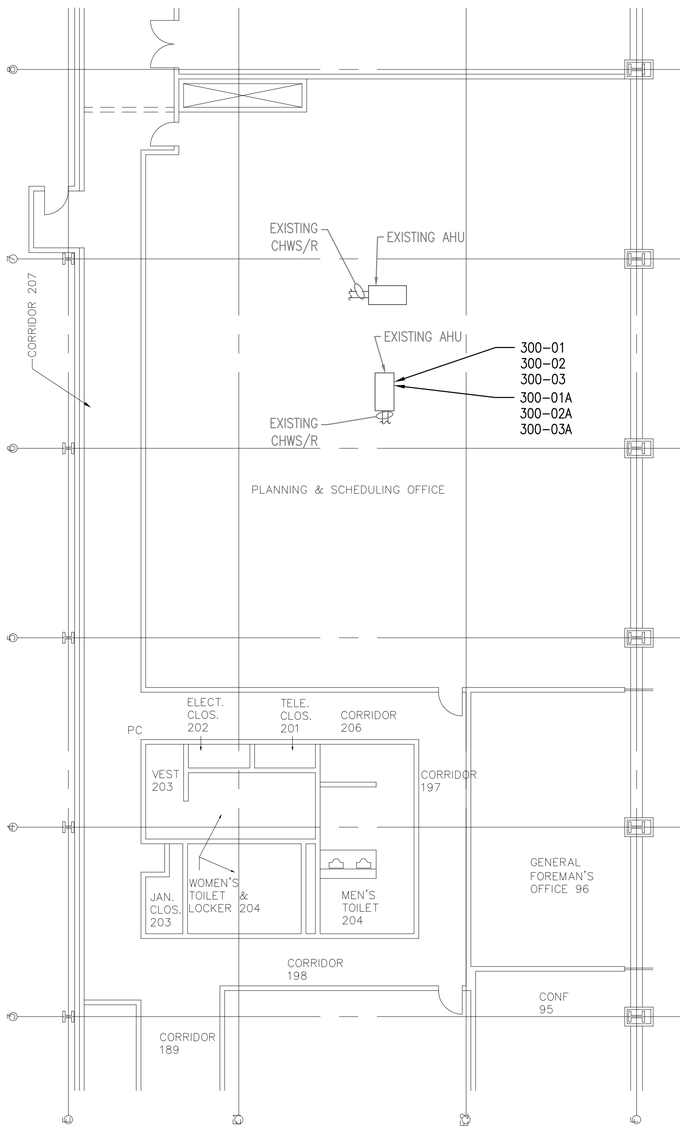
FY 16 ENERGY PROJECT
TASK 1-B-R-22

B299 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703802
SHEET 349 OF 506

ET1.0 | 299-15-57

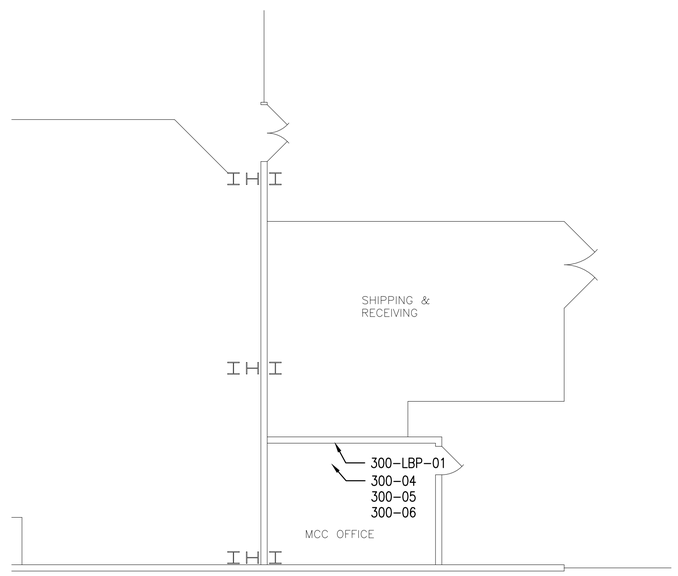
DRAWFORM REVISION: 10 OCTOBER 2014



B300 SECOND FLOOR HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 1/8" = 1'

PLAN NORTH



B300 FIRST FLOOR 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 B300 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
300-01	ND	NS
300-01A	ND	NS
300-02	ND	NS
300-02A	ND	NS
300-03	ND	NS
300-03A	ND	NS
300-04	ND	NS
300-05	ND	NS
300-06	ND	NS
300-LBP-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' 8 4 0 8 16 24 scale feet

CHECK GRAPHIC SCALE BEFORE USING

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

NAVFAC

STATE OF MAINE Bradlee Mesquita 9410 LICENSED PROFESSIONAL ENGINEER SEAL

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A/E INFO

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

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

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

B300 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703803
SHEET 350 OF 506
H1.0 300-15-685

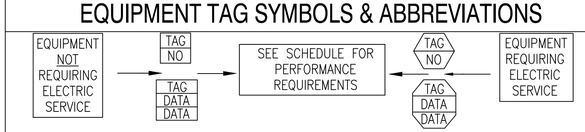
DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\HazMats\DWG\A1066_2_HZMT_R22.dwg LAYOUT NAME: B300-H1.0 PLOTTED: Friday, August 07, 2015 - 2:36pm USER: REP

GENERIC HVAC ABBREVIATIONS

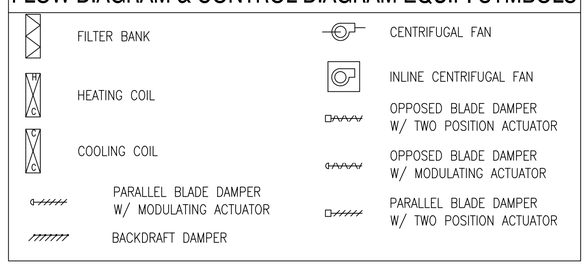
°F	DEGREES FAHRENHEIT	ID	INSIDE DIAMETER
°C	DEGREES CELSIUS	IN	INCHES
ø	DIAMETER	INSUL	INSULATION
ACV	AUTOMATIC CONTROL VALVE	KW	KILOWATT
AD	ACCESS DOOR	KVA	KILOVOLT AMPERE
ADJ	ADJUSTABLE	L	LENGTH
ADDL	ADDITIONAL	LB	POUND
AFF	ABOVE FINISHED FLOOR	LF	LINEAR FEET
AFG	ABOVE FINISHED GRADE	LVG	LEAVING
ALT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

EQUIPMENT TAG SYMBOLS & ABBREVIATIONS

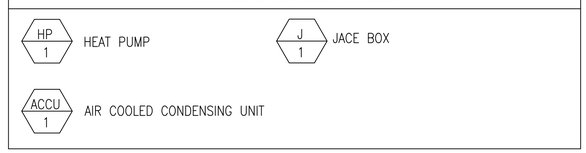


NOTE:REFER TO SCHEDULES FOR DEFINITION OF EQUIPMENT SPECIFIC DATA LISTED WITHIN TAG BLOCKS

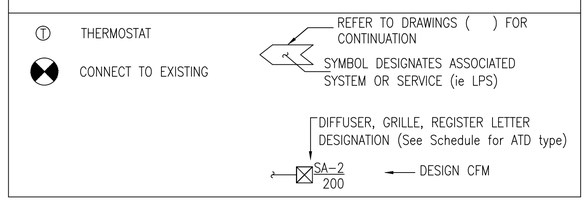
FLOW DIAGRAM & CONTROL DIAGRAM EQUIP. SYMBOLS



HVAC SYSTEM TAGS



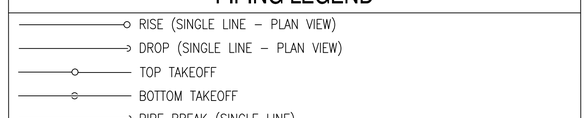
CALL OUT SYMBOLS



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		
F	FAN	––	WITH ACCESS DOOR
FC	FORWARD CURVED	SG	SUPPLY GRILLE
FA	FREE AREA	SM	SHEETMETAL
FCU	FAN COIL UNIT	SP	STATIC PRESSURE
FD	FIRE DAMPER (W/ ACCESS DOOR)	SR	SUPPLY REGISTER
FLTR	FILTER	SWDI	SINGLE WIDTH DOUBLE INLET
FPI	FINS PER INCH	SWSI	SINGLE WIDTH SINGLE INLET
FPT	FAN POWERED TERMINAL BOX	TE	TOILET EXHAUST
GE	GENERAL EXHAUST	TF	TRANSFER FAN
GIH	GRAVITY INTAKE HOOD	TG	TRANSFER GRILLE
GRH	GRAVITY RELIEF HOOD	TR	TRANSFER
HC	HEATING COIL	TSP	TOTAL STATIC PRESSURE
LAT	LEAVING AIR TEMPERATURE	UC	UNDERCUT DOOR
LD	LINEAR DIFFUSER	VD	VOLUME DAMPER
LUVR	LOUVER	VV	VARIABLE VOLUME SUPPLY AIR TERMINAL BOX
		WMS	WIRE MESH SCREEN

PIPING LEGEND



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 300 HVAC LEGEND
MD2.0	BUILDING 300 HVAC SECOND FLOOR PARTIAL DEMOLITION PLAN
M2.0	BUILDING 300 HVAC SECOND FLOOR, PENTHOUSE AND ROOF PARTIAL PLANS
M3.0	BUILDING 300 HVAC CONTROLS
M3.1	BUILDING 300 HVAC CONTROLS
M3.2	BUILDING 300 HVAC CONTROLS
M4.0	BUILDING 300 HVAC SCHEDULES

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

NAVFAC

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

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INFO

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ACTIVITY

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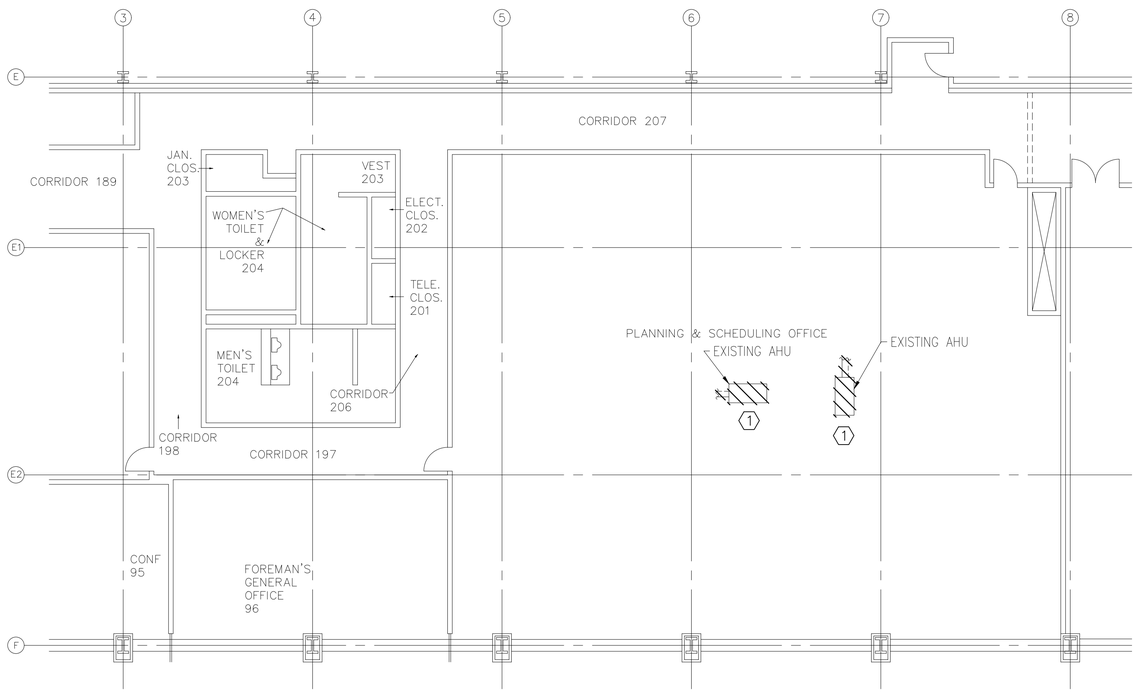
DES JC | DRW SV | CHK DM
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

DEPARTMENT OF THE NAVY
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 300 HVAC LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703804
SHEET 351 OF 506
M1.0 | 300-15-686

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 300 HVAC SECOND FLOOR PARTIAL DEMOLITION PLAN

1/8"=1'

PLAN NORTH

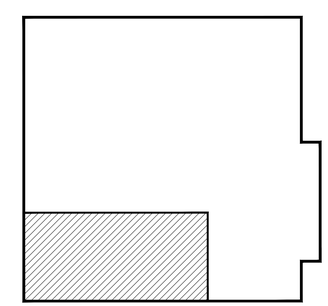
GENERAL SHEET NOTES

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

DEMOLITION KEYNOTES

1. REMOVE EXISTING AHU AND ALL ASSOCIATED APPURTENANCES.
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.

KEY PLAN



GRAPHIC SCALE

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

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

NAVFAC

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

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CONTRACT NO. N62470-10-D-8007 CTO 0010-2011-08 CONTRACTOR: CSI ENGINEERING

PREPARED
CSI ENGINEERING
CSI PROFESSIONAL ENGINEERING
978 Islington St#2, 2Fl. Portsmouth, NH 03801 978-433-8818
25 Ayer Rd. Ste. 204 Harvard, MA 01451 508-315-9244
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

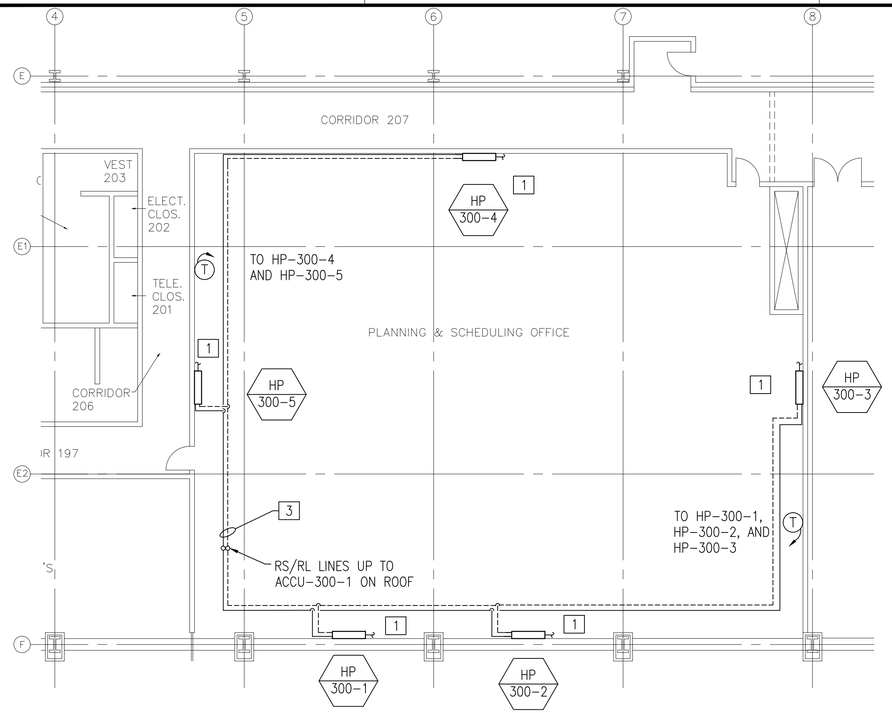
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 300 HVAC SECOND FLOOR PARTIAL DEMOLITION PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703805
SHEET 352 OF 506
MD2.0 | 300-15-687

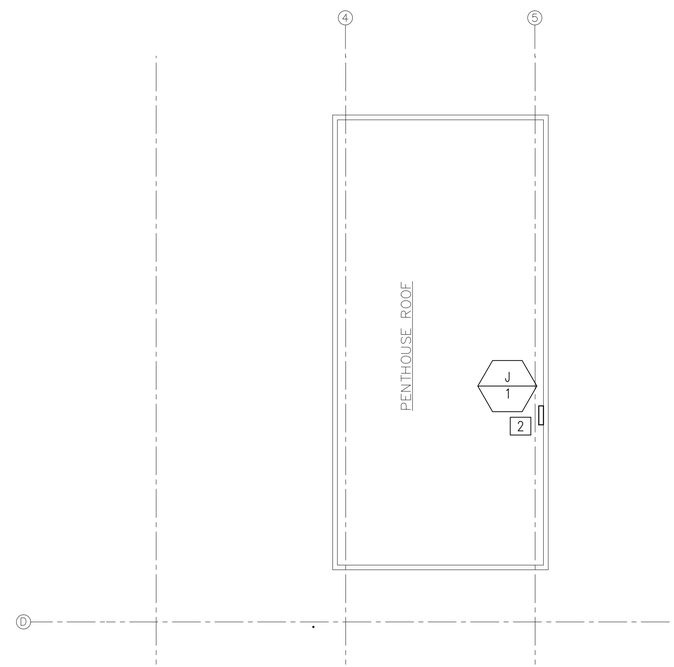
DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 300 HVAC SECOND FLOOR PARTIAL PLAN

1/8"=1'

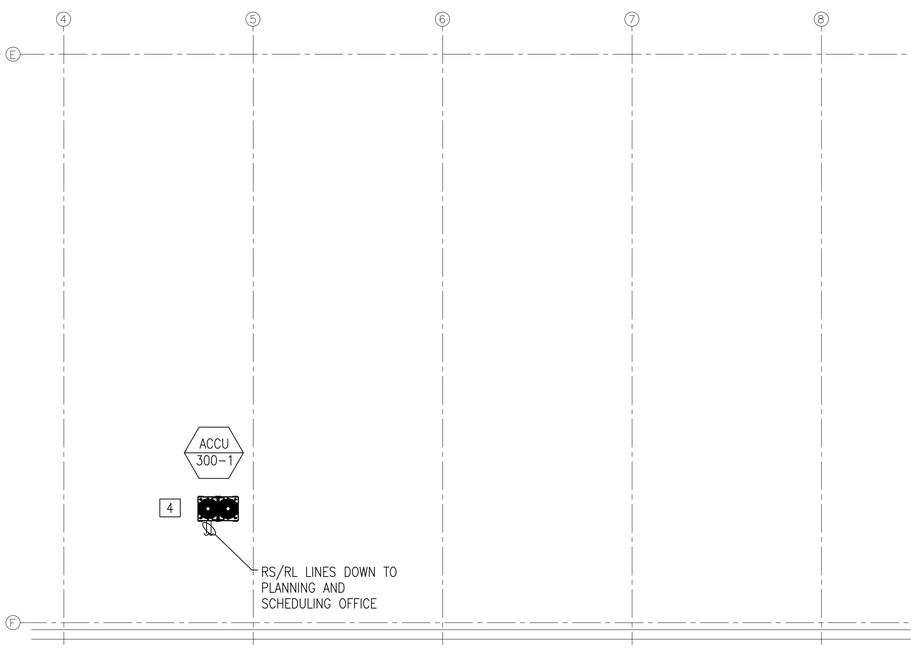
PLAN NORTH



BUILDING 300 HVAC PENTHOUSE PLAN

1/8"=1'

PLAN NORTH



BUILDING 300 HVAC ROOF PARTIAL PLAN

1/8"=1'

PLAN NORTH

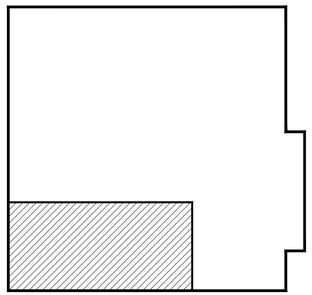
GENERAL SHEET NOTES

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

NEW WORK KEYNOTES

1. FURNISH AND INSTALL NEW HEAT PUMPS AND RS/RL LINES. ROUTE CONDENSATE LINES TO NEAREST INDIRECT DRAIN. 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.
3. SEE GENERAL NOTE 17 ON SHEET M1.0 FOR PIPING INFORMATION.
4. FURNISH AND INSTALL NEW ACCU AND IT'S ASSOCIATED RS/RL LINES. SEE STRUCTURAL DRAWINGS FOR ROOF SUPPORT.

KEY PLAN



GRAPHIC SCALE

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

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

NAVFAC

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FIRE PROTECTION
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Stamford, CT 06905
(781) 272-0020
25 B Hartman Ave, Ste 204
Lebanon, NJ 08833
(908) 534-9424
CSI ENGINEERING, LLC
INFO@CSIENGINEERING.COM
WWW.CSIENGINEERING.COM
CONTRACT NO. GS-10F-0016L
TOO10-D0114-108
CAGE CODE 6YEU3

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

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

BUILDING 300 HVAC SECOND FLOOR, PENTHOUSE AND ROOF PARTIAL PLANS

EPROJECT NO.: 1350913

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

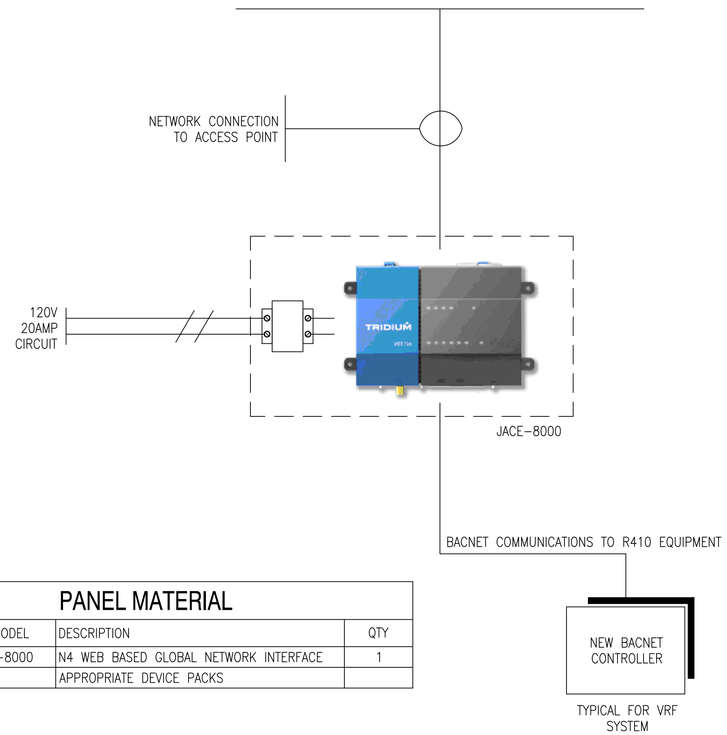
NAVFAC DRAWING NO. 12703806

SHEET 353 OF 506

M2.0 | 300-15-688

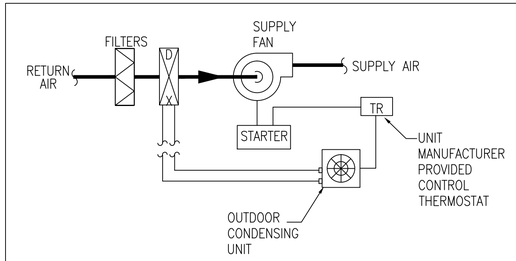
DRAWFORM REVISION: 10 OCTOBER 2014

PORTSMOUTH NAVAL SHIPYARD (BUILDING 300_MACHINE CENTRAL TOOL SHOPS)
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	



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

OFF
1. SF DEENERGIZED
2. ACCU DEENERGIZED

UNOCCUPIED COOLING CONTROL

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

OCCUPIED COOLING CONTROL

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

OCCUPIED HEATING CONTROL
1. SF ENERGIZED
2. ACCU IS STAGED ON TO MAINTAIN THE SPACE TEMPERATURE SETPOINT OF 70°F(ADJ).

UNOCCUPIED HEATING CONTROL
1. SF ENERGIZED
2. ACCU IS STAGE ON TO MAINTAIN THE SPACE TEMPERATURE SETPOINT OF 60°F(ADJ).

HEAT PUMP CONTROL SEQUENCE

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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DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
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CSI
CONSULTING SERVICES INC.
FIRE PROTECTION
979 BOSTON POST RD.
SUITE 200
SUDBURY, MA 01776
TEL: 978-443-8878
FAX: 978-443-8879
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 300 HVAC CONTROLS

EPROJECT NO.: 1350913

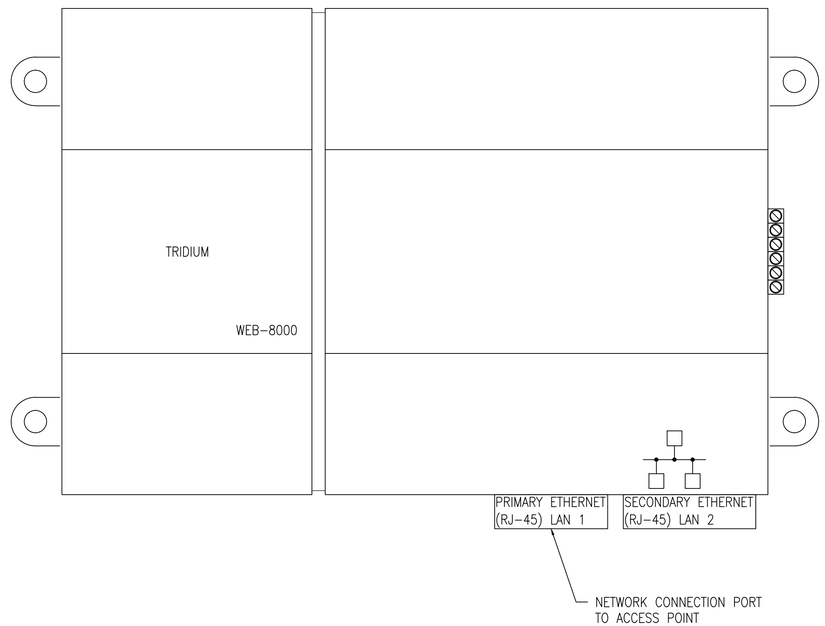
CONSTR. CONTR. NO.
N40085-XX-C-XXXX

NAVFAC DRAWING NO.
12703807

SHEET 354 OF 506

M3.0 | 300-15-689

DRAWFORM REVISION: 10 OCTOBER 2014



ETHERNET CONNECTION TO RF ACCESS POINT

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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No. 12370
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PROFESSIONAL ENGINEER
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ENGINEER
CSI ENGINEERING
FIRE PROTECTION
978-263-0616
978-263-0628
915 BROADWAY SUITE 204
DOVER, NH 03820
R-23 AVIATION AVE STE 304
PORTSMOUTH, NH 03801
603-431-9424
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
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PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD

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

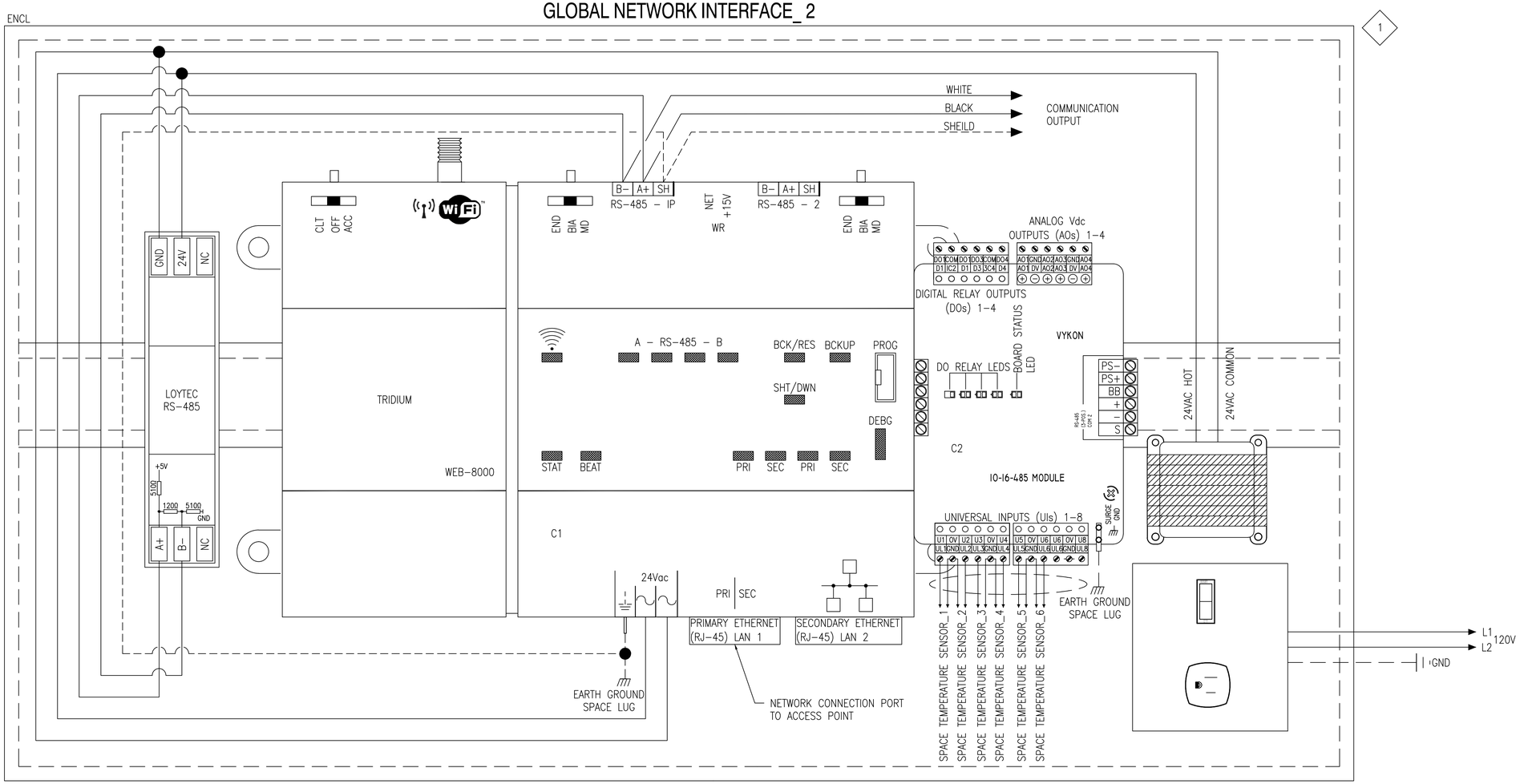
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 300 HVAC CONTROLS

