		HEAT PUMP SCHEI	DULE		
INDOOR L	JNIT DESIGNATION		HP-1A	HP-2A	HP-3A
OUTDOOF	R UNIT DESIGNATIO	N	HP-1B	HP-2B	HP-3B
LOCATION	N		VARIOUS	VARIOUS	VARIOUS
MINIMUM	COMBINED SEER R	ATING PER ARI		17.0	17.0
MINIMUM	COMBINED EER RA	TING PER ARI	11	12.2	12.2
		TOTAL AIRFLOW (CFM)	2900	1580	1580
		OUTSIDE AIRFLOW (CFM)	530	180	120
	EVADODATOD	EXTERNAL STATIC PRESSURE (IN-WC)	.6	.6	.6
_	EVAPORATOR	TOTAL COOLING CAPACITY (MBH)	89	47.5	47.5
INDOOR UNIT		HEAT PUMP HEATING CAPACITY AT 17° F (MBH)	50	29.2	29.2
OR		ELECTRIC HEATING CAPACITY (KW)	10	5.0	5.0
0		BLOWER MOTOR FLA (A)		9.1	9.1
<b>∠</b>		TOTAL MCA (A)	36	27	27
	ELECTRICAL	VOLTAGE	208	208	208
		PHASE	3	1	1
		FREQUENCY (Hz)	60	60	60
BASED O	N .		LENNOX	LENNOX	LENNOX
INDOOR L	JNIT MODEL		TAA090S4D-1Y	CBX32MV-048	CBX32MV-048
REFRIGE	RANT		R-410A	R-410A	R-410A
	AMBIENT DESIGN	TEMPERATURE (DEG F)	95	95	95
		MINIMUM CIRCUIT AMPACITY (A)	38	28.5	28.5
⊨		MAXIMUM OVERCURRENT PROTECTION (A)	60	45	45
OR UNIT		MINIMUM HEATING COP AT 17° F	2.25	2.5	2.5
OOR	FLECTRICAL	MINIMUM HEATING COP AT 47° F	3.3	3.32	3.32
OUTDO	ELECTRICAL	MINIMUM HEAT PUMP HSPF		8.7	8.7
Б		VOLTAGE (V)	208	208	208
		PHASE	3	1	1
		FREQUENCY (Hz)	60	60	60
BASED O	N	•	LENNOX	LENNOX	LENNOX
OUTDOOF	R SYSTEM MODEL		TPA090S4SN1Y	XP21-048-230	XP21-048-230
REMARKS	3		1, 2 & 3	1, 2 & 3	1, 2 & 3

#### REMARKS LEGEND:

- 1. PROVIDE CONDENSING UNIT SHUTOFF MOISTURE SENSOR IN AUXILLARY PORT OF INDOOR UNIT DRAIN PAN.
- 2. PROVIDE SECONDARY DRAIN PAN EXTENDING 4" BEYOND AIR HANDLING UNIT ON ALL SIDES.

— UNIT DRAIN CONNECTION

"A" = DIMENSION SHALL BE IN ACCORDANCE WITH MANUFACTURES

AC DRAIN FOR HEAT PUMP AIR HANDLER

INSTRUCTIONS, MINIMUM OF 2 INCHES.

DRAIN CONNECTION SIZE

CONDENSATE DRAIN PIPE SIZE SHALL BE UNIT

NEGATIVE PRESSURE DRAIN PAN

THREADED CAP

SLOPE 1/2" PER 10'

SEE DRAWINGS FOR

ROUTING

3. PROVIDE ECM MOTOR ON INDOOR UNIT.

**UNIT DRAIN PAN** 

NO SCALE

FINE	RGY RECOVERY VENTILATO	K SCHEDULE
ESIGNATION		ERV-1
CUDDLY FAN	TOTAL FAN AIRFLOW (CFM)	830
SUPPLY FAN	EXTERNAL STATIC PRESSURE (IN. WG)	.25
TYLIALIOT FAN	TOTAL FAN AIRFLOW (CFM)	700
EXHAUST FAN	EXTERNAL STATIC PRESSURE (IN. WG)	.25
	OPERATING OUTSIDE AIRFLOW	830
_	OPERATING EXHAUST AIRFLOW	700
ENTHALPY WHEEL	OUTDOOR EAT DB/WB (COOLING)	95/79
<u></u> ≻	OUTDOOR EAT DB/WB (HEATING)	20/16.6
ALP,	EXHAUST EAT DB/WB (COOLING)	75/63
Ĭ	EXHAUST EAT DB/WB (HEATING)	70/53
ш	DELIVERED CONDITIONS DB/WB (COOLING)	81.5/68.9
	DELIVERED CONDITIONS DB/WB (HEATING)	50.8/42.6
EII TEDO	SUPPLY (MERV)	8
FILTERS	EXHAUST(MERV)	8
	MCA (A)	18.3
ELECTRICAL	MOCP (A)	25
TRI	VOLTS (V)	115
ILE(	PHASE	1
ш	FREQUENCY (Hz)	60
ASED ON		GREENHECK
IODEL		MINIVENT-750
EMARKS:		1
EMARKS LEGE	ND:	•
PROVIDE FAC	TORY MOUNTED CONTROLS FOR UNITS INCLUDING ALL	REQUIRED
OTOD CTARTE	DO DROVIDE EACTORY DEMOTE DANIEL INCLUDING IND	ICATION FOR DIDTY

MOTOR STARTERS, PROVIDE FACTORY REMOTE PANEL INCLUDING INDICATION FOR DIRTY

FILTER, HAND-OFF-AUTO SWITCH, AND 7 DAY TIME CLOCK.

	ELECTRIC DOMESTIC WATER HEATER	
DESIGNATION	WH-1	
LOCATION	MECH ROOM	
STORAGE (GALLONS)	60	
TOTAL CAPACITY (KW)	6	
RECOVERY RATE @ 90 DEG F (GPH)	27	
ELECTRICAL		
VOLTS	208	
PHASE	1	
FREQUENCY (Hz)	60	
REMARKS	1	
DEMARKS LECEND.		

STORAGE (GALLONS)	60
TOTAL CAPACITY (KW)	6
RECOVERY RATE @ 90 DEG F (GPH)	27
ELECTRICAL	1
VOLTS	208
PHASE	1
FREQUENCY (Hz)	60
REMARKS	1
REMARKS LEGEND:	

REMARKS LEGEND:
1. PROVIDE 3.2 GALLON EXPANSION TANK OR LARGER SUCH AS AMTROL ST-8 OR SIMILAR.

#### HOODED GRAVITY INTAKE AND RELIEF SCHEDULE

DESIGNATION	HGI-1	HGR-1
USAGE	INTAKE	RELIEF
AIRFLOW (CFM)	830	700
STATIC PRESSURE (IN H2O)	.034	.026
THROAT AREA (SF)	1.83	1.45
THROAT VELOCITY (FPM)	454	483
THROAT DIAMETER (IN)	20.25	16.25
SELECTION BASED ON	GREENHECK	GREENHECK
MODEL	GRSI-18	GRSR-16
REMARKS	1	1
REMARKS LEGEND:		

REMARKS LEGEND.
1. PROVIDE BIRD SCREE

AIR <sup>-</sup>	TERMINA	L DEVIC	E SCHED	ULE
DESIGNATION	S1	R1	E1	E1
TYPE	SUPPLY	RETURN	EXHAUST	EXHAUST
	A=6"			
NECK SIZE	B=8"	24×24	10×10	24×24
NECK SIZE	C=10"	24x24	12x12	24x24
	D=12"	*		
FRAME STYLE	LAY-IN	LAY-IN	LAY-IN	LAY-IN
AIR PATTERN	4 WAY			
MAX NC RATING	20	20	20	20
MATERIAL	STEEL	STEEL	STEEL	STEEL
FINISH	BAKED ENAMEL	BAKED ENAMEL	BAKED ENAMEL	BAKED ENAMEL
BASED ON	PRICE	PRICE	PRICE	PRICE
MODEL	SCD	81 SERIES	81 SERIES	81 SERIES

## ATTIC FAN SCHEDULE DESIGNATION LOCATION

SR-1	USAGE	VENTILATION	VENTILATION
LIEF	FAN DATA		
00	AIRFLOW (SCFM)	1700	1700
26	EXTERNAL SP (IN-H20)	.125	.125
.45	RPM	1725	1725
83	DRIVE TYPE	DIRECT	DIRECT
5.25	MOTOR DATA		
NHECK	HORSEPOWER	1/2	1/2
SR-16	RPM	1750	1750
1	VOLTS	115	115
	PHASE	60	60
	HERTZ	1	1
	SELECTION BASED ON	GREENHECK	GREENHECK

ROOF

LD-120-VG LD-120-VG

1, 2, 3 & 4 1, 2, 3 & 4

── TO HEAT PUMP

ROOF

REMARKS LEGEND:

MODEL

REMARKS

1. PROVIDE FAN WITH INTEGRAL BACK-DRAFT DAMPER, CONTINUOUS DUTY RATED.

2. PROVIDE FAN WITH FACTORY MOUNTED DISCONNECT.

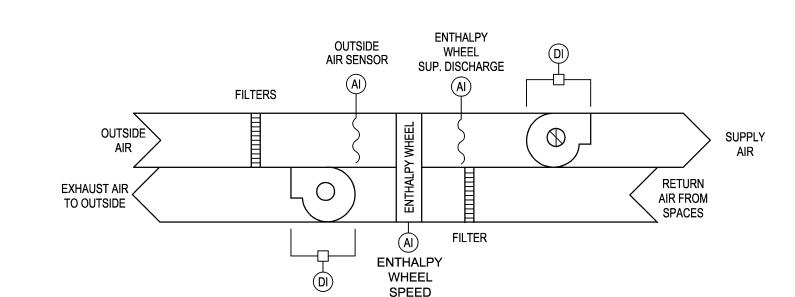
3. PROVIDE FAN WITH ECM MOTOR AND WITH ADJUSTABLE SPEED.

4. PROVIDE ATTIC MOUNTED THERMOSTATIC CONTROL. SET THERMOSTAT TO OPERATE FAN WHEN ATTIC EXCEEDS 85 DEG F.

TOTILATION	DX COIL
N	
D	
FROM HEAT PUMP	
TRAP	
Trar —	
DRAIN PANS UNDER ENTIRE UNIT AND COIL/DRAIN CONNECTIONS	
SECONDARY DRAIN PAN ONLY WHERE IND UNIT IS ABOVE FINISHED CEILING	DOOR

PREP'D BY DATE APPROVED

#### HEAT PUMP INDOOR UNIT DETAIL



#### ENERGRY RECOVERY VENTILATOR CONTROL DIAGRAM

SCALE: NONE SEQUENCE OF OPERATION:

OFF AND THE WHEEL DOES NOT ROTATE.

DURING THE OCCUPIED MODE, THE ENERGY RECOVERY VENTILATOR SHALL RUN CONTINUOUSLY. DURING UNOCCUPIED MODE, THE UNIT WILL BE DISABLED WHERE THE SUPPLY AND EXHAUST FANS ARE

DURING OPERATION, DIFFERENTIAL PRESSURE SENSORS SHALL BE USED TO CONFIRM STATUS OF SUPPLY AND EXHAUST FANS. A TACHOMETER SHALL BE USED TO VERIFY WHEEL OPERATION. IF AT ANY TIME THE UNIT IS COMMANDED ON AND EITHER OF THESE THREE OPERATIONAL PIECES OF THE UNIT

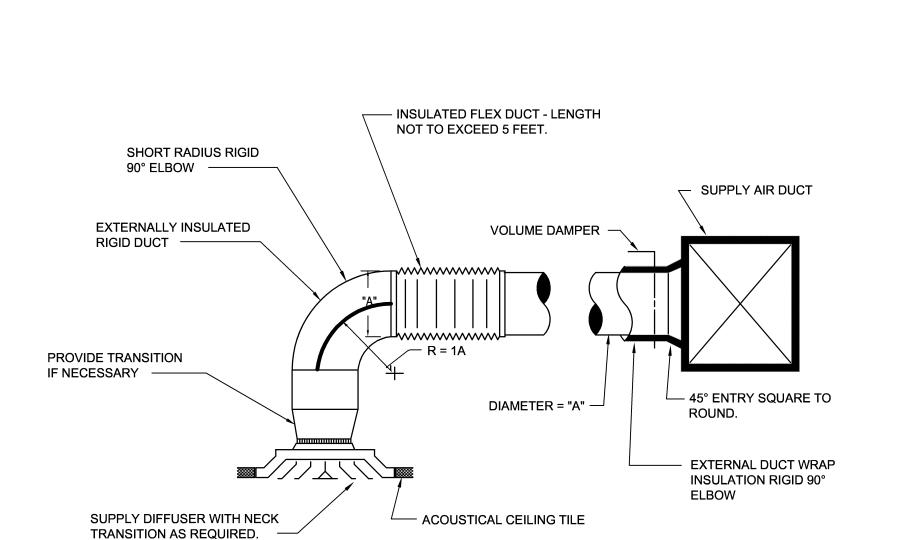
ARE NOT FUNCTIONING, THE ENTIRE UNIT SHALL BE SHUT DOWN AND AN ALARM SENT.

#### SPLIT SYSTEM HEAT PUMP SEQUENCE OF OPERATIONS

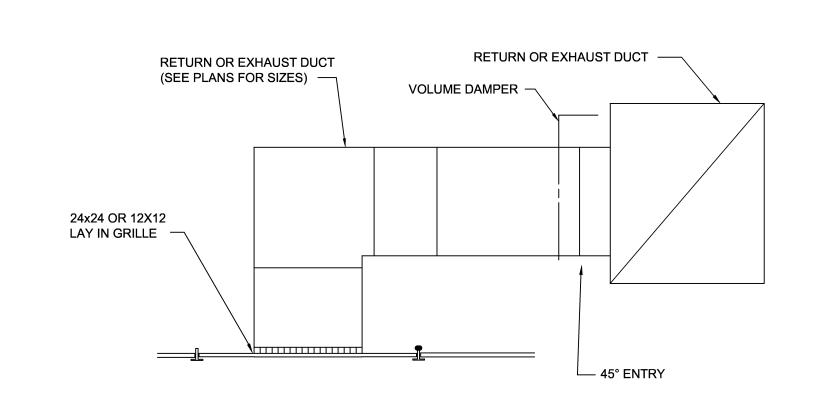
DURING THE OCCUPIED MODE, THE SPLIT SYSTEM AIR HANDLER FAN SHALL RUN CONTINUOUSLY TO SATISFY ROOM COMBINED THERMOSTAT AND HUMIDISTAT. THE SUPPLY AIR FAN ECM MOTOR SHALL REMAIN ON DURING OCCUPIED MODE AND THE SPEED SHALL MODULATE ACCORDING TO THE MANUFACTURER'S STANDARD SEQUENCE OF OPERATION TO CONTROL ROOM TEMPERATURE AND LIMIT HUMIDITY. IN THE HEATING MODE, THE THERMOSTAT SHALL NOT ENERGIZE THE AUXILIARY ELECTRIC HEAT IF THE HEAT PUMP MODE CAN MEET THE DEMAND. SUCH AS DURING WARM-UP FROM NIGHT SET BACK USING A SMART RECOVERY CAPABLE THERMOSTAT. FACTORY COMMUNICATING THERMOSTAT SHALL BE PROVIDED WITH 7 DAY PROGRAMMING TO ALLOW NIGHT/WEEKEND SET-BACK, COMMUNICATE ALI STANDARD MANUFACTURER'S ALARMS FROM THE UNITS TO THE THERMOSTAT, AND INDICATE DIRTY FILTER.THERMOSTAT SHALL INCLUDE DEHUMIDIFICATION CONTROL TO INTEGRATE WITH HEAT PUMP CONTROLLER TO REDUCE FAN SPEED TO INCREASE LATENT PERFORMANCE AND REDUCE INDOOR AIR HUMIDITY.

