

GENERAL NOTES

- THE SUBMISSION OF A BID BY THE CONTRACTOR IS NOTIFICATION THAT THE CONTRACTOR HAS TOTALLY FAMILIARIZED HIMSELF WITH THE CONTRACT DOCUMENTS AND EXISTING SITE CONDITIONS AND HAS AGREED TO PROVIDE THE NECESSARY LABOR AND MATERIAL FOR THE COMPLETE INSTALLATION OF EACH SYSTEM IN ACCORDANCE WITH THE UNIFORM FACILITY CRITERIA.
- THESE DRAWINGS ARE PRESENTED TO THE CONTRACTOR WITH THE UNDERSTANDING THAT THE CONTRACTOR IS AN EXPERT AND COMPETENT IN THE PREPARATION OF CONTRACT BID PRICES ON THE BASIS OF INFORMATION SUCH AS IS CONTAINED IN THESE DOCUMENTS. IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS TO CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION AND IN COMPLETE CONFORMANCE WITH ALL APPLICABLE CODES, RULES, AND REGULATIONS. INCLUDE MINOR ITEMS NOT USUALLY SHOWN OR SPECIFIED, BUT MANIFESTLY NECESSARY FOR THE INSTALLATION AND OPERATION OF THE VARIOUS SYSTEMS IN THE WORK AND IN THE PROPOSAL THE SAME AS IF SPECIFIED OR SHOWN ON THE DRAWINGS. IF ANY DEPARTURES FROM THE DRAWINGS ARE DEEMED NECESSARY, SUBMIT DETAILS OF SUCH DEPARTURES AND THE REASONS THEREFORE TO THE CONTRACT OFFICER FOR REVIEW.
- VISIT THE SITE AND VERIFY ALL DIMENSIONS IN THE FIELD, AND ADVISE THE CONTRACTING OFFICER OF ANY DISCREPANCIES.
- THE DRAWINGS INDICATE ARRANGEMENTS AND APPROXIMATE SIZES AND RELATIVE LOCATIONS OF PRINCIPAL APPARATUS, EQUIPMENT, DEVICES, AND SERVICES TO BE PROVIDED. DRAWINGS ARE DIAGRAMMATIC AND ARE A GRAPHIC REPRESENTATION OF CONTRACT REQUIREMENTS.
- PROVIDE ALL EQUIPMENT IN STRICT COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
- PROVIDE LABOR TO RECEIVE, UNLOAD, STORE, PROTECT, AND TRANSFER TO POINT OF INSTALLATION FOR ALL FURNISHED ITEMS.
- RESTORE AND RETURN EXISTING SYSTEMS, DEVICES, FINISHES, ETC. DAMAGED OR ALTERED BY WORK TO PREVIOUS OPERATION. RESTORE AND RECONNECT EXISTING SYSTEMS AND SERVICES THAT ARE TEMPORARILY DISCONNECTED BUT ARE TO REMAIN IN USE.
- OBTAIN THE SERVICES OF AN INDEPENDENT AABC OR NEBB CERTIFIED BALANCING CONTRACTOR TO ADJUST EQUIPMENT TO ACHIEVE DESIGN AIR AND WATER FLOWS. PRESENT ALL REQUIRED MEASURED PARAMETERS PRESENTED IN THE BALANCING REPORTS IN ORDER TO EVALUATE THE PERFORMANCE AND CAPACITY AT THE EQUIPMENT. REPLACE BELTS AND SHEAVES REPLACED AS REQUIRED FOR SPECIFIED OPERATION.
- PREPARE FULLY DIMENSIONED FIELD SHEET METAL INSTALLATION DRAWINGS.
- LEGALLY DISPOSE OF EXISTING WORK THAT IS REMOVED. ALL WORK DISPOSED OF BECOMES THE PROPERTY OF THE CONTRACTOR. PROMPTLY REMOVE FROM THE SITE.

- PROVIDED SYSTEMS MUST OPERATE UNDER ALL CONDITIONS OF LOAD WITHOUT SOUND OR VIBRATION THAT IS OBJECTIONABLE TO THE CONTRACTING OFFICER. CORRECT IN APPROVED MANNER OBJECTIONABLE SOUND OR VIBRATION CONDITIONS DUE TO WORKMANSHIP.
- CONTRACTOR MUST SIMILARLY NOTIFY CONTRACTING OFFICER OF COMPLETION OF ALL WORK, INDICATING THE CONTRACTOR IS READY FOR THE FINAL PUNCH LIST INSPECTION.
- UPON COMPLETION OF ALL UNFINISHED OR FAULTY WORK NOTED IN FINAL PUNCH LIST, THE CONTRACTOR MUST SUBMIT TO THE CONTRACTING OFFICER IN WRITING A LETTER OF COMPLETION CERTIFYING THAT ALL PUNCH LIST ITEMS HAVE BEEN COMPLETED AND ALL AS-BUILTS, MANUALS, ETC. HAVE BEEN SUBMITTED.
- THE TERM "PROVIDE" MEANS "FURNISH NEW AND INSTALL".
- PROVIDE THERMOSTATS, HUMIDISTATS AND SWITCHES AT 4'-0" MAX ABOVE FINISHED FLOOR (2'-10" MAX ABOVE FINISHED FLOOR IN SIDE REACH ACCESSIBLE LOCATIONS). UNLESS OTHERWISE SPECIFIED, PROVIDE CONTROL WIRING FROM THERMOSTAT, HUMIDISTAT OR SWITCH TO THE CORRESPONDING HVAC EQUIPMENT AND/OR CONTROL PANEL. PROVIDE ALL LOW VOLTAGE CONTROL WIRING IN A MANNER TO PREVENT PHYSICAL DAMAGE.
- UNLESS OTHERWISE SPECIFIED, PROVIDE ALL AUTOMATIC TEMPERATURE CONTROLS (ATC) INCLUDING WIRING, DDC SENSORS AND ALL MISCELLANEOUS APPURTENANCES TO MEET THE INTENT OF THESE DOCUMENTS.
- IT IS THE INTENT THAT ALL EXISTING PIPING, DUCTWORK, FIXTURES, AND OTHER EQUIPMENT AND MATERIALS THAT INTERFERE WITH THE ALTERED EXISTING BUILDING ARRANGEMENTS AND NEW SYSTEMS BE REMOVED, RELOCATED, REROUTED, OR ABANDONED. THE DRAWINGS GENERALLY INDICATE MAJOR ITEMS OF EXISTING MATERIALS AND EQUIPMENT THAT ARE TO BE REMOVED, RELOCATED, REROUTED, OR ABANDONED BY EACH TRADE. IT IS NOT POSSIBLE TO INDICATE ALL RELATED ACCESSORIES, SPECIALTIES, AND OTHER MINOR ITEMS. HOWEVER, THEIR REMOVAL, RELOCATION, REROUTING, OR ABANDONMENT MUST ALSO BE INCLUDED IN THIS CONTRACT.
- REMOVE BACK TO RISER OR MAIN AND PLUG OR CAP BEHIND FINISHED SURFACES THAT WILL BECOME ABANDONED DUE TO NEW WORK.
- UNLESS INDICATED OTHERWISE, ABANDONED EXISTING PIPING AND SIMILAR MATERIALS CONCEALED WITHIN FINAL CONSTRUCTION, SUCH AS WITHIN WALLS AND UNDER FLOORS ON GRADE, NEED NOT BE REMOVED, BUT NEED ONLY TO BE SHUTOFF AND PLUGGED BEHIND FINISHED SURFACES, PROVIDED THEY DO NOT INTERFERE WITH THE NEW SYSTEMS, EQUIPMENT, AND BUILDING ARRANGEMENTS.

CODES

DESIGN AND PERFORMANCE OF COMPONENTS AND METHODS SPECIFIED HEREIN MUST COMPLY WITH THE LATEST ADOPTED VERSIONS OF THE STATE CODES, STANDARDS, AND MANUFACTURER'S RECOMMENDATIONS OF THE ENTITIES LISTED BELOW BUT NOT LIMITED TO:

IBC	2015 INTERNATIONAL BUILDING CODE
IFGC	2015 INTERNATIONAL FUEL GAS CODE
IMC	2015 INTERNATIONAL MECHANICAL CODE
IECC	2015 INTERNATIONAL ENERGY CONSERVATION CODE
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
UL	UNDERWRITER'S LABORATORIES, INC.
FM	FACTORY MUTUAL
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
AMCA	AIR MOVING AND CONDITIONING ASSOCIATION
ARI	AMERICAN REFRIGERATION INSTITUTE
MSS	MANUFACTURER'S STANDARDIZATION SOCIETY OF THE VALVE AND FITTING INDUSTRY
UFC	DEPARTMENT OF DEFENSE UNIFIED FACILITIES CRITERIA INCLUDING SECTION 3-401-01

SYMBOL LIST

	DEMOLITION WORK
	EXISTING WORK
	NEW WORK
	POINT OF CONNECTION
	NEW-TO-EXISTING
	EXTENT OF DEMOLITION
	TO-EXISTING WORK TO REMAIN
	BREAK LINE (DOUBLE LINE DUCTWORK)
	BREAK LINE (SINGLE LINE)
	FLOW ARROW
	EQUIPMENT DESIGNATIONS (REFER TO SCHEDULES AND/OR SPECS)
	DUCTWORK SIZE (INSIDE DIMENSION IN INCHES)
	LOUVER W/CFM
	SMOKE DAMPER W/ ACCESS DOOR
	MOTOR OPERATED DAMPER W/ ACCESS DOOR
	VOLUME DAMPER
	GAS-FIRED UNIT HEATER
	BALL VALVE
	GATE VALVE
	CHECK VALVE
	THREE WAY CONTROL VALVE
	TWO WAY CONTROL VALVE
	STRAINER
	PIPE RISING
	PIPE DROPPING DOWN
	TEE OUTLET DOWN
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	UNION - SCREWED OR FLANGED
	THERMOSTAT
	DUCT MOUNTED SMOKE DETECTOR

ABBREVIATION

AD	AIR DRYER
AHU	AIR HANDLING UNIT
CBV	BALANCING VALVE
COMP	COMPRESSOR
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
DDC	DIRECT DIGITAL CONTROL
(E)	EXISTING
ECU	CONDENSING UNIT
FC	FLEX CONNECTION
MER	MECHANICAL EQUIPMENT ROOM
RM	ROOM
UH	UNIT HEATER

FILE NAME: P:\Projects\CHDC\CHDC1501-NAVFAC_Hanger_111\DESIGN\NAVFAC\Hanger_111\DWG\1501-M001.dwg LAYOUT NAME: M001 PLOTTED: Tuesday, April 26, 2016 9:13am USER: mmorcello

DATE	5/2/2016
DESCRIPTION	FINAL SUBMISSION
NO.	1
REV.	



