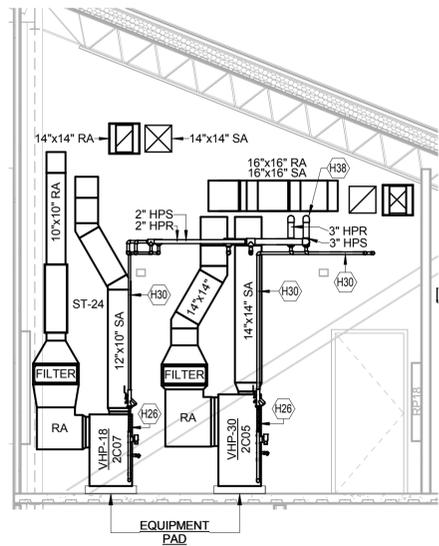


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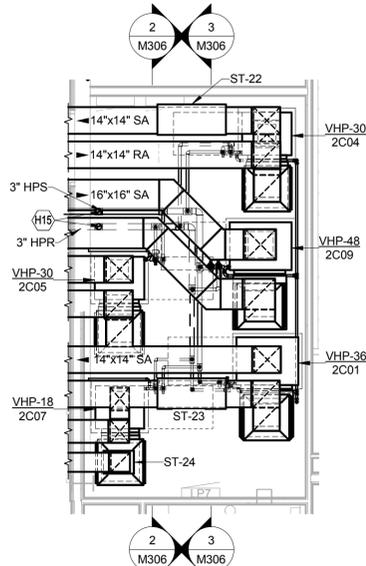
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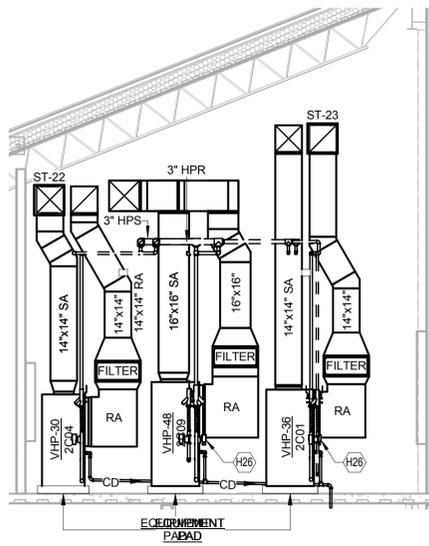
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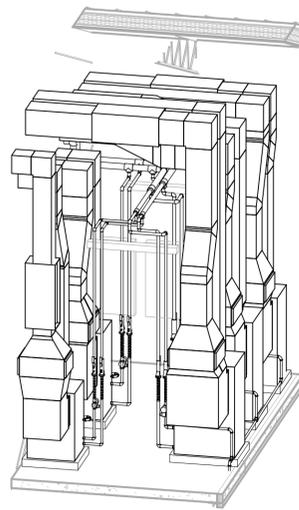
3 MECH 2C08 Section 2  
1/4" = 1'-0"



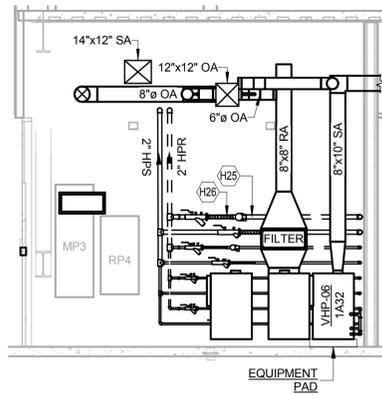
1 2C08 MECH  
1/4" = 1'-0"



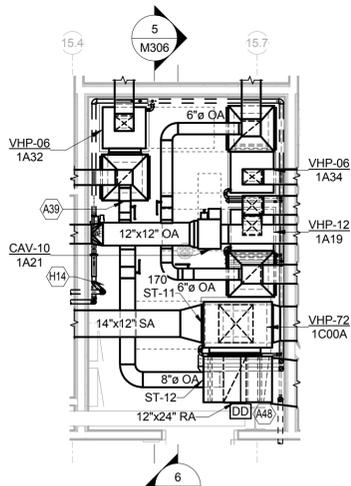
2 MECH 2C08 Section 1  
1/4" = 1'-0"



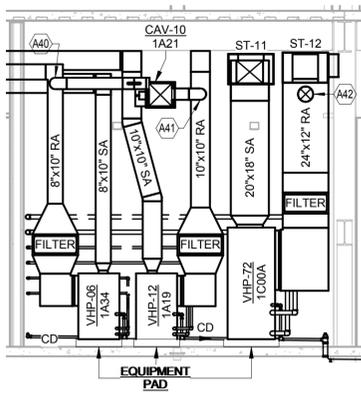
8 2C08-MECH - ISOMETRIC



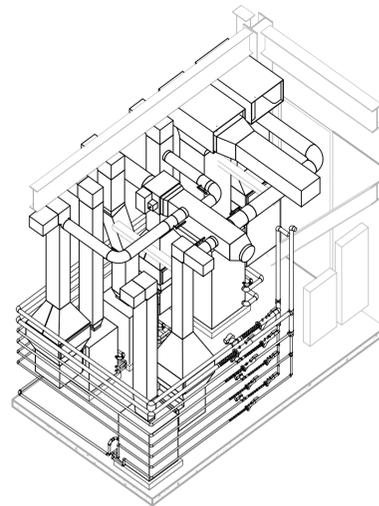
6 1A21 MECH Section 2  
1/4" = 1'-0"



4 1A21 MECH  
1/4" = 1'-0"



5 1A21 MECH Section 1  
1/4" = 1'-0"



7 1A21-MECH - ISOMETRIC

TAGGED NOTES

A39	CONNECT 6" OA INTO 10"x8" RA DUCT AND BALANCE TO 70 CFM.
A40	CONNECT 6" OA INTO 8"x10" RA DUCT AND BALANCE TO 60 CFM.
A41	CONNECT 6" OA INTO 8"x10" RA DUCT AND BALANCE TO 60 CFM.
A42	CONNECT 8" OA INTO 12"x24" RA DUCT AND BALANCE TO 60 CFM.
A48	PROVIDE DUCT SMOKE DETECTOR IN THIS LOCATION.
H14	REFER TO HYDRONIC PIPING CONNECTIONS DETAIL FOR ADDITIONAL INFORMATION.
H15	PIPING TO BE HELD TIGHT TO BOTTOM OF DUCTWORK.
H25	ROUTE HPS/R PIPING TIGHT TO WALL AND PROVIDE LABELS FOR BOTH THE SUPPLY AND RETURN PIPING CLEARLY INDICATING THE UNIT NAME/NUMBER WHICH IT SERVES.
H26	INSTALL HOSE KIT AND 2-WAY CONTROL VALVE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND WSHIP HOSE KIT DETAIL. SIZE HOSE KIT IN ACCORDANCE WITH UNIT RUN-OUT SIZE.
H30	WSHP BRANCH PIPING. REFER TO WSHIP SCHEDULE FOR PIPE RUN-OUT SIZING.
H38	PROVIDE MANUAL AIR VENT IN THIS LOCATION. PIPE TO NEAREST DRAIN.

GENERAL NOTE: ALL HEAT PUMPS SHALL HAVE FRONT ONLY ACCESS.

HEAT PUMP RUNOUT SCHEDULE

MARK	CONDENSATE PIPE SIZE	HPS/HPR PIPE SIZE
HHP-12	3/4"	1"
HHP-18	3/4"	1"
HHP-24	1"	1"
HHP-30	1"	1-1/4"
HHP-36	1"	1-1/4"
VHP-06	1"	3/4"
VHP-12	1"	1"
VHP-18	1"	1"
VHP-24	1"	1"
VHP-30	1"	1-1/4"
VHP-36	1"	1-1/4"
VHP-42	1"	1-1/4"
VHP-48	1"	1-1/2"
VHP-60	1-1/4"	1-1/2"
VHP-72	1-1/4"	2"
VHP-96	1-1/4"	2"
VHP-120	1-1/4"	2"

APPROVED

FOR COMMANDER NAVFAC ACTIVITY

SATISFACTORY TO DATE

FAR FAR KDM

PM/DM

BRANCH MANAGER

CHIEF ENGR ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON  
DOD/EA  
MARINE CORPS BASE QUANTICO, VIRGINIA  
QUANTICO, VA

REPLACE QUANTICO M/H SCHOOL

ENLARGED MECHANICAL ROOMS

SCALE: 1/4" = 1'-0"  
PROJECT NO.: P-021  
CONSTR. CONTR. NO.: W91236-15-C-0023  
NAVFAC DRAWING NO.: 13091246  
SHEET 492 OF 789  
M306

DATE

DESCRIPTION

SEAL

STATE OF KENTUCKY  
KEVIN J. MUSSEY  
22266  
PROFESSIONAL ENGINEER

AE INFO

10 MARCH 2016

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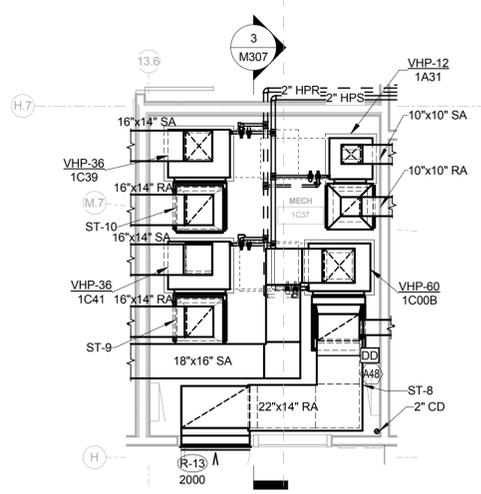
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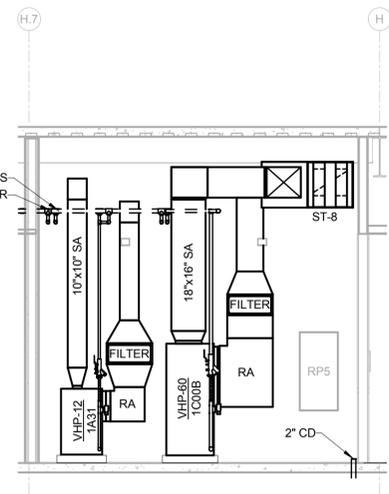
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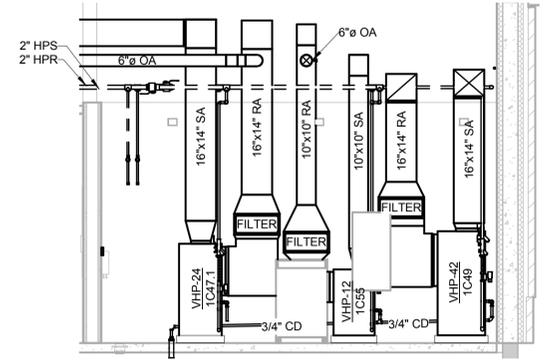
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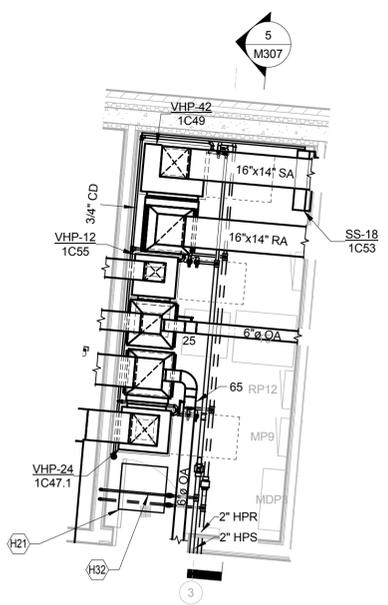
1 1C37 MECH  
1/4" = 1'-0"



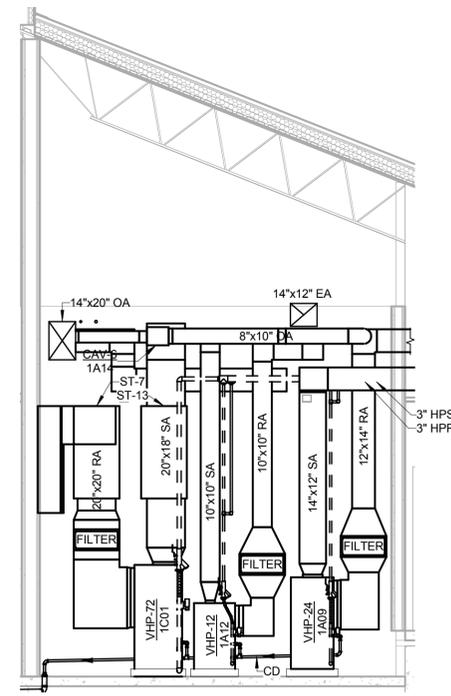
3 MECH 1C37 SECTION 1  
1/4" = 1'-0"



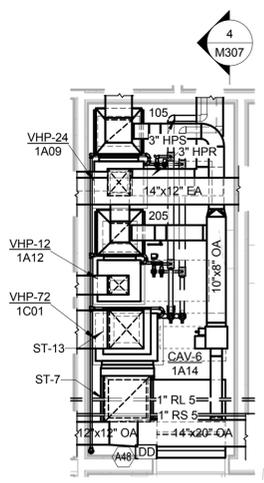
5 1C53 MECH 4 SECTION 1  
1/4" = 1'-0"



2 1C53 MECH 4  
1/4" = 1'-0"



4 1A14 MECH SECTION 1  
1/4" = 1'-0"



7 1A14 MECH  
1/4" = 1'-0"

TAGGED NOTES

A48	PROVIDE DUCT SMOKE DETECTOR IN THIS LOCATION.
H21	SPILL CONDENSATE PIPING TO CONDENSATE SUMP PIT. REFER TO CONDENSATE SUMP PIPING SCHEMATIC FOR DETAILS
H32	PROVIDE 3/4" DRAIN DOWN LINE WITH 3/4" BALL VALVE. ROUTE DRAIN DOWN LINE TO CONDENSATE PIT.

GENERAL NOTE: ALL HEAT PUMPS SHALL HAVE FRONT ONLY ACCESS.

HEAT PUMP RUNOUT SCHEDULE

MARK	CONDENSATE PIPE SIZE	HPS/HPR PIPE SIZE
HHP-12	3/4"	1"
HHP-18	3/4"	1"
HHP-24	1"	1"
HHP-36	1"	1-1/4"
HHP-36	1"	1-1/4"
VHP-06	1"	3/4"
VHP-12	1"	1"
VHP-18	1"	1"
VHP-24	1"	1"
VHP-30	1"	1-1/4"
VHP-36	1"	1-1/4"
VHP-42	1"	1-1/4"
VHP-48	1"	1-1/2"
VHP-60	1-1/4"	1-1/2"
VHP-72	1-1/4"	2"
VHP-96	1-1/4"	2"
VHP-120	1-1/4"	2"

DATE	DESCRIPTION	BY	APPR



**EWING COLE**  
Federal Reserve Bank Building  
100 North 6th Street  
Philadelphia, PA 19106-1590  
Tel: 215-923-2020 Fax: 215-574-0822

APPROVED  
FOR COMMANDER NAVFAC ACTIVITY

SATISFACTORY TO DATE  
FAR FAR KDM

BRANCH MANAGER  
CHIEF ENGR ARCH  
FIRE PROTECTION

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON  
DOD/EA  
MARINE CORPS BASE QUANTICO, VIRGINIA  
QUANTICO, VA

**REPLACE QUANTICO M/H SCHOOL**  
ENLARGED MECHANICAL ROOMS

SCALE: 1/4" = 1'-0"  
PROJECT NO.: P-021  
CONSTR. CONTR. NO.: W91236-15-C-0023  
NAVFAC DRAWING NO.: 13091247  
SHEET 493 OF 789  
M307

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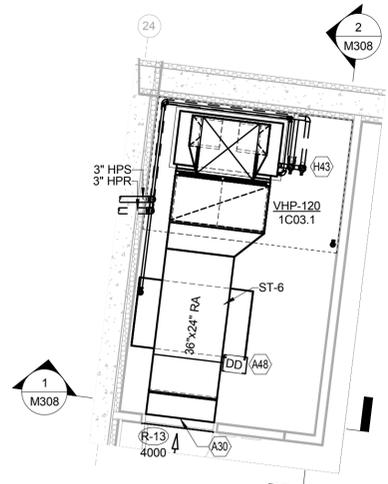
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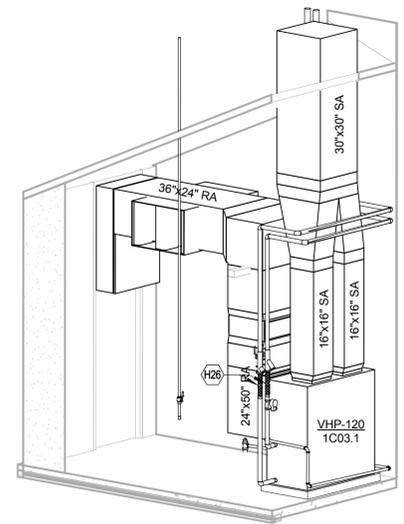
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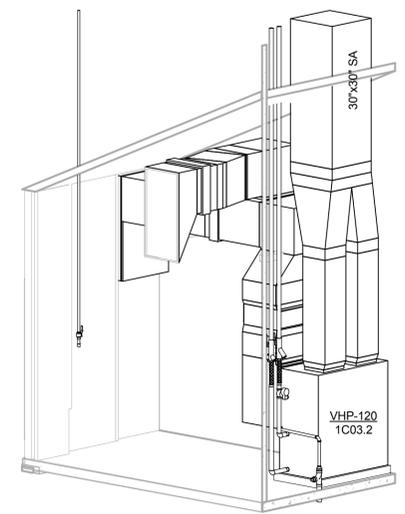
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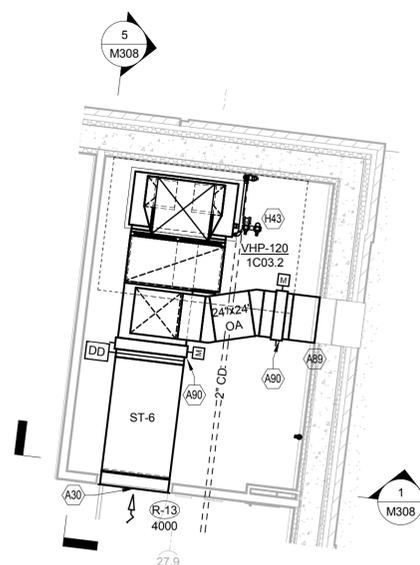
3 1C05 MECH  
1/4" = 1'-0"



