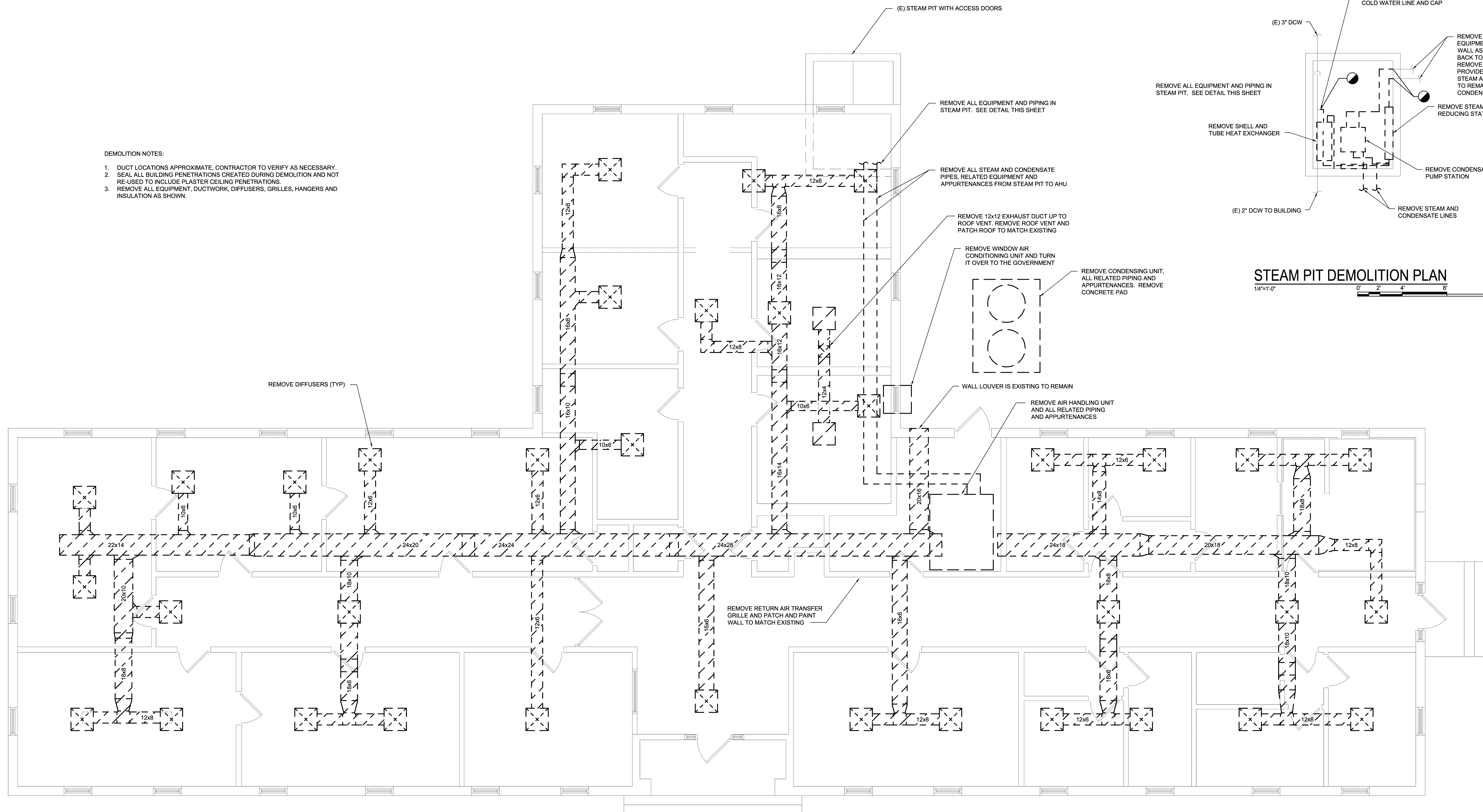


SYM.	PREP'D BY	DATE	APPROVED

DEMOLITION NOTES:

1. DUCT LOCATIONS APPROXIMATE. CONTRACTOR TO VERIFY AS NECESSARY.
2. SEAL ALL BUILDING PENETRATIONS CREATED DURING DEMOLITION AND NOT RE-USED TO INCLUDE PLASTER CEILING PENETRATIONS.
3. REMOVE ALL EQUIPMENT, DUCTWORK, DIFFUSERS, GRILLES, HANGERS AND INSULATION AS SHOWN.



STEAM PIT DEMOLITION PLAN
1/4"=1'-0"

BUILDING 501 MECHANICAL DEMOLITION PLAN
1/4"=1'-0"

DISCLOSURE OF INFORMATION

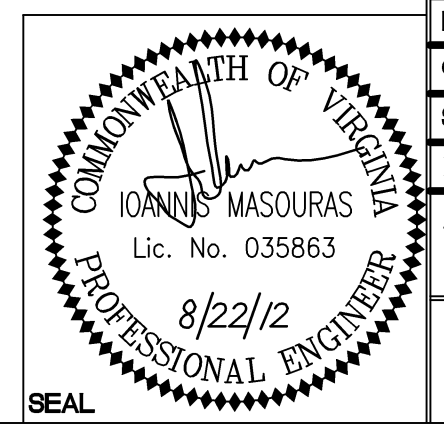
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(1) The information is otherwise in the public domain before the date of release.

(2) 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.

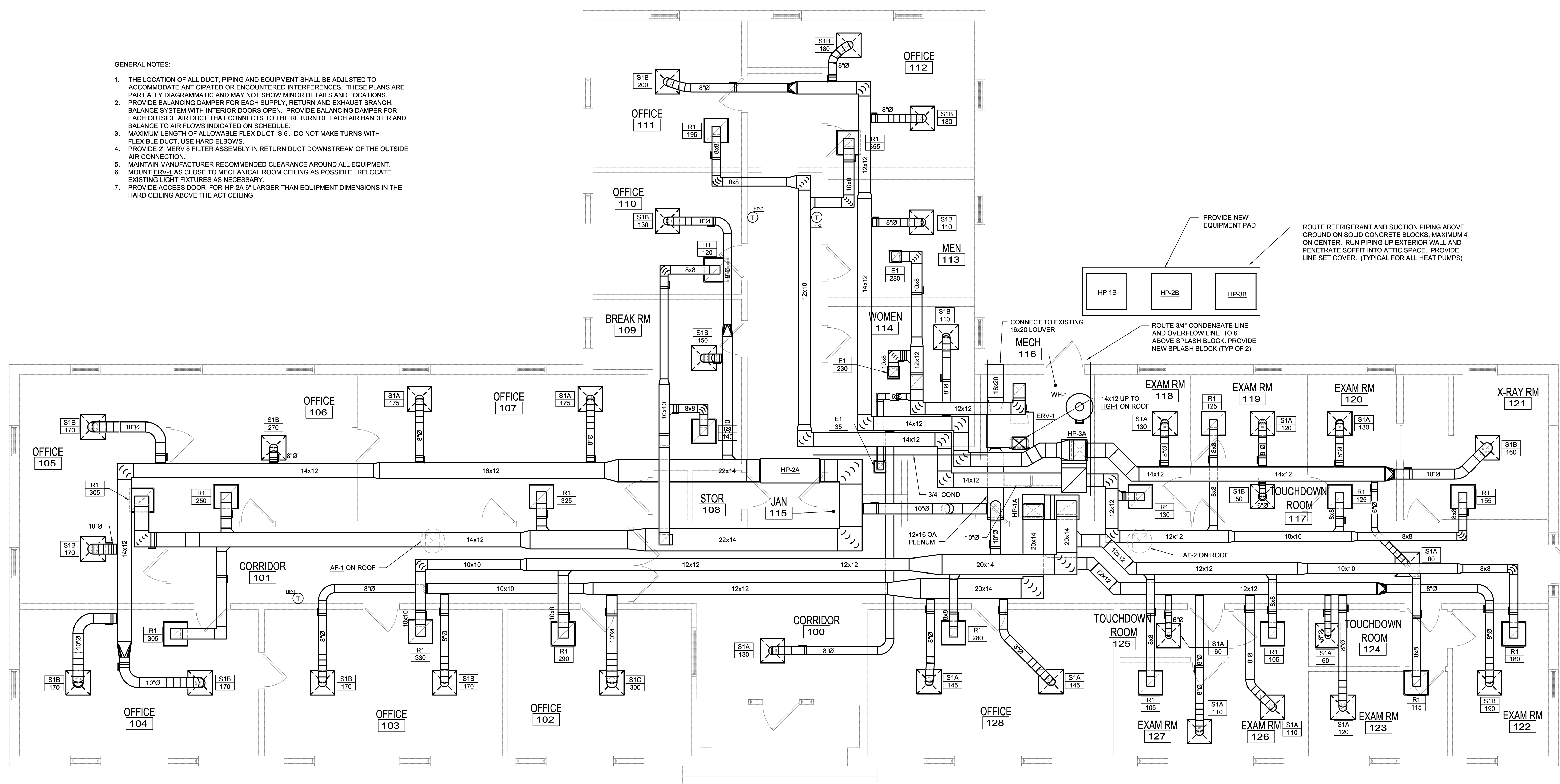
(c) The Contractor agrees to include a similar requirement in each subcontract under this contract. Subcontractors shall submit requests for authorization to release through the prime contractor to the Contracting Officer.



WileyWilson 6606 West Broad St., Suite 500 Richmond, Virginia 23230-1717 804.264.7242 wileywilson.com		M-110A PROJECT NO. CP12-0091	
DEPT OF NAVY MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA		NAVAL FACILITIES ENGINEERING COMMAND	
DES. IM	DR. SWL	HVAC/DHW IMPROVEMENTS, VARIOUS FACILITIES, HADNOT POINT BUILDING 501 MECHANICAL DEMOLITION PLAN	
CHK. JHE	SUBMITTED BY:	DESIGN DR.	NAVFAC DRAWING NO. 60011380
APPROVED PWO OR OIC	DATE	SIZE E	CODE IDENT NO. 80091
SATISFACTORY TO	DATE	CONSTR CONTR NO. N40085-12-B-0091	SHEET 36 OF 84
SCALE: AS SHOWN	SPEC No. 05-12-0091		

SYM.	PREP'D BY	DATE	APPROVED

- GENERAL NOTES:
1. THE LOCATION OF ALL DUCT, 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. PROVIDE BALANCING DAMPER FOR EACH SUPPLY, RETURN AND EXHAUST BRANCH. BALANCE SYSTEM WITH INTERIOR DOORS OPEN. PROVIDE BALANCING DAMPER FOR EACH OUTSIDE AIR DUCT THAT CONNECTS TO THE RETURN OF EACH AIR HANDLER AND BALANCE TO AIR FLOWS INDICATED ON SCHEDULE.
 3. MAXIMUM LENGTH OF ALLOWABLE FLEX DUCT IS 6'. DO NOT MAKE TURNS WITH FLEXIBLE DUCT. USE HARD ELBOWS.
 4. PROVIDE 2" MERV 8 FILTER ASSEMBLY IN RETURN DUCT DOWNSTREAM OF THE OUTSIDE AIR CONNECTION.
 5. MAINTAIN MANUFACTURER RECOMMENDED CLEARANCE AROUND ALL EQUIPMENT. MOUNT ERV-1 AS CLOSE TO MECHANICAL ROOM CEILING AS POSSIBLE. RELOCATE EXISTING LIGHT FIXTURES AS NECESSARY.
 6. PROVIDE ACCESS DOOR FOR HP-2A 6" LARGER THAN EQUIPMENT DIMENSIONS IN THE HARD CEILING ABOVE THE ACT CEILING.



PROVIDE NEW EQUIPMENT PAD

ROUTE REFRIGERANT AND SUCTION PIPING ABOVE GROUND ON SOLID CONCRETE BLOCKS, MAXIMUM 4" ON CENTER. RUN PIPING UP EXTERIOR WALL AND PENETRATE SOFFIT INTO ATTIC SPACE. PROVIDE LINE SET COVER. (TYPICAL FOR ALL HEAT PUMPS)

CONNECT TO EXISTING 16x20 LOUVER

ROUTE 3/4" CONDENSATE LINE AND OVERFLOW LINE TO 6" ABOVE SPLASH BLOCK. PROVIDE NEW SPLASH BLOCK (TYP OF 2)

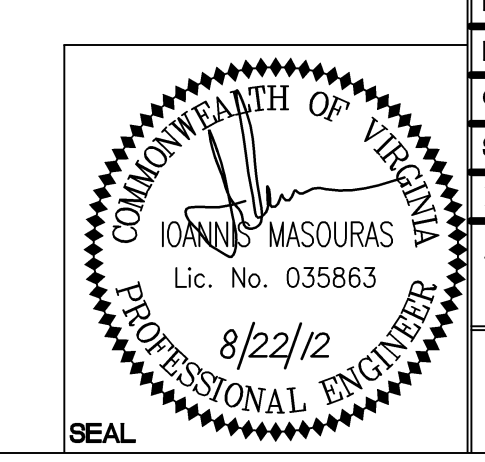
BUILDING 501 MECHANICAL NEW WORK PLAN
 1/4"=1'-0" 0 2 4 8