> Wiley|Wilson 6606 West Broad St., Suite 500 M - 106CRichmond, Virginia 23230-1717 804.254.7242 PROJECT NO. CP12-0091 NAVAL FACILITIES ENGINEERING COMMAND
>
> MARINE CORPS BASE
>
> CAMP LEJEUNE, NORTH CAROLINA DEPT OF NAVY IM HVAC/DHW IMPROVEMENTS, SWL VARIOUS FACILITIES, JHE HADNOT POINT
> BUILDING 219 SCHEDULES, DETAILS & SUBMITTED BY: DESIGN DIR. CONTROLS DATE SIZE CODE IDENT NO. NAVFAC DRAWING NO. APPROVED: PWO OR OICC

BOARD CEILING PATCH INSTRUCTIONS. (8" DUCT WITH 2" INSULATION SHOULD HAVE 10" HOLE IN GYPSUM BOARD) 60011369 DATE N40085-12-B-0091 CONSTR CONTR NO. SATISFACTORY TO SCALE: AS SPEC No. SHEET 25 OF 84



TYPICAL CEILING SUPPLY DIFFUSER CONNECTION SCALE: NONE



SCALE: NONE

CEILING RETURN/EXHAUST GRILLE

ENLARGE EXISTING PENETRATIONS IN CEILING TO ALIGN RUNOUTS

DIFFUSERS AND RETURN GRILLS TO FIT CEILING. PERFORATED FACE

— PULL EXISTING FLEXIBLE DUCT STRAIGHT AND

- PROVIDE HARD ROUND ELBOW

EXISTING PLASTER CEILING

- PROVIDE 5/8" GYPSUM BOARD PATCH. FIT SNUGLY AROUND

DUCT AND INSULATION. SEE

DETAIL 3/E-501 FOR GYPSUM

- INSULATE HARD DUCT

SMOOTH, SECURE WITH BAND CLAMP

WITH NEW DIFFUSER/GRILL LOCATIONS. PROVIDE SUPPLY

MAXIMUM OFFSET OF 4", EXCEPT WHEN

OBSTRUCTED BY TRUSS, MAX OFFSET=7"

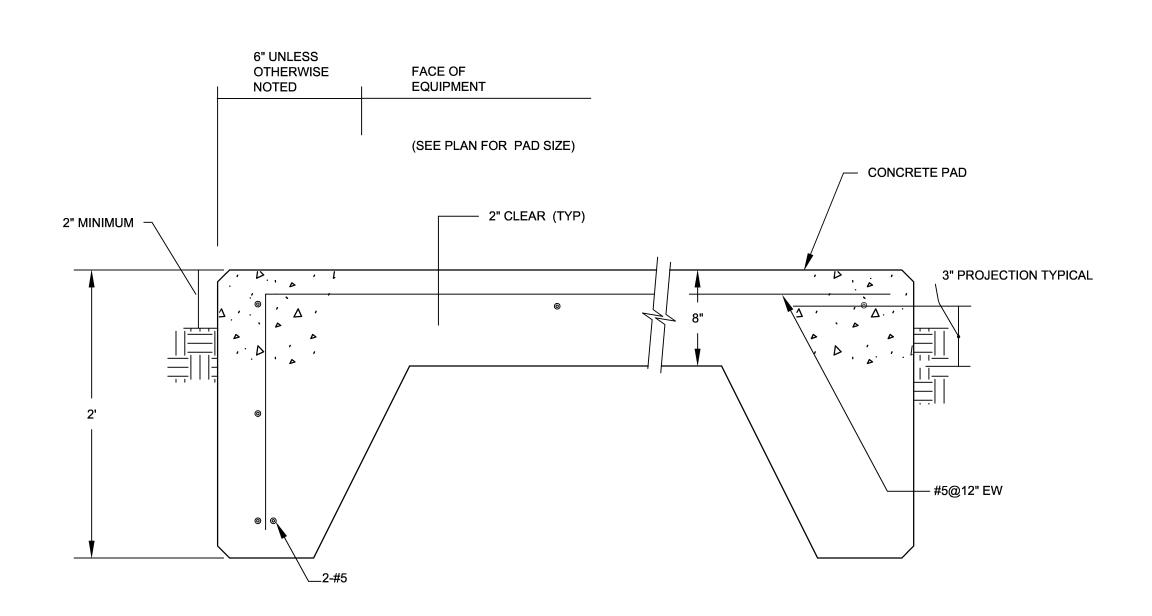
SUPPLY DIFFUSERS ARE NOT PERMITTED.

PROVIDE INSULATED

INSULATE BACKSIDE OF SUPPLY DIFFUSER

FLEXIBLE DUCT

CONNECTOR —



EXTERIOR EQUIPMENT PAD DETAIL SCALE: NONE

#### — PRE-FINISHED METAL CURB BY MANUFACTURER — PROVIDE METAL FLASHING MECHANICAL EQUIPMENT; SEE MECHANICAL DRAWINGS ----- PROVIDE CONTINUOUS MASTIC SEALANT AROUND BASE PROVIDE METAL FLASHING-PROVIDE CONTINUOUS MASTIC SEALANT AROUND BASE -**EXISTING ROOF SHINGLES -EXISTING ROOF SHEATHING-EXISTING ROOF TRUSS—** - REMOVE EXISTING SHINGLES AND SHEATHING AS REQUIRED. PROVIDE ANGLE SUPPORT NOTE: ROOF MOUNTED MECHANICAL BETWEEN TRUSSES TO EQUIPMENT TO BE LOCATED BETWEEN SUPPORT ROOF MOUNTED EXISTING ROOF TRUSSES, SIZE MECHANICAL EQUIPMENT OPENING ACCORDING TO (4 SIDES) -MANUFACTURER'S INSTRUCTIONS.

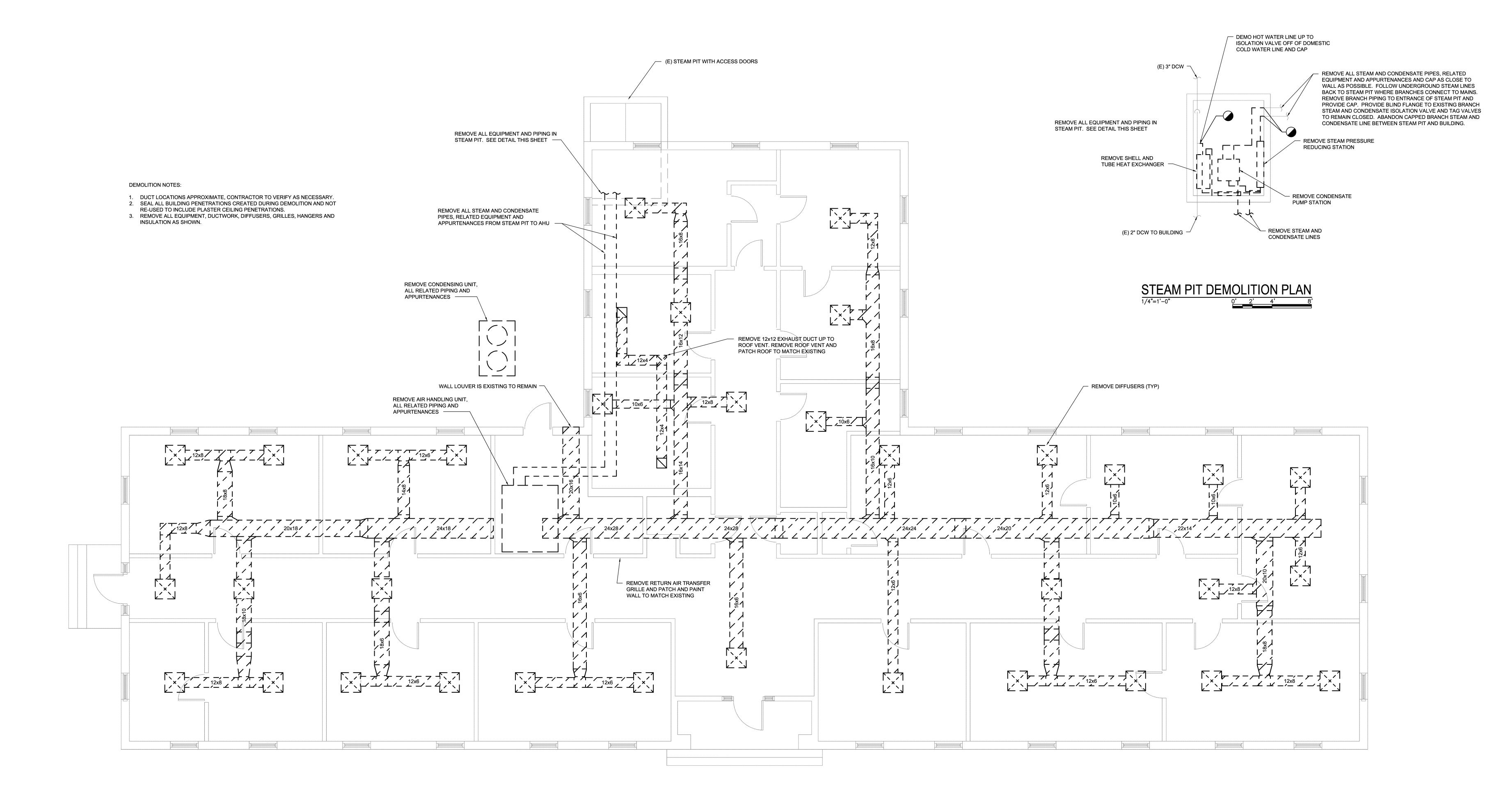
**ROOF PENETRATION DETAIL** SCALE: NONE

### DISCLOSURE OF INFORMATION

- Contractor shall comply as follows: (a) The Contractor shall not release to anyone outside the Contractor's organization any unclassified information, regardless of medium (e.g., film, tape, document), pertaining to any part of this contract or any program related to this contract, unless-
- The Contracting Officer has given prior written approval; or
- The information is otherwise in the public domain before the date of release.
- Requests for approval shall identify the specific information to be released, the medium to be used, and the purpose for the release. The Contractor shall submit its request to the Contracting Officer at least 45 days before the proposed date for release.
- The Contractor agrees to include a similar requirement in each subcontract under this contract. Subcontractors shall submit requests for authorization to release through the prime contractor to the Contracting Officer.

TYP. DUCT TAKE OFF DETAIL SCALE: NONE

PREP'D BY DATE APPROVED



# BUILDING 317 MECHANICAL DEMOLITION PLAN

#### DISCLOSURE OF INFORMATION Contractor shall comply as follows:

(a) The Contractor shall not release to anyone outside the Contractor's organization any unclassified information, regardless of

medium (e.g., film, tape, document), pertaining to any part of this contract or any program related to this contract, unless-The Contracting Officer has given prior written approval; or

The information is otherwise in the public domain before the date of release.

Requests for approval shall identify the specific information to be released, the medium to be used, and the purpose for the

release. The Contractor shall submit its request to the Contracting Officer at least 45 days before the proposed date for release. The Contractor agrees to include a similar requirement in each subcontract under this contract. Subcontractors shall submit

requests for authorization to release through the prime contractor to the Contracting Officer.



PROJECT NO. CP12-0091 NAVAL FACILITIES ENGINEERING COMMAND

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA HVAC/DHW IMPROVEMENTS, VARIOUS FACILITIES, **HADNOT POINT** BUILDING 317 MECHANICAL DEMOLITION PLAN NAVFAC DRAWING NO.

DATE SIZE CODE IDENT NO. 60011370 DATE CONSTR CONTR NO.

N40085-12-B-0091

IM

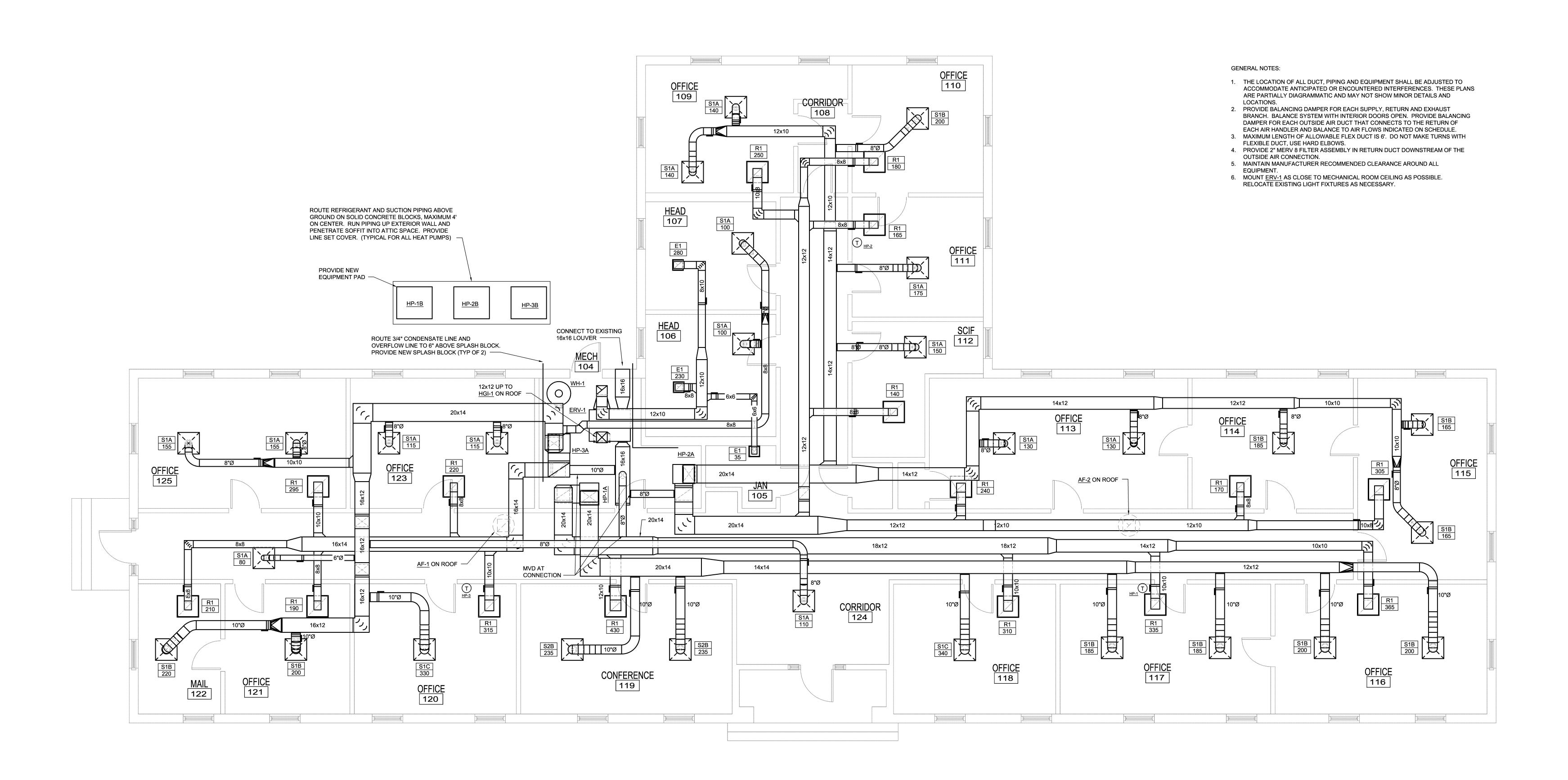
SWL

JHE

SCALE: AS SPEC No. SHEET 26 OF 84

M - 107A

SYM. PREP'D BY DATE APPROVED



# BUILDING 317 MECHANICAL NEW WORK PLAN

#### DISCLOSURE OF INFORMATION

Contractor shall comply as follows:

(a) The Contractor shall not release to anyone outside the Contractor's organization any unclassified information, regardless of medium (e.g., film, tape, document), pertaining to any part of this contract or any program related to this contract, unless-

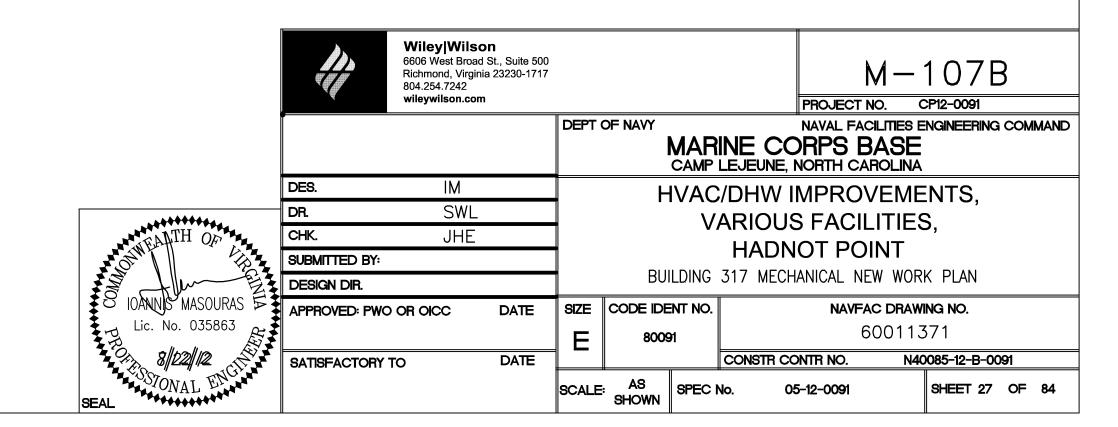
The Contracting Officer has given prior written approval; or
The information is otherwise in the public domain before the date of release.

