

MECHANICAL LEGEND	
SYMBOL	DESCRIPTION
---	SOIL OR WASTE
---	VENT
---●---	BACK WATER VALVE
□ D-(-)	DRAIN (ALL TYPES)
---PD---	PUMP DISCHARGE
---	COLD WATER
---	HOT WATER
---	HOT WATER RETURN
---D---	CONDENSATE DRAIN
---RS---	REFRIGERANT SUCTION
---RL---	REFRIGERANT LIQUID
---	SHUTOFF VALVE
---	BALANCING VALVE
---	CHECK VALVE
---	CHECK VALVE
---	HOSE BIBB
---	RELIEF VALVE
---	UNION
---	STRAINER
---	THERMOMETER
⊠	OUTDOOR AIR OR SUPPLY AIR DUCT
⊠	RETURN AIR DUCT
⊠	EXHAUST AIR DUCT
⊠⊠⊠⊠	FLEXIBLE CONNECTION
⊠	THERMOSTAT/TEMPERATURE SENSOR
W102-A	DOMESTIC WATER RISER TAG
S102-A	SANITARY/VENT RISER TAG

MECHANICAL ABBREVIATIONS	
ACCU	AIR COOLED CONDENSING UNIT
AS	AIRFLOW SENSOR/AIR SEPARATOR
BHP	BRAKE HORSEPOWER
BTUH	BRITISH THERMAL UNIT PER HOUR
C	CELSIUS/CONDUIT
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
CLG	CEILING/COOLING
CO	CLEANOUT
CP	CONDENSATE PUMP
CV	CHECK VALVE
CW	COLD WATER
D	DAMPER/DRAIN/DROP
DB	DRY BULB
DIA	DIAMETER
DN	DOWN
DWGS	DRAWINGS
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EH	ELECTRIC HEATER
ET	EXPANSION TANK
EWI	ENTERING WATER TEMPERATURE
EXH	EXHAUST
F	FAHRENHEIT
FC	FLEXIBLE CONNECTION
FCU	FAN COIL UNIT
FP	FIRE PROTECTION
FPD	FLUID PRESSURE DROP
GAL	GALLON
GPM	GALLONS PER MINUTE
H	HEIGHT/HIGH/HUMIDISTAT/HUMIDITY SENSOR
HB	HOSE BIBB
HP	HORSEPOWER
HTG	HEATING
HZ	HERTZ
KW	KILOWATT
LAV	LAVATORY
LB	POUNDS
L/S	LITERS PER SECOND
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MH	MECHANICAL HVAC
MIN	MINIMUM
NO	NUMBER
NPSHR	NET POSITIVE SUCTION HEAD REQUIRED
OA	OUTDOOR AIR
P	PIPE/PLUMBING FIXTURE TYPE/PUMP
PD	PRESSURE DROP/PUMP DISCHARGE
PL	PLUMBING
PPD	PUMP PRESSURE DROP
PSI	PRESSURE - POUNDS PER SQUARE INCH
R	RADIUS/REFRIGERANT/REGISTER/RISE/RISER
RA	RETURN AIR
RL	REFRIGERANT LIQUID
RR	RETURN REGISTER
RS	REFRIGERANT SUCTION
SA	SUPPLY AIR
SAN	SANITARY
SF	SQUARE FEET/SQUARE FOOT
SH	SHOWER
SP	STATIC PRESSURE
SQ. FT.	SQUARE FEET/SQUARE FOOT
SR	SUPPLY REGISTER
S/W	SANITARY/WASTE
T	THERMOSTAT
TYP	TYPICAL
V	VENT
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VTR	VENT THROUGH ROOF
WB	WET BULB
WC	WATER CLOSET
WG	WATER GAGE
WPD	WATER PRESSURE DROP

- GENERAL NOTES:** (APPLICABLE TO ALL MECHANICAL DRAWINGS)
- THE LOCATION OF EXISTING UTILITIES IS SHOWN IN AN APPROXIMATE WAY ONLY. DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. REPAIR ALL DAMAGES OCCASIONED BY FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES.
  - RUN ALL SOIL, WASTE AND DRAIN PIPING WITH 2 PERCENT MINIMUM GRADE UNLESS OTHERWISE NOTED. HORIZONTAL VENT PIPING SHALL BE GRADED TO DRIP BACK TO THE SOIL OR WASTE PIPE BY GRAVITY.
  - PROVIDE SHUTOFF VALVES IN DOMESTIC WATER SYSTEMS IN BRANCH LINES SERVING TWO OR MORE FIXTURES.
  - PROVIDE AN AIR VENT AT THE TOP OF ALL RISERS AND AT THE HIGH POINT OF EACH DROP IN THE HEATING GLYCOL WATER SYSTEM.
  - PITCH DOWN ALL STEAM AND CONDENSATE RETURN MAINS 1-INCH IN 40 FEET IN THE DIRECTION OF FLOW.
  - PITCH UP ALL STEAM AND CONDENSATE RUNOUTS TO RISERS AND EQUIPMENT AT 4 PERCENT GRADE. WHERE THIS PITCH CANNOT BE OBTAINED, RUNOUTS OVER 8 FEET IN LENGTH SHOULD BE ONE SIZE LARGER THAN NOTED. RUNOUT AND RISER CONNECTIONS SHALL BE FROM THE TOP OF THE HORIZONTAL MAIN WITH A VERTICAL OR 45 DEGREE CONNECTION.
  - PROVIDE AN END OF MAIN DRIP AT EACH RISE IN THE STEAM MAIN. PROVIDE CONDENSATE DRIPS AT THE BOTTOM OF ALL STEAM RISERS AND DOWN FED RUNOUTS TO EQUIPMENT, RADIATION, ETC., AND AHEAD OF ALL CONTROL VALVES.
  - PROVIDE CONDENSATE DRIP WITH STEAM TRAP ON HORIZONTAL STEAM MAINS AT INTERVALS OF NOT MORE THAN 150 FEET.
  - UNLESS OTHERWISE NOTED, ALL PIPING AND DUCTWORK IS OVERHEAD, TIGHT TO UNDERSIDE OF SLAB, WITH SPACE FOR INSULATION IF REQUIRED.
  - INSTALL PIPING AND DUCTWORK SO THAT ALL VALVES AND DAMPERS ARE ACCESSIBLE.
  - COORDINATE ALL MECHANICAL WORK WITH ELECTRICAL WORK, ETC., SHOWN ON OTHER DRAWINGS.
  - EXCEPT AS OTHERWISE NOTED, LOCATE ALL ROOM TEMPERATURE SENSORS 48 INCHES ABOVE FINISHED FLOOR ON SAME HORIZONTAL CENTERLINE AS LIGHT SWITCH. WHERE LIGHT SWITCH AND TEMPERATURE SENSOR ARE NEXT TO EACH OTHER, LIGHT SWITCH SHALL BE CLOSEST TO THE DOOR. COORDINATE WITH ELECTRICAL CONTRACTOR. NOTIFY THE ENGINEER OF ANY ROOMS WHERE THE ABOVE LOCATION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION.
  - MAINTAIN MINIMUM 6"-8" CLEARANCE TO UNDERSIDE OF PIPES, DUCTS, CONDUITS, SUSPENDED EQUIPMENT, ETC., THROUGHOUT ACCESS ROUTES IN MECHANICAL AND ELECTRICAL ROOMS.
  - UNLESS OTHERWISE NOTED, WHERE HOT AND COLD WATER PIPING DROPS INTO PIPE CHASE, THE SIZE SHOWN FOR THE PIPE DROPS SHALL BE USED TO THE LAST FIXTURE.
  - CERTAIN ITEMS SUCH AS ACCESS DOORS, CLEANOUTS, RISE AND DROPS IN DUCTWORK AND PIPING, ETC., ARE INDICATED ON THE DRAWINGS FOR CLARITY OR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF THE REQUIREMENTS FOR THESE ITEMS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THESE ITEMS AS REQUIRED ELSEWHERE IN THE CONTRACT DOCUMENTS.
  - WHERE THE INSTALLATION OF NEW SERVICES OR THE EXTENSION OF EXISTING SERVICES REQUIRE CUTTING OF EXISTING FLOORS, WALLS, PARTITIONS, ETC., IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK FOR THE PRESENCE OF EXISTING MECHANICAL AND/OR ELECTRICAL SERVICES WITHIN OR IMMEDIATELY BENEATH CONSTRUCTION AND EXERCISE NECESSARY PRECAUTIONS TO PREVENT DAMAGE TO THE SERVICES OR INJURY TO HIS PERSONNEL DUE TO CONTACT WITH SAME. WHERE PRACTICAL, SUCH EXISTING SERVICES SHALL BE TEMPORARILY DISCONNECTED DURING THE CUTTING OPERATION. SUCH OUTAGES IN SERVICE SHALL BE SCHEDULED IN ADVANCE WITH THE OWNER.
  - FLOW SCHEMATIC AND RISER DIAGRAMS INDICATE FLOW AND OPERATION CONCEPTS AS WELL AS GENERAL ARRANGEMENT OF EQUIPMENT, VALVES, PRESSURE GAUGES, ETC. ARE INDICATED FOR THIS PURPOSE. ADDITIONAL VALVES, PRESSURE GAUGES, ETC. SHALL BE PROVIDED AS SHOWN ON VARIOUS EQUIPMENT DETAILS. SEE PLANS AND DETAILS FOR PIPE SIZES NOT INDICATED ON FLOW SCHEDULES AND RISER DIAGRAMS.
  - CONTRACTOR SHALL RECYCLE ALL MERCURY SWITCH THERMOSTATS THAT ARE REMOVED. RECYCLED THERMOSTATS SHALL BE DELIVERED TO PARTICIPATING WHOLESALERS.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR RESEARCHING ALL SYSTEMS THAT A PARTICULAR OUTAGE WILL AFFECT AS WELL AS LOCATING ALL SHUTOFF POINTS. THIS INFORMATION SHALL BE INCLUDED IN THE OUTAGE PLAN TO BE SUBMITTED TO COTR FOR APPROVAL.
  - EXISTING SYSTEMS SHOWN TO BE REMOVED ON DEMOLITION DRAWINGS SHALL BE REMOVED BACK TO MAINS. NO SYSTEM SHALL BE ABANDONED IN PLACE.