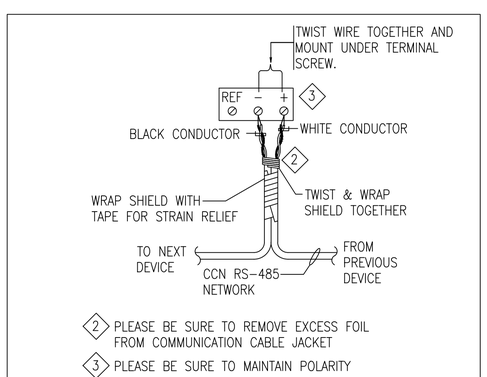
EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703808
SHEET 355 OF 506
M3.1 | 300-15-690

DRAWFORM REVISION: 10 OCTOBER 2014

GLOBAL NETWORK INTERFACE_ 2



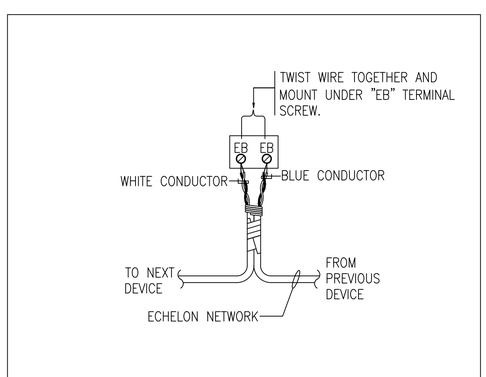
1 LOCATION OF CONTROLLER TO BE FIELD VERIFIED



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
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3	100% REVIEW SUBMISSION	07/24/2015	DM
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STATE OF NEW HAMPSHIRE DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER

SEAL

CSI ENGINEERING

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC DRW SV CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

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

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

BUILDING 300 HVAC CONTROLS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703809

SHEET 356 OF 506

M3.2 300-15-691

DRAWFORM REVISION: 10 OCTOBER 2014

INDOOR HEAT PUMP SCHEDULE

TAG NO.	LOCATION	ASSOCIATED OUTDOOR UNIT	TYPE	REFRIGERANT TYPE	COOLING DATA: TOTAL MBH	COOLING DATA: INDOOR TEMP. DB(°F)	COOLING DATA: INDOOR TEMP. WB(°F)	COOLING DATA: OUTDOOR TEMP. DB(°F)	HEATING DATA: MBH	HEATING DATA: INDOOR TEMP. DB (°F)	HEATING DATA: OUTDOOR TEMP. DB (°F)	FAN DATA: CFM	FAN DATA: TYPE	FAN DATA: QUANTITY	ELECTRICAL DATA: V	PH	Hz	FLA	MCA	MOP	COOLING CURRENT (A)	HEATING CURRENT (A)	COOLING INPUT (W)	HEATING INPUT (W)	DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
					INDOOR UNIT																					
HP-300-1	OFFICE	ACCU-300-1	WALL HUNG	R410A	23.2	75	63	85	23.8	70	4	388-494	CROSSFLOW	1	208	60	1	0.4	0.5	15	0.4	0.4	60	60	TRANE 4TVW0024B100NC	SEE NOTES
HP-300-2	OFFICE	ACCU-300-1	WALL HUNG	R410A	23.2	75	63	85	23.8	70	4	388-494	CROSSFLOW	1	208	60	1	0.4	0.5	15	0.4	0.4	60	60	TRANE 4TVW0024B100NC	SEE NOTES
HP-300-3	OFFICE	ACCU-300-1	WALL HUNG	R410A	23.2	75	63	85	23.8	70	4	388-494	CROSSFLOW	1	208	60	1	0.4	0.5	15	0.4	0.4	60	60	TRANE 4TVW0024B100NC	SEE NOTES
HP-300-4	OFFICE	ACCU-300-1	WALL HUNG	R410A	23.2	75	63	85	23.8	70	4	388-494	CROSSFLOW	1	208	60	1	0.4	0.5	15	0.4	0.4	60	60	TRANE 4TVW0024B100NC	SEE NOTES
HP-300-5	OFFICE	ACCU-300-1	WALL HUNG	R410A	23.2	75	63	85	23.8	70	4	388-494	CROSSFLOW	1	208	60	1	0.4	0.5	15	0.4	0.4	60	60	TRANE 4TVW0024B100NC	SEE NOTES

NOTES: 1. PROVIDE WITH BACNET INTERFACE 2. PROVIDE WITH REFRIGERANT Y-JOINT MODEL 4YDK1509B0051A AND 4YDK2512B0138A. 3. PROVIDE WITH CONDENSATE PUMP. 4. PROVIDE WITH SPACE THERMOSTAT. 5. PROVIDE WITH BACNET INTERFACE 6. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.

OUTDOOR HEAT PUMP SCHEDULE

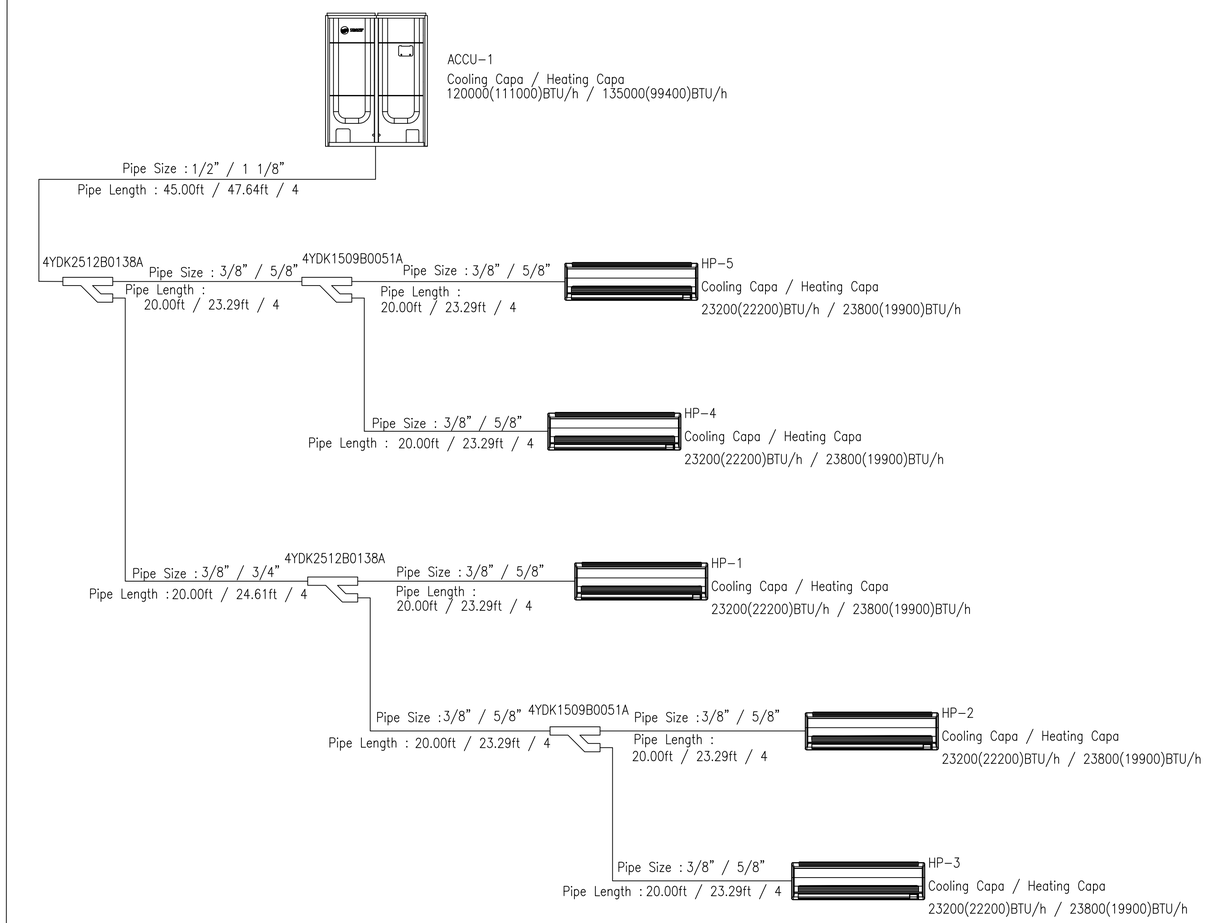
TAG NO.	LOCATION	COOLING CAPACITY: BTU/HR	COOLING CAPACITY: INDOOR WB/DB °F	COOLING CAPACITY: OUTDOOR DB °F	COOLING CAPACITY: OPERATING RANGE °F DB	HEATING CAPACITY: BTU/HR	HEATING CAPACITY: INDOOR DB °F	HEATING CAPACITY: OUTDOOR DB °F	HEATING CAPACITY: OPERATING RANGE °F WB	COMPRESSOR: TYPE	COMPRESSOR: QUANTITY	FAN: TYPE	FAN: QUANTITY	FAN: CFM	POWER SUPPLY: V	PH	HZ	MCA	MOCP	DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
ACCU-300-1	ROOF	114	75/63	85	23-120	129	70	4	-13-75	SCROLL	2	PROP.	2	9,182	208	3	60	43	50	4TVH0120B300NB	SEE NOTES

NOTES: 1. PROVIDE WITH ROOF SUPPORT. 2. PROVIDE WITH BACNET INTERFACE. 3. PROVIDE WITH BACNET INTERFACE 4. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.

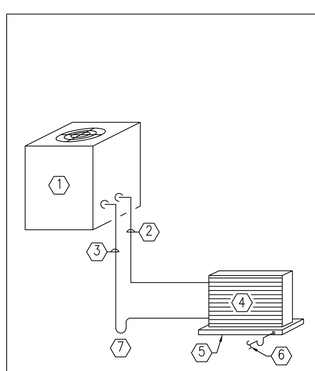
JACE BOX

TAG NO.	LOCATION	ELECTRICAL: AMP	ELECTRICAL: V	DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
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.



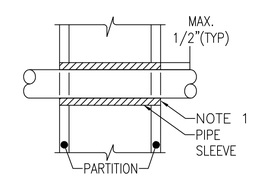
PIPING DIAGRAM



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

SYM	DESCRIPTION	DATE	APPR
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3	100% REVIEW SUBMISSION	07/24/2015	DM
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0	35% SUBMISSION	02/23/2015	DM

NAVFAC

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CONTRACT NO. N40085-12-D-1800 DO/DT NO. 0013 REV 00

PROVIDING CSI TECHNOLOGY FOR PROTECTION
CSI
9175 GUILFORD, SUITES 206 & 207 COLUMBIA, MD 21046 TEL: 410-312-0500
215 ANTHONY AVE, STE 204 MONROE, LA 71201 318-323-7400
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

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

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

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

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

BUILDING 300 HVAC SCHEDULES

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703810
SHEET 357 OF 506
M4.0 | 300-15-692

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

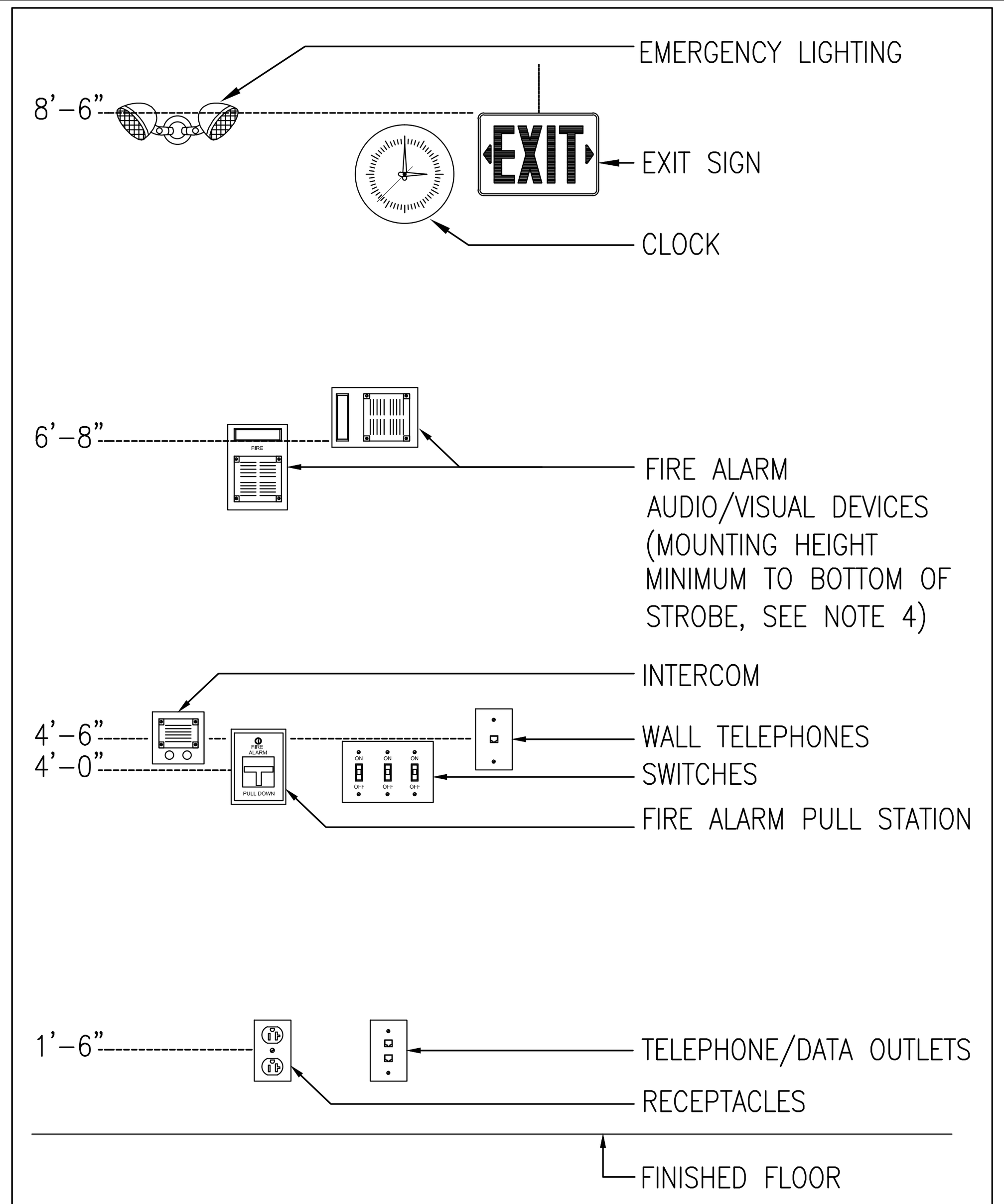
3" × 1"

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 "30AS" – INDICATES 30AMP SWITCH
	ENCLOSED CIRCUIT BREAKER IN NEMA 1 ENCLOSURE UNLESS OTHERWISE NOTED
JCB	DDC CONTROL JACE BOX. PROVIDED BY TRADE CONTRACTOR. FIELD COORDINATE EXACT LOCATION.

ELECTRIC SYSTEM TAG 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 FOR WIRING DEVICES) "WP" – INDICATES WEATHERPROOF (TYP FOR WIRING DEVICES) "C" – INDICATES COUNTER HEIGHT (TYP FOR WIRING DEVICES) "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

SCHEDULE OF DRAWINGS

DWG#	DESCRIPTION
E1.0	BUILDING 300 ELECTRICAL LEGEND
ED2.0	BUILDING 300 ELECTRICAL SECOND FLOOR PARTIAL DEMOLITION PLAN
E2.0	BUILDING 300 ELECTRICAL FIRST, SECOND, PENTHOUSE & ROOF PARTIAL PLANS
E3.0	BUILDING 300 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

CSI ENGINEERING – HVAC, PLUMBING, FIRE PROTECTION, ELECTRICAL
999 BROADWAY SUITE 206 SAUGUS, MA 01906 781-233-4808
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 300 ELECTRICAL LEGEND

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703811
SHEET 358 OF 506
E1.0 | 300-15-693

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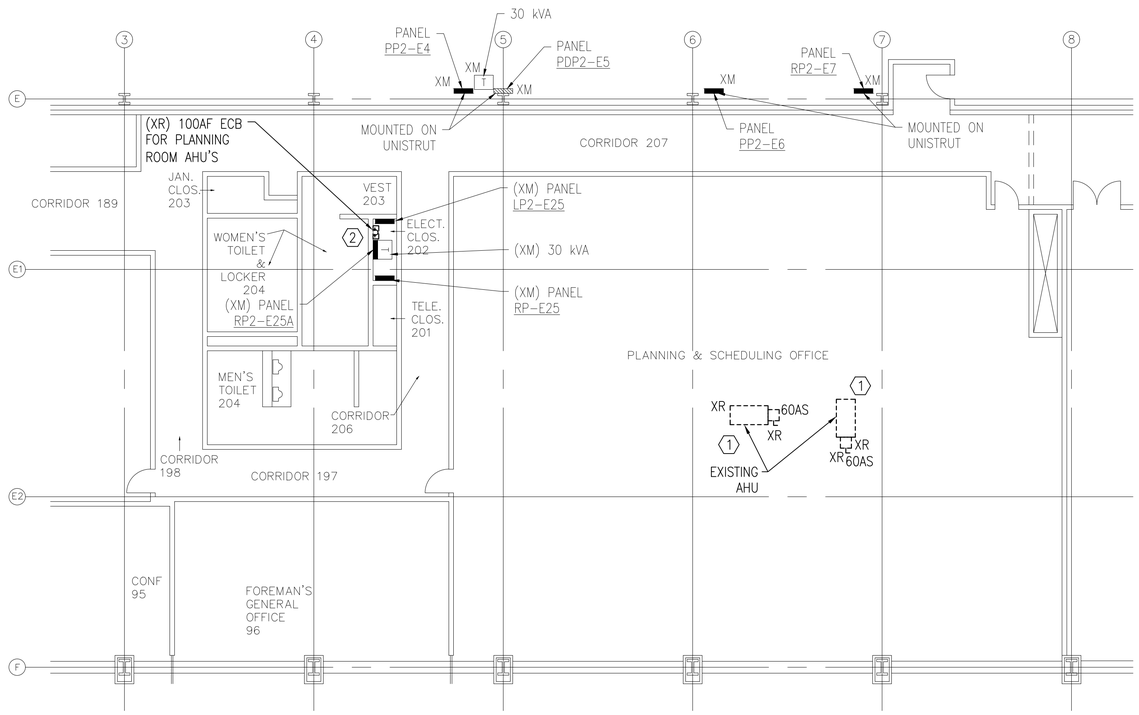
DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 300 ELECTRICAL SECOND FLOOR PARTIAL DEMOLITION PLAN

1/8"=1'

PLAN NORTH

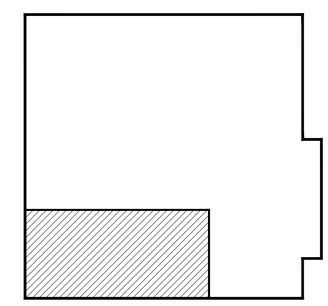
GENERAL SHEET NOTES

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 AHU. DEMOLISH ASSOCIATED BRANCH CIRCUITRY, AND DISCONNECT IN THEIR ENTIRETY.
2. EXISTING AHU ENCLOSED CIRCUIT BREAKER TO BE REMOVED. DEMOLISH ALL ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE.

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
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0	35% SUBMISSION	02/23/2015	DM

NAVFAC

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

PROJECT ENGINEER: CSI TECHNOLOGY, 999 Bedford Street, 7th Floor, Stamford, CT 06905, 781-329-8828, 23 AVIATION AVE, STE 304, PORTSMOUTH, NH 03801, 603-319-9214

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 300 ELECTRICAL SECOND FLOOR PARTIAL DEMOLION PLAN

EPROJECT NO.: 1350913

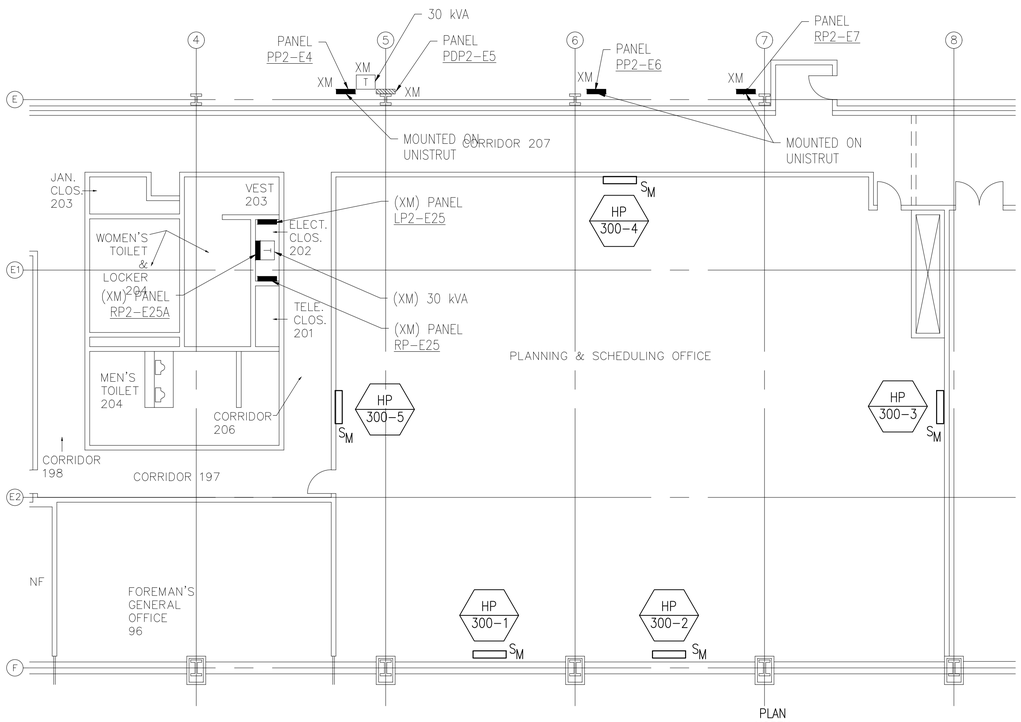
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703812

SHEET 359 OF 506

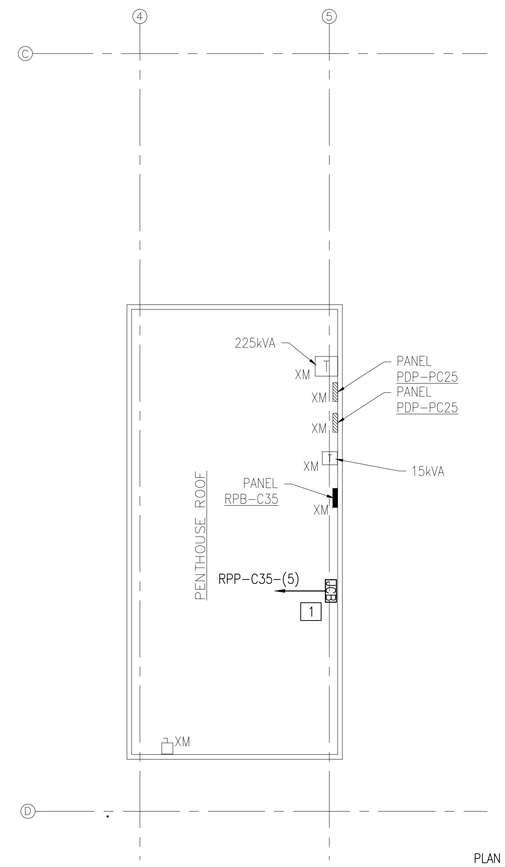
ED2.0 | 300-15-694

DRAWFORM REVISION: 10 OCTOBER 2014



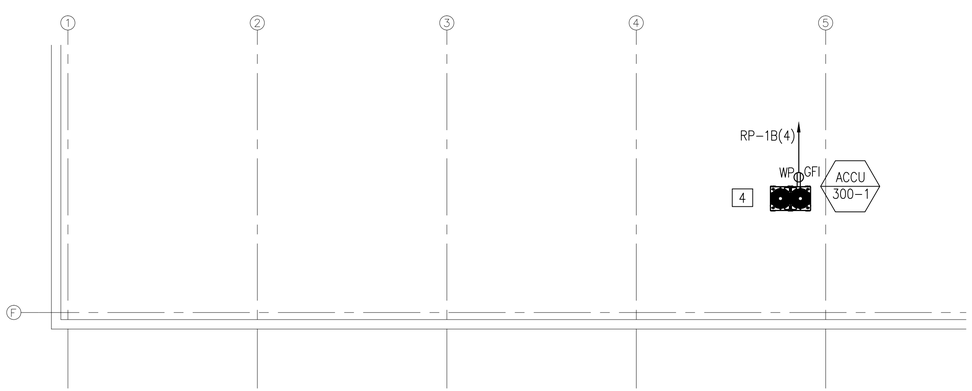
BUILDING 300 ELECTRICAL SECOND FLOOR PARTIAL PLAN
1/8"=1'

PLAN NORTH



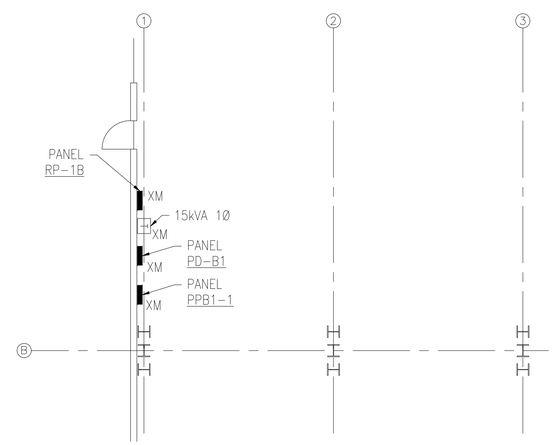
BUILDING 300 ELECTRICAL PENTHOUSE PLAN
1/8"=1'

PLAN NORTH



BUILDING 300 PARTIAL ROOF PLAN
1/8"=1'

PLAN NORTH



BUILDING 300 ELECTRICAL FIRST FLOOR PARTIAL PLAN
1/8"=1'

PLAN NORTH

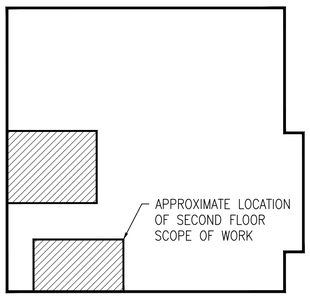
GENERAL SHEET NOTES

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

KEY PLAN



GRAPHIC SCALE

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

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

ENGINEER: CSI
FIRE PROTECTION
919 Middle St. Suite 204 Portsmouth, NH 03801 781-23-2-8828
P.O. BOX 1750 Kittery, ME 03904 (207) 439-0391 (207) 439-2672
INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

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

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

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

BUILDING 300 ELECTRICAL FIRST, SECOND, PENTHOUSE & ROOF PARTIAL PLANS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703813
SHEET 360 OF 506
E2.0 300-15-695

DRAWFORM REVISION: 10 OCTOBER 2014

PANELBOARD SCHEDULE

PANEL: RP2-F9 | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING
MAIN: MLO | BUS AMPS: 125A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC: 2ND FLOOR FRIDGE ROOM

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1		EXISTING LOAD			–	0	EXISTING LOAD	20/1	2
3		EXISTING LOAD			–		EXISTING LOAD		4
5		EXISTING LOAD			–	0	EXISTING LOAD	20/1	6
7		EXISTING LOAD			–	0	EXISTING LOAD	20/1	8
9	20/2	WINDOW AC RECEPT LEFT			–	0	EXISTING LOAD	20/1	10
11					–	0	EXISTING LOAD	20/1	12
13	15/2	HP-300-1	0.52		–	0	EXISTING LOAD	20/1	14
15						0.52	HP-300-4	15/2	16
17	15/2	HP-300-2	0.52						18
19					–	0.52	HP-300-5	15/2	20
21	15/2	HP-300-3	0.52		–				22
23		SPACE			–		SPACE		24
25		SPACE			–		SPACE		26
27		SPACE			–		SPACE		28
29		SPACE			–		SPACE		30
			1.56			1.04	TOTAL CONNECTED kVA:	2.60	
							TOTAL CONNECTED AMPERES:	7.23	

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: RP-1B | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING
MAIN: MCB 400A | BUS AMPS: 400A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC:

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	100/1	SPR	0	OFF	–	0	OFFICE RECEPTACLES	20/1	2
3	100/1	SPR	0	OFF	–	0	ACCU GFI RECEPTACLE	20/1	4
5	100/2	SPR	0	OFF	–	0	OFFICE RECEPTACLES	20/1	6
7					–	0	OFFICE RECEPTACLES	20/1	8
9	100/2	SPR	0	OFF	–	0	OFFICE LIGHTS	20/1	10
11					–		WEMACS PANEL	20/1	12
13	50/2	SPR	0	OFF	–		AMI	20/1	14
15							SPACE	20/1	16
17							SPACE	20/1	18
19	50/3	ACCU-300-1	15.5		–		SPACE	20/1	20
21					–		SPACE	20/1	22
23		SPACE			–		SPACE	20/1	24
25		SPACE			–		SPACE	20/1	26
27		SPACE			–		SPACE	20/1	28
29		SPACE			–		SPACE	20/1	30
			15.50			0.00	TOTAL CONNECTED kVA:	15.50	
							TOTAL CONNECTED AMPERES:	43.07	

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: RPP-C35 | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING
MAIN: MCB 50A | BUS AMPS: 50A | MOUNT.: SURFACE
PH/WIRE: 3ø/4W | AIC: | LOC:

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	LIGHTS	0	–	–	0	EMERGENCY LIGHTS	20/1	2
3	20/1	RECEPTACLES	0	–	–	0	SHUNT TRIP	20/1	4
5	20/1	JACE BOX	0.02	1	–	0	THERMAL CONTROLS	20/1	6
7	20/2	LEO	0	–	–				8
9					–				10
11					–				12
13									14
15					–		MAIN	50/3	16
17									18
19					–				20
21					–				22
23					–				24
25					–				26
27					–				28
29					–				30
			0.02			0.00	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.