DISCLOSURE OF INFORMATION
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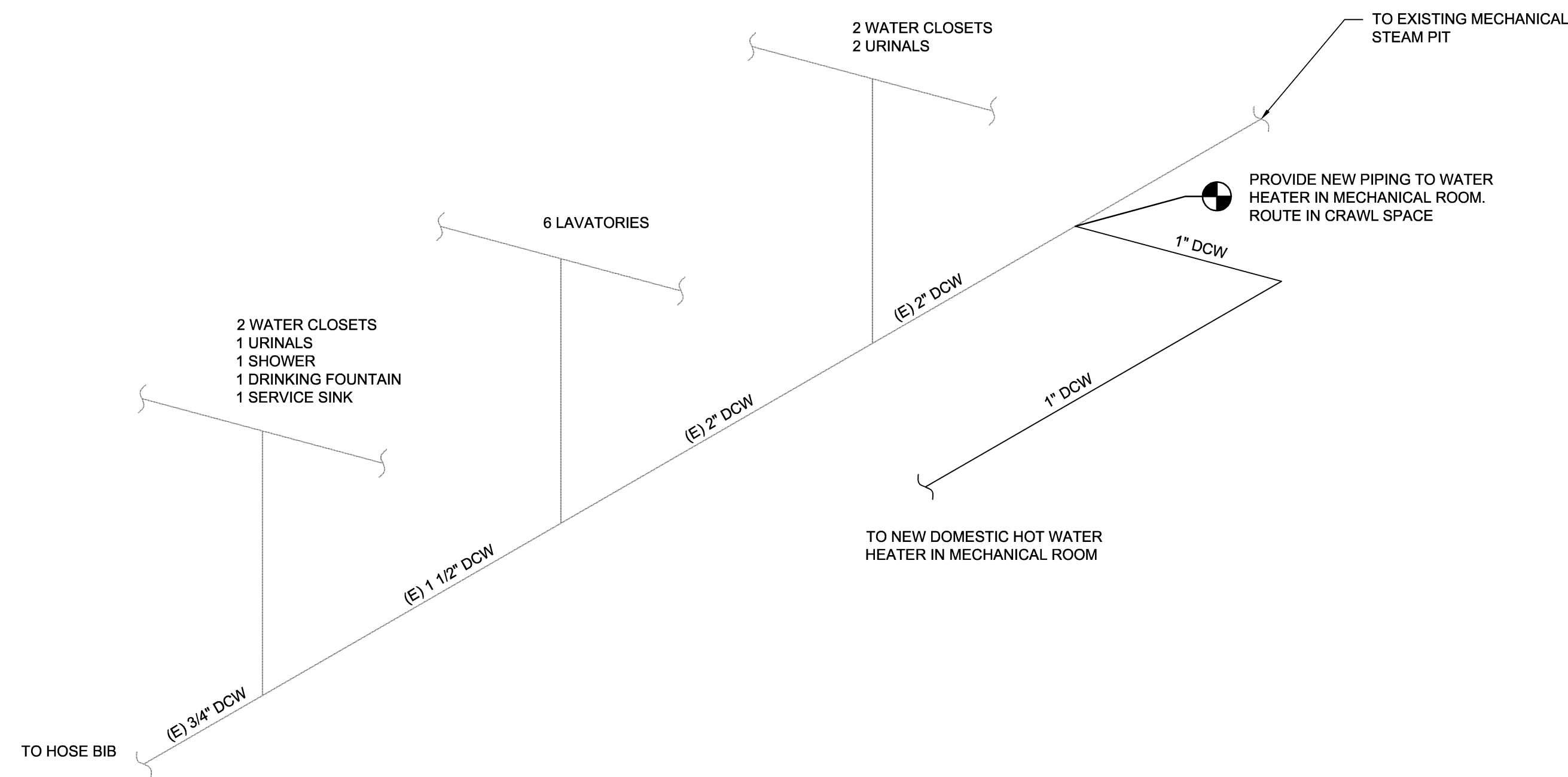
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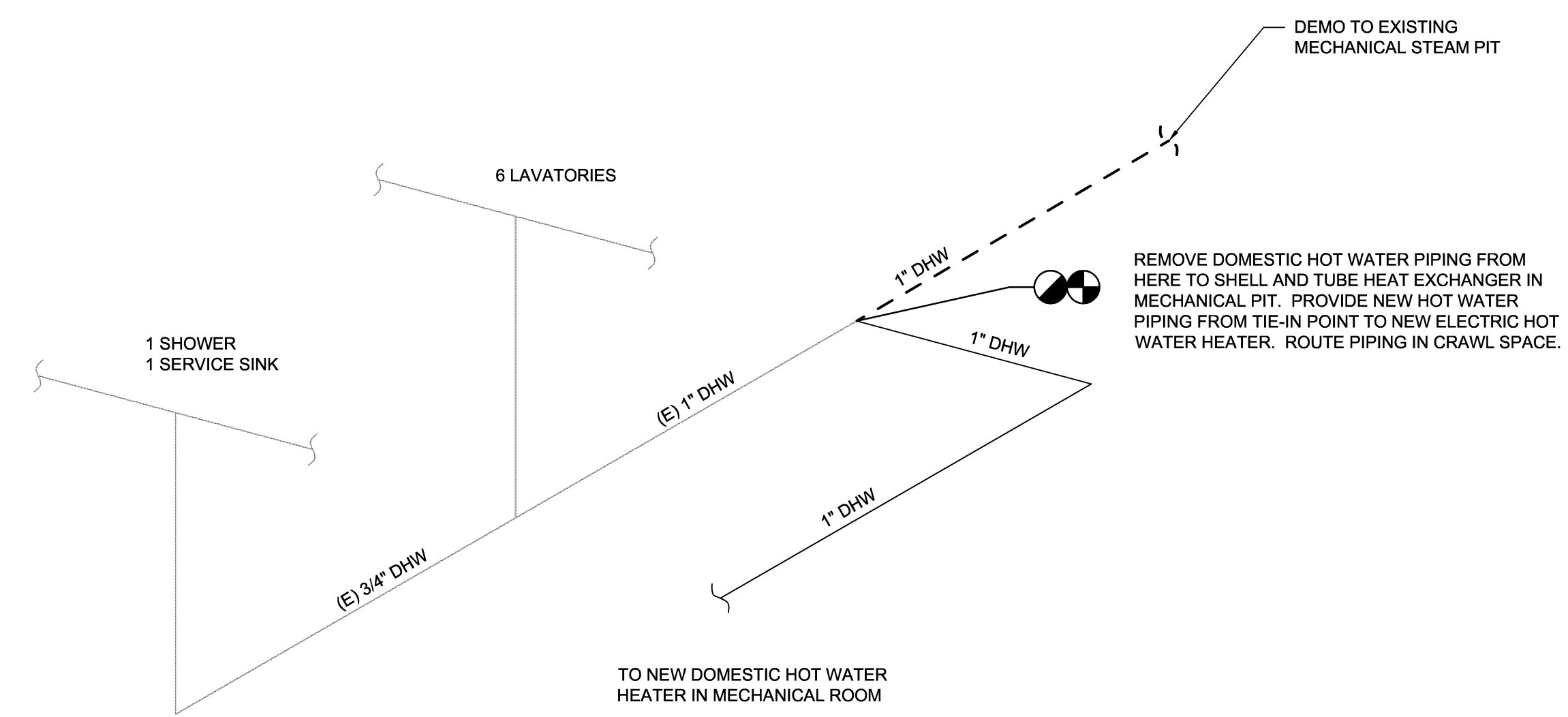


WileyWilson 6606 West Broad St., Suite 500 Richmond, Virginia 23230-1717 804.264.7242 wileywilson.com		M-110B PROJECT NO. CP12-0091 NAVAL FACILITIES ENGINEERING COMMAND	
DEPT OF NAVY MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA HVAC/DHW IMPROVEMENTS, VARIOUS FACILITIES, HADNOT POINT BUILDING 501 MECHANICAL NEW WORK PLAN		NAVFAC DRAWING NO. 60011381	
DES. IM	DR. SWL	CHK. JHE	SUBMITTED BY: APPROVED PWO OR OICC DATE SATISFACTORY TO DATE
SIZE E	CODE IDENT NO. 80091	CONSTR CONTR NO. N40085-12-B-0091	NAVFAC DRAWING NO. 60011381
SCALE: AS SHOWN	SPEC No. 05-12-0091	SHEET 37 OF 84	

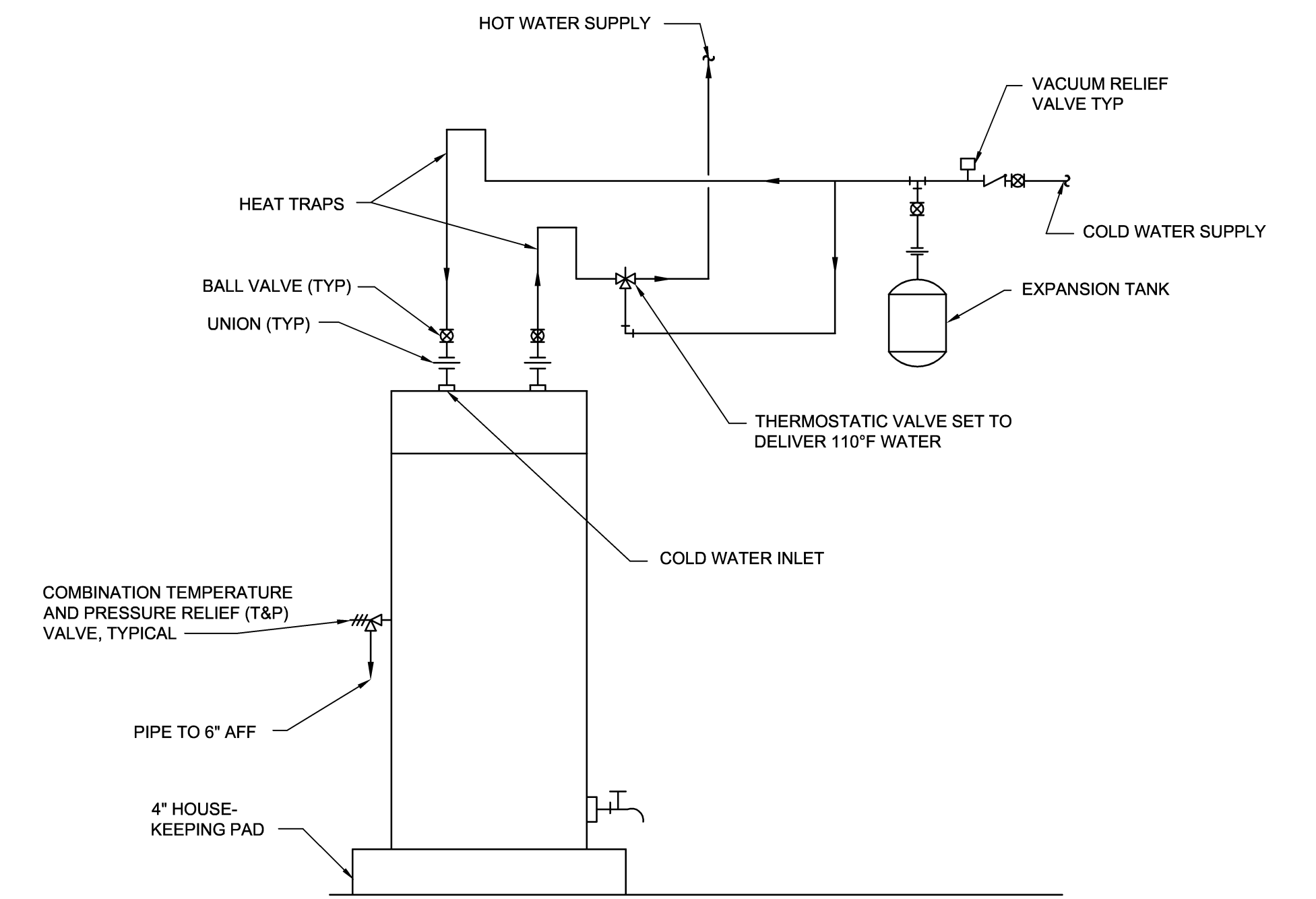
SYM.	PREP'D BY	DATE	APPROVED



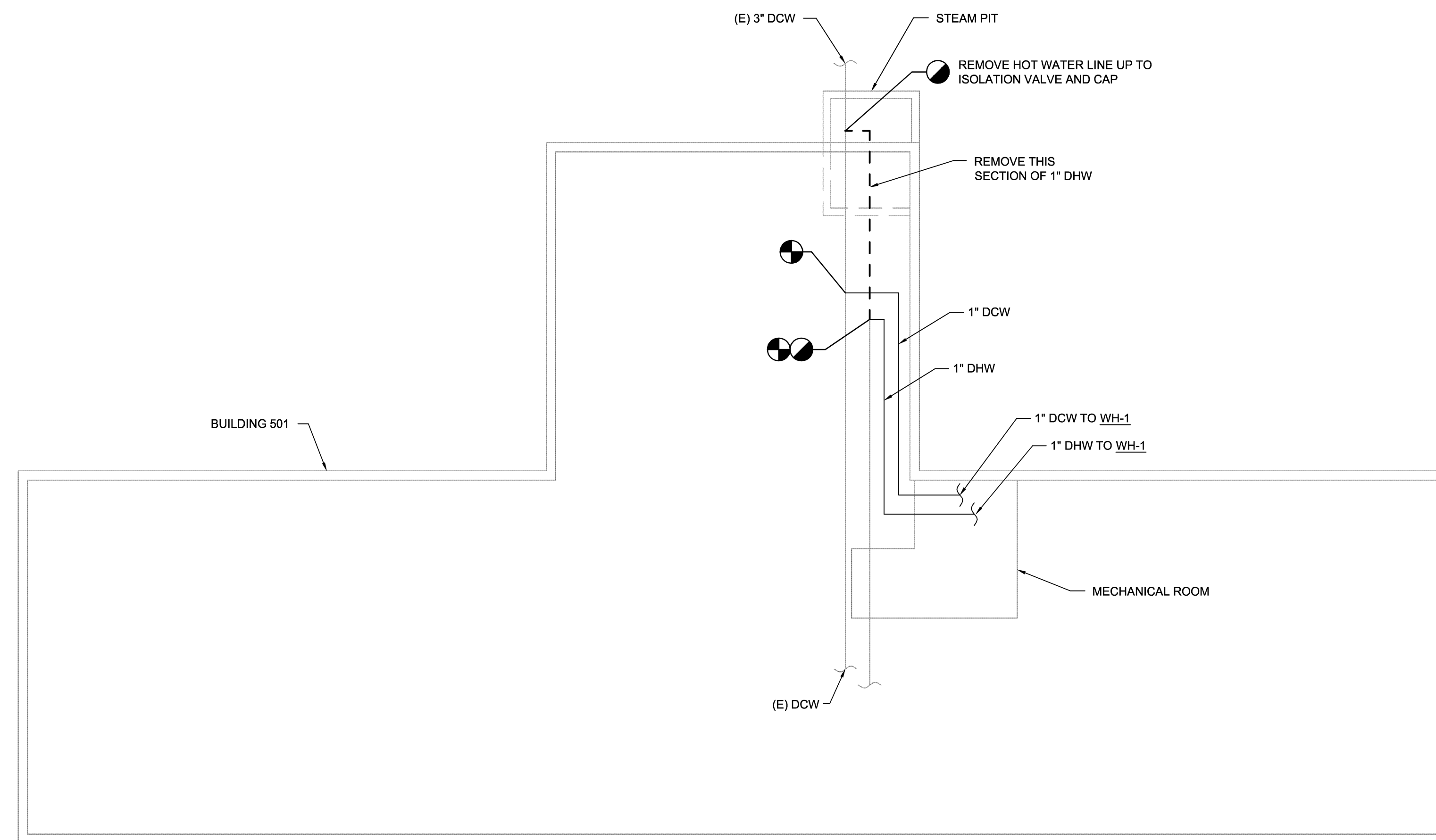
DOMESTIC COLD WATER RISER DIAGRAM
NOT TO SCALE



DOMESTIC HOT WATER RISER DIAGRAM
NOT TO SCALE



ELECTRIC WATER HEATER DETAIL
NOT TO SCALE



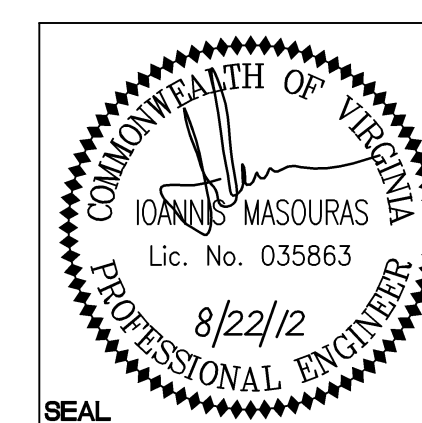
DOMESTIC WATER SITE PLAN
NOT TO SCALE

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.

DISCLOSURE OF INFORMATION
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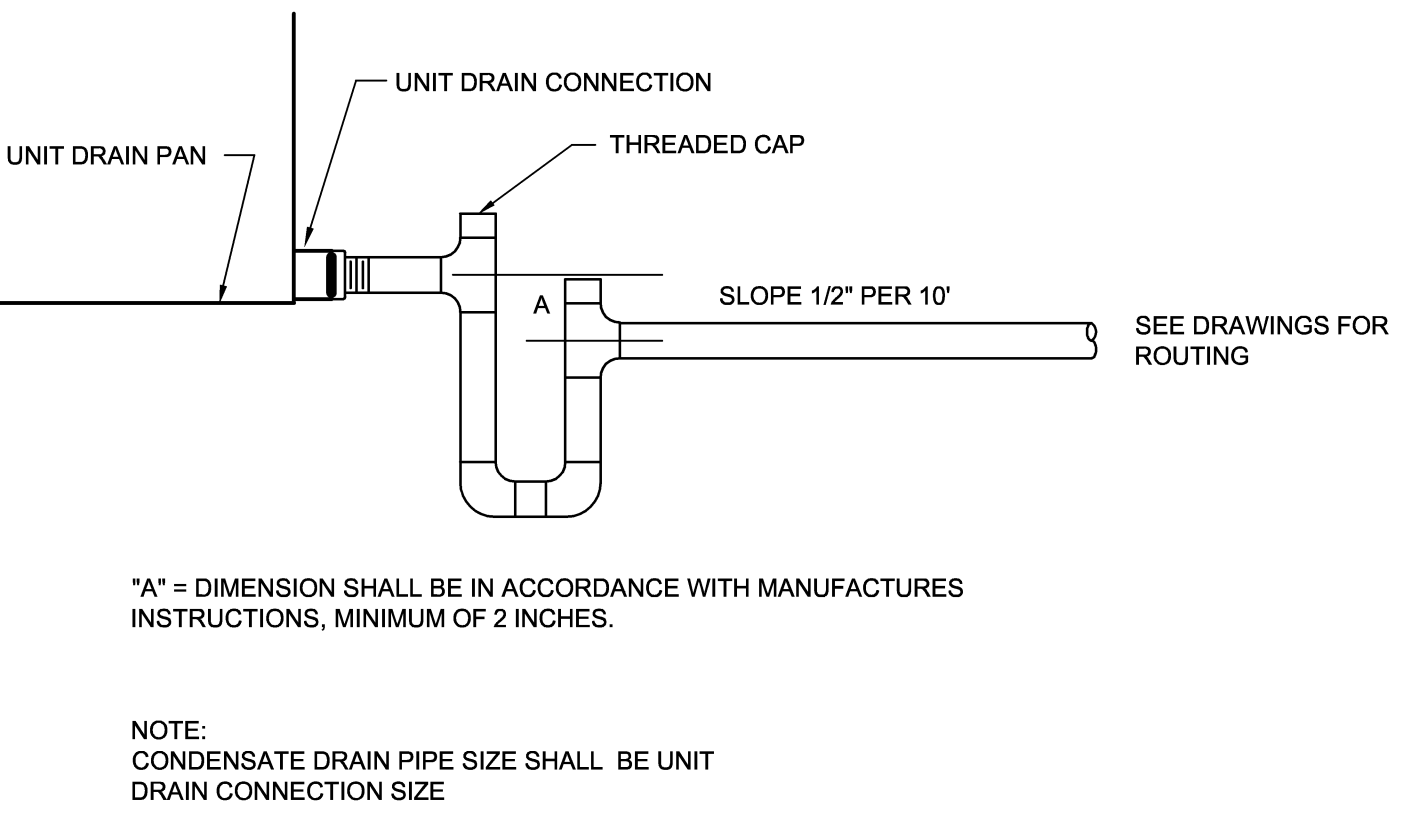