the PROTECTION ENGINEERING GROUP
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APPROVED:
 FOR COMMANDER NAVFAC

SATISFACTORY TO:
 DES NM DRW KM CHK RB

BRANCH MANAGER
 CHIEF ENG/ARCH: Mark J. Airaghi, PE

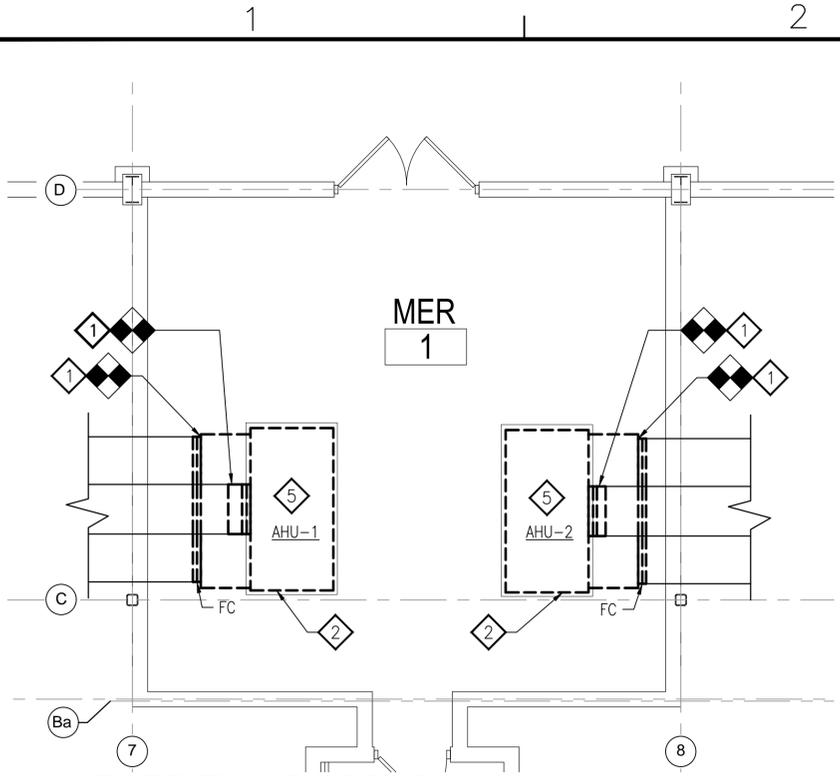
FIRE PROTECTION

DEPARTMENT OF THE NAVY
 NAVAL FACILITIES ENGINEERING COMMAND
 NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
 HAMPSON ROADS BPT
 VIRGINIA BEACH, VIRGINIA
 NAVAL AIR STATION OCEANA
 VIRGINIA BEACH, VIRGINIA
HANGAR 111 FIRE PROTECTION AND STRUCTURAL REPAIRS
 REFERENCE SHEET - MECHANICAL

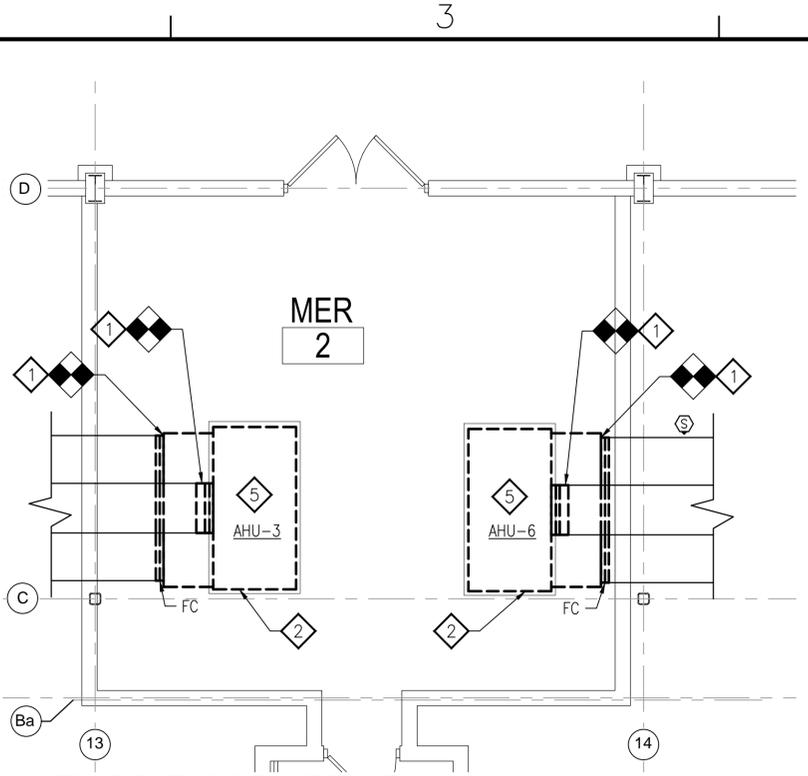
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 CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12716364
 SHEET 142 OF 170

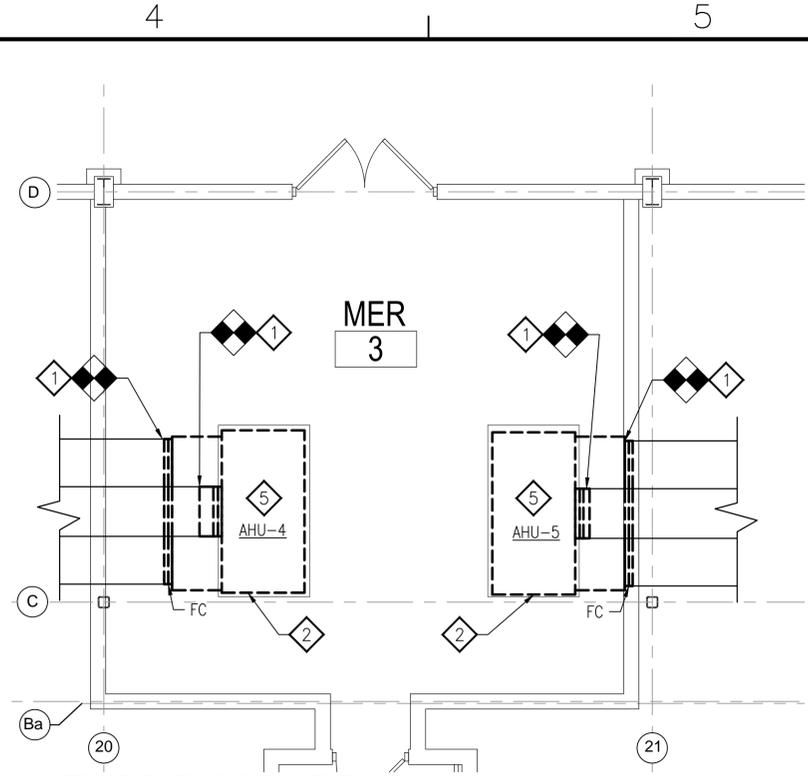
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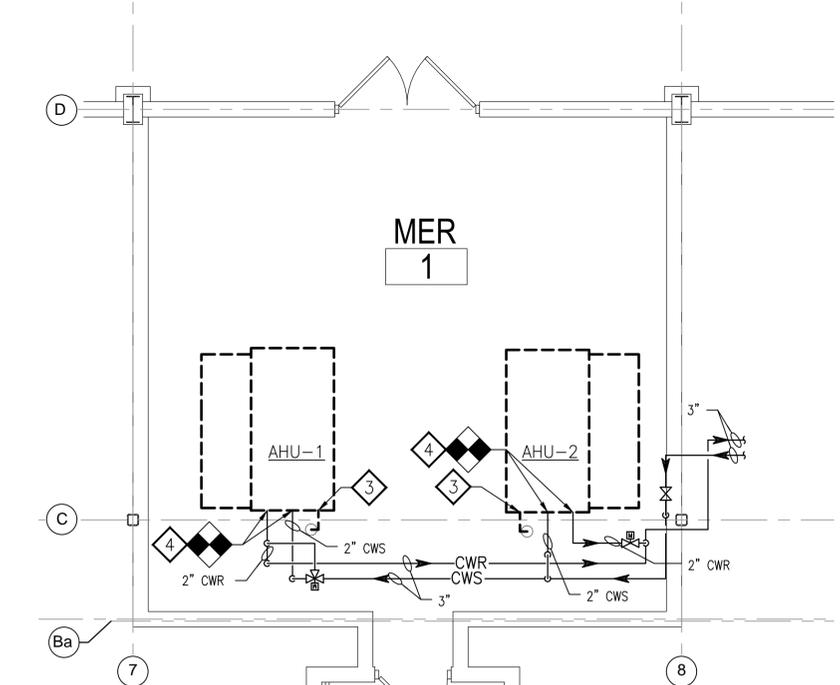
(C1) THIRD FLOOR AREA D
MER 1 DUCTWORK DEMOLITION PLAN
SCALE: 1/4" = 1'-0"
PROJECT NORTH



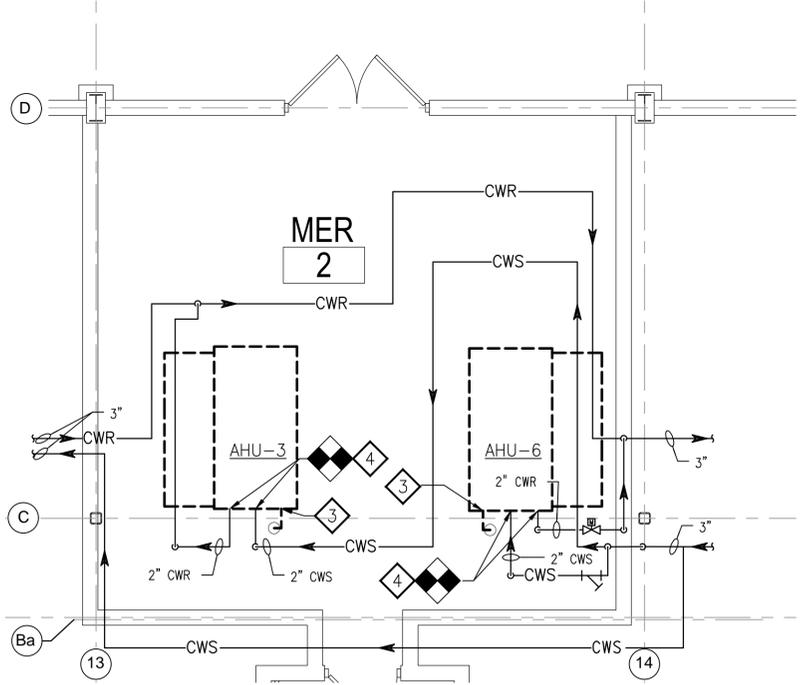
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MER 2 DUCTWORK DEMOLITION PLAN
SCALE: 1/4" = 1'-0"
PROJECT NORTH



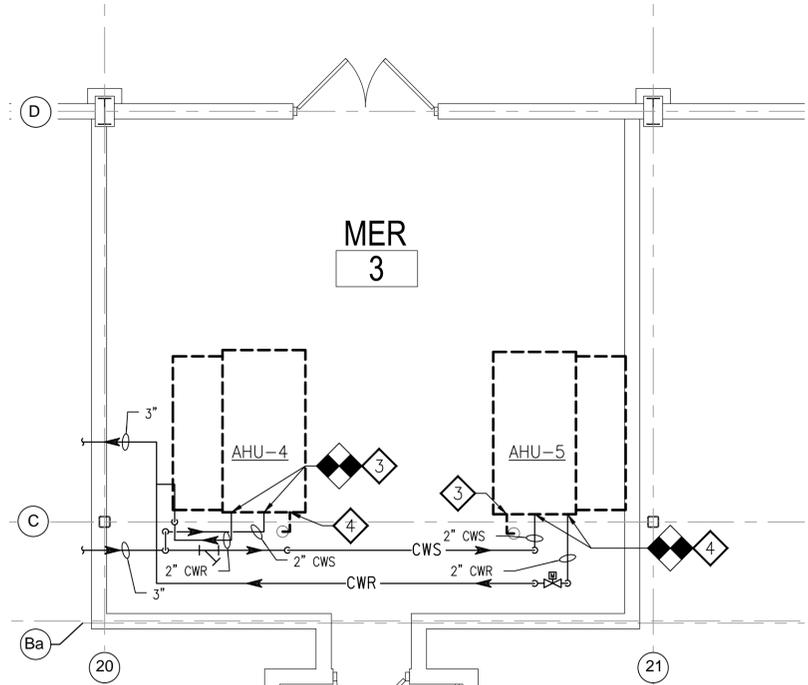
(C4) THIRD FLOOR AREA F
MER 3 DUCTWORK DEMOLITION PLAN
SCALE: 1/4" = 1'-0"
PROJECT NORTH



(A1) THIRD FLOOR AREA D
MER 1 PIPING DEMOLITION PLAN
SCALE: 1/4" = 1'-0"
PROJECT NORTH



(A2) THIRD FLOOR AREA E
MER 2 PIPING DEMOLITION PLAN
SCALE: 1/4" = 1'-0"
PROJECT NORTH



(A4) THIRD FLOOR AREA F
MER 3 PIPING DEMOLITION PLAN
SCALE: 1/4" = 1'-0"
PROJECT NORTH

KEY NOTES

- 1 DEMOLISH AND REMOVE EXISTING AHU DUCTWORK CONNECTIONS UP TO LOCATION INDICATED ON FLOOR PLANS.
- 2 DEMOLISH AND REMOVE EXISTING AHU THROUGH ACCESS DOOR IN MER LOCATED AT THE THIRD FLOOR LEVEL IN HANGAR AREA. PROVIDE A LIFT OR SIMILAR APPARATUS FOR REMOVAL OF EQUIPMENT.
- 3 DEMOLISH AND REMOVE EXISTING CONDENSATE PIPING.