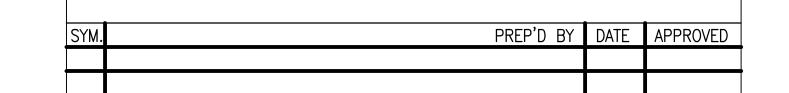
b) Requests for approval shall identify the specific information to be released, the medium to be used, and the purpose for the

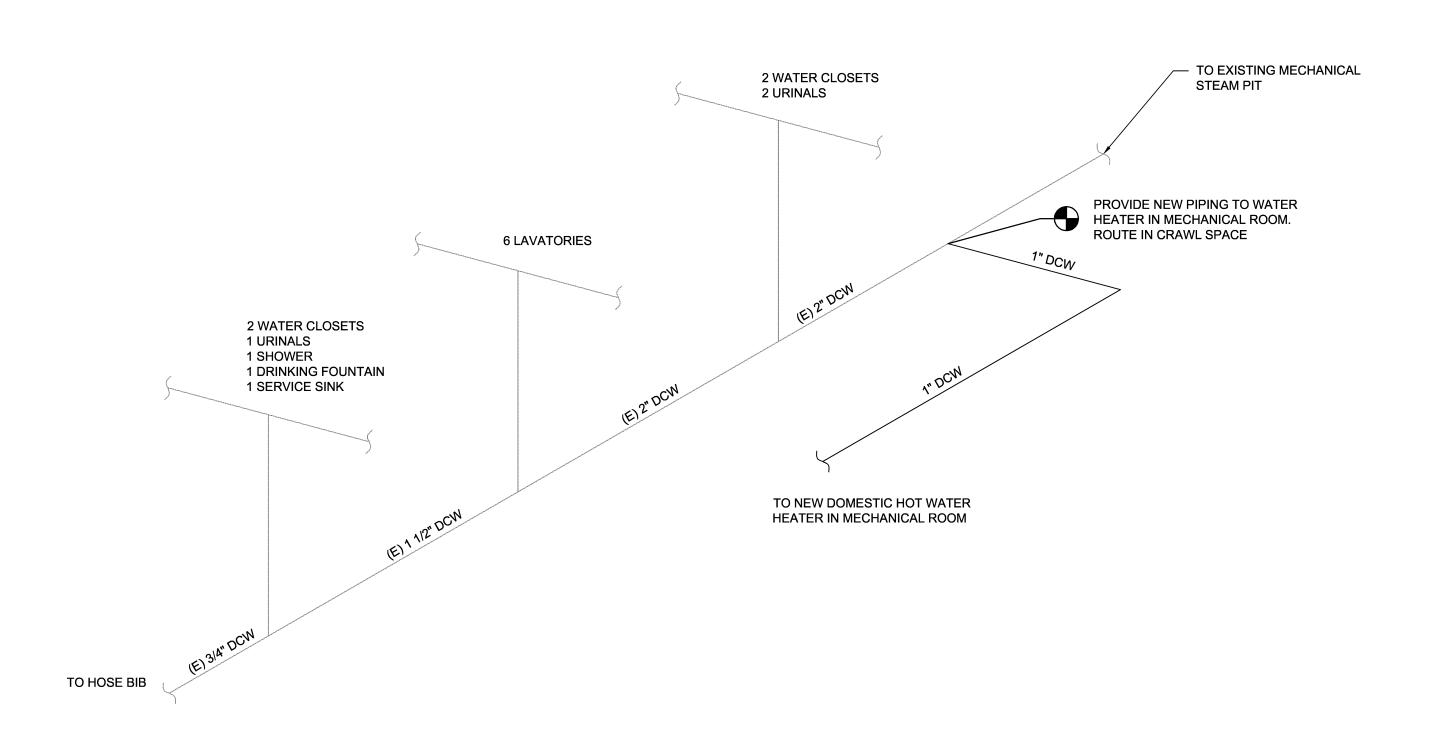
release. The Contractor shall submit its request to the Contracting Officer at least 45 days before the proposed date for release.

The Contractor agrees to include a similar requirement in each subcontract under this contract. Subcontractors shall submit

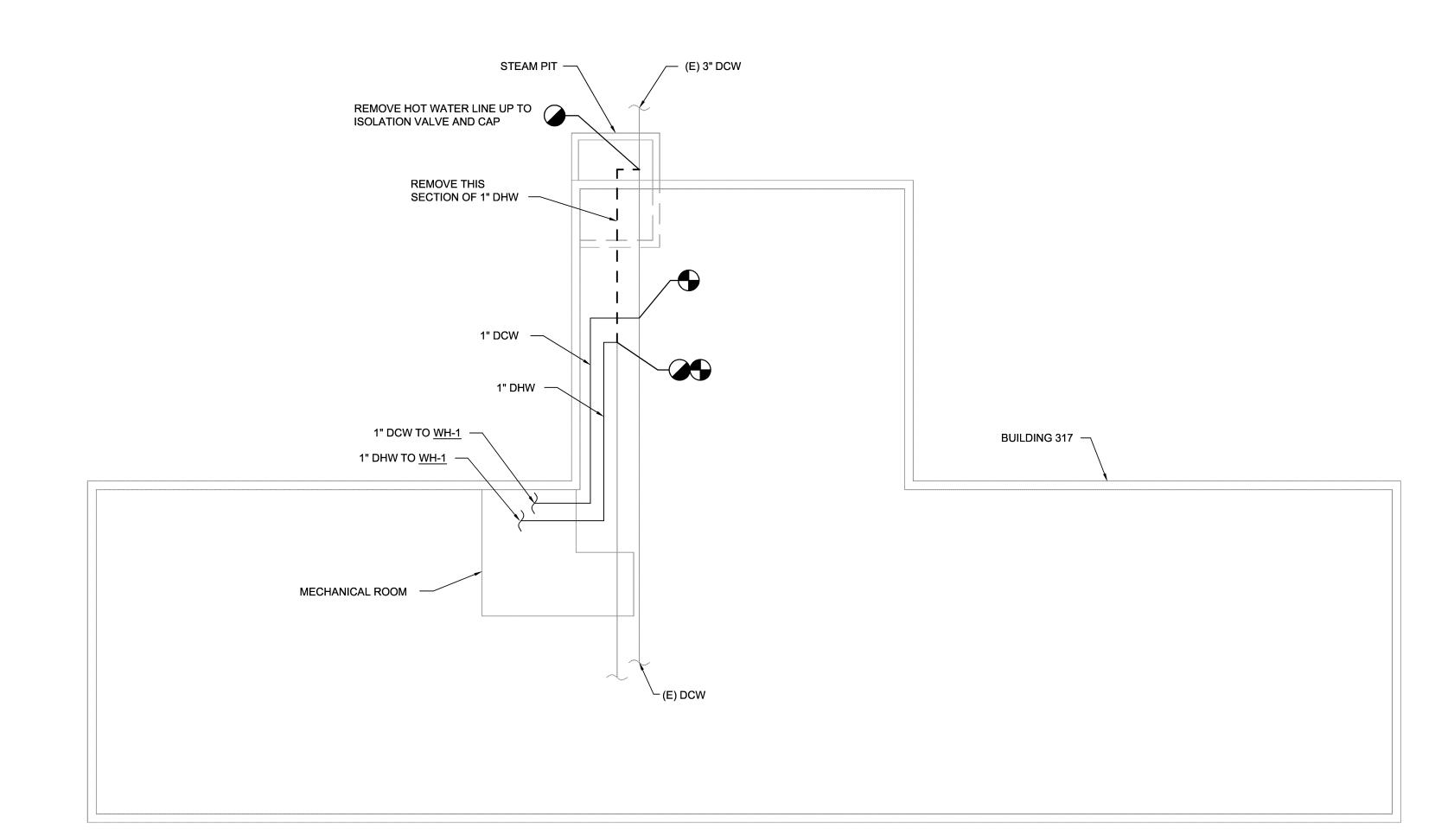
requests for authorization to release through the prime contractor to the Contracting Officer.







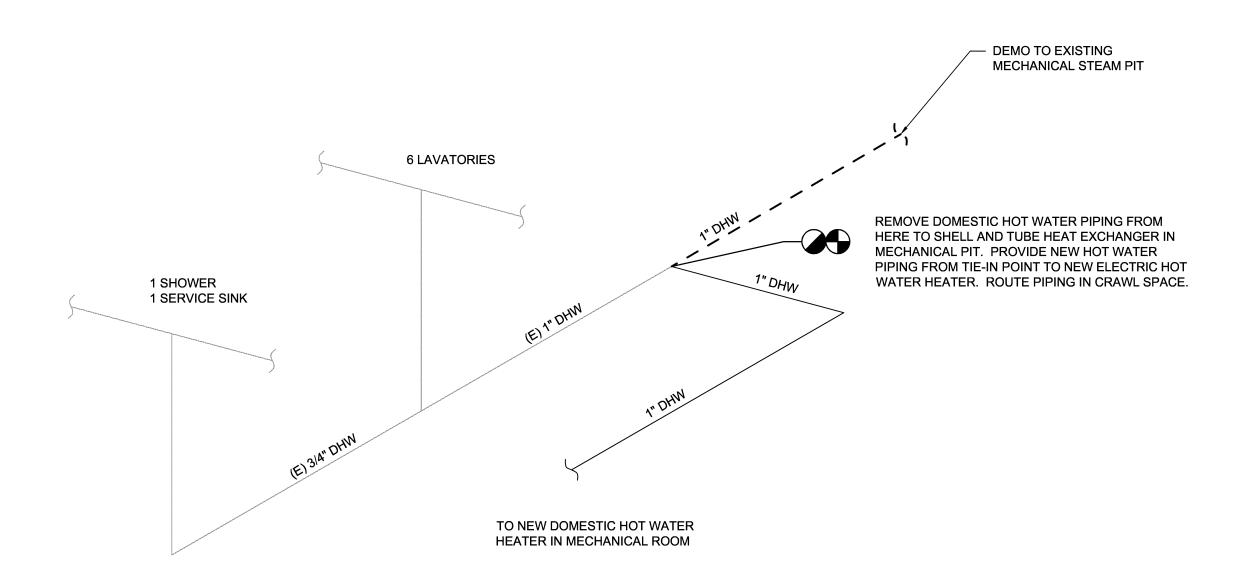
### DOMESTIC COLD WATER RISER DIAGRAM



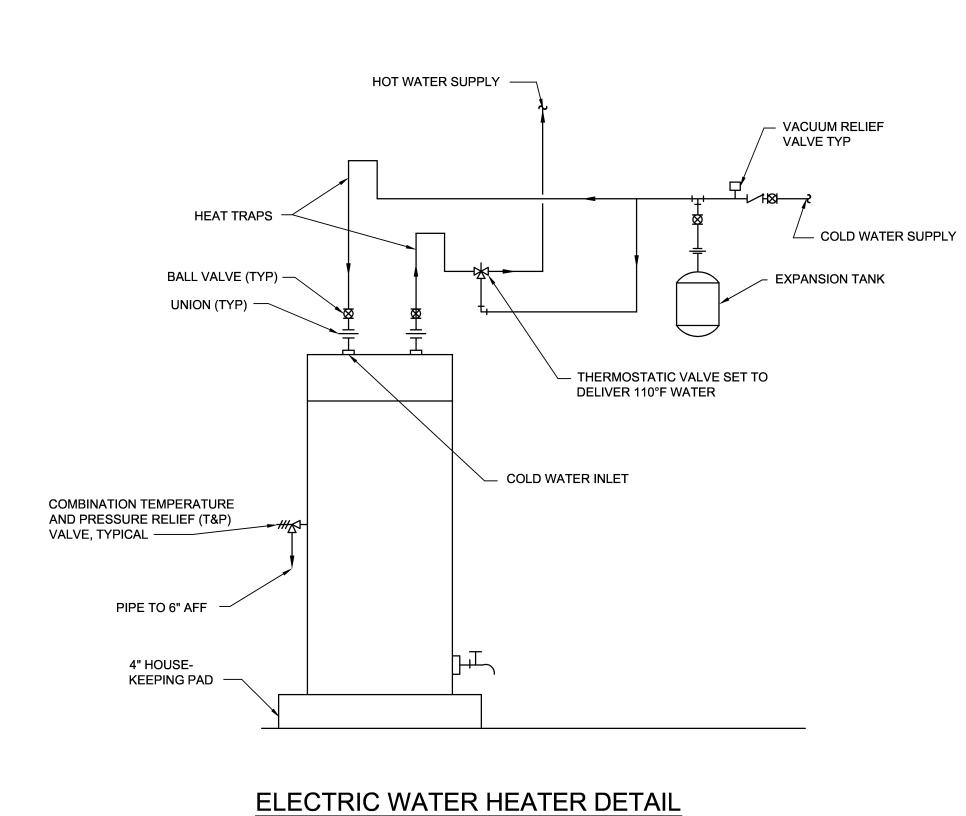
### DOMESTIC WATER SITE PLAN

#### DISCLOSURE OF INFORMATION Contractor shall comply as follows:

- (a) The Contractor shall not release to anyone outside the Contractor's organization any unclassified information, regardless of medium (e.g., film, tape, document), pertaining to any part of this contract or any program related to this contract, unless-
- (1) The Contracting Officer has given prior written approval; or
- (2) The information is otherwise in the public domain before the date of release.
- Requests for approval shall identify the specific information to be released, the medium to be used, and the purpose for the
- release. The Contractor shall submit its request to the Contracting Officer at least 45 days before the proposed date for release. (c) The Contractor agrees to include a similar requirement in each subcontract under this contract. Subcontractors shall submit
- requests for authorization to release through the prime contractor to the Contracting Officer.



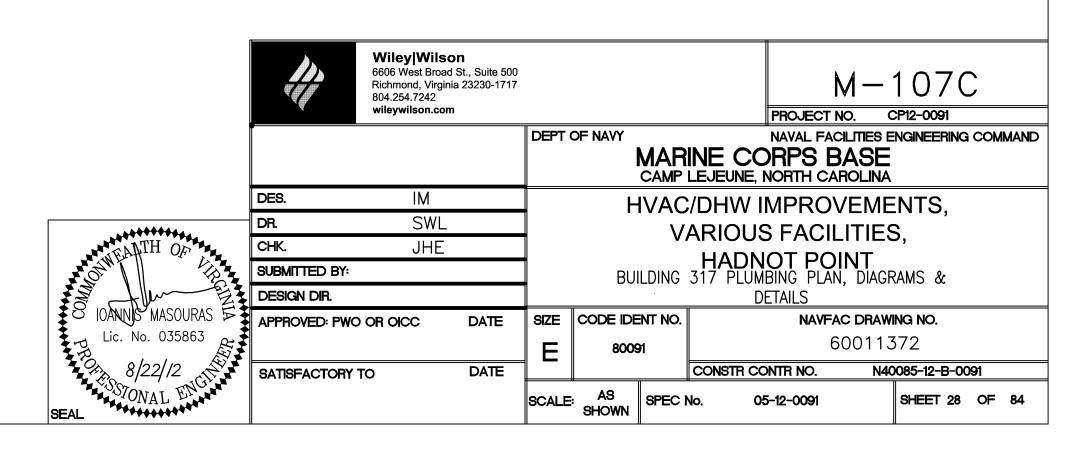
#### DOMESTIC HOT WATER RISER DIAGRAM NOT TO SCALE



NOT TO SCALE

#### PLUMBING NOTES:

- 1. THE LOCATION OF ALL PIPING AND EQUIPMENT SHALL BE ADJUSTED TO ACCOMMODATE ANTICIPATED OR ENCOUNTERED INTERFERENCES. THESE PLANS ARE PARTIALLY DIAGRAMMATIC AND MAY NOT
- SHOW MINOR DETAILS AND LOCATIONS. 2. STORE DOMESTIC HOT WATER AT 140 DEG F AND TEMPER TO 110 DEG F BEFORE BEING SUPPLIED TO
- BUILDING. PROVIDE MIXING VALVE.