6 1C05-MECH - ISOMETRIC



7 1C07-MECH - ISOMETRIC



4 1C07 MECH  
1/4" = 1'-0"

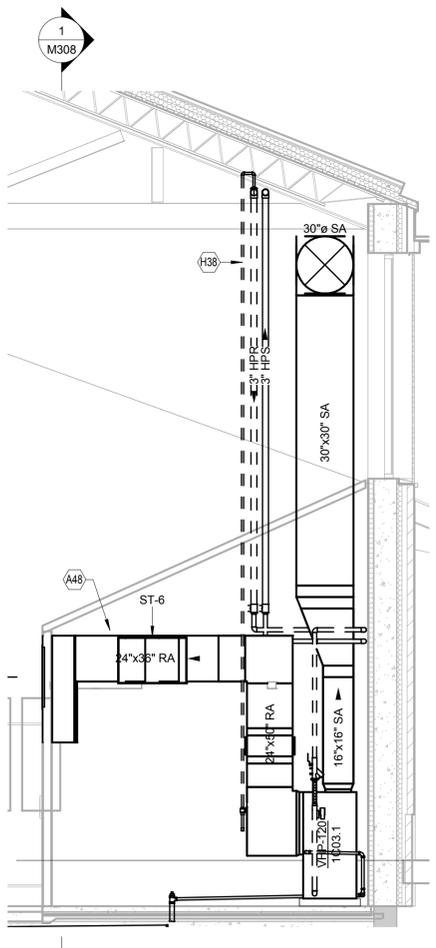
TAGGED NOTES

A29	RECTANGULAR DUCT TO PENETRATE CEILING SOFFIT AND TRANSITION TO ROUND DUCT FOR CLEAN INSTALLATION. SEAL PENETRATION AIRTIGHT.
A30	CONNECT DUCT TO RETURN GRILLE ABOVE DOOR. REFER TO ARCHITECTURAL PLANS FOR RETURN GRILLE INFORMATION AND ELEVATIONS.
A48	PROVIDE DUCT SMOKE DETECTOR IN THIS LOCATION.
A62	SLOPE SA DUCTWORK WITH ROOF STRUCTURE.
A89	CONNECT 24"x24" OA DUCT TO LOUVER. LOUVE TO BE SPECIFIED BY ARCHITECT.
A90	PROVIDE MOTORIZED DAMPER AND INTERLOCK WITH VHP-120-1C03.2 ECONOMIZER OPERATION.
H26	INSTALL HOSE KIT AND 2-WAY CONTROL VALVE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND WSPH HOSE KIT DETAIL. SIZE HOSE KIT IN ACCORDANCE WITH UNIT RUN-OUT SIZE.
H38	PROVIDE MANUAL AIR VENT IN THIS LOCATION. PIPE TO NEAREST DRAIN.
H43	PROVIDE 3-WAY CONTROL VALVE IN LIEU OF 2-WAY CONTROL VALVE IN THIS LOCATION.

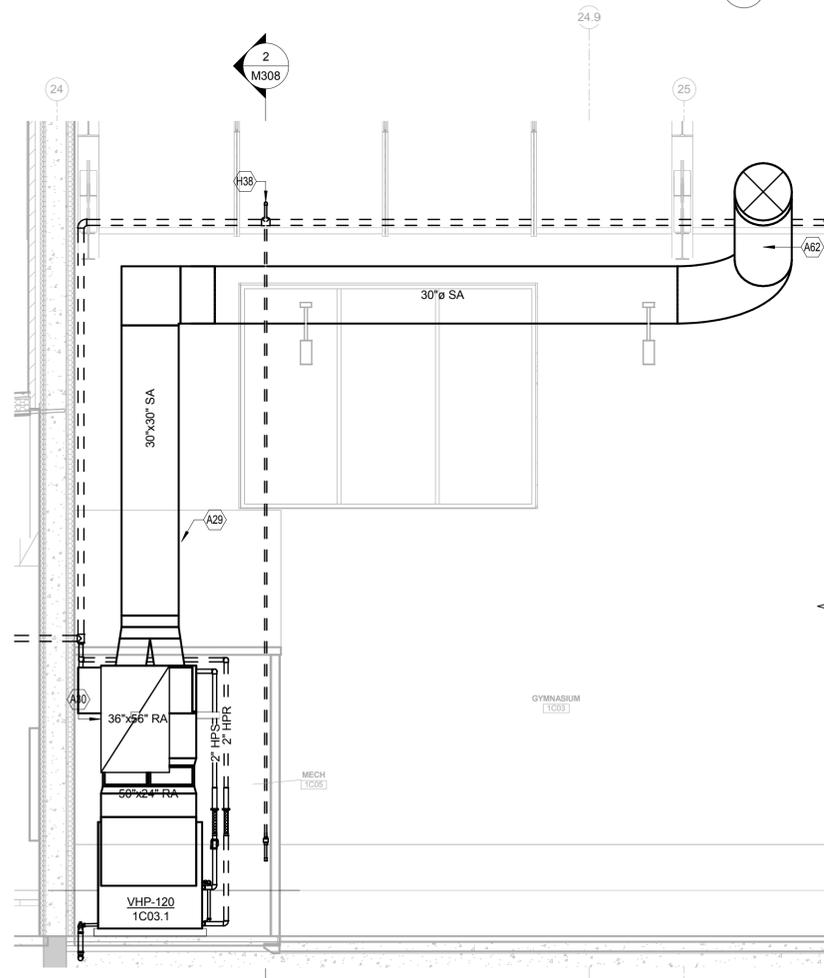
GENERAL NOTE: ALL HEAT PUMPS SHALL HAVE FRONT ONLY ACCESS.

**HEAT PUMP RUNOUT SCHEDULE**

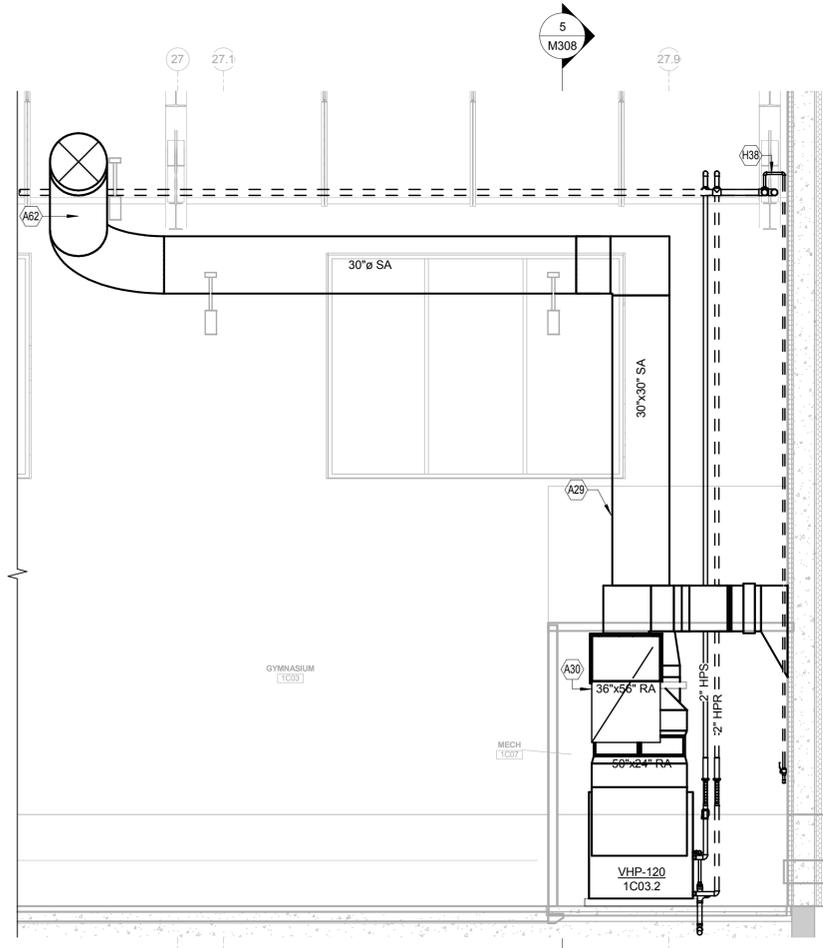
MARK	CONDENSATE PIPE SIZE	HPS/HPR PIPE SIZE
HHP-12	3/4"	1"
HHP-18	3/4"	1"
HHP-24	1"	1"
HHP-30	1"	1-1/4"
HHP-36	1"	1-1/4"
VHP-06	1"	3/4"
VHP-12	1"	1"
VHP-18	1"	1"
VHP-24	1"	1"
VHP-30	1"	1-1/4"
VHP-36	1"	1-1/4"
VHP-42	1"	1-1/4"
VHP-48	1"	1-1/2"
VHP-60	1-1/4"	1-1/2"
VHP-72	1-1/4"	2"
VHP-96	1-1/4"	2"
VHP-120	1-1/4"	2"



2 MECH 1C05 SECTION 1  
1/4" = 1'-0"



1 1C05 MECH/1C07 MECH SECTION  
1/4" = 1'-0"



5 MECH 1C07 Section 1  
1/4" = 1'-0"

APPROVED

FOR COMMANDER NAVFAC ACTIVITY

SATISFACTORY TO DATE

CRK LMM/CRK KDM

PRJDM

BRANCH MANAGER

CHIEF ENGR ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON  
DODEA  
MARINE CORPS BASE QUANTICO  
QUANTICO, VA

REPLACE QUANTICO M/H SCHOOL

ENLARGED MECHANICAL ROOMS

SCALE: 1/4" = 1'-0"

PROJECT NO.: P-021

CONSTR. CONTR. NO.: W91236-15-C-0023

NAVFAC DRAWING NO.: 13091248

SHEET 494 OF 789

M308

DATE

DESCRIPTION

SYW

APPR

STATE OF KENTUCKY  
KEVIN P. MUSSLER  
22206  
LICENSED PROFESSIONAL ENGINEER

SEAL

EWING COLE  
Federal Reserve Bank Building  
100 North 6th Street  
Philadelphia, PA 19106-1590  
Tel: 215-923-2020 Fax: 215-574-0822

AE INFO

10 MARCH 2016

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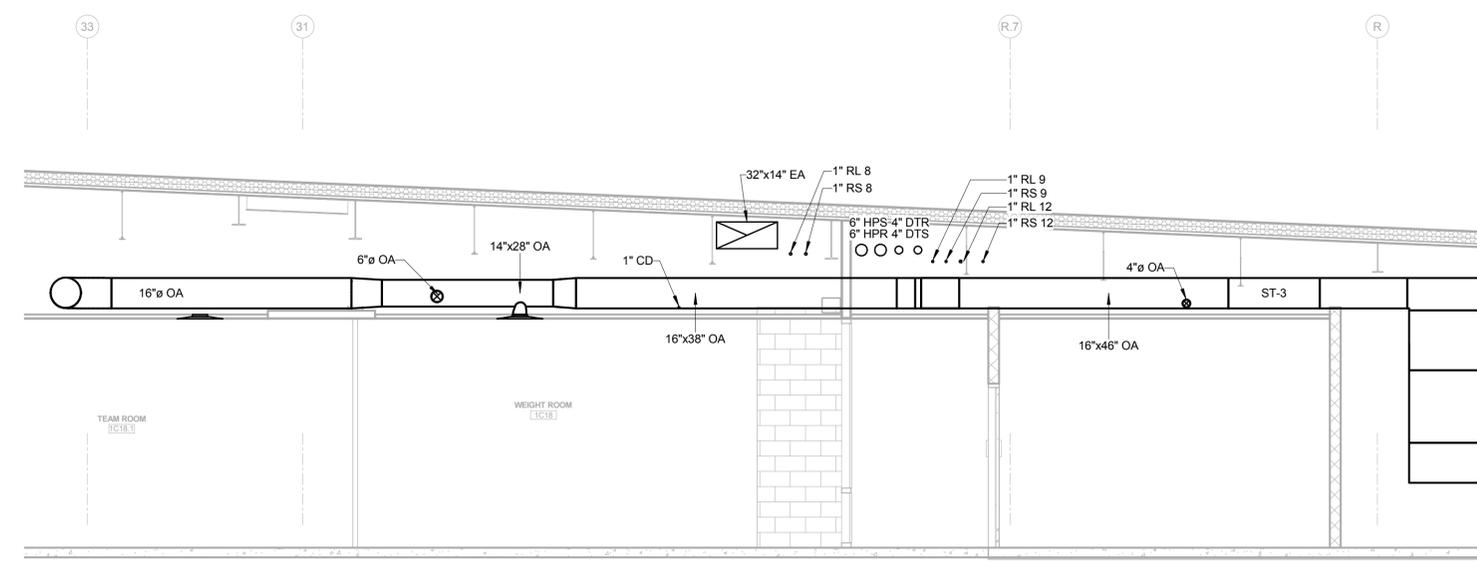
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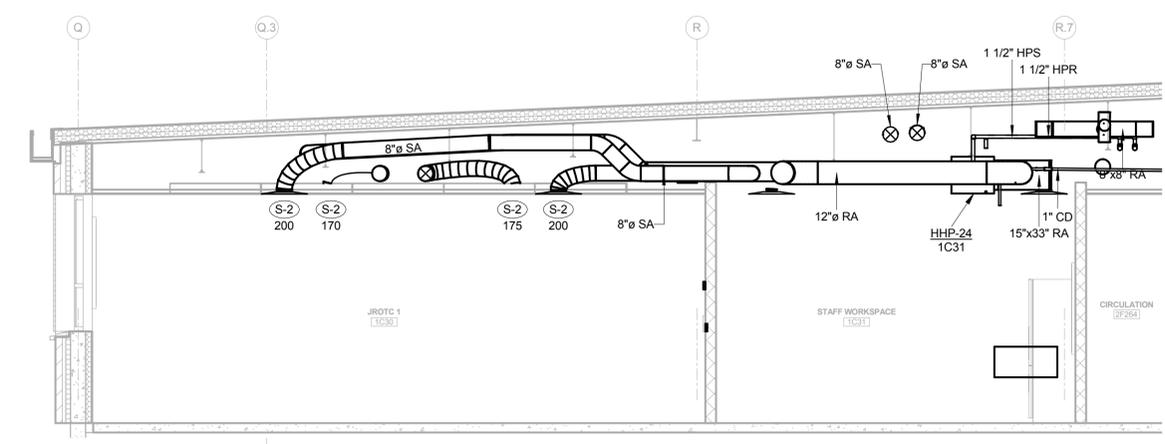
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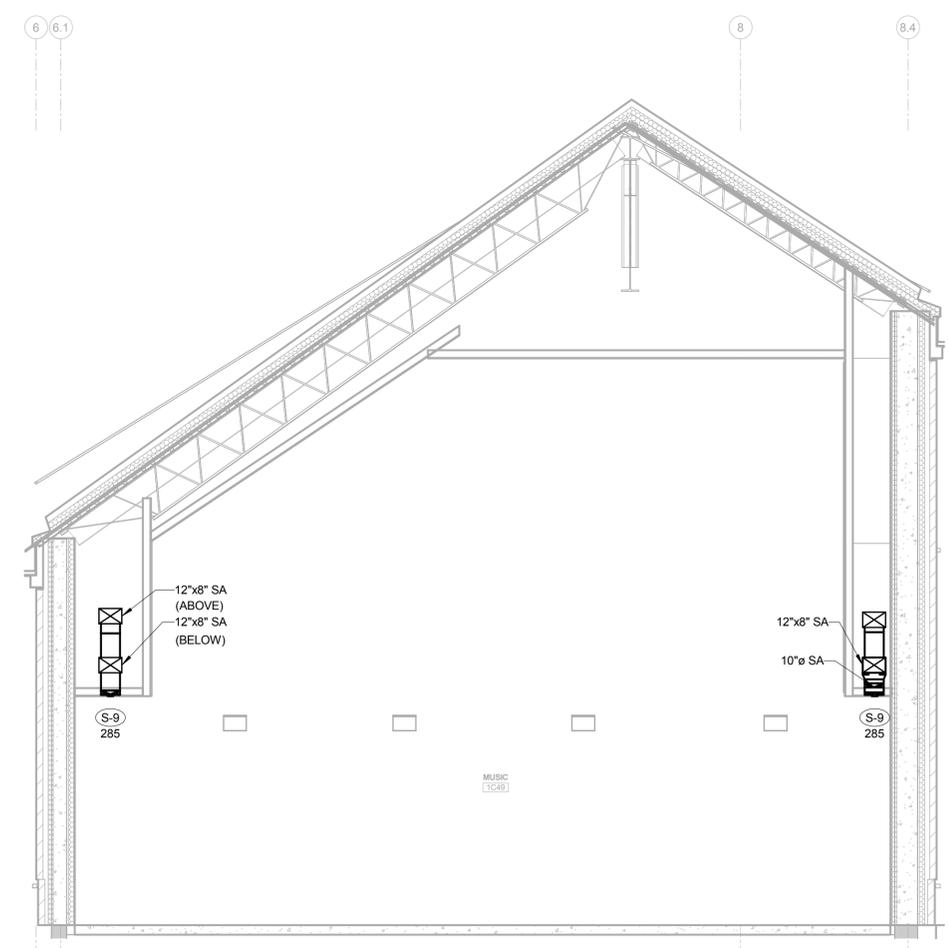
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2 AREA F SECTION 2  
1/4" = 1'-0"