WileyWilson 6606 West Broad St., Suite 500 Richmond, Virginia 23230-1717 804.254.7242 wileywilson.com		M-110C PROJECT NO. CP12-0091	
DEPT OF NAVY MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA		NAVAL FACILITIES ENGINEERING COMMAND	
DES. IM DR. SWL CHK. JHE SUBMITTED BY: DESIGN DR.	HVAC/DHW IMPROVEMENTS, VARIOUS FACILITIES, HADNOT POINT BUILDING 501 PLUMBING PLAN, DIAGRAMS & DETAILS		
APPROVED PWO OR OICC DATE	SIZE E	CODE IDENT NO. 80091	NAVFAC DRAWING NO. 60011382
SATISFACTORY TO DATE	SCALE: AS SHOWN	CONSTR CONTR NO. N40085-12-B-0091	SHEET 38 OF 84

SYM.	PREP'D BY	DATE	APPROVED

HEAT PUMP SCHEDULE					
INDOOR UNIT DESIGNATION	HP-1A	HP-2A	HP-3A		
OUTDOOR UNIT DESIGNATION	HP-1B	HP-2B	HP-3B		
LOCATION	VARIOUS	VARIOUS	VARIOUS		
MINIMUM COMBINED SEER RATING PER ARI	17.0	17.0	17.0		
MINIMUM COMBINED EER RATING PER ARI	12.2	12.2	12.2		
INDOOR UNIT	EVAPORATOR	TOTAL AIRFLOW (CFM)	1580	1580	1580
		OUTSIDE AIRFLOW (CFM)	175	135	495
		EXTERNAL STATIC PRESSURE (IN-WC)	.6	.6	.6
		TOTAL COOLING CAPACITY (MBH)	47.5	47.5	47.5
		HEAT PUMP HEATING CAPACITY AT 17° F (MBH)	29.2	29.2	29.2
	ELECTRICAL	ELECTRIC HEATING CAPACITY (KW)	5.0	5.0	5.0
		BLOWER MOTOR FLA (A)	9.1	9.1	9.1
		TOTAL MCA (A)	27	27	27
		VOLTAGE	208	208	208
		PHASE	1	1	1
FREQUENCY (Hz)	60	60	60		
BASED ON	LENNOX	LENNOX	LENNOX		
INDOOR UNIT MODEL	CBX32MV-048	CBX32MV-048	CBX32MV-048		
REFRIGERANT	R-410A	R-410A	R-410A		
OUTDOOR UNIT	ELECTRICAL	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
		MINIMUM HEATING COP AT 17° F	2.5	2.5	2.5
		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
OUTDOOR SYSTEM MODEL	XP21-048-230	XP21-048-230	XP21-048-230		
REMARKS	1, 2 & 3	1, 2, 3 & 4	1, 2 & 3		

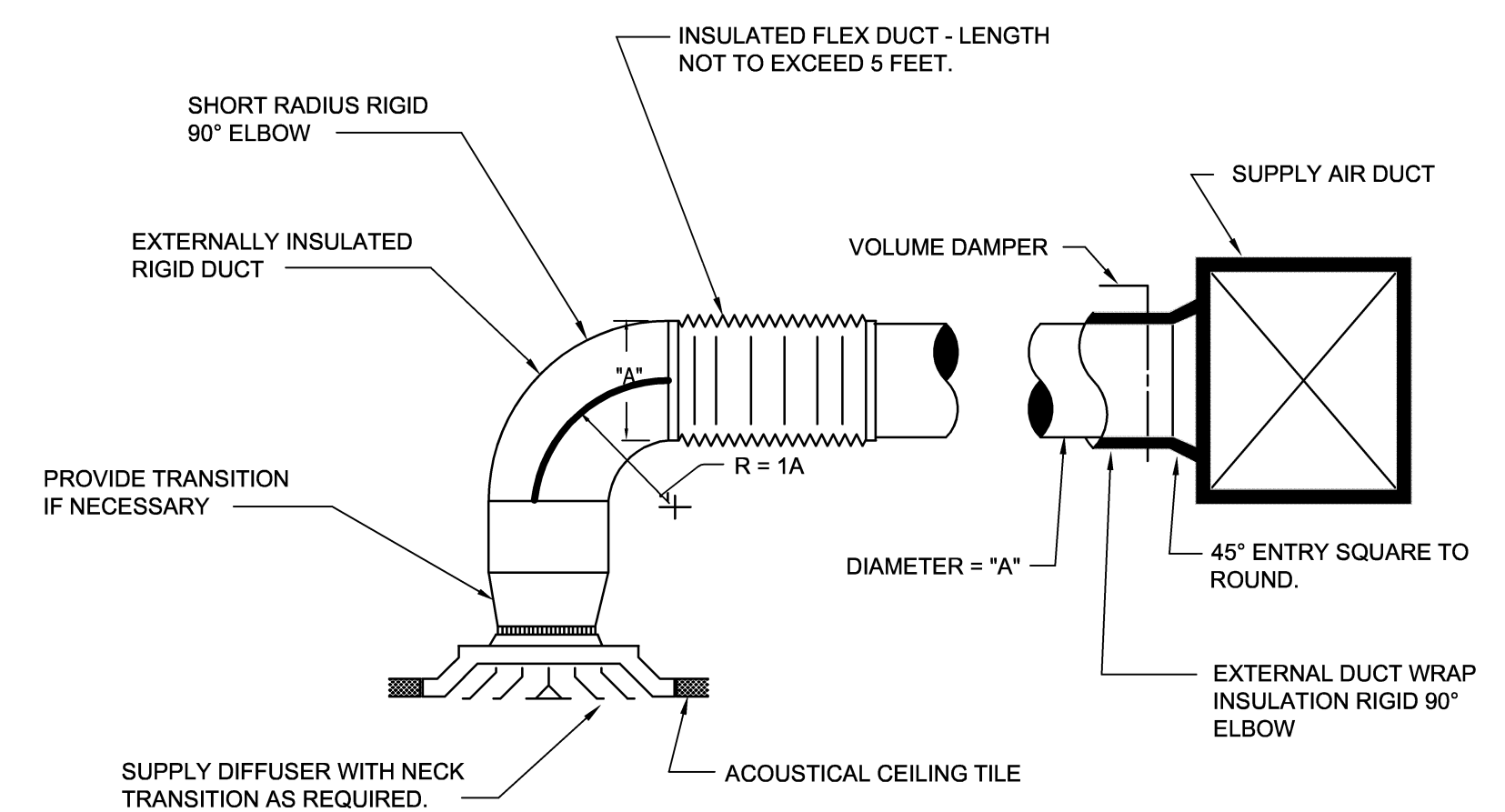
- REMARKS LEGEND:
1. PROVIDE CONDENSING UNIT SHUTOFF MOISTURE SENSOR IN AUXILIARY PORT OF INDOOR UNIT DRAIN PAN.
 2. PROVIDE SIDE RETURN UNIT STAND.
 3. PROVIDE ECM MOTOR ON INDOOR UNIT.
 4. PROVIDE SECONDARY DRAIN PAN EXTENDING 4" BEYOND AIR HANDLING UNIT ON ALL SIDES.



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

ENERGY RECOVERY VENTILATOR SCHEDULE		ERV-1
DESIGNATION	TOTAL FAN AIRFLOW (CFM)	805
SUPPLY FAN	EXTERNAL STATIC PRESSURE (IN. WG)	.5
EXHAUST FAN	TOTAL FAN AIRFLOW (CFM)	545
	EXTERNAL STATIC PRESSURE (IN. WG)	.5
ENTHALPY WHEEL	OPERATING OUTSIDE AIRFLOW	805
	OPERATING EXHAUST AIRFLOW	5445
	OUTDOOR EAT DB/WB (COOLING)	95/79
	OUTDOOR EAT DB/WB (HEATING)	20/16.6
	EXHAUST EAT DB/WB (COOLING)	75/63
	EXHAUST EAT DB/WB (HEATING)	70/53
	DELIVERED CONDITIONS DB/WB (COOLING)	83.1/70.4
	DELIVERED CONDITIONS DB/WB (HEATING)	48.2/39.2
	SUPPLY (MERV)	8
	EXHAUST(MERV)	8
FILTERS	MCA (A)	18.3
	MOCP (A)	25
	VOLTS (V)	115
	PHASE	1
ELECTRICAL	FREQUENCY (Hz)	60
	BASED ON	GREENHECK
MODEL	MINVENT-750	1
REMARKS		

- REMARKS LEGEND:
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.



TYPICAL CEILING SUPPLY DIFFUSER CONNECTION
SCALE: NONE

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

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

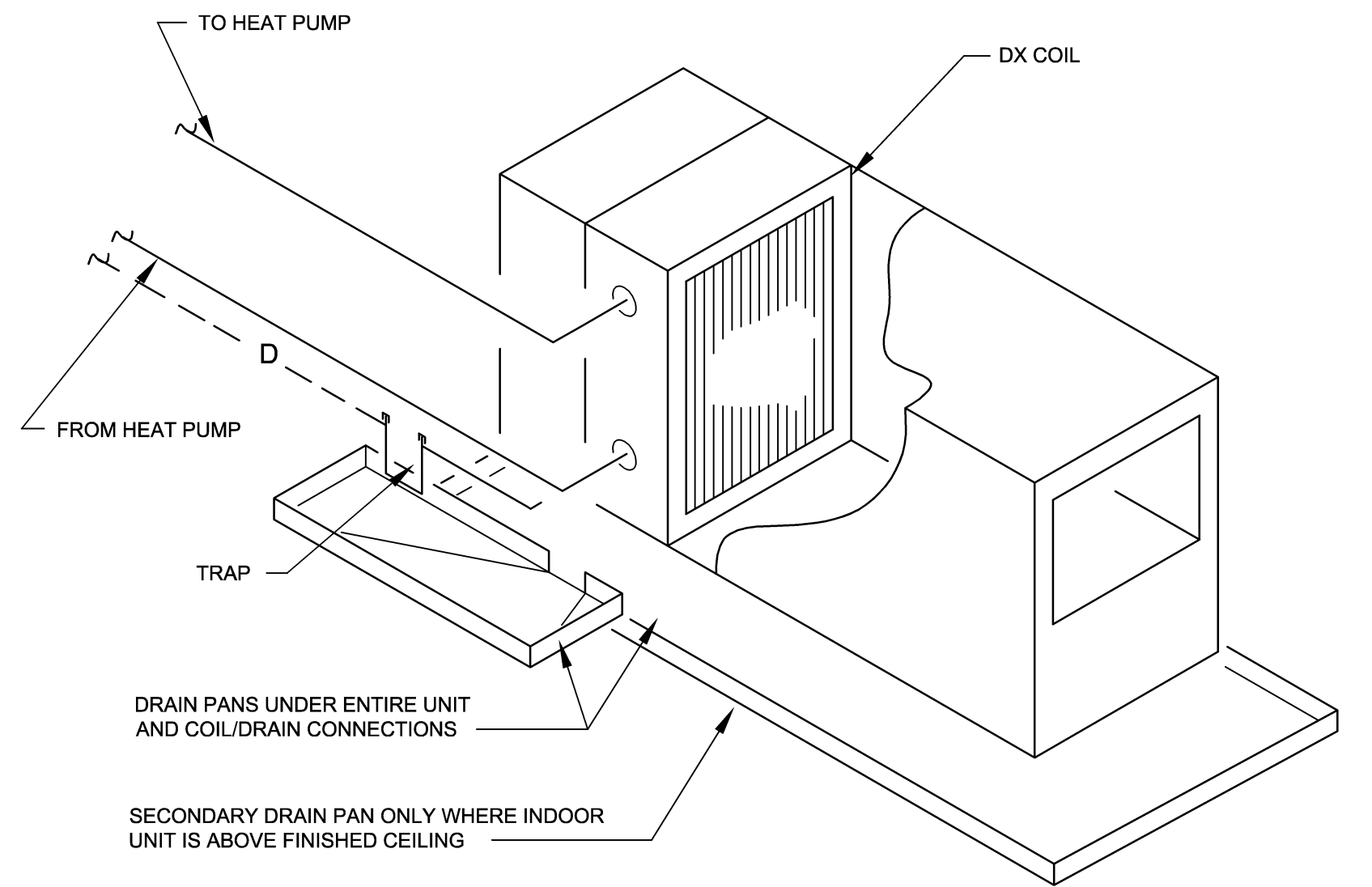
HOODED GRAVITY INTAKE SCHEDULE		HGI-1
DESIGNATION	INTAKE	
USAGE		
AIRFLOW (CFM)	805	
STATIC PRESSURE (IN H2O)	.047	
THROAT AREA (SF)	1.45	
THROAT VELOCITY (FPM)	555	
THROAT DIAMETER (IN)	16.25	
SELECTION BASED ON	GREENHECK	
MODEL	GRSI-16	
REMARKS	1	

- REMARKS LEGEND:
1. PROVIDE BIRD SCREEN.