		HEAT PUMP SCHE	DULE		
INDOOR U	NIT DESIGNATION		HP-1A	HP-2A	HP-3A
OUTDOOF	R UNIT DESIGNATIO	N	HP-1B	HP-2B	HP-3B
LOCATION	I		VARIOUS	VARIOUS	VARIOUS
MINIMUM	COMBINED SEER R	ATING PER ARI	17.0	17.0	17.0
MINIMUM	COMBINED EER RA	TING PER ARI	12.2	12.2	12.2
		TOTAL AIRFLOW (CFM)	1580	1580	1580
		OUTSIDE AIRFLOW (CFM)	140	130	350
	5,45054705	EXTERNAL STATIC PRESSURE (IN-WC)	.6	.6	.6
	EVAPORATOR	TOTAL COOLING CAPACITY (MBH)	47.5	47.5	47.5
INDOOR UNIT		HEAT PUMP HEATING CAPACITY AT 17° F (MBH)	29.2	29.2	29.2
OR I		ELECTRIC HEATING CAPACITY (KW)	5.0	5.0	5.0
Ō		BLOWER MOTOR FLA (A)	9.1	9.1	9.1
<b>∠</b>		TOTAL MCA (A)	27	27	27
	ELECTRICAL	VOLTAGE	208	208	208
		PHASE	1	1	1
		FREQUENCY (Hz)	60	60	60
BASED ON	J		LENNOX	LENNOX	LENNOX
INDOOR U	NIT MODEL		CBX32MV-048	CBX32MV-048	CBX32MV-048
REFRIGER	RANT		R-410A	R-410A	R-410A
	AMBIENT DESIGN	TEMPERATURE (DEG F)	95	95	95
		MINIMUM CIRCUIT AMPACITY (A)	28.5	28.5	28.5
⊨		MAXIMUM OVERCURRENT PROTECTION (A)	45	45	45
TINO		MINIMUM HEATING COP AT 17° F	2.5	2.5	2.5
OOR	FLECTRICAL	MINIMUM HEATING COP AT 47° F	3.32	3.32	3.32
OUTDOOR	ELECTRICAL	MINIMUM HEAT PUMP HSPF	8.7	8.7	8.7
7		VOLTAGE (V)	208	208	208
		PHASE	1	1	1
		FREQUENCY (Hz)	60	60	60
BASED ON	ı I	•	LENNOX	LENNOX	LENNOX
OUTDOOF	R SYSTEM MODEL		XP21-048-230	XP21-048-230	XP21-048-230
REMARKS			1, 2 & 3	1, 2 & 3	1, 2 & 3

ENER	RGY RECOVERY VENTILATO	OR SCHEDULE
DESIGNATION		ERV-1
OUDDLY EAN	TOTAL FAN AIRFLOW (CFM)	620
SUPPLY FAN	EXTERNAL STATIC PRESSURE (IN. WG)	.5
EVIJALICE FAN	TOTAL FAN AIRFLOW (CFM)	545
EXHAUST FAN	EXTERNAL STATIC PRESSURE (IN. WG)	.5
	OPERATING OUTSIDE AIRFLOW	620
	OPERATING EXHAUST AIRFLOW	545
ENTHALPY WHEEL	OUTDOOR EAT DB/WB (COOLING)	95/79
<b>≯</b>	OUTDOOR EAT DB/WB (HEATING)	20/16.6
ALP	EXHAUST EAT DB/WB (COOLING)	75/63
Ĕ	EXHAUST EAT DB/WB (HEATING)	70/53
ū	DELIVERED CONDITIONS DB/WB (COOLING)	80.5/67.9
	DELIVERED CONDITIONS DB/WB (HEATING)	53.8/44.6
EII TEDO	SUPPLY (MERV)	8
FILTERS	EXHAUST(MERV)	8
	MCA (A)	18.3
ELECTRICAL	MOCP (A)	25
IRI T	VOLTS (V)	115
ILEC	PHASE	1
ш	FREQUENCY (Hz)	60
BASED ON		GREENHECK
MODEL		MINIVENT-750
REMARKS:		1

1. PROVIDE FACTORY MOUNTED CONTROLS FOR UNITS INCLUDING ALL REQUIRED MOTOR STARTERS, PROVIDE FACTORY REMOTE PANEL INCLUDING INDICATION FOR DIRTY FILTER, HAND-OFF-AUTO

SWITCH, AND 7 DAY TIME CLOCK.

ELECTRIC DOMESTIC			HOODED GRA	VITY
WATER HEATER			<b>INTAKE SCHE</b>	DULE
DESIGNATION	WH-1	DES	IGNATION	HGI-1
LOCATION	MECH ROOM	USA	GE	INTAKE
STORAGE (GALLONS)	60	AIRF	FLOW (CFM)	620
TOTAL CAPACITY (KW)	6	STA <sup>-</sup>	TIC PRESSURE (IN H2O)	.028
RECOVERY RATE @ 90 DEG F (GPH)	27	THR	OAT AREA (SF)	1.45
ELECTRICAL		THR	OAT VELOCITY (FPM)	428
VOLTS	208	THR	OAT DIAMETER (IN)	16.25
PHASE	1	SELE	ECTION BASED ON	GREENHE
FREQUENCY (Hz)	60	МОД	DEL	GRSI-16
REMARKS	1	REM	ARKS	1
REMARKS LEGEND:		REM	ARKS LEGEND:	
1. PROVIDE 3.2 GALLON EXPANSION TANK OR LARGER SUCH AS AMTROL ST-7 OR SIMILAR.		1. PF	ROVIDE BIRD SCREEN.	

DESIGNATION	HGI-1			
USAGE	INTAKE			
AIRFLOW (CFM)	620			
STATIC PRESSURE (IN H2O)	.028			
THROAT AREA (SF)	1.45			
THROAT VELOCITY (FPM)	428			
THROAT DIAMETER (IN)	16.25			
SELECTION BASED ON	GREENHECK			
MODEL	GRSI-16			
REMARKS 1				
REMARKS LEGEND:	_			
1. PROVIDE BIRD SCREEN.				

ATTIC FAI	AIR <sup>-</sup>		
DESIGNATION	AF-1	AF-2	DESIGNATION
LOCATION	ROOF	ROOF	TYPE
USAGE	ATTIC VENTILATION	ATTIC VENTILATION	
FAN DATA			NECK SIZE
AIRFLOW (SCFM)	1700	1700	
EXTERNAL SP (IN-H20)	.125	.125	FRAME STYLE
RPM	1725	1725	AIR PATTERN
DRIVE TYPE	DIRECT	DIRECT	1 11111111111111
MOTOR DATA			MAX NC RATING
HORSEPOWER	1/2	1/2	MATERIAL
RPM	1750	1750	FINISH
VOLTS	115	115	BASED ON
PHASE	60	60	MODEL
HERTZ	1	1	REMARKS
SELECTION BASED ON	GREENHECK	GREENHECK	REMARKS LEGEN
MODEL	LD-120-VG	LD-120-VG	1. PROVIDE A SEI
REMARKS	1, 2, 3 & 4	1, 2, 3 & 4	F (ADJUSTABLE)

1. PROVIDE FAN WITH INTEGRAL BACK-DRAFT DAMPER, CONTINUOUS

3. PROVIDE FAN WITH ECM MOTOR AND WITH ADJUSTABLE SPEED. 4. PROVIDE ATTIC MOUNTED THERMOSTATIC CONTROL. SET THERMOSTAT TO OPERATE FAN WHEN ATTIC EXCEEDS 85 DEG F.

2. PROVIDE FAN WITH FACTORY MOUNTED DISCONNECT.

REMARKS LEGEND:

ECK	REMARKS LEGEND:
VG	1. PROVIDE A SELF-MODULATING DIFFUSER WITH A COOLING SET POINT OF 75 DE
	F (ADJUSTABLE) AND A HEATING SET POINT OF 68 DEG F (ADJUSTABLE).

AIR TERMINAL DEVICE SCHEDULE

SUPPLY

A=6"

B=8"

C=10"

D=12"

LAY-IN

STEEL

ENAMEL

PRICE

SCD

--

S2

SUPPLY

A=6"

B=8"

C=10"

D=12"

LAY-IN

4 WAY

25

STEEL

ENAMEL

PRICE

VPD-HC

RETURN

LAY-IN

25

STEEL

BAKED

ENAMEL

PRICE

81 SERIES

- -

**EXHAUST** 

12x12

LAY-IN

25

STEEL

ENAMEL

PRICE

81 SERIES

--

PREP'D BY DATE APPROVED

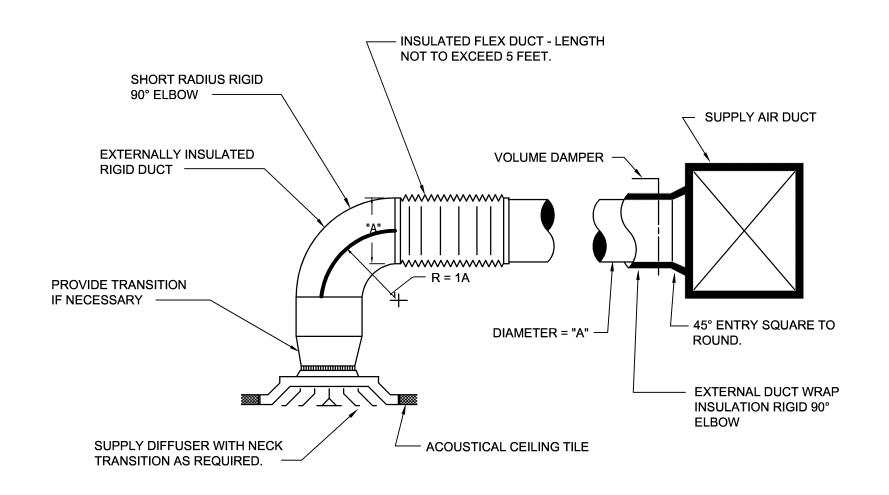
- 1. PROVIDE CONDENSING UNIT SHUTOFF MOISTURE SENSOR IN AUXILLARY PORT OF INDOOR UNIT DRAIN PAN.
- PROVIDE SIDE RETURN UNIT STAND.
- 3. PROVIDE ECM MOTOR ON INDOOR UNIT.

UNIT DRAIN PAN	UNIT DRAIN CONNECTION  THREADED CAP  SLOPE 1/2" PER 10'  SEE DRAWINGS FOR ROUTING
	ON SHALL BE IN ACCORDANCE WITH MANUFACTURES

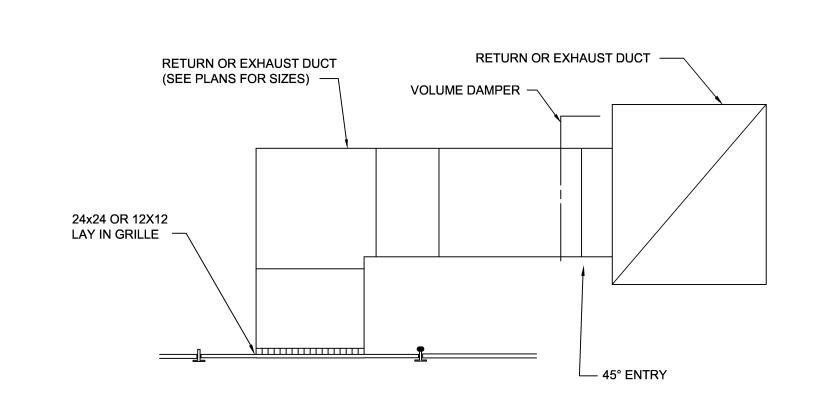
INSTRUCTIONS, MINIMUM OF 2 INCHES.

CONDENSATE DRAIN PIPE SIZE SHALL BE UNIT DRAIN CONNECTION SIZE

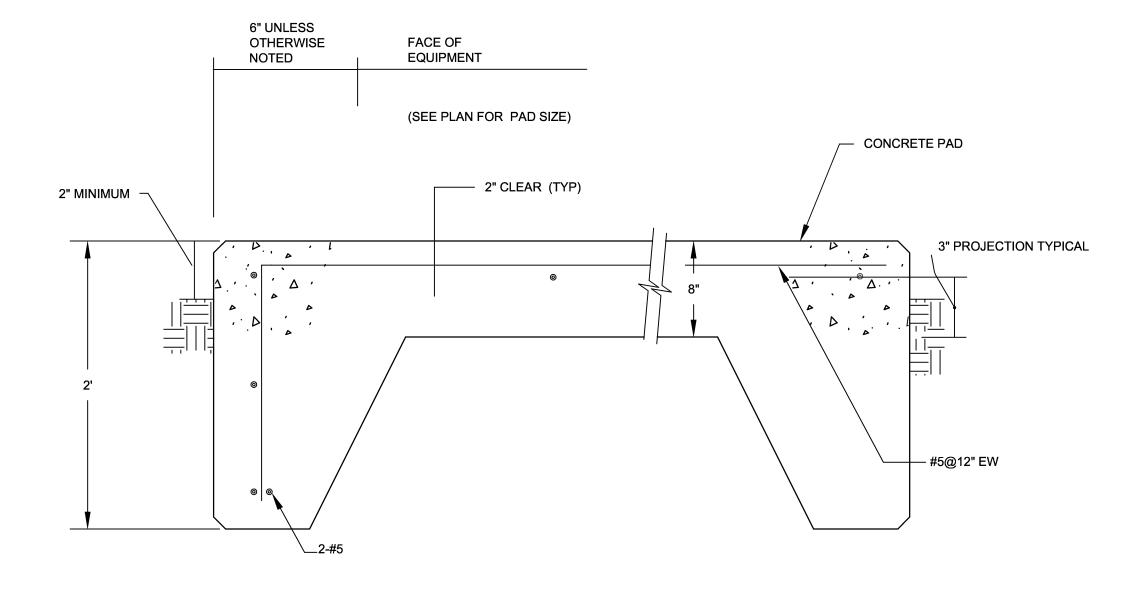
AC DRAIN FOR HEAT PUMP AIR HANDLER NEGATIVE PRESSURE DRAIN PAN NO SCALE



TYPICAL CEILING SUPPLY DIFFUSER CONNECTION SCALE: NONE



CEILING RETURN/EXHAUST GRILLE SCALE: NONE



EXTERIOR EQUIPMENT PAD DETAIL SCALE: NONE

— PRE-FINISHED METAL CURB BY MANUFACTURER — PROVIDE METAL FLASHING MECHANICAL EQUIPMENT; SEE MECHANICAL DRAWINGS ----PROVIDE CONTINUOUS MASTIC SEALANT AROUND BASE PROVIDE METAL FLASHING-PROVIDE CONTINUOUS MASTIC SEALANT AROUND BASE -**EXISTING ROOF SHINGLES -EXISTING ROOF SHEATHING-EXISTING ROOF TRUSS—** - REMOVE EXISTING SHINGLES AND SHEATHING AS REQUIRED. PROVIDE ANGLE SUPPORT NOTE: ROOF MOUNTED MECHANICAL BETWEEN TRUSSES TO **EQUIPMENT TO BE LOCATED BETWEEN** SUPPORT ROOF MOUNTED EXISTING ROOF TRUSSES, SIZE MECHANICAL EQUIPMENT OPENING ACCORDING TO (4 SIDES) -MANUFACTURER'S INSTRUCTIONS.

> **ROOF PENETRATION DETAIL** SCALE: NONE

#### DIFFUSERS AND RETURN GRILLS TO FIT CEILING. PERFORATED FACE SUPPLY DIFFUSERS ARE NOT PERMITTED. — PULL EXISTING FLEXIBLE DUCT STRAIGHT AND SMOOTH, SECURE WITH BAND CLAMP PROVIDE INSULATED FLEXIBLE DUCT - PROVIDE HARD ROUND ELBOW CONNECTOR — - INSULATE HARD DUCT EXISTING PLASTER CEILING INSULATE BACKSIDE OF SUPPLY DIFFUSER INSTRUCTIONS. (8" DUCT WITH 2" INSULATION SHOULD HAVE MAXIMUM OFFSET OF 4", EXCEPT WHEN 10" HOLE IN GYPSUM BOARD) OBSTRUCTED BY TRUSS, MAX OFFSET=7"

TYP. DUCT TAKE OFF DETAIL

ENLARGE EXISTING PENETRATIONS IN CEILING TO ALIGN RUNOUTS WITH NEW DIFFUSER/GRILL LOCATIONS. PROVIDE SUPPLY - PROVIDE 5/8" GYPSUM BOARD PATCH. FIT SNUGLY AROUND DUCT AND INSULATION. SEE DETAIL 3/E-501 FOR GYPSUM BOARD CEILING PATCH

SCALE: NONE

#### OUTSIDE AIR SENSOR SUP. DISCHARGE OUTSIDE RETURN EXHAUST AIR AIR FROM TO OUTSIDE SPACES **ENTHALPY** WHEEL

#### ENERGRY RECOVERY VENTILATOR CONTROL DIAGRAM

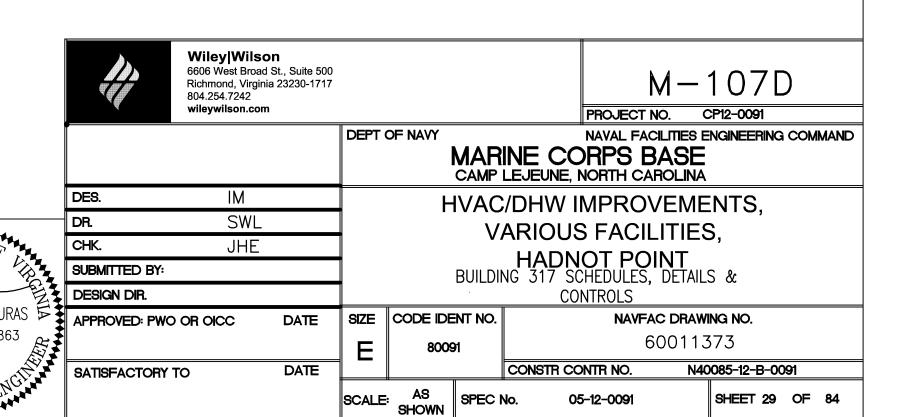
SCALE: NONE SEQUENCE OF OPERATION:

DURING THE OCCUPIED MODE, THE ENERGY RECOVERY VENTILATOR SHALL RUN CONTINUOUSLY. DURING UNOCCUPIED MODE, THE UNIT WILL BE DISABLED WHERE THE SUPPLY AND EXHAUST FANS ARE OFF AND THE WHEEL DOES NOT ROTATE.