MECHANICAL EQUIPMENT SCHEDULE

EQUIP TAG	DESCRIPTION	LOAD HP	LOAD KVA	LOAD VOLT	LOAD PH	PANEL SOURCE PANEL	PANEL SOURCE C/B	BRANCH CIRCUIT	CONNECTION FLEX	CONNECTION JB	CONNECTION REC	CONNECTION DISC	NOTES
ACCU 300-1	CONDENSING UNIT	–	15.49	208	3	RP-1B (17,19,21)	50A/3P	(3)#8 & (1)#10G, 3/4"C	X			X	NOTE 7
HP 300-1	HEAT PUMP	–	0.104	208	1	RP2-F9 (13,15)	15A/2P	(2)#12 & (1)#12G, 3/4"C	X			X	NOTE 8
HP 300-2	HEAT PUMP	–	0.104	208	1	RP2-F9 (13,15)	15A/2P	(2)#12 & (1)#12G, 3/4"C	X			X	NOTE 8
HP 300-3	HEAT PUMP	–	0.104	208	1	RP2-F9 (13,15)	15A/2P	(2)#12 & (1)#12G, 3/4"C	X			X	NOTE 8
HP 300-4	HEAT PUMP	–	0.104	208	1	RP2-F9 (13,15)	15A/2P	(2)#12 & (1)#12G, 3/4"C	X			X	NOTE 8
HP 300-5	HEAT PUMP	–	0.104	208	1	RP2-F9 (13,15)	15A/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.

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

NAVFAC

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

THE CAD/CADD/GIS/BIM FILE, DATA, DRAWING AND DATA FILE, AND ANY PRINTOUT THEREOF, WHICH WERE PREPARED BY THE CONTRACTOR, ITS SUBCONTRACTORS, AGENTS OR CONSULTANTS, WERE PREPARED IN ACCORDANCE WITH THE CONTRACT AND ARE ACCEPTED AS AN ACCURATE RECORD OF THE AS-BUILT CONDITIONS OF THE FACILITY. THE CONTRACTOR, ITS SUBCONTRACTORS, AGENTS OR CONSULTANTS MAKE NO WARRANTIES, EXPRESS OR IMPLIED, AS TO THE ACCURACY OF THE DATA CONTAINED THEREIN. 12D10-D1-2014-168 12D10-D1-2014-169 12D10-D1-2014-170 12D10-D1-2014-171 12D10-D1-2014-172 12D10-D1-2014-173 12D10-D1-2014-174

PLUMBING
MADE: CSI ENGINEERING
FIRE PROTECTION:
918 BANFORD BLVD. 326 JACKSONVILLE, FL 32225 (904) 317-1026
25 SANTINI AVE. STE 204 LONG BRANCH, NJ 07740 (732) 229-9424
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

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

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

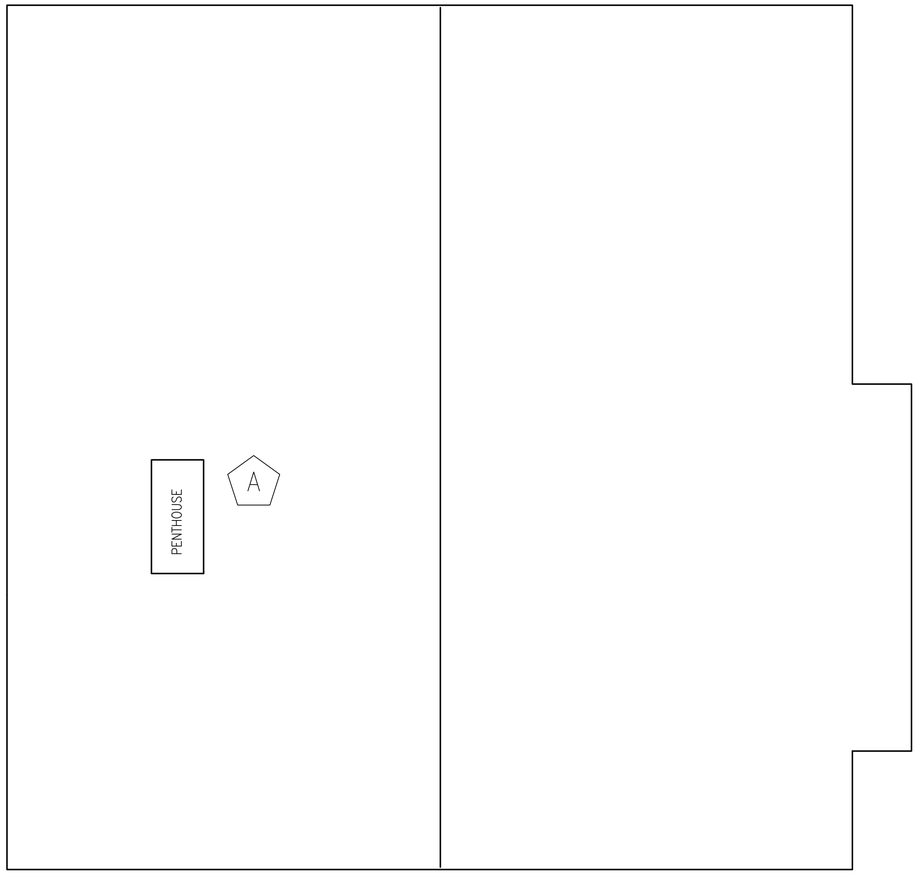
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 300 ELECTRICAL SCHEDULES

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703814
SHEET 361 OF 506
E3.0 | 300-15-696

DRAWFORM REVISION: 10 OCTOBER 2014



B300 ANTENNA LOCATION - ROOF PLAN

1/32" = 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

(A) NEW WORK KEYNOTES

1. CONTRACTOR SHALL MOUNT RF ACCESS POINT TO EXTERIOR OF PENTHOUSE EAST WALL.
2. CONTRACTOR SHALL ENSURE LINE-OF-SIGHT TO B170 ACCESS POINT.
3. WALL MOUNT SHALL BE CAPABLE OF WITHSTANDING 100 MPH SUSTAINED WINDS AND 165 MPH WIND GUSTS. MOUNTING HEIGHT TO BE DETERMINED BY CONTRACTOR TO MINIMIZE GROUND-LEVEL VISIBILITY WHILE MAINTAINING ACCESS POINT LINE-OF-SIGHT.
4. CAT5 CABLE SHALL BE ROUTED THROUGH PENTHOUSE WALL TO JACE.

GRAPHIC SCALE

1/32" = 1' 32 16 0 32 64 96
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. 13914 LICENSED PROFESSIONAL ENGINEER
SEAL

aecom architects|engineers
13 WATER ST NEWMARKET NH
(603) 200-0096 AECGR.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

B300 RF INSTALLATION DETAILS

PROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703815
SHEET 362 OF 506
ET1.0 | 300-15-697

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 301 HVAC LEGEND
M2.0	BUILDING 301 HVAC ATTIC MECHANICAL ROOM PARTIAL PLAN
M3.0	BUILDING 301 HVAC CONTROLS
M3.1	BUILDING 301 HVAC CONTROLS
M3.2	BUILDING 301 HVAC CONTROLS

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

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

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ARCHITECT/ENGINEER: CSI ENGINEERING — FIRE PROTECTION — 999 Middlesex Avenue, Suite 204, Lowell, MA 01851, T 978.323.4008 — 25 Braintree Hill Office Park, Suite 404, Braintree, MA 02184, T 617.323.4600 — CSI ENGINEERING TECHNOLOGY — A/E INFO

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FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JC | DRW SV | CHK DM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

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

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

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 301 HVAC LEGEND

EPROJECT NO.: 1350913

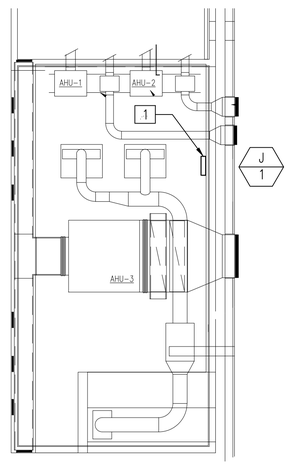
CONSTR. CONTR. NO. N40085–XX–C–XXXX

NAVFAC DRAWING NO. 12703816

SHEET 363 OF 506

M1.0 | 301-15-173

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 301 HVAC ATTIC MECHANICAL ROOM PARTIAL 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.

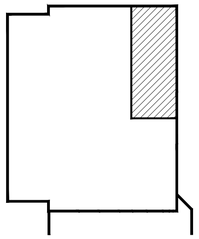
GENERAL SHEET NOTES

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.

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 CADD Contractor is responsible for the accuracy of this drawing. Any changes, modifications, or revisions made to this drawing without the knowledge, consent, or authorization of the Engineer of Record are prohibited. Any unauthorized use of this drawing shall be at the user's own risk and the user agrees to indemnify the Engineer of Record from all claims, damages, losses, and expenses arising out of such use. Drawing prepared in accordance with UFC 1-300-08, Table 1-1

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CSI ENGINEERING

FIRE PROTECTION

999 Bedford Street, 2nd Floor Stamford, CT 06905 (781) 23-24000

A/E INFO

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ACTIVITY

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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
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 301 HVAC ATTIC MECHANICAL ROOM PARTIAL PLAN

EPROJECT NO.: 1350913

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

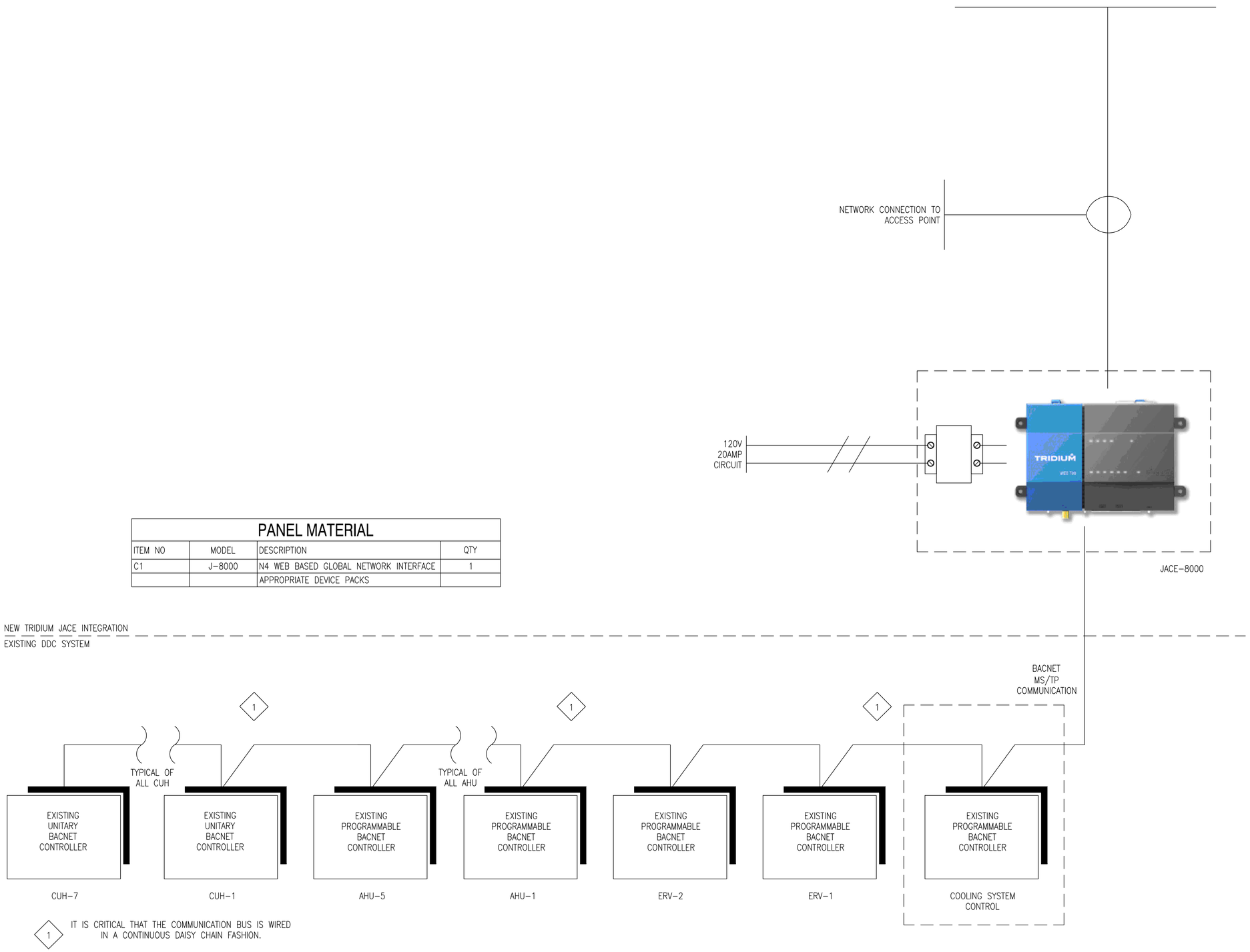
NAVFAC DRAWING NO. 12703817

SHEET 364 OF 506

M2.0 | 301-15-174

DRAWFORM REVISION: 10 OCTOBER 2014

PORTSMOUTH NAVAL SHIPYARD (BUILDING 301_FITNESS CENTER)
EXISTING ALERTON INTEGRATED DDC SYSTEM ARCHITECTURE



PANEL MATERIAL

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

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

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

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DAVID H. MAHONEY No. 12370 LICENSED PROFESSIONAL ENGINEER
SEAL

DESIGN FIRM
CSI ENGINEERING
CSI PROJECT NO.
999 Bedford St. Ste. 204
Portsmouth, NH 03801
781-23-24828
A/E INFO
P.O. BOX 1570 PO. 1570
KITTERY, ME 03904
207-313-9214

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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

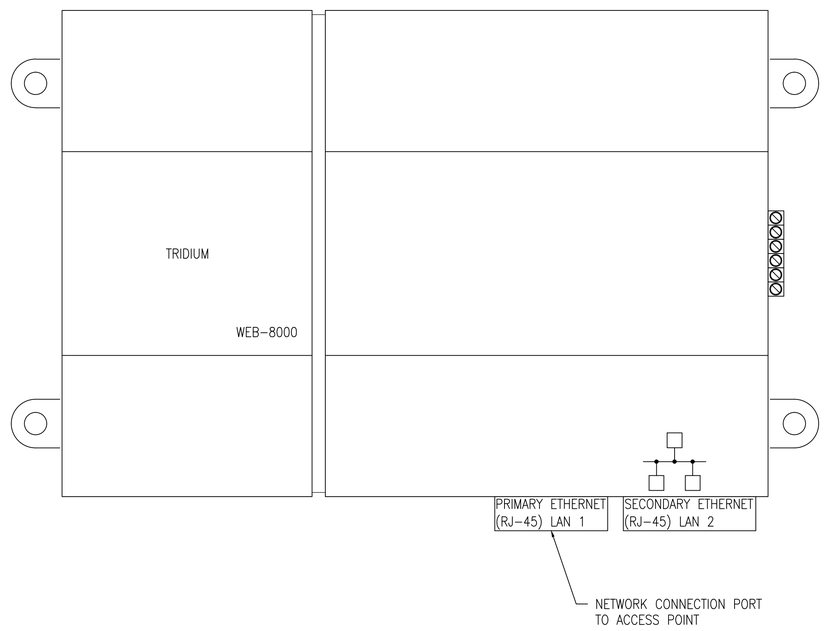
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 301 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703818
SHEET 365 OF 506

M3.0 | 301-15-175

DRAWFORM REVISION: 10 OCTOBER 2014



ETHERNET CONNECTION TO RF ACCESS POINT

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

"I HEREBY CERTIFY THAT THE PLANS, SPECIFICATIONS, AND REPORT WERE PREPARED BY ME OR UNDER MY SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF NEW HAMPSHIRE."

PROJECT MANAGER
CSI ENGINEERING
CORE PROFESSIONAL SERVICES, INC.
999 BANDEMER SCHOOL ROAD
PORTSMOUTH, NH 03801
TEL: 603-433-8575
215 AVIATION AVE, STE 203
HAMPTON, VA 23666
757-723-9404
N/E INFO

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ACTIVITY
SATISFACTORY TO DATE

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

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

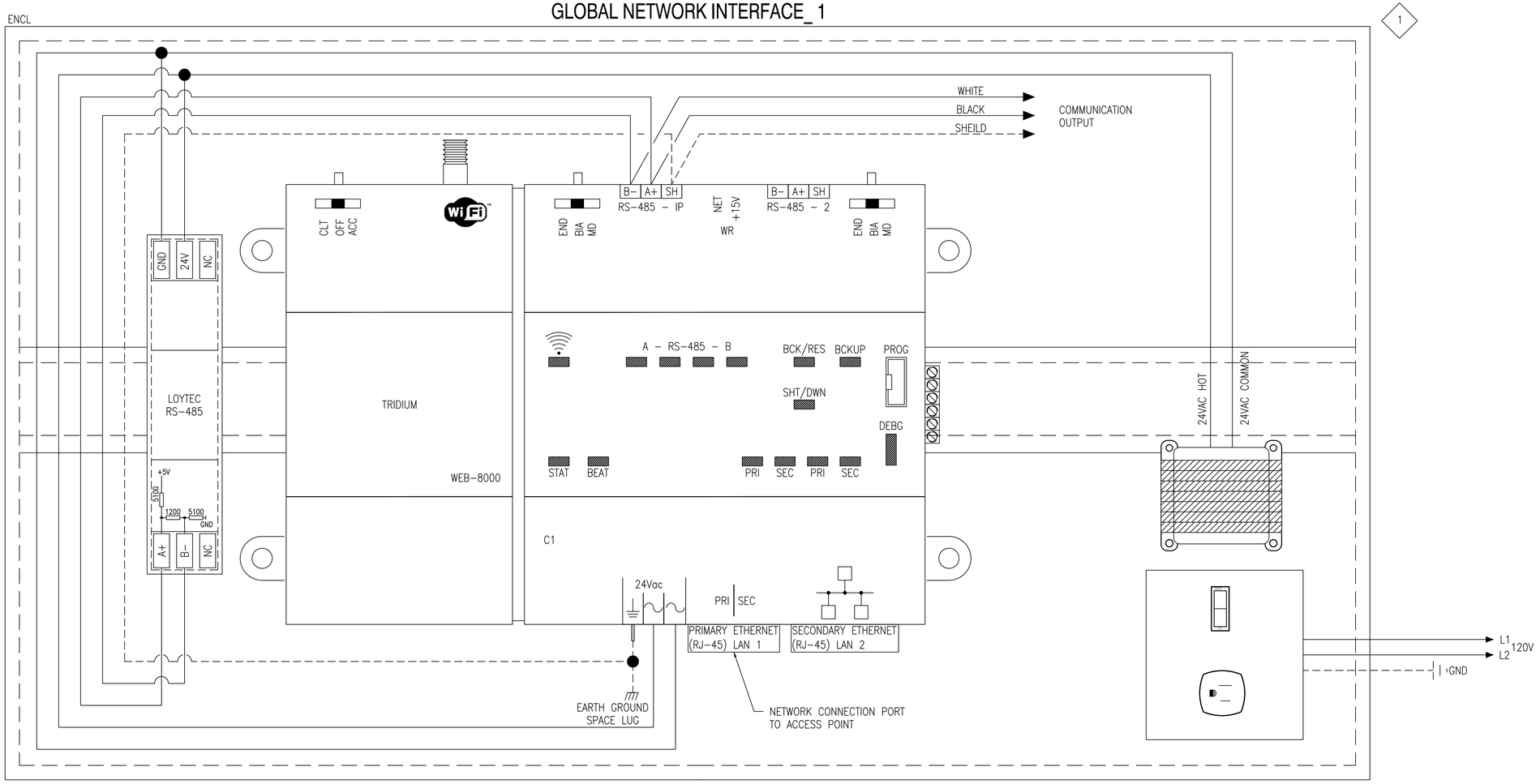
BUILDING 301 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703819
SHEET 366 OF 506

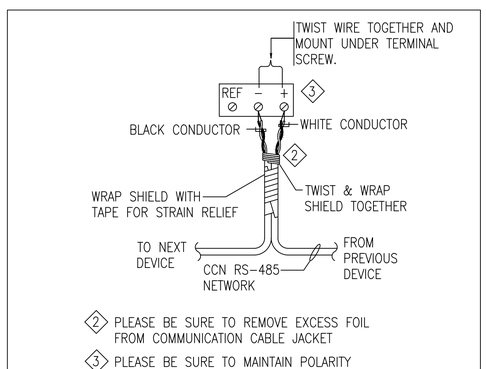
M3.1 | 301-15-176

DRAWFORM REVISION: 10 OCTOBER 2014

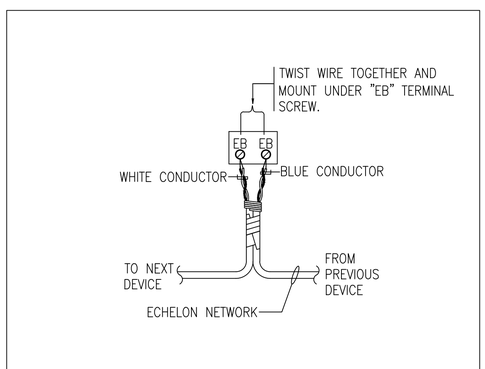
GLOBAL NETWORK INTERFACE_ 1



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

SYM	DESCRIPTION	DATE	APPR
4	100% SUBMISSION	08/07/2015	DM
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STATE OF NEW HAMPSHIRE
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ENGINEER
CSI ENGINEERING
CORE PROFESSIONALS
919 BANCROFT WAY, STE 204
BERKELEY, CA 94710
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FAX: 510-845-8829
A/E INFO
P.O. BOX 1000
CONCORD, CA 94524-4004
TEL: 925-671-3000
FAX: 925-671-3114

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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

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

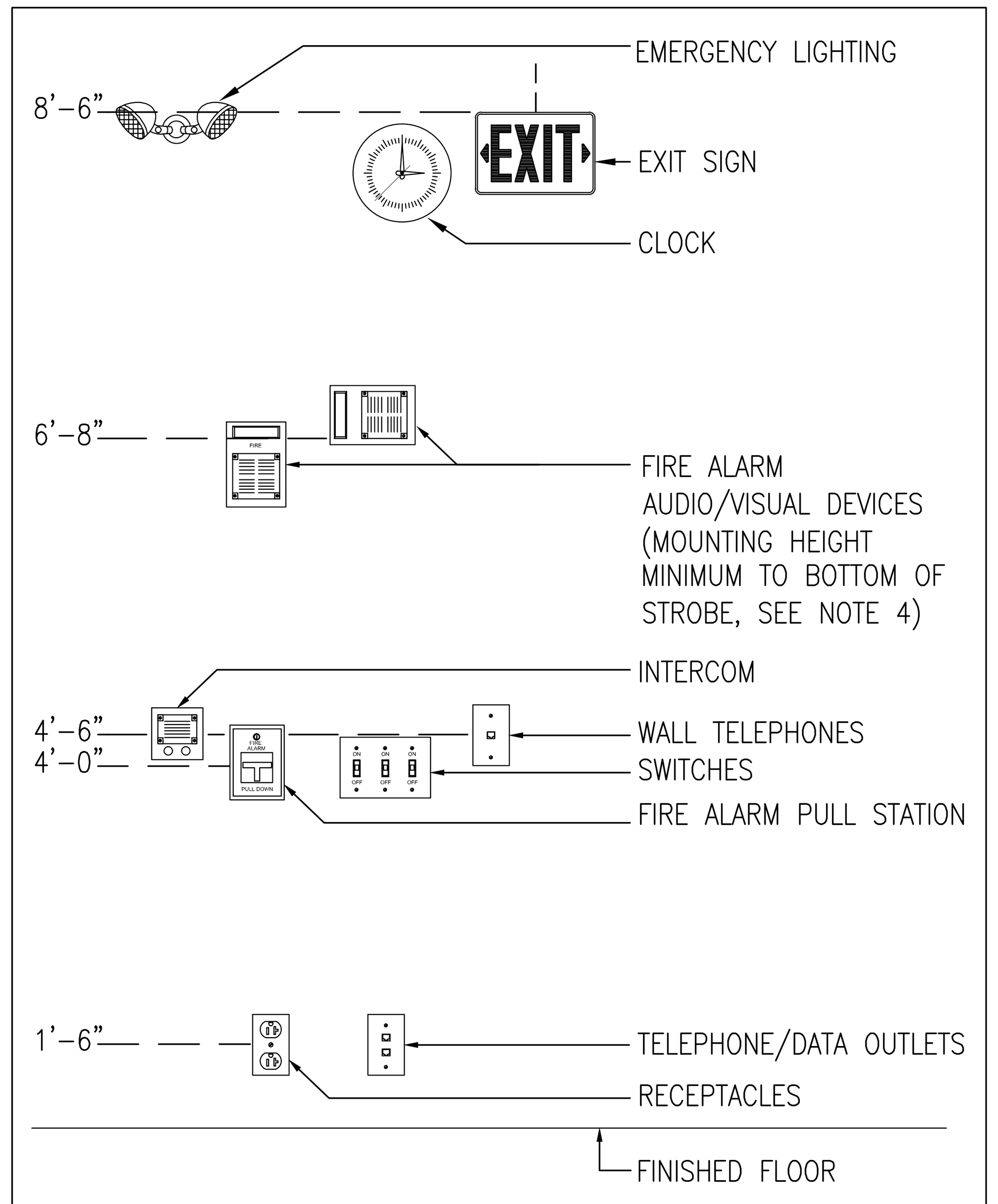
FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 301 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703820
SHEET 367 OF 506

M3.2 | 301-15-177

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

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		

GENERAL 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

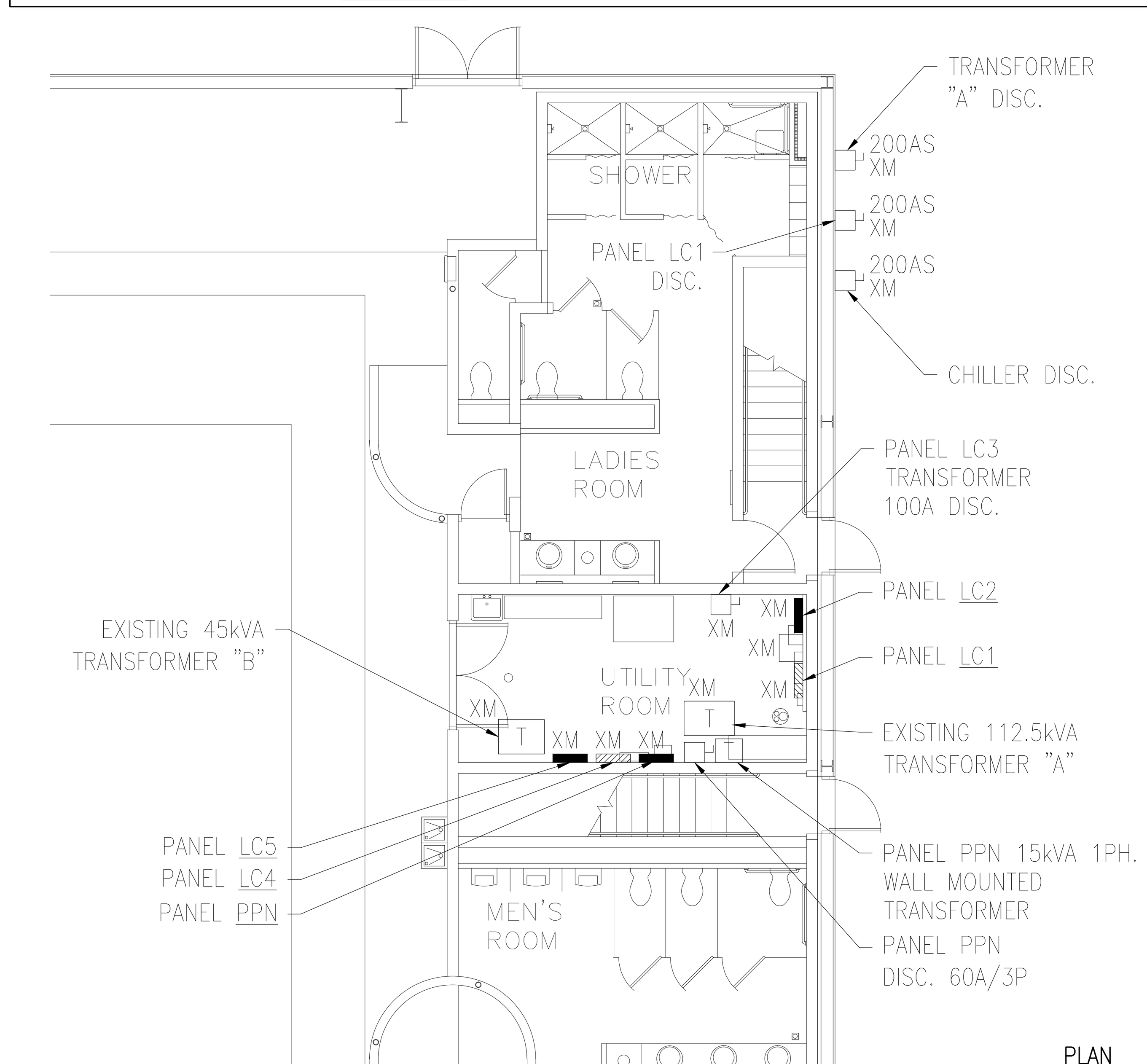
SYMBOL	DESCRIPTION
▬	208Y/120 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS
▨	480Y/277 VOLT PANELBOARD, REFER TO SCHEDULE OF PANELBOARDS
T	DRY TYPE TRANSFORMER

PANELBOARD SCHEDULE

PANEL: LC5 — VOLTS: 120/ 208 — NEW/EXISTING.: EXISTING
MAIN: MLO — BUS AMPS: 225A — MOUNT.: SURFACE
PH/WIRE: Xø/XW — AIC: 22K — LOC: BLDG 320 MECH. RM.