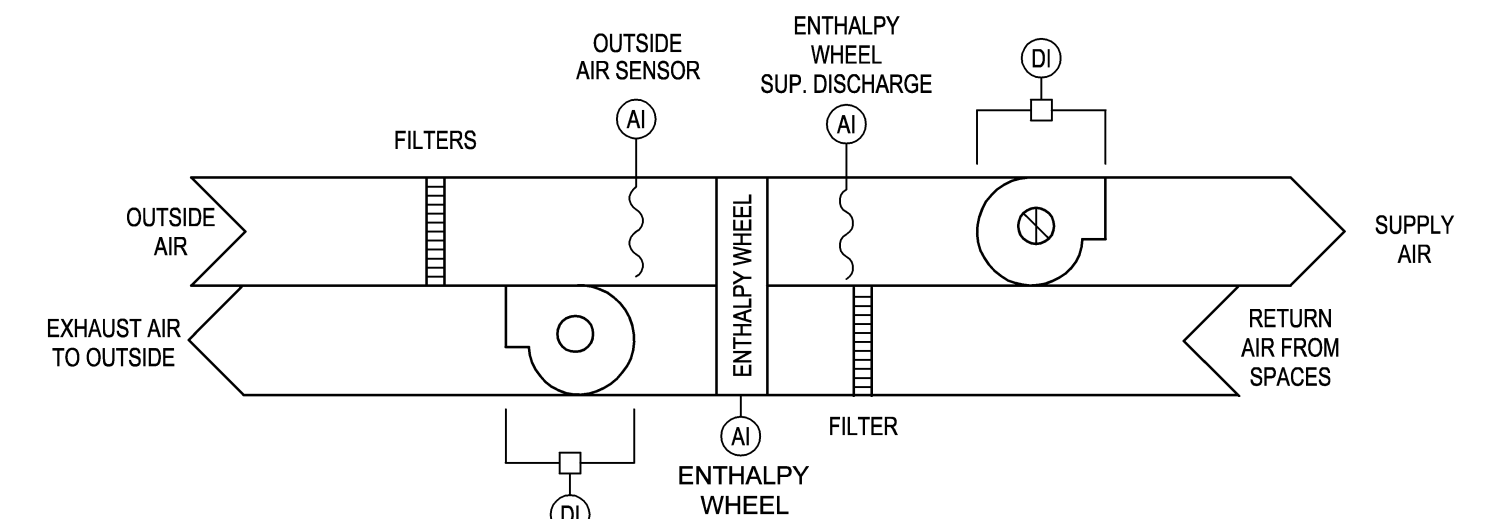
ATTIC FAN SCHEDULE		
DESIGNATION	AF-1	AF-2
LOCATION	ROOF	ROOF
USAGE	ATTIC VENTILATION	ATTIC VENTILATION
FAN DATA	--	--
AIRFLOW (SCFM)	1700	1700
EXTERNAL SP (IN-H2O)	.125	.125
RPM	1725	1725
DRIVE TYPE	DIRECT	DIRECT
MOTOR DATA	--	--
HORSEPOWER	1/2	1/2
RPM	1750	1750
VOLTS	115	115
PHASE	60	60
HERTZ	1	1
SELECTION 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 SCHEDULE			
DESIGNATION	S1	R1	E1
TYPE	SUPPLY	RETURN	EXHAUST
NECK SIZE	A-6"	24x24	12x12
	B-8"		
	C-10"		
	D-12"		
FRAME STYLE	LAY-IN	LAY-IN	LAY-IN
AIR PATTERN	4 WAY	--	--
MAX NG 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

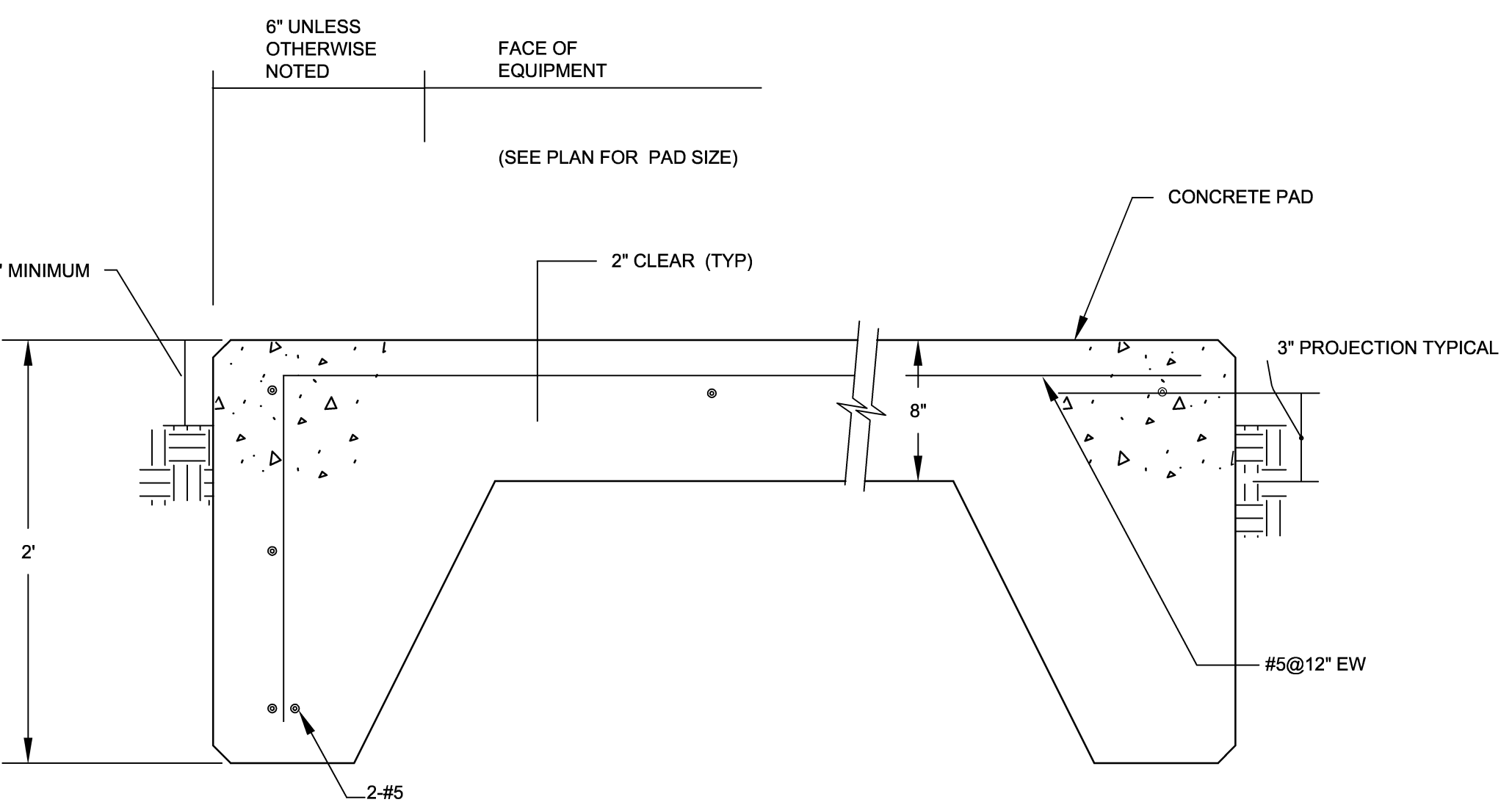


HEAT PUMP INDOOR UNIT DETAIL
SCALE: NONE

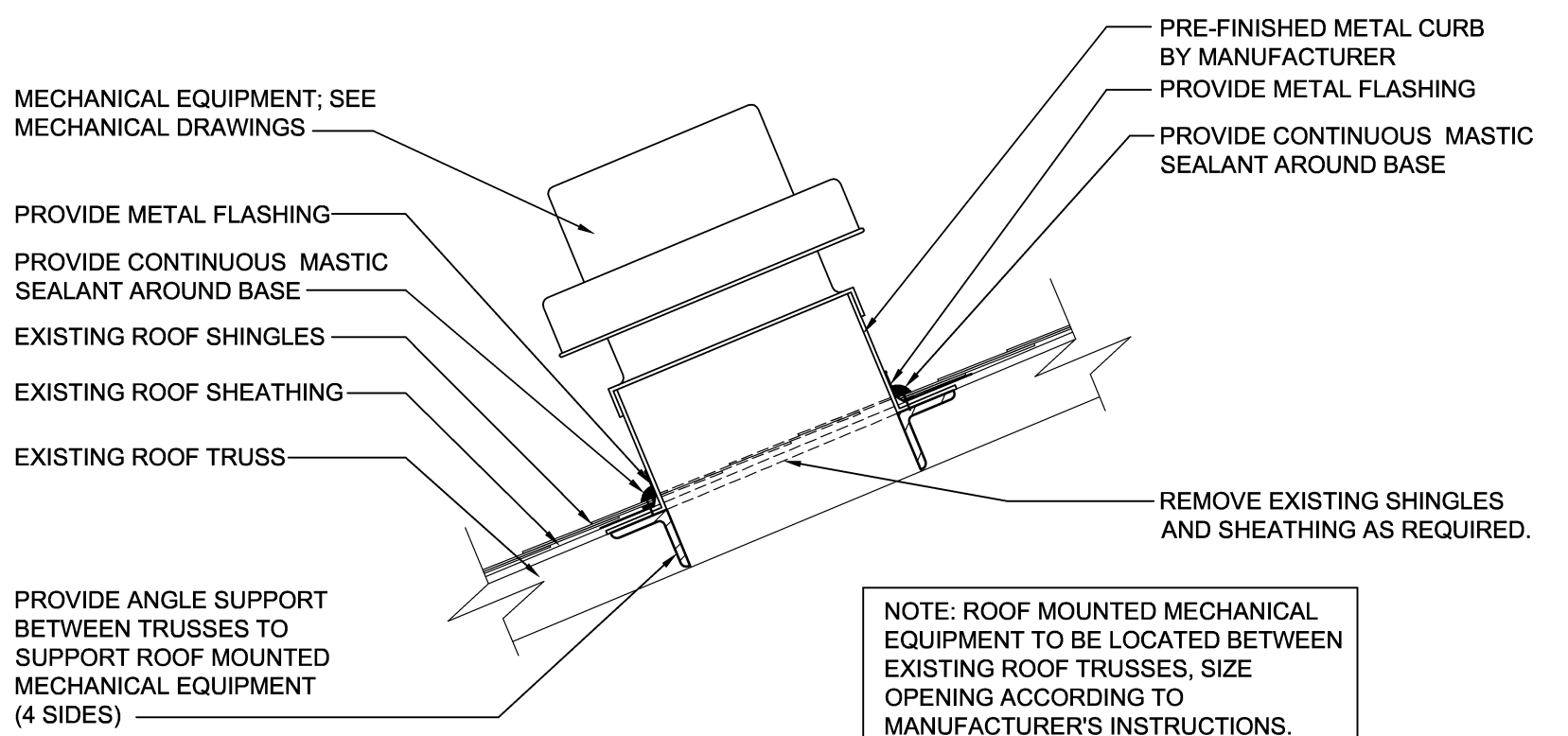


ENERGY RECOVERY VENTILATOR CONTROL DIAGRAM
SCALE: NONE

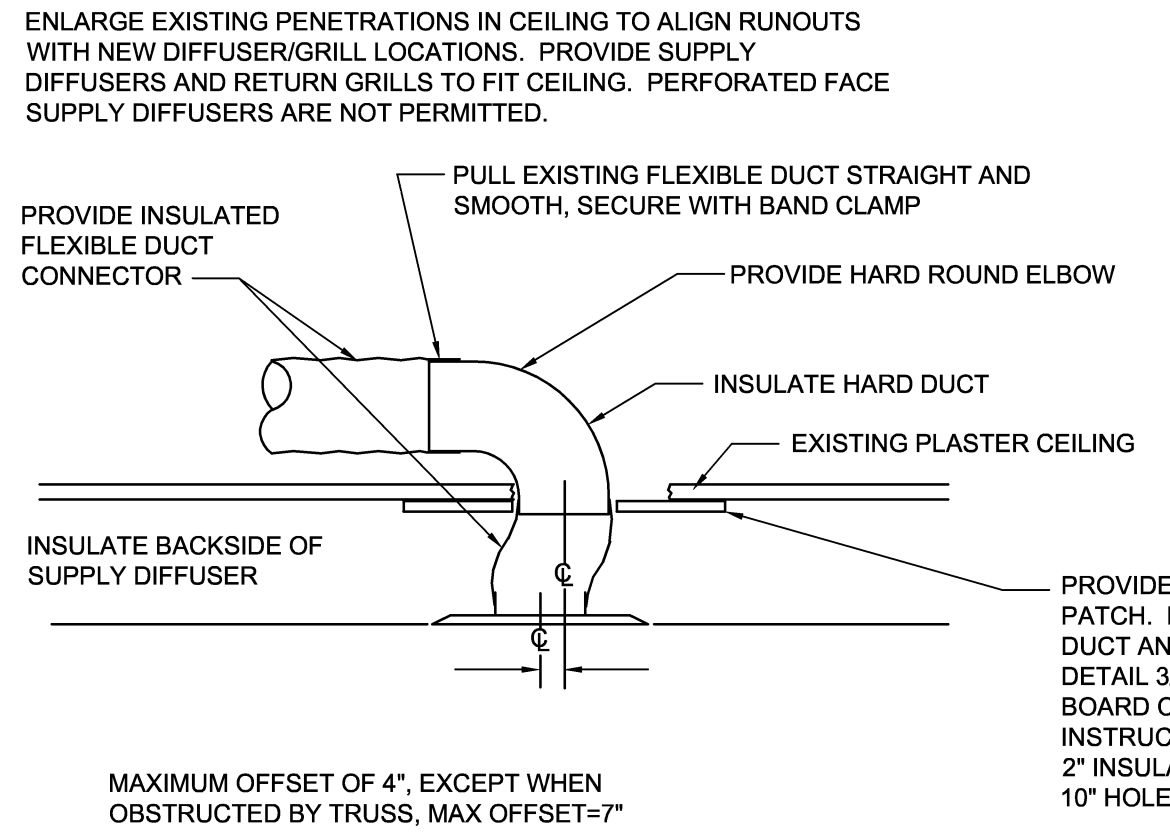
- SEQUENCE OF OPERATION:
- DURING THE OCCUPIED MODE, THE ENERGY RECOVERY VENTILATOR SHALL RUN CONTINUOUSLY. DURING UNOCCUPIED MODE, THE UNIT WILL BE DISABLED WHERE THE SUPPLY AND EXHAUST FANS ARE OFF AND THE WHEEL DOES NOT ROTATE.
- DURING OPERATION, DIFFERENTIAL PRESSURE SENSORS SHALL BE USED TO CONFIRM 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.



EXTERIOR EQUIPMENT PAD DETAIL
SCALE: NONE



ROOF PENETRATION DETAIL
SCALE: NONE



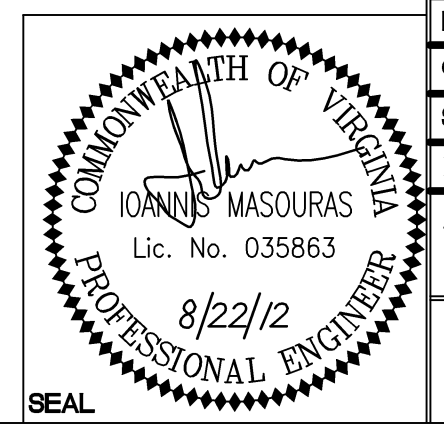
TYP. DUCT TAKE OFF DETAIL
SCALE: NONE

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 ALL 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
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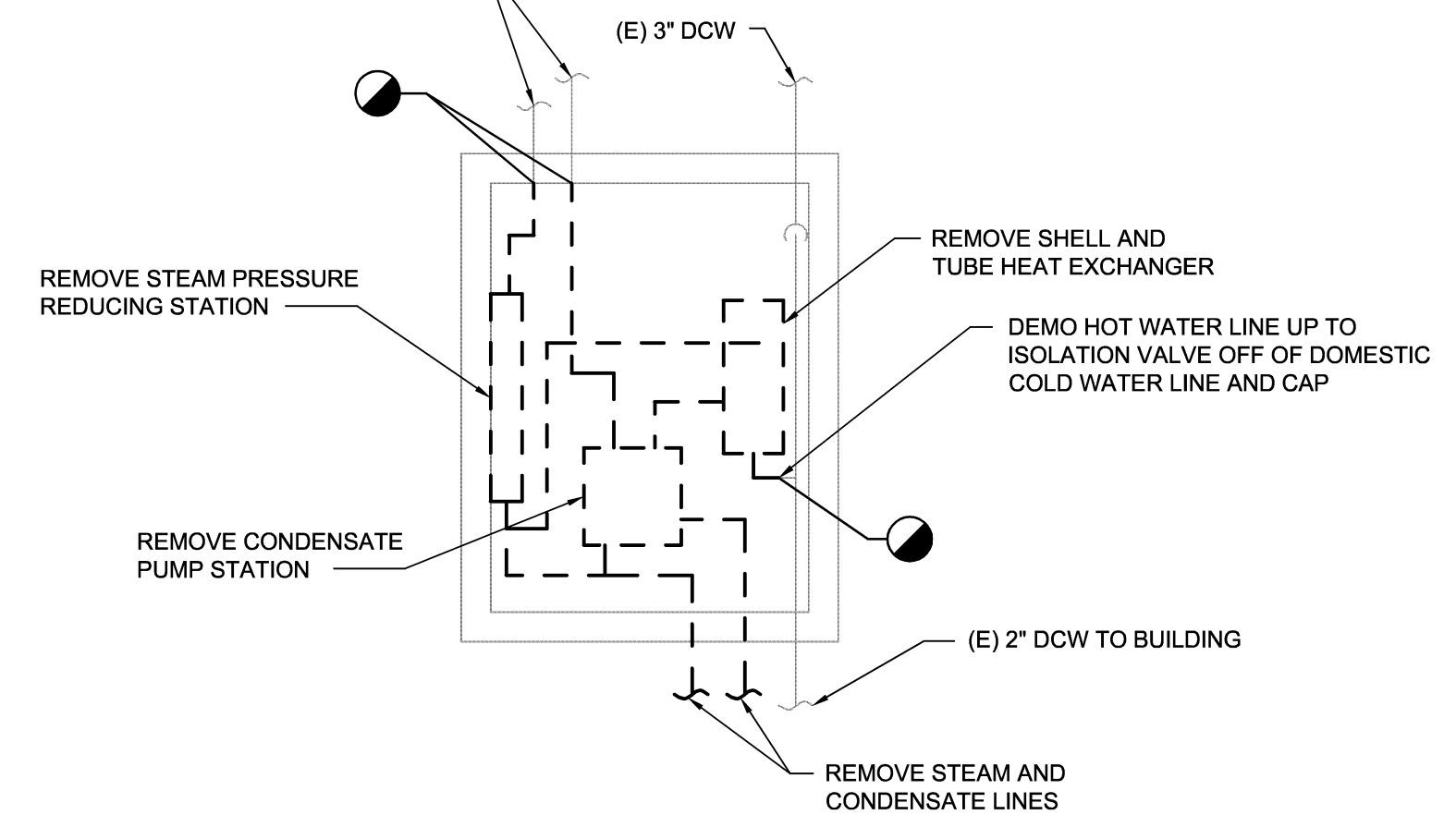
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WileyWilson 6606 West Broad St., Suite 500 Richmond, Virginia 23230-1717 804.264.7242 wileywilson.com		M-110D PROJECT NO. CP12-0091 NAVAL FACILITIES ENGINEERING COMMAND	
DEPT OF NAVY MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA HVAC/DHW IMPROVEMENTS, VARIOUS FACILITIES, HADNOT POINT BUILDING 501 SCHEDULES, DETAILS & CONTROLS		NAVFAC DRAWING NO. 60011383 CONSTR CONTR NO. N40085-12-B-0091	
DES. IM	DR. SWL	CHK. JHE	DATE
SUBMITTED BY: DESIGN DR.		APPROVED PWO OR OIOC DATE	
SATISFACTORY TO		DATE	
SCALE: AS SHOWN	SPEC No. 05-12-0091	SHEET 39 OF 84	