DURING OPERATION, DIFFERENTIAL PRESSURE SENSORS SHALL BE USED TO CONFIRM STATUS OF SUPPLY AND EXHAUST FANS. A TACHOMETER SHALL BE USED TO VERIFY WHEEL OPERATION. IF AT ANY TIME THE UNIT IS COMMANDED ON AND EITHER OF THESE THREE OPERATIONAL PIECES OF THE UNIT ARE NOT FUNCTIONING, THE ENTIRE UNIT SHALL BE SHUT DOWN AND AN ALARM SENT.

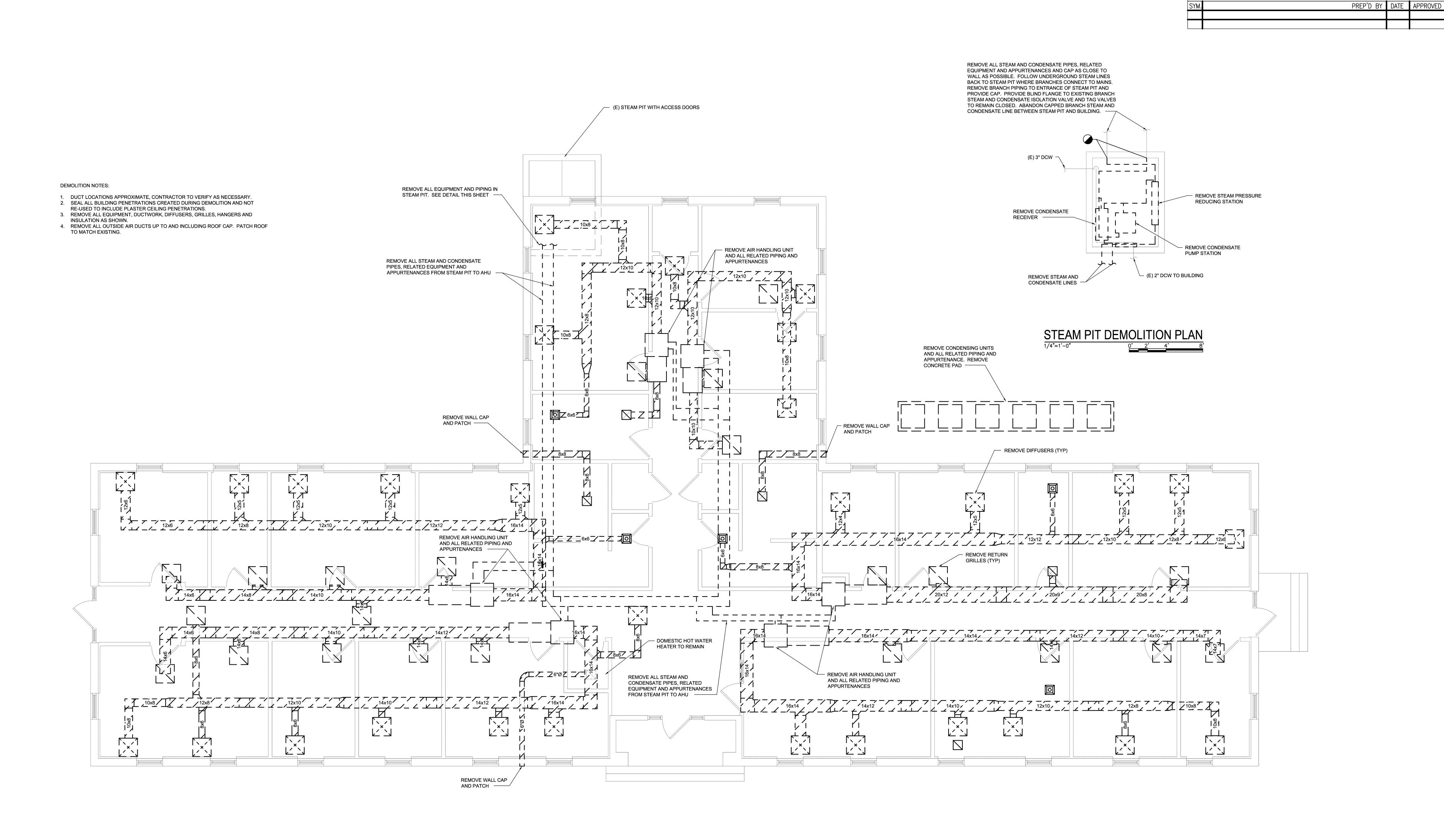
#### SPLIT SYSTEM HEAT PUMP SEQUENCE OF OPERATIONS

DURING THE OCCUPIED MODE, THE SPLIT SYSTEM AIR HANDLER FAN SHALL RUN CONTINUOUSLY TO SATISFY ROOM COMBINED THERMOSTAT AND HUMIDISTAT. THE SUPPLY AIR FAN ECM MOTOR SHALL REMAIN ON DURING OCCUPIED MODE AND THE SPEED SHALL MODULATE ACCORDING TO THE MANUFACTURER'S STANDARD SEQUENCE OF OPERATION TO CONTROL ROOM TEMPERATURE AND LIMIT HUMIDITY. IN THE HEATING MODE, THE THERMOSTAT SHALL NOT ENERGIZE THE AUXILIARY ELECTRIC HEAT IF THE HEAT PUMP MODE CAN MEET THE DEMAND. SUCH AS DURING WARM-UP FROM NIGHT SET BACK USING A SMART RECOVERY CAPABLE THERMOSTAT. FACTORY COMMUNICATING THERMOSTAT SHALL BE PROVIDED WITH 7 DAY PROGRAMMING TO ALLOW NIGHT/WEEKEND SET-BACK, COMMUNICATE ALI STANDARD MANUFACTURER'S ALARMS FROM THE UNITS TO THE THERMOSTAT, AND INDICATE DIRTY FILTER. THERMOSTAT SHALL INCLUDE DEHUMIDIFICATION CONTROL TO INTEGRATE WITH HEAT PUMP CONTROLLER TO REDUCE FAN SPEED TO INCREASE LATENT PERFORMANCE AND REDUCE INDOOR AIR HUMIDITY.



#### DISCLOSURE OF INFORMATION

- Contractor shall comply as follows: (a) The Contractor shall not release to anyone outside the Contractor's organization any unclassified information, regardless of medium (e.g., film, tape, document), pertaining to any part of this contract or any program related to this contract, unless-
- The Contracting Officer has given prior written approval; or
- The information is otherwise in the public domain before the date of release.
- Requests for approval shall identify the specific information to be released, the medium to be used, and the purpose for the
- release. The Contractor shall submit its request to the Contracting Officer at least 45 days before the proposed date for release. The Contractor agrees to include a similar requirement in each subcontract under this contract. Subcontractors shall submit
- requests for authorization to release through the prime contractor to the Contracting Officer.



# BUILDING 400 MECHANICAL DEMOLITION PLAN 1/4"=1'-0" BUILDING 400 MECHANICAL DEMOLITION PLAN 0' 2' 4' 8'

### DISCLOSURE OF INFORMATION Contractor shall comply as follows:

(a) The Contractor shall not release to anyone outside the Contractor's organization any unclassified information, regardless of medium (e.g., film, tape, document), pertaining to any part of this contract or any program related to this contract, unless-

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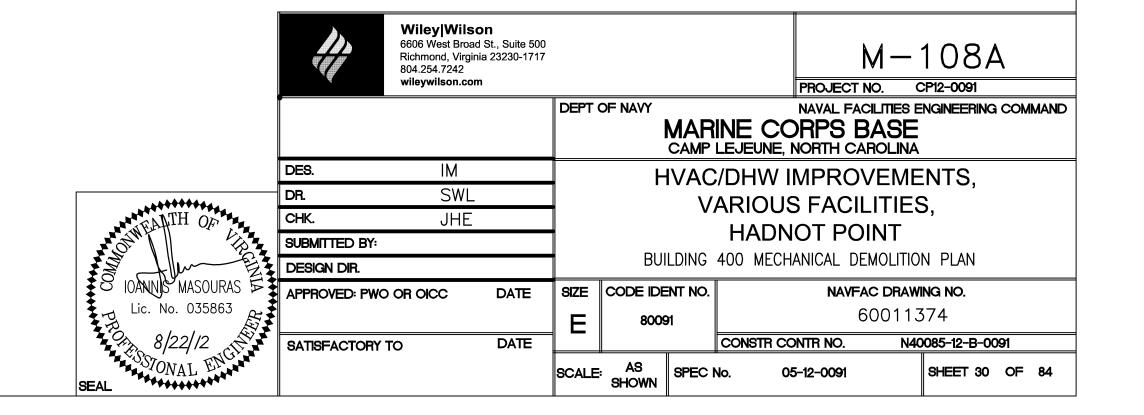
n the information is otherwise in the public domain before the date of release.

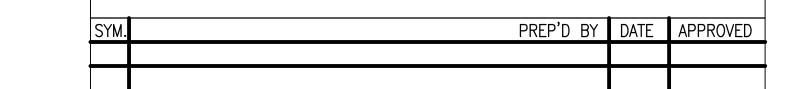
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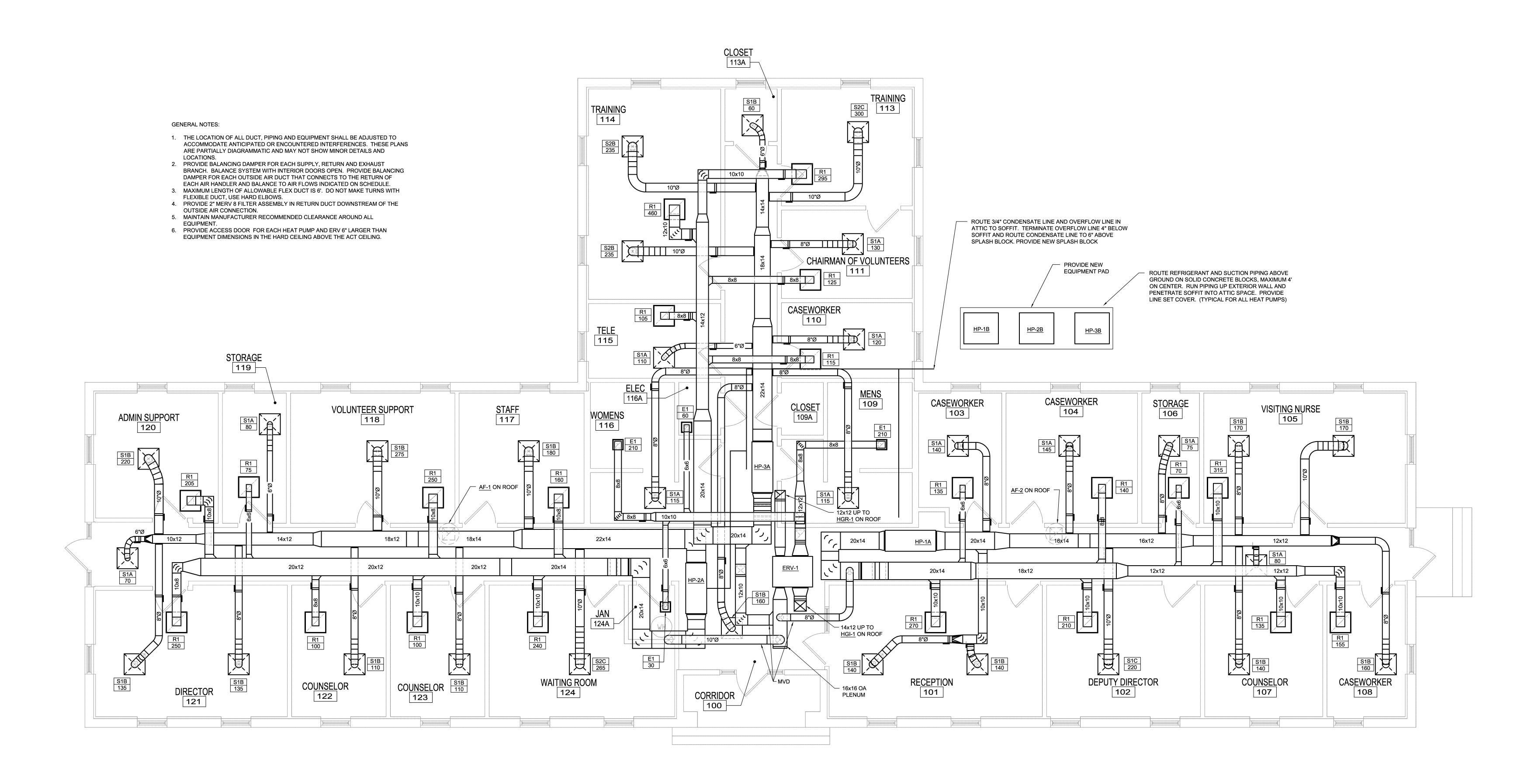
release. The Contractor shall submit its request to the Contracting Officer at least 45 days before the proposed date for release.

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#### DISCLOSURE OF INFORMATION

Contractor shall comply as follows:
(a) The Contractor shall not release to anyone outside the Contractor's organization any unclassified information, regardless of

medium (e.g., film, tape, document), pertaining to any part of this contract or any program related to this contract, unless-

(1) The Contracting Officer has given prior written approval; or (2) The information is otherwise in the public domain before the date of release.

2) I he information is otherwise in the public domain before the date of release.
5) Requests for approval shall identify the specific information to be released, the medium to be used, and the purpose for the

release. The Contractor shall submit its request to the Contracting Officer at least 45 days before the proposed date for release.

c) The Contractor agrees to include a similar requirement in each subcontract under this contract. Subcontractors shall submit requests for authorization to release through the prime contractor to the Contracting Officer.