- 4 DISCONNECT EXISTING CHILLED WATER SUPPLY AND RETURN LINES TO REMAIN FROM AHU.
- 5 PRIOR TO DEMOLITION OF WORK CLEAN TEST AND ADJUST EXISTING AHU TO EXISTING CONDITIONS. SUBMIT AIR AND WATER BALANCING REPORT TO CONTRACTING OFFICER FOR REVIEW.

CAUTION: IF THIS PLAN IS A REDUCTION,
GRAPHIC SCALE MUST BE USED.
0 2' 4' 6' 8'
1" = 1'-0"

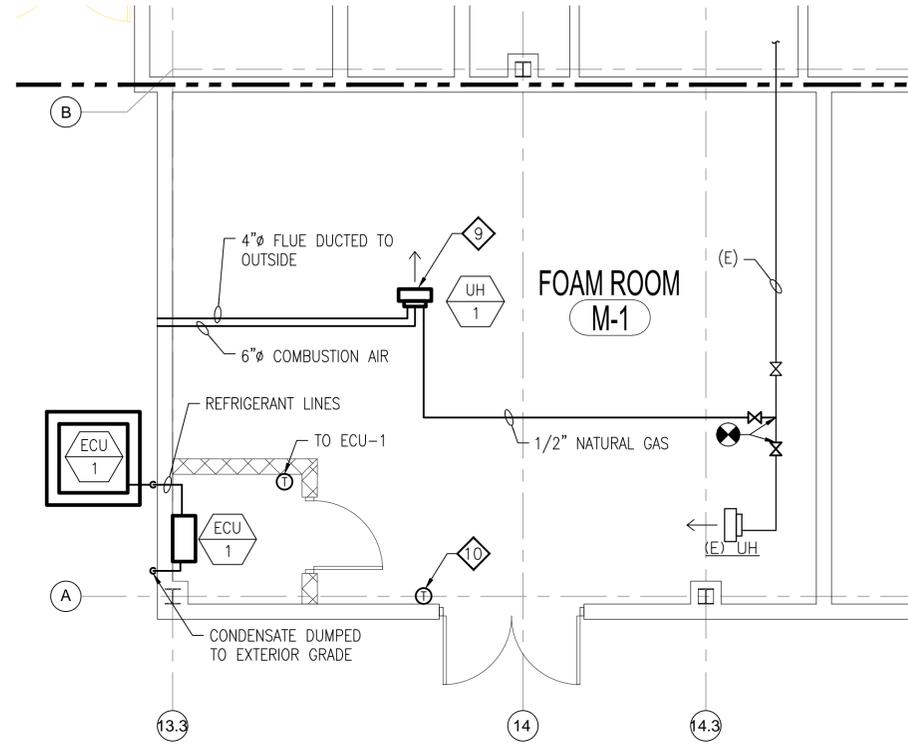
KEY PLAN

A	B	C
D	E	F

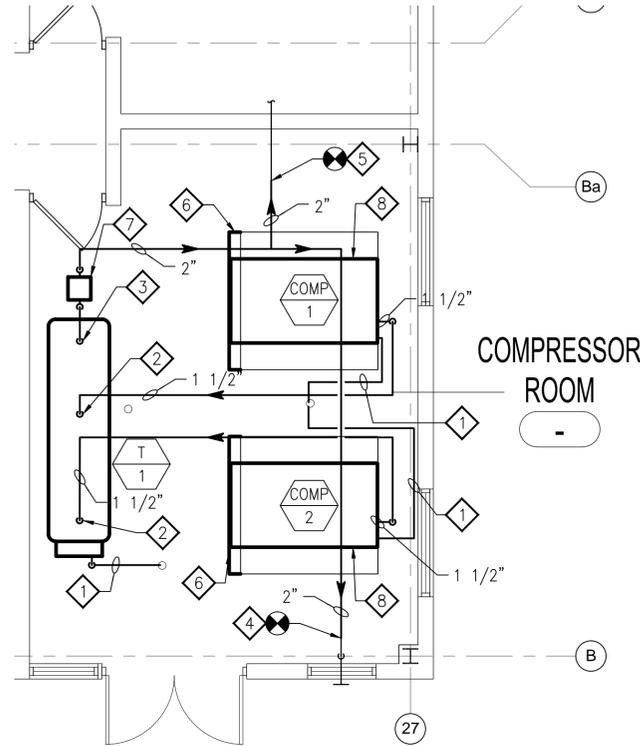
 	DATE: 5/2/2016 APPR: DESCRIPTION: FINAL SUBMISSION 1 SNV
 14585 Avon Parkway, Suite 150 703-488-9999 Chantilly, Virginia 20151 fax: 703-488-9994 www.PEGroup-nc.com	
PENNONI ASSOCIATES INC. 349 Southport Circle, Suite 100 Virginia Beach, Virginia 23452 T 757.497.7472 F 757.497.0250 A/E M/E	
APPROVED: FOR COMMANDER NAVFAC ACTIVITY SATISFACTORY TO: DES: NM DRW: KM CHK: RB PA/DM: KPL/IAS BRANCH MANAGER CHIEF ENG/ARCH: Mark J. Airaghi, PE FIRE PROTECTION	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC HAMPSON ROADS IRT NAVAL AIR STATION OCEANA VIRGINIA BEACH, VIRGINIA HANGAR 111 FIRE PROTECTION AND STRUCTURAL REPAIRS ENLARGED PLAN - MECH RMS - MECHANICAL DEMOLITION PLAN	
SCALE: 1/4" = 1'-0" EPROJECT NO.: 1372146 CONSTR. CONTR. NO.: NAVFAC DRAWING NO.: 12716366 SHEET 144 OF 170 MD402 <small>DRAWING REVISION: 10 MAY 2014</small>	

FILE NAME: P:\Projects\CHDC\CHDC1501-NAVFAC\Hangar 111\DESIGN\A\CHDC1501-NAVFAC.dwg LAYOUT NAME: MD402 PLOTTED: Tuesday, April 26, 2016 - 9:14am USER: mmccello

FILE NAME: C:\Users\lmarcello\appdata\local\Temp\AsPublish_L_153172\CH001501-1401.dwg LAYOUT NAME: M401 PLOTTED: Tuesday, April 26, 2016 - 9:14am USER: lmarcello



B1 FIRST FLOOR AREA E
FOAM ROOM NEW WORK PLAN
SCALE: 1/4" = 1'-0"



B2 FIRST FLOOR AREA F
COMPRESSOR ROOM NEW WORK PLAN
SCALE: 1/4" = 1'-0"



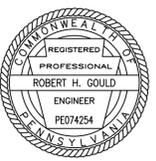
KEY NOTES

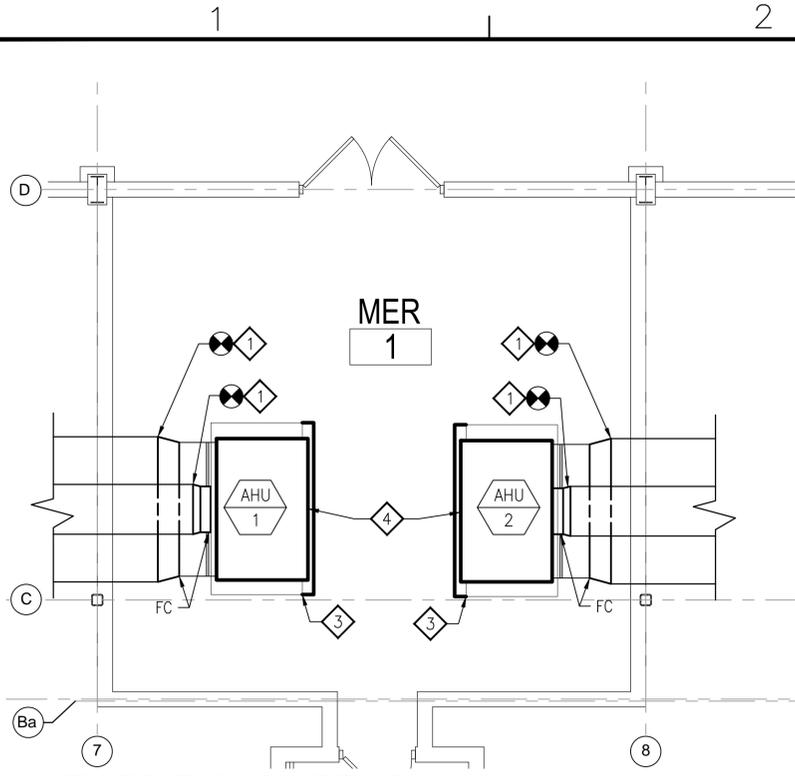
- 1 PROVIDE 3/8" CONDENSATE PIPING TO EXISTING FLOOR DRAIN. REFER TO DETAIL 2 ON M-503.
- 2 PROVIDE CONNECTION FROM AIR COMPRESSOR TO 500 GALLON AIR STORAGE TANK.
- 3 PROVIDE CONNECTION FROM 500 GALLON STORAGE TANK TO COMPRESSED AIR SUPPLY PIPING.
- 4 PROVIDE CONNECTION TO EXISTING OUTSIDE COMPRESSED AIR SUPPLY POINT.
- 5 PROVIDE CONNECTION TO EXISTING BUILDING COMPRESSED AIR SUPPLY PIPING SYSTEM.
- 6 EXTEND EXISTING 72x72x4 EQUIPMENT PADS BY 6 INCHES. COORDINATE WITH STRUCTURAL PLANS.
- 7 PROVIDE 2" COMPRESSED AIR PIPING CONNECTION FROM RECEIVER TANK TO EXTERNAL POINT OF USE 500 SCFM, MECHANICAL EXTRACTOR-DRYER. EXTRACTOR-DRYER MUST HAVE LIGHTWEIGHT ALUMINUM HOUSING AND STANDARD 5 MICRON RATING. REFER TO DETAIL 1 ON M-503.
- 8 REFER TO DETAIL 1 ON M-502 FOR SKID MOUNTED COMPRESSOR DIMENSIONS.
- 9 REFER TO DETAIL 3 ON M-503 FOR GAS UNIT HEATER MOUNTING DETAIL.
- 10 PROVIDE LOW TEMPERATURE ALARM TO DDC SYSTEM.