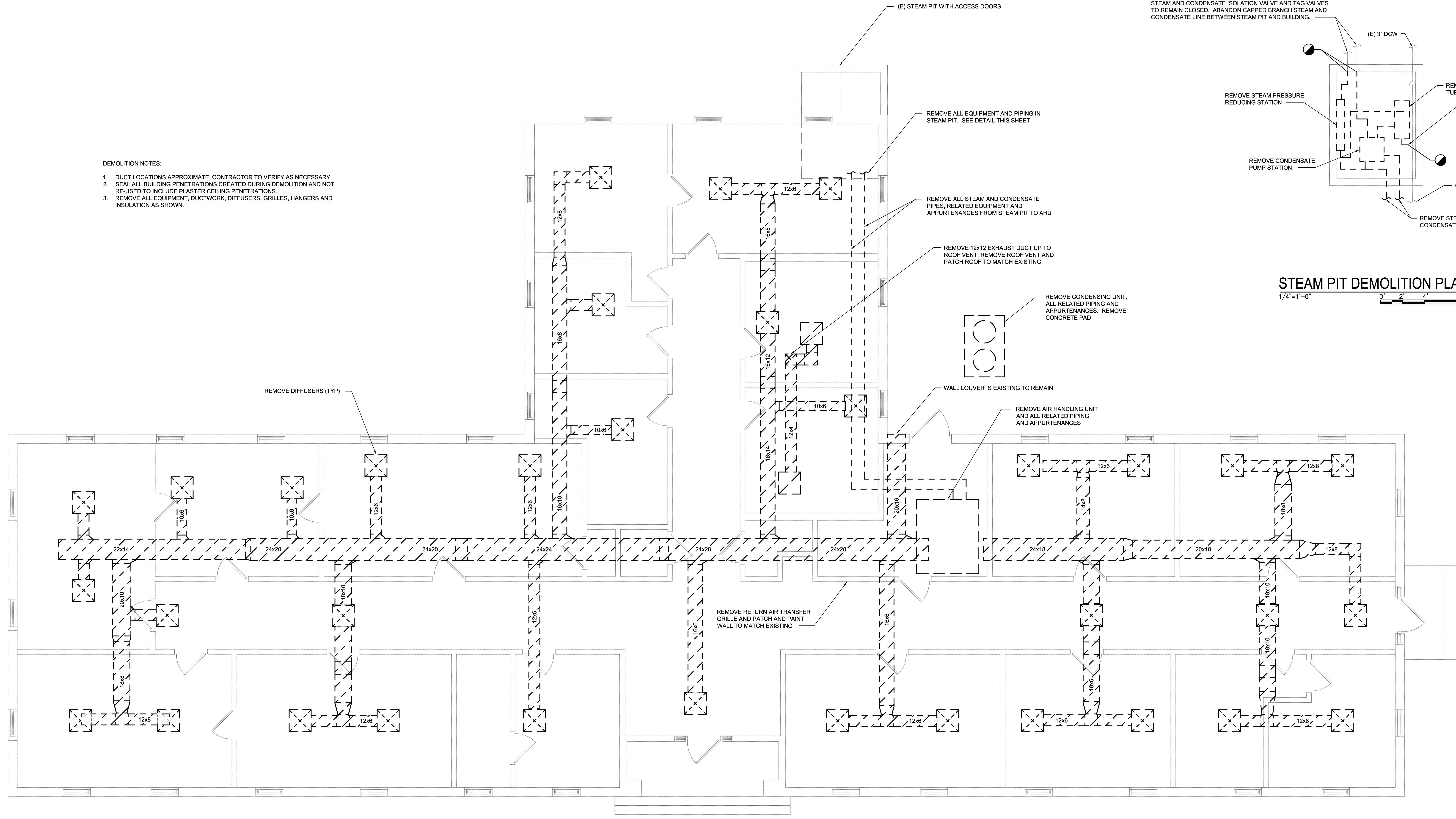
SYM.	PREP'D BY	DATE	APPROVED

REMOVE ALL STEAM AND CONDENSATE PIPES, RELATED EQUIPMENT AND APPURTENANCES AND CAP AS CLOSE TO WALL AS POSSIBLE. FOLLOW UNDERGROUND STEAM LINES BACK TO STEAM PIT WHERE BRANCHES CONNECT TO MAINS. REMOVE BRANCH PIPING TO ENTRANCE OF STEAM PIT AND PROVIDE CAP. PROVIDE BLIND FLANGE TO EXISTING BRANCH STEAM AND CONDENSATE ISOLATION VALVE AND TAG VALVES TO REMAIN CLOSED. ABANDON CAPPED BRANCH STEAM AND CONDENSATE LINE BETWEEN STEAM PIT AND BUILDING.



- DEMOLITION NOTES:**
- DUCT LOCATIONS APPROXIMATE. CONTRACTOR TO VERIFY AS NECESSARY.
 - SEAL ALL BUILDING PENETRATIONS CREATED DURING DEMOLITION AND NOT RE-USED TO INCLUDE PLASTER CEILING PENETRATIONS.
 - REMOVE ALL EQUIPMENT, DUCTWORK, DIFFUSERS, GRILLES, HANGERS AND INSULATION AS SHOWN.

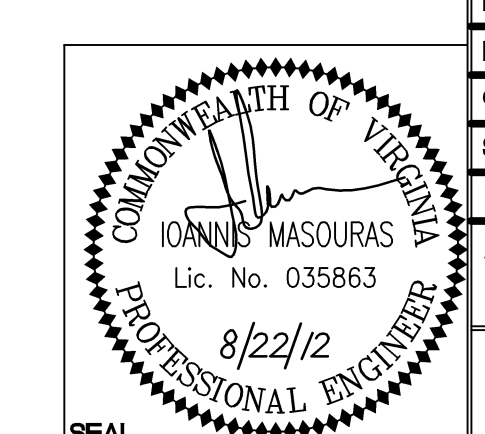
STEAM PIT DEMOLITION PLAN
 1/4"=1'-0" 0' 2' 4' 8'



BUILDING 516 MECHANICAL DEMOLITION PLAN
 1/4"=1'-0" 0' 2' 4' 8'

DISCLOSURE OF INFORMATION

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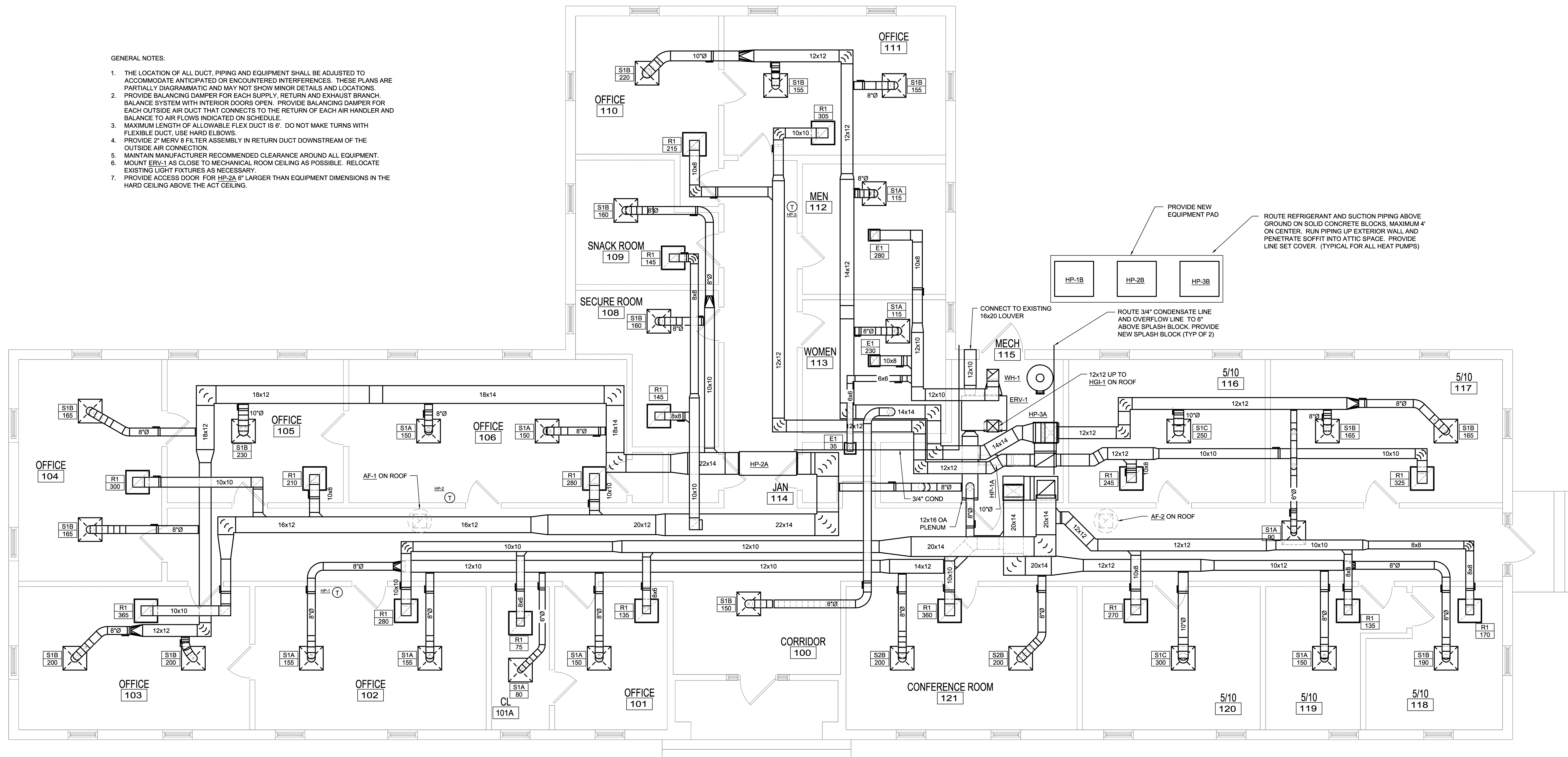


 6606 West Broad St., Suite 500 Richmond, Virginia 23230-1717 804.564.7342 wileywilson.com		PROJECT NO. CP12-0091	
DEPT OF NAVY MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA		M-111A	
DES. IM DR. SWL CHK. JHE		NAVAL FACILITIES ENGINEERING COMMAND HVAC/DHW IMPROVEMENTS, VARIOUS FACILITIES, HADNOT POINT BUILDING 516 MECHANICAL DEMOLITION PLAN	
SUBMITTED BY: DESIGN DR.		NAVFAC DRAWING NO. 60011384	
APPROVED PWO OR OICC DATE		SIZE E	
SATISFACTORY TO DATE		CODE IDENT NO. 80091	
SCALE: AS SHOWN		CONSTR CONTR NO. N40085-12-B-0091	
SPEC No. 05-12-0091		SHEET 40 OF 84	

SYM.	PREP'D BY	DATE	APPROVED

GENERAL NOTES:

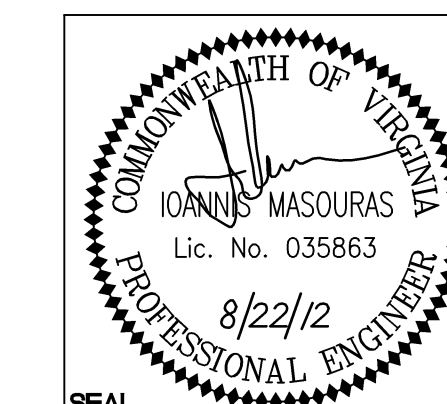
1. THE LOCATION OF ALL DUCT, PIPING AND EQUIPMENT SHALL BE ADJUSTED TO ACCOMMODATE ANTICIPATED OR ENCOUNTERED INTERFERENCES. THESE PLANS ARE PARTIALLY DIAGRAMMATIC AND MAY NOT SHOW MINOR DETAILS AND LOCATIONS.
2. PROVIDE BALANCING DAMPER FOR EACH SUPPLY, RETURN AND EXHAUST BRANCH. BALANCE SYSTEM WITH INTERIOR DOORS OPEN. PROVIDE BALANCING DAMPER FOR EACH OUTSIDE AIR DUCT THAT CONNECTS TO THE RETURN OF EACH AIR HANDLER AND BALANCE TO AIR FLOWS INDICATED ON SCHEDULE.
3. MAXIMUM LENGTH OF ALLOWABLE FLEX DUCT IS 6'. DO NOT MAKE TURNS WITH FLEXIBLE DUCT. USE HARD ELBOWS.
4. PROVIDE 2" MERV 8 FILTER ASSEMBLY IN RETURN DUCT DOWNSTREAM OF THE OUTSIDE AIR CONNECTION.
5. MAINTAIN MANUFACTURER RECOMMENDED CLEARANCE AROUND ALL EQUIPMENT. MOUNT ERV-1 AS CLOSE TO MECHANICAL ROOM CEILING AS POSSIBLE. RELOCATE EXISTING LIGHT FIXTURES AS NECESSARY.
7. PROVIDE ACCESS DOOR FOR HP-2A 6" LARGER THAN EQUIPMENT DIMENSIONS IN THE HARD CEILING ABOVE THE ACT CEILING.