1 AREA F SECTION 1  
1/4" = 1'-0"



3 MUSIC 1C49 SECTION  
1/4" = 1'-0"

SYN	DESCRIPTION	DATE	APPR



**EWING COLE**  
Federal Reserve Bank Building  
100 North 6th Street  
Philadelphia, PA 19106-1590  
Tel: 215-923-2020 Fax: 215-574-0952

AE INFO

APPROVED

FOR COMMANDER NAVFAC  
ACTIVITY

SATISFACTORY TO DATE

CRK LMM/CRK KDM

PRJDM

BRANCH MANAGER

CHIEF ENGR ARCH

FIRE PROTECTION

NAVAL FACILITIES ENGINEERING COMMAND

NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON

DODIA

MARINE CORPS BASE QUANTICO, VIRGINIA

QUANTICO, VA

REPLACE QUANTICO M/H SCHOOL

MECHANICAL SECTIONS

DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING COMMAND

PROJECT NO. P-021

CONSTR. CONTR. NO. W91236-15-C-0023

NAVFAC DRAWING NO. 13091249

SHEET 495 OF 789  
M401

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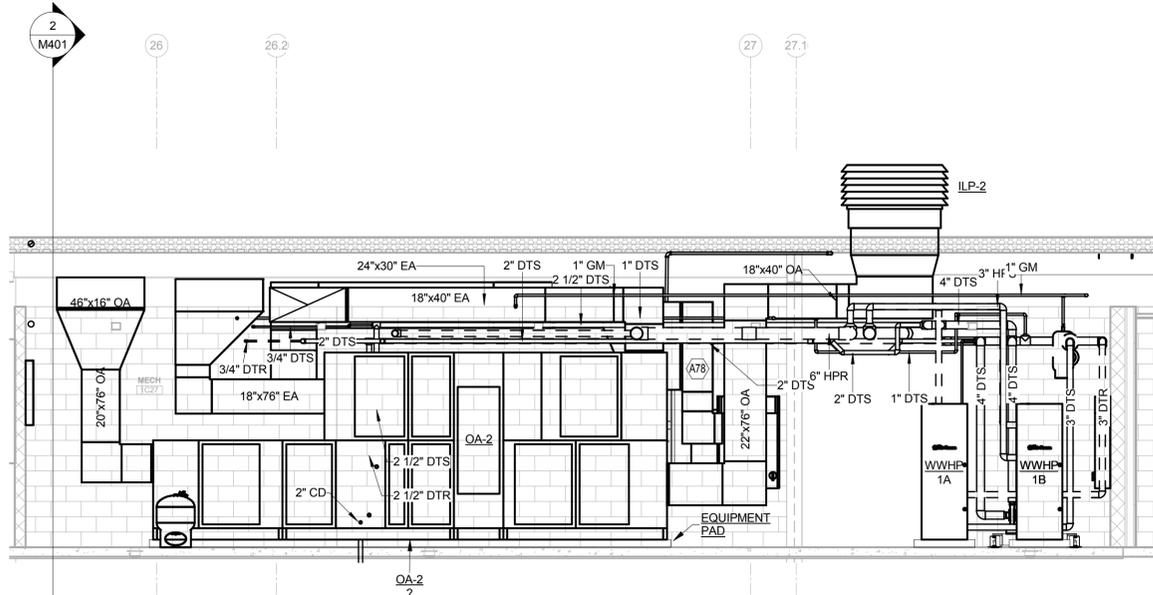
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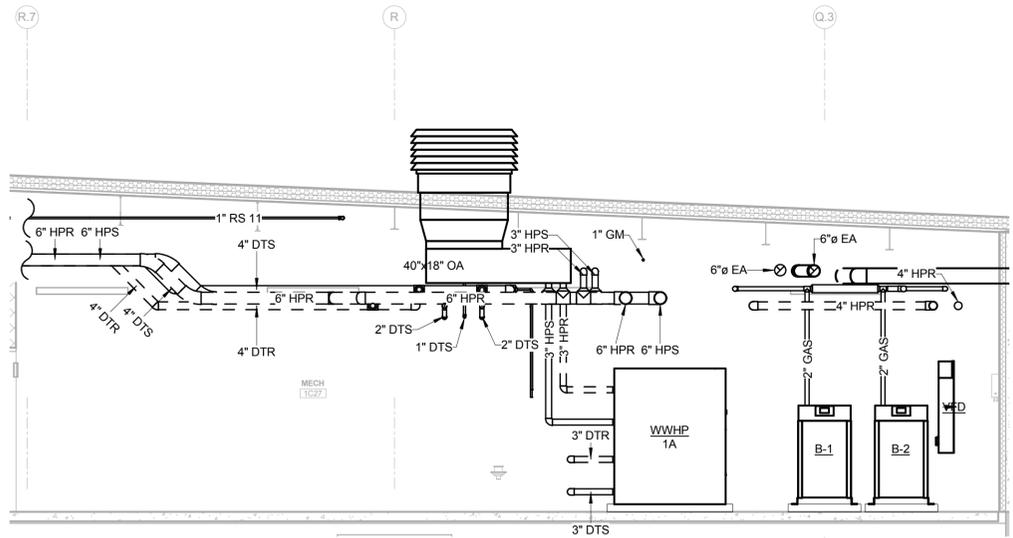
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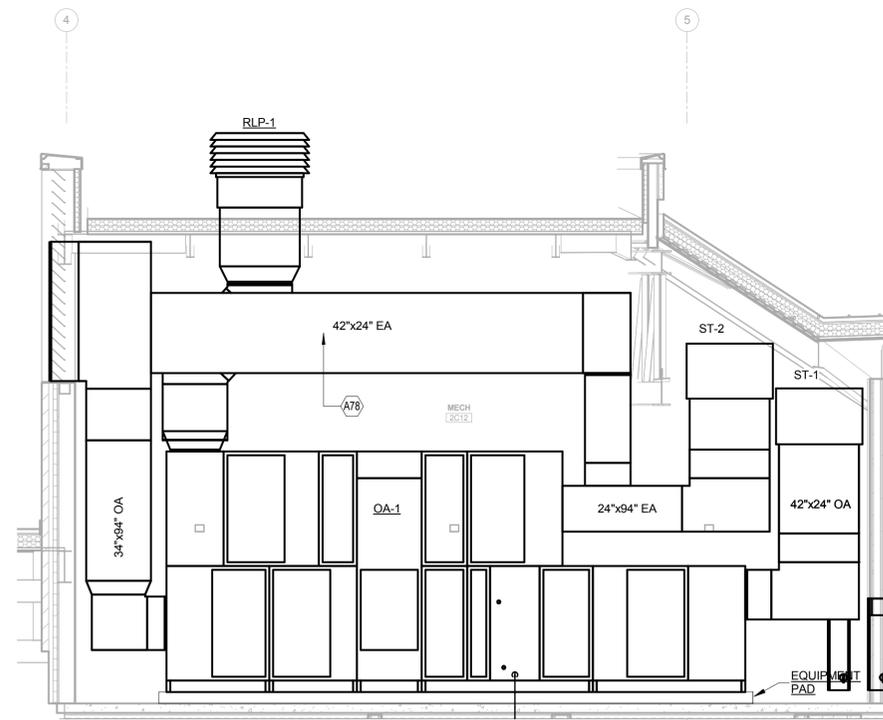
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4 OUTSIDE AIR UNIT 2  
1/4" = 1'-0"



1 MECH 1C27 SECTION  
1/4" = 1'-0"



5 OUTSIDE AIR UNIT 1  
1/4" = 1'-0"

TAGGED NOTES
A78 OUTSIDE AIR BYPASS

APPROVED	DATE	APPR
FOR COMMANDER NAVFAC ACTIVITY		
SATISFACTORY TO	DATE	
CRK LMM/CRK KDM		
PM/DM		
BRANCH MANAGER		
CHIEF ENGR ARCH		
FIRE PROTECTION		
NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON	MECHANICAL SECTIONS	
DDISA	REPLACE QUANTICO M/H SCHOOL	
MARINE CORPS BASE QUANTICO, VIRGINIA	QUANTICO, VA	
DEPARTMENT OF THE NAVY	MARINE CORPS BASE QUANTICO	
SCALE: 1/4" = 1'-0"	PROJECT NO.: P-021	
CONSTR. CONTR. NO. W91236-15-C-0023	NAVFAC DRAWING NO. 13091250	
SHEET 496 OF 789	DRAWING REVISION: 10 MARCH 2020	
M402		



**EWING COLE**  
Federal Reserve Bank Building  
100 North 6th Street  
Philadelphia, PA 19106-1590  
Tel: 215-923-2020 Fax: 215-574-0952

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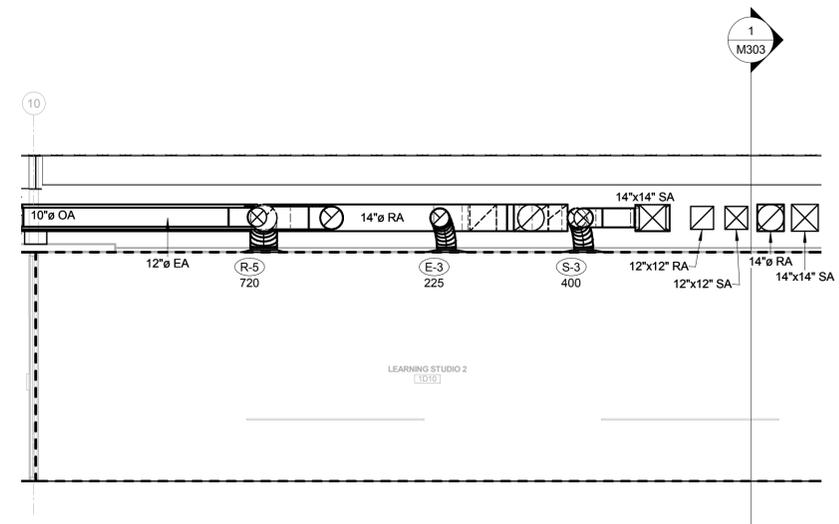
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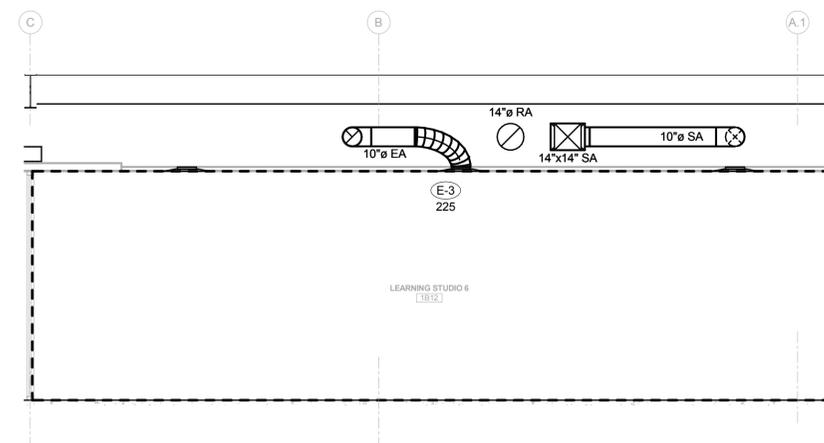
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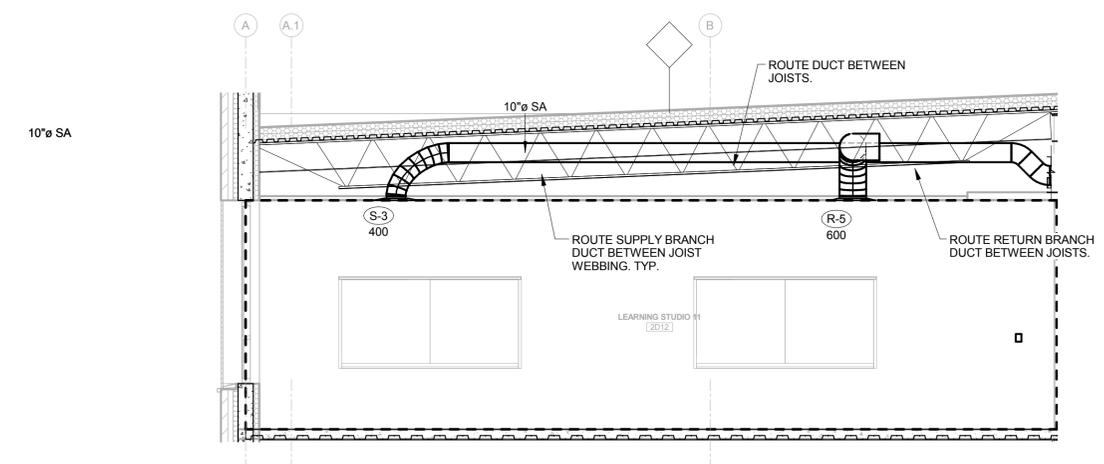
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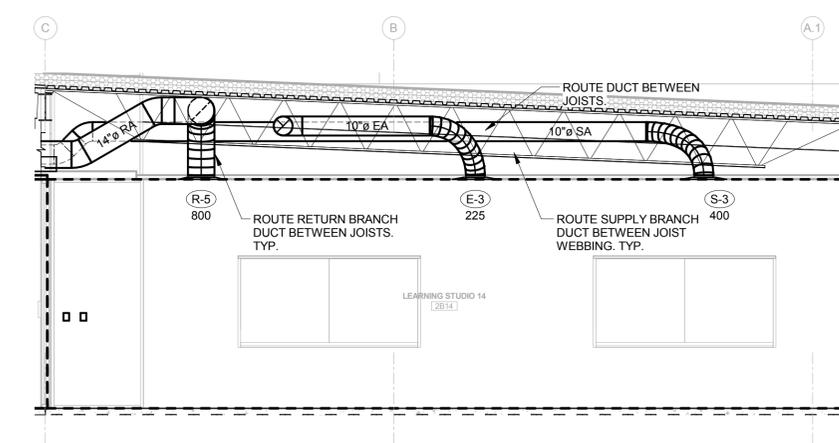
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1/4" = 1'-0"



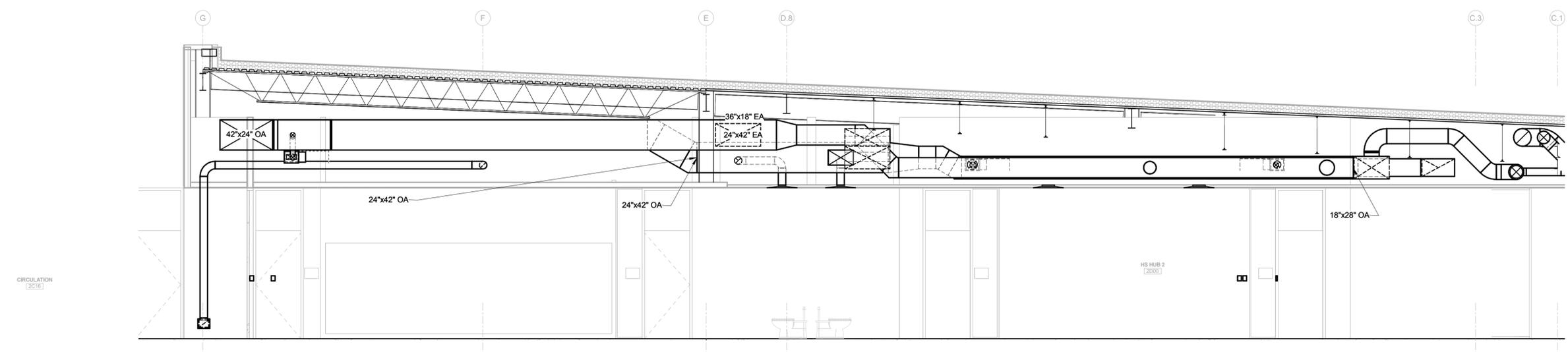
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1/4" = 1'-0"



3 Learning Studio 12 Section  
1/4" = 1'-0"



4 Learning Studio 14 Section  
1/4" = 1'-0"



5 HS Hub 2 Section  
1/4" = 1'-0"

APPROVED	DATE
FOR COMMANDER NAVFAC ACTIVITY	
SATISFACTORY TO	DATE
CRK	LMM/CRK KDM
PROJECT NO.	P-021
CONSTR. CONTR. NO.	W91236-15-C-0023
NAVFAC DRAWING NO.	13091251
SHEET	497 OF 789
	M403

DEPARTMENT OF THE NAVY  
 NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON  
 DOD/EA  
 MARINE CORPS BASE QUANTICO  
 QUANTICO, VA  
**REPLACE QUANTICO M/H SCHOOL**  
 MECHANICAL SECTIONS

STATE OF KENTUCKY  
 KEVIN P. MUSSIE  
 222966  
 LICENSED PROFESSIONAL ENGINEER  
 SEAL

EWING COLE  
 Federal Reserve Bank Building  
 100 North 6th Street  
 Philadelphia, PA 19106-1590  
 Tel: 215-923-2020 Fax: 215-574-0852