Revisions:	Date
Revisions by the VA	09/19/2019
100% Construction Documents Submission	05/11/13
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80% Design Development Submission	03/28/13

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Stamp/Seal

Drawing Title  
**MECHANICAL COVER SHEET**

Approved: Project Director

Project Title  
**BUILDING 405B RENOVATION**

Location  
**MARTINSBURG, WV**

Date  
 05/31/2013

Checked  
**MTM**

Drawn  
**ADL**

VA Project Number  
**613-13-115**

Building Number  
**405B**

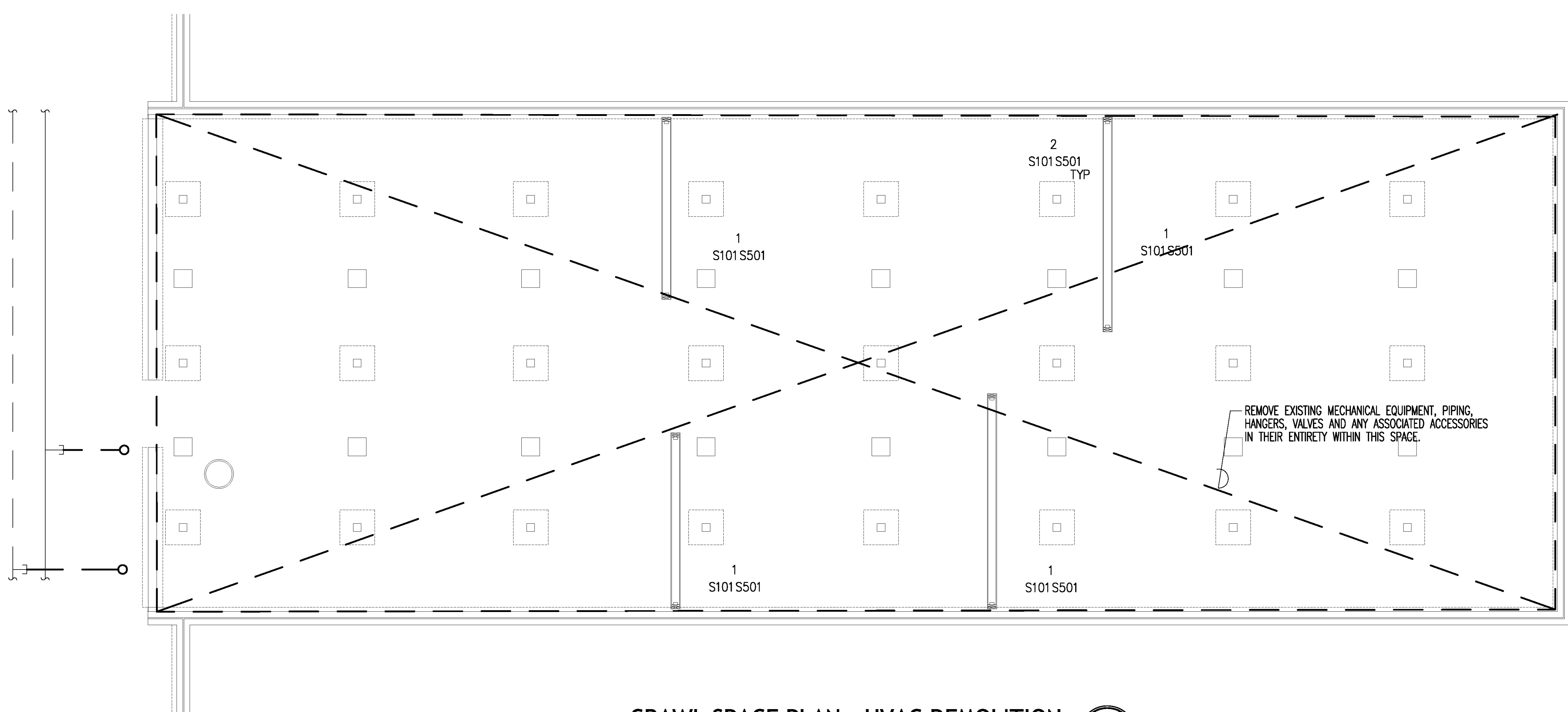
Drawing Number  
**MH001**

**Office of Construction and Facilities Management**

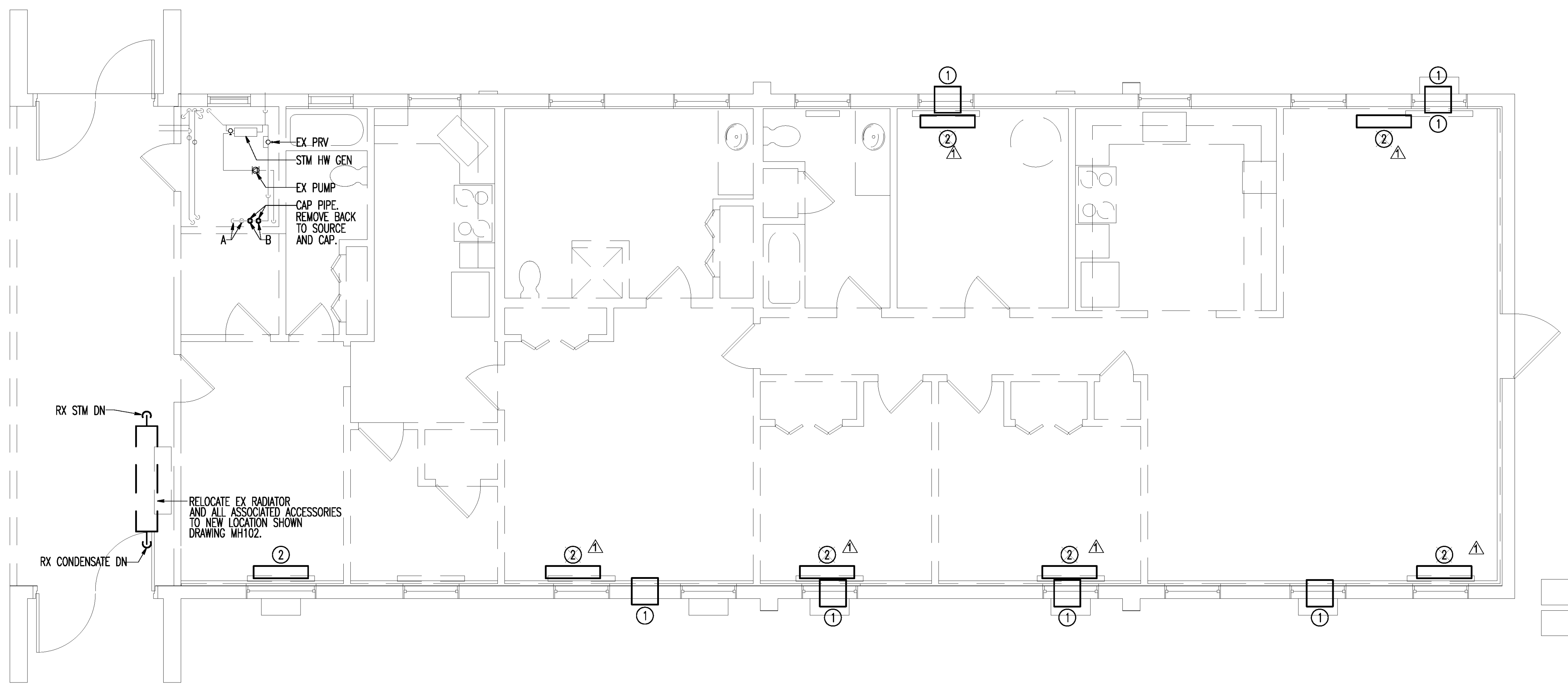
Department of Veterans Affairs

DRAWING NOTES: (APPLICABLE TO THIS DRAWING ONLY)  
 1. EXISTING SHOWN WITH LIGHT WEIGHT LINE.  
 2. DEMOLITION WORK SHOWN WITH HEAVY WEIGHT, DASHED LINE.

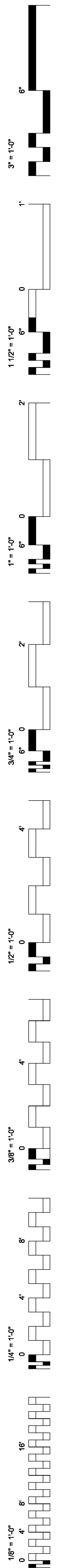
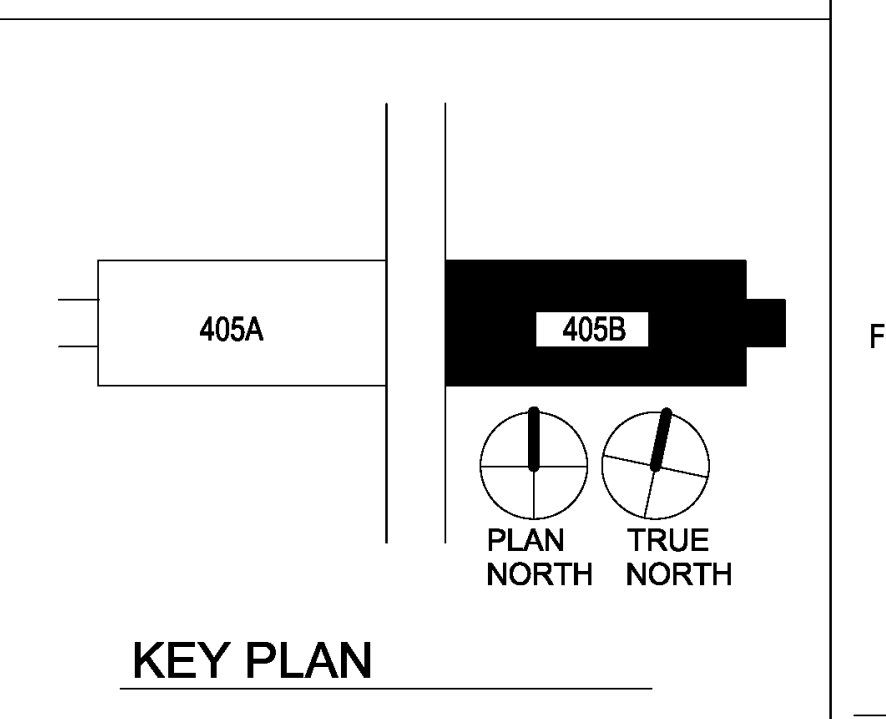
SPECIAL NOTES: (APPLICABLE TO THIS DRAWING ONLY)  