BUILDING 516 MECHANICAL NEW WORK PLAN
 1/4"=1'-0" 0 2 4 8

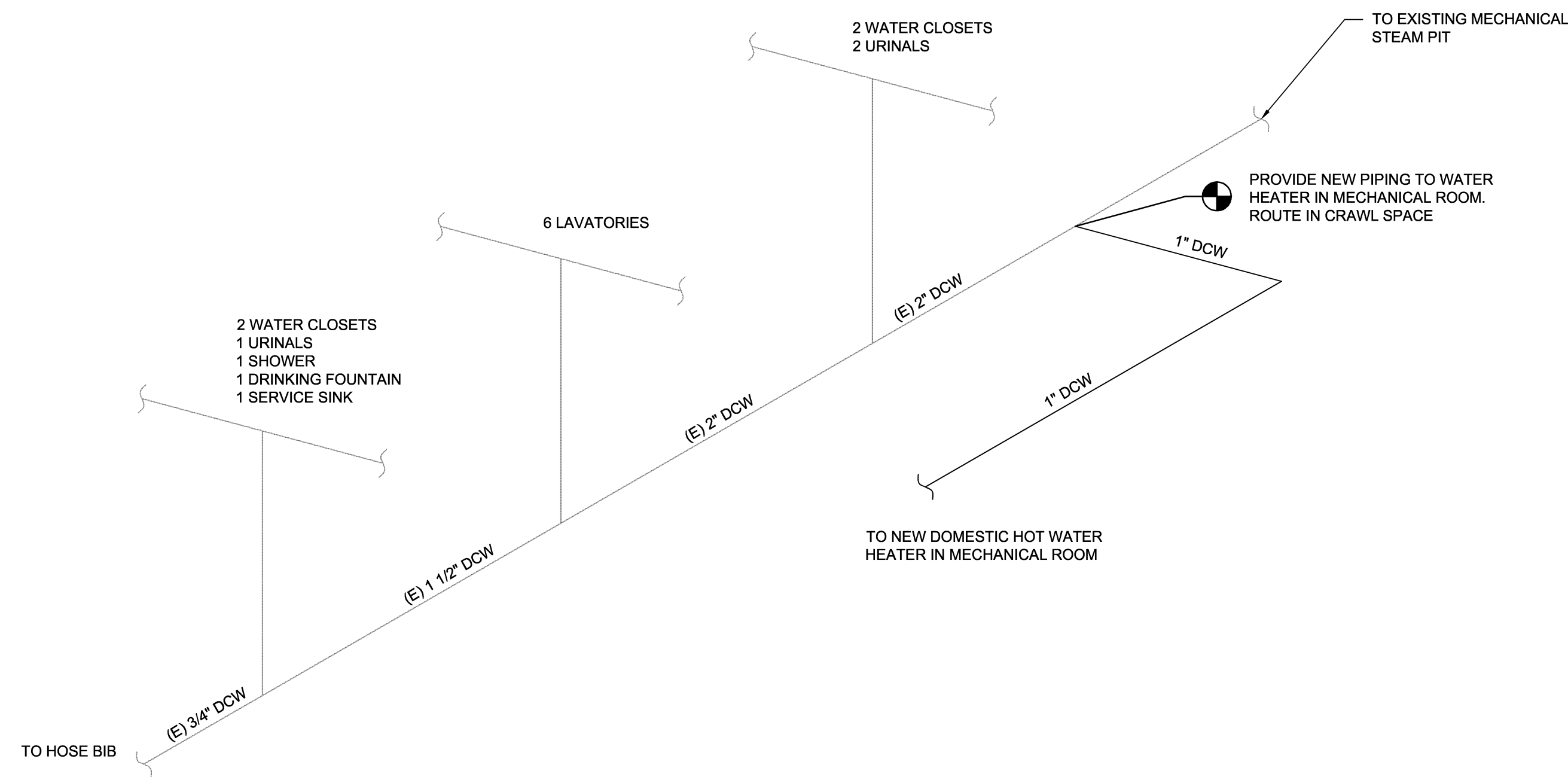
DISCLOSURE OF INFORMATION
 Contractor shall comply as follows:

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 - (1) The Contracting Officer has given prior written approval; or
 - (2) 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.
- (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.

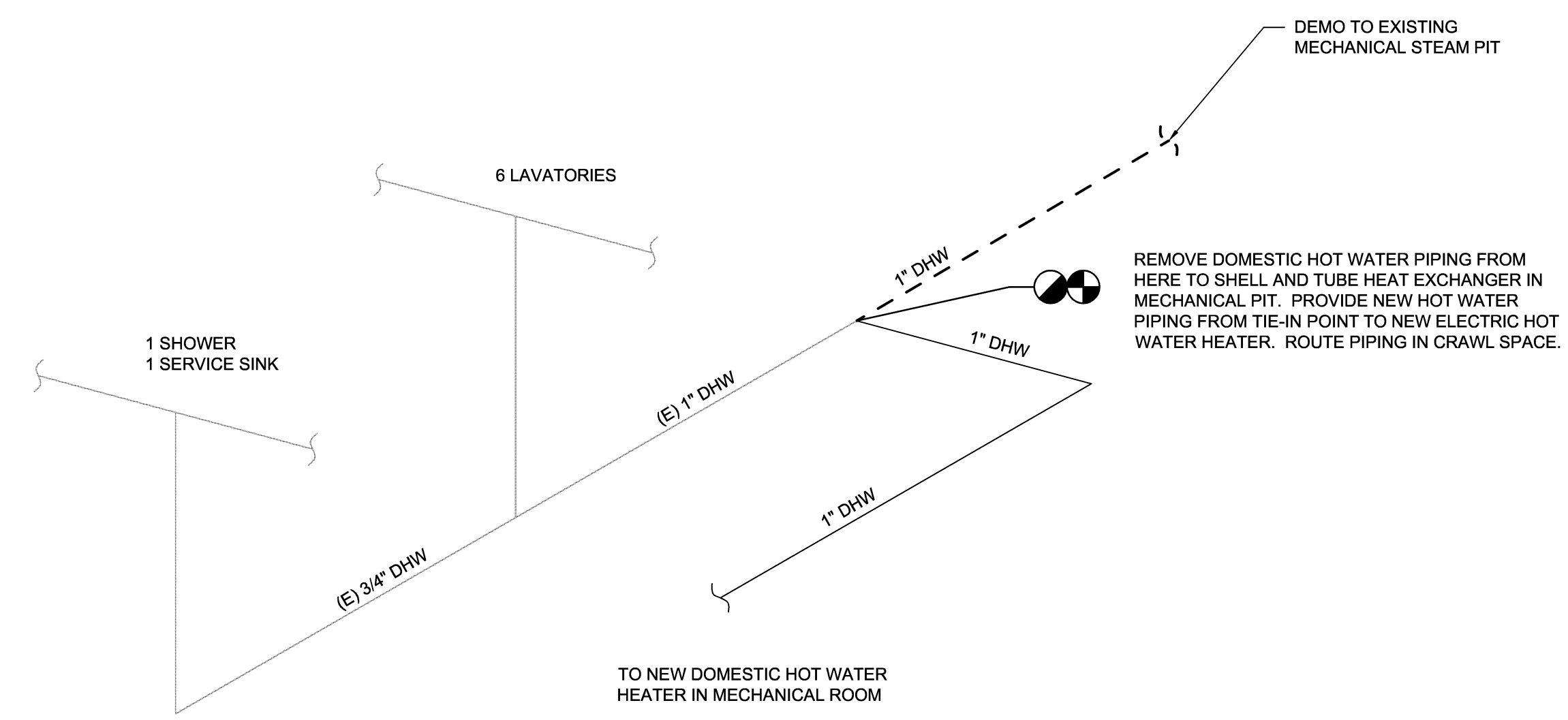


WileyWilson 6606 West Broad St., Suite 500 Richmond, Virginia 23230-1717 804.264.7242 wileywilson.com		M-111B PROJECT NO. CP12-0091 NAVAL FACILITIES ENGINEERING COMMAND	
DEPT OF NAVY MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA HVAC/DHW IMPROVEMENTS, VARIOUS FACILITIES, HADNOT POINT BUILDING 516 MECHANICAL NEW WORK PLAN		NAVFAC DRAWING NO. 60011385 CONSTR CONTR NO. N40085-12-B-0091	
DES. IM	DR. SWL	SIZE E	CODE IDENT NO. 80091
CHK. JHE	SUBMITTED BY:	APPROVED PWO OR OICC	DATE
DESIGN DR.	APPROVED PWO OR OICC	DATE	DATE
SATISFACTORY TO	DATE	SCALE: AS SHOWN	SPEC No. 05-12-0091
		SHEET 41 OF 84	

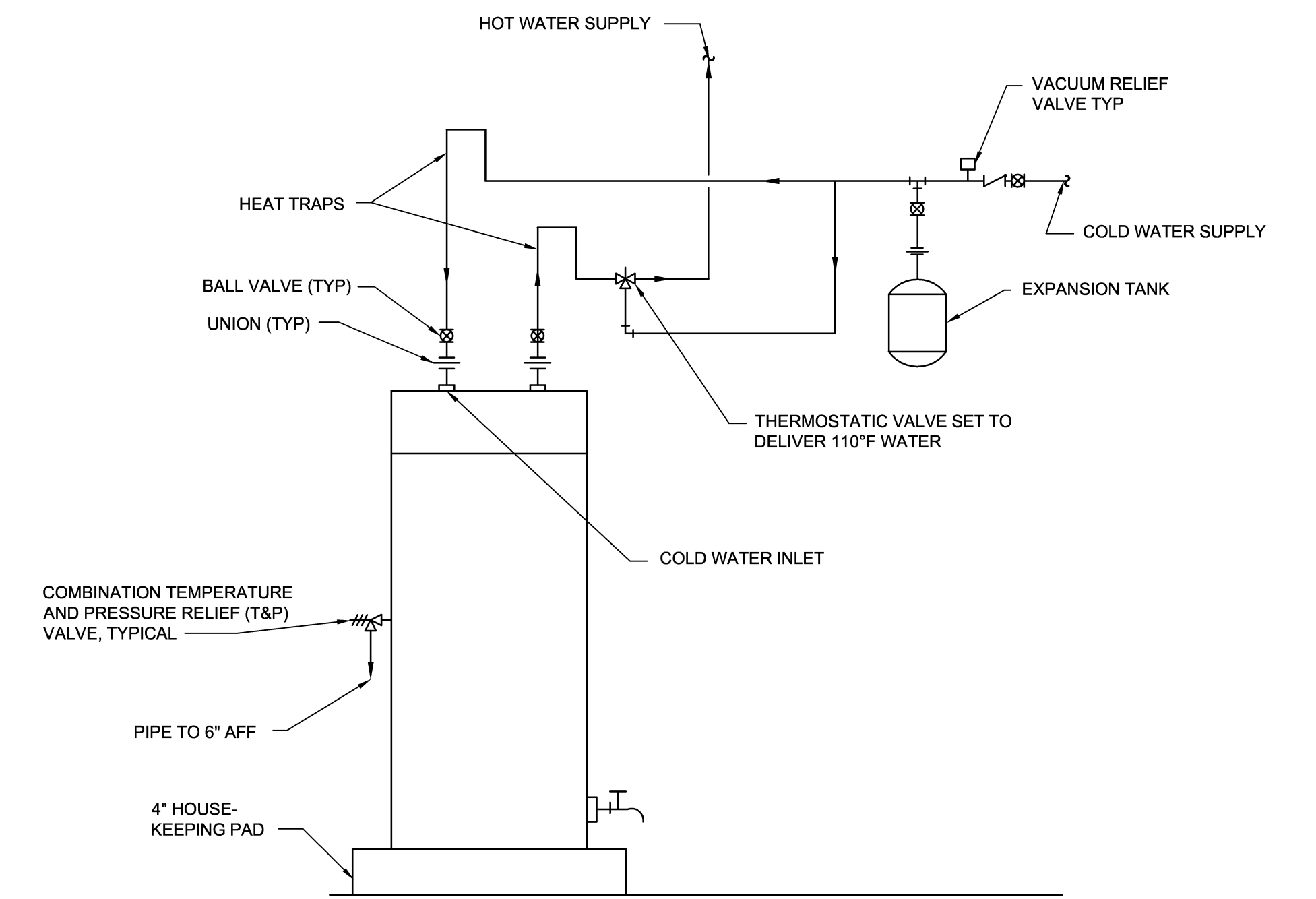
SYM.	PREP'D BY	DATE	APPROVED



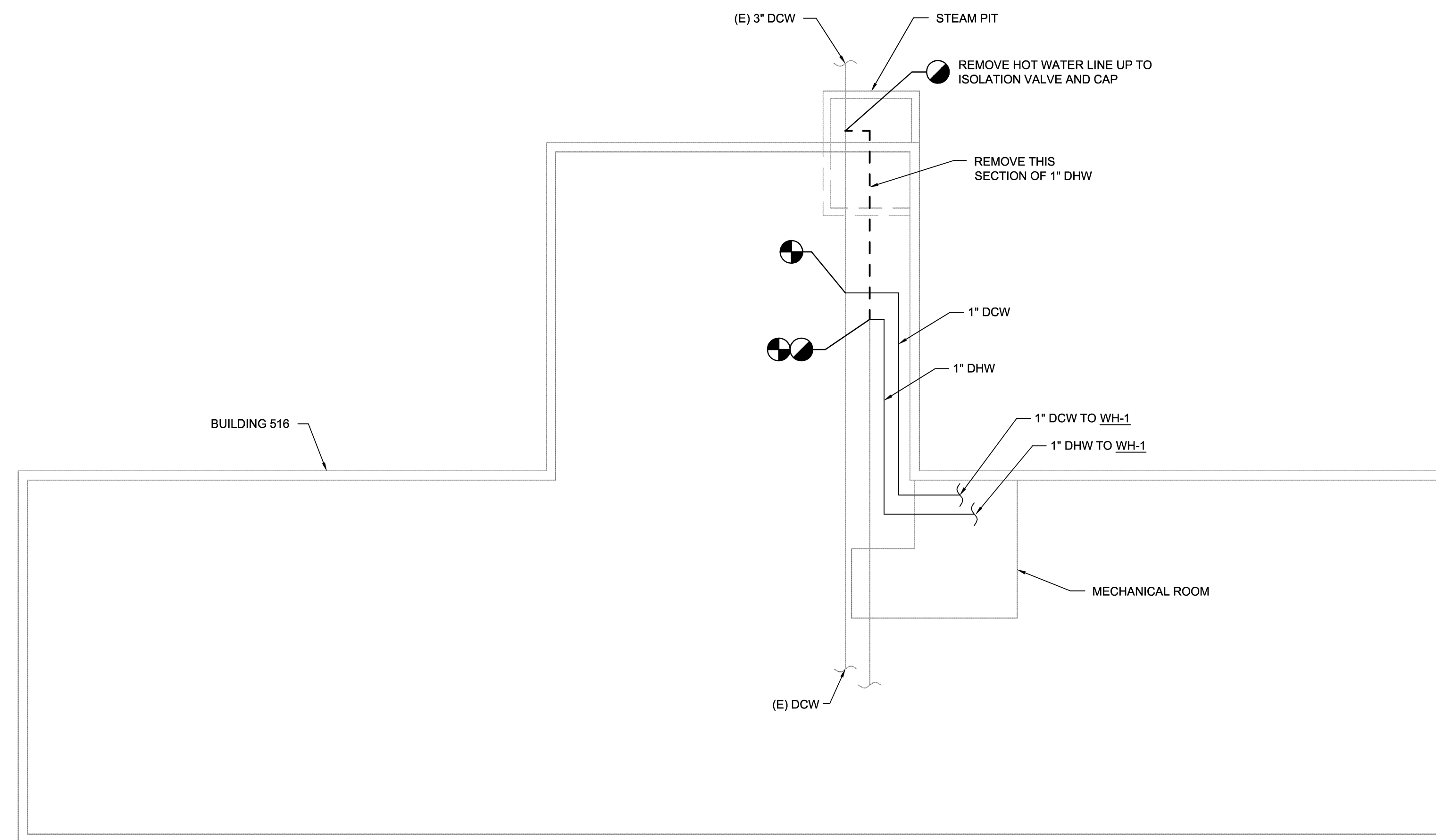
DOMESTIC COLD WATER RISER DIAGRAM
NOT TO SCALE



DOMESTIC HOT WATER RISER DIAGRAM
NOT TO SCALE



ELECTRIC WATER HEATER DETAIL
NOT TO SCALE



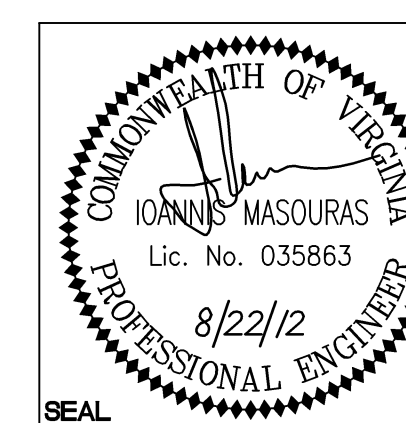
DOMESTIC WATER SITE PLAN
NOT TO SCALE

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.

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- (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.