RTA SUBMISSION - 10/13/2016

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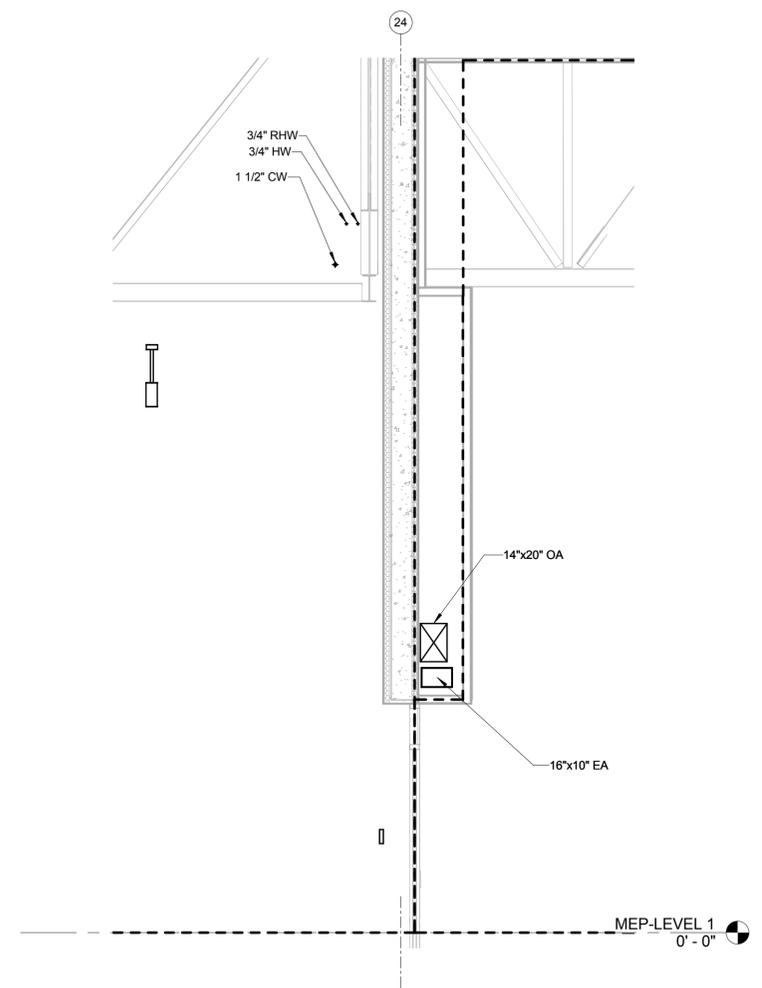
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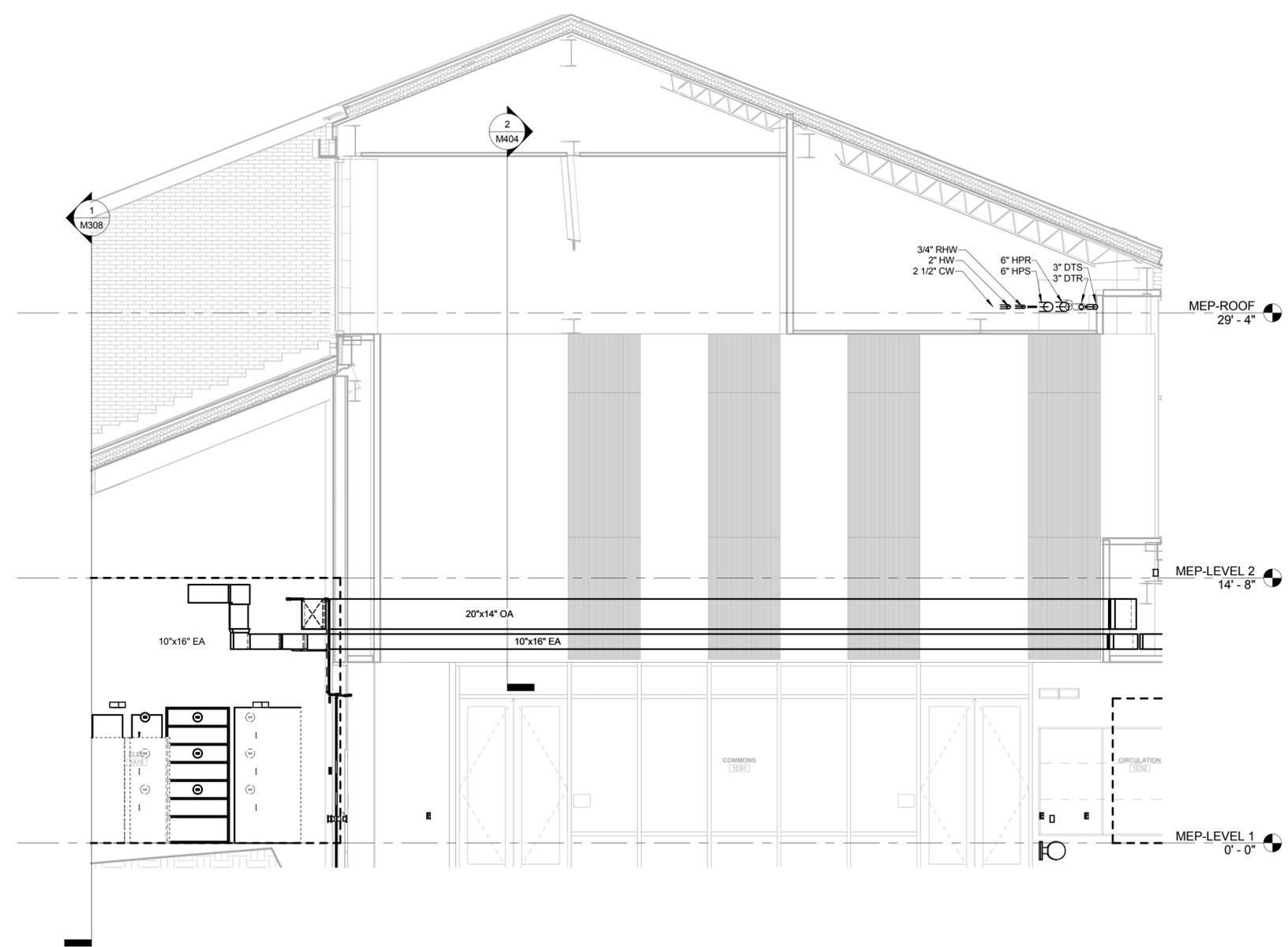
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2 MECH COMMONS 1C01 SECTION 2  
1/4" = 1'-0"



1 MECH COMMONS 1C01 SECTION 1  
1/4" = 1'-0"

APPROVED	DATE	APPR
FOR COMMANDER NAVFAC ACTIVITY		
SATISFACTORY TO	DATE	
CRK	LMM	KDM
PRJCDM		
BRANCH MANAGER		
CHIEF ENGR ARCH		
FIRE PROTECTION		
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON DDDEA	QUANTICO, VA	MECHANICAL SECTIONS
MARINE CORPS BASE QUANTICO	QUANTICO, VA	
<b>REPLACE QUANTICO M/H SCHOOL</b>		
SCALE: 1/4" = 1'-0"		
PROJECT NO. P-021		
CONSTR. CONTR. NO. W91236-15-C-0023		
NAVFAC DRAWING NO. 13091252		
SHEET 498 OF 789		
M404		
DRAWING REVISION: 10 MARCH 2009		

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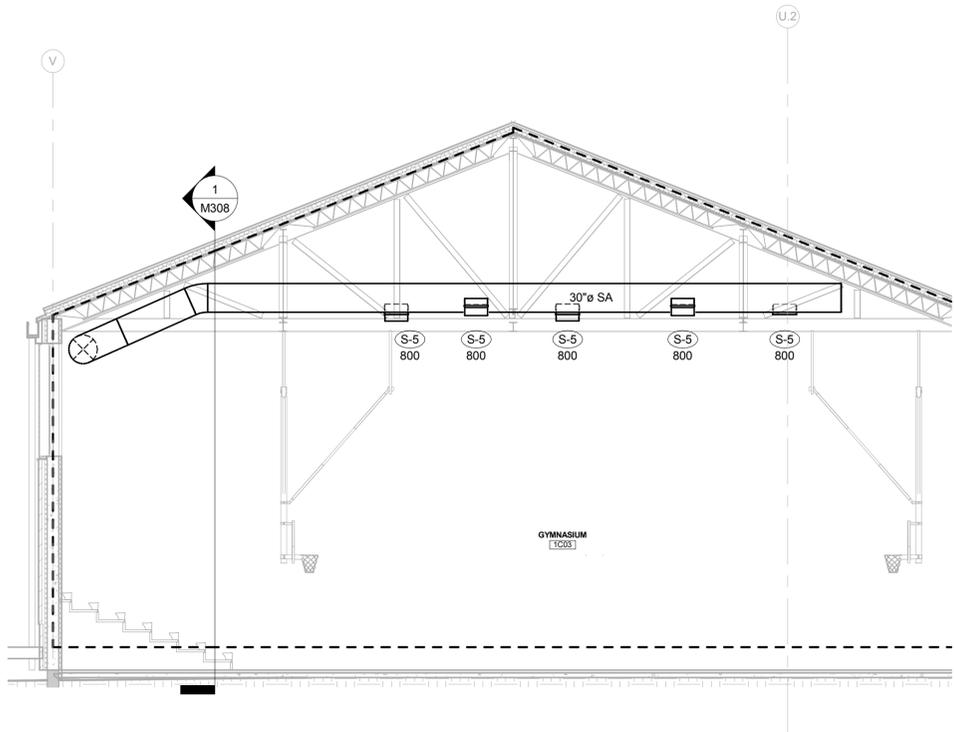
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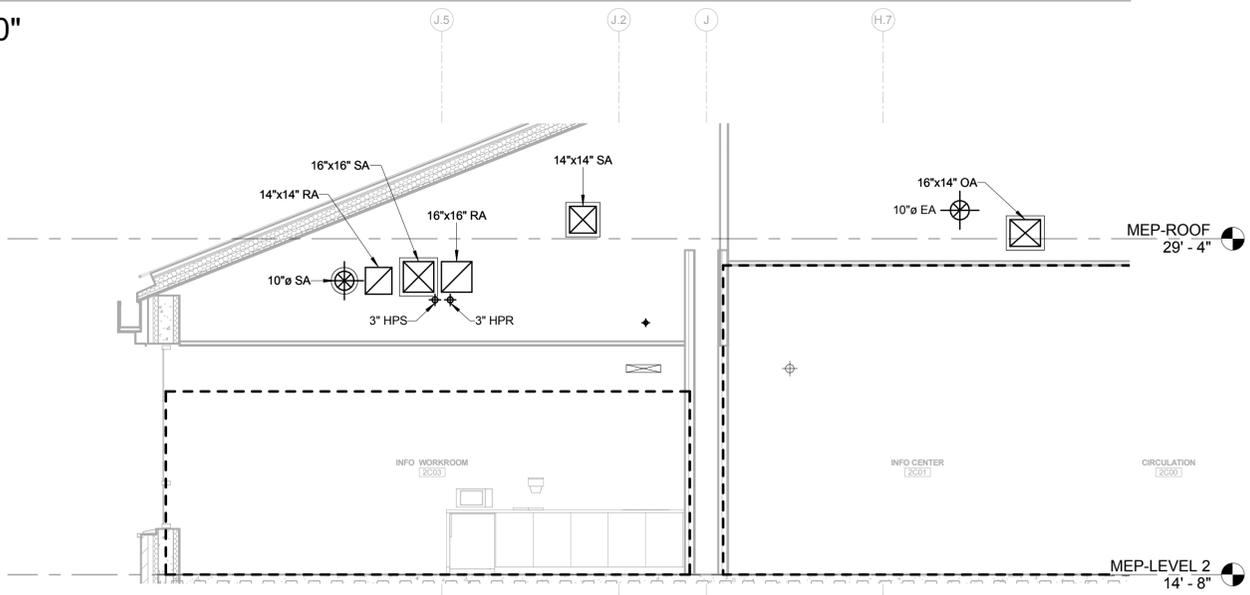
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3 GYMNASIUM DUCT ROUTING SECTION  
1/8" = 1'-0"



2 MECH LEARNING STUDIO 2B16  
1/4" = 1'-0"

1 MECH SECOND FLOOR AREA B SECTION  
1/4" = 1'-0"

APPROVED	DATE	APPR
FOR COMMANDER NAVFAC ACTIVITY		
SATISFACTORY TO	DATE	
CRK	LMM/CRK	KDM
PM/DM		
BRANCH MANAGER		
CHIEF ENG/ARCH		
FIRE PROTECTION		
NAVAL FACILITIES ENGINEERING COMMAND	QUANTICO, VA	
NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON	QUANTICO, VA	
D00EA		
MARINE CORPS BASE QUANTICO		
REPLACE QUANTICO M/H SCHOOL		
MECHANICAL SECTIONS		
SCALE: As indicated		
PROJECT NO.: P-021		
CONSTR. CONTR. NO. W91236-15-C-0023		
NAVFAC DRAWING NO. 13091253		
SHEET 499 OF 789		
M405		
DRAWING REVISION	10 MARCH 2009	



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Philadelphia, PA 19106-1590  
Tel: 215-923-2020 Fax: 215-574-0952

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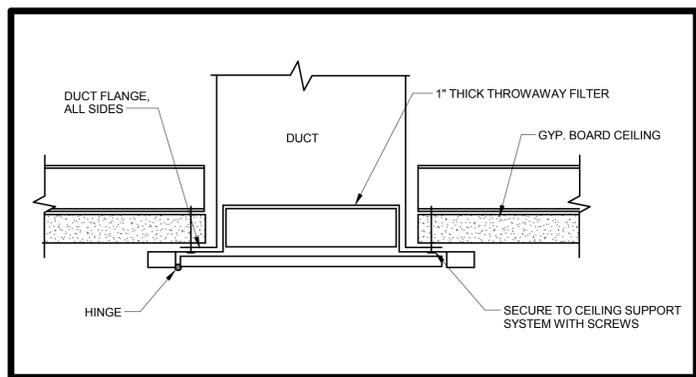
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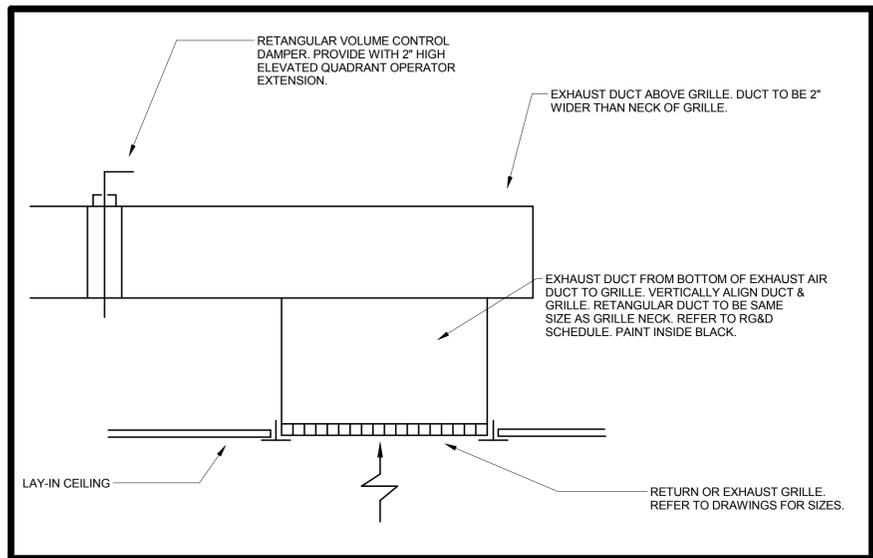
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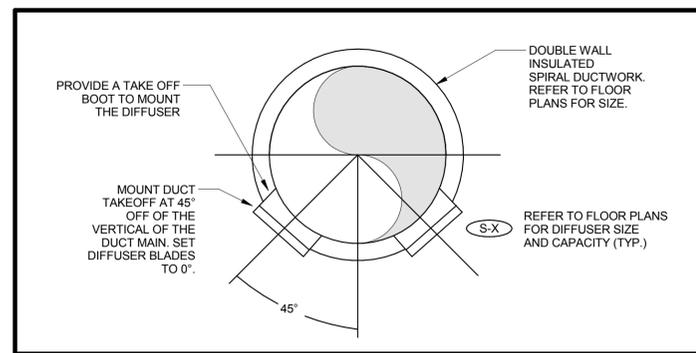
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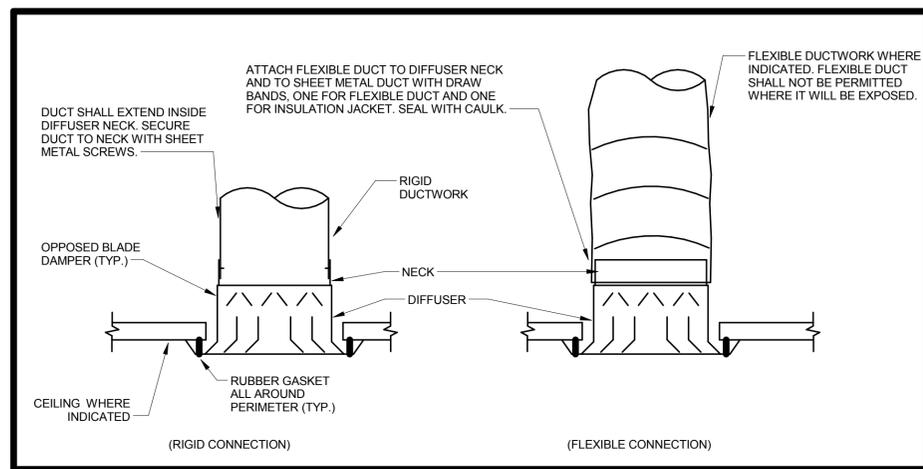
5 FILTER/GRILLE DUCT CONNECTION DETAIL  
SCALE: NTS



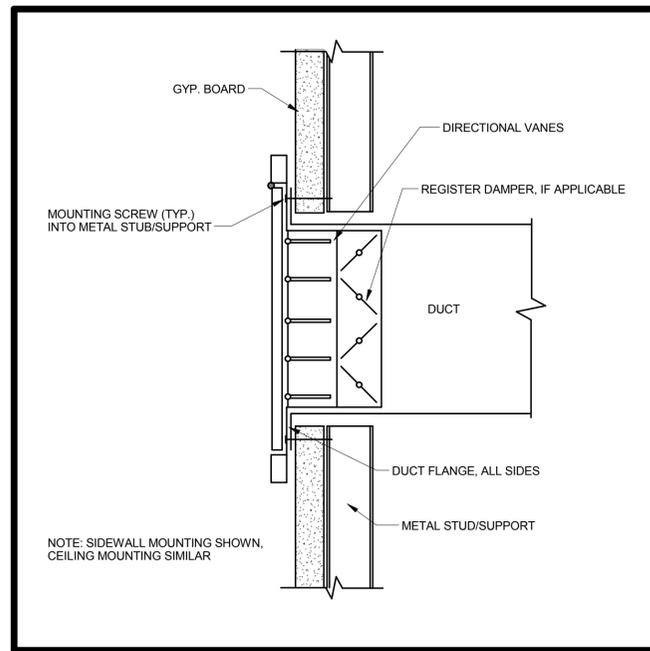
3 EXHAUST GRILLE DETAIL (FOR TOILET/JAN EXHAUST)  
SCALE: NTS