NAVAL FACILITIES ENGINEERING COMMAND

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA IM HVAC/DHW IMPROVEMENTS, SWL VARIOUS FACILITIES, JHE **HADNOT POINT** SUBMITTED BY: BUILDING 400 MECHANICAL NEW WORK PLAN DESIGN DIR. DATE SIZE CODE IDENT NO. NAVFAC DRAWING NO. APPROVED: PWO OR OICC 60011375 DATE CONSTR CONTR NO. N40085-12-B-0091 SATISFACTORY TO SCALE: AS SPEC No. SHEET 31 OF 84

Wiley|Wilson 6606 West Broad St., Suite 500 Richmond, Virginia 23230-1717 804.254.7242 wileywilson.com

M - 108B

PROJECT NO. CP12-0091

SYM.	PREP'D B	/ DATE	APPROVED

		HEAT PUMP SCHE	DULE		
INDOOR L	JNIT DESIGNATION		HP-1A	HP-2A	HP-3A
OUTDOOF	JTDOOR UNIT DESIGNATION HP-1B HP-2B HP-3				HP-3B
LOCATION	N		VARIOUS	VARIOUS	VARIOUS
MINIMUM	COMBINED SEER R	ATING PER ARI	17.0	17.0	17.0
MINIMUM	COMBINED EER RA	TING PER ARI	12.2	12.2	12.2
		TOTAL AIRFLOW (CFM)	1580	1580	1580
		OUTSIDE AIRFLOW (CFM)	150	150 200	
	EL/ADODATOD	EXTERNAL STATIC PRESSURE (IN-WC)	.6	.6	.6
	EVAPORATOR	TOTAL COOLING CAPACITY (MBH)	47.5	47.5	47.5
N N		HEAT PUMP HEATING CAPACITY AT 17° F (MBH)	29.2	29.2	29.2
OR I		ELECTRIC HEATING CAPACITY (KW)	5.0	5.0	5.0
INDOOR UNIT		BLOWER MOTOR FLA (A)	9.1	9.1	9.1
2		TOTAL MCA (A)	27	27	27
	ELECTRICAL	VOLTAGE	208	208	208
		PHASE	1	1	1
		FREQUENCY (Hz)	60	60	60
BASED OF	V		LENNOX	LENNOX	LENNOX
INDOOR L	JNIT MODEL		CBX32MV-048	CBX32MV-048	CBX32MV-048
REFRIGE	RANT		R-410A	R-410A	R-410A
	AMBIENT DESIGN	TEMPERATURE (DEG F)	95	95	95
		MINIMUM CIRCUIT AMPACITY (A)	28.5	28.5	28.5
⊨		MAXIMUM OVERCURRENT PROTECTION (A)	45	45	45
OR UNIT		MINIMUM HEATING COP AT 17° F	2.5	2.5	2.5
, POC	ELECTRICAL	MINIMUM HEATING COP AT 47° F	3.32	3.32	3.32
ООТБОС	ELECTRICAL	MINIMUM HEAT PUMP HSPF	8.7	8.7	8.7
б		VOLTAGE (V)	208	208	208
		PHASE	1	1	1
		FREQUENCY (Hz)	60	60	60
BASED OF	N		LENNOX	LENNOX	LENNOX
OUTDOOF	R SYSTEM MODEL		XP21-048-230	XP21-048-230	XP21-048-230
REMARKS	3		1, 2 & 3	1, 2 & 3	1, 2 & 3

#### REMARKS LEGEND:

- 1. PROVIDE CONDENSING UNIT SHUTOFF MOISTURE SENSOR IN AUXILLARY PORT OF INDOOR UNIT DRAIN PAN.
- 2. PROVIDE SECONDARY DRAIN PAN EXTENDING 4" BEYOND AIR HANDLING UNIT ON ALL SIDES.
- 3. PROVIDE ECM MOTOR ON INDOOR UNIT.

ENERGY RECOVERY VENTILATOR SCHEDULE							
DESIGNATION		ERV-1					
CURRIVEAN	TOTAL FAN AIRFLOW (CFM)	830					
SUPPLY FAN	EXTERNAL STATIC PRESSURE (IN. WG)	.25					
EVIJALIOT FAN	TOTAL FAN AIRFLOW (CFM)	510					
EXHAUST FAN	EXTERNAL STATIC PRESSURE (IN. WG)	.25					
	OPERATING OUTSIDE AIRFLOW	830					
	OPERATING EXHAUST AIRFLOW	510					
里	OUTDOOR EAT DB/WB (COOLING)	95/79					
, W	OUTDOOR EAT DB/WB (HEATING)	20/16.6					
ENTHALPY WHEEL	EXHAUST EAT DB/WB (COOLING)	75/63					
Į.	EXHAUST EAT DB/WB (HEATING)	70/53					
ш	DELIVERED CONDITIONS DB/WB (COOLING)	83.8/70.9					
	DELIVERED CONDITIONS DB/WB (HEATING)	44/37.6					
EII TEDO	SUPPLY (MERV)	8					
FILTERS	EXHAUST(MERV)	8					
	MCA (A)	18.3					
CAL	MOCP (A)	25					
CTRI	VOLTS (V)	115					
ELECTRICAL	PHASE	1					
ш	FREQUENCY (Hz)	60					
BASED ON		GREENHECK					
MODEL		MINIVENT-750					
	<del></del>						

#### REMARKS:

- 1. PROVIDE FACTORY MOUNTED CONTROLS FOR UNITS INCLUDING ALL REQUIRED
- MOTOR STARTERS, PROVIDE FACTORY REMOTE PANEL INCLUDING INDICATION FOR DIRTY FILTER, HAND-OFF-AUTO SWITCH, AND 7 DAY TIME CLOCK.

AIR TERMINAL DEVICE SCHEDULE							
DESIGNATION	S1	S2	R1	E1			
TYPE	SUPPLY	SUPPLY	RETURN	EXHAUST			
	A=6"	A=6"					
NEOK OLZE	B=8"	B=8"	24x24	12x12			
NECK SIZE	C=10"	C=10"	24X24	12x12			
	D=12"	D=12"					
FRAME STYLE	LAY-IN	LAY-IN	LAY-IN	LAY-IN			
AIR PATTERN	4 WAY	4 WAY					
MAX NC RATING	25	25	25	25			
MATERIAL	STEEL	STEEL	STEEL	STEEL			
FINISH	BAKED ENAMEL	BAKED ENAMEL	BAKED ENAMEL	BAKED ENAMEL			
BASED ON	PRICE	PRICE	PRICE	PRICE			
MODEL	SCD	VPD-HC	81 SERIES	81 SERIES			
REMARKS		1					

#### REMARKS LEGEND:

RETURN OR EXHAUST DUCT

SCALE: NONE

(SEE PLANS FOR SIZES) —

24x24 OR 12X12

— PRE-FINISHED METAL CURB BY MANUFACTURER

— PROVIDE METAL FLASHING

SEALANT AROUND BASE

- PROVIDE CONTINUOUS MASTIC

- REMOVE EXISTING SHINGLES

NOTE: ROOF MOUNTED MECHANICAL

EXISTING ROOF TRUSSES, SIZE

MANUFACTURER'S INSTRUCTIONS.

OPENING ACCORDING TO

**ROOF PENETRATION DETAIL** 

SCALE: NONE

**EQUIPMENT TO BE LOCATED BETWEEN** 

AND SHEATHING AS REQUIRED.

LAY IN GRILLE -

#### HOODED GRAVITY INTAKE AND RELIEF SCHEDULE

DESIGNATION	HGI-1	HGR-1
USAGE	INTAKE	RELIEF
AIRFLOW (CFM)	830	510
STATIC PRESSURE (IN H2O)	.034	.047
THROAT AREA (SF)	1.83	.82
THROAT VELOCITY (FPM)	454	622
THROAT DIAMETER (IN)	20.25	12.25
SELECTION BASED ON	GREENHECK	GREENHECK
MODEL	GRSI-18	GRSR-12
REMARKS	1	1

REMARKS LEGEND: 1. PROVIDE BIRD SCREEN.

RETURN OR EXHAUST DUCT

— 45° ENTRY

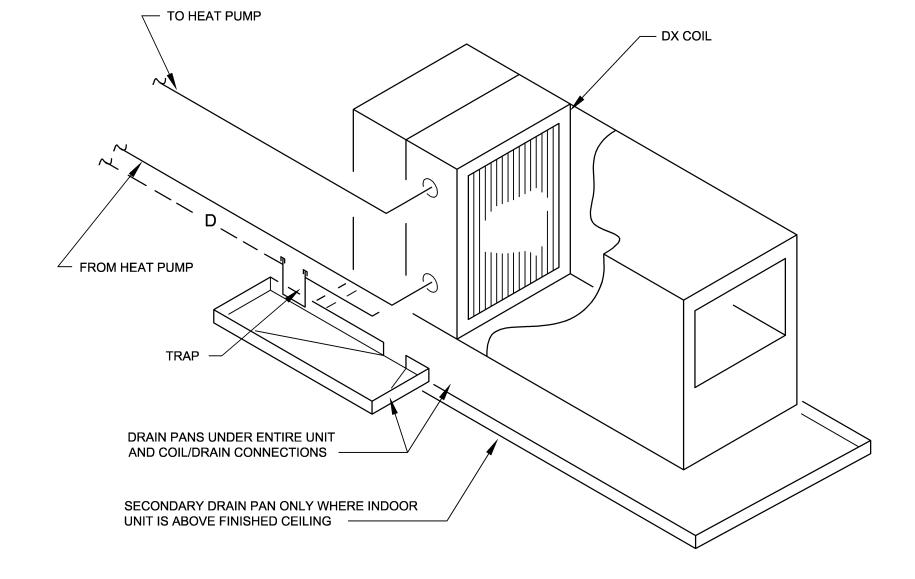
VOLUME DAMPER

CEILING RETURN/EXHAUST GRILLE

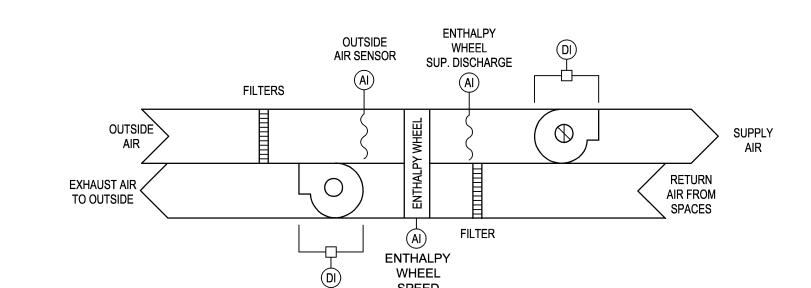
### REMARKS LEGEND:

ATTIC FAN S	CHEDULE	Ξ
DESIGNATION	AF-1	AF-2
LOCATION	ROOF	ROOF
USAGE	ATTIC VENTILATION	ATTIC VENTILATION
FAN DATA		
AIRFLOW (SCFM)	1700	1700
EXTERNAL SP (IN-H20)	.125	.125
RPM	1725	1725
DRIVE TYPE	DIRECT	DIRECT
MOTOR DATA		
HORSEPOWER	1/2	1/2
RPM	1750	1750
VOLTS	115	115
PHASE	60	60
HERTZ	1	1
SELECTION BASED ON	GREENHECK	GREENHECK
MODEL	LD-120-VG	LD-120-VG
REMARKS	1, 2, 3 & 4	1, 2, 3 & 4
DEMARKS LECEND.		

- 1. PROVIDE FAN WITH INTEGRAL BACK-DRAFT DAMPER, CONTINUOUS DUTY RATED.
- 2. PROVIDE FAN WITH FACTORY MOUNTED DISCONNECT.
- 3. PROVIDE FAN WITH ECM MOTOR AND WITH ADJUSTABLE SPEED.
- 4. PROVIDE ATTIC MOUNTED THERMOSTATIC CONTROL. SET THERMOSTAT TO OPERATE FAN WHEN ATTIC EXCEEDS 85 DEG F.



### HEAT PUMP INDOOR UNIT DETAIL



#### ENERGRY RECOVERY VENTILATOR CONTROL DIAGRAM

SCALE: NONE

SEQUENCE OF OPERATION:

DURING THE OCCUPIED MODE, THE ENERGY RECOVERY VENTILATOR SHALL RUN CONTINUOUSLY. DURING UNOCCUPIED MODE, THE UNIT WILL BE DISABLED WHERE THE SUPPLY AND EXHAUST FANS ARE OFF AND THE WHEEL DOES NOT ROTATE.

DURING OPERATION, DIFFERENTIAL PRESSURE SENSORS SHALL BE USED TO CONFIRM STATUS OF SUPPLY AND EXHAUST FANS. A TACHOMETER SHALL BE USED TO VERIFY WHEEL OPERATION. IF AT ANY TIME THE UNIT IS COMMANDED ON AND EITHER OF THESE THREE OPERATIONAL PIECES OF THE UNIT ARE NOT FUNCTIONING, THE ENTIRE UNIT SHALL BE SHUT DOWN AND AN ALARM SENT.

#### SPLIT SYSTEM HEAT PUMP SEQUENCE OF OPERATIONS

DURING THE OCCUPIED MODE, THE SPLIT SYSTEM AIR HANDLER FAN SHALL RUN CONTINUOUSLY TO SATISFY ROOM COMBINED THERMOSTAT AND HUMIDISTAT. THE SUPPLY AIR FAN ECM MOTOR SHALL REMAIN ON DURING OCCUPIED MODE AND THE SPEED SHALL MODULATE ACCORDING TO THE MANUFACTURER'S STANDARD SEQUENCE OF OPERATION TO CONTROL ROOM TEMPERATURE AND LIMIT HUMIDITY. IN THE HEATING MODE, THE THERMOSTAT SHALL NOT ENERGIZE THE AUXILIARY ELECTRIC HEAT IF THE HEAT PUMP MODE CAN MEET THE DEMAND. SUCH AS DURING WARM-UP FROM NIGHT SET BACK USING A SMART RECOVERY CAPABLE THERMOSTAT. FACTORY COMMUNICATING THERMOSTAT SHALL BE PROVIDED WITH 7 DAY PROGRAMMING TO ALLOW NIGHT/WEEKEND SET-BACK, COMMUNICATE ALI STANDARD MANUFACTURER'S ALARMS FROM THE UNITS TO THE THERMOSTAT, AND INDICATE DIRTY FILTER.THERMOSTAT SHALL INCLUDE DEHUMIDIFICATION CONTROL TO INTEGRATE WITH HEAT PUMP CONTROLLER TO REDUCE FAN SPEED TO INCREASE LATENT PERFORMANCE AND REDUCE INDOOR AIR HUMIDITY.

> Wiley|Wilson 6606 West Broad St., Suite 500 M - 108CRichmond, Virginia 23230-1717 804.254.7242 PROJECT NO. CP12-0091 NAVAL FACILITIES ENGINEERING COMMAND
> MARINE CORPS BASE
> CAMP LEJEUNE, NORTH CAROLINA DEPT OF NAVY IM HVAC/DHW IMPROVEMENTS, SWL VARIOUS FACILITIES, JHE HADNOT POINT
> BUILDING 400 SCHEDULES, DETAILS & SUBMITTED BY: DESIGN DIR. CONTROLS DATE SIZE CODE IDENT NO. NAVFAC DRAWING NO. APPROVED: PWO OR OICC 60011376

> > N40085-12-B-0091

SHEET 32 OF 84

CONSTR CONTR NO.

BOARD CEILING PATCH INSTRUCTIONS. (8" DUCT WITH 2" INSULATION SHOULD HAVE 10" HOLE IN GYPSUM BOARD) DATE SATISFACTORY TO SCALE: AS SPEC No.

- PROVIDE HARD ROUND ELBOW CONNECTOR — - INSULATE HARD DUCT EXISTING PLASTER CEILING INSULATE BACKSIDE OF SUPPLY DIFFUSER - PROVIDE 5/8" GYPSUM BOARD PATCH. FIT SNUGLY AROUND DUCT AND INSULATION. SEE DETAIL 3/E-501 FOR GYPSUM MAXIMUM OFFSET OF 4", EXCEPT WHEN OBSTRUCTED BY TRUSS, MAX OFFSET=7" TYP. DUCT TAKE OFF DETAIL SCALE: NONE

ENLARGE EXISTING PENETRATIONS IN CEILING TO ALIGN RUNOUTS

DIFFUSERS AND RETURN GRILLS TO FIT CEILING. PERFORATED FACE

— PULL EXISTING FLEXIBLE DUCT STRAIGHT AND

SMOOTH, SECURE WITH BAND CLAMP

WITH NEW DIFFUSER/GRILL LOCATIONS. PROVIDE SUPPLY

SUPPLY DIFFUSERS ARE NOT PERMITTED.

PROVIDE INSULATED

FLEXIBLE DUCT

### — UNIT DRAIN CONNECTION THREADED CAP UNIT DRAIN PAN SLOPE 1/2" PER 10' SEE DRAWINGS FOR ROUTING

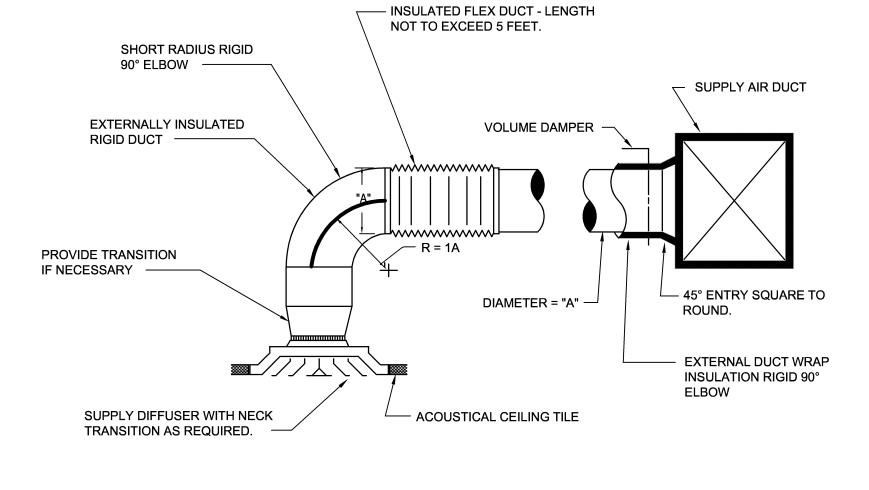
"A" = DIMENSION SHALL BE IN ACCORDANCE WITH MANUFACTURES INSTRUCTIONS, MINIMUM OF 2 INCHES.