 ① REMOVE EXISTING WINDOW AIR CONDITIONER AND ALL ACCESSORIES  
 ② RELOCATE EXISTING RADIATOR TO NEW LOCATION SHOWN ON DRAWING MHT02. RELOCATE PIPING, CONTROL VALVE, THERMOSTAT AND ALL ASSOCIATED ACCESSORIES.



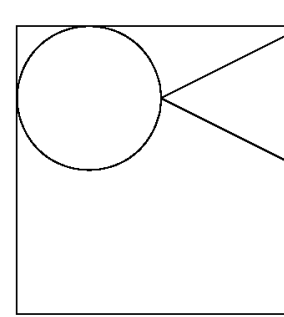
① CRAWL SPACE PLAN - HVAC DEMOLITION  
 SCALE: 1/4" = 1'-0"



② FIRST FLOOR PLAN - HVAC DEMOLITION  
 SCALE: 1/4" = 1'-0"



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Stamp/Seal  
 Drawing Title  
**MECHANICAL DEMOLITION**  
 Approved: Project Director

Project Title  
**BUILDING 405B RENOVATION**  
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**MARTINSBURG, WV**  
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**613-13-115**  
 Building Number  
**405B**  
 Drawing Number  
**MH101**

Office of Construction and Facilities Management  
 Department of Veterans Affairs

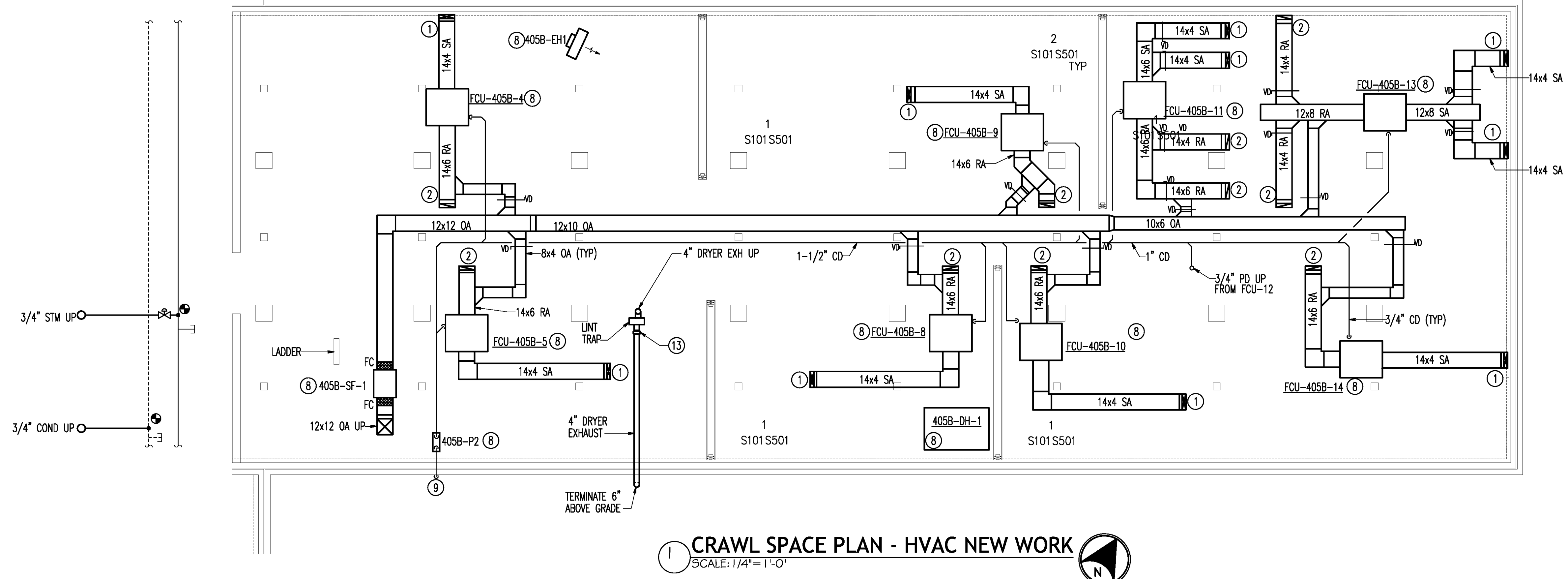
3" = 1'-0"  
1 1/2" = 1'-0"  
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1/2" = 1'-0"  
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1/8" = 1'-0"