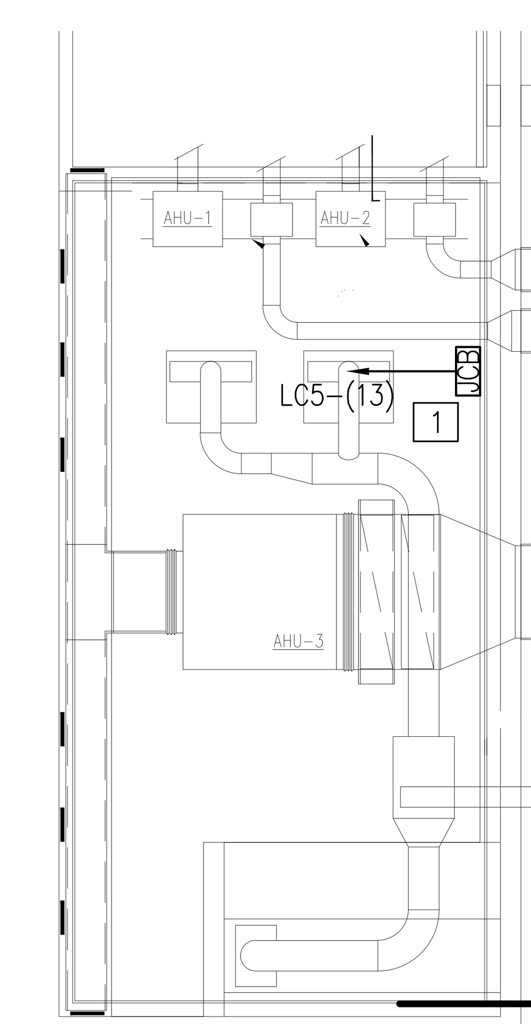
CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	90/3	EXISTING LOAD	0	–	–	0	EXISTING LOAD	20/1	2
3					–	0	EXISTING LOAD	20/1	4
5					–	0	EXISTING LOAD	20/1	6
7	20/1	EXISTING LOAD	0	–	–	0	EXISTING LOAD	20/1	8
9	20/1	EXISTING LOAD	0	–	–	0	EXISTING LOAD	20/1	10
11	20/1	EXISTING LOAD	0	–	–	0	EXISTING LOAD	20/1	12
13	20/1	JACE BOX	.02	1	–	0	SPACE	20/1	14
15	20/1	SPACE	0	–	–	0	SPACE	20/1	16
17	20/1	SPACE	0	–	–	0	SPACE	20/1	18
19	20/1	SPACE	0	–	–	0	SPACE	20/1	20
21	20/1	SPACE	0	–	–	0	SPACE	20/1	22
23	20/1	SPACE	0	–	–	0	SPACE	20/1	24
25	20/1	SPACE	0	–	–	0	SPACE	20/1	26
27	20/1	SPACE	0	–	–	0	SPACE	20/1	28
29	20/1	SPACE	0	–	–	0	SPACE	20/1	30
31	20/1	SPACE	0	–	–	0	SPACE	20/1	32
33	20/1	SPACE	0	–	–	0	SPACE	20/1	34
35	20/1	SPACE	0	–	–	0	SPACE	20/1	36
37	20/1	SPACE	0	–	–	0	SPACE	20/1	38
39	20/1	SPACE	0	–	–	0	SPACE	20/1	40
41	20/1	SPACE	0	–	–	0	SPACE	20/1	42
			0.02			0.00	TOTAL CONNECTED kVA:	0.02	
							TOTAL CONNECTED AMPERES:	0.06	

NOTES:
1. 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 301 FIRST FLOOR ELECTRIC ROOM PARTIAL PLAN

1/8"=1'-0"



BUILDING 301 ATTIC HVAC MECHANICAL ROOM PARTIAL PLAN

1/8"=1'-0"

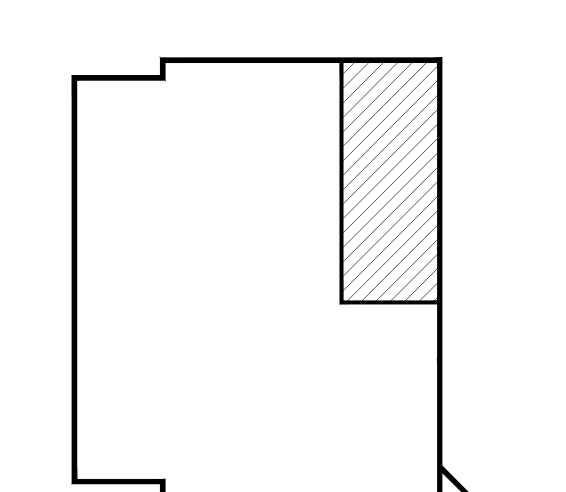
GENERAL SHEET NOTES

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;
   - 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



SCHEDULE OF DRAWINGS

DWG#	DESCRIPTION
E1.0	BUILDING 301 ELECTRICAL LEGEND, FIRST FLOOR ELECTRIC ROOM, ATTIC HVAC MECHANICAL ROOM PARTIAL PLANS & PANELBOARD SCHEDULE

GRAPHIC SCALE

1/8" = 1' — scale 8 4 0 8 16 24 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
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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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CSI ENGINEERING — PLUMBING HVAC ELECTRICAL FIRE PROTECTION
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A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

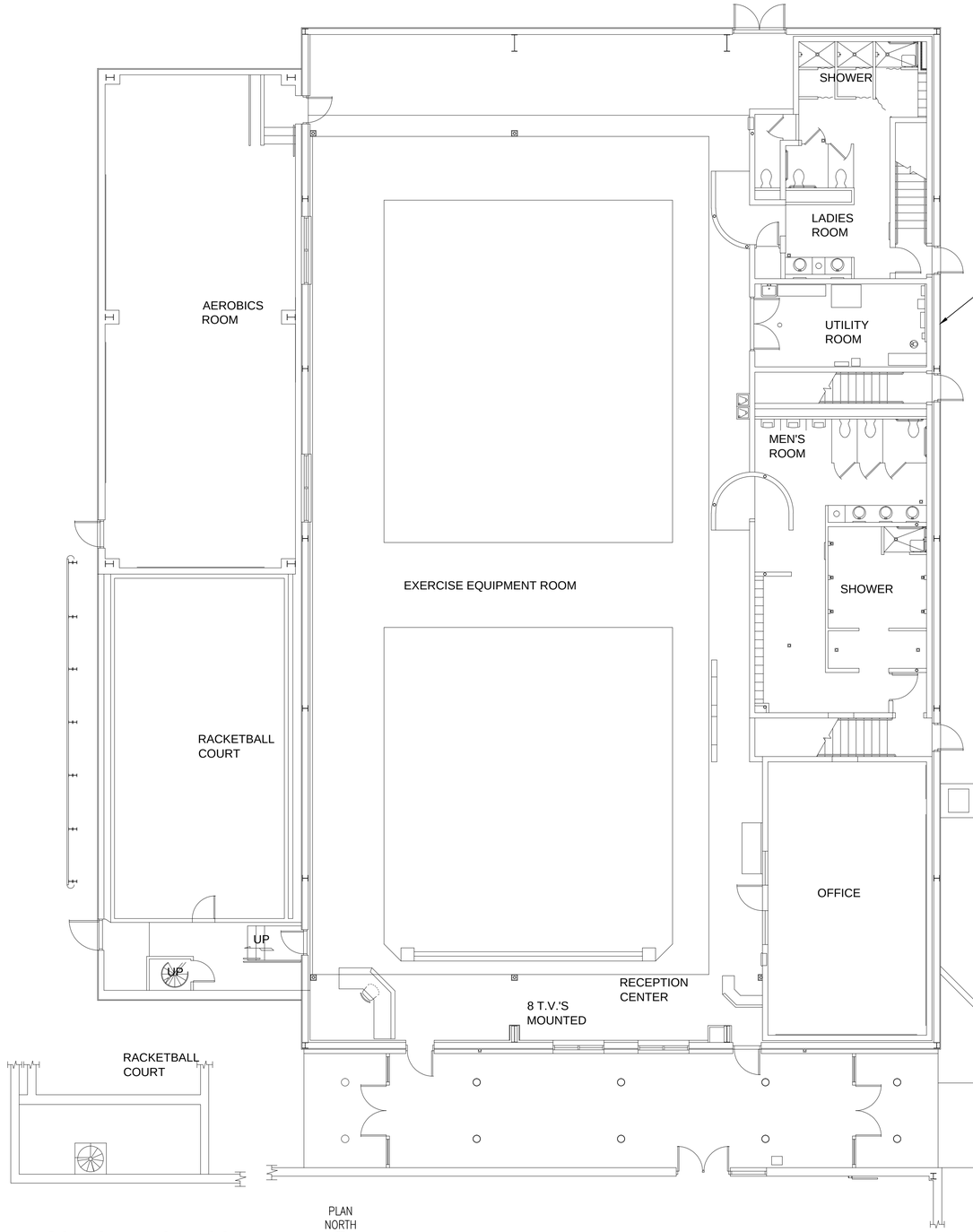
DES TM | DRW TM | CHK JO
PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
FIRE PROTECTION X

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 301 ELECTRICAL LEGEND, FIRST FLOOR ELECTRIC ROOM, ATTIC HVAC MECHANICAL ROOM PARTIAL PLANS, & PANELBOARD SCHEDULE

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703821
SHEET 368 OF 506
E1.0 301-15-178



NOTE: NO ELEVATIONS WERE AVAILABLE TO CREATE DRAWING; FIRST FLOOR PLAN IS USED TO SHOW APPROXIMATE LOCATION OF ANTENNA; ANTENNA SHALL BE MOUNTED ON THE EXTERIOR OF BUILDING

PLAN NORTH

B301 ANTENNA LOCATION - FIRST FLOOR PLAN

1/8" = 1'-0"

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 POLE MOUNT WITH STAND OFF RF ACCESS POINT ON HIGH EXTERIOR EAST WALL.
2. CONTRACTOR SHALL 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 DETERMINE BEST PATH BETWEEN JACE AND RF ACCESS POINT; PENETRATION IN EAST WALL IS REQUIRED TO ROUTE CAT5 TO RF ACCESS POINT.

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. 13914 LICENSED PROFESSIONAL ENGINEER

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A/E INFO.

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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

B301 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

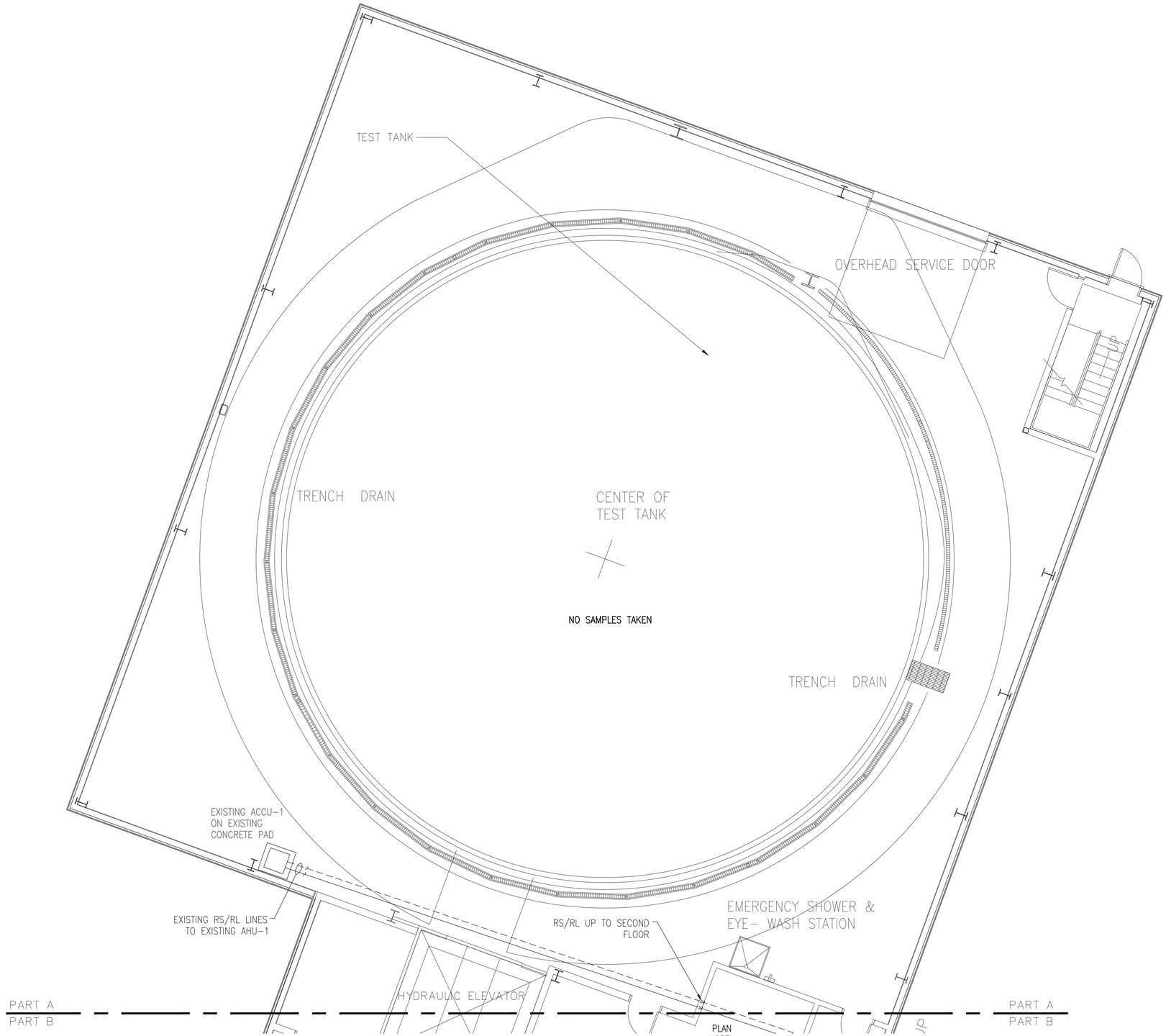
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703822

SHEET 369 OF 506

ET1.0 301-15-179

DRAWFORM REVISION: 10 OCTOBER 2014



B306 PART A HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 1/8" = 1'

GENERAL SHEET NOTES

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

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 B306 ASBESTOS, LEAD, PCB, AND TCLP INVENTORY TABLES LOCATED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, DATED JUNE 22, 2015, FOR ADDITIONAL INFORMATION.

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

NAVFAC

STATE OF MAINE
Bradlee Mesquita
9410
LICENSED
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www.tighebond.com

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

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

B306 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703823

SHEET 370 OF 506

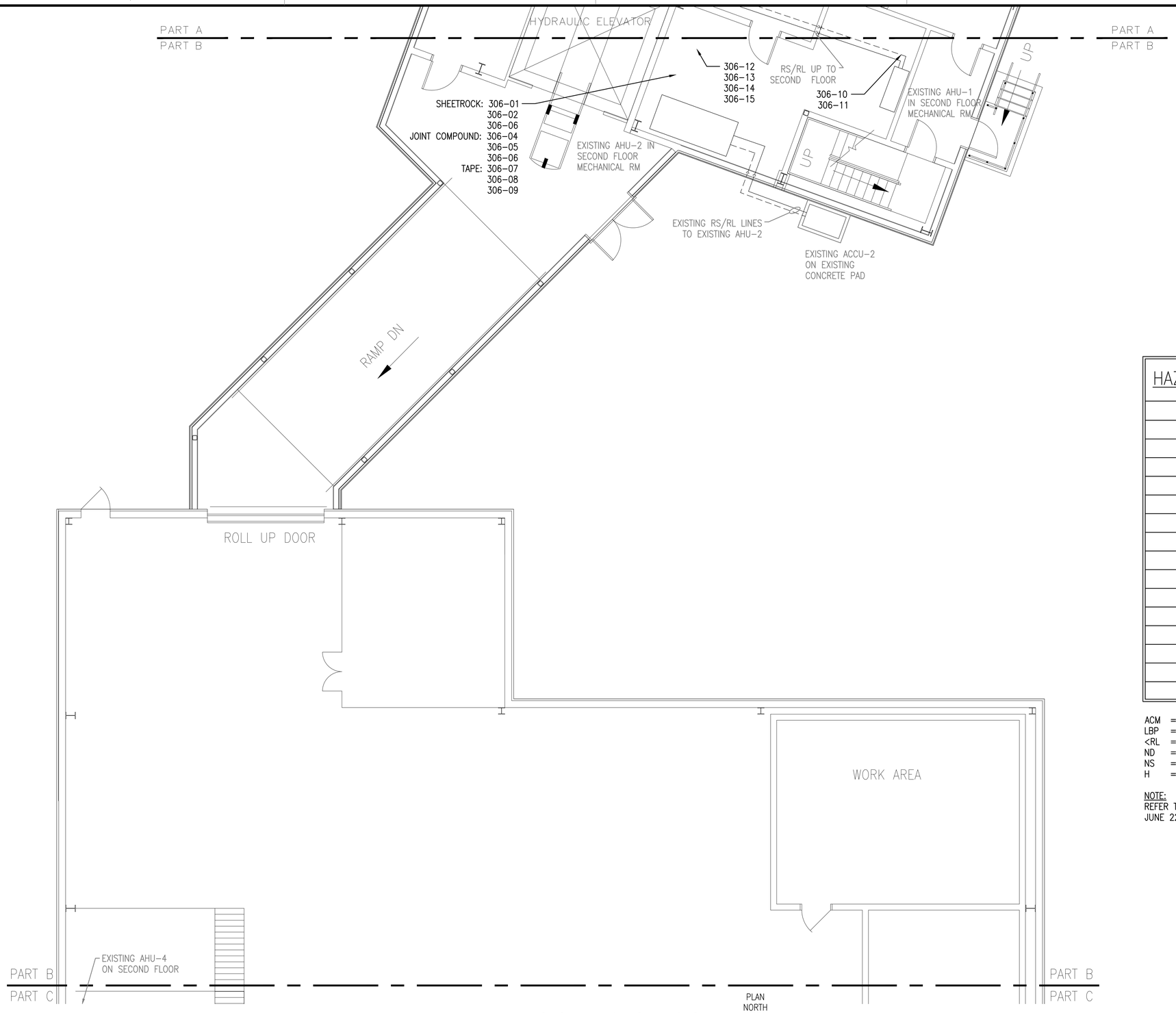
H1.0 | 306-15-236

DRAWFORM REVISION: 10 OCTOBER 2014

GRAPHIC SCALE

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

FILE NAME: J:\A\A1066 AEC Subconsulting Support\HazMats\DWG\A1066_2_HZMT_R22.dwg LAYOUT NAME: B306-H1.0 PLOTTED: Friday, August 07, 2015 - 2:36pm USER: REP



B306 PART B HAZARDOUS MATERIAL SAMPLING PLAN
SCALE: 1/8" = 1'

GENERAL SHEET NOTES

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3. SEE B306 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
306-01	ND	NS
306-02	ND	NS
306-03	ND	NS
306-04	ND	NS
306-05	ND	NS
306-06	ND	NS
306-07	ND	NS
306-08	ND	NS
306-09	ND	NS
306-10	ND	NS
306-11	ND	NS
306-12	ND	NS
306-13	ND	NS
306-14	ND	NS
306-15	ND	NS

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

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

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

SYM	DESCRIPTION	DATE	APPR
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1	90% SUBMISSION	06/05/2015	BLM

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

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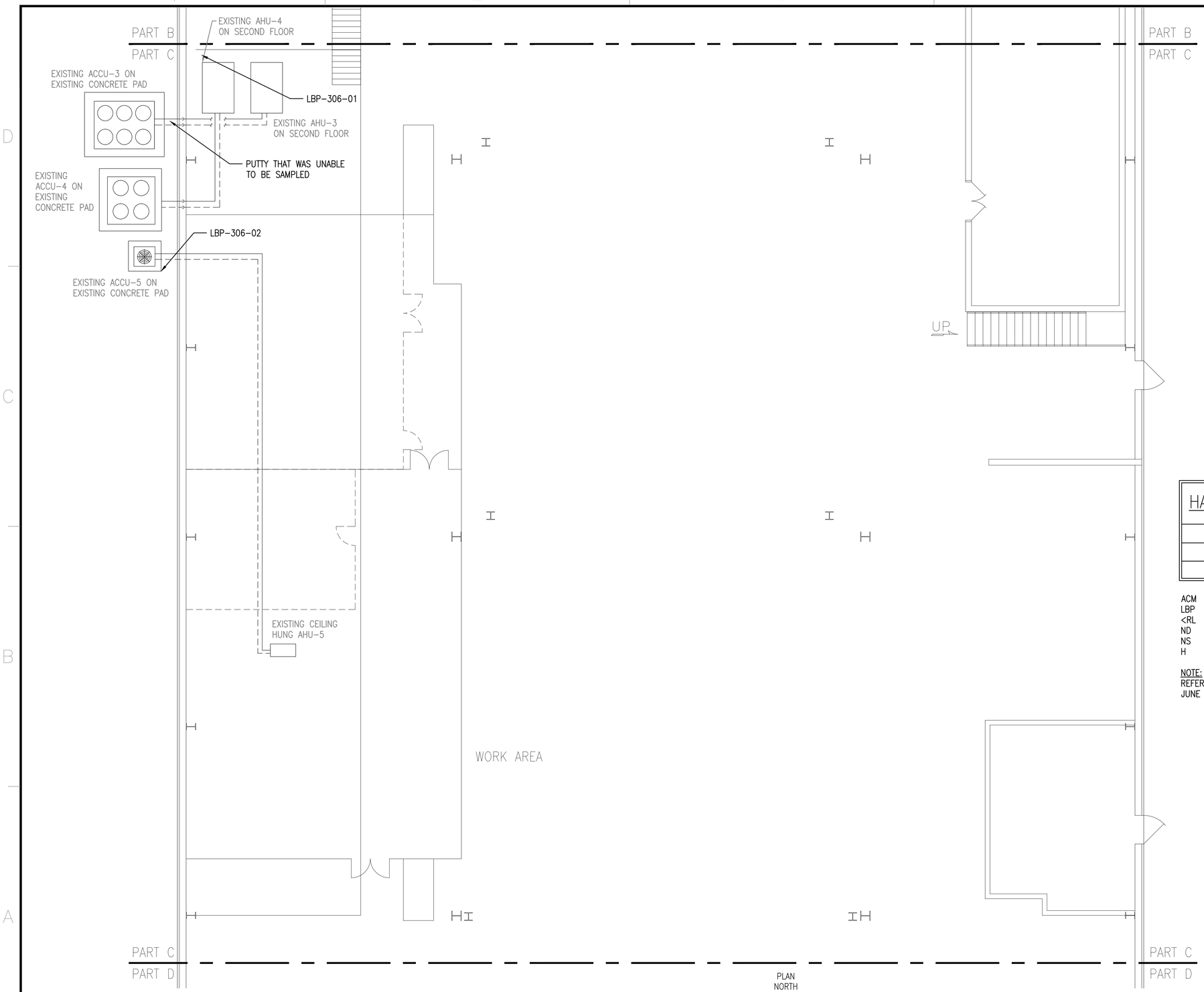
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22
B306 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703824
SHEET 371 OF 506
H1.1 | 306-15-237

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\InzMats\DWG\A1066_2_H2MT_R22.dwg LAYOUT NAME: B306-H1.1 PLOTTED: Friday, August 07, 2015 - 2:36pm USER: REP



B306 PART C HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 1/8" = 1'

GENERAL SHEET NOTES

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3. SEE B306 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
LBP-306-01	NS	<RL
LBP-306-02	NS	<RL

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

NOTE:
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GRAPHIC SCALE

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FIRE PROTECTION X

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

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

B306 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703825
SHEET 372 OF 506
H1.2 306-15-238

DRAWFORM REVISION: 10 OCTOBER 2014

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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

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 SYSTEM TAGS

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

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 306 HVAC LEGEND
MD2.0A	BUILDING 306 HVAC FIRST FLOOR DEMOLITION PLAN PART A
MD2.0B	BUILDING 306 HVAC FIRST FLOOR DEMOLITION PLAN PART B
MD2.0C	BUILDING 306 HVAC FIRST FLOOR DEMOLITION PLAN PART C
M2.0A	BUILDING 306 HVAC FIRST FLOOR PLAN PART A
M2.0B	BUILDING 306 HVAC FIRST FLOOR PLAN PART B
M2.0C	BUILDING 306 HVAC FIRST FLOOR PLAN PART C
M3.0	BUILDING 306 HVAC CONTROLS
M3.1	BUILDING 306 HVAC CONTROLS
M3.2	BUILDING 306 HVAC CONTROLS
M4.0	BUILDING 306 HVAC SCHEDULES AND DETAILS

SYM	DESCRIPTION	DATE	APPR
4	100% SUBMISSION	08/07/2015	DM
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NAVAL FACILITIES ENGINEERING COMMAND
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

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

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

BUILDING 306 HVAC LEGEND

EPROJECT NO.: 1350913

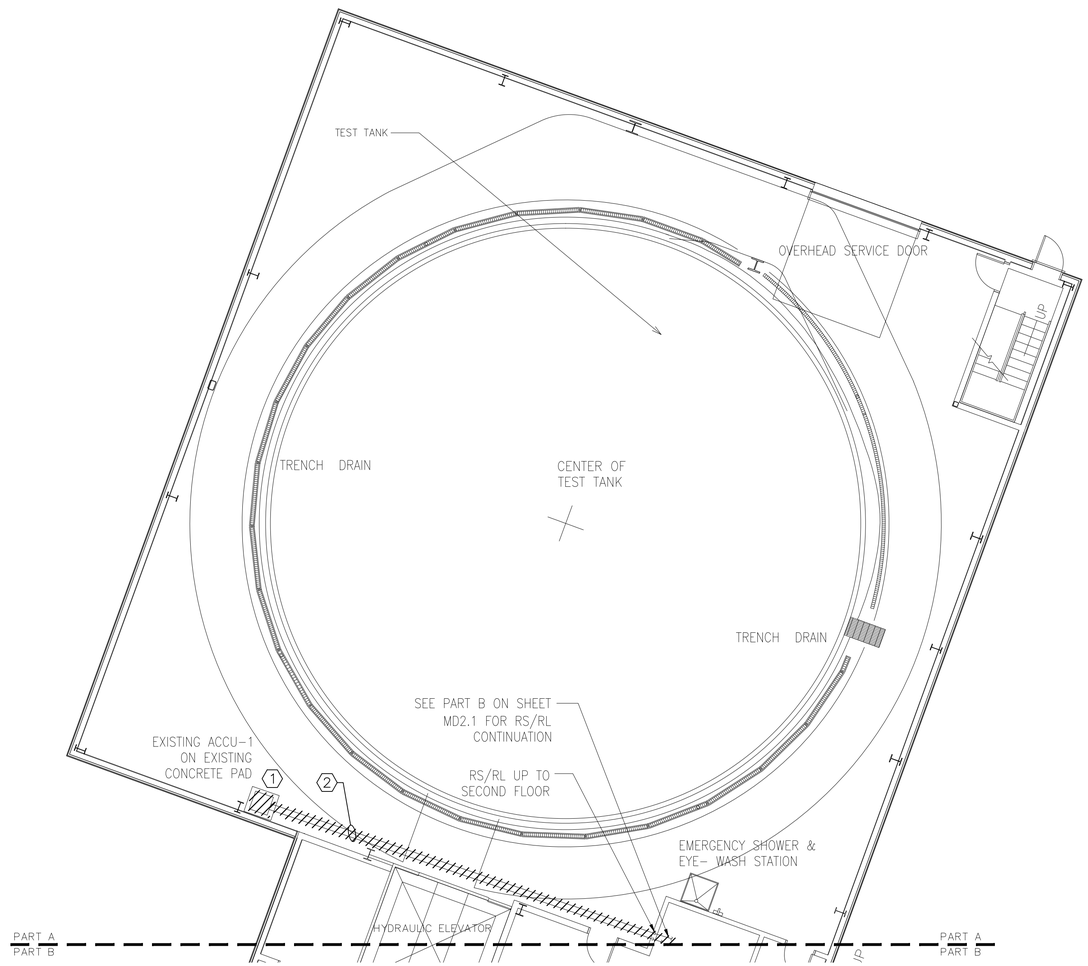
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703826

SHEET 373 OF 506

M1.0 | 306-15-239

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 306 HVAC FIRST FLOOR DEMOLITION PLAN PART A

1/8"=1'

PLAN NORTH

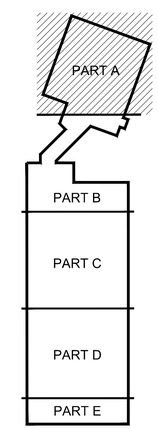
GENERAL SHEET NOTES

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. ACCESSIBLE EXISTING RS/RL LINES TO BE REMOVED. ANY REMAINING RS/RL CONCEALED TO BE EVACUATED, CAPPED AND ABANDONED IN PLACE.