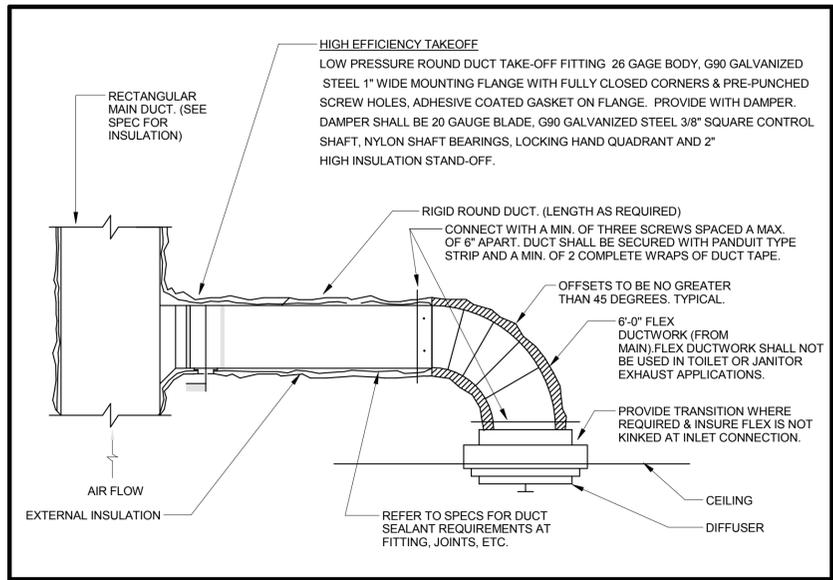
1 REGISTER DUCT TAKEOFF DETAIL  
SCALE: NTS



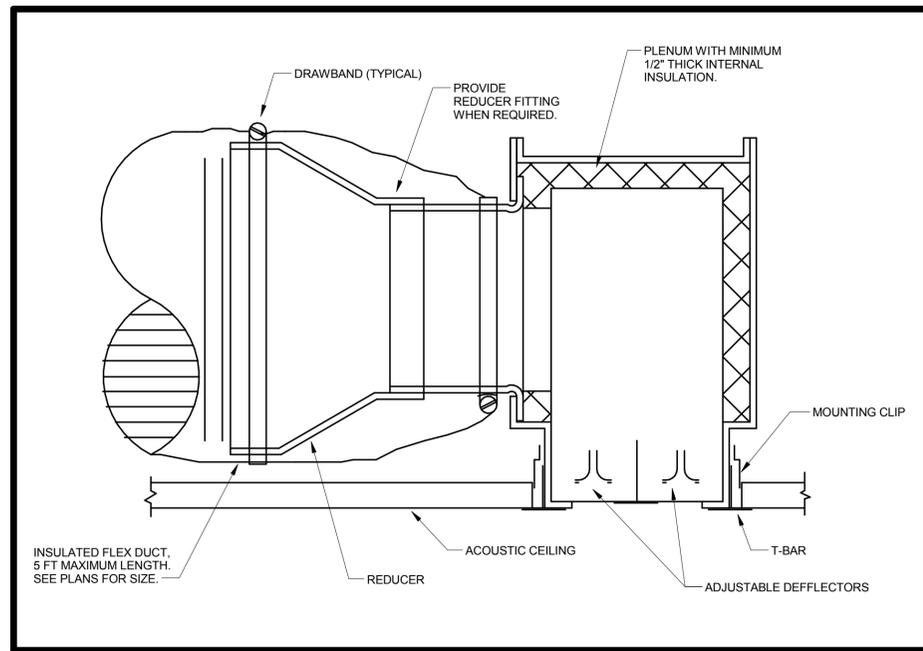
6 DUCT TO DIFFUSER/REGISTER CONNECTION  
SCALE: NTS



2 GRILLE/REGISTER DUCT CONNECTION DETAIL  
SCALE: NTS



4 TYPICAL ROUND SUPPLY, RETURN, & EXHAUST BRANCH DUCT DETAIL (NON TOILET OR JANITOR CLOSET)  
SCALE: NTS



7 LINEAR SLOT DIFFUSER DETAIL  
SCALE: NTS

SYN	DESCRIPTION	DATE	APPR



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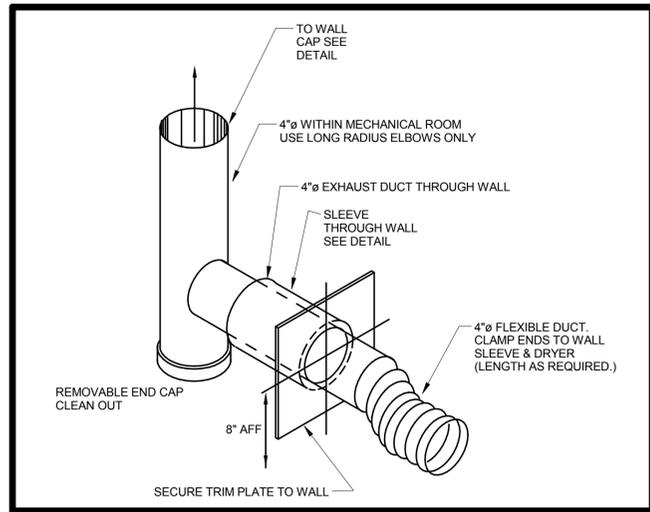
APPROVED  
FOR COMMANDER NAVFAC  
ACTIVITY

SATISFACTORY TO DATE  
CRK LMM/CRK KDM  
P/MDM  
BRANCH MANAGER  
CHIEF ENGR ARCH  
FIRE PROTECTION

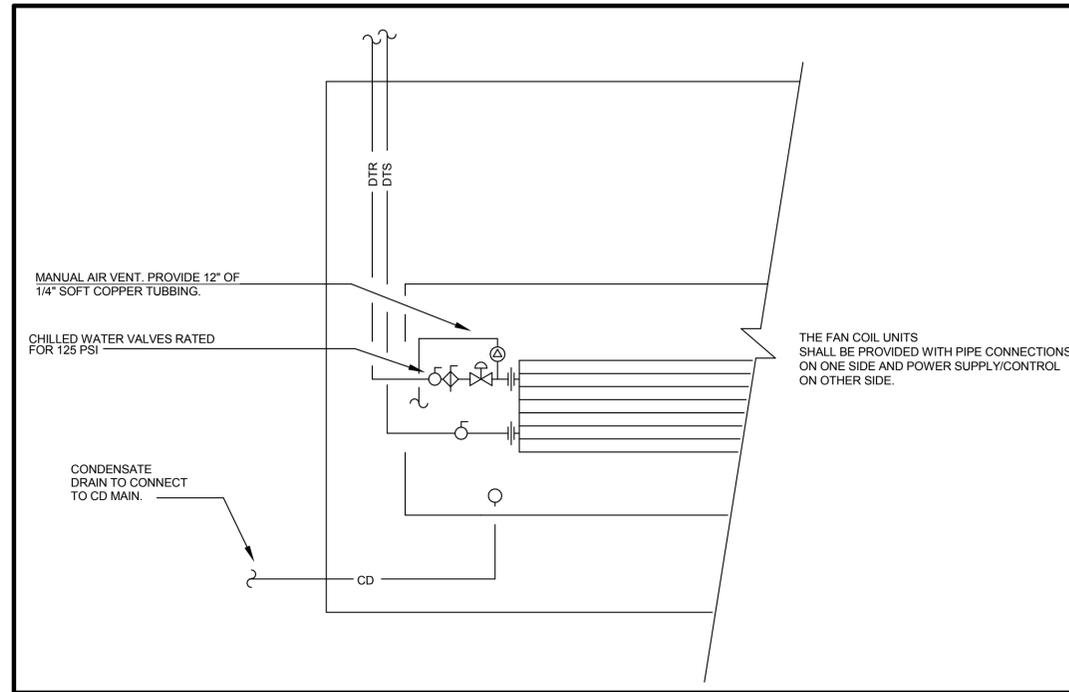
DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON  
DODIA  
MARINE CORPS BASE QUANTICO, VIRGINIA  
QUANTICO, VA  
**REPLACE QUANTICO M/H SCHOOL**  
MECHANICAL DETAILS

SCALE: As Indicated  
PROJECT NO.: P-021  
CONSTR. CONTR. NO.: W91236-15-C-0023  
NAVFAC DRAWING NO.: 13091256  
SHEET 502 OF 789  
M503

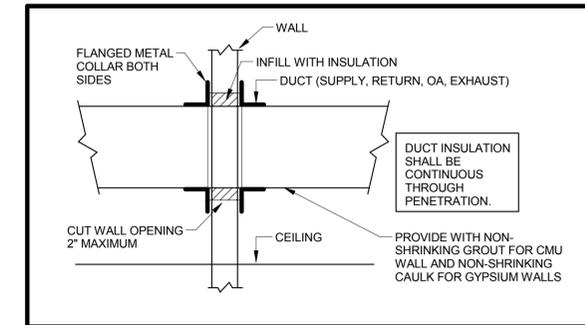
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3 DRYER VENT HOOKUP DETAIL  
SCALE: NTS

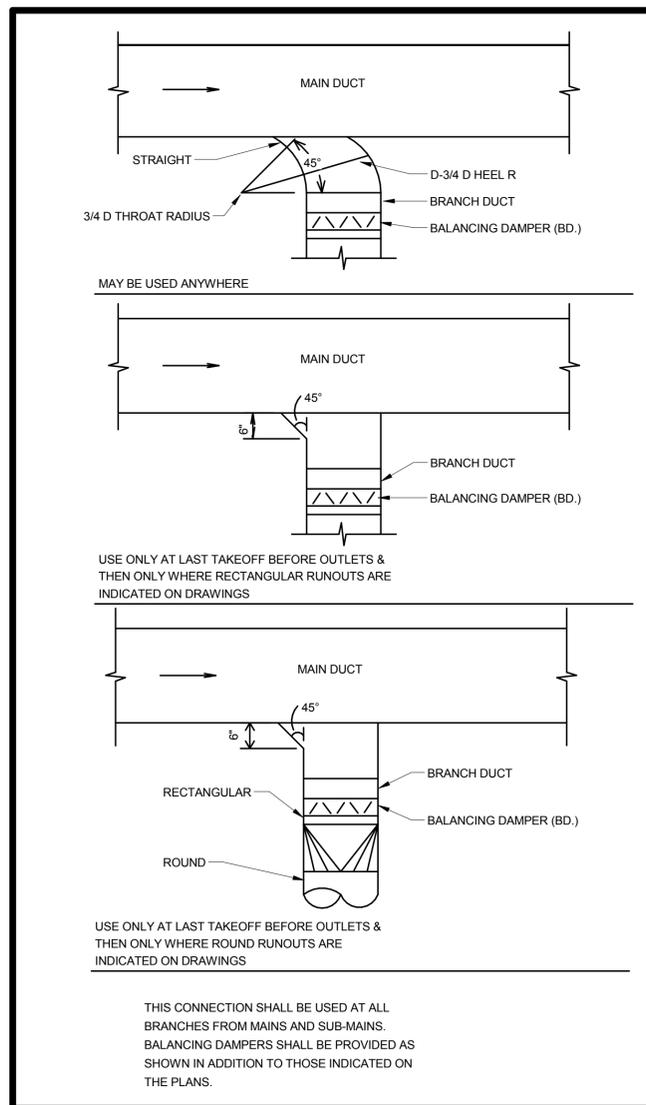


6 FAN COIL PIPING DETAIL  
SCALE: NTS



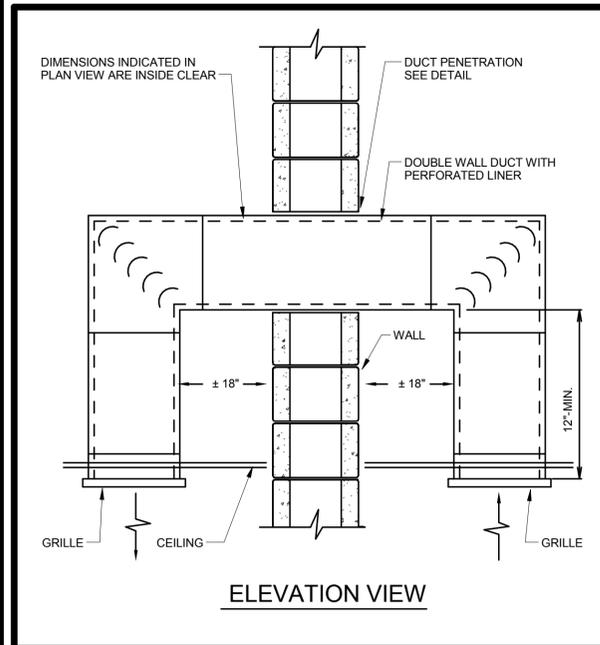
7 DUCT PENETRATION THROUGH NON-RATED WALL DETAIL  
SCALE: NTS

C



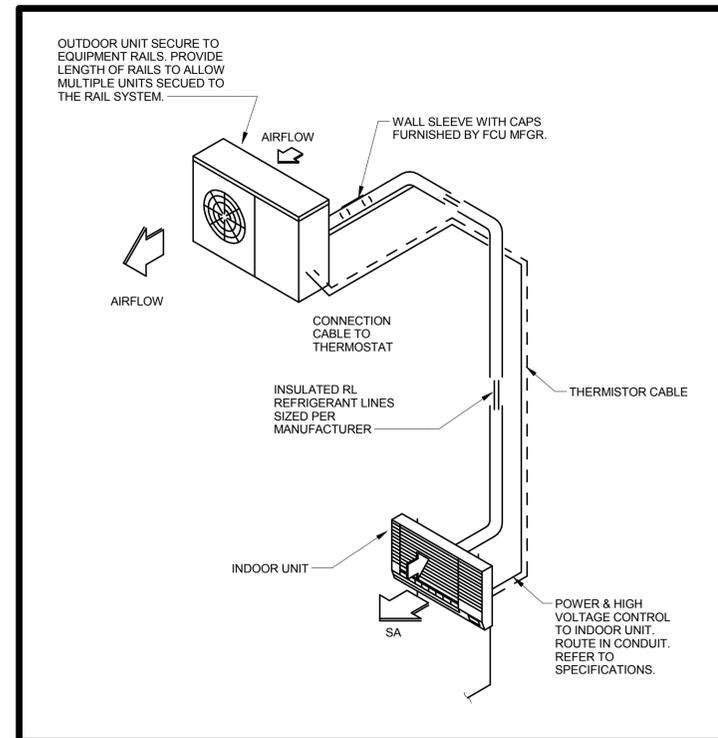
2 BRANCH CONNECTION DETAILS  
SCALE: NTS

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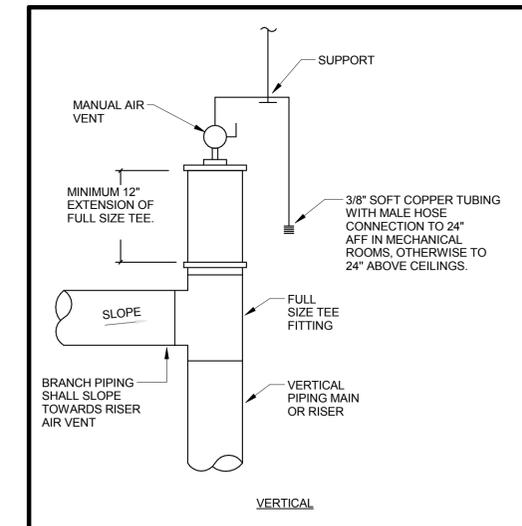


5 TRANSFER DUCT DETAIL  
SCALE: NTS

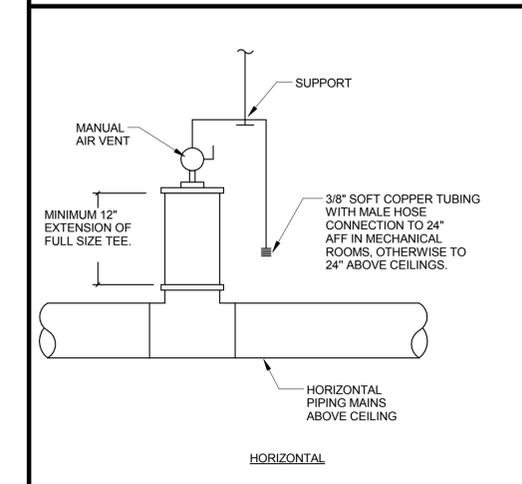
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4 DUCTLESS AIR CONDITIONER UNIT DETAIL  
SCALE: NTS



1 MANUAL AIR VENT DETAIL  
SCALE: NTS



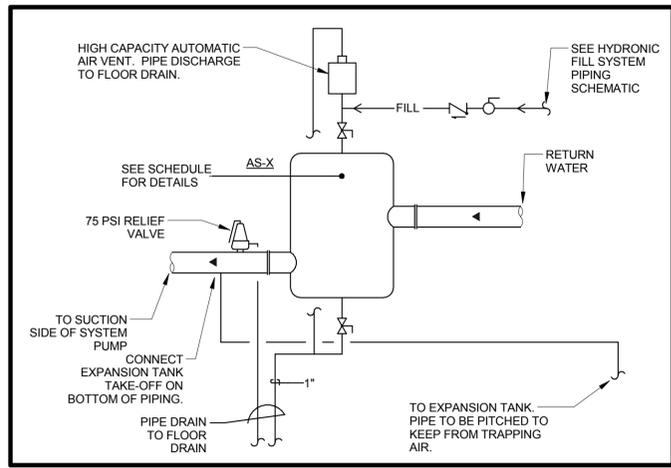
DATE	APPR
DESCRIPTION	SYM
<b>EWING COLE</b> Federal Reserve Bank Building 100 North 6th Street Philadelphia, PA 19106-1590 Tel: 215-923-2020 Fax: 215-574-0822	
APPROVED	AE INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	DATE
CRK	LMM/CRK KDM
PM/DM	
BRANCH MANAGER	
CHIEF ENGR ARCH	
FIRE PROTECTION	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON D/DEA	MARINE CORPS BASE QUANTICO, VIRGINIA QUANTICO, VA
<b>REPLACE QUANTICO M/H SCHOOL</b>	
MECHANICAL DETAILS	
SCALE:	As Indicated
PROJECT NO.:	P-021
CONSTR. CONTR. NO.:	W91236-15-C-0023
NAVFAC DRAWING NO.:	13091257
SHEET	503 OF 789
<b>M504</b>	
DRAWING REVISION	10 MARCH 2016