**DRAWING NOTES:** (APPLICABLE TO THIS DRAWING ONLY)

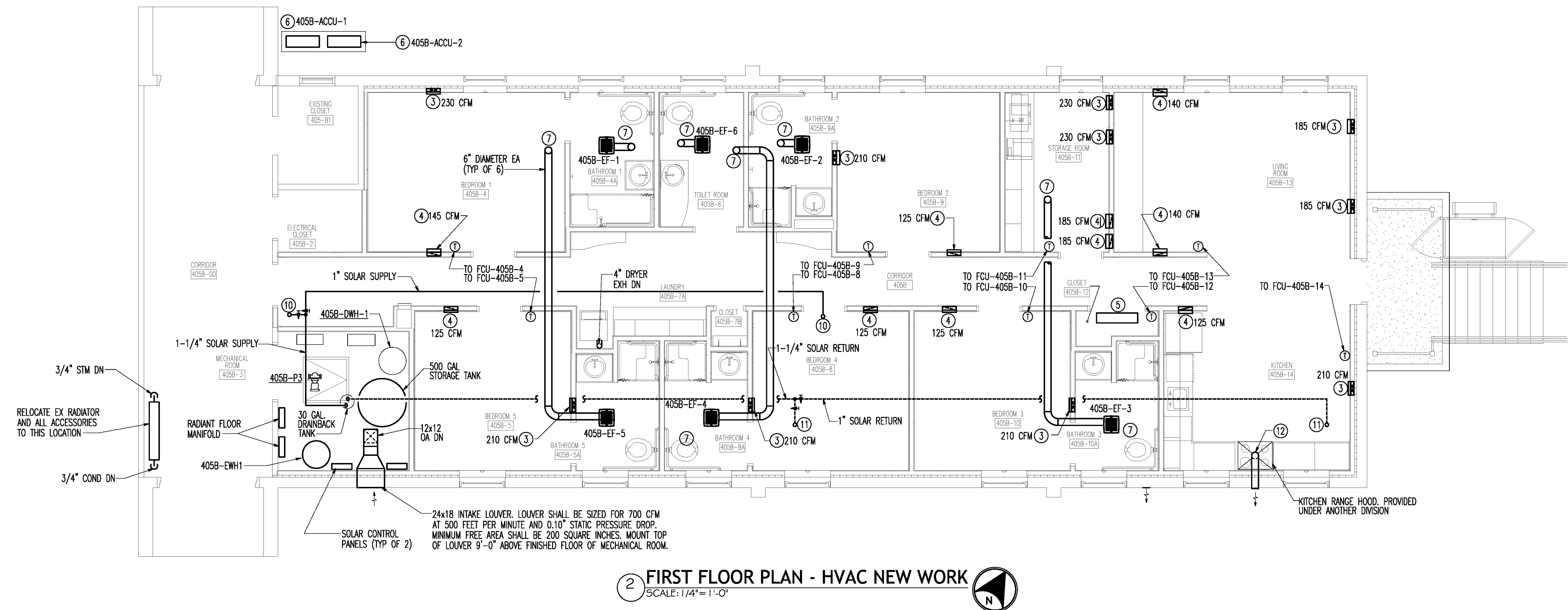
1. NEW WORK SHOWN WITH HEAVY WEIGHT LINE.
2. CRAWL SPACE PLAN SHOWN WITH FIRST FLOOR PLAN DASHED. LIGHTWEIGHT LINE FOR INFORMATION ONLY.

**SPECIAL NOTES:** (APPLICABLE TO THIS DRAWING ONLY)

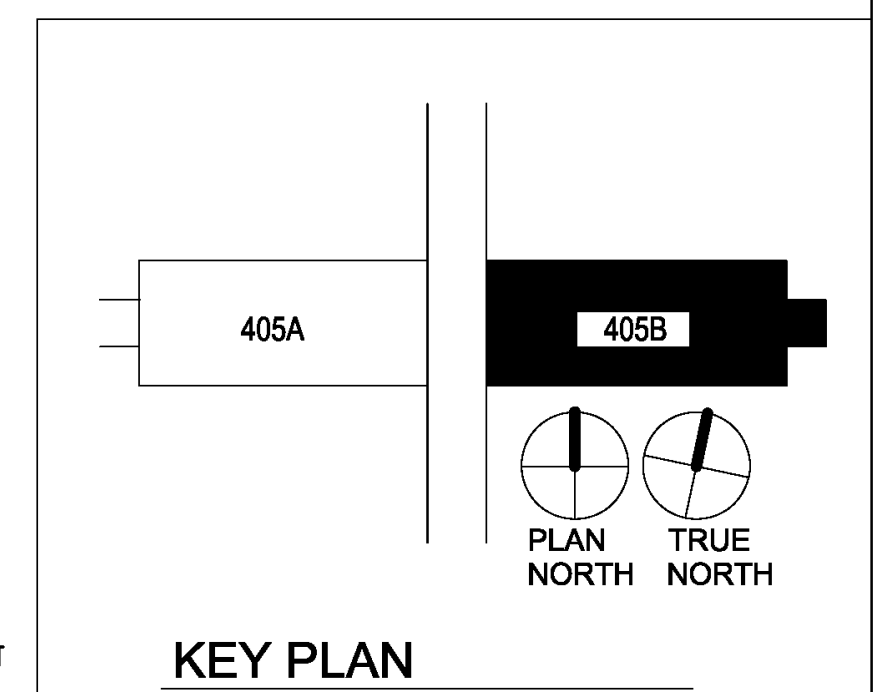
1. 14x3 SUPPLY AIR UP. INSTALL DUCTWORK BETWEEN NEW WALL STUDS ON FLOOR ABOVE. COORDINATE DUCTWORK AND WALL STUDS.
2. 14x3 RETURN AIR UP. INSTALL DUCTWORK BETWEEN NEW WALL STUDS ON FLOOR ABOVE. COORDINATE DUCTWORK AND WALL STUDS.
3. 8x8 SUPPLY REGISTER SR-1. MOUNT REGISTER 6" BELOW FINISHED CEILING. BALANCE TO CFM SHOWN.
4. 8x8 RETURN REGISTER RR-1. MOUNT REGISTER 6" BELOW FINISHED CEILING. BALANCE TO CFM SHOWN.
5. FCU-405B-12. MOUNT UNIT 6" BELOW FINISHED CEILING.
6. MOUNT ACCU ON 4" HIGH CONCRETE PAD. INSTALL RS AND RL PIPING FROM ACCU TO ASSOCIATED INDOOR UNIT PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
7. EXTEND 6" DIAMETER EXHAUST UP THROUGH ROOF. TERMINATE WITH MANUFACTURER PROVIDED PITCHED ROOF CAP. CAP SHALL BE PROVIDED WITH BLACK ENAMEL FINISH, INTEGRAL FLASHING FLANGE AND BUILT-IN BIRDSCREEN AND DAMPER.
8. SUPPORT FROM STRUCTURE ABOVE.
9. EXTEND 1-1/2" CONDENSATE DRAIN THROUGH WALL AND TURN DOWN. DISCHARGE ABOVE GRADE.
10. 1" SOLAR SUPPLY UP. SEE DRAWING 1/MH104 FOR CONTINUATION.
11. 1" SOLAR RETURN UP. SEE DRAWING 1/MH104 FOR CONTINUATION.
12. CONNECT 6" DIAMETER EXHAUST TO RANGE HOOD PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. EXTEND 6" DIAMETER EXHAUST THROUGH WALL AND TERMINATE WITH 8x8 BRICK VENT OR HOOD MANUFACTURER'S PROVIDED TERMINATION.
13. DRYER BOOSTER FAN.