KEY PLAN



GRAPHIC SCALE

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

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PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

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

BUILDING 306 HVAC FIRST FLOOR DEMOLITION PLAN PART A

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703827

SHEET 374 OF 506

MD2.0A | 306-15-240

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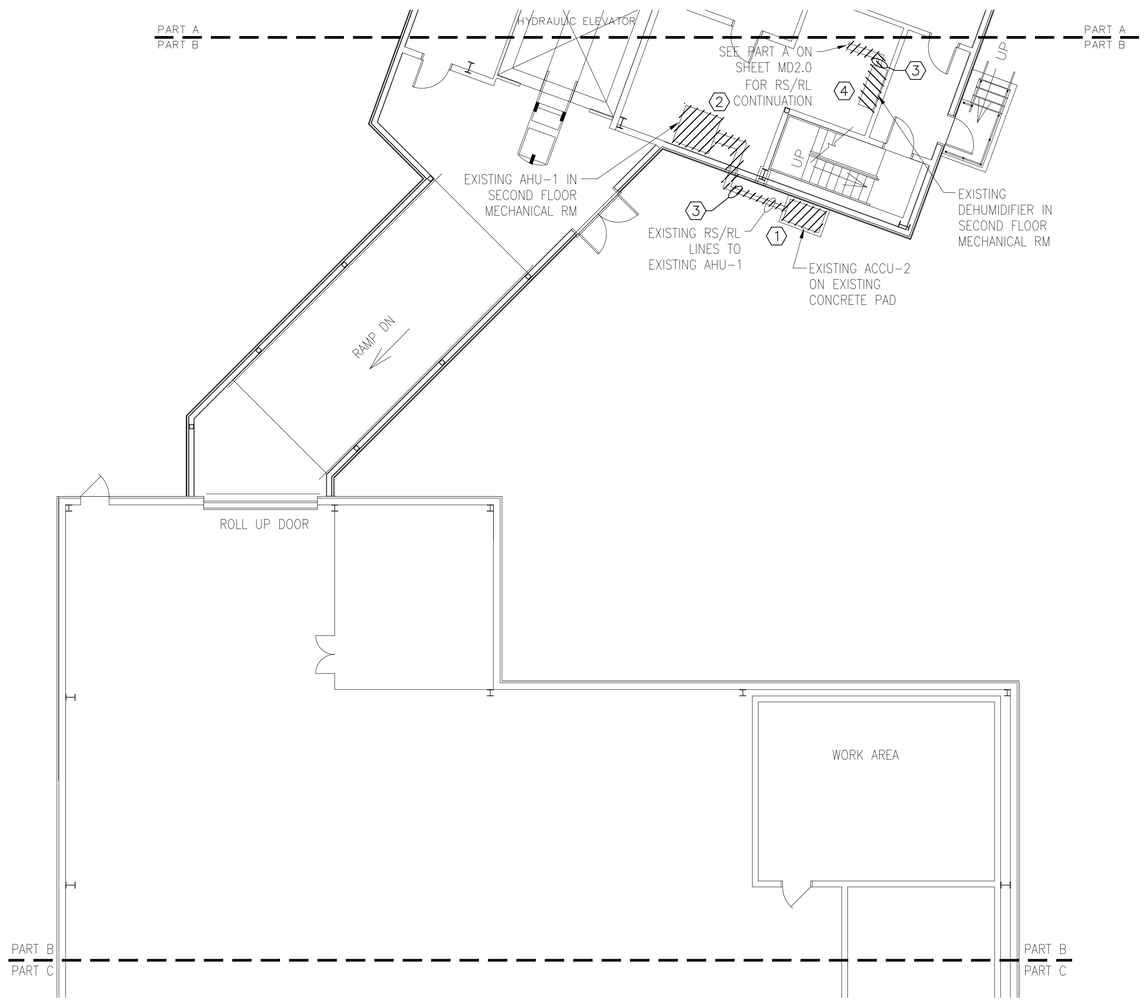


BUILDING 306 HVAC FIRST FLOOR DEMOLITION PLAN PART B

1/8"=1'-0"

PLAN NORTH

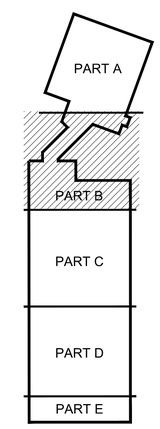
GENERAL SHEET NOTES

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

KEY PLAN



GRAPHIC SCALE

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PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

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

BUILDING 306 HVAC FIRST FLOOR DEMOLITION PLAN PART B

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703828

SHEET 375 OF 506

MD2.0B 306-15-241

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SHEET TAKEN OUT OF PROJECT

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SUB-CONSULTANT
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PORTSMOUTH NAVAL SHIPYARD
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FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 306 HVAC FIRST FLOOR DEMOLITION PLAN PART C

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO.
12703829

SHEET 376 OF 506

MD2.0C | 306-15-242

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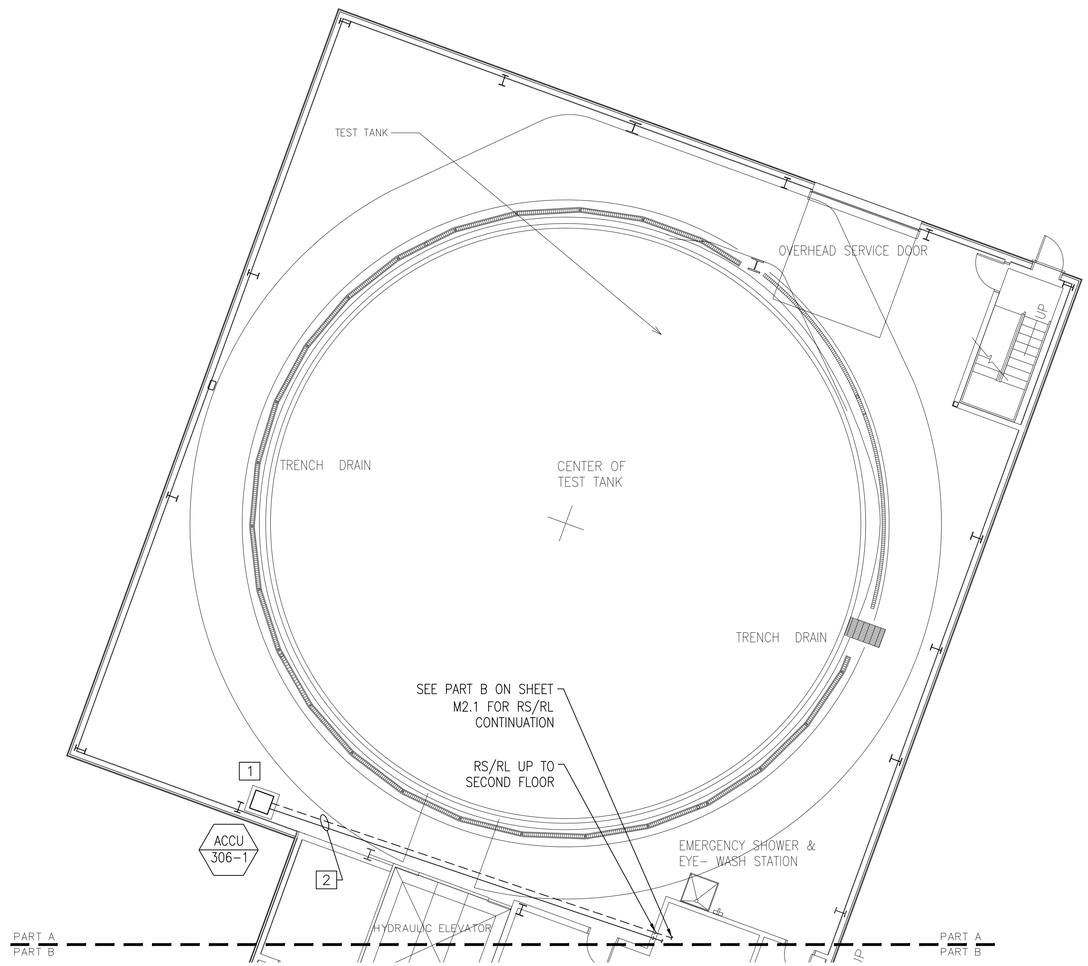


BUILDING 306 HVAC FIRST FLOOR PLAN PART A

1/8"=1'-0"

PLAN NORTH

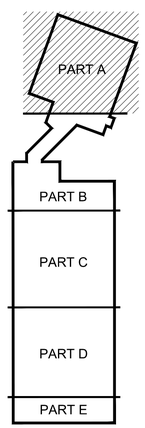
GENERAL SHEET NOTES

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. SEE HVAC GENERAL NOTE 17 ON SHEET M1.0 FOR PIPING INFORMATION.

KEY PLAN



GRAPHIC SCALE

1/8" = 1' 8 4 0 8 16 24
scale feet
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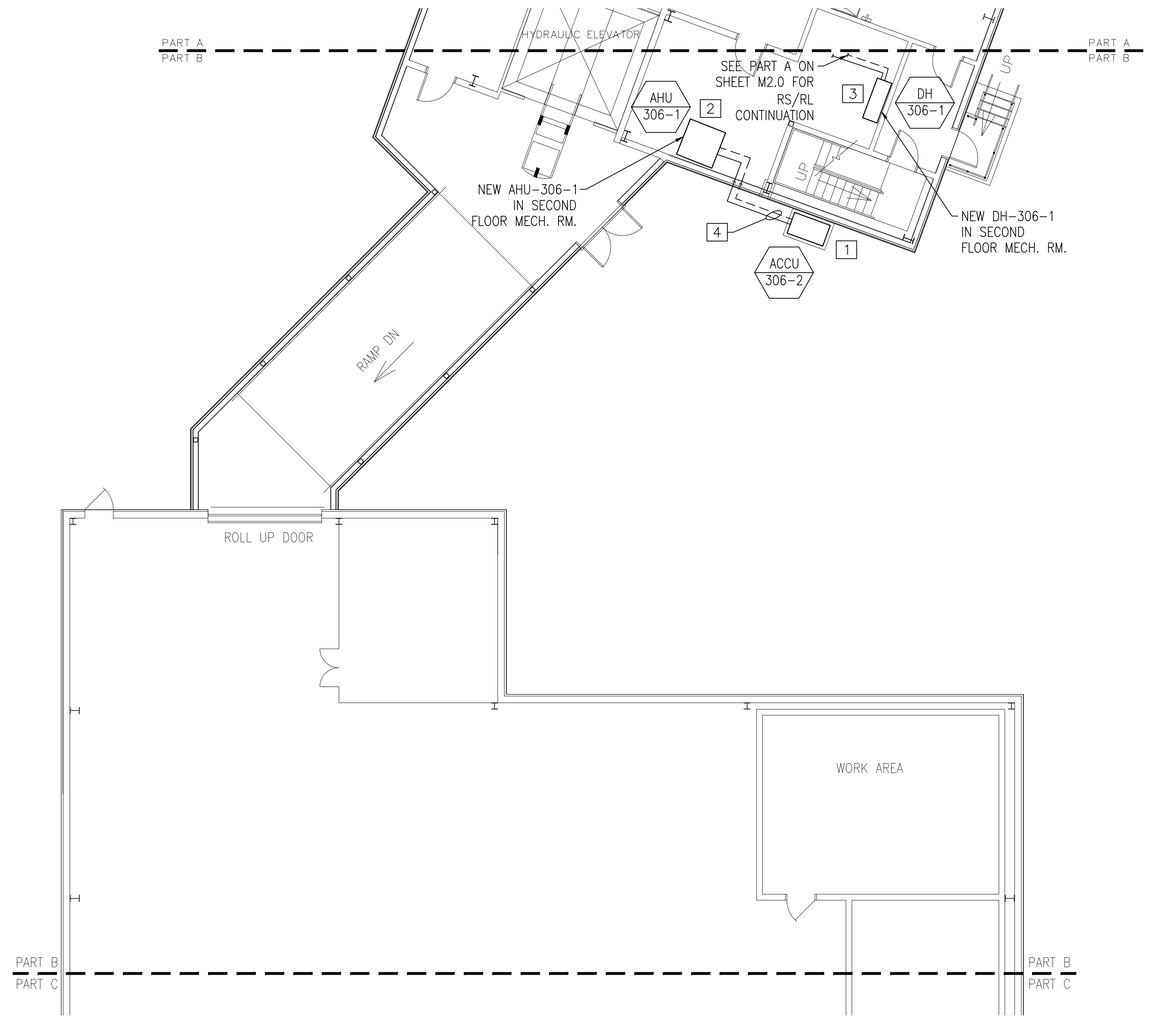
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22
BUILDING 306 HVAC FIRST FLOOR PLAN PART A

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703830
SHEET 377 OF 506
M2.0A | 306-15-243
DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 306 HVAC FIRST FLOOR PLAN PART B

1/8"=1'-0"

PLAN NORTH

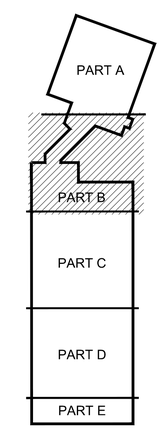
GENERAL SHEET NOTES

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 CONNECT TO ASSOCIATED RS/RL LINES. EXISTING CONDENSATE LINES, CONTROL WIRING, WATER LINES, 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. FURNISH AND INSTALL NEW DEHUMIDIFIER AND RS/RL LINES. EXISTING CONDENSATE LINES AND CONTROL WIRING TO BE RECONNECTED. PROVIDE WITH NEW DDC COMPATIBLE THERMOSTAT AND CONNECT TO EXISTING CONTROL WIRING, FIELD COORDINATE EXACT LOCATION WITH NAVFAC.
4. SEE HVAC GENERAL NOTE 17 ON SHEET M1.0 FOR PIPING INFORMATION.

KEY PLAN



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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

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

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PLUMBING FIRE PROTECTION ELECTRICAL

CSI ENGINEERING

999 BANDFIELD BLVD, STE. 204 SANDY, SC 29745 (803) 329-2025

25 SLAYTON AVE, STE 2324 WINNIPEG, MANITOBA (204) 623-1924

N/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 306 HVAC FIRST FLOOR PLAN PART B

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703831

SHEET 378 OF 506

M2.0B | 306-15-244

DRAWFORM REVISION: 10 OCTOBER 2014

SHEET TAKEN OUT OF PROJECT

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

NAVFAC

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

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PROJECT MANAGER
CSI ENGINEERING
999 BOSTON POST ROAD, STE 3
MADISON, CT 06443-3000
TEL: 203-318-9828
FAX: 203-318-9824
25 SANTINI AVE, STE 3324
LONG BRANCH, NJ 07740-3000
TEL: 732-229-0028
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 306 HVAC FIRST FLOOR PLAN PART C

EPROJECT NO.: 1350913

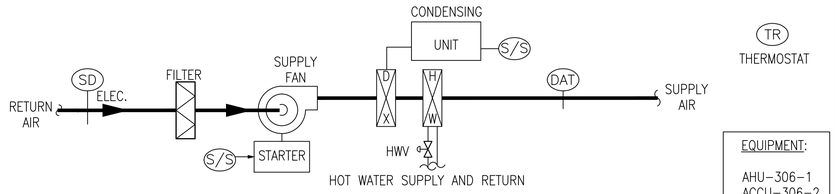
CONSTR. CONTR. NO.
N40085-XX-C-XXXX

NAVFAC DRAWING NO.
12703832

SHEET 379 OF 506

M2.0C | 306-15-245

DRAWFORM REVISION: 10 OCTOBER 2014



EQUIPMENT:

AHU-306-1
ACCU-306-2

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

OFF
1. SF DEENERGIZED
2. ACCU DEENERGIZED
3. HWV IS OPEN

UNOCCUPIED COOLING CONTROL

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

OCCUPIED COOLING CONTROL

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

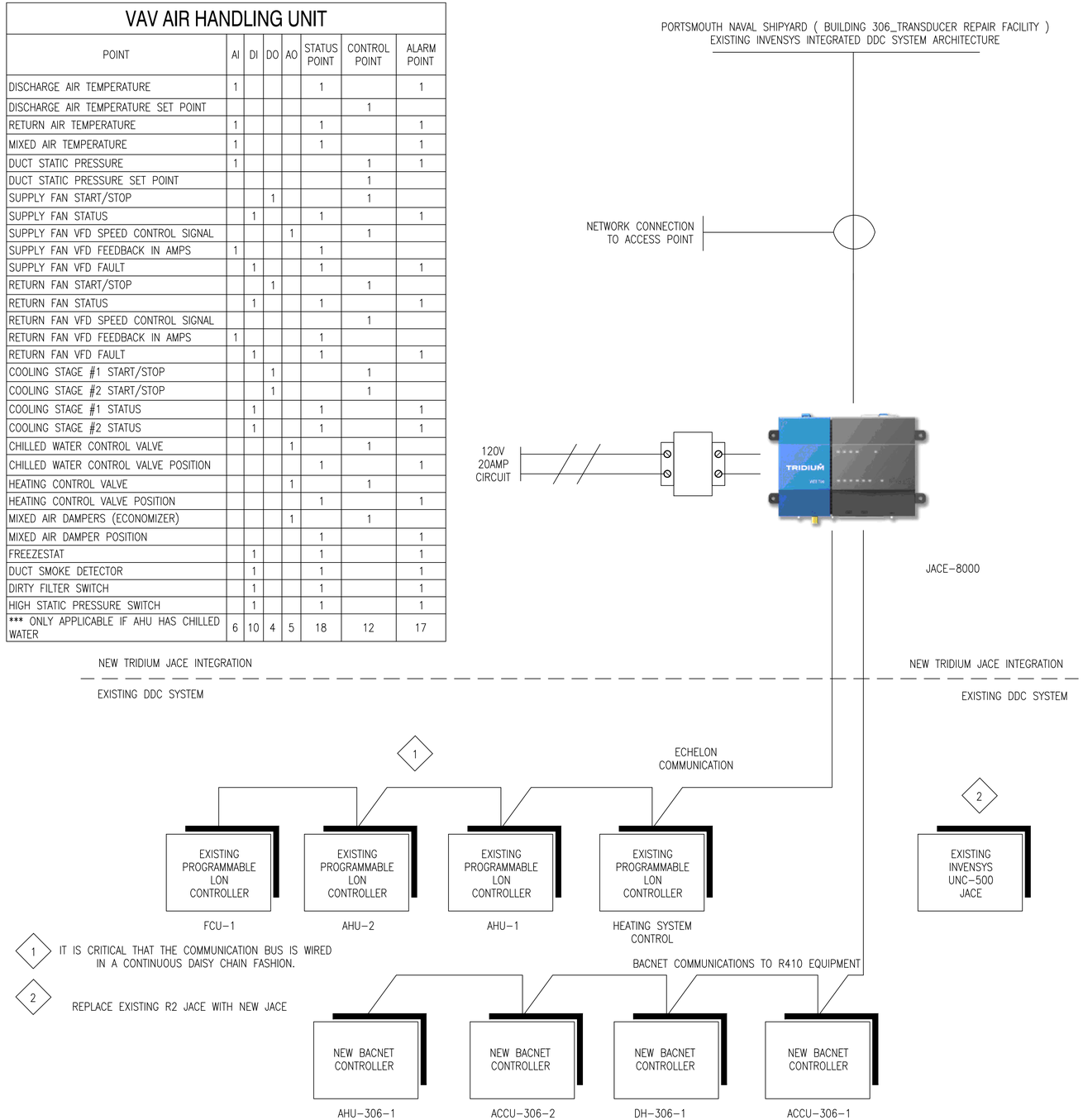
UNOCCUPIED HEATING CONTROL
1. SF IS ENERGIZED
2. COOLING SYSTEM IS OFF
3. HWV IS MODULATING TO MAINTAIN THE HEATING TEMPERATURE SETPOINT OF 60°F (ADJ).

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).

AIR HANDLER W/ DX COOLING SEQUENCE OF OPERATION

VAV AIR HANDLING UNIT

POINT	AI	DI	DO	AO	STATUS POINT	CONTROL POINT	ALARM POINT
DISCHARGE AIR TEMPERATURE	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	
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
CHILLED WATER CONTROL VALVE				1		1	
CHILLED WATER CONTROL VALVE POSITION					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	5	18	12	17



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	

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

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

DESIGN FIRM
CSI TECHNOLOGY
FIRE PROTECTION
999 Bedford Street, 2nd Floor
Stamford, CT 06905
Tel 203-348-0928
Fax 203-348-0929
215 Haverhill Rd, Ste 304
Portsmouth, NH 03801
603-319-9214
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

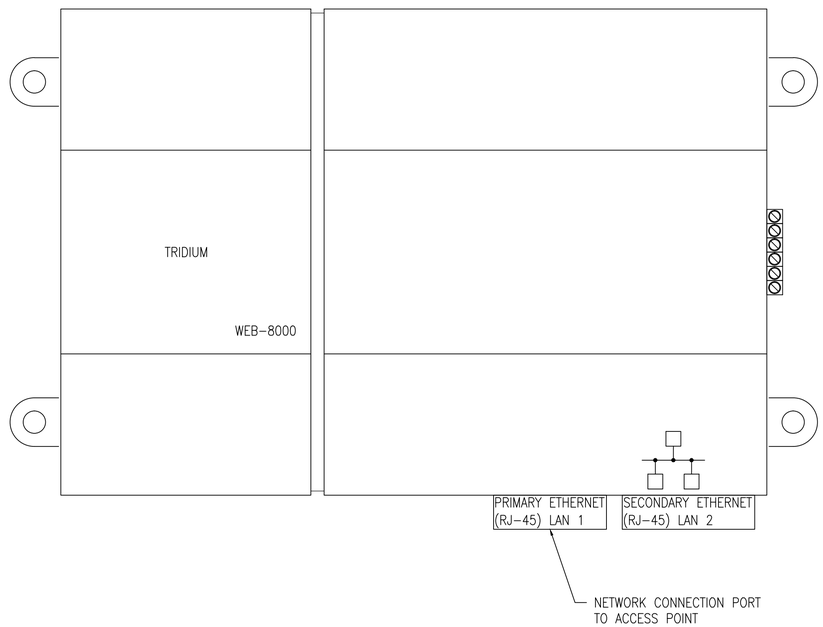
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
PORTSMOUTH NAVAL SHIPYARD
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 306 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703833
SHEET 380 OF 506
M3.0 | 306-15-246

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

"I HEREBY CERTIFY THAT THE ENGINEERING WORK SHOWN ON THIS DOCUMENT WAS PERFORMED BY ME OR UNDER MY SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF NEW HAMPSHIRE."

PROJECT MANAGER
CSI ENGINEERING
FIRE PROTECTION
999 BOSCAWEN AVENUE, STE. 204
MANCHESTER, NH 03102
TEL: 603-623-8828
25 B AVIATION AVE, STE. 200
PORTSMOUTH, NH 03801
603-431-9424
A/E INFO

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FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

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

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

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

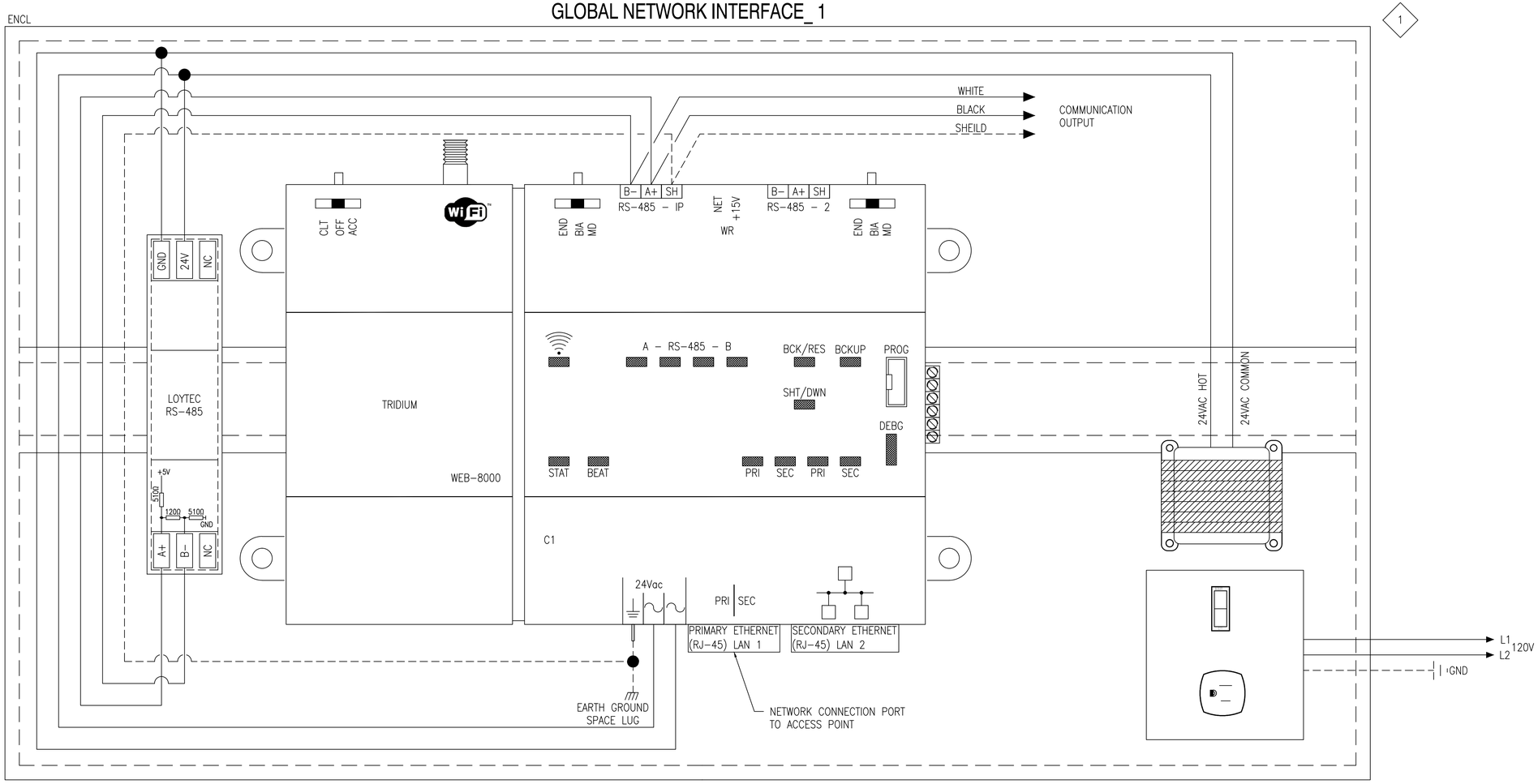
BUILDING 306 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703834
SHEET 381 OF 506

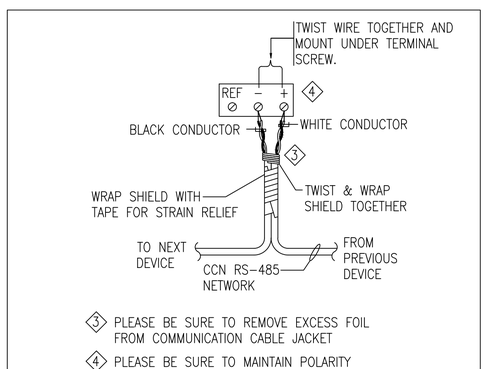
M3.1 | 306-15-247

DRAWFORM REVISION: 10 OCTOBER 2014

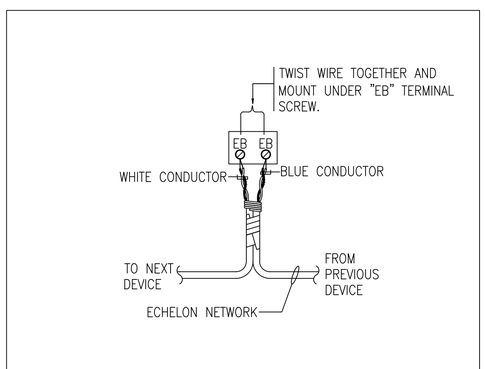
GLOBAL NETWORK INTERFACE_ 1



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
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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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CONTRACTOR FIELD VERIFICATION REQUIRED
CADD ID: 2014-08
LAST REVISION: 10/2014

PROJECT MANAGER
CSI
TYPE OF SERVICE
CSI ENGINEERING
978 BROADWAY SUITE 206
BEVERLY, MA 01915
TEL: 978-232-9505
A/E INFO
215 MARTINS AVE STE 204
LAKEWOOD, NJ 08701
732-367-1900
EDI-2-1-1-0-2-4

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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
KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
FY 16 ENERGY PROJECT
TASK 1–B–R–22
BUILDING 306 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085–XX–C–XXXX
NAVFAC DRAWING NO. 12703835
SHEET 382 OF 506
M3.2 306-15-248

DRAWFORM REVISION: 10 OCTOBER 2014

AIR HANDLING UNIT SCHEDULE

TAG	ASSOCIATED OUTDOOR UNIT	LOCATION	CFM	FAN DATA				DX COOLING COIL					HEATING COIL (HOT WATER)										V	PHASE	FLA	MCA	MOCP	FILTER DATA	DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
				MOTOR				CAPACITY (MBH)		REFRIGERANT TYPE	AIR DATA		CAPACITY (MBH)	AIR DATA			HOT WATER DATA				ROWS	FINS PER IN.								
				RPM	HP	V	PH	TOTAL	SENS.		LAT (°F)			EAT (°F)	LAT (°F)	P.D. (IN.WG)	GPM	EWT (°F)	LWT (°F)	P.D. (FT.WG)										
											DB	WB																		
AHU-306-1	ACCU-306-2	SECOND FLR MECH. RM	4815	1800	5	460	3	143	113	R-410A	56	55	128	60	84	0.34	7	180	142	0.3	1	8	460	3	6.5	8.1	10	2" FLAT FILTER	CARRIER 39MN10	SEE NOTES

NOTES: 1. PROVIDE W/ BACNET INTERFACE. 2. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT. 3. PROVIDE MOUNTING HARDWARE AS REQUIRED. 4. PROVIDE W/ BELT DRIVE MOTORS. 5. PROVIDE WITH DRAIN PAN.