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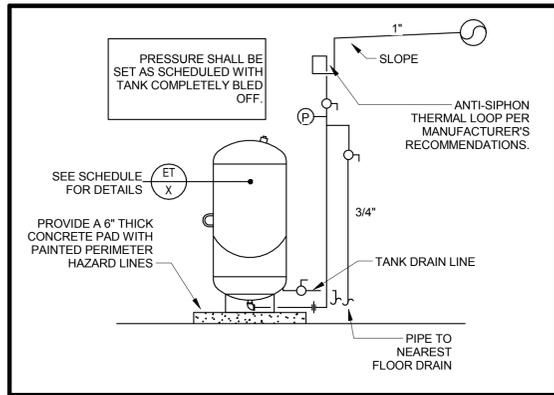
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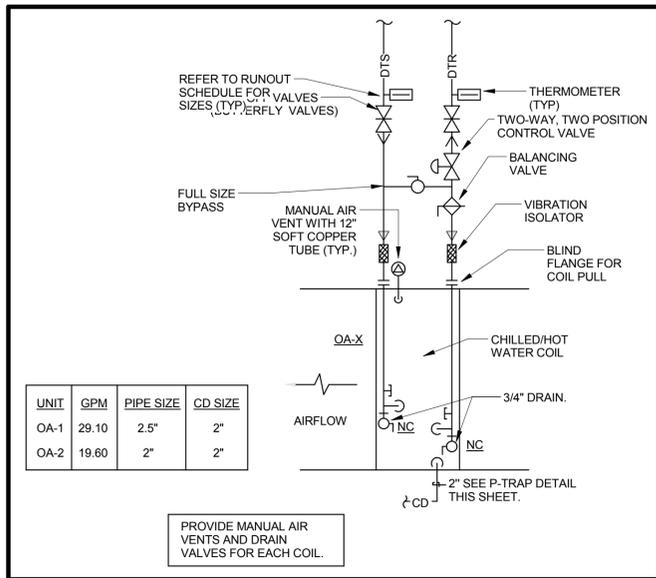
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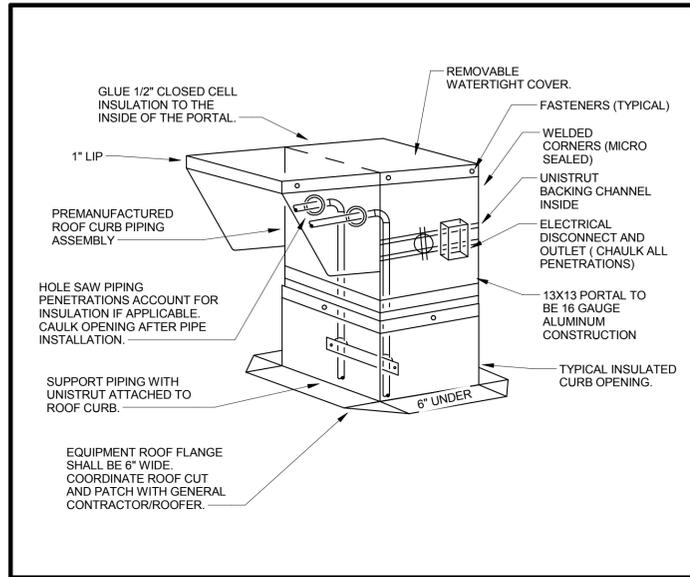
1 AIR SEPARATOR TANK DETAIL (SCALE: NTS)



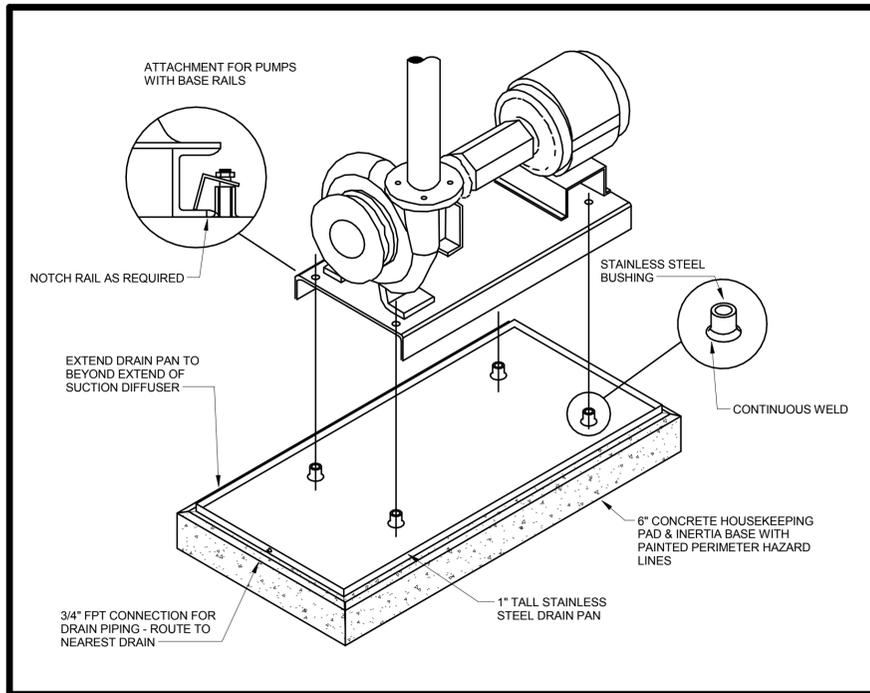
7 EXPANSION TANK PIPING DETAIL (SCALE: NTS)



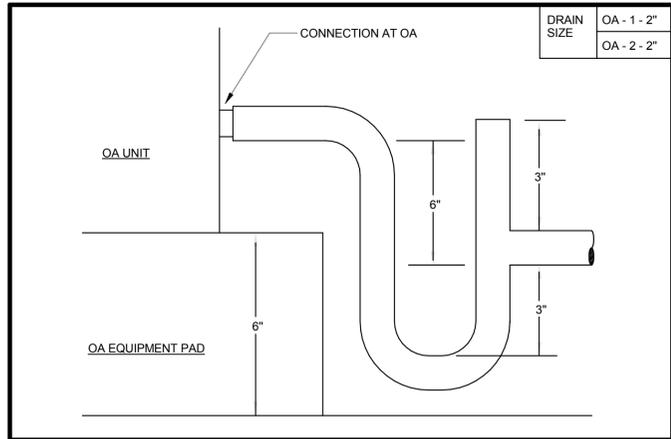
2 OUTSIDE AIR COIL CONNECTION DETAIL (SCALE: NTS)



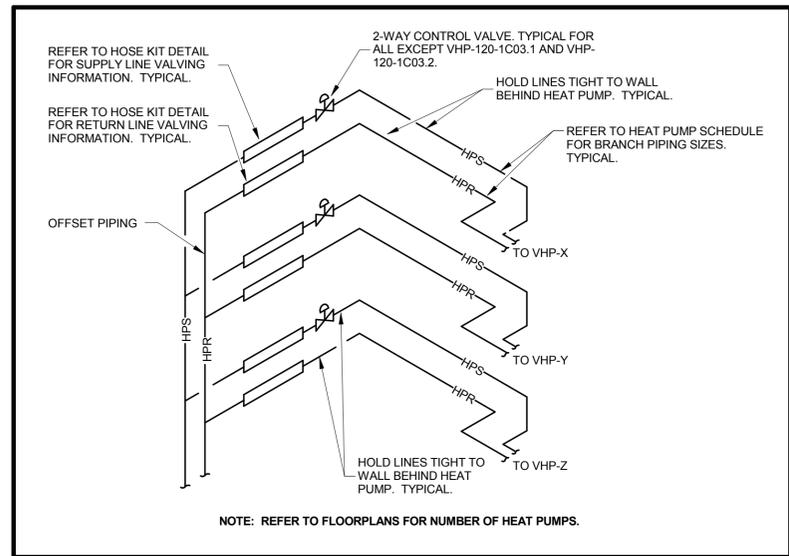
8 PIPE DRAIN/ROOF CURB DETAIL (SCALE: NTS)



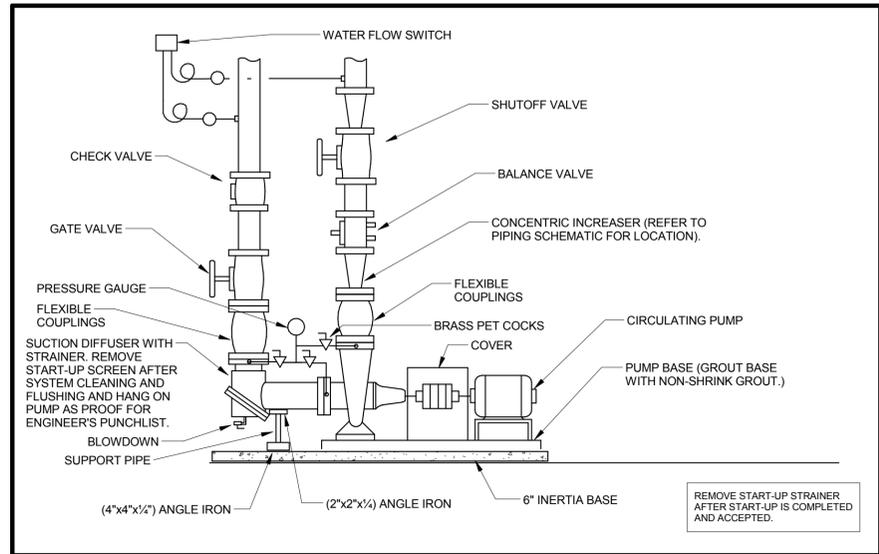
4 PUMP DRAIN PAN DETAIL (SCALE: NTS)



6 OA P-TRAP DETAIL (DRAW-THRU COIL) (SCALE: NTS)



5 HYDRONIC PIPING CONNECTIONS DETAIL (SCALE: NTS)



3 BASE MOUNTED PUMP PIPING DETAIL (SCALE: NTS)

NO.	DESCRIPTION	DATE	APPR.



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AE INFO

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SATISFACTORY TO DATE

CRK LMM/CRK KDM

PM/DM

BRANCH MANAGER

CHIEF ENGR ARCH

FIRE PROTECTION

NAVFACILITIES ENGINEERING COMMAND  
 NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON  
 DOD/EA  
 MARINE CORPS BASE QUANTICO, VIRGINIA  
 QUANTICO, VA

REPLACE QUANTICO M/H SCHOOL

MECHANICAL DETAILS

SCALE: As Indicated

PROJECT NO.: P-021

CONSTR. CONTR. NO.: W91236-15-C-0023

NAVFAC DRAWING NO.: 13091258

SHEET 504 OF 789

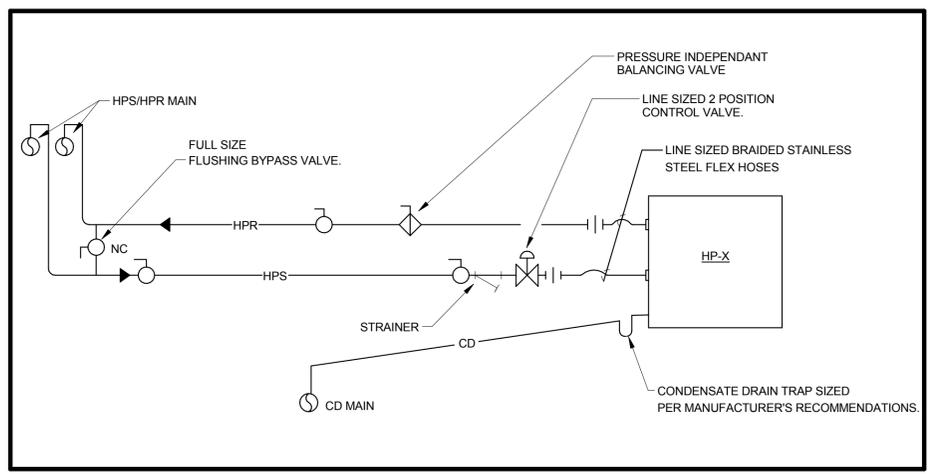
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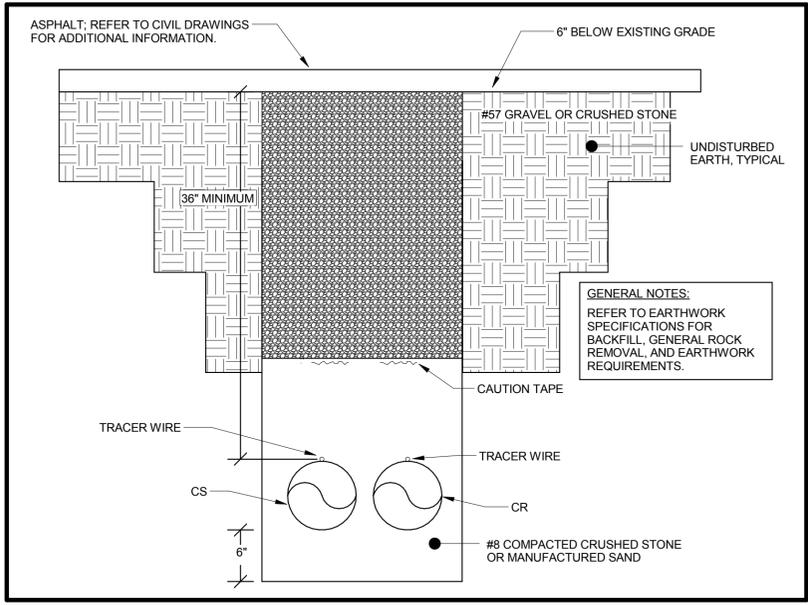
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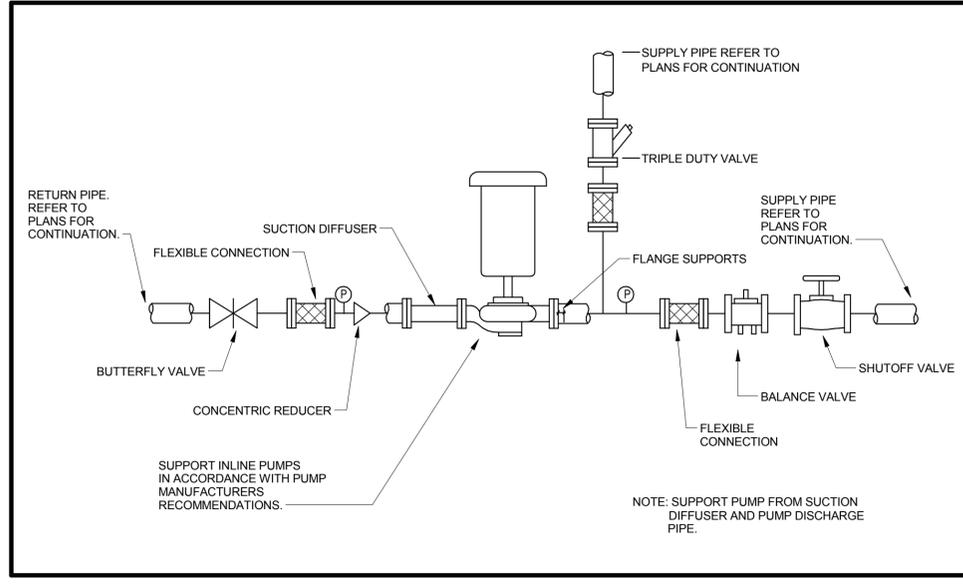
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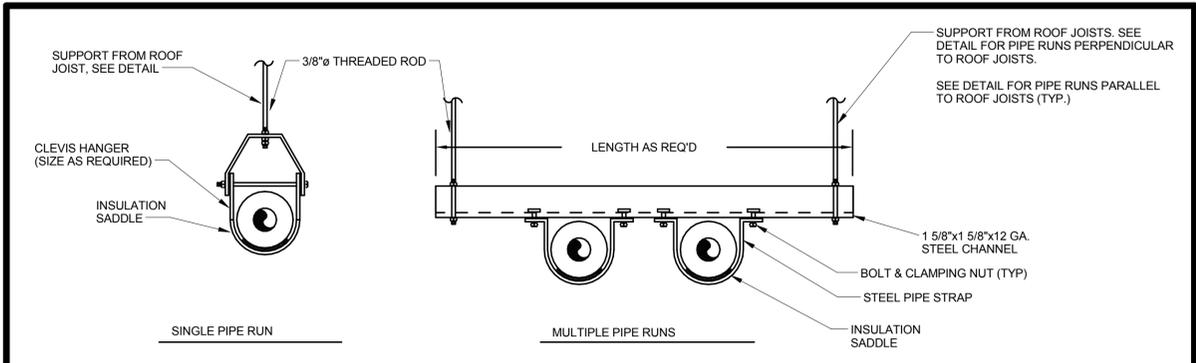
4 HORIZONTAL HEAT PUMP PIPING SCHEMATIC  
SCALE: NTS



1 CONDENSER WATER MAINS TRENCHING DETAIL  
SCALE: NTS



3 IN-LINE PUMP DETAIL  
SCALE: NTS



MAXIMUM PIPE/TUBING SUPPORT SPACING																		
NOM. SIZE (IN.)	THRU 3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
PIPE (FT.)	7	7	7	9	10	11	12	14	16	17	19	22	23	25	27	28	30	32
TBING (FT.)	5	6	7	8	8	9	12	12	13	14	16	-	-	-	-	-	-	-