**1 CRAWL SPACE PLAN - HVAC NEW WORK**  
SCALE: 1/4" = 1'-0"



**2 FIRST FLOOR PLAN - HVAC NEW WORK**  
SCALE: 1/4" = 1'-0"



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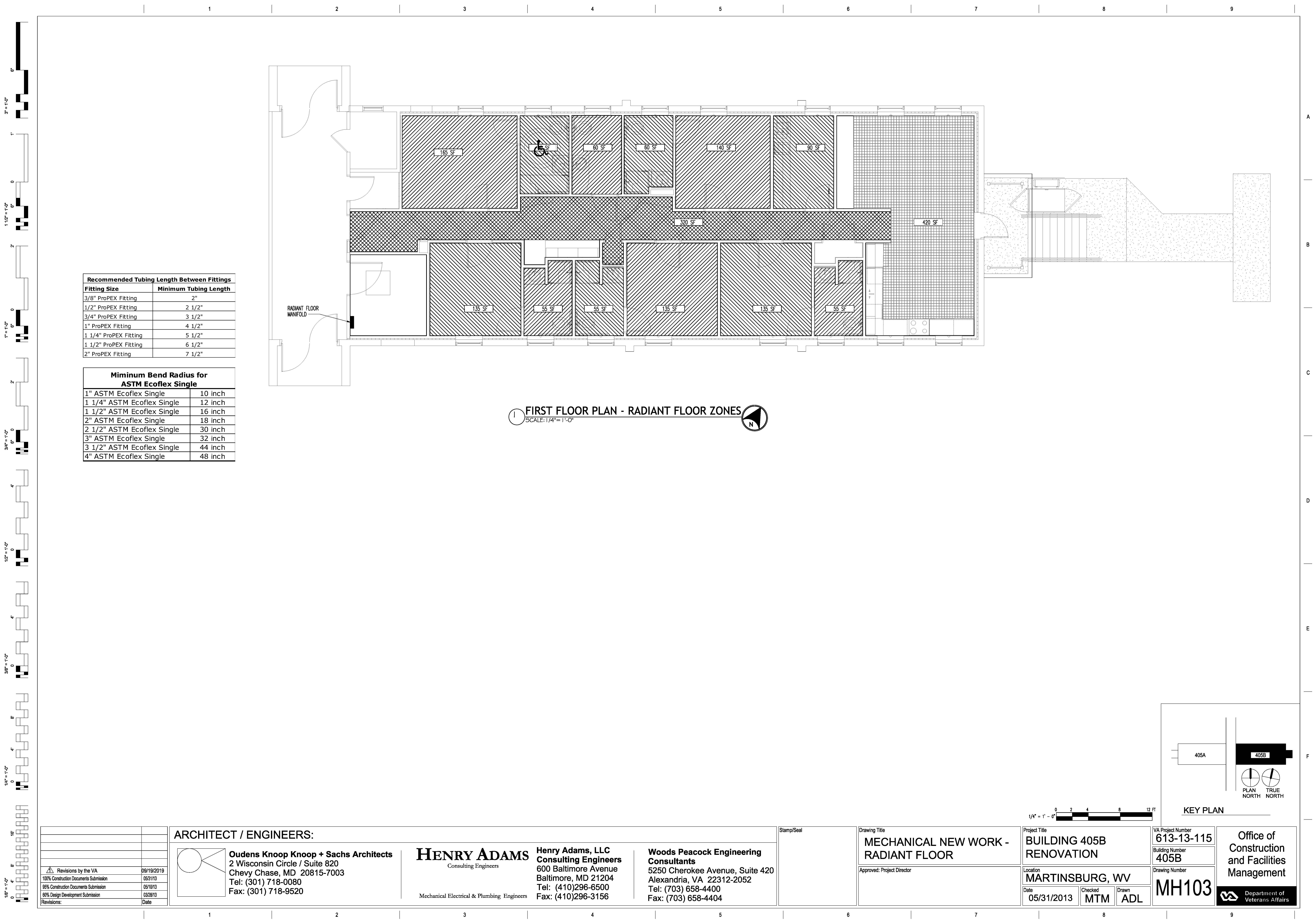
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Stamp/Seal  
Drawing Title  
**MECHANICAL NEW WORK**  
Approved: Project Director

Project Title  
**BUILDING 405B RENOVATION**  
Location  
**MARTINSBURG, WV**  
Date  
05/31/2013  
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MTM  
Drawn  
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**613-13-115**  
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**MH102**

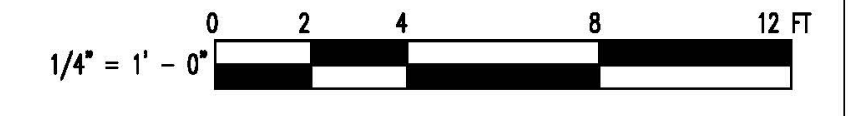
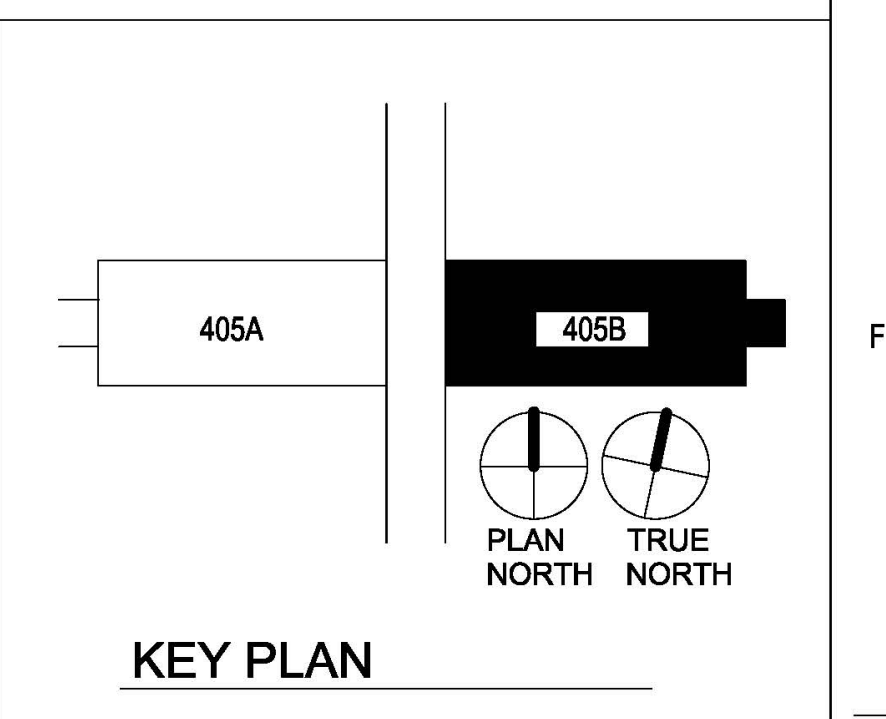
**Office of Construction and Facilities Management**  
Department of Veterans Affairs