CAUTION: IF THIS PLAN IS A REDUCTION,
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0 2' 4' 6' 8'
1/4" = 1'-0"

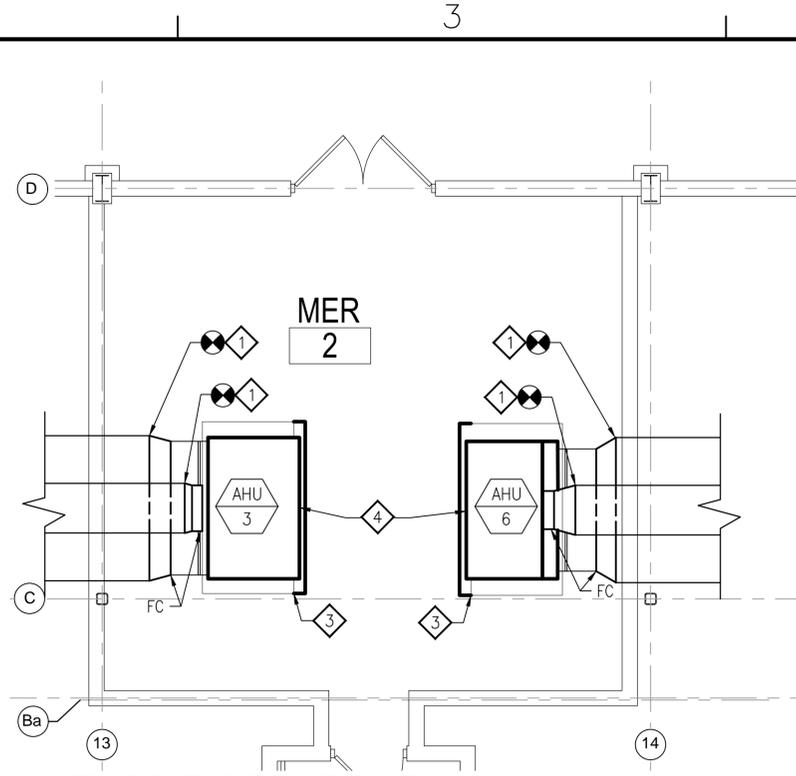
KEY PLAN

A	B	C
D	E	F

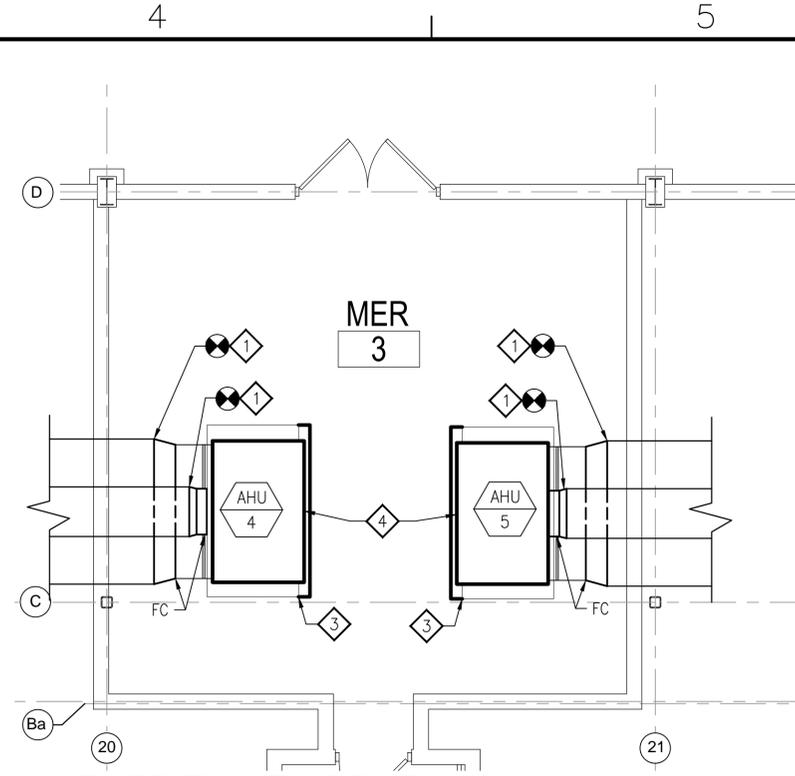
	DATE: 5/2/2016 APPR:
	DESCRIPTION: FINAL SUBMISSION 1
 	
the PROTECTION ENGINEERING GROUP <small>14585 Avon Parkway, Suite 150 703-488-8994 Chantilly, Virginia 20151 fax: 703-488-8994 www.PEGroup-nc.com</small>	
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APPROVED:	
FOR COMMANDER NAVFAC	
ACTIVITY:	
SATISFACTORY TO:	
DES:	NM DRW KM CHK RB
PA/DM:	KPL/IAS
BRANCH MANAGER:	
CHIEF ENG/ARCH: Mark J. Airaghi, PE	
FIRE PROTECTION:	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC HAMPDEN ROADS BPT VIRGINIA BEACH, VIRGINIA	VIRGINIA BEACH, VIRGINIA HANGAR 111 FIRE PROTECTION AND STRUCTURAL REPAIRS ENLARGED PLAN - 1RST FLOOR - MECHANICAL NEW WORK PLAN
SCALE:	1/4" = 1'-0"
PROJECT NO.:	1372146
CONSTR. CONTR. NO.:	
NAVFAC DRAWING NO.:	12716367
SHEET:	145 OF 170
M-401	
<small>DRAWING REVISION: 10 MAY 2014</small>	



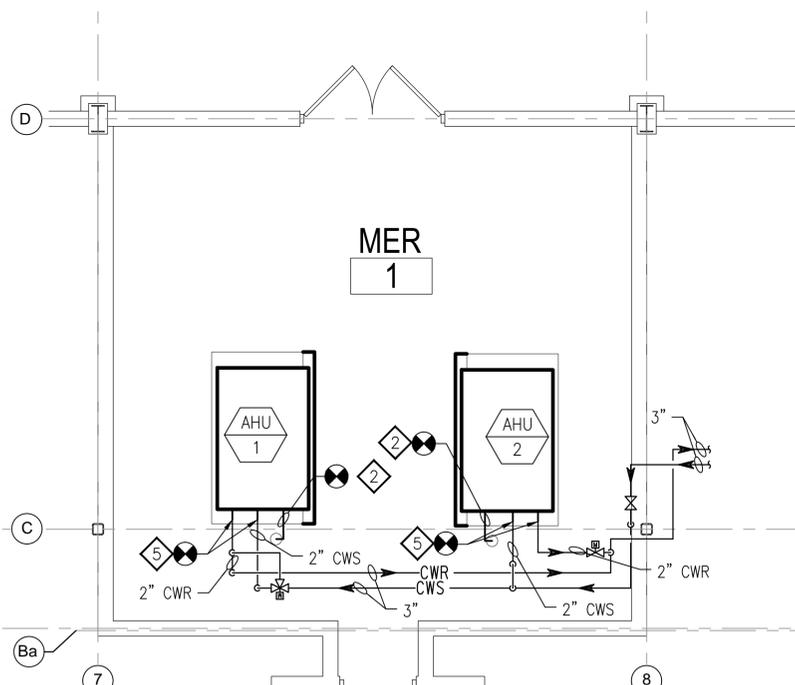
C1 THIRD FLOOR AREA D
MER 1 DUCTWORK NEW WORK PLAN
SCALE: 1/4" = 1'-0"
PROJECT NORTH



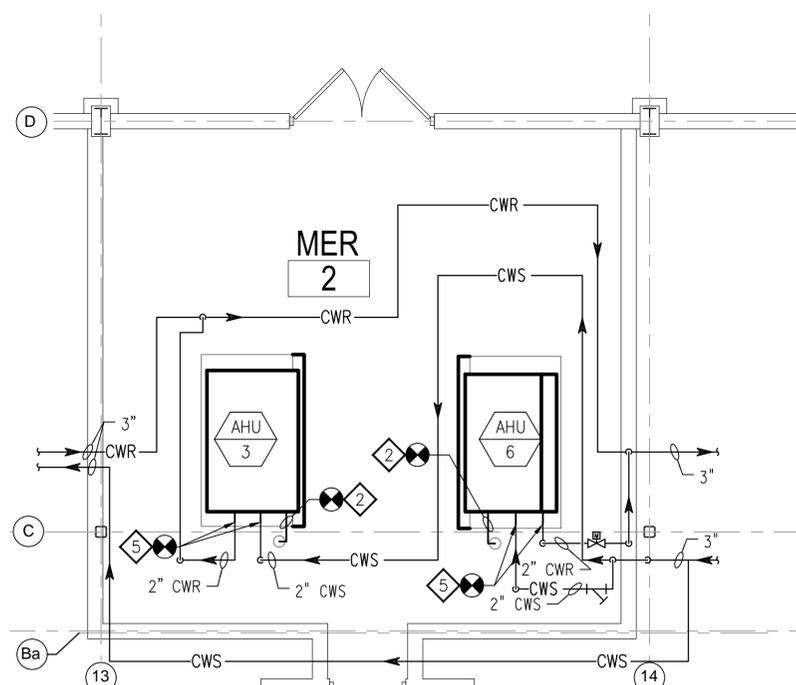
C2 THIRD FLOOR AREA E
MER 2 DUCTWORK NEW WORK PLAN
SCALE: 1/4" = 1'-0"
PROJECT NORTH



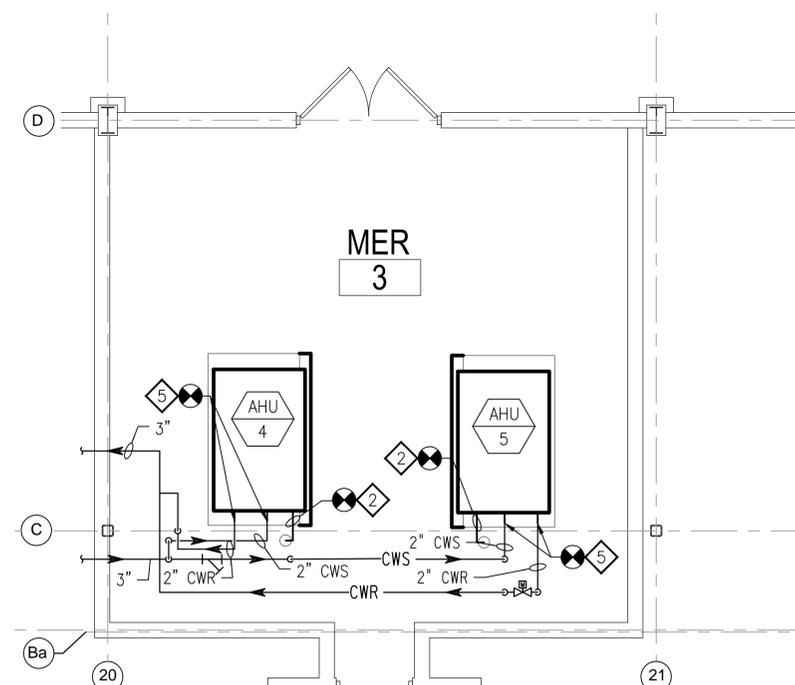
C4 THIRD FLOOR AREA F
MER 3 DUCTWORK NEW WORK PLAN
SCALE: 1/4" = 1'-0"
PROJECT NORTH



A1 THIRD FLOOR AREA D
MER 1 PIPING NEW WORK PLAN
SCALE: 1/4" = 1'-0"
PROJECT NORTH



A2 THIRD FLOOR AREA E
MER 2 PIPING NEW WORK PLAN
SCALE: 1/4" = 1'-0"
PROJECT NORTH



A4 THIRD FLOOR AREA F
MER 3 PIPING NEW WORK PLAN
SCALE: 1/4" = 1'-0"
PROJECT NORTH

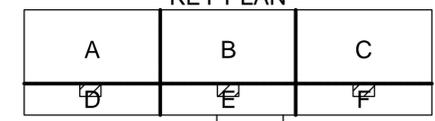
CAUTION: IF THIS PLAN IS A REDUCTION,
GRAPHIC SCALE MUST BE USED.
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1/4" = 1'-0"

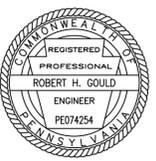
KEY NOTES

- 1 PROVIDE 15" DUCT TRANSITIONS FROM CONNECTION TO UNIT TO EXISTING DUCTWORK.
- 2 PROVIDE 1 1/4" CONDENSATE PIPING TO EXISTING FLOOR DRAIN. REFER TO DETAIL 2 ON M-501.
- 3 EXTEND EXISTING 48x90x4 INCH CONCRETE EQUIPMENT PAD BY 6 INCHES. COORDINATE WITH STRUCTURAL PLANS.