DEHUMIDIFIER UNIT SCHEDULE

TAG No.	LOCATION	ASSOCIATED OUTDOOR UNIT	CFM	SUPPLY FAN			COMPRESSOR		DX EVAPORATOR COIL			DEHUMIDIFIER	ELECTRICAL DATA						FILTER DATA (SEE FILTER SCHEDULE)	DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
			TOTAL	STATIC PRESS. (IN.WG)	MOTOR		TYPE	QTY.	CAPACITY (MBH)		FINS PER FT.	CAPACITY LB./HR	HZ	V	PH	FLA	MCA	MOP			
				EXTERNAL	QTY.	HP			TOTAL	SENS.											
DH-306-1	MECH. RM.	ACCU-306-1	1,100	0.5	1	1	SCROLL	1	43.4	24.4	12	18	60	230	1	24	30	45	4" MERV 8	DESERT AIRE LC03R2NNKNDLAED	SEE NOTES

NOTES: 1. PROVIDE WITH BACNET INTERFACE. 2. PROVIDE WITH DRAIN PAN. 3. PROVIDE WITH HOT GAS BY-PASS. 4. PROVIDE WITH ELECTROFIN COATING. 5. PROVIDE WITH CA3530 CAREL CONTROLLER. 6. PROVIDE WITH WALL MOUNTED TEMPERATURE AND HUMIDITY SENSOR. 7. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.

JACE BOX

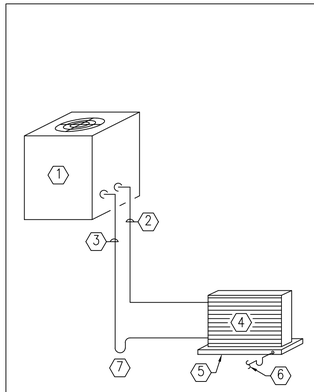
TAG NO.	LOCATION	ELECTRICAL		DESIGN BASED ON MANUFACTURER AND MODEL NUMBER (AS STANDARD)	NOTES
		AMP	V		
J-1	SEE PLANS	20	120	JACE 8000	SEE NOTES

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

AIR COOLED CONDENSING UNIT SCHEDULE

TAG	SERVES	DESIGN BASED ON MANUFACTURER	DESIGN BASED ON MODEL No.	COOLING DATA	ELECTRIC DATA					NOTES
				COOLING (MBH)	VOLTS	HZ	PHASE	MCA	MOCP	
ACCU-306-1	BLDG 306	DESERT AIRE	RC5S018C	18	208	60	1	2	3	SEE NOTES
ACCU-306-2	BLDG 306	CARRIER	38AUDA14A0C6-0A0A0	148	460	60	3	25.5	30	SEE NOTES

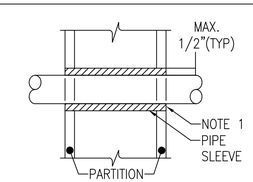
NOTES: 1. PROVIDE W/ BACNET INTERFACE. 2. PROVIDE WITH SEACOAST RATED COATING FOR CONDENSER COIL. 3. CONTRACTOR SHALL PROVIDE VENDOR AUTHORIZED SOFTWARE & TRAINING FOR EACH PIECE OF EQUIPMENT.



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

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
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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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MADE IN: CSI ENGINEERING

FIRE PROTECTION

918 BANDMILL BLVD. STE 204 MOBILE, ALABAMA 36609 251-343-1475

215 AVIATION AVE. STE 300 HAMPTON, VA 23666 757-325-8505

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

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

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT - MAINE
NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
NAVAL SHIPYARD - PORTSMOUTH, NH
KITTERY, MAINE
PORTSMOUTH NAVAL SHIPYARD
FY 16 ENERGY PROJECT
TASK 1-B-R-22
BUILDING 306 HVAC SCHEDULES AND DETAILS

EPROJECT NO.: 1350913

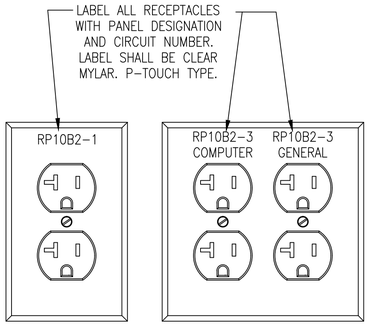
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703836

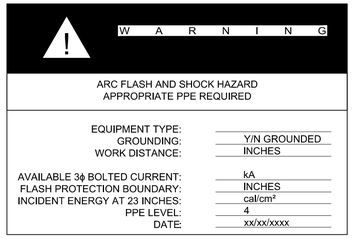
SHEET 383 OF 506

M4.0 | 306-15-249

DRAWFORM REVISION: 10 OCTOBER 2014



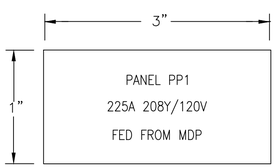
RECEPTACLE LABEL REQUIREMENTS



NOTES:

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

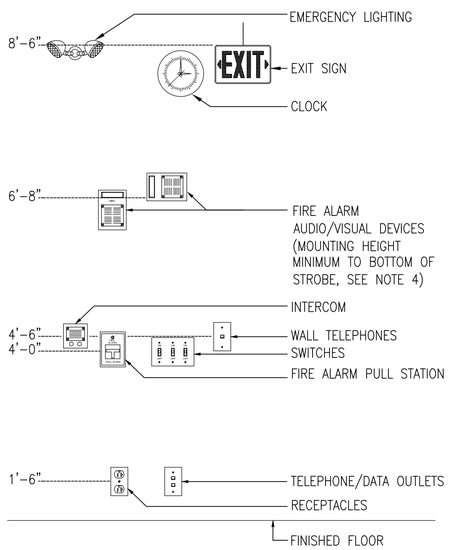
TYPICAL FLASH PROTECTION WARNING LABEL



NOTES:

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

TYPICAL NAMEPLATE DETAIL



NOTES:

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

TYPICAL DEVICE MOUNTING HEIGHTS DETAIL

ELECTRIC ABBREVIATIONS

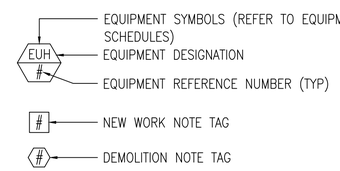
A/AMP	AMPERE	LTG	LIGHTING
AC	ALTERNATING CURRENT	MCB	MAIN CIRCUIT BREAKER
ADA	AMERICAN WITH DISABILITIES ACT	MEC	MASSACHUSETTS ELECTRIC CODE
AF	AMPERE FRAME	MH	MANHOLE
AFF	ABOVE FINISHED FLOOR	MLO	MAIN LUGS ONLY
AFG	ABOVE FINISHED GRADE	MTD	MOUNTED
AIC	AMPERE INTERRUPTING CAPACITY	MTG	MOUNTING
AL	ALUMINUM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

MOTOR & CONTROLS LEGEND

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

ELECTRIC SYSTEM TAGS OR CALL OUT SYMBOL

SYMBOL



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

WIRING DEVICES

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

FIRE ALARM LEGEND

SYMBOL	DESCRIPTION
XXXX	FIRE ALARM DEVICE "RTS" – INDICATES REMOTE TEST STATION
	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 306 ELECTRICAL LEGEND
ED2.0A	BUILDING 306 ELECTRICAL FIRST FLOOR DEMOLITION PLAN PART A
ED2.0B	BUILDING 306 ELECTRICAL FIRST FLOOR DEMOLITION PLAN PART B
ED2.0C	BUILDING 306 ELECTRICAL FIRST FLOOR DEMOLITION PLAN PART C
E2.0A	BUILDING 306 ELECTRICAL FIRST FLOOR PLAN PART A
E2.0B	BUILDING 306 ELECTRICAL FIRST FLOOR PLAN PART B
E2.0C	BUILDING 306 ELECTRICAL FIRST FLOOR PLAN PART C
E3.0	BUILDING 306 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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BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

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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 306 ELECTRICAL LEGEND

EPROJECT NO.: 1350913

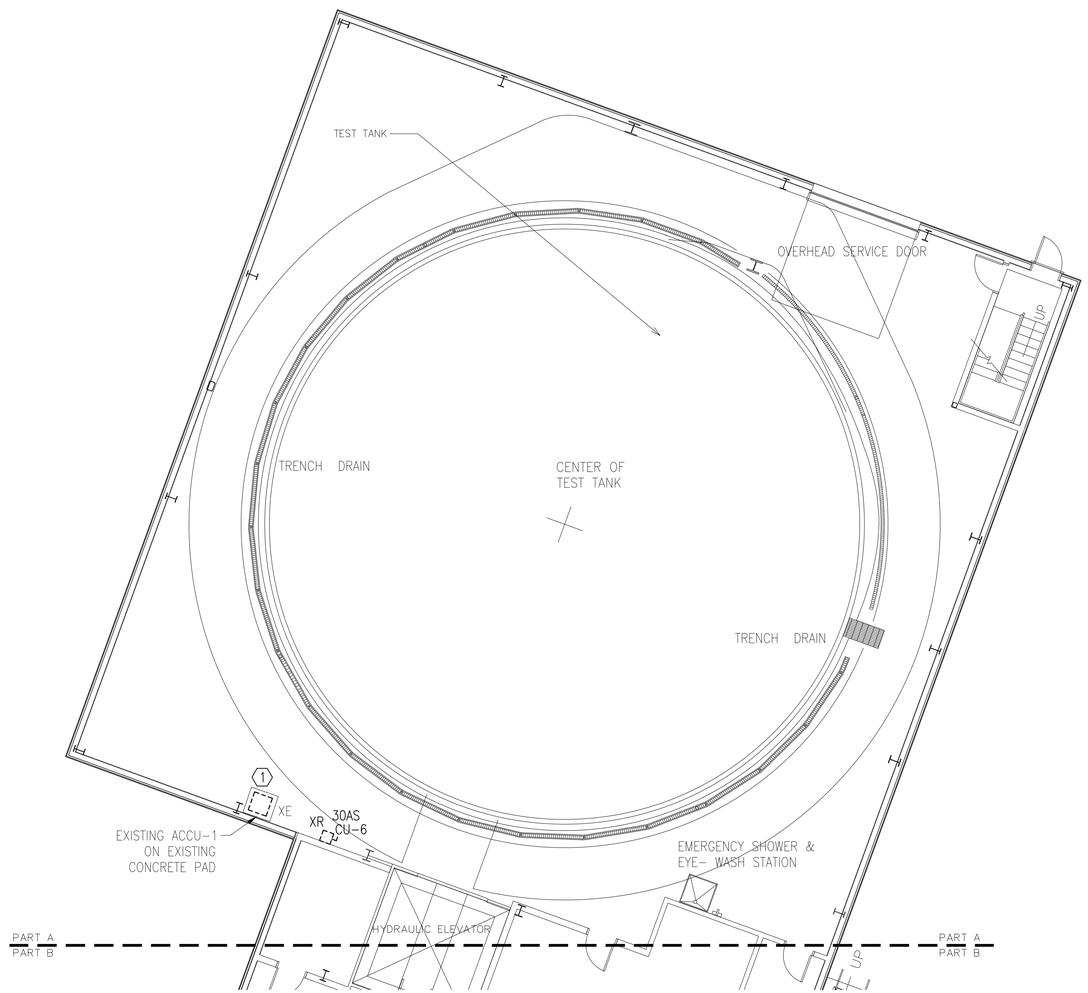
CONSTR. CONTR. NO. N40085-XX-C-XXXX

NAVFAC DRAWING NO. 12703837

SHEET 384 OF 506

E1.0 306-15-250

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 306 ELECTRICAL FIRST FLOOR DEMOLITION PLAN - PART A

1/8"=1'-0"

PLAN NORTH

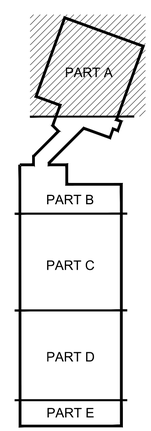
GENERAL SHEET NOTES

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

DEMOLITION KEYNOTES

1. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING ACCU. DEMOLISH DISCONNECT IN IT'S ENTIRETY AND MAINTAIN BRANCH CIRCUITRY EXISTING AND CIRCUIT BREAKER FOR REUSE.

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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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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Tel: 603-436-0616
Fax: 603-436-0628
CSI Project No. 1-15-0
Date: 02/23/2015

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

BUILDING 306 ELECTRICAL FIRST FLOOR DEMOLITION PLAN PART A

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703838

SHEET 385 OF 506

ED2.0A 306-15-251

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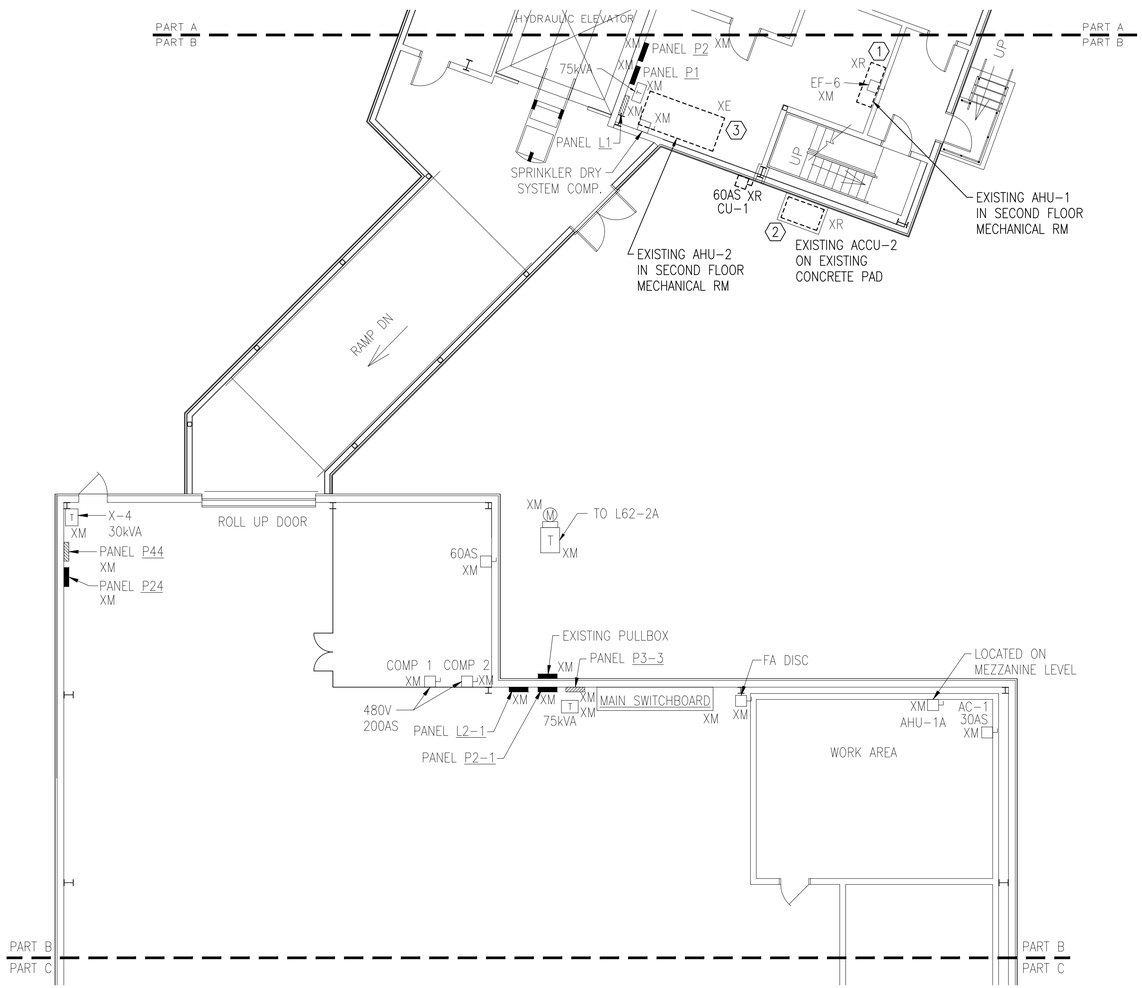


BUILDING 306 ELECTRICAL FIRST FLOOR DEMOLITION PLAN - PART B

1/8"=1'-0"

PLAN NORTH

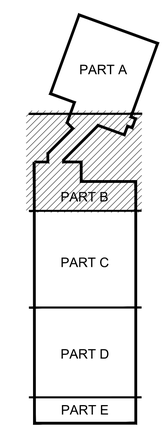
GENERAL SHEET NOTES

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 AHU. DEMOLISH ASSOCIATED BRANCH CIRCUITRY, DISCONNECT, AND CIRCUIT BREAKER IN THEIR ENTIRETY.
2. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING ACCU. DEMOLISH ASSOCIATED BRANCH CIRCUITRY, DISCONNECT AND CIRCUIT BREAKER IN THEIR ENTIRETY.
3. DISCONNECT AND MAKE SAFE FOR REMOVAL EXISTING AHU. CONTRACTOR SHALL TRACE EXISTING CIRCUIT BACK TO SOURCE PANEL PRIOR TO DEMOLITION. MAINTAIN ASSOCIATED CIRCUIT BREAKER FOR REUSE. DEMOLISH ASSOCIATED DISCONNECT IN ITS ENTIRETY.

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
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0	35% SUBMISSION	02/23/2015	DM

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

PREPARED BY: CSI TECHNOLOGIES ENGINEERING
FIRE PROTECTION
918 Bridgeton Avenue, Suite 206
Portsmouth, New Hampshire 03801
TEL 603-319-6028
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A/E INFO

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ACTIVITY

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PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

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

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NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 306 ELECTRICAL FIRST FLOOR DEMOLITION PLAN PART B

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703839

SHEET 386 OF 506

ED2.0B | 306-15-252

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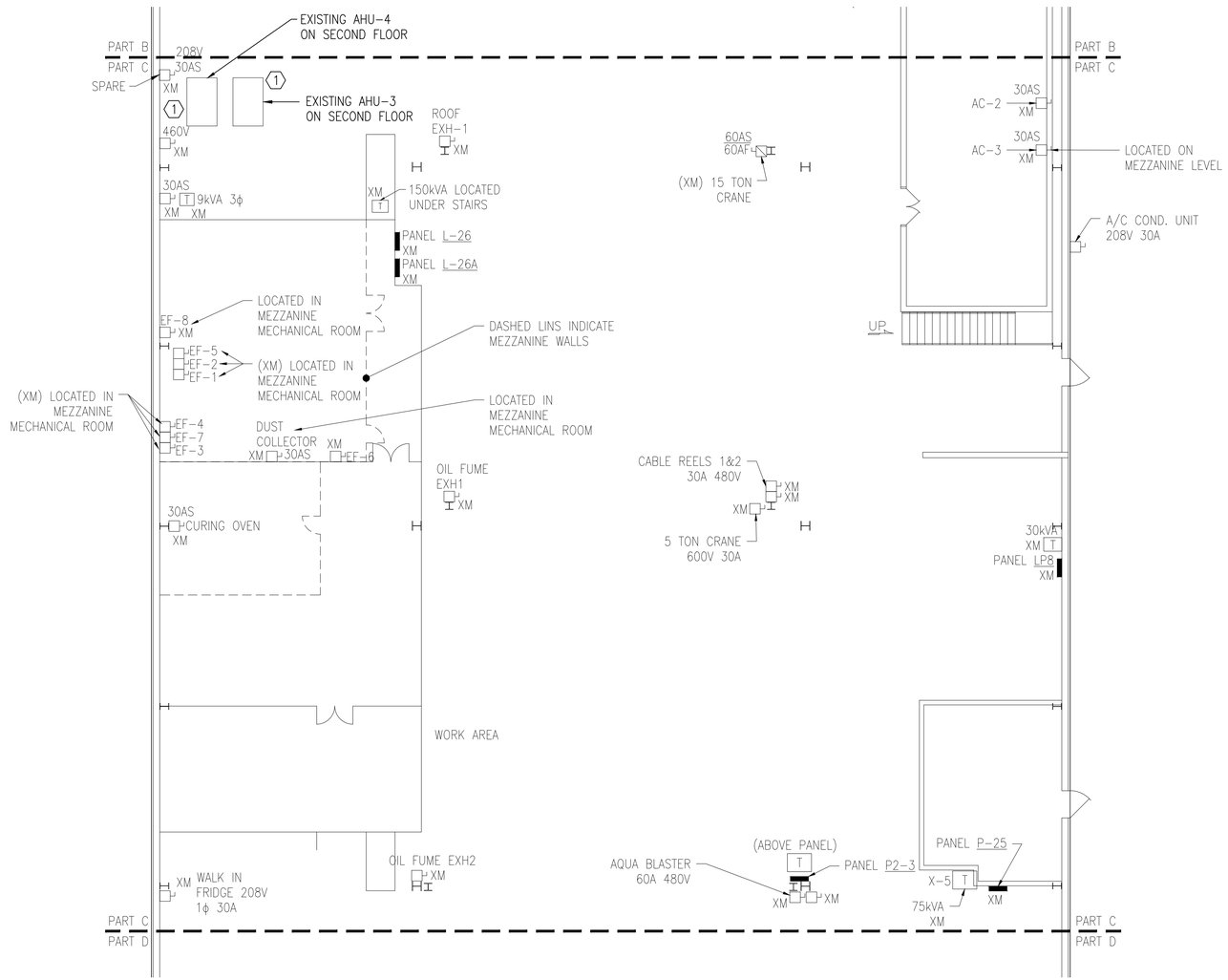

BUILDING 306 ELECTRICAL FIRST DEMOLITION FLOOR PLAN - PART C

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.
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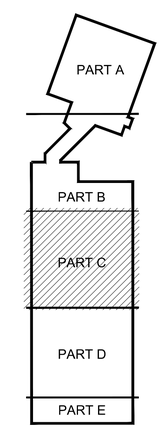
4. THE ELECTRICAL CONTRACTOR SHALL TEMPORARILY SUPPORT ALL ITEMS TO REMAIN THAT ARE AFFECTED BY THE DEMOLITION OF BUILDING STRUCTURAL COMPONENTS (WALLS, CEILINGS, ETC.). TEMPORARILY SUPPORTED ITEMS SHALL BE PERMANENTLY SUPPORTED AND INSTALLED WHEN FINALIZED STRUCTURES ARE IN PLACE.

DEMOLITION KEYNOTES

1. EXISTING AIR HANDLING UNIT TO REMAIN.

KEY PLAN



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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0	35% SUBMISSION	02/23/2015	DM

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

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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
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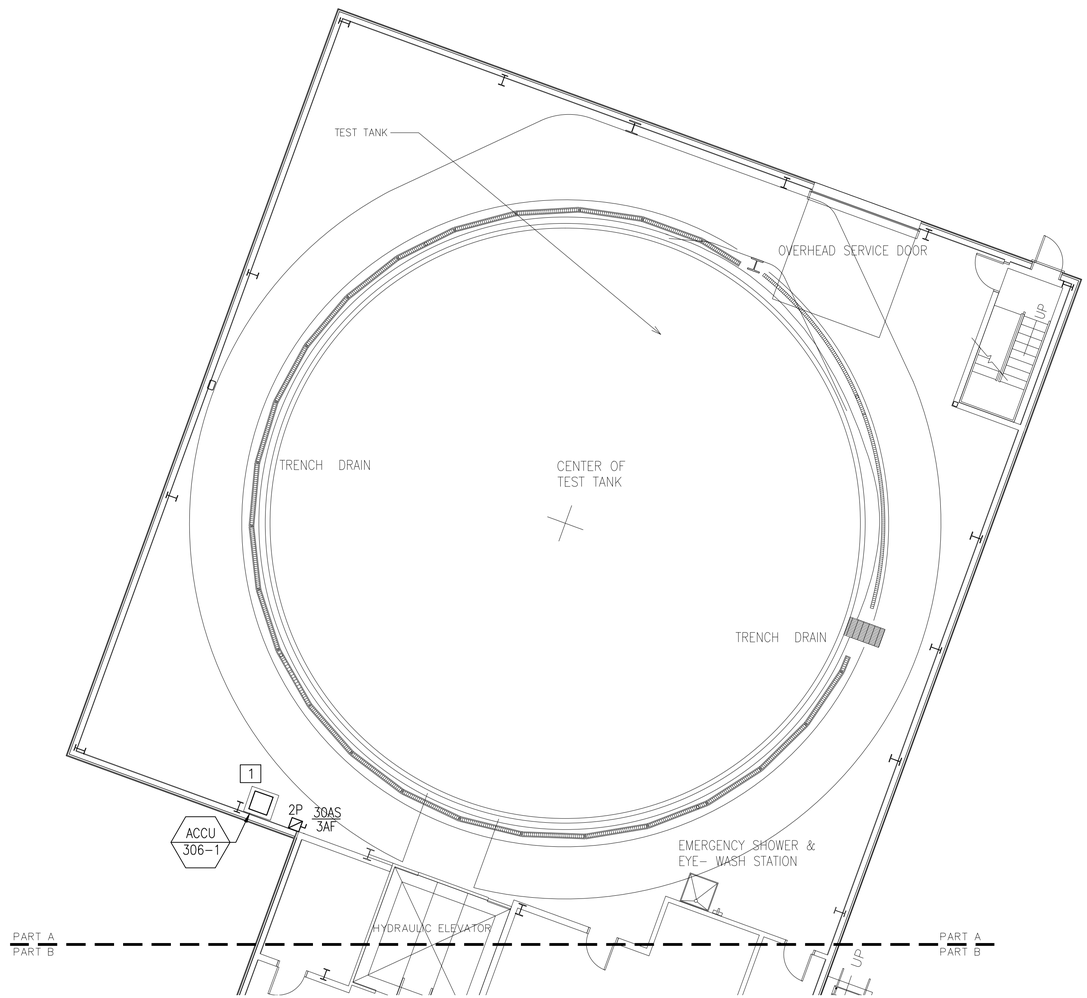
PORTSMOUTH NAVAL SHIPYARD
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE
FY 16 ENERGY PROJECT
TASK 1-B-R-22
BUILDING 306 ELECTRICAL FIRST FLOOR DEMOLITION PLAN PART C

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703840
SHEET 387 OF 506
ED2.0C 306-15-253

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 306 ELECTRICAL FIRST FLOOR PLAN - PART A

1/8"=1'-0"

PLAN NORTH

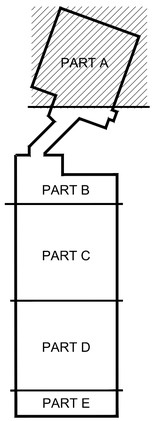
GENERAL SHEET NOTES

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. REUSE EXISTING CIRCUIT BREAKER MAINTAINED DURING DEMOLITION FOR NEW ACCU. PROVIDE NEW DISCONNECT AS SHOWN. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.