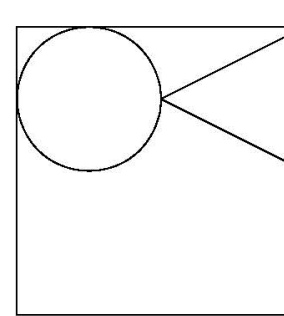
Recommended Tubing Length Between Fittings	
Fitting Size	Minimum Tubing Length
3/8" ProPEX Fitting	2"
1/2" ProPEX Fitting	2 1/2"
3/4" ProPEX Fitting	3 1/2"
1" ProPEX Fitting	4 1/2"
1 1/4" ProPEX Fitting	5 1/2"
1 1/2" ProPEX Fitting	6 1/2"
2" ProPEX Fitting	7 1/2"

Minimum Bend Radius for ASTM Ecoflex Single	
1" ASTM Ecoflex Single	10 inch
1 1/4" ASTM Ecoflex Single	12 inch
1 1/2" ASTM Ecoflex Single	16 inch
2" ASTM Ecoflex Single	18 inch
2 1/2" ASTM Ecoflex Single	30 inch
3" ASTM Ecoflex Single	32 inch
3 1/2" ASTM Ecoflex Single	44 inch
4" ASTM Ecoflex Single	48 inch

1 FIRST FLOOR PLAN - RADIANT FLOOR ZONES  
SCALE: 1/4" = 1'-0"



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Drawing Title  
**MECHANICAL NEW WORK - RADIANT FLOOR**  
 Approved: Project Director

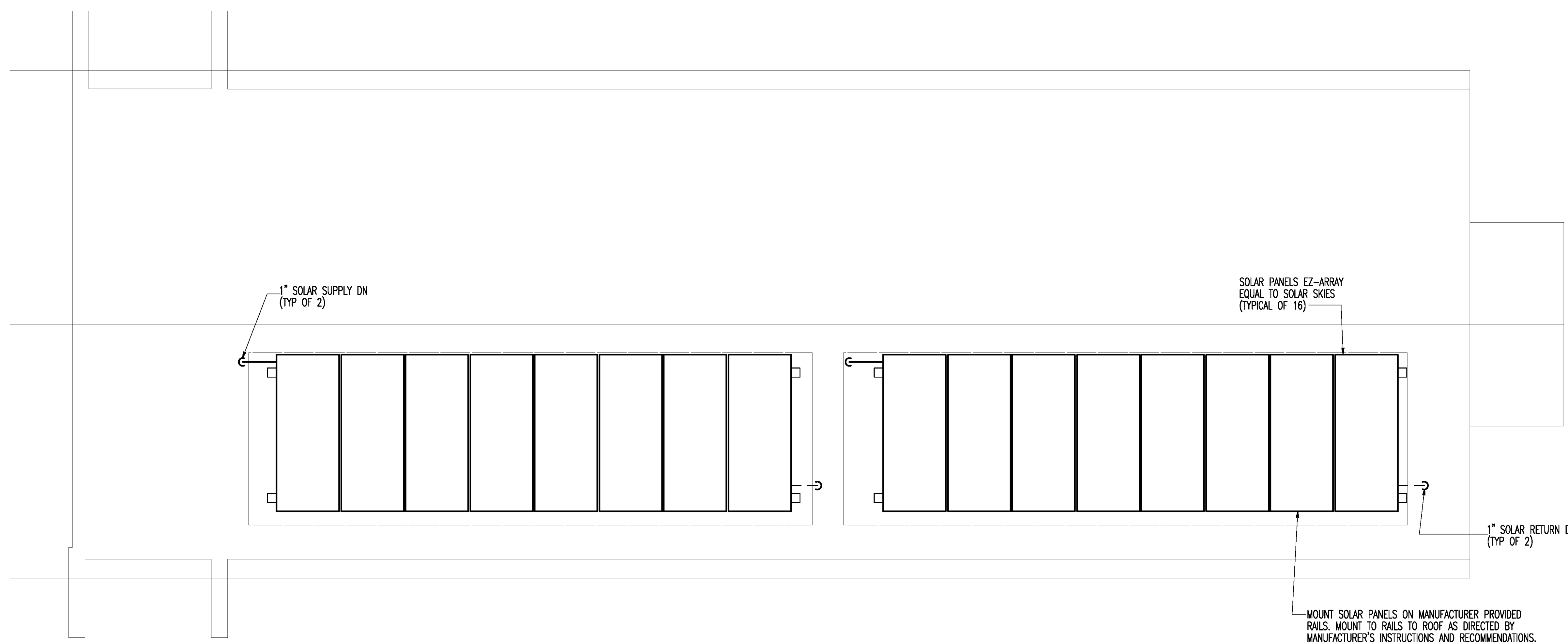
Project Title  
**BUILDING 405B RENOVATION**  
 Location  
**MARTINSBURG, WV**  
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 Building Number  
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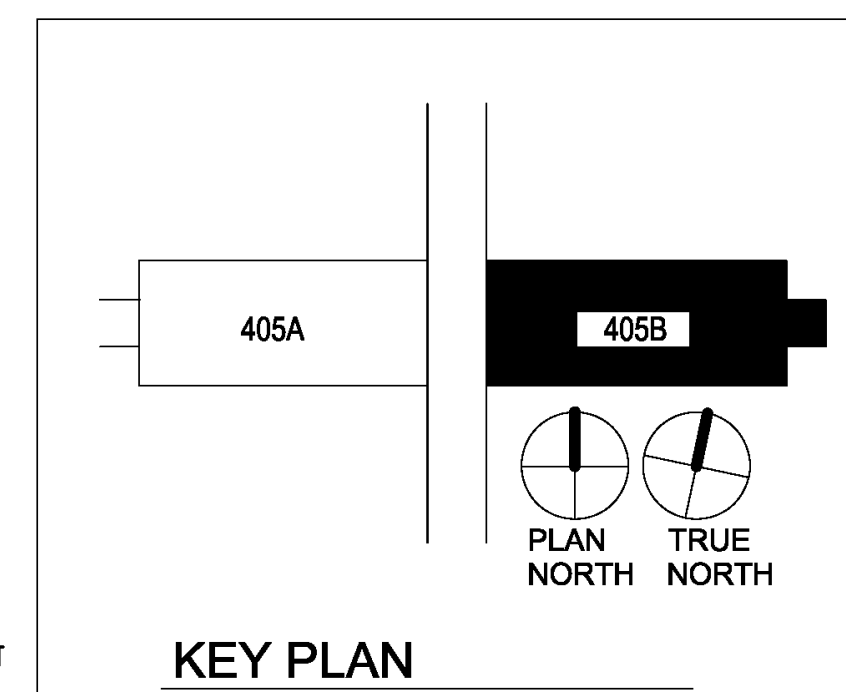
Office of Construction and Facilities Management  
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DRAWING NOTES: (APPLICABLE TO THIS DRAWING ONLY)

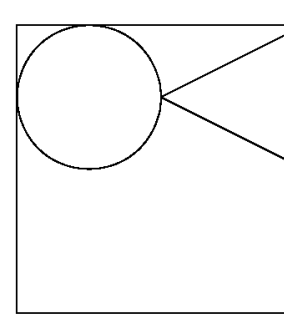
1. NEW WORK SHOWN WITH HEAVY WEIGHT LINE.