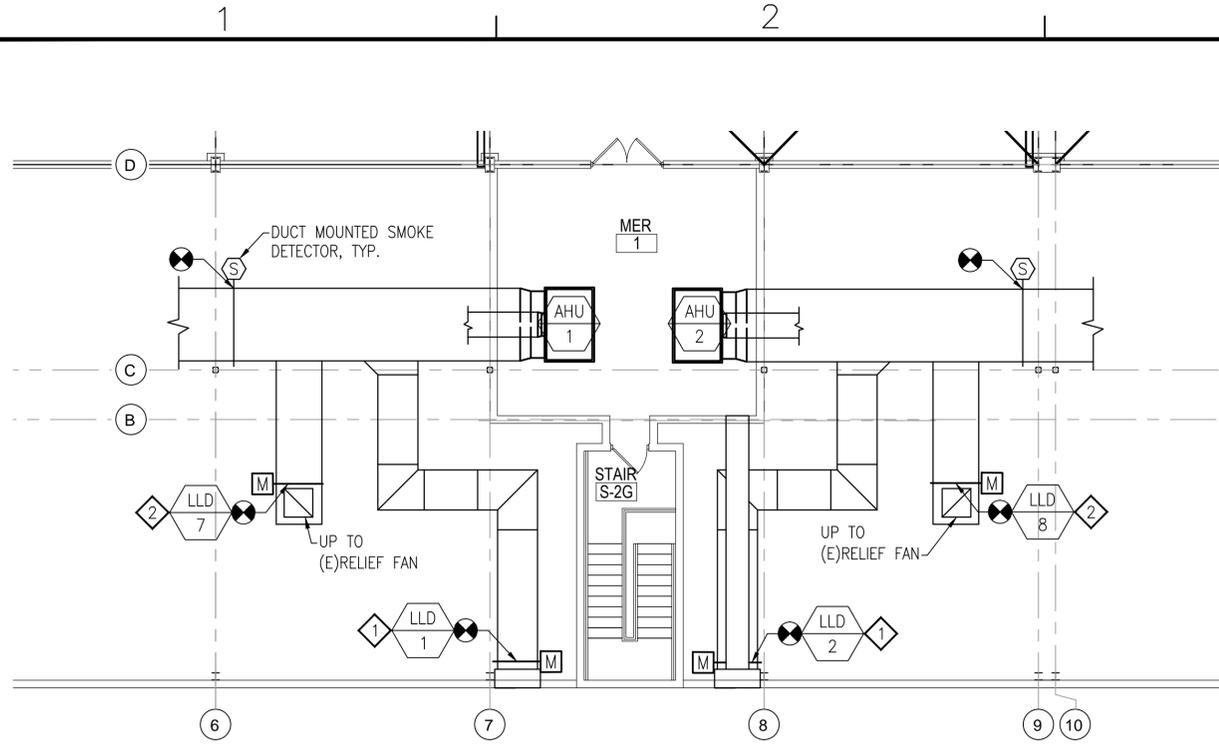
- 4 PROVIDE AHU INTO THIRD LEVEL MER THROUGH ACCESS DOORS IN HANGAR BAY VIA A LIFT OR SIMILAR APPARATUS.
- 5 REFER TO DETAIL 1 ON M-501 FOR CHILLED WATER COIL CONNECTION.

KEY PLAN

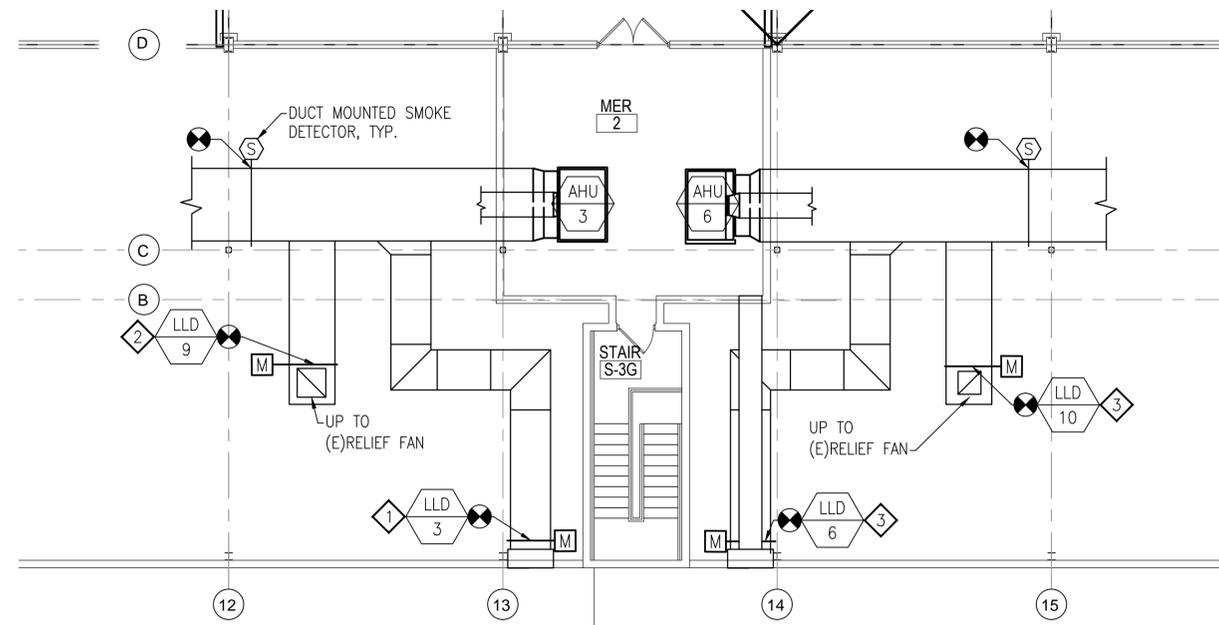


DATE: 5/2/2016	APPR:
DESCRIPTION: 1 FINAL SUBMISSION	DATE:
SYN	DESCRIPTION:
	
	
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APPROVED:	
FOR COMMANDER NAVFAC	
ACTIVITY:	
SATISFACTORY TO:	
DES: NM DRW: KM CHK: RB	
PA/DM: KPL/IAS	
BRANCH MANAGER:	
CHIEF ENG/ARCH: Mark J. Airaghi, PE	
FIRE PROTECTION:	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC HAMPSON ROADS IFT NAVFAC OCEANA VIRGINIA BEACH, VIRGINIA	HANGAR 111 FIRE PROTECTION AND STRUCTURAL REPAIRS ENLARGED PLAN - MECH RIMS MECHANICAL NEW WORK PLAN
SCALE: 1/4" = 1'-0"	
EPROJECT NO.: 1372146	
CONSTR. CONTR. NO.:	
NAVFAC DRAWING NO. 12716368	
SHEET 146 OF 170	
M-402	
<small>DRAWING REVISION: 10 MAY 2014</small>	

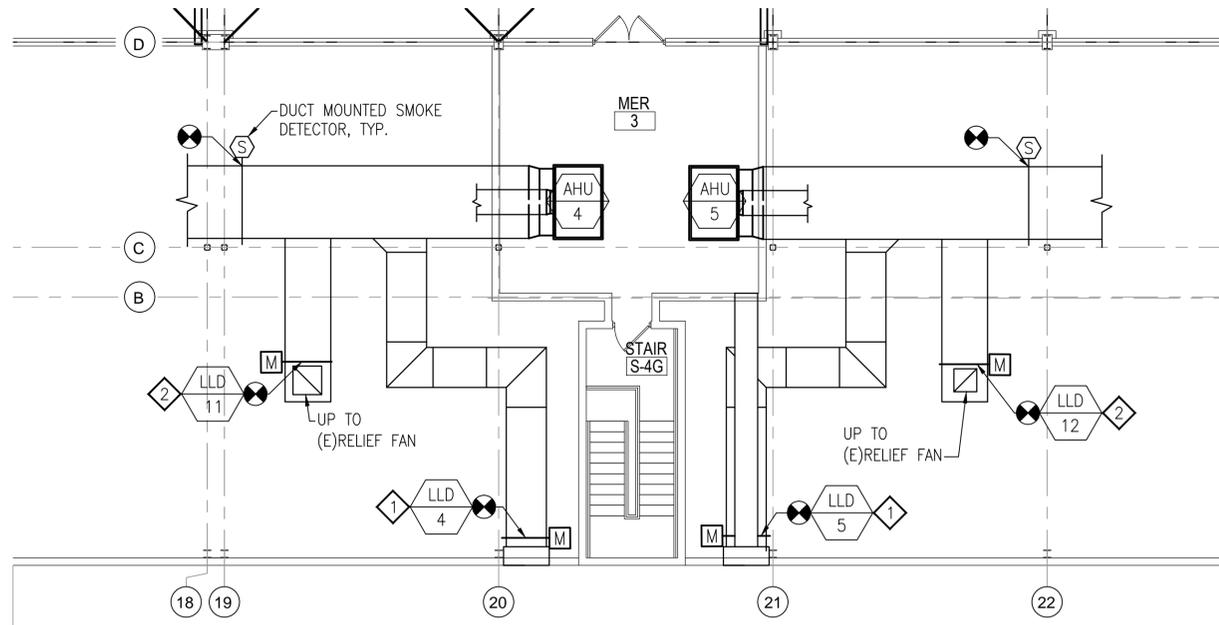
FILE NAME: P:\Projects\CHDC\0401501-NAVFAC\hangar 111\DESIGN\NAVFAC\hangar 111\DESIGN\NAVFAC\0401501-NAVFAC.dwg LAYOUT NAME: M402 PLOTTED: Tuesday, April 26, 2016 9:14am USER: mmrcalld



C1 THIRD FLOOR AREA D MER 1 DUCTWORK NEW WORK PLAN
SCALE: 1/8" = 1'-0"



C3 THIRD FLOOR AREA E MER 2 DUCTWORK NEW WORK PLAN
SCALE: 1/8" = 1'-0"



A1 THIRD FLOOR AREA F MER 3 DUCTWORK NEW WORK PLAN
SCALE: 1/8" = 1'-0"



KEY NOTES

- 1 PROVIDE LOW LEAKAGE AIR DAMPER AT BRANCH CONNECTION TO 42x20 OUTSIDE AIR DUCT, FROM INTERIOR OF FACILITY. PROVIDE A LIFT OR SIMILAR APPARATUS FOR PLENUM SPACE ACCESS.
- 2 PROVIDE LOW LEAKAGE AIR DAMPER AT BRANCH CONNECTION TO 48x16 RELIEF AIR DUCT, FROM INTERIOR OF FACILITY. PROVIDE A LIFT OR SIMILAR APPARATUS FOR PLENUM SPACE ACCESS.
- 3 PROVIDE LOW LEAKAGE AIR DAMPER AT BRANCH CONNECTION TO 40x16 OUTSIDE AIR/RELIEF AIR DUCT, FROM INTERIOR OF FACILITY. PROVIDE A LIFT OR SIMILAR APPARATUS FOR PLENUM SPACE ACCESS.