KEY PLAN



GRAPHIC SCALE

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

STM	DESCRIPTION	DATE	
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
			APPR

NAVFAC

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

ENGINEERING
CSI ENGINEERING
FIRE PROTECTION
999 Bedford St, Suite 206
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781-33-2-8000
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909-323-9424
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

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

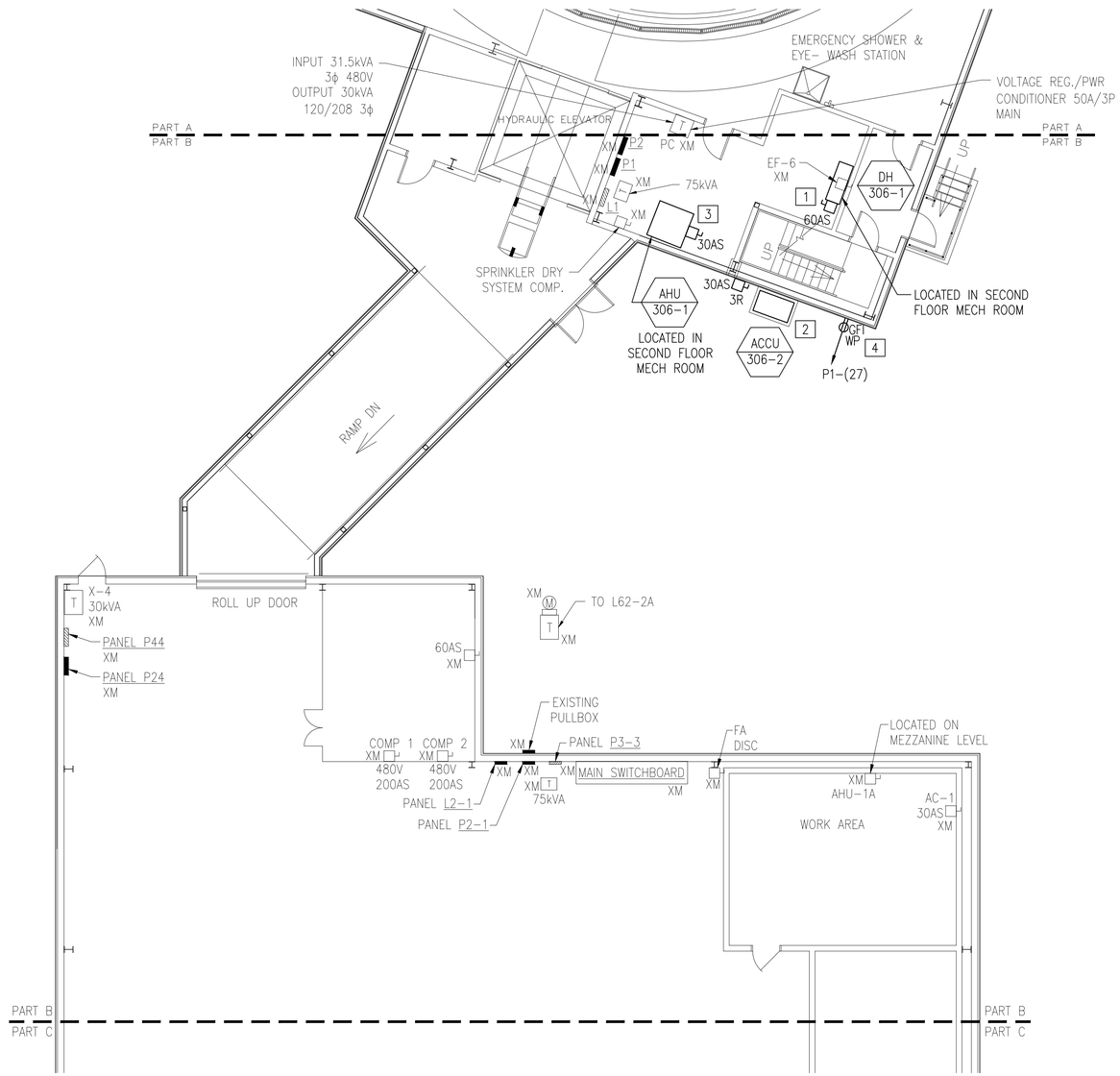
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
PUBLIC WORKS DEPARTMENT – MAINE
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL SHIPYARD ~ PORTSMOUTH, NH
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

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

BUILDING 306 ELECTRICAL FIRST FLOOR PLAN PART A

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703841
SHEET 388 OF 506
E2.0A | 306-15-254

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 306 ELECTRICAL FIRST FLOOR PLAN - PART B

1/8"=1'-0"

PLAN NORTH

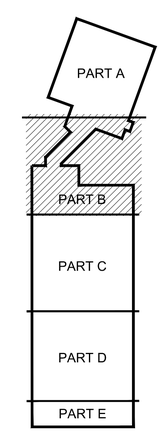
GENERAL SHEET NOTES

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.

NEW WORK KEYNOTES

1. PROVIDE NEW CIRCUIT BREAKER IN PANEL "P1" FOR NEW DEHUMIDIFIER. PROVIDE NEW DISCONNECT AS SHOWN. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
2. PROVIDE NEW CIRCUIT BREAKER IN PANEL "L1" FOR NEW ACCU. PROVIDE NEW DISCONNECT AS SHOWN. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
3. CONNECT NEW AHU TO EXISTING CIRCUIT BREAKER AND BRANCH CIRCUITRY TRACED DURING DEMOLITION. PROVIDE NEW DISCONNECT AS SHOWN. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E3.0 FOR ADDITIONAL INFORMATION.
4. 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' 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

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

ENGINEER: CSI ENGINEERING, LLC
FIRM PRESENTATION
919 Sagamore Avenue, Suite 206
Portsmouth, NH 03801
TEL: 603-319-5928
215 Hamilton Ave, Ste 3304
Philadelphia, PA 19103
TEL: 267-319-2414

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

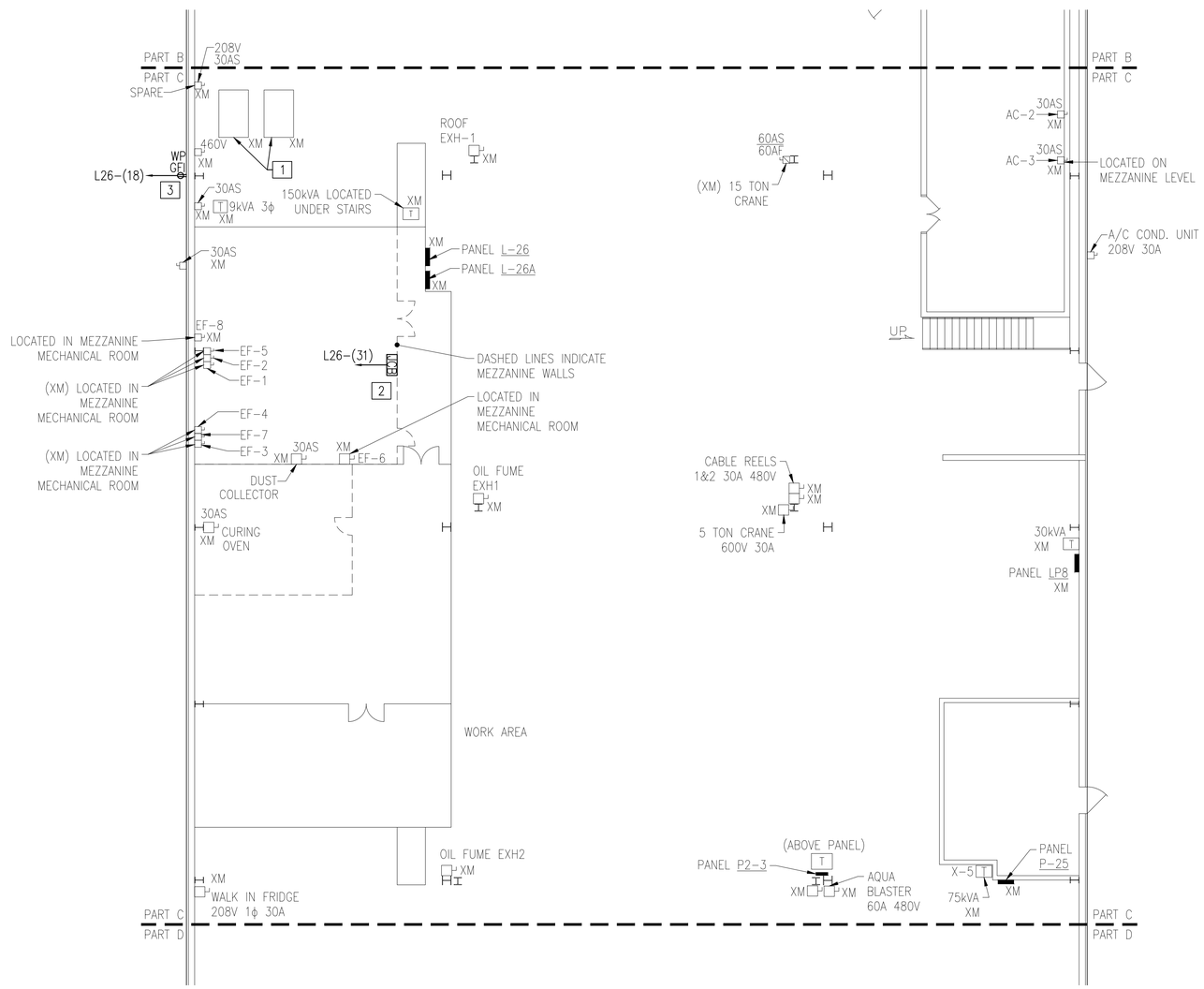
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 306 ELECTRICAL FIRST FLOOR PLAN PART B

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703842
SHEET 389 OF 506
E2.0B 306-15-255

DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 306 ELECTRICAL FIRST FLOOR PLAN - PART C

1/8"=1-0"

PLAN NORTH

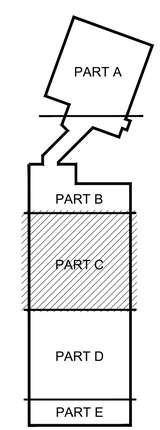
GENERAL SHEET NOTES

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. EXISTING AIR HANDLING UNITS TO REMAIN.
2. NEW DDC JACE BOX PROVIDED BY TRADE CONTRACTOR. COORDINATE EXACT LOCATION WITH NAVFAC AND CONTROLS CONTRACTOR.
3. PROVIDE NEW RECEPTACLE FOR NEW CONDENSING UNITS. UTILIZE EXISTING CIRCUIT BREAKER IN PANEL "L26" FOR NEW RECEPTACLE.

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
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
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 306 ELECTRICAL FIRST FLOOR PLAN PART C

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703843

SHEET 390 OF 506

E2.0C 306-15-256

DRAWFORM REVISION: 10 OCTOBER 2014

PANELBOARD SCHEDULE

PANEL: P1 | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING

MAIN: 225A MCB/MLO | BUS AMPS: 225A | MOUNT.: SURFACE

PH/WIRE: 3ø/4W | AIC: XXK | LOC: TANK MECH. RM.

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	SUMP PUMP RECEPT.	0	–	–	0	EMERGENCY SHOWER	30/2	2
3	20/1	ELEVATOR PIT RECEPT.	0	–					4
5	20/1	EMR RECEPT.	0	–	GFI	0	EMERGENCY SHOWER	20/2	6
7	20/1	ELEVATOR CAB LIGHT	0	–					8
9	20/1	TELDATE BACKBOARD REC.	0	–	–	0	SODA ASH OUTLET	20/1	10
11	20/1	ELEV. MECH. EXT. REC. EF-4	0	–	–	0	SODA ASH OUTLET	20/1	12
13	20/1	EXT. RECEPT. VEST. UH-2	0	–	–	0	CONTROL ROOM RACK RECEPT.	20/2	14
15	20/1	ANNULAR SPACE ST-2 RECEPT.	0	–					16
17	20/1	EXT. ANNULAR SPACE RECEPT.	0	–	–	0	PROVISION	20/1	18
19	20/1	CONNECTOR RECEPT. UH-1	0	–	–	0	PROVISION	20/1	20
21	20/1	CF-1	0	–	–	0	PROVISION	20/1	22
23	20/1	BAS PNL 1ST FLR. MECH. RM.	0	–	–	0	PROVISION	20/1	24
25	20/1	EF-2, EF-3	0	–	–	0	PROVISION	20/1	26
27	20/1	ACCU GFI RECEPTACLE	.18	1	–	0	PROVISION	20/1	28
29	20/1	J.B. MOTORIZED ACU	0	–	–	0	PROVISION	20/1	30
31	20/1	ELEV. MECH. RM. RECEPT.	0	–	–	0	OVERHEAD DOOR #1	20/3	32
33	20/1	SPARE	0	–					34
35	20/2	ACCU-306-1	0.42	1					36
37					–	0	SPARE	20/3	38
39	45/2	DH-306-1	6.9	2					40
41									42
			7.50			0.00	TOTAL CONNECTED kVA:	7.50	
							TOTAL CONNECTED AMPERES:	20.84	

NOTES:
1. VERIFY AND REUSE EXISTING CIRCUIT BREAKER AS INDICATED FOR NEW LOAD.
2. REMOVE EXISTING CIRCUIT BREAKER AND PROVIDE 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.

MECHANICAL EQUIPMENT SCHEDULE

EQUIP TAG	DESCRIPTION	LOAD HP	LOAD KVA	LOAD VOLT	LOAD PH	PANEL SOURCE PANEL	PANEL SOURCE C/B	BRANCH CIRCUIT	CONNECTION FLEX	CONNECTION JB	CONNECTION REC	CONNECTION DISC	NOTES
ACCU 306-1	CONDENSING UNIT	–	0.42	208	1	P1-(35,37)	20A/2P	(2)#12, (1)#12G, 3/4"C	X			X	NOTE 6
ACCU 306-2	CONDENSING UNIT	–	20.3	460	3	L1-(20,22,24)	30A/3P	(3)#10, (1)#10G, 3/4"C	X			X	NOTE 7
AHU 306-1	AIR HANDLING UNIT	–	–	–	X	REFER TO PANELBOARD SCHEDULE L1		–	X			X	
DH 306-1	DEHUMIDIFIER	–	6.9	208	1	P1-(39,41)	45A/2P	(2)#8, (1)#10G, 3/4"C	X			X	

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

PANELBOARD SCHEDULE

PANEL: L1 | VOLTS: 277/ 480 | NEW/EXISTING.: EXISTING

MAIN: 250A MCB | BUS AMPS: 250A | MOUNT.: SURFACE

PH/WIRE: 3ø/3W | AIC: XXK | LOC: TANK MECH. RM.

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	LIGHTING FIRST FLOOR	0	–	–	0	PANEL P1/P2 VIA T1	125/3	2
3	20/1	LIGHTING ANNULAR SPACE	0	–					4
5	20/1	LIGHTING SECOND FLOOR	0	–					6
7	20/1	LIGHTING EXTERIOR	0	–	–	0	PANEL CP VIA POWER CONDITIONER	50/3	8
9	20/1	EWH-1	0	–					10
11	20/1	EWH-2	0	–					12
13	30/3	SURGE SUPPRESSOR	0	–	1	0	AC-1	15/3	14
15									16
17									18
19	20/1	SPARE	0	–	2	20.3	ACCU-306-2	30/3	20
21	20/3	SPRINKLER DRY SYSTEM COMP.	0	–					22
23									24
25					1	0	HUMIDIFIER H-1	15/3	26
27	20/1	SPARE	0	–					28
29	20/1	SPARE	0	–					30
31	20/3	P2A TANK CIRC. PUMP	0	–	–	0	OXYGEN PUMP	15/3	32
33									34
35									36
37	20/3	P2B TANK CIRC. PUMP	0	–	–	0	EF-6	15/3	38
39									40
41									42
			0.00			20.30	TOTAL CONNECTED kVA:	20.30	
							TOTAL CONNECTED AMPERES:	24.45	

NOTES:
1. CIRCUIT BREAKER POSSIBLY FEEDS EXISTING AHU-2 ON DRAWING ED2.1. REUSE CIRCUIT BREAKER ASSOCIATED WITH THE EXISTING UNIT AND CONNECT NEW AHU-306-2. TRACE EXISTING CIRCUIT PRIOR TO DEMOLITION OF EXISTING UNIT.
2. VERIFY AND REUSE EXISTING CIRCUIT BREAKER AS INDICATED FOR NEW LOAD.
3. NEW WORK DENOTED WITH UNDERLINED TEXT. ANY PANELS THAT SHOW NO NEW WORK ARE FOR REFERENCE ONLY.

PANELBOARD SCHEDULE

PANEL: L26 | VOLTS: 120/ 208 | NEW/EXISTING.: EXISTING

MAIN: 400A MCB | BUS AMPS: 400A | MOUNT.: SURFACE

PH/WIRE: 3ø/4W | AIC: XXK | LOC: BLDG 306

CIR.	AMPS/ POLES	DESCRIPTION OF LOAD	LOAD kVA	NOTE	NOTE	LOAD kVA	DESCRIPTION OF LOAD	AMPS/ POLES	CIR.
1	20/1	EF-8	0	–	–	0	RECEPTS. 117	20/1	2
3	20/1	FRZR 118	0	–	–	0	RECEPTS. 117	20/1	4
5	20/1	FRZR 118	0	–	–	0	RECEPTS. 117	20/1	6
7	20/1	REC. TORQUE TESTER	0	–	–	0	PNL L26A	100/3	8
9	20/1	?	0	–					10
11	20/1	EM LTS	0	–					12
13	20/1	EF-1	0	–	–	0	RF-1	20/2	14
15									16
17	20/3	EF-2	0	–	1	.18	CONDENSING UNIT GFI	20/1	18
19					–	0	FCU-1	20/1	20
21	20/3	EF-3	0	–	–	0	CUH-1	20/1	22
23					–	0	EXISTING LOAD	20/2	24
25									26
27	20/1	REC. DWN DRFT TBLES	0	–	–	0	RECEPTS. 118	20/1	28
29	20/1	REC. DWN DRFT TBLES	0	–	–	0	RECEPTS. 118	20/1	30
31	20/1	JACE BOX	.02	1	–	0	RECEPTS. 118	20/1	32
33	20/1	LTG & EM	0	–	–	0	J BOX 117	20/1	34
35	20/1	LTG & EM	0	–	–	0	J BOX 117	20/1	36
37	20/1	LTG & EM	0	–	–	0	RECEPTS. TABLE 117	20/1	38
39	20/1	EF-7	0	–	–	0	SANDBLASTER	20/1	40
41	15/1	EXISTING LOAD	0	–	–	0	SPACE	20/1	42
			0.02			0.18	TOTAL CONNECTED kVA:	0.20	
							TOTAL CONNECTED AMPERES:	0.56	

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

SYM	DESCRIPTION	DATE	APPR.
4	100% SUBMISSION	08/07/2015	DM
3	100% REVIEW SUBMISSION	07/24/2015	DM
2	90% SUBMISSION	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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PREPARED BY: CSI ENGINEERING
FIRM PROPRIETORSHIP: 918 BANDMAN BLVD. STE 204 FORT WORTH, TX 76108 TEL: 817-249-0028
918 BANDMAN BLVD. STE 204 FORT WORTH, TX 76108 817-249-0028

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE

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

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

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

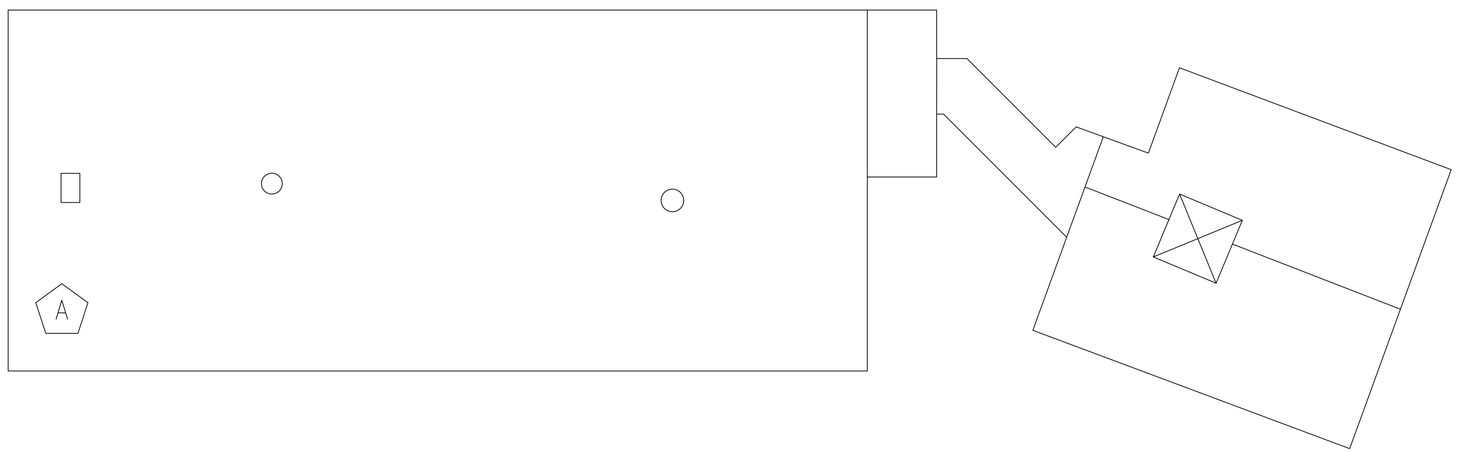
FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 306 ELECTRICAL PANELBOARD SCHEDULES

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703844
SHEET 391 OF 506

E3.0 | 306-15-257

DRAWFORM REVISION: 10 OCTOBER 2014



B306 ANTENNA LOCATION - ROOF PLAN

1/32" = 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

(A) NEW WORK KEYNOTES

1. CONTRACTOR TO POLE MOUNT RF ACCESS POINT ON EXISTING MAST LOCATED ON WEST WALL PEAK
2. CONTRACTOR SHALL ENSURE CLEAR LINE-OF-SIGHT TO B86A ACCESS POINT.
3. 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

1/32" = 1' 32 16 0 32 64 96 scale feet

CHECK GRAPHIC SCALE BEFORE USING

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

STATE OF NEW HAMPSHIRE KEITH CHRISTOPHER No. 13914 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

B306 RF INSTALLATION DETAILS

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703845

SHEET 392 OF 506

ET1.0 306-15-258

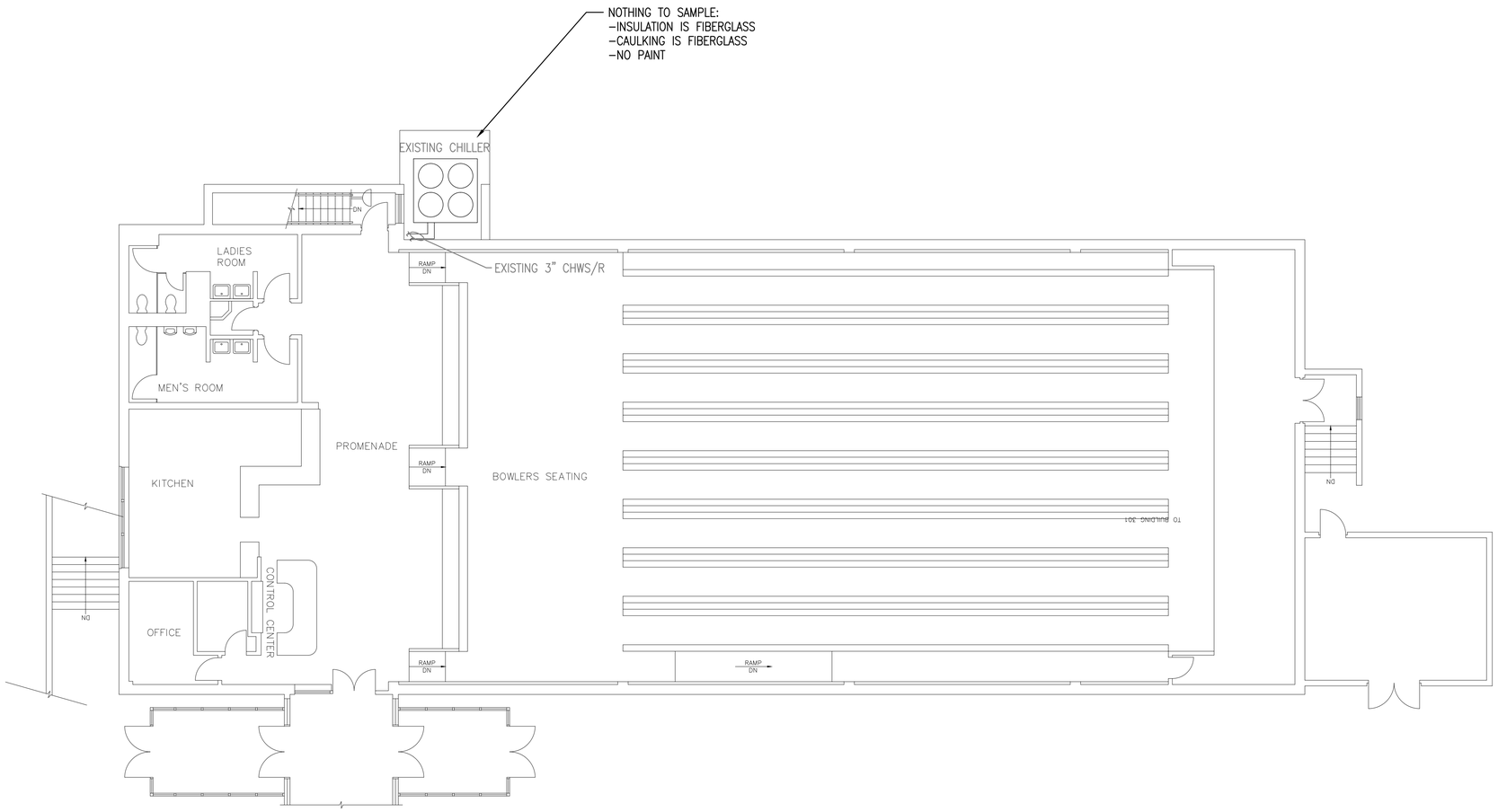
DRAWFORM REVISION: 10 OCTOBER 2014

GENERAL SHEET NOTES

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

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

3. SEE B308 ASBESTOS, LEAD, PCB, AND TCLP INVENTORY TABLES LOCATED IN THE HAZARDOUS BUILDING MATERIAL ASSESSMENT REPORT, DATED JUNE 22, 2015, FOR ADDITIONAL INFORMATION.



B308 HAZARDOUS MATERIAL SAMPLING PLAN

SCALE: 1/8" = 1'

PLAN NORTH

GRAPHIC SCALE

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

CHECK GRAPHIC SCALE BEFORE USING

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

NAVFAC

STATE OF MAINE
Bradlee Mesquita
9410
LICENSED
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177 Corporate Drive
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(603) 433-8818
www.tighebond.com

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES A/E DRW REP CHK BLM

PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

FIRE PROTECTION X

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

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

B308 HAZARDOUS MATERIAL SAMPLING PLAN

EPROJECT NO.: 1350913

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

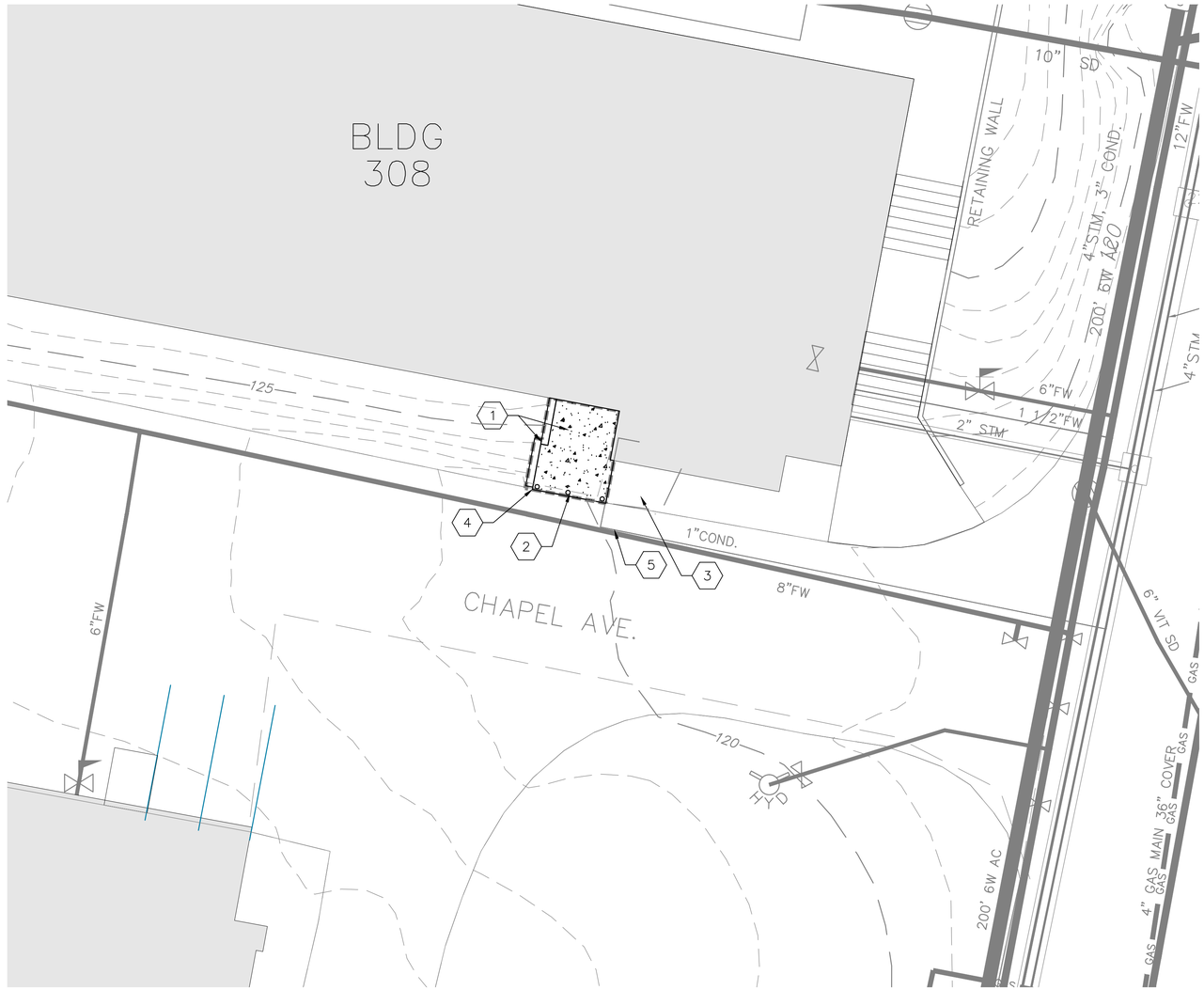
NAVFAC DRAWING NO. 12703846

SHEET 393 OF 506

H1.0 308-15-51

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\HazMats\DWG\A1066_2_HZMT_R22.dwg LAYOUT NAME: B308-H1.0 PLOTTED: Friday, August 07, 2015 - 2:36pm USER: REP



B308 DEMOLITION PLAN

SCALE: 1" = 10'

PLAN NORTH

GENERAL SHEET NOTES

1. ALL WORK SHALL BE COORDINATED THROUGH THE PWD–MAINE CONSTRUCTION OFFICER.
2. BURIED UTILITIES ARE SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL VERIFY ACTUAL LOCATIONS OF ALL BURIED UTILITIES.
3. CONTRACTOR SHALL CONDUCT AN ENVIRONMENTAL PERMIT REVIEW OF THE SITE PRIOR TO EXCAVATION.
4. CONTRACTOR SHALL CONDUCT AN ARCHEOLOGICAL REVIEW OF THE SITE PRIOR TO EXCAVATION.
5. EXCAVATED SOIL SHALL BE DISPOSED OF IN ACCORDANCE WITH SECTION 31 23 00.00 22 EXCAVATION AND FILL (PWD MAINE).
6. CONTRACTOR SHALL DISPOSE OF ALL CONSTRUCTION DEBRIS AND MATERIALS AT PERMITTED OFF–SITE DISPOSAL FACILITY.
7. DEPTH OF EXISTING BUILDING FOOTINGS IS UNKNOWN. CONTRACTOR SHALL ENSURE ADEQUATE COVER IS MAINTAINED ABOVE BUILDING FOOTINGS AS DETERMINED BY NAVFAC STRUCTURAL ENGINEERING DEPARTMENT.