**1 ROOF PLAN - MECHANICAL NEW WORK**  
SCALE: 1/4" = 1'-0"



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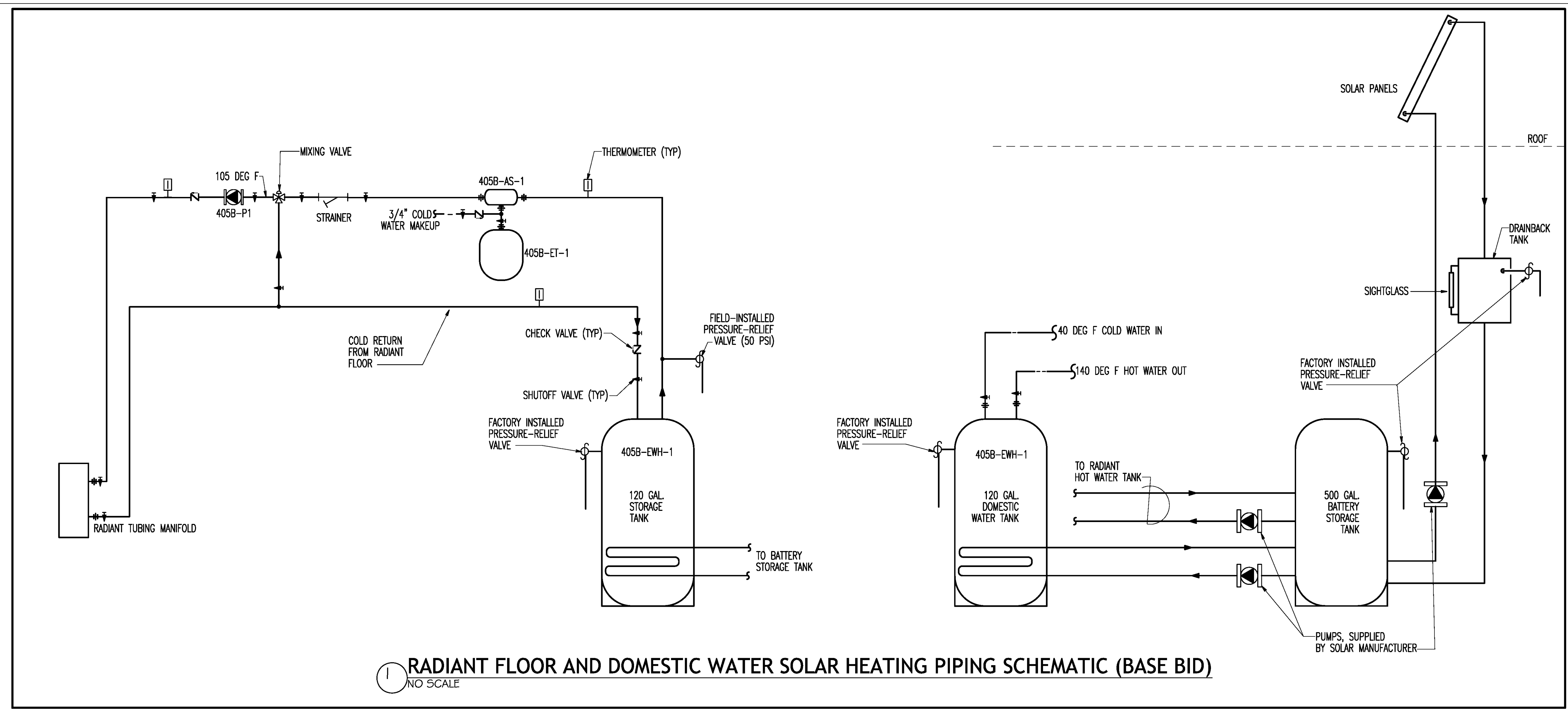
Drawing Title  
**MECHANICAL NEW WORK - ROOF PLAN**  
 Approved: Project Director

Project Title  
**BUILDING 405B RENOVATION**  
 Location  
**MARTINSBURG, WV**  
 Date  
 05/31/2013  
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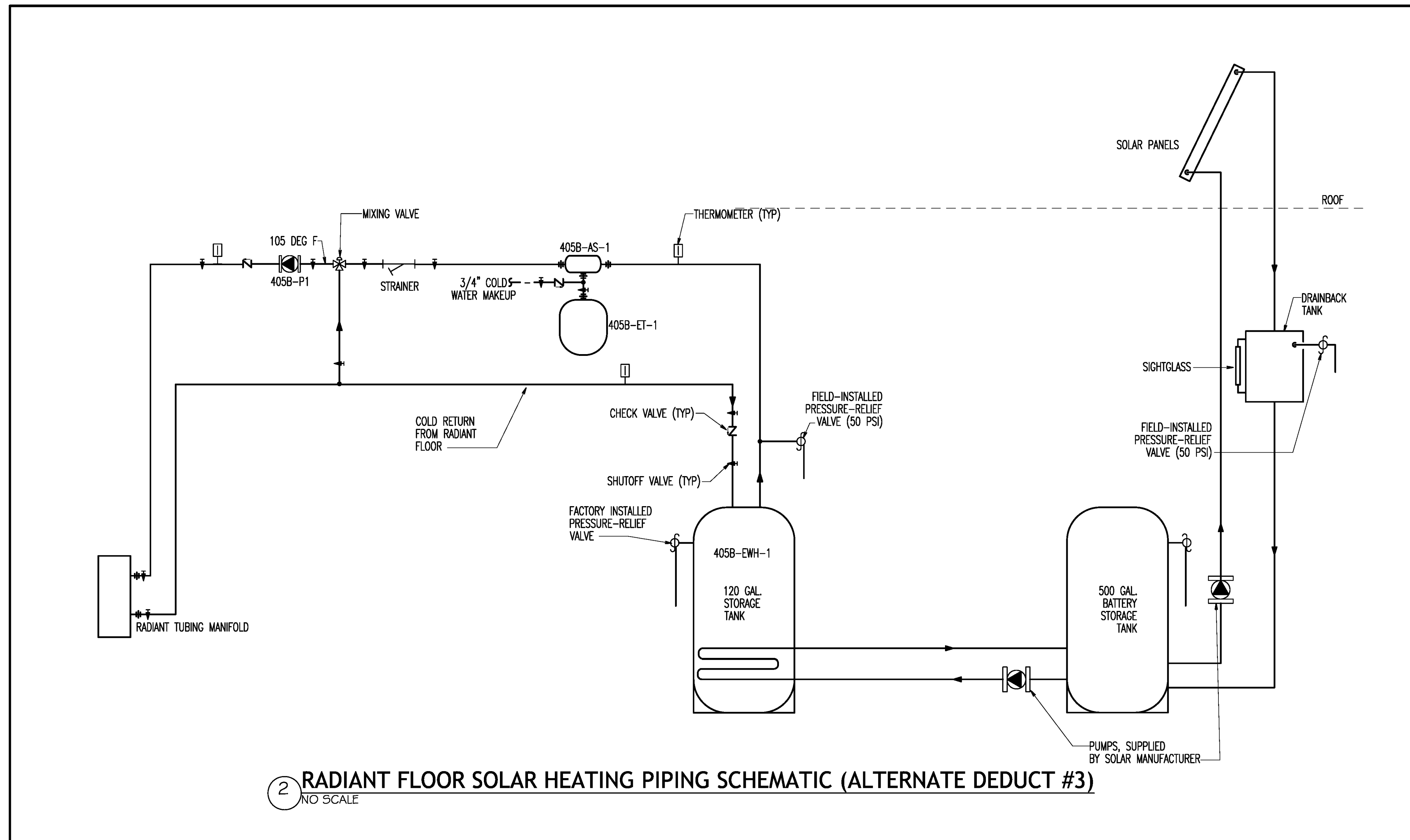
VA Project Number  
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**MH104**