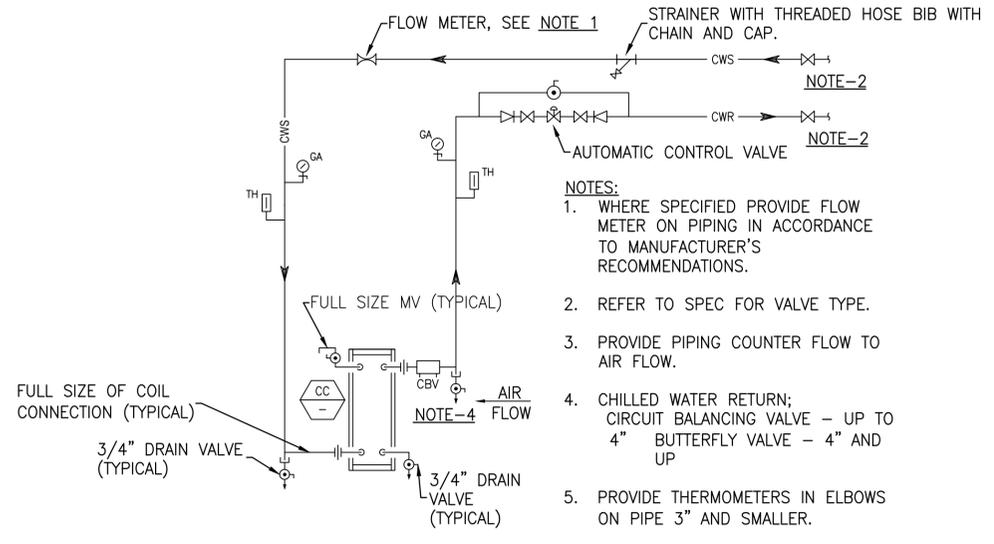
CAUTION: IF THIS PLAN IS A REDUCTION,
GRAPHIC SCALE MUST BE USED.
0 4' 8' 12' 16'
1/8" = 1'-0"

KEY PLAN

A	B	C
D	E	F

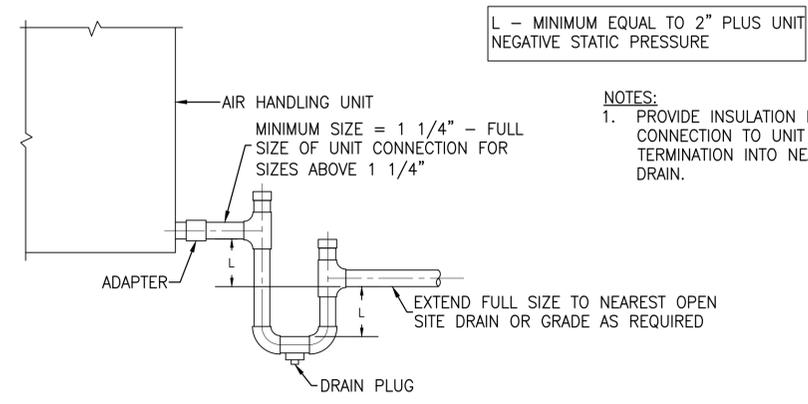
DATE 5/2/2016	APPR.
1	FINAL SUBMISSION
the PROTECTION ENGINEERING GROUP <small>14585 Avon Parkway, Suite 150 703-488-9991 Chantilly, Virginia 20151 fax: 703-488-9994 www.PEGroup-nc.com</small>	
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ACTIVITY	
SATISFACTORY TO:	
DES	NM DRW XM CHK RG
BRANCH MANAGER KPL/IAS	
CHIEF ENGR/ARCH: Mark J. Airaghi, PE	
FIRE PROTECTION	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC HAMPDEN ROADS BFT NAVAL AIR STATION OCEANA VIRGINIA BEACH, VIRGINIA HANGAR 111 FIRE PROTECTION AND STRUCTURAL REPAIRS ENLARGED PLAN - MECH RIMS MECHANICAL NEW WORK PLAN	
SCALE: 1/8" = 1'-0"	
EPROJECT NO.: 1372146	
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO. 12716369	
SHEET 147 OF 170	
M-403	
<small>DRAWING REVISION: 10 MAY 2014</small>	

FILE NAME: P:\Projects\CHDC\GHDG1501-NAVFAC Hangar 111\DESIGN\NA\GHDG1501-4403.dwg LAYOUT NAME: M403 PLOTTED: Tuesday, April 26, 2016 9:15am USER: mmrcalio



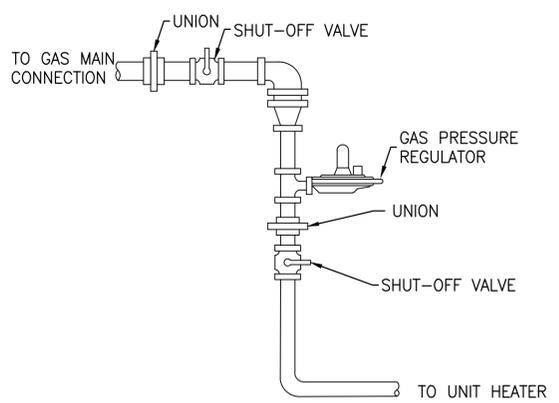
- NOTES:**
1. WHERE SPECIFIED PROVIDE FLOW METER ON PIPING IN ACCORDANCE TO MANUFACTURER'S RECOMMENDATIONS.
 2. REFER TO SPEC FOR VALVE TYPE.
 3. PROVIDE PIPING COUNTER FLOW TO AIR FLOW.
 4. CHILLED WATER RETURN; CIRCUIT BALANCING VALVE - UP TO 4" BUTTERFLY VALVE - 4" AND UP
 5. PROVIDE THERMOMETERS IN ELBOWS ON PIPE 3" AND SMALLER.
 6. PROVIDE BALANCING VALVE WITH INLET AND OUTLET STRAIGHT PIPE IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.

1 CHILLED WATER COIL 2-WAY VALVE
N.T.S. M-402



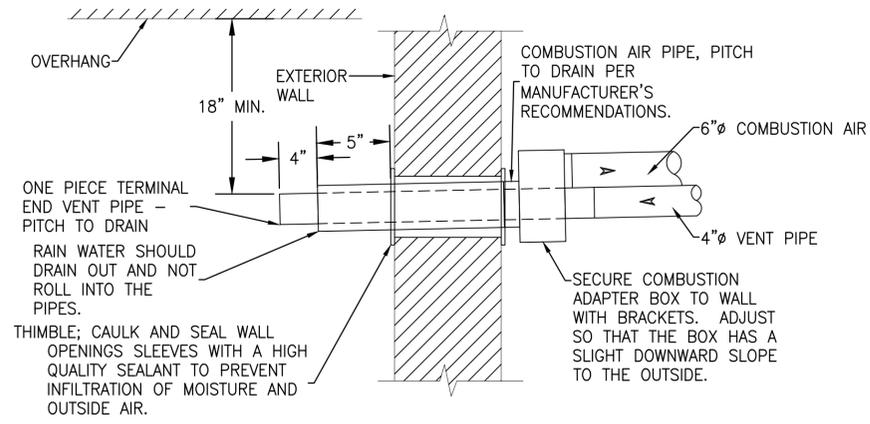
- NOTES:**
1. PROVIDE INSULATION FROM POINT OF CONNECTION TO UNIT TO POINT OF TERMINATION INTO NEAREST FLOOR DRAIN.

2 CONDENSATE DRAIN DETAIL
N.T.S. M-402



NOTE:
CONTRACTOR TO INSTALL A SEDIMENT TRAP AT ALL EQUIPMENT CONNECTION POINTS. SEDIMENT TRAP LEG TO BE A MIN. OF 3" IN LENGTH.

3 GAS UNIT HEATER CONNECTION
N.T.S. M-401



NOTE:
PAINT THE EXTERIOR SIDE OF THE TERMINAL END UNIT (THIMBLE, PIPES, SCREENS, ETC) WITH TWO COATS OF HIGH TEMPERATURE PAINT. PROVIDE THE MANUFACTURER'S PRINTED COLOR PALETTE OR SAMPLES INDICATING THE ACTUAL AVAILABLE COLORS FOR THE CONTRACTING OFFICER'S SELECTION. COMPLY WITH MANUFACTURER'S INSTRUCTIONS FOR CLEANING / SURFACE PREPARATION, APPLICATION, AND CURE TIMES AND METHODS.

4 COMBUSTION AIR OUTLET DETAIL
N.T.S. M-401

FILE NAME: P:\Projects\CHDC\CHDC1501-NAVFAC_Hanger_111\DESIGN\NAVFAC_Hanger_111\501.dwg LAYOUT NAME: M501 PLOTTED: Tuesday, April 26, 2016 9:15am USER: mmrcelid

NO.	DATE	DESCRIPTION
1	5/2/2016	FINAL SUBMISSION

APPROVED FOR COMMANDER NAVFAC

SATISFACTORY TO

DES	NM	DRW	XM	CHK	RG

BRANCH MANAGER: KPL/IAS

CHIEF ENG/ARCH: Mark J. Araghi, PE

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
HAMPSON ROADS BPT
NAVAL AIR STATION OCEANA
OCEANA, VIRGINIA BEACH, VIRGINIA

HANGAR 111 FIRE PROTECTION AND STRUCTURAL REPAIRS

DETAILS - MECHANICAL

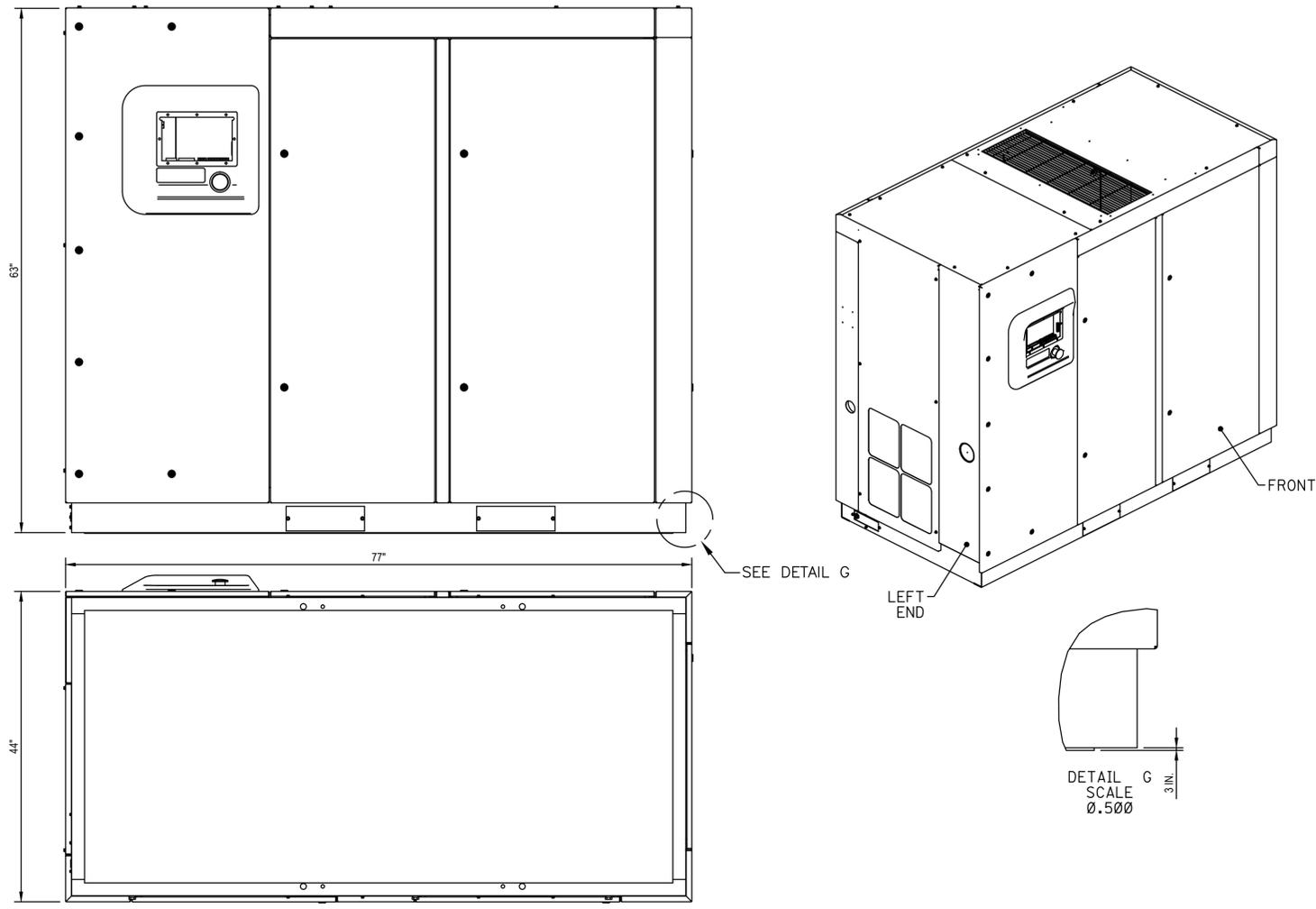
SCALE: NO SCALE
EPROJECT NO.: 1372146
CONSTR. CONTR. NO.
NAVFAC DRAWING NO: 12716370
SHEET 148 OF 170