2 FEDERAL PIPE SUPPORT DETAIL-HVAC  
SCALE: NTS

APPROVED

FOR COMMANDER NAVFAC ACTIVITY

SATISFACTORY TO DATE

CRK LMM/CRK KDM

PLM/DM

BRANCH MANAGER

CHIEF ENGR ARCH

FIRE PROTECTION

NAVAL FACILITIES ENGINEERING COMMAND  
NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON  
DODEA

MARINE CORPS BASE QUANTICO, VIRGINIA

QUANTICO, VA

REPLACE QUANTICO M/H SCHOOL

MECHANICAL DETAILS

SCALE: As indicated

PROJECT NO.: P-021

CONSTR. CONTR. NO. W91236-15-C-0023

NAVFAC DRAWING NO. 13091259

SHEET 505 OF 789

M506

DRAWN/FORM REVISION: 10 MARCH 2009



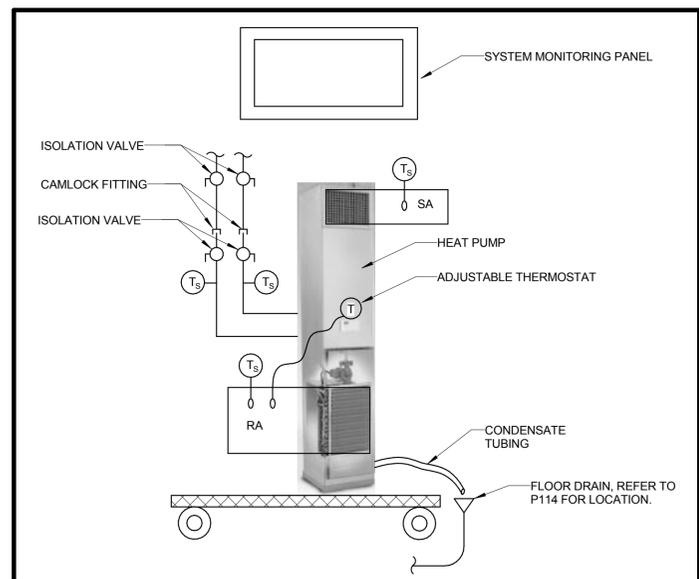
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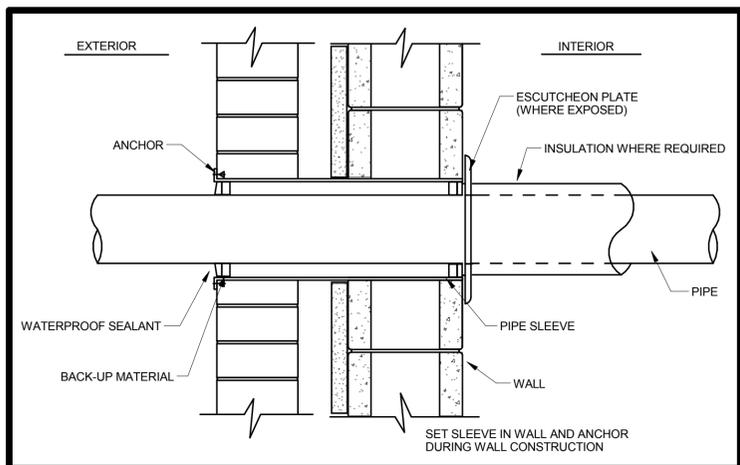
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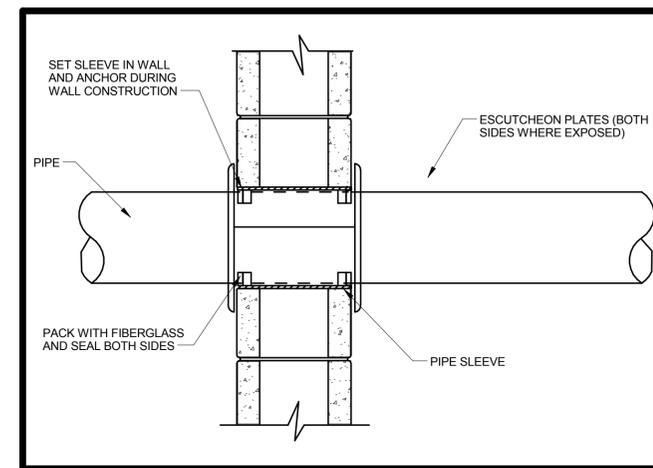
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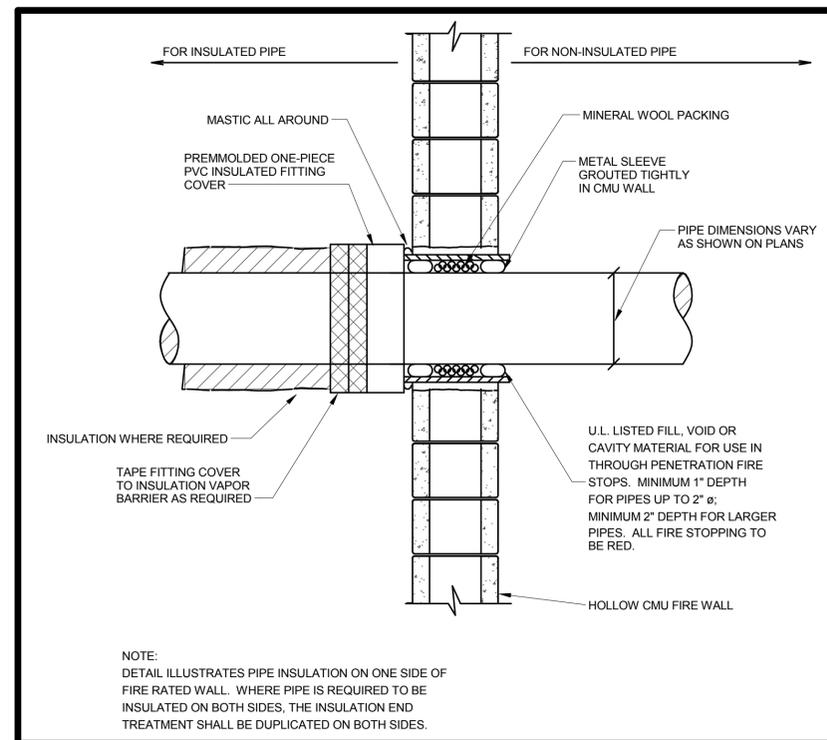
2 HVAC CURRICULUM DEMONSTRATION HEAT PUMP  
SCALE: NTS



3 PIPE SLEEVE THRU EXTERIOR WALL  
SCALE: NTS



1 MASONRY WALL SLEEVE  
SCALE: NTS



4 FIRE WALL PENETRATION  
SCALE: NTS

SYN	DESCRIPTION	DATE	APPR



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FOR COMMANDER NAVFAC  
ACTIVITY

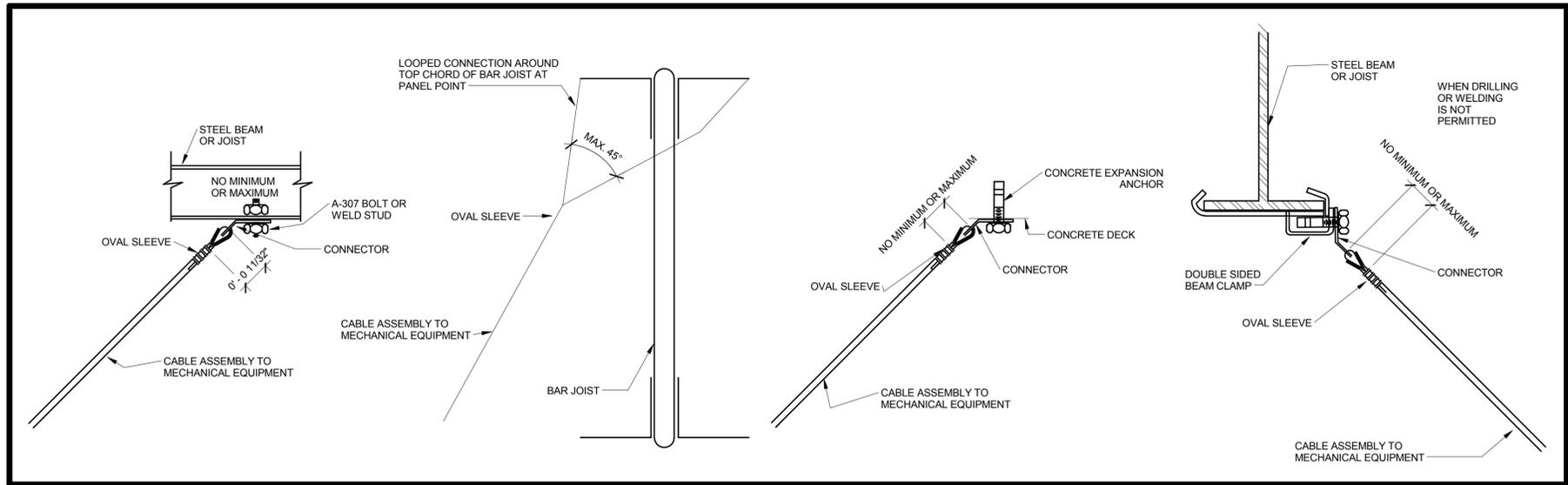
SATISFACTORY TO	DATE
CRK	LMM/CRK KDM
PM/DM	
BRANCH MANAGER	
CHIEF ENGR ARCH	
FIRE PROTECTION	

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON  
DODEA  
MARINE CORPS BASE QUANTICO, VIRGINIA  
QUANTICO, VA  
**REPLACE QUANTICO M/H SCHOOL**  
MECHANICAL DETAILS

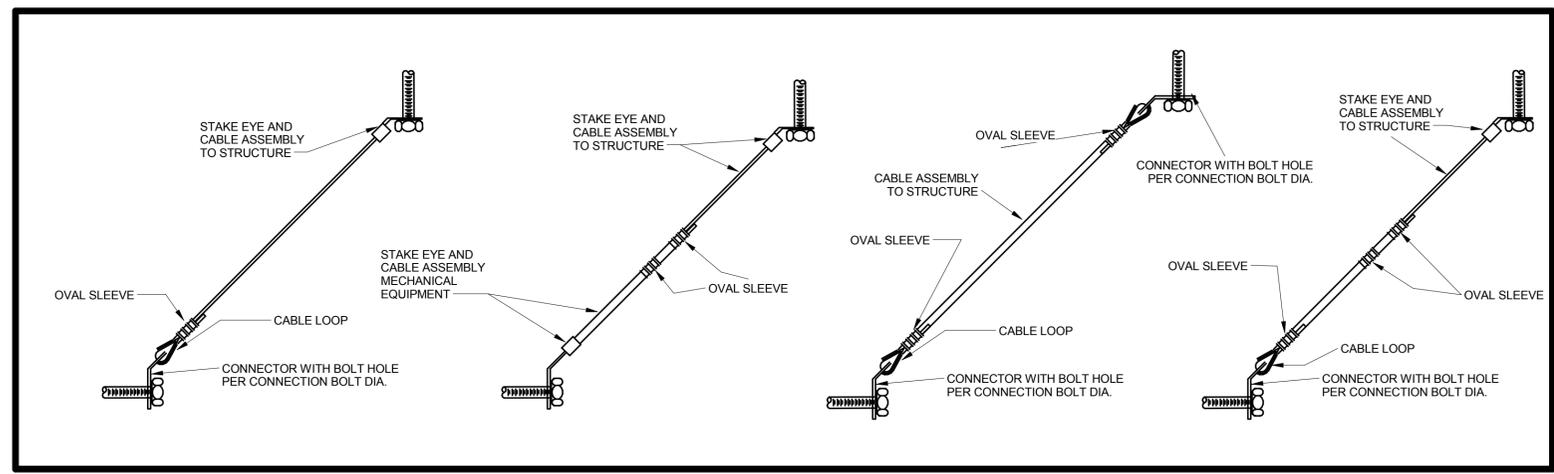
SCALE:	As indicated
PROJECT NO.:	P-021
CONSTR. CONTR. NO.:	W91236-15-C-0023
NAVFAC DRAWING NO.:	13091260
SHEET	506 OF 789
	M507

### GENERAL NOTES

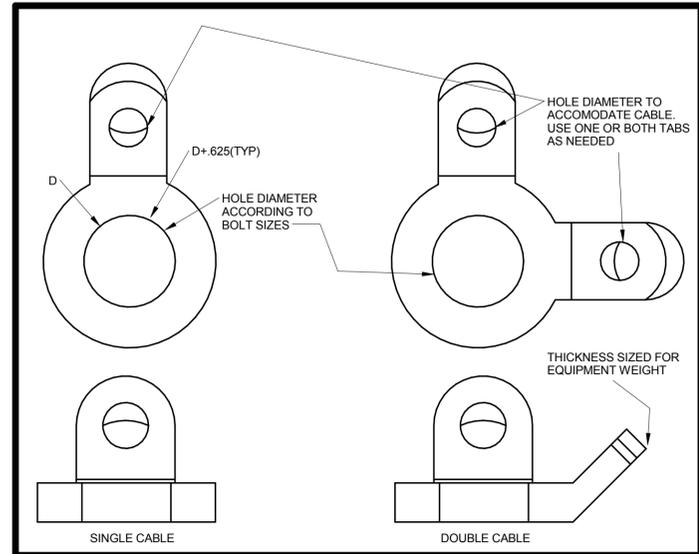
- A. BRACING SUPPORTS SHALL RESIST 0.5 TIMES FORCE IN ANY DIRECTION AND 1.5 TIMES IN DOWNWARD DIRECTION.
- B. SUSPEND PIPE AND DUCT WHICH IMPOSE A LOAD 31 POUNDS OR MORE ON THEIR SUPPORTS SHALL BE INSTALLED TO RESIST FORCES OF .5 TIMES THE PIPE/DUCT WEIGHT IN ANY DIRECTION AND 1.5 TIMES THE PIPE/DUCT WEIGHT IN THE DOWNWARD DIRECTION.
- C. ALL FLOOR MOUNTED MECHANICAL EQUIPMENT WITHOUT VIBRATION ISOLATION SHALL BE BOLTED TO THE FLOOR OR CONCRETE PAD.
- D. REFER TO STANDARD 19 EQUIPMENT BRACING, SHEET G006, FOR SUSPENDED EQUIPMENT BRACING REQUIREMENTS.



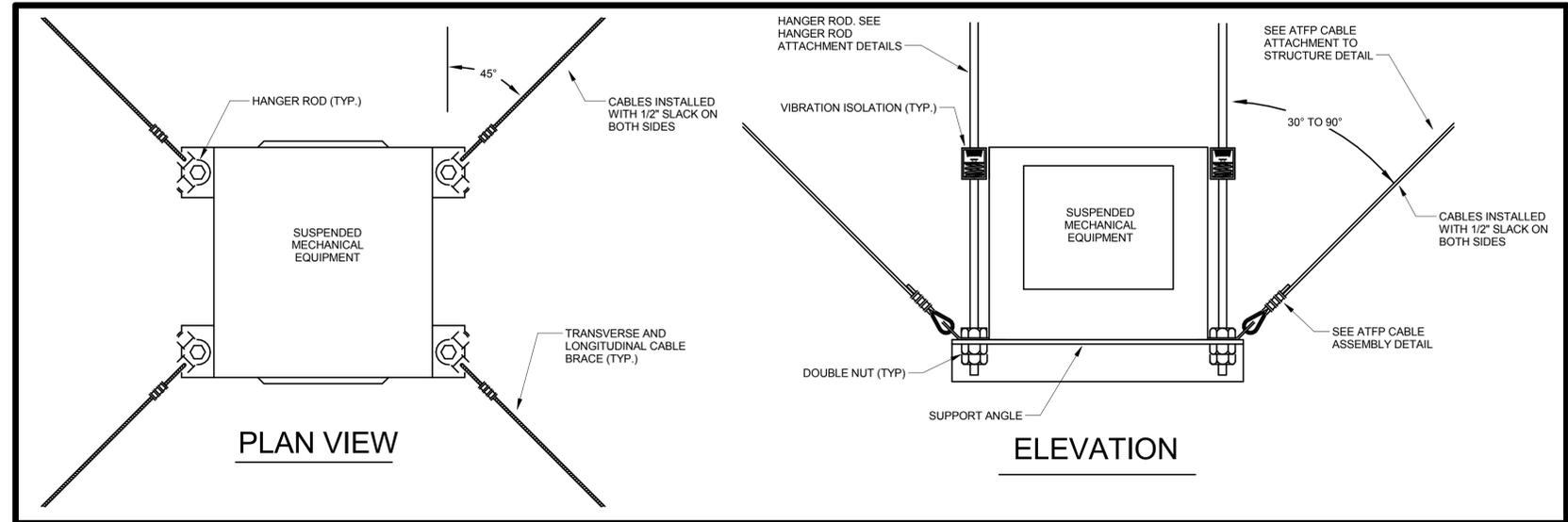
2 ATFP CABLE BRACING ATTACHMENT TO STRUCTURE DETAIL  
SCALE: NTS



3 ATFP CABLE BRACING ASSEMBLY DETAIL  
SCALE: NTS



4 ATFP BRACING CONNECTOR DETAIL  
SCALE: NTS



1 ATFP BRACING DETAIL FOR SUSPENDED MECHANICAL EQUIPMENT WITH EXTERNAL VIBRATION ISOLATORS  
SCALE: NTS

DATE	APPR
DESCRIPTION	SYM
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APPROVED	AE INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	DATE
CRK	LMM/CRK KDM
PLM/DM	
BRANCH MANAGER	
CHIEF ENGR ARCH	
FIRE PROTECTION	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON DDOEA MARINE CORPS BASE QUANTICO, VIRGINIA QUANTICO, VA	
<b>REPLACE QUANTICO M/H SCHOOL</b>	
MECHANICAL DETAILS	
SCALE:	As indicated
PROJECT NO.:	P-021
CONSTR. CONTR. NO.:	W91236-15-C-0023
NAVFAC DRAWING NO.:	13091261
SHEET	507 OF 789
<b>M508</b>	
DRAWING REVISION	10 MARCH 2016

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REFER TO MECHANICAL SYSTEM HYDRONIC PIPING SCHEMATIC FOR CONTINUATION.