DEMOLITION KEYNOTES

1. DEMOLISH EXISTING CONCRETE EQUIPMENT PAD AND EXISTING RETAINING WALLS.
2. REMOVE EXISTING BOLLARDS (TYP. OF 3)
3. EXISTING SIDEWALK AND VERTICAL GRANITE CURB TO REMAIN.
4. LIMIT OF SAWCUT.
5. RELOCATE EXISTING 1" CONDENSATE LINE AS REQUIRED.

GRAPHIC SCALE

1" = 10' 10 5 0 10 20 30
scale feet

CHECK GRAPHIC SCALE BEFORE USING

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

NAVFAC

STATE OF MAINE
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A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

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

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

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

FY 16 ENERGY PROJECT
TASK 1–B–R–22

PORTSMOUTH NAVAL SHIPYARD

B308 DEMOLITION PLAN

EPROJECT NO.: 1350913

CONSTR. CONTR. NO.
N40085–XX–C–XXXX

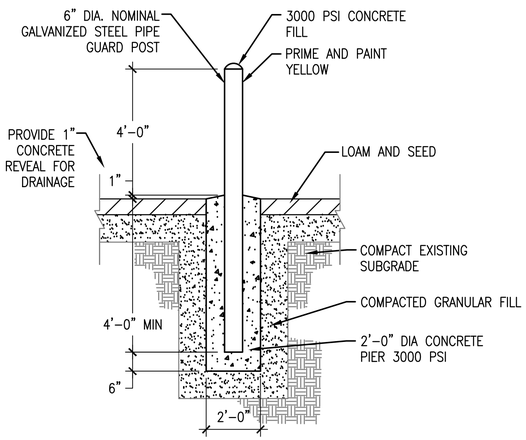
NAVFAC DRAWING NO.
12703847

SHEET 394 OF 506

C1.0 | 308-15-52

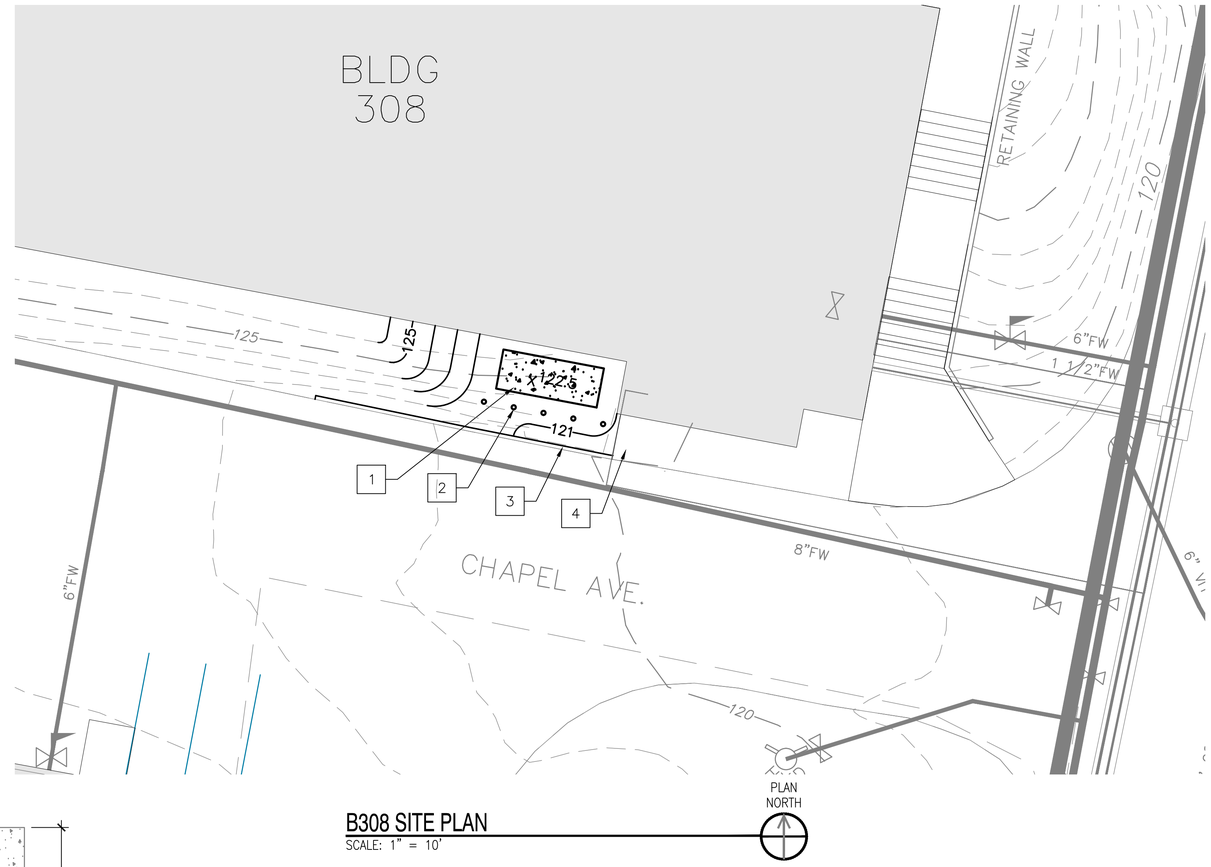
DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\02_R-22\DWG-CAD\DESIGN\A1066_2_R22_SITE.dwg LAYOUT NAME: C1.0 B308 DEMO PLOTTED: Friday, August 07, 2015 - 2:54pm USER: REP



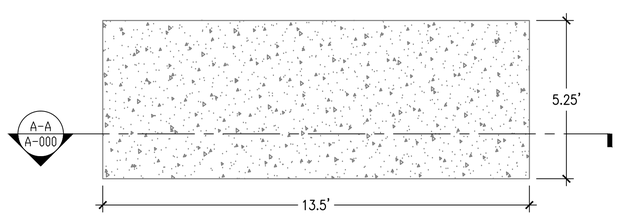
CONCRETE FILLED STEEL BOLLARD DETAIL (2)

NO SCALE



B308 SITE PLAN

SCALE: 1" = 10'

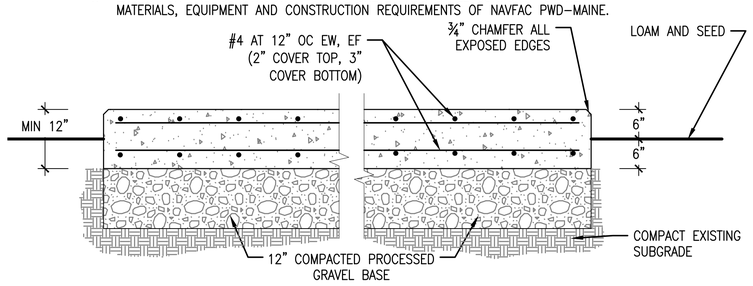


CONCRETE EQUIPMENT PAD DETAIL (1)

NO SCALE

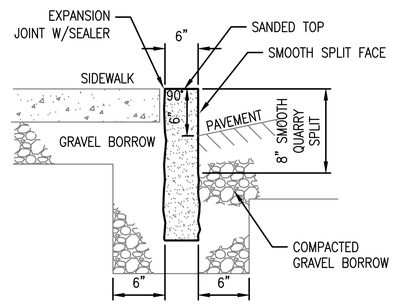
NOTES:

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

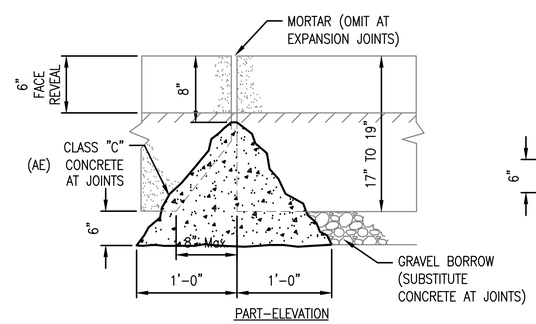


SECTION VIEW

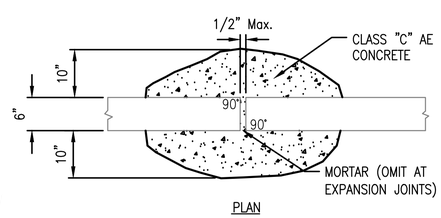
NO SCALE A-000 (A-A)



CROSS SECTION



PART-ELEVATION



PLAN

VERTICAL GRANITE CURB DETAIL (3)

NO SCALE

GENERAL SHEET NOTES

1. ALL WORK SHALL BE COORDINATED THROUGH THE PWD-MAINE CONSTRUCTION OFFICER.
2. VERIFY LOCATION AND DEPTH OF WATER MAIN PRIOR TO CONSTRUCTION ACTIVITIES. RELOCATE EQUIPMENT PAD AS NECESSARY TO AVOID INTERRUPTION TO EXISTING UTILITIES.
3. DEPTH OF EXISTING BUILDING FOOTINGS IS UNKNOWN. CONTRACTOR SHALL ENSURE ADEQUATE COVER IS MAINTAINED ABOVE BUILDING FOOTINGS AS DETERMINED BY NAVFAC STRUCTURAL ENGINEERING DEPARTMENT.

NEW WORK KEYNOTES

1. CONSTRUCT CONCRETE EQUIPMENT PAD.
2. CONSTRUCT 6" CONCRETE FILLED STEEL BOLLARDS AROUND EQUIPMENT PAD. (TYP. OF 5) BOLLARDS SHALL BE EVENLY SPACED, 4' O.C., AND PLACED AS TO NOT INTERFERE WITH EQUIPMENT ACCESS OR OPERATION.
3. CONSTRUCT 40' VERTICAL GRANITE CURB. MATCH EXISTING.
4. REPAIR CONCRETE SIDEWALK TO EXISTING CONDITION.

GRAPHIC SCALE

1" = 10' 10 5 0 10 20 30 scale feet

CHECK GRAPHIC SCALE BEFORE USING

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

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

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

B308 SITE PLAN

EPROJECT NO.: 1350913

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

NAVFAC DRAWING NO. 12703848

SHEET 395 OF 506

C2.0 | 308-15-53

DRAWFORM REVISION: 10 OCTOBER 2014

FILE NAME: J:\A\A1066 AEC Subconsulting Support\02_R-22\DWG-CAD\DESIGN\A1066_2_R22_SITE.dwg LAYOUT NAME: C2.0 B308 SITE PLOTTED: Friday, August 07, 2015 - 2:54pm USER: REP

HVAC ABBREVIATIONS

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

PIPING LEGEND

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

FLOW DIAGRAM & CONTROL DIAGRAM EQUIP. SYMBOLS

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

HVAC SYSTEM TAGS

CH 1 — CHILLER

J 1 — JACE BOX

CALL OUT SYMBOLS

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

EQUIPMENT TAG SYMBOLS & ABBREVIATIONS

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

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

AIR SYSTEM SPECIFIC ABBREVIATIONS

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

HYDRONIC SYSTEM SPECIFIC ABBREVIATIONS

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

HVAC GENERAL NOTES

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

SCHEDULE OF DRAWINGS

DWG#	DESCRIPTION
M1.0	BUILDING 308 HVAC LEGEND
MD2.0	BUILDING 308 HVAC FIRST FLOOR DEMOLITION PLAN
M2.0	BUILDING 308 HVAC FIRST FLOOR PLAN
M3.0	BUILDING 308 HVAC CONTROLS
M3.1	BUILDING 308 HVAC CONTROLS
M3.2	BUILDING 308 HVAC CONTROLS
M4.0	BUILDING 308 HVAC SCHEDULES AND DETAILS

SYM	DESCRIPTION	DATE	APPR
4	100% SUBMISSION	08/07/2015	DM
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ACTIVITY

SATISFACTORY TO DATE

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PM/DM PETER STOCKLESS

BRANCH MANAGER BRUCE LITALIEN

FEAD/PM&E AMIN BAHROUR PM&E

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

FY 16 ENERGY PROJECT
TASK 1–B–R–22

BUILDING 308 HVAC LEGEND

EPROJECT NO.: 1350913

CONSTR. CONTR. NO. N40085–XX–C–XXXX

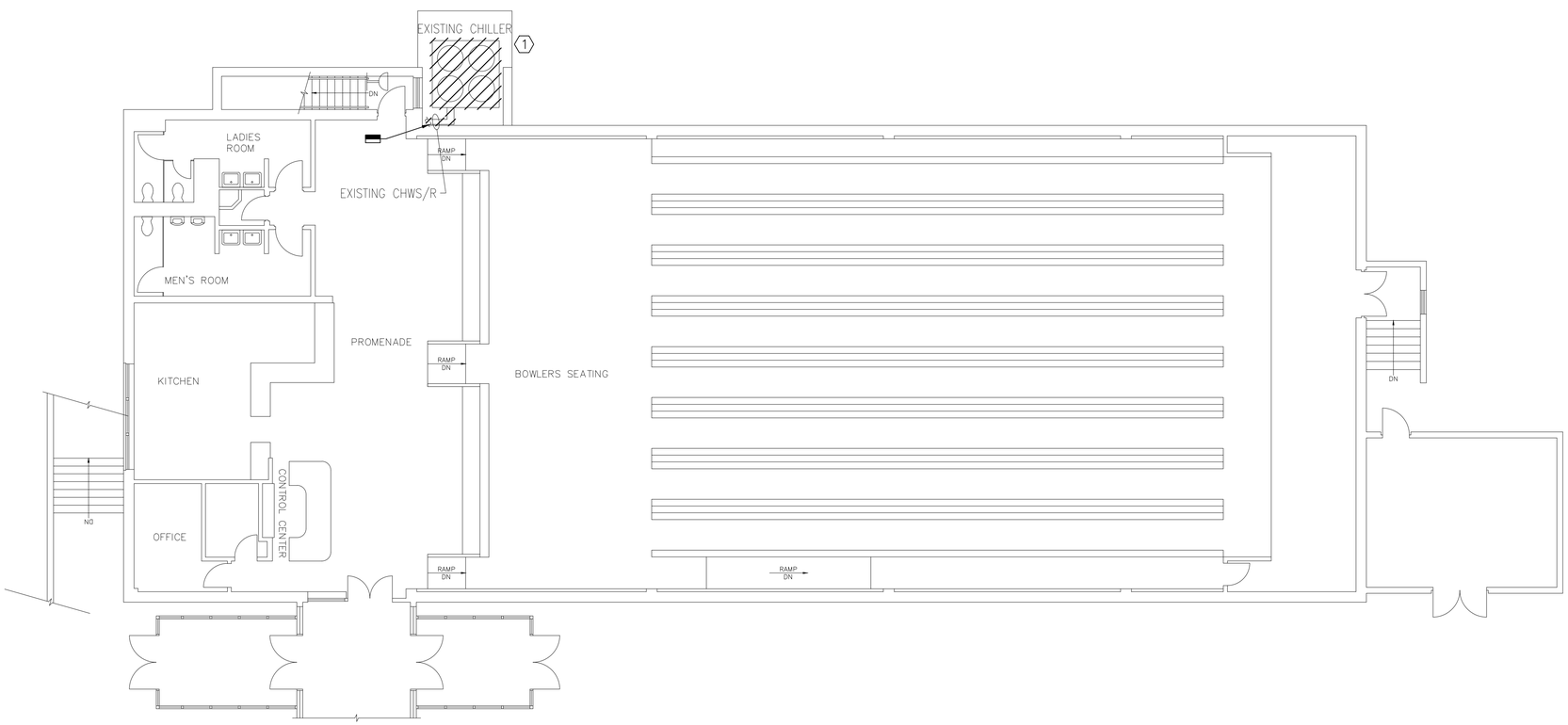
NAVFAC DRAWING NO. 12703849

SHEET 396 OF 506

M1.0 | 308-15-54

DRAWFORM REVISION: 10 OCTOBER 2014

BASEMENT FLOOR PLAN



BUILDING 308 HVAC FIRST FLOOR DEMOLITION PLAN

1/8"=1'-0"

PLAN NORTH

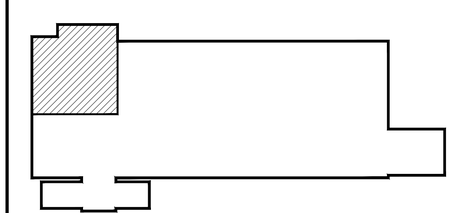
GENERAL SHEET NOTES

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. EXISTING CHILLER AND ASSOCIATED CHWS/R PIPES TO BE REMOVED UP TO POINT OF DEMOLITION AS INDICATED ON THE DRAWING. REFER TO CIVIL DRAWINGS FOR DEMOLITION OF RETAINING WALL AND CONCRETE PAD.

KEY PLAN



GRAPHIC SCALE

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

STM	DESCRIPTION	DATE	APPR
4	100% SUBMISSION	08/07/2015	DM
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23 A WATTON AVE, STE 2024
BERWYN, PA 19312-1000
610-251-9424
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FY 16 ENERGY PROJECT
TASK 1-B-R-22

BUILDING 308 HVAC FIRST FLOOR DEMOLITION PLAN

EPROJECT NO.: 1350913

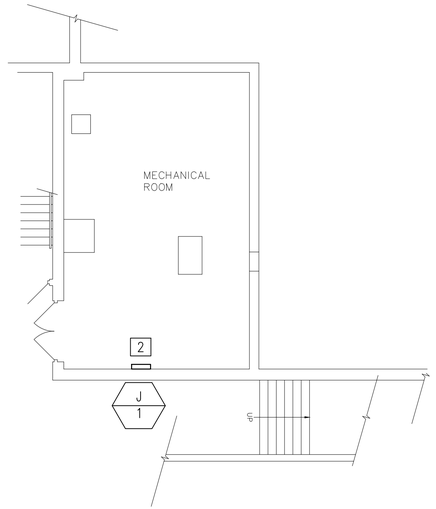
CONSTR. CONTR. NO.
N40085-XX-C-XXXX

NAVFAC DRAWING NO.
12703850

SHEET 397 OF 506

MD2.0 308-15-55

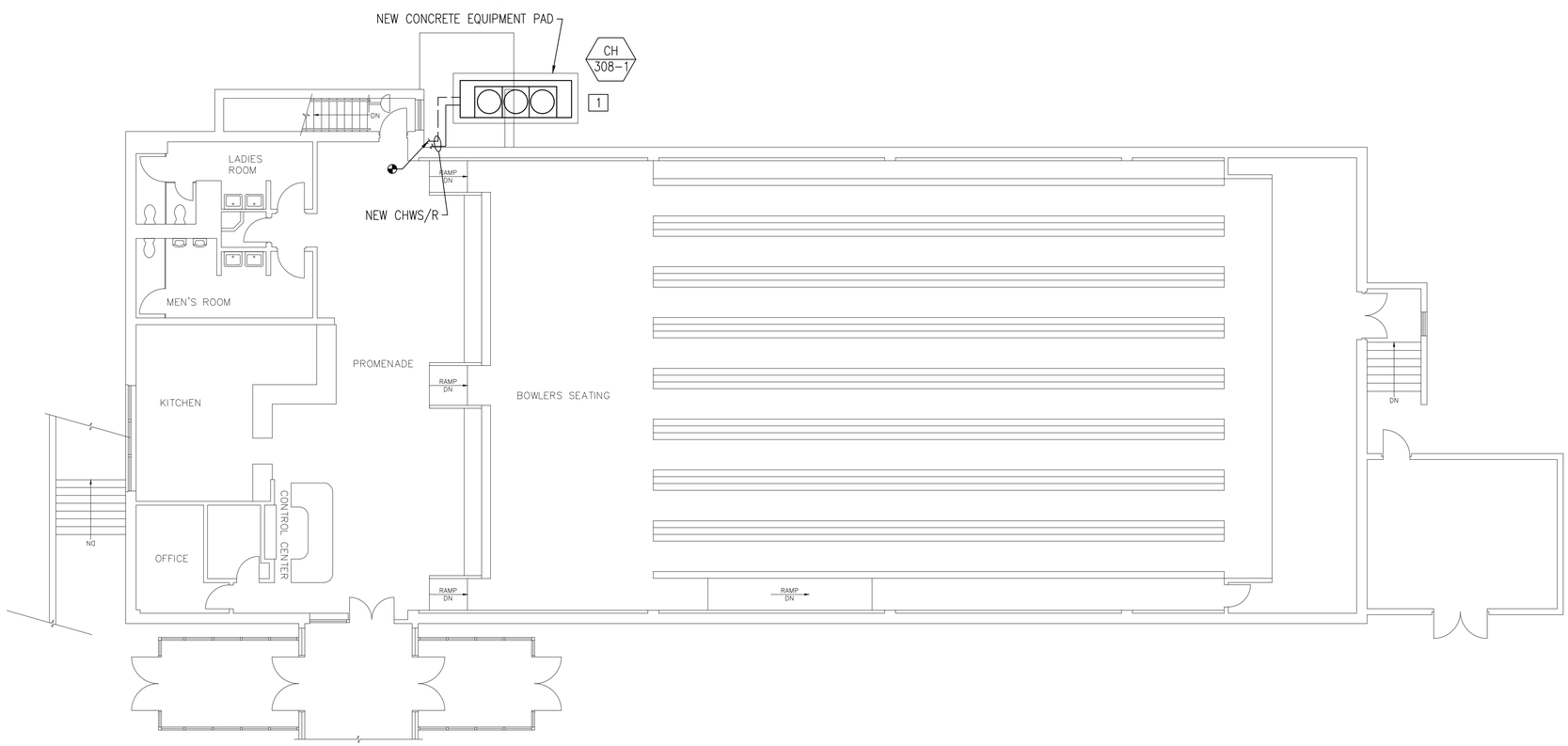
DRAWFORM REVISION: 10 OCTOBER 2014



BUILDING 308 HVAC PARTIAL BASEMENT FLOOR PLAN

1/8"=1'-0"

PLAN NORTH



BUILDING 308 HVAC FIRST FLOOR PLAN

1/8"=1'-0"

PLAN NORTH

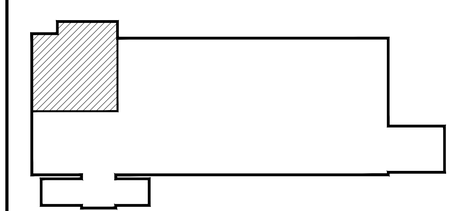
GENERAL SHEET NOTES

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

NEW WORK KEYNOTES

1. FURNISH AND INSTALL NEW CHILLER AND CONNECT CHWS/R PIPING TO EXISTING SYSTEM. NEW CHILLER TO BE PLACED ON NEW CONCRETE PAD. REFER TO CIVIL DRAWINGS FOR REMOVAL OF RETAINING WALL AND EXTENSION OF CONCRETE PAD.
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

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

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FEAD/PM&E AMIN BAHROUR PM&E

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PORTSMOUTH NAVAL SHIPYARD

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NAVAL SHIPYARD – PORTSMOUTH, NH
KITTERY, MAINE

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

BUILDING 308 HVAC FIRST FLOOR PLAN

EPROJECT NO.: 1350913

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

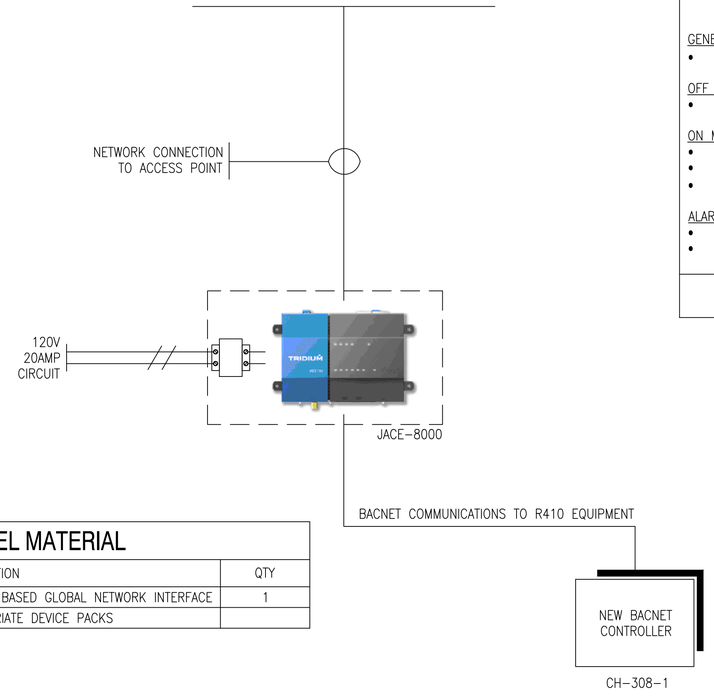
NAVFAC DRAWING NO. 12703851

SHEET 398 OF 506

M2.0 | 308-15-56

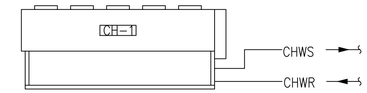
DRAWFORM REVISION: 10 OCTOBER 2014

PORTSMOUTH NAVAL SHIPYARD (BUILDING 308_BOWLING ALLEY)
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	



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

OFF MODE:
- PACKAGED CHILLER IS DE-ENERGIZED

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

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

PACKAGED CHILLER SEQUENCE OF OPERATION

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No. 12370
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PM/DM PETER STOCKLESS
BRANCH MANAGER BRUCE LITALIEN
FEAD/PM&E AMIN BAHROUR PM&E
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PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

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

BUILDING 308 HVAC CONTROLS

EPROJECT NO.: 1350913
CONSTR. CONTR. NO. N40085-XX-C-XXXX
NAVFAC DRAWING NO. 12703852
SHEET 399 OF 506

M3.0 | 308-15-57

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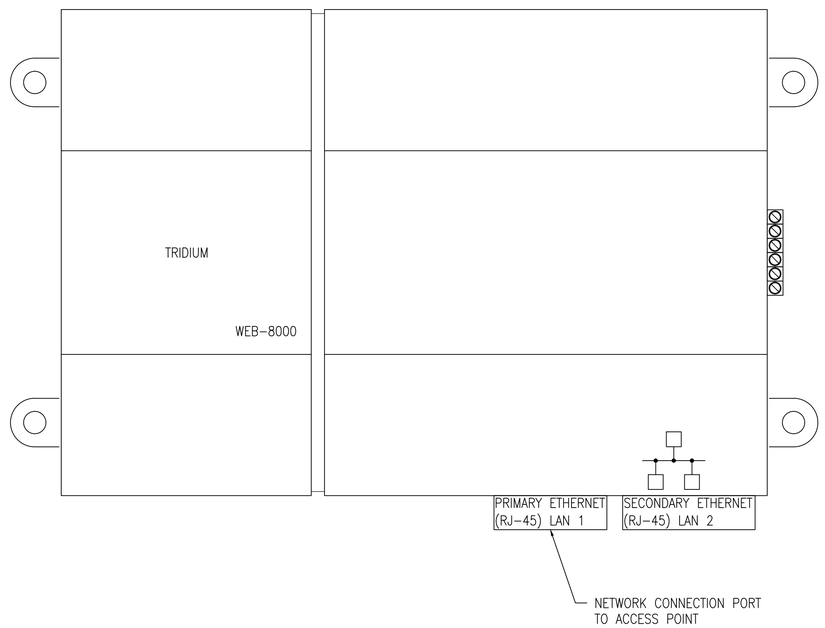

ETHERNET CONNECTION TO RF ACCESS POINT

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FIRE PROTECTION	X		

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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. 12703853
SHEET 400 OF 506
M3.1 308-15-58

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