CONDENSATE DRAIN PIPE SIZE SHALL BE UNIT

DRAIN CONNECTION SIZE

#### AC DRAIN FOR HEAT PUMP AIR HANDLER NEGATIVE PRESSURE DRAIN PAN

NO SCALE



TYPICAL CEILING SUPPLY DIFFUSER CONNECTION SCALE: NONE

MECHANICAL EQUIPMENT; SEE

MECHANICAL DRAWINGS —

PROVIDE METAL FLASHING-

**EXISTING ROOF SHEATHING-**

SEALANT AROUND BASE -**EXISTING ROOF SHINGLES -**

EXISTING ROOF TRUSS—

PROVIDE ANGLE SUPPORT

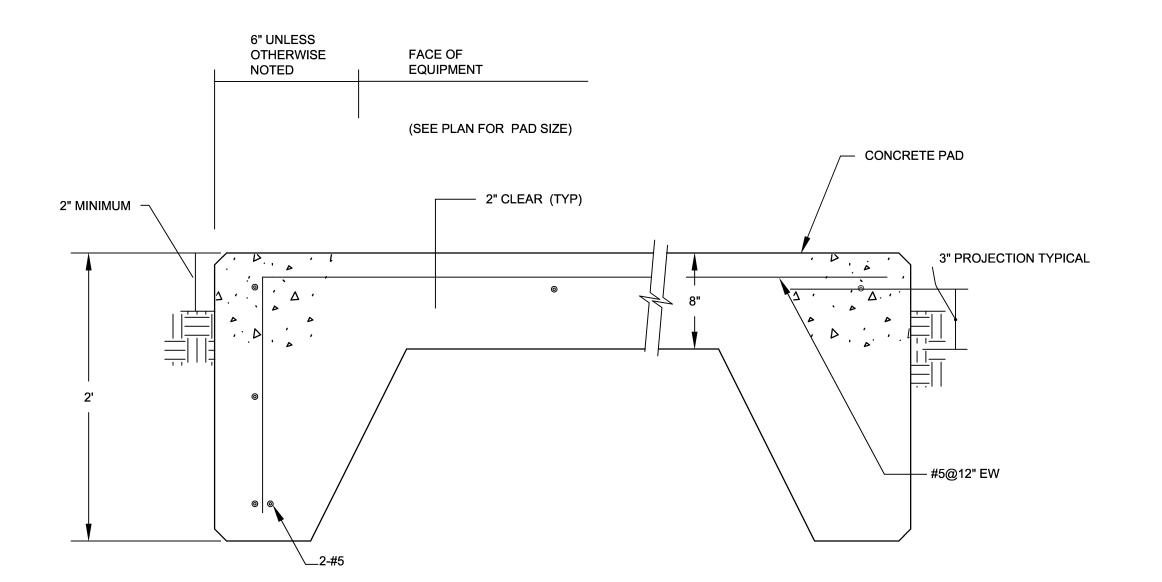
SUPPORT ROOF MOUNTED

MECHANICAL EQUIPMENT

(4 SIDES) -

BETWEEN TRUSSES TO

PROVIDE CONTINUOUS MASTIC



EXTERIOR EQUIPMENT PAD DETAIL SCALE: NONE

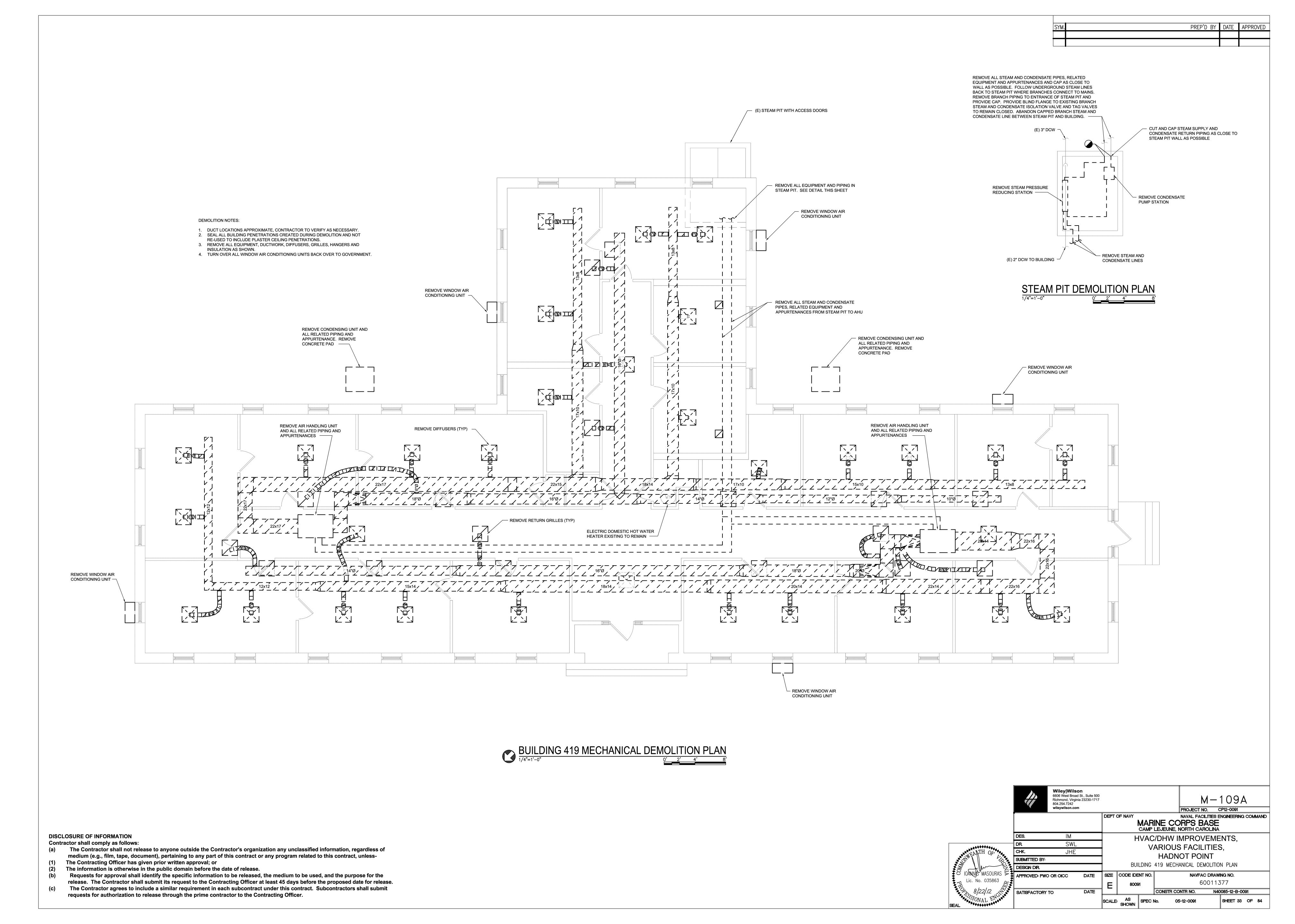
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- The information is otherwise in the public domain before the date of release. Requests for approval shall identify the specific information to be released, the medium to be used, and the purpose for the

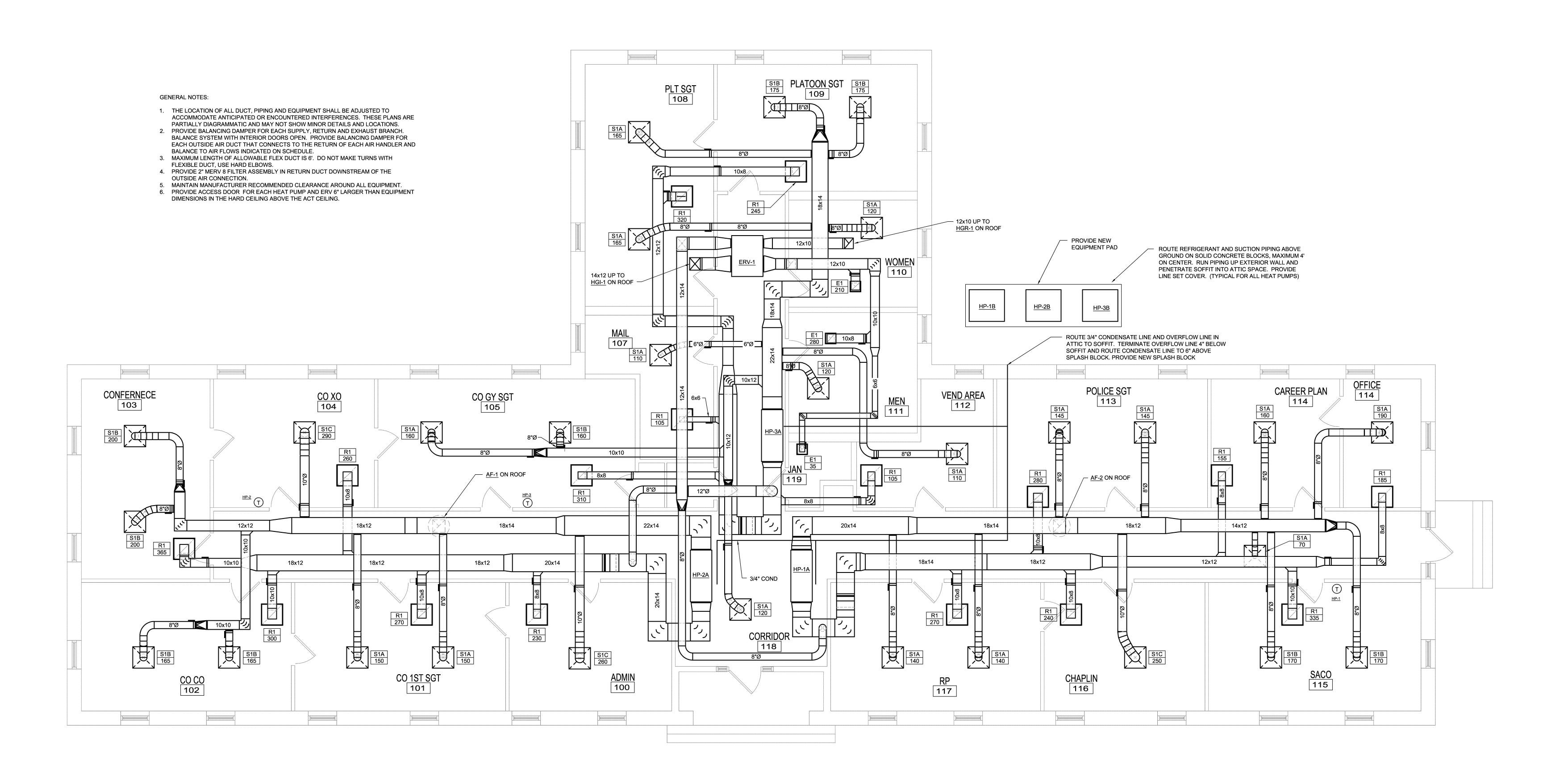
release. The Contractor shall submit its request to the Contracting Officer at least 45 days before the proposed date for release.

The Contractor agrees to include a similar requirement in each subcontract under this contract. Subcontractors shall submit requests for authorization to release through the prime contractor to the Contracting Officer.

<sup>1.</sup> PROVIDE A SELF-MODULATING DIFFUSER WITH A COOLING SET POINT OF 75 DEG F (ADJUSTABLE) AND A HEATING SET POINT OF 68 DEG F (ADJUSTABLE).



PREP'D BY DATE APPROVED



# BUILDING 419 MECHANICAL NEW WORK PLAN

#### DISCLOSURE OF INFORMATION

Contractor shall comply as follows: (a) The Contractor shall not release to anyone outside the Contractor's organization any unclassified information, regardless of

medium (e.g., film, tape, document), pertaining to any part of this contract or any program related to this contract, unless-(1) The Contracting Officer has given prior written approval; or

(2) The information is otherwise in the public domain before the date of release.

Requests for approval shall identify the specific information to be released, the medium to be used, and the purpose for the

release. The Contractor shall submit its request to the Contracting Officer at least 45 days before the proposed date for release. (c) The Contractor agrees to include a similar requirement in each subcontract under this contract. Subcontractors shall submit

requests for authorization to release through the prime contractor to the Contracting Officer.

		Wiley Wilson 6606 West Broad S Richmond, Virginia 804.254.7242 wileywilson.com	St., Suite 500				i i		109B	
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8/22/12	SATISFACTORY	то	DATE				CONSTR CO	NTR NO. N44	0085-12-B-0091	
SEAL SEAL				SCALE	AS SHOWN	SPEC I	No. 05	-12-0091	SHEET 34 OF 84	<b>,</b>

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SYM.	PREP'D BY	DATE	APPROVED

		HEAT PUMP SCHE	DULE		
INDOOR UNIT DESIGNATION		HP-1A	HP-2A	HP-3A	
OUTDOOR UNIT DESIGNATION		HP-1B	HP-2B	HP-3B	
LOCATION	l .		VARIOUS	VARIOUS	VARIOUS
MINIMUM	COMBINED SEER R	ATING PER ARI	17.0	17.0	17.0
MINIMUM	COMBINED EER RA	TING PER ARI	12.2	12.2	12.2
		TOTAL AIRFLOW (CFM)	1580	1580	1580
		OUTSIDE AIRFLOW (CFM)	115	155	495
	EVADODATOD	EXTERNAL STATIC PRESSURE (IN-WC)	.6	.6	.6
_	EVAPORATOR	TOTAL COOLING CAPACITY (MBH)	47.5	47.5	47.5
		HEAT PUMP HEATING CAPACITY AT 17° F (MBH)	29.2	29.2	29.2
ORI		ELECTRIC HEATING CAPACITY (KW)	5.0	5.0	5.0
INDOOR UNIT		BLOWER MOTOR FLA (A)	9.1	9.1	9.1
_ =		TOTAL MCA (A)	27	27	27
	ELECTRICAL	VOLTAGE	208	208	208
		PHASE	1	1	1
	FREQUENCY (Hz)	60	60	60	
BASED ON	N		LENNOX	LENNOX	LENNOX
INDOOR UNIT MODEL		CBX32MV-048	CBX32MV-048	CBX32MV-048	
REFRIGERANT		R-410A	R-410A	R-410A	
AMBIENT DESIGN TEMPERATURE (DEG F)		95	95	95	
		MINIMUM CIRCUIT AMPACITY (A)	28.5	28.5	28.5
⊨		MAXIMUM OVERCURRENT PROTECTION (A)	45	45	45
ELECTRICAL		MINIMUM HEATING COP AT 17° F	2.5	2.5	2.5
	FLECTRICAL	MINIMUM HEATING COP AT 47° F	3.32	3.32	3.32
	ELECTRICAL	MINIMUM HEAT PUMP HSPF	8.7	8.7	8.7
		VOLTAGE (V)	208	208	208
		PHASE	1	1	1
		FREQUENCY (Hz)	60	60	60
BASED ON		LENNOX	LENNOX	LENNOX	
OUTDOOF	R SYSTEM MODEL		XP21-048-230	XP21-048-230	XP21-048-230
REMARKS	}		1, 2 & 3	1, 2 & 3	1, 2 & 3

#### REMARKS LEGEND:

NO SCALE

- 1. PROVIDE CONDENSING UNIT SHUTOFF MOISTURE SENSOR IN AUXILLARY PORT OF INDOOR UNIT DRAIN PAN.
- 2. PROVIDE SECONDARY DRAIN PAN EXTENDING 4" BEYOND AIR HANDLING UNIT ON ALL SIDES.
- 3. PROVIDE ECM MOTOR ON INDOOR UNIT.