M-501

DRAWING REVISION: 10 MAY 2014

LOW LEAKAGE DAMPER SCHEDULE											
LOUVER No.	SERVICE	RATED AIR FLOW (CFM)	MAXIMUM LEAKAGE RATE	FACE AREA SQ. FT.	REQUIREMENTS		BASIS OF DESIGN: MANUFACTURER AND MODEL No.				
					NOMINAL SIZE DAMPER	NUMBER OF OPERATORS	V	PH	Hz	DAMPER MODEL	MOTOR OPERATOR
1	AHU-1 OA	5,500	0.03	5.83	42x20	1	120	1	60	GREENHECK: VCD-33V	HONEYWELL:MS4104F1210
2	AHU-2 OA	5,500	0.03	5.83	42x20	1	120	1	60	GREENHECK: VCD-33V	HONEYWELL:MS4104F1210
3	AHU-3 OA	5,500	0.03	5.83	42x20	1	120	1	60	GREENHECK: VCD-33V	HONEYWELL:MS4104F1210
4	AHU-4 OA	5,500	0.03	5.83	42x20	1	120	1	60	GREENHECK: VCD-33V	HONEYWELL:MS4104F1210
5	AHU-5 OA	5,500	0.03	5.83	42x20	1	120	1	60	GREENHECK: VCD-33V	HONEYWELL:MS4104F1210
6	AHU-6 OA	4,200	0.03	4.44	40x16	1	120	1	60	GREENHECK: VCD-33V	HONEYWELL:MS4104F1210
7	AHU-1 RA	5,500	0.03	5.33	48X16	1	120	1	60	GREENHECK: VCD-33V	HONEYWELL:MS4104F1210
8	AHU-2 RA	5,500	0.03	5.33	48X16	1	120	1	60	GREENHECK: VCD-33V	HONEYWELL:MS4104F1210
9	AHU-3 RA	5,500	0.03	5.33	48X16	1	120	1	60	GREENHECK: VCD-33V	HONEYWELL:MS4104F1210
10	AHU-6 RA	5,500	0.03	4.44	40X16	1	120	1	60	GREENHECK: VCD-33V	HONEYWELL:MS4104F1210
11	AHU-4 RA	5,500	0.03	5.33	48X16	1	120	1	60	GREENHECK: VCD-33V	HONEYWELL:MS4104F1210
12	AHU-5 RA	4,200	0.03	5.33	48X16	1	120	1	60	GREENHECK: VCD-33V	HONEYWELL:MS4104F1210

NOTES:
 1. IN CASE OF POWER LOSS OR EQUIPMENT FAILURE, DAMPER TO FAIL IN CLOSED POSITION.



1 SKID MOUNTED AIR COMPRESSORS AND AIR DRYER
 N.T.S. M-401

DATE	5/2/2016
DESCRIPTION	FINAL SUBMISSION
SYMBOL	1
SEAL	
the PROTECTION ENGINEERING GROUP 14585 Avon Parkway, Suite 150 Chantilly, Virginia 20151 T 757.497.7472 F 757.497.0250 www.PEGroup-nc.com	
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APPROVED: FOR COMMANDER NAVFAC ACTIVITY:	
SATISFACTORY TO:	
DES	NM DRW XM CHK RB
PM/DM	KPL/IAS
BRANCH MANAGER CHIEF ENG/ARCH: Mark J. Airaghi, PE	
FIRE PROTECTION	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC HAMPSON ROADS IPT NAVAL AIR STATION OCEANA VIRGINIA BEACH, VIRGINIA HANGAR 111 FIRE PROTECTION AND STRUCTURAL REPAIRS DETAILS - MECHANICAL	
SCALE:	NO SCALE
PROJECT NO.:	1372146
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	12716371
SHEET	149 OF 170
M-502 <small>DRAWING REVISION: 10 MAY 2014</small>	

FILE NAME: P:\Projects\CHDC\CHDC1501-NAVFAC Hangar 111\DESIGN\A\CHDC1501-M502.dwg LAYOUT NAME: M502 PLOTTED: Tuesday, April 26, 2016 9:15am USER: mmorcello

1

2

3

4

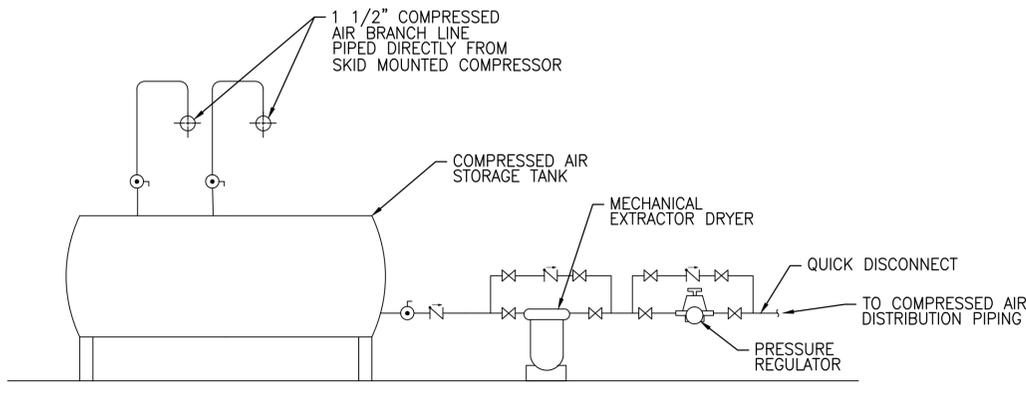
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D

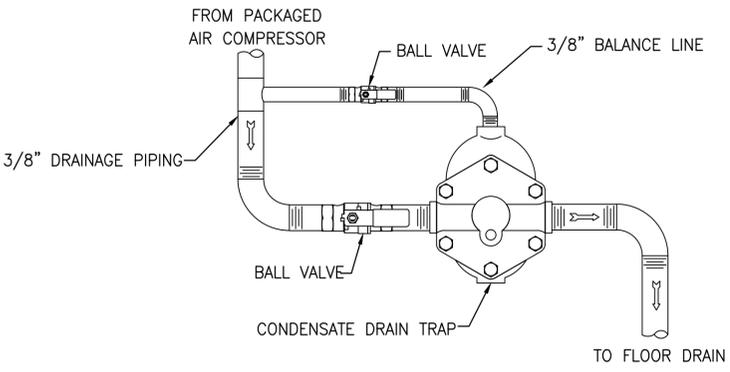
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B

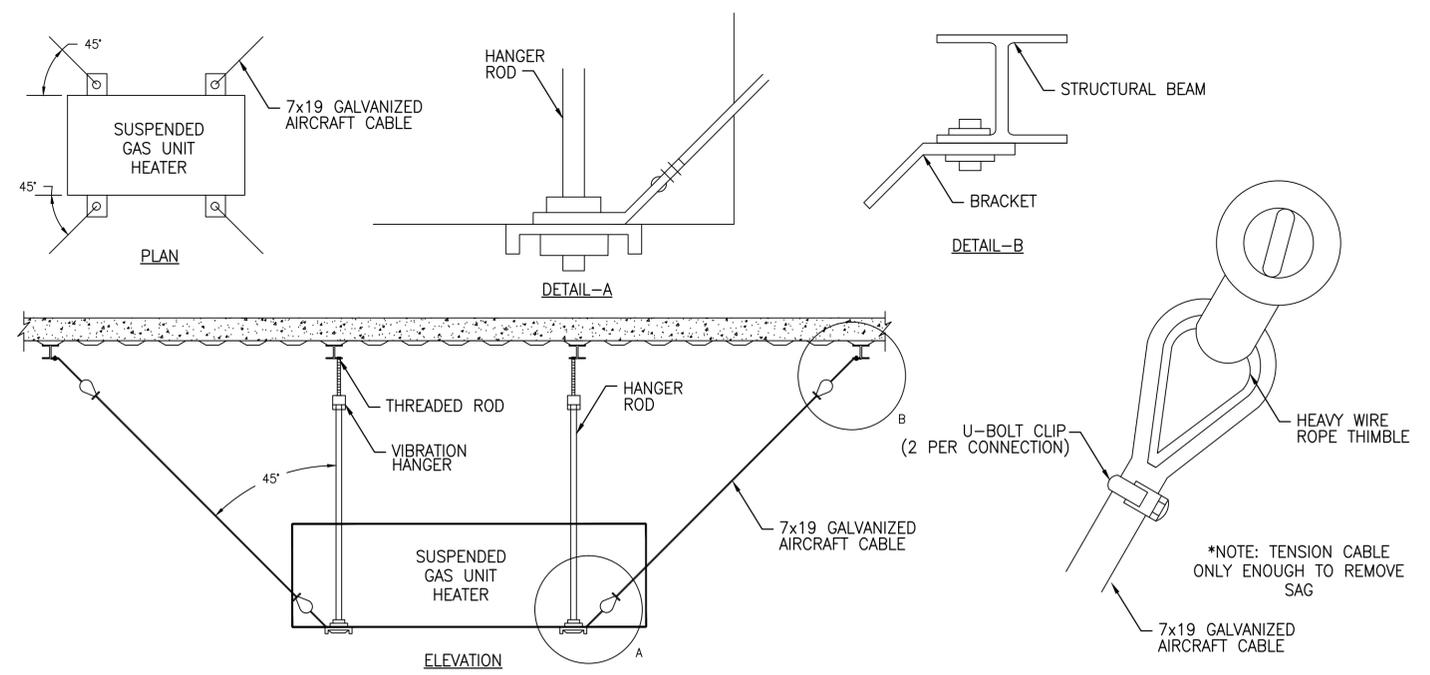
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1 COMPRESSED AIR SYSTEM CONNECTION DETAIL
 N.T.S. M-401