REFER TO MECHANICAL SYSTEM HYDRONIC PIPING SCHEMATIC FOR CONTINUATION.

TEES TO BE 4 PIPE DIAMETERS APART OR LESS FOR HYDRAULIC SEPARATION

80 PSI PRV

SPILL TO FD

SPILL TO FD

PUMP SHALL BE BALANCED WITH VFD

PUMP SHALL BE BALANCED WITH VFD

PROVIDE PIPE STAND SUPPORT TYPICAL.

CONCRETE PAD TYPICAL

### MECHANICAL PLANT PIPING SCHEMATIC

NTS

MOUNT ALL EQUIPMENT ON A CONCRETE PAD.

1" TO AIR SEPARATOR DEVICE #2 AS-2.

1" TO AIR SEPARATOR DEVICE #1 AS-1.

FILL VALVE (TYP)

LINE SIZED WATER METER WITH DIGITAL OUTPUT FOR BMS ALARM.

BALL VALVE

2 POSITION, 2 WAY CONTROL VALVE INTERLOCKED WITH CHEMICAL TREATMENT SYSTEM.

GLOBE VALVE FOR FLOW CONTROL

MAINTAIN 1/2"/FT. SLOPE IN HYDRONIC PIPING TO CT-1.

FLEX CONNECTOR

SPILL 3/4" BLOWDOWN LINE TO DRAIN PIT.

CT 1 COOLING TOWER

PROVIDE STAINLESS STEEL COOLING TOWER DISCHARGE SCREEN AT 10" DRAIN LINE.

HEAVY DUTY STEEL COVER DESIGNED SPECIFICALLY FOR DUPLEX PUMPS WITH KNOCK-OUTS FOR PUMP IMPELLARS, 6" CS PIPING, COLUMN PIPE AND FLOAT CONTROLS.

20 MIL. STAINLESS STL. STRAINER HX-1 ENTERING WATER SIDE. TYP. PAD HEIGHT AS REQUIRED TO MAINTAIN SLOPE IN PIPING.

56" HIGH WATER FLOAT 50" MAXIMUM WATER DEPTH WHEN BOTH PUMPS ARE OFF.

LOW WATER FLOAT 24" MINIMUM WATER DEPTH FOR PUMP OPERATION.

CONCRETE 1700 GALLON CISTERNA MODIFIED IN FABRICATION TO CONTAIN ONE 30" MANHOLE, A 10" DRAIN INLET AND 2" CONDENSATE INLET. PROVIDE FLOATS AS SPECIFIED.

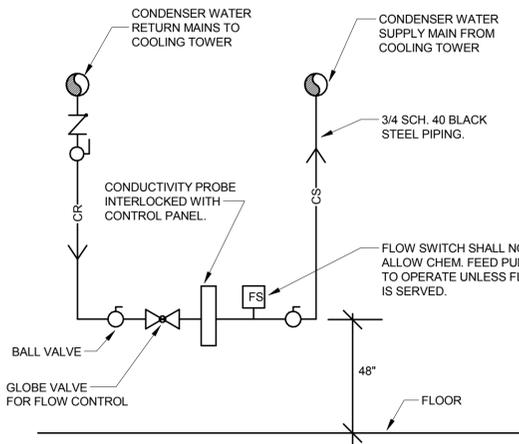
BRASS SEDIMENT STRAINERS HANG 6" ABOVE SUMP FLOOR

PROVIDE CONCRETE BASIN WITH DIMENSIONS: LENGTH 9', WIDTH 5', DEPTH 5'

4" PVC OVERFLOW PIPE BOTTOM OF PIPE 50" FROM BASIN FF

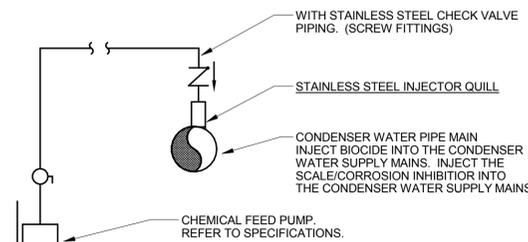
PROVIDE CONCRETE DRAINAGE BASIN WITH DIMENSION: WIDTH 3', LENGTH 3', AND DEPTH 3'.

10" DRAIN LINE TO REMOTE COOLING TOWER BASIN.



### CONDUCTIVITY MONITORING ASSEMBLY

NOT TO SCALE



### CHEMICAL FEED INJECTOR BIOCIDES & SCALE/CORROSION INHIBITORS

NOT TO SCALE

APPROVED	DATE	APPR
FOR COMMANDER NAVFAC ACTIVITY		DESCRIPTION
SATISFACTORY TO	DATE	
BDH	BDH	KDM
PM/DM		
BRANCH MANAGER		
CHIEF ENGR ARCH		
FIRE PROTECTION		
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON DOD/EA MARINE CORPS BASE QUANTICO QUANTICO, VA		MECHANICAL PIPING SCHEMATICS
<b>REPLACE QUANTICO M/H SCHOOL</b>		
SCALE: As indicated		
PROJECT NO.: P-021		
CONSTR. CONTR. NO. W91236-15-C-0023		
NAVFAC DRAWING NO. 13091262		
SHEET 508 OF 789		
M601		
DRAWING REVISION	10 MARCH 2016	



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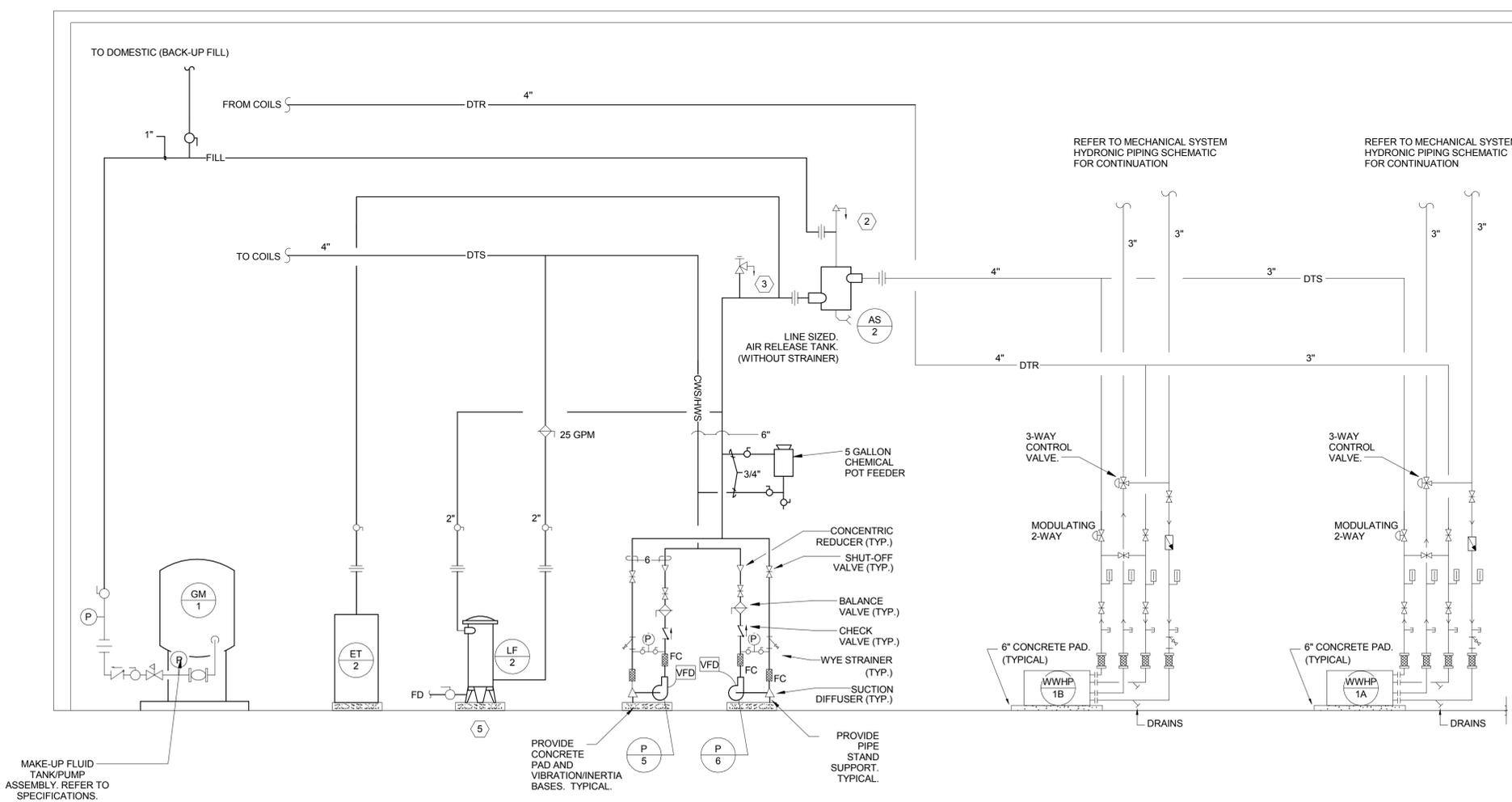
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**DUAL TEMPERATURE SYSTEM HYDRONIC PIPING SCHEMATIC**

NTS  
NOTE: SUPPORT AIR RELEASE TANKS FROM FLOOR IF REQUIRED.  
MOUNT ALL EQUIPMENT ON A CONCRETE PAD.

SYMBOL	DESCRIPTION	DATE	APPROVED
			
			
<b>EWING COLE</b> Federal Reserve Bank Building 100 North 6th Street Philadelphia, PA 19106-1500 Tel: 215-923-2020 Fax: 215-574-0852			
AE INFO			
APPROVED			
FOR COMMANDER NAVFAC ACTIVITY			
SATISFACTORY TO	DATE		
CRK	LMM/CRK	KDM	
PRJ/DM			
BRANCH MANAGER			
CHIEF ENGR ARCH			
FIRE PROTECTION			
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON DOD/EA MARINE CORPS BASE QUANTICO, VIRGINIA <b>REPLACE QUANTICO M/H SCHOOL</b> QUANTICO, VA MECHANICAL PIPING SCHEMATICS			
SCALE:	1/8" = 1'-0"		
PROJECT NO.:	P-021		
CONSTR. CONTR. NO.:	W91236-15-C-0023		
NAVFAC DRAWING NO.:	13091264		
SHEET	510	OF	789
M603			
DRAWING REVISION: 10 MARCH 2009			

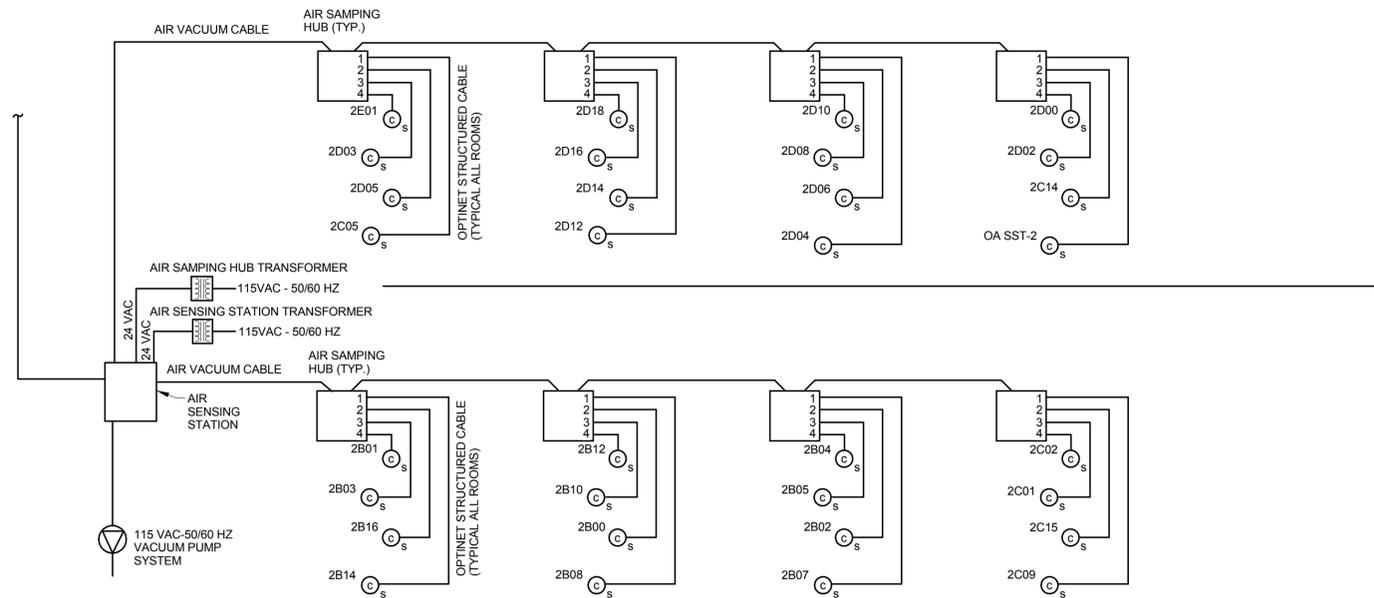
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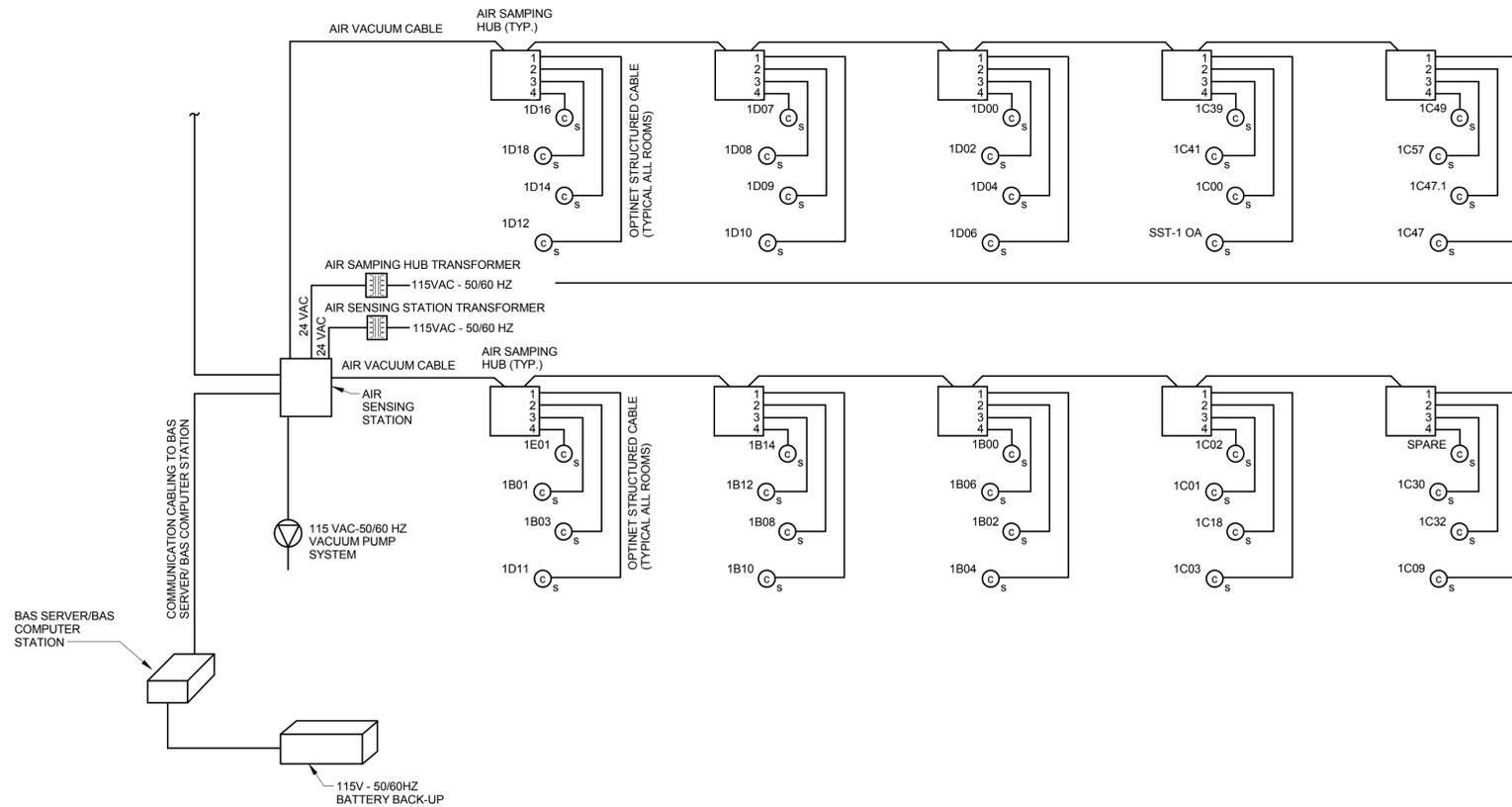
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2 AIR MONITORING SYSTEM 2  
1" = 1'-0"



1 AIR MONITORING SYSTEM 1  
1" = 1'-0"

APPROVED	DATE	APPR
FOR COMMANDER NAVFAC ACTIVITY		
SATISFACTORY TO	DATE	
CRK	LMM/CRK	KDM
PM/DM		
BRANCH MANAGER		
CHIEF ENGR ARCH		
FIRE PROTECTION		
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND - WASHINGTON DDOEA MARINE CORPS BASE QUANTICO, VIRGINIA QUANTICO, VA <b>REPLACE QUANTICO M/H SCHOOL</b> MECHANICAL PIPING SCHEMATICS		
SCALE:	1" = 1'-0"	
PROJECT NO.:	P-021	
CONSTR. CONTR. NO.:	W91236-15-C-0023	
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SHEET	511	OF 789
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