NEGATIVE PRESSURE DRAIN PAN

ENE	RGY RECOVERY VENTILATO	R SCHEDULE
ESIGNATION		ERV-1
SUPPLY FAN	TOTAL FAN AIRFLOW (CFM)	765
	EXTERNAL STATIC PRESSURE (IN. WG)	0.5
EVITATIOT FAN	TOTAL FAN AIRFLOW (CFM)	525
EXHAUST FAN	EXTERNAL STATIC PRESSURE (IN. WG)	0.5
	OPERATING OUTSIDE AIRFLOW	765
_	OPERATING EXHAUST AIRFLOW	525
里	OUTDOOR EAT DB/WB (COOLING)	95/79
<u></u> ≻	OUTDOOR EAT DB/WB (HEATING)	20/16.6
ALP	EXHAUST EAT DB/WB (COOLING)	75/63
ENTHALPY WHEEL	EXHAUST EAT DB/WB (HEATING)	70/53
	DELIVERED CONDITIONS DB/WB (COOLING)	82.9/70.1
	DELIVERED CONDITIONS DB/WB (HEATING)	46.8/39.6
EII TEDO	SUPPLY (MERV)	8
FILTERS	EXHAUST(MERV)	8
	MCA (A)	18.3
CAL	MOCP (A)	25
XT.	VOLTS (V)	115
MOCP (A)  VOLTS (V)  PHASE		1
ш	FREQUENCY (Hz)	60
BASED ON	•	GREENHECK
MODEL		MINIVENT-750
REMARKS:		1

- 1. PROVIDE FACTORY MOUNTED CONTROLS FOR UNITS INCLUDING ALL REQUIRED
- MOTOR STARTERS, PROVIDE FACTORY REMOTE PANEL INCLUDING INDICATION FOR DIRTY FILTER, HAND-OFF-AUTO SWITCH, AND 7 DAY TIME CLOCK.

HOODED GRAVI RELIEF SO		
CICNATION	10.1	UCD 1

DESIGNATION	HGI-1	HGR-1
USAGE	INTAKE	RELIEF
AIRFLOW (CFM)	765	525
STATIC PRESSURE (IN H2O)	.043	.05
THROAT AREA (SF)	1.45	.82
THROAT VELOCITY (FPM)	528	640
THROAT DIAMETER (IN)	16.25	12.25
SELECTION BASED ON	GREENHECK	GREENHECK
MODEL	GRSI-16	GRSR-12
REMARKS	1	1

REMARKS LEGEND:

<ol> <li>PROVIDE BIRD SCREEN.</li> </ol>	

ATTIC FAN SCHEDULE			
DESIGNATION	AF-1	AF-2	
LOCATION	ROOF	ROOF	
USAGE	ATTIC VENTILATION	ATTIC VENTILATION	
FAN DATA			
AIRFLOW (SCFM)	1700	1700	
EXTERNAL SP (IN-H20)	.125	.125	
RPM	1725	1725	
DRIVE TYPE	DIRECT	DIRECT	
MOTOR DATA			
HORSEPOWER	1/2	1/2	
RPM	1750	1750	
VOLTS	115	115	
PHASE	60	60	
HERTZ	1	1	
SELECTION BASED ON	GREENHECK	GREENHECK	
MODEL	LD-120-VG	LD-120-VG	
REMARKS	1, 2, 3 & 4	1, 2, 3 & 4	

#### REMARKS LEGEND:

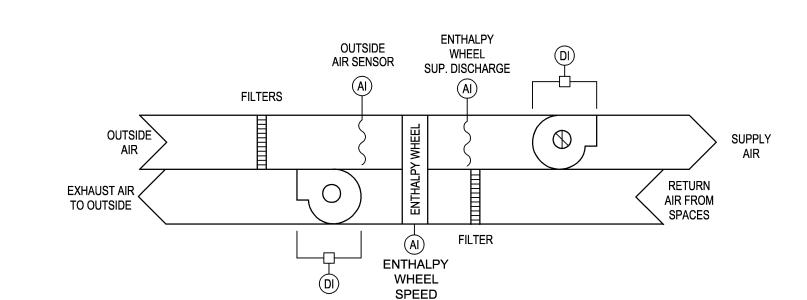
- 1. PROVIDE FAN WITH INTEGRAL BACK-DRAFT DAMPER, CONTINUOUS DUTY RATED.
- 2. PROVIDE FAN WITH FACTORY MOUNTED DISCONNECT.
- 3. PROVIDE FAN WITH ECM MOTOR AND WITH ADJUSTABLE SPEED.
- 4. PROVIDE ATTIC MOUNTED THERMOSTATIC CONTROL. SET THERMOSTAT TO OPERATE FAN WHEN ATTIC EXCEEDS 85 DEG F.

AIR TERMINAL DEVICE					
DEGIGNATION	SCHEDULE				
DESIGNATION	S1	R1	E1		
TYPE	SUPPLY	RETURN	EXHAUST		
	A=6"		12x12		
NECK SIZE	B=8"	24x24			
NECK SIZE	C=10"	24x24			
	D=12"				
FRAME STYLE	LAY-IN	LAY-IN	LAY-IN		
AIR PATTERN	4 WAY				
MAX NC RATING	20	20	20		
MATERIAL	STEEL	STEEL	STEEL		
FINISH	BAKED ENAMEL	BAKED ENAMEL	BAKED ENAMEL		
BASED ON	PRICE	PRICE	PRICE		
MODEL	SCD	81 SERIES	81 SERIES		

─ TO HEAT PUMP

# FROM HEAT PUMP DRAIN PANS UNDER ENTIRE UNIT AND COIL/DRAIN CONNECTIONS SECONDARY DRAIN PAN ONLY WHERE INDOOR UNIT IS ABOVE FINISHED CEILING

### HEAT PUMP INDOOR UNIT DETAIL



#### ENERGRY RECOVERY VENTILATOR CONTROL DIAGRAM

SCALE: NONE SEQUENCE OF OPERATION:

OFF AND THE WHEEL DOES NOT ROTATE.

DURING THE OCCUPIED MODE, THE ENERGY RECOVERY VENTILATOR SHALL RUN CONTINUOUSLY. DURING UNOCCUPIED MODE, THE UNIT WILL BE DISABLED WHERE THE SUPPLY AND EXHAUST FANS ARE

DURING OPERATION, DIFFERENTIAL PRESSURE SENSORS SHALL BE USED TO CONFIRM STATUS OF SUPPLY AND EXHAUST FANS. A TACHOMETER SHALL BE USED TO VERIFY WHEEL OPERATION. IF AT ANY TIME THE UNIT IS COMMANDED ON AND EITHER OF THESE THREE OPERATIONAL PIECES OF THE UNIT

ARE NOT FUNCTIONING, THE ENTIRE UNIT SHALL BE SHUT DOWN AND AN ALARM SENT.

#### SPLIT SYSTEM HEAT PUMP SEQUENCE OF OPERATIONS

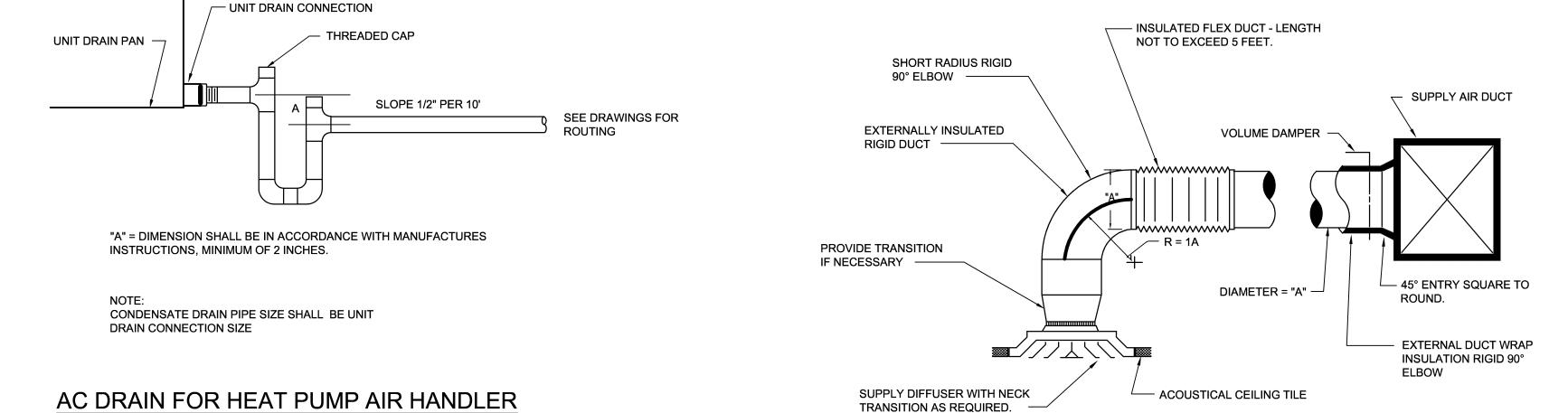
DURING THE OCCUPIED MODE, THE SPLIT SYSTEM AIR HANDLER FAN SHALL RUN CONTINUOUSLY TO SATISFY ROOM COMBINED THERMOSTAT AND HUMIDISTAT. THE SUPPLY AIR FAN ECM MOTOR SHALL REMAIN ON DURING OCCUPIED MODE AND THE SPEED SHALL MODULATE ACCORDING TO THE MANUFACTURER'S STANDARD SEQUENCE OF OPERATION TO CONTROL ROOM TEMPERATURE AND LIMIT HUMIDITY. IN THE HEATING MODE, THE THERMOSTAT SHALL NOT ENERGIZE THE AUXILIARY ELECTRIC HEAT IF THE HEAT PUMP MODE CAN MEET THE DEMAND. SUCH AS DURING WARM-UP FROM NIGHT SET BACK USING A SMART RECOVERY CAPABLE THERMOSTAT. FACTORY COMMUNICATING THERMOSTAT SHALL BE PROVIDED WITH 7 DAY PROGRAMMING TO ALLOW NIGHT/WEEKEND SET-BACK, COMMUNICATE ALI STANDARD MANUFACTURER'S ALARMS FROM THE UNITS TO THE THERMOSTAT, AND INDICATE DIRTY FILTER.THERMOSTAT SHALL INCLUDE DEHUMIDIFICATION CONTROL TO INTEGRATE WITH HEAT PUMP CONTROLLER TO REDUCE FAN SPEED TO INCREASE LATENT PERFORMANCE AND REDUCE INDOOR AIR HUMIDITY.

> Wiley|Wilson 6606 West Broad St., Suite 500 M - 109CRichmond, Virginia 23230-1717 804.254.7242 PROJECT NO. CP12-0091 DEPT OF NAVY IM HVAC/DHW IMPROVEMENTS, SWL VARIOUS FACILITIES, JHE HADNOT POINT
> BUILDING 419 SCHEDULES, DETAILS & SUBMITTED BY: DESIGN DIR. CONTROLS DATE SIZE CODE IDENT NO. NAVFAC DRAWING NO. APPROVED: PWO OR OICC

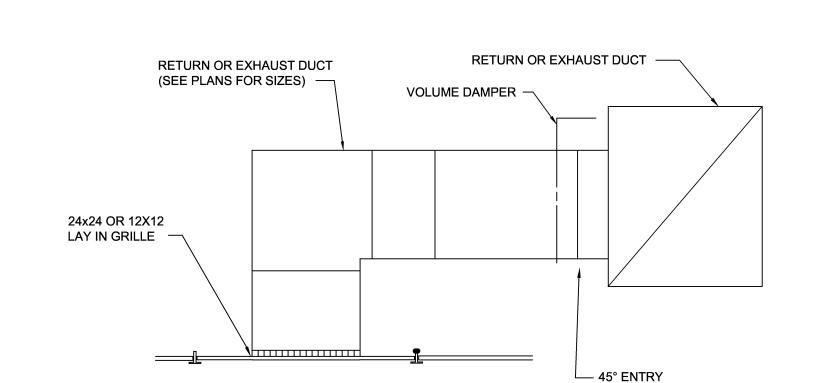
INSTRUCTIONS. (8" DUCT WITH 2" INSULATION SHOULD HAVE NAVAL FACILITIES ENGINEERING COMMAND

MARINE CORPS BASE

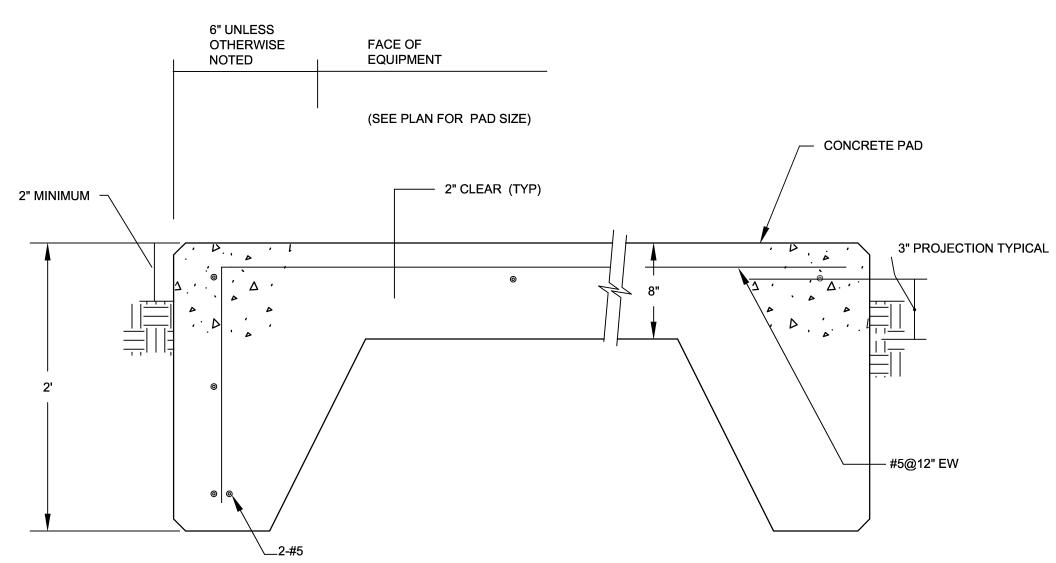
CAMP LEJEUNE, NORTH CAROLINA 10" HOLE IN GYPSUM BOARD) 60011379 DATE N40085-12-B-0091 CONSTR CONTR NO. SATISFACTORY TO SCALE: AS SPEC No. SHEET 35 OF 84







CEILING RETURN/EXHAUST GRILLE SCALE: NONE



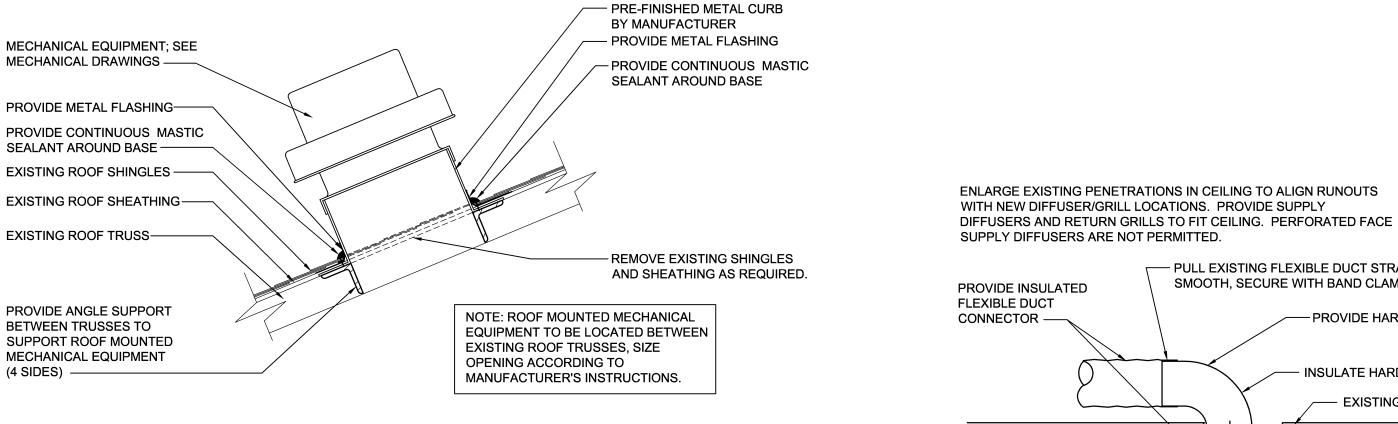
EXTERIOR EQUIPMENT PAD DETAIL SCALE: NONE

## (4 SIDES) -SCALE: NONE

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**ROOF PENETRATION DETAIL** 

#### — PULL EXISTING FLEXIBLE DUCT STRAIGHT AND SMOOTH, SECURE WITH BAND CLAMP - PROVIDE HARD ROUND ELBOW - INSULATE HARD DUCT EXISTING PLASTER CEILING INSULATE BACKSIDE OF SUPPLY DIFFUSER - PROVIDE 5/8" GYPSUM BOARD PATCH. FIT SNUGLY AROUND DUCT AND INSULATION. SEE DETAIL 3/E-501 FOR GYPSUM BOARD CEILING PATCH MAXIMUM OFFSET OF 4", EXCEPT WHEN OBSTRUCTED BY TRUSS, MAX OFFSET=7"

TYP. DUCT TAKE OFF DETAIL

SCALE: NONE