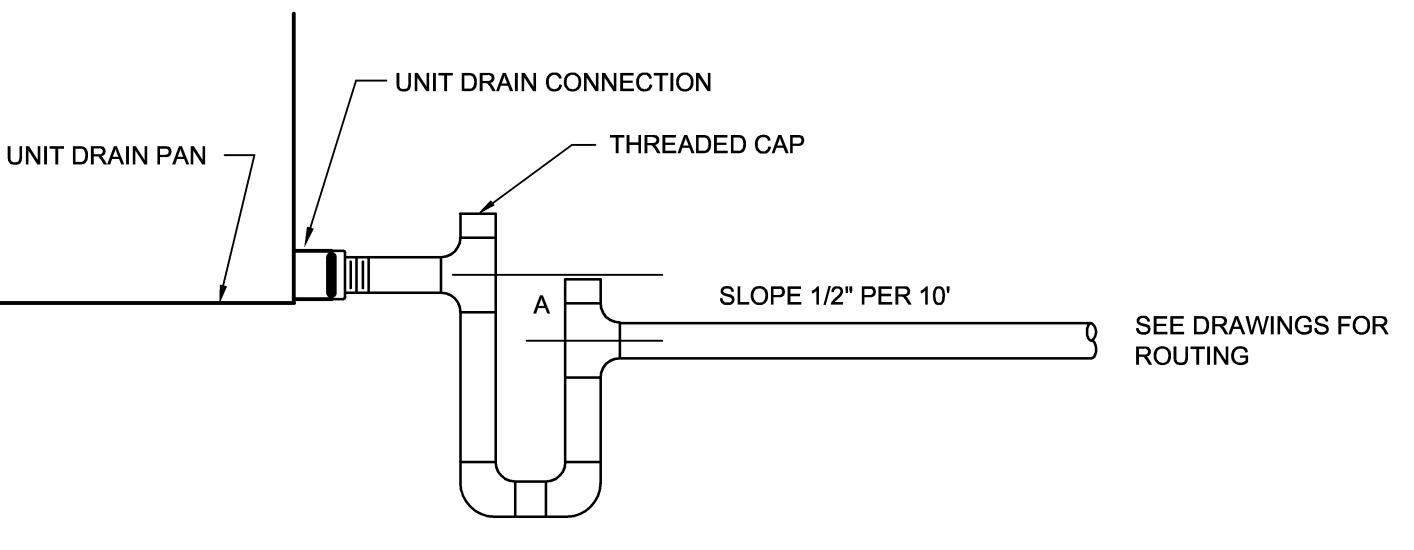


WileyWilson 6606 West Broad St., Suite 500 Richmond, Virginia 23230-1717 804.264.7242 wileywilson.com		M-111C PROJECT NO. CP12-0091	
DEPT OF NAVY MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA		NAVAL FACILITIES ENGINEERING COMMAND	
DES. IM DR. SWL CHK. JHE SUBMITTED BY: DESIGN DR. APPROVED PWO OR OICC SATISFACTORY TO	DATE DATE	SIZE E	CODE IDENT NO. 80091 CONSTR CONTR NO. N40085-12-B-0091
NAVFAC DRAWING NO. 60011386		SHEET 42 OF 84	
SCALE: AS SHOWN		SPEC No. 05-12-0091	

SYM	PREP'D BY	DATE	APPROVED

HEAT PUMP SCHEDULE					
INDOOR UNIT DESIGNATION	HP-1A	HP-2A	HP-3A		
OUTDOOR UNIT DESIGNATION	HP-1B	HP-2B	HP-3B		
LOCATION	VARIOUS	VARIOUS	VARIOUS		
MINIMUM COMBINED SEER RATING PER ARI	17.0	17.0	17.0		
MINIMUM COMBINED EER RATING PER ARI	12.2	12.2	12.2		
INDOOR UNIT	EVAPORATOR	TOTAL AIRFLOW (CFM)	1580	1580	1580
		OUTSIDE AIRFLOW (CFM)	155	135	490
		EXTERNAL STATIC PRESSURE (IN-WC)	.6	.6	.6
		TOTAL COOLING CAPACITY (MBH)	47.5	47.5	47.5
		HEAT PUMP HEATING CAPACITY AT 17° F (MBH)	29.2	29.2	29.2
	ELECTRICAL	ELECTRIC HEATING CAPACITY (KW)	5.0	5.0	5.0
		BLOWER MOTOR FLA (A)	9.1	9.1	9.1
		TOTAL MCA (A)	27	27	27
		VOLTAGE	208	208	208
		PHASE	1	1	1
FREQUENCY (Hz)	60	60	60		
BASED ON	LENNOX	LENNOX	LENNOX		
INDOOR UNIT MODEL	CBX32MV-048	CBX32MV-048	CBX32MV-048		
REFRIGERANT	R-410A	R-410A	R-410A		
OUTDOOR UNIT	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
		MINIMUM HEATING COP AT 17° F	2.5	2.5	2.5
	ELECTRICAL	MINIMUM HEATING COP AT 47° F	3.32	3.32	3.32
		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		
OUTDOOR SYSTEM MODEL	XP21-048-230	XP21-048-230	XP21-048-230		
REMARKS	1, 2 & 3	1, 2, 3 & 4	1, 2 & 3		

- REMARKS LEGEND:
1. PROVIDE CONDENSING UNIT SHUTOFF MOISTURE SENSOR IN AUXILIARY PORT OF INDOOR UNIT DRAIN PAN.
 2. PROVIDE SIDE RETURN UNIT STAND.
 3. PROVIDE ECM MOTOR ON INDOOR UNIT.
 4. PROVIDE SECONDARY DRAIN PAN EXTENDING 4" BEYOND AIR HANDLING UNIT ON ALL SIDES.

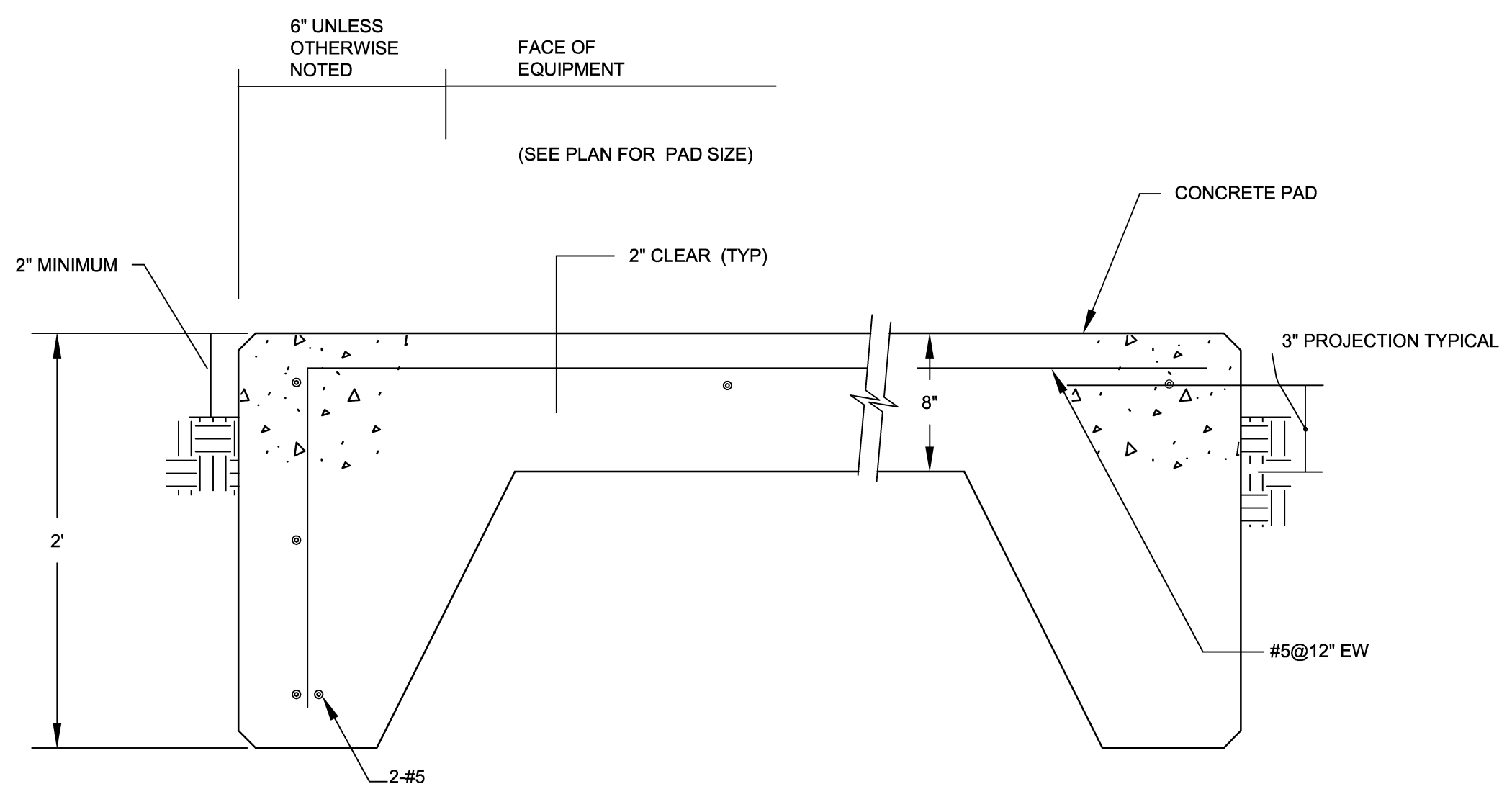


A = DIMENSION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, MINIMUM OF 2 INCHES.

NOTE: CONDENSATE DRAIN PIPE SIZE SHALL BE UNIT DRAIN CONNECTION SIZE

AC DRAIN FOR HEAT PUMP AIR HANDLER NEGATIVE PRESSURE DRAIN PAN

NO SCALE

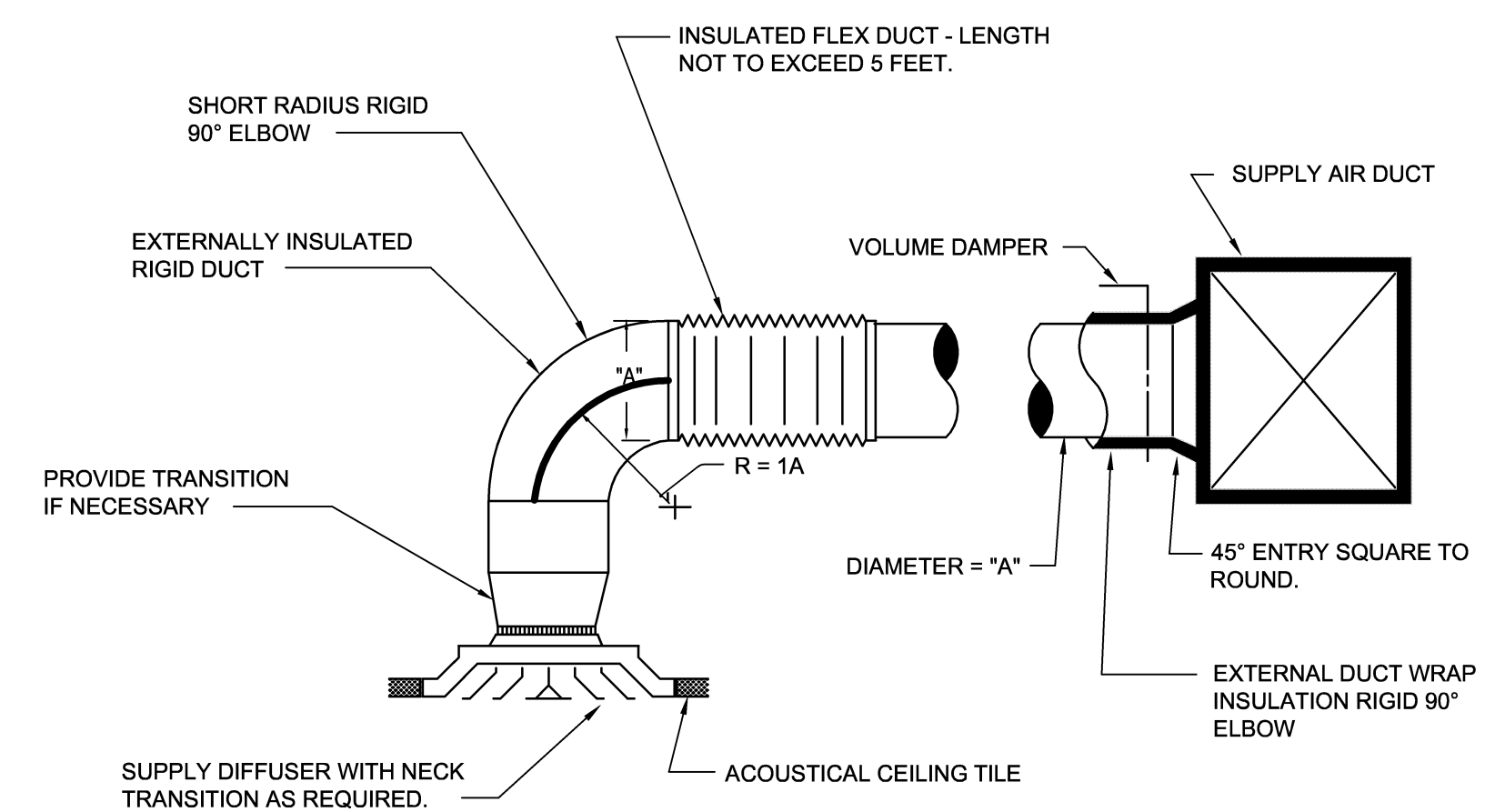


EXTERIOR EQUIPMENT PAD DETAIL

SCALE: NONE

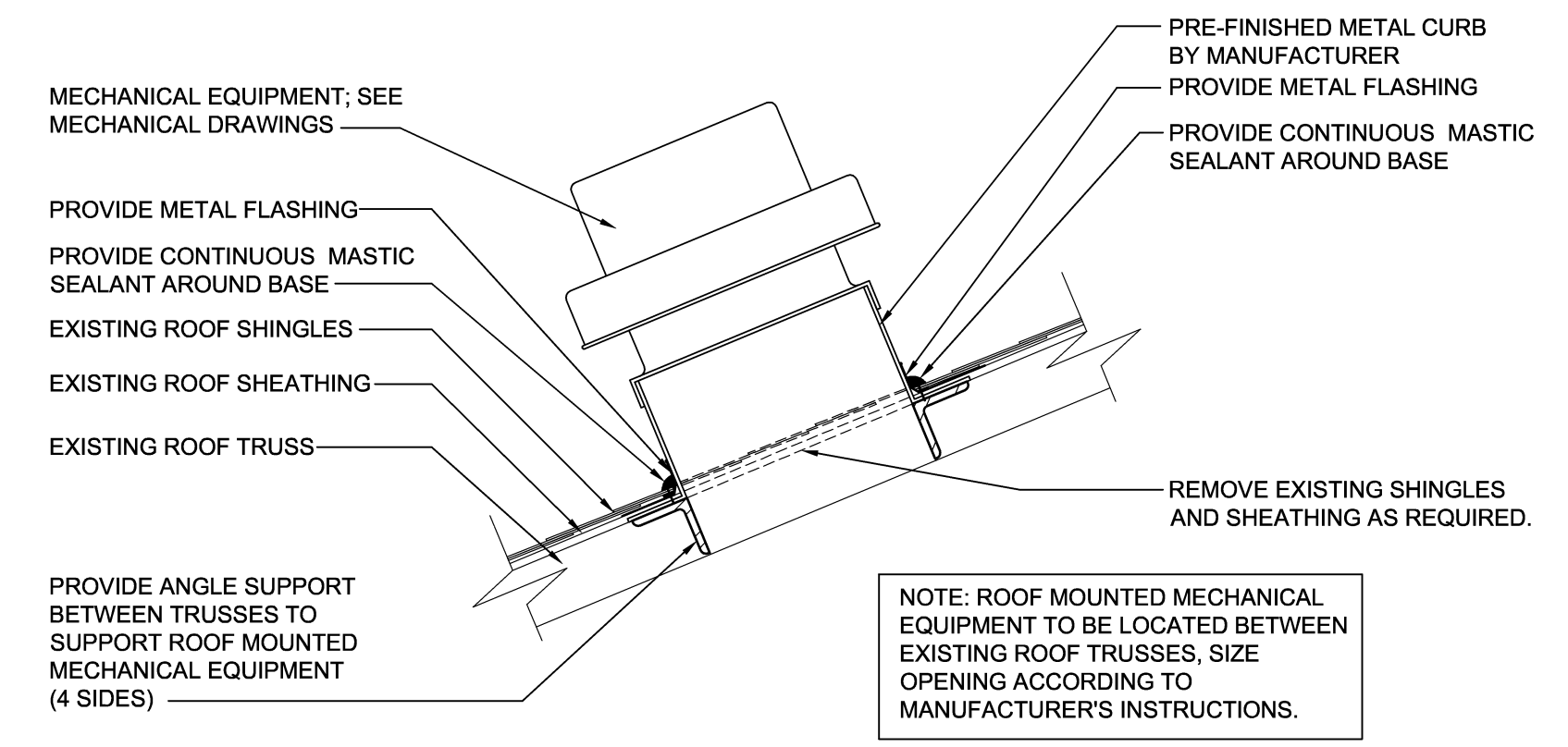
ENERGY RECOVERY VENTILATOR SCHEDULE		ERV-1
DESIGNATION	TOTAL FAN AIRFLOW (CFM)	780
SUPPLY FAN	EXTERNAL STATIC PRESSURE (IN. WG)	.25
EXHAUST FAN	TOTAL FAN AIRFLOW (CFM)	545
	EXTERNAL STATIC PRESSURE (IN. WG)	.25
ENTHALPY WHEEL	OPERATING OUTSIDE AIRFLOW	780
	OPERATING EXHAUST AIRFLOW	545
	OUTDOOR EAT DB/WB (COOLING)	95/79
	OUTDOOR EAT DB/WB (HEATING)	20/16.6
	EXHAUST EAT DB/WB (COOLING)	75/63
	EXHAUST EAT DB/WB (HEATING)	70/53
	DELIVERED CONDITIONS DB/WB (COOLING)	82.8/70.1
	DELIVERED CONDITIONS DB/WB (HEATING)	47/39.8
	SUPPLY (MERV)	8
	EXHAUST (MERV)	8
ELECTRICAL	MCA (A)	18.3
	MOCIP (A)	25
	VOLTS (V)	115
	PHASE	1
FREQUENCY (Hz)	60	
BASED ON		GREENHECK
MODEL		MINVENT-750
REMARKS		1

- REMARKS LEGEND:
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.