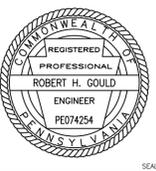
2 CONDENSATE AUTOMATIC DRAIN TRAP DETAIL
 N.T.S. M-401



3 GAS UNIT HEATER MOUNTING DETAIL
 N.T.S. M-401

FILE NAME: P:\Projects\CHDC\CHDC1501-NAVFAC_Hanger_111\DESIGN\A\CHDC1501-NAVFAC.dwg LAYOUT NAME: M503 PLOTTED: Tuesday, April 26, 2016 9:16am USER: mmorcello

NO.	DATE	DESCRIPTION
1	5/2/2016	FINAL SUBMISSION



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APPROVED:
 FOR COMMANDER NAVFAC
 ACTIVITY
 SATISFACTORY TO:
 DES: NM | DRW: KM | CHK: RB
 PM/DM: KPL/IAS
 BRANCH MANAGER
 CHIEF ENG/ARCH: Mark J. Airaghi, PE
 FIRE PROTECTION

DEPARTMENT OF THE NAVY
 NAVAL FACILITIES ENGINEERING COMMAND
 NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
 HAMPDEN ROSS BFT
 NAVFAC OCEANA
 VIRGINIA BEACH, VIRGINIA
HANGAR 111 FIRE PROTECTION AND STRUCTURAL REPAIRS
 DETAILS - MECHANICAL

SCALE: NO SCALE
 EPROJECT NO.: 1372146
 CONSTR. CONTR. NO.
 NAVFAC DRAWING NO: 12716372
 SHEET 150 OF 170
M-503
 DRAWING REVISION: 10 MAY 2014

AIR HANDLING UNIT

UNIT No.	LOCATION	TOTAL CFM	MIN. OA CFM	ML. FILTER RATING	SUPPLY FAN DATA						CHILLED WATER COOLING COIL										ELECTRICAL					UNIT WEIGHT (LBS.)	BASIS OF DESIGN: MANUFACTURER & MODEL No.	REMARKS			
					E.S.P. (in. W.G.)	MAX. T.S.P. (in. W.G.)	RPM	HP	V	PH	HZ	EAT °F		LAT °F		MAX. P.D. (in. W.G.)	MAX. FACE VEL. (FPM)	EWT °F	LWT °F	TOTAL GPM	MAX. P.D. (FT. W.G.)	SENSIBLE MBH	TOTAL MBH	V	PH				HZ	MCA	LRA
												DB	WB	DB	WB																
AHU-1	MER-1	6600	1000	MERV 8	3.0	4.38	1750	7.5	460	3	60	78.8	65.7	55.7	54.7	0.62	472	46.0	56.1	43.6	6.60	166.4	221.1	460	3	60	9.7	71	1761	DAIKIN CAH014GDAC	SEE NOTES
AHU-2	MER-1	6600	1000	MERV 8	3.0	4.38	1750	7.5	460	3	60	78.8	65.7	55.7	54.7	0.62	472	46.0	56.1	43.6	6.60	166.4	221.1	460	3	60	9.7	71	1761	DAIKIN CAH014GDAC	SEE NOTES
AHU-3	MER-2	6600	1000	MERV 8	3.0	4.38	1750	7.5	460	3	60	78.8	65.7	55.7	54.7	0.62	472	46.0	56.1	43.6	6.60	166.4	221.1	460	3	60	9.7	71	1761	DAIKIN CAH014GDAC	SEE NOTES
AHU-4	MER-3	6600	1000	MERV 8	3.0	4.38	1750	7.5	460	3	60	78.8	65.7	55.7	54.7	0.62	472	46.0	56.1	43.6	6.60	166.4	221.1	460	3	60	9.7	71	1761	DAIKIN CAH014GDAC	SEE NOTES
AHU-5	MER-3	6600	1000	MERV 8	3.0	4.38	1750	7.5	460	3	60	78.8	65.7	55.7	54.7	0.62	472	46.0	56.1	43.6	6.60	166.4	221.1	460	3	60	9.7	71	1761	DAIKIN CAH014GDAC	SEE NOTES
AHU-6	MER-2	4200	500	MERV 8	3.0	4.31	1750	7.5	460	3	60	78.8	65.7	55.5	54.7	0.52	439	46.0	56.1	27.8	7.90	106.9	140.8	460	3	60	9.7	71	1336	DAIKIN CAH010GDAC	SEE NOTES

NOTES:

1. PROVIDE UNIT VFDS AND ALL ASSOCIATED PARTS AND WIRING.
2. INTERLOCK AHU WITH BUILDING BACnet DIGITAL CONTROL SYSTEM. PROVIDE SIMILAR GRAPHICS AND FUNCTIONARY AS EXISTING AHU'S.
3. REFER TO FIRE ALARM DRAWINGS FOR DUCT SMOKE DETECTION AND EMERGENCY HVAC OFF BUTTON REQUIREMENTS.
4. UPON MANUAL START COMMAND, UNIT MUST RUN CONTINUOUSLY. CWS VALVES MUST MODULATE AS NECESSARY TO MAINTAIN SPACE TEMPERATURE AS REGULATED BY ZONE TEMPERATURE CONTROLS.
5. MAXIMUM WEIGHT OF AHU INSTALLED IN FIELD NOT TO EXCEED 1761 LBS.
6. UNIT SELECTION MUST INCLUDE THE FOLLOWING SECTIONS: PANEL FILTER SECTION, CHILLED WATER COOLING COIL SECTION, FAN SECTION.

SPLIT SYSTEM AIR CONDITIONING SCHEDULE

UNIT No.	NOMINAL TONS	INDOOR AIR HANDLING UNIT - AHU										BASIS OF DESIGN: MANUFACTURER AND MODEL No.	UNIT No.	CONDENSING UNIT - CU										BASIS OF DESIGN: MANUFACTURER AND MODEL No.	REMARKS				
		SUPPLY FAN		COOLING COIL			HEATER			ELECTRICAL				FAN	COMPRESSOR		AMBIENT TEMP.	ELECTRICAL DATA											
		TOTAL CFM	TYPE	E.S.P. in. W.G.	EAT °F DB/WB	SENS. MBH	TOTAL MBH	EAT °F	MBH	KW	FLA	MCA	MOCP	V	PH	HZ	No.	No.	TYPE		MCA	MOCP	V	PH	HZ				
ECU-1	0.75	400	ECM	-	80/67	9.0	9.0	47	10.9	1.2	0.76	1.0	15	208/230	1	60	MITSUBISHI: MSZ-GE09NA-9	CU-1	1	1	ECM	95	12	15	208/230	1	60	MITSUBISHI: MUZ-GE09NA	SEE NOTES

NOTES:

1. PROVIDE HARD WIRED THERMOSTAT. PROVIDE COMMON ALARM TO EXISTING DIGITAL CONTROL SYSTEM.
2. TEST CONDITIONS BASED ON AHRI 210/240. PROVIDE WIND BAFFLE FOR OUTDOOR UNIT. INCLUDE LOW AMBIENT CONTROL AND CRANKCASE HEATER ACCESSORIES.
3. REFRIGERANT IS R410A. SIZE AND PROVIDE REFRIGERANT PIPING IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
4. SYSTEM MUST HAVE SINGLE POINT CONNECTION TO THE CONDENSING UNIT WITH INDOOR AIR HANDLING UNIT WIRED FROM THE CONDENSING UNIT.
5. MOUNT INDOOR AIR HANDLING UNIT 6 INCHES BELOW CEILING.

AIR COMPRESSOR SYSTEM SCHEDULE

UNIT No.	DESCRIPTION	BASIS OF DESIGN : MANUFACTURER & MODEL No.	CAPACITY		APPURTENANCES			ELECTRICAL				DIMENSIONS (IN.)			LOCATION		REMARKS
			SCFM	PSIG	RECEIVER	COOLING	CONTROLS	HP	V	PH	HZ	H	W	L	RM NAME	RM No.	
COMP-1	CONTACT COOLED ROTARY SCREW	INGERSOLL RAND R37NE-TAS	203-227	65-135	HORIZONTAL 500 GAL. 150 PSI	INTERNAL	INTERNAL	50	460	3	60	63	77	44	COMPRESSOR RM	-	SEE NOTES
COMP-2	CONTACT COOLED ROTARY SCREW	INGERSOLL RAND R37NE-TAS	203-227	65-135				50	460	3	60	63	77	44	COMPRESSOR RM	-	SEE NOTES

NOTES:

1. INTEGRATE ONBOARD DIGITAL CONTROLLERS FOR BOTH COMPRESSORS TOGETHER. ALLOWING COMPRESSORS TO RUN SEPARATELY OR CONCURRENTLY BASED ON THE CURRENT LOAD DEMAND.

GAS UNIT HEATER SCHEDULE

UNIT No.	LOCATIO N	INPUT MBH	OUTPUT MBH	CFM	EAT °F	LAT °F	ELECTRICAL					BASIS OF DESIGN : MANUFACTURER & MODEL No.	REMARKS
							HP	RPM	V	PH	HZ		
UH-1	FOAM ROOM	30	24.9	370	20	80	1/20	1650	120	1	60	TRANE MODEL: GTNE003	SEE NOTES

NOTES:

1. INTEGRATE GAS UNIT HEATER WITH EXISTING GAS UNIT HEATER THERMOSTAT.
2. REFER TO DETAIL 4 ON M503 FOR GAS UNIT HEATER MOUNTING DETAIL. BRACING TO WITHSTAND HORIZONTAL FORCES UP TO HALF OF THE WEIGHT OF THE EQUIPMENT IT SUPPORTS AND VERTICAL FORCES UP TO 1.5 TIMES THE WEIGHT OF THE EQUIPMENT IT SUPPORTS. SUBMIT BRACING TO THE CONTRACTING OFFICER FOR REVIEW.

RECEIVER TANK SCHEDULE

UNIT No.	LOCATION	SERVICE	TYPE	CAPACITY (GAL.)	SIZE		PRESSURE RATING (PSIG)	CONNECTION SIZE		WEIGHT (LBS.)	BASIS OF DESIGN : MANUFACTURER & MODEL No.	REMARKS
					DIAMETER (IN.)	LENGTH (IN.)		FILL	SYSTEM			
T-1	COMPRESSOR RM	COMP-1&2	HORIZONTAL	500	36	116	150	1 1/2"	2"	2195	INGERSOLL-RAND	

	DATE: 5/2/2016
1	FINAL SUBMISSION
1	SYN DESCRIPTION

the PROTECTION ENGINEERING GROUP
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APPROVED:
 FOR COMMANDER NAFAC

ACTIVITY:
 SATISFACTORY TO:
 DES: NM | DRW: KM | CHK: RB
 PM/DM: KPL/IAS
 BRANCH MANAGER:
 CHIEF ENGR/ARCH: Mark J. Airaghi, PE
 FIRE PROTECTION:

DEPARTMENT OF THE NAVY
 NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
 HAMPSON ROADS IFT
 VIRGINIA BEACH, VIRGINIA
 NAVAL AIR STATION OCEANA
 HANGAR 111 FIRE PROTECTION
 AND STRUCTURAL REPAIRS
 DETAILS - MECHANICAL

SCALE: NO SCALE
 EPROJECT NO.: 1372146
 CONSTR. CONTR. NO.:
 NAFAC DRAWING NO.: 12716373
 SHEET 151 OF 170

M-601

DRAWING REVISION: 10 MAY 2014

FILE NAME: P:\Projects\CHDC\CHDC1501-NAFAC_Hangar_111\DESIGN\A\CHDC1501-NAFAC.dwg LAYOUT NAME: M601 PLOTTED: Tuesday, April 26, 2016 9:16am USER: mmorcello