TYPICAL CEILING SUPPLY DIFFUSER CONNECTION

SCALE: NONE



ROOF PENETRATION DETAIL

SCALE: NONE

ELECTRIC DOMESTIC WATER HEATER		WH-1
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

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

HOODED GRAVITY INTAKE SCHEDULE		HGI-1
DESIGNATION		HGI-1
LOCATION		INTAKE
USAGE		
AIRFLOW (CFM)		780
STATIC PRESSURE (IN H2O)		.044
THROAT AREA (SF)		1.45
THROAT VELOCITY (FPM)		538
THROAT DIAMETER (IN)		16.25
SELECTION BASED ON		GREENHECK
MODEL		GRSI-16
REMARKS		1

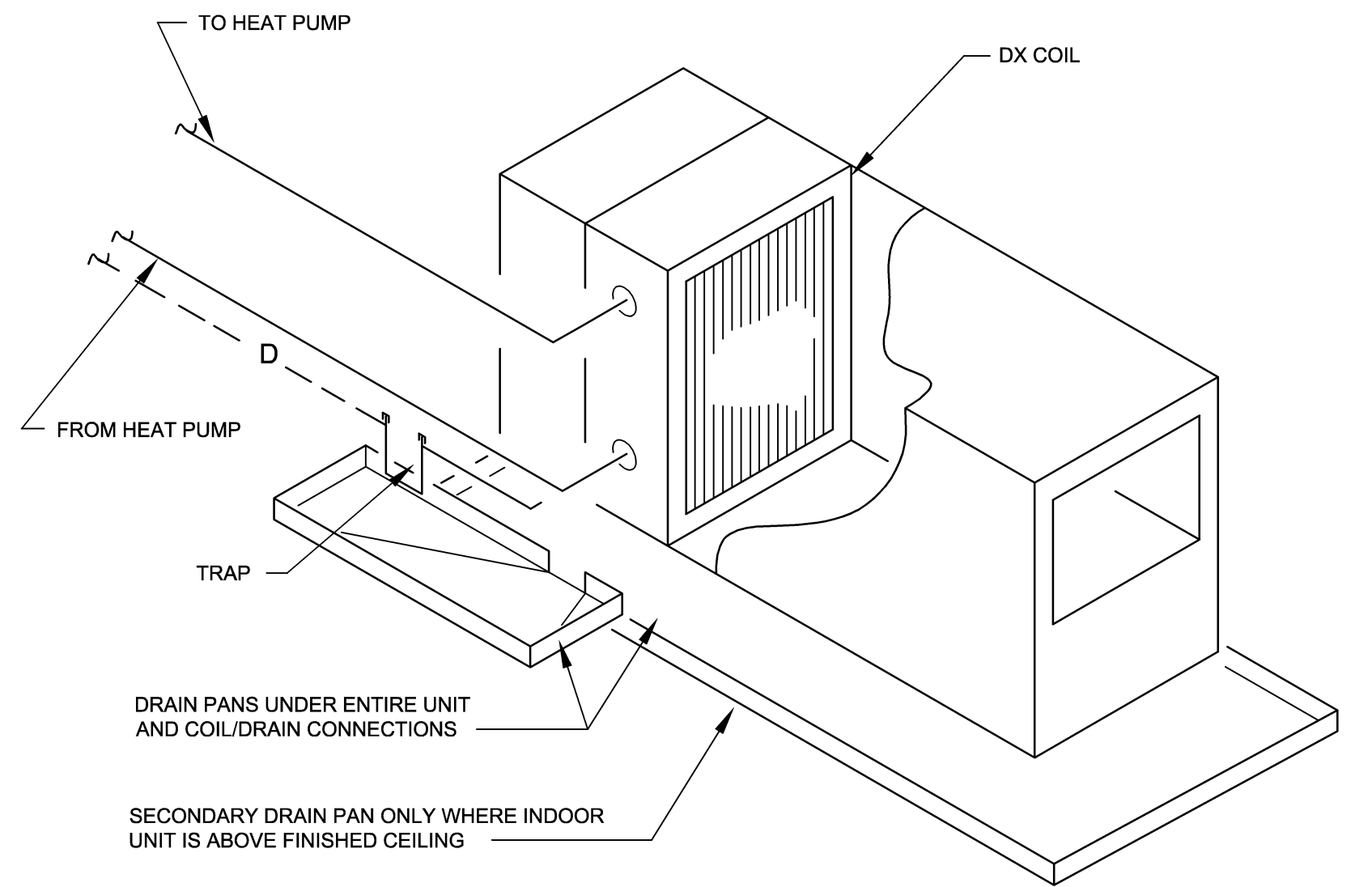
- REMARKS LEGEND:
1. PROVIDE BIRD SCREEN.

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-H2O)	.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 66 DEG F.

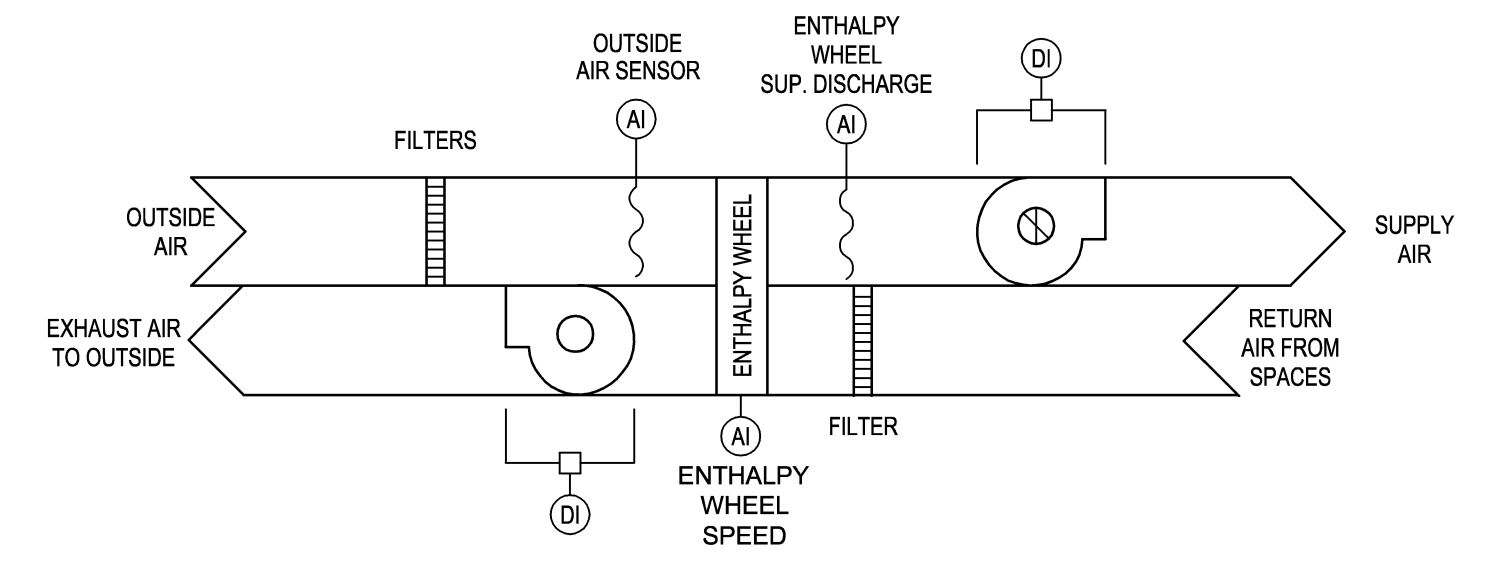
AIR TERMINAL DEVICE SCHEDULE				
DESIGNATION	S1	S2	R1	E1
TYPE	SUPPLY	SUPPLY	RETURN	EXHAUST
NECK SIZE	A=6"	A=6"	24x24	12x12
	B=8"	B=8"		
	C=10"	C=10"		
	D=12"	D=12"		
FRAME STYLE	LAY-IN	LAY-IN	LAY-IN	LAY-IN
AIR PATTERN	4 WAY	4 WAY	--	--
MAX NC RATING	25	25	25	25
MATERIAL	STEEL	STEEL	STEEL	STEEL
FINISH	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:
1. PROVIDE A SELF-MODULATING DIFFUSER WITH A COOLING SET POINT OF 75 DEG F (ADJUSTABLE) AND A HEATING SET POINT OF 66 DEG F (ADJUSTABLE).



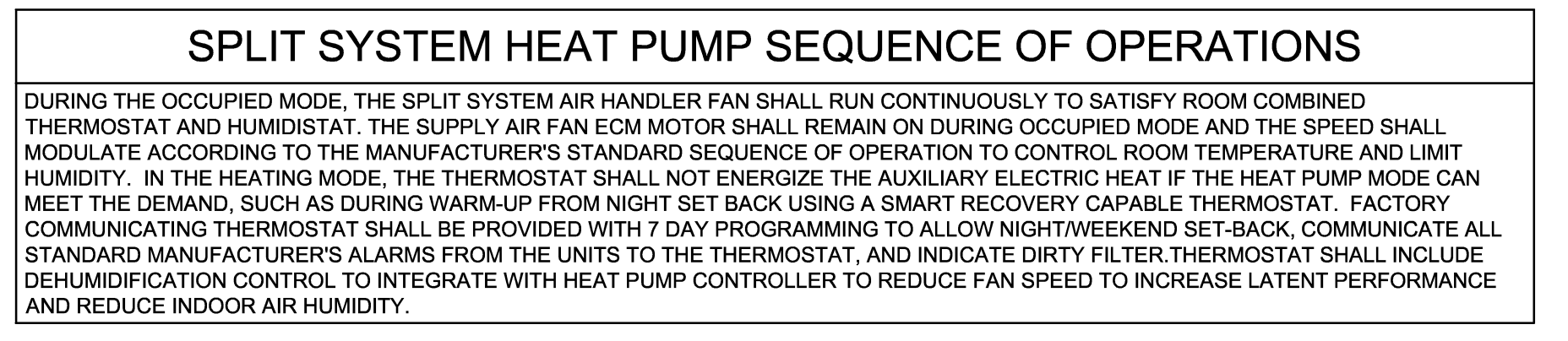
HEAT PUMP INDOOR UNIT DETAIL

SCALE: NONE



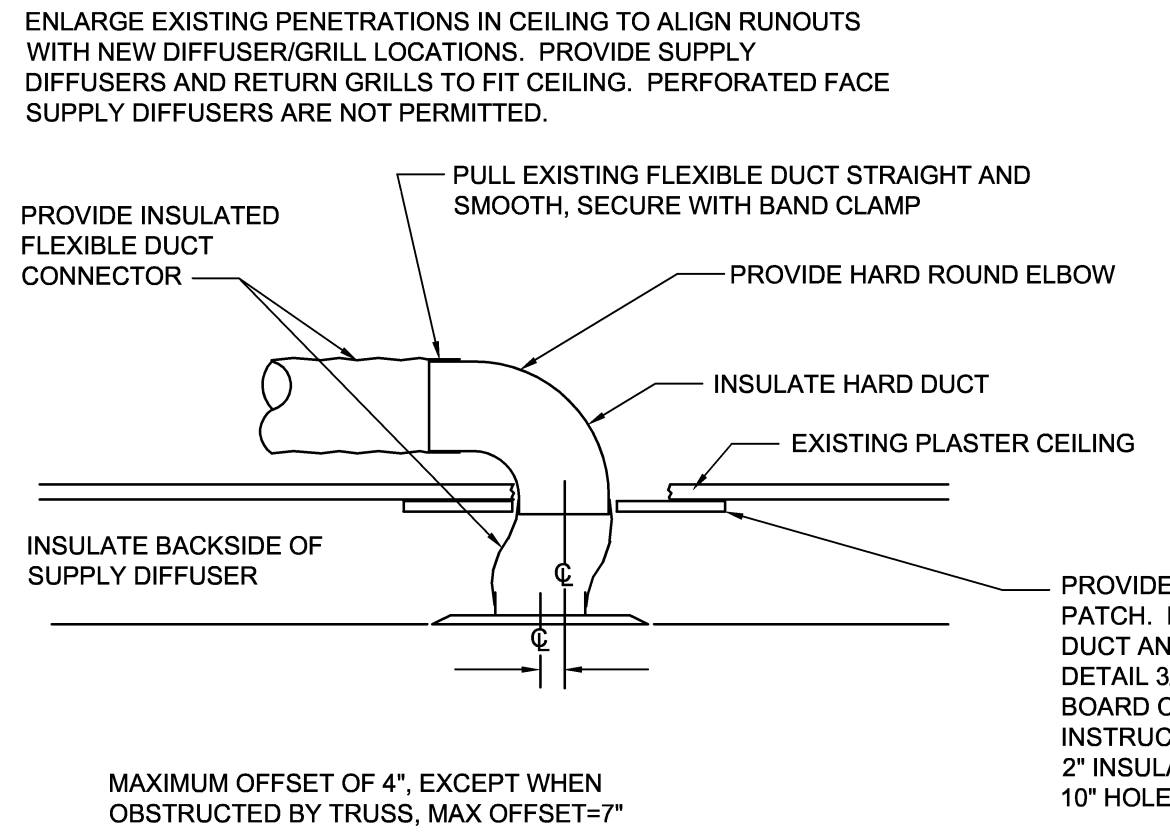
ENERGY RECOVERY VENTILATOR CONTROL DIAGRAM

- 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 ALL 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.

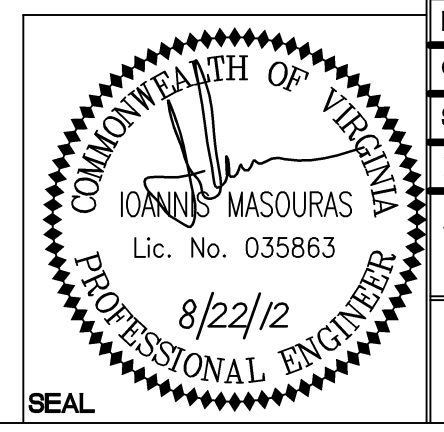


TYP. DUCT TAKE OFF DETAIL

SCALE: NONE

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DEPT OF NAVY MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA HVAC/DHW IMPROVEMENTS, VARIOUS FACILITIES, HADNOT POINT BUILDING 516 SCHEDULES, DETAILS & CONTROLS		NAVFAC DRAWING NO. 60011387	
DES. IM	DR. SWL	CHK. JHE	SUBMITTED BY:
DESIGN DR.	APPROVED PWO OR OIOC	DATE	SIZE
SATISFACTORY TO	DATE	CODE IDENT NO.	80091
SCALE: AS SHOWN	SPEC No.	05-12-0091	SHEET 43 OF 84