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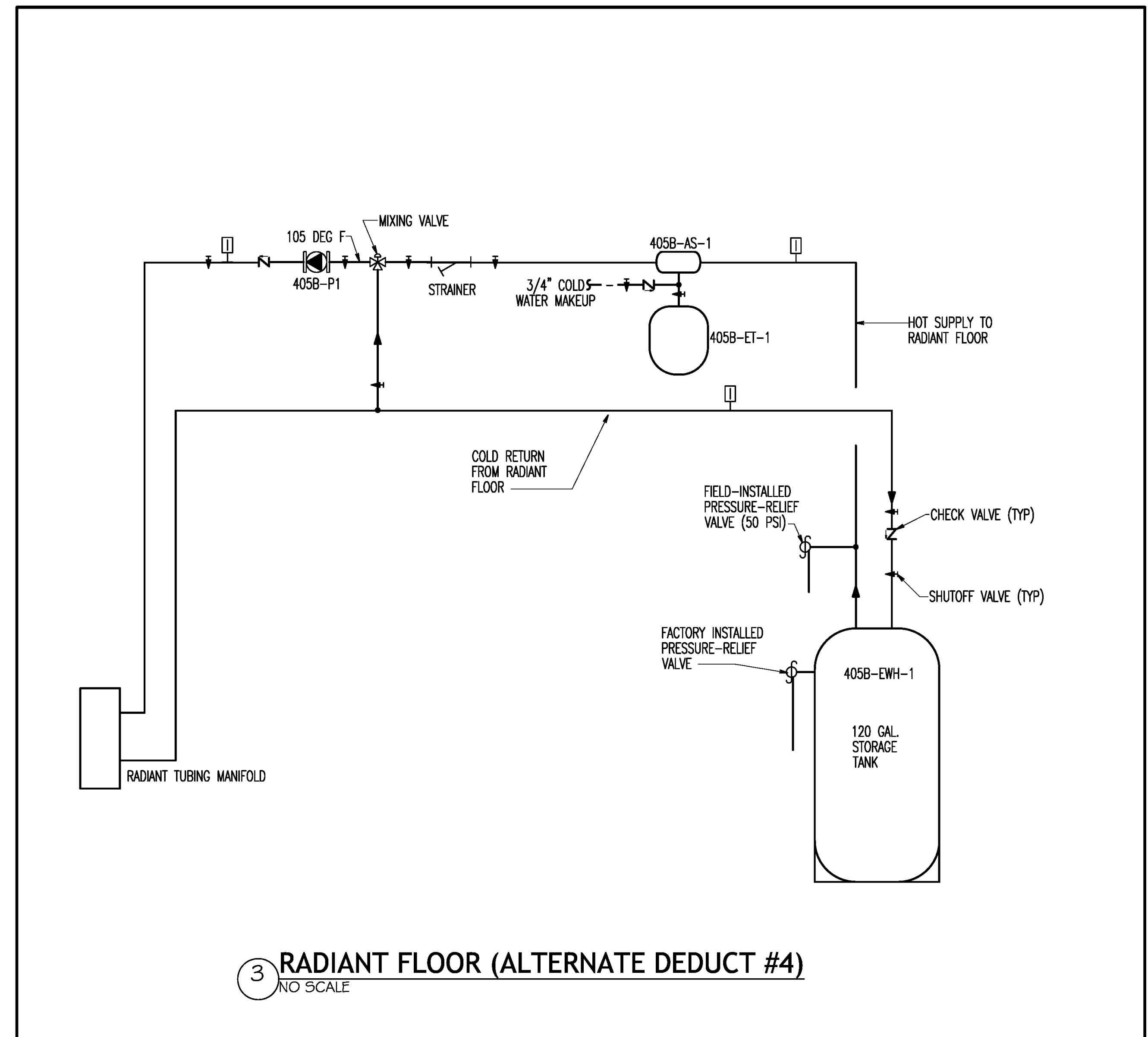
5" = 1'-0"  
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 3/8" = 1'-0"  
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1 RADIANT FLOOR AND DOMESTIC WATER SOLAR HEATING PIPING SCHEMATIC (BASE BID)  
NO SCALE



2 RADIANT FLOOR SOLAR HEATING PIPING SCHEMATIC (ALTERNATE DEDUCT #3)  
NO SCALE



3 RADIANT FLOOR (ALTERNATE DEDUCT #4)  
NO SCALE

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Drawing Title  
**MECHANICAL PIPING SCHEMATICS**  
 Approved: Project Director

Project Title  
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 Location  
**MARTINSBURG, WV**  
 Date  
 05/31/2013  
 Checked  
 MTM  
 Drawn  
 ADL

VA Project Number  
**613-13-115**  
 Building Number  
**405B**  
 Drawing Number  
**MH105**

Office of Construction and Facilities Management  
 Department of Veterans Affairs

UNIT HEATERS								
UNIT NO.	TYPE	LOCATION	CFM	CAPACITY MBH	EAT	ELEC. KW	FAN MOTOR HP	NOTES
405B-EH1	HORIZONTAL COIL RESIS.	MECHANICAL ROOM	400	400	40	5.0	1/125	

AIR SEPARATOR SCHEDULE								
UNIT NO.	LOCATION	SYSTEM	TYPE	INLET SIZE, IN	GPM	WPD	BUILT-IN STRAINER REQ'D	NOTES
405B-AS-1	MECHANICAL ROOM	RADIANT FLOOR	FULL FLOW TANGENTIAL	1	2	0.25	NO	NO

RADIANT FLOOR																		
ROOM NO.	ROOM NAME	ZONE	CONSTRUCTION	ATTACHMENT METHOD	TUBE TYPE	TUBE SPACING	LEADER LENGTH	LOOP LENGTH	NO. OF LOOPS	ROOM LOAD PER SQ FT.	SURFACE TEMP	HEATED AREA SQ FT.	HEATING					NOTES
													BTUH	EWT	LWT	GPM	WPD	
405B-4	BEDROOM 1	1	SUB-FLOOR	EMBEDDED	hePEX 1/2"	12	15	195	1	10	75	165	2700	105	90	0.13	0.23	
405B-4A	BATHROOM 1	1	SUB-FLOOR	EMBEDDED	hePEX 1/2"	9	15	100	1	17.9	79	52	800	105	90	0.05	0.02	
405B-5	BEDROOM 5	5	SUB-FLOOR	EMBEDDED	hePEX 1/2"	12	11	155	1	10	75	135	2100	105	90	0.10	0.13	
405B-5A	BATHROOM 5	5	SUB-FLOOR	EMBEDDED	hePEX 1/2"	9	12	85	1	16.7	78	45	800	105	90	0.04	0.02	
405B-6	TOILET	8	SUB-FLOOR	EMBEDDED	hePEX 1/2"	9	11	95	1	12.1	76	55	800	105	90	0.05	0.02	
405B-8	BEDROOM 4	4	SUB-FLOOR	EMBEDDED	hePEX 1/2"	12	11	155	1	10	75	135	2100	105	90	0.10	0.13	
405B-8A	BATHROOM 4	4	SUB-FLOOR	EMBEDDED	hePEX 1/2"	9	12	85	1	16.7	78	45	800	105	90	0.04	0.02	
405B-9	BEDROOM 2	2	SUB-FLOOR	EMBEDDED	hePEX 1/2"	12	17	220	1	10	75	135	2100	105	90	0.10	0.13	
405B-9A	BATHROOM 2	2	SUB-FLOOR	EMBEDDED	hePEX 1/2"	9	11	85	1	16.3	78	45	800	105	90	0.04	0.02	
405B-10	BEDROOM 3	3	SUB-FLOOR	EMBEDDED	hePEX 1/2"	12	16	165	1	10	75	135	2100	105	90	0.10	0.13	
405B-10A	BATHROOM 3	3	SUB-FLOOR	EMBEDDED	hePEX 1/2"	9	17	95	1	16.7	78	45	800	105	90	0.04	0.02	
405B-11	STORAGE ROOM	7	SUB-FLOOR	EMBEDDED	hePEX 1/2"	12	16	120	1	13.7	77	90	900	105	90	0.07	0.05	
405B-13	LIVING ROOM	7	SUB-FLOOR	EMBEDDED	hePEX 1/2"	12	10	120	1	16.4	78	270	3200	105	90	0.49	0.50	
405B-14	KITCHEN	7	SUB-FLOOR	EMBEDDED	hePEX 1/2"	12	10	120	1	16.4	78	160	2300	105	90	0.49	0.50	
405B	CORRIDOR	7	SUB-FLOOR	EMBEDDED	hePEX 1/2"	12	12	185	2	10	75	320	1000	105	90	0.25	0.21	

405B-ACCU-1 VARIABLE REFRIGERANT FAN COIL UNITS ①②											
UNIT NO.	TYPE	SERVICE	CFM		COOLING				HEATING		NOTES
			SA	OA	TOTAL MBH	SENS MBH	EAT DB	EAT WB	TOTAL MBH	EAT DB	
FCU-405B-4	A	405B-4 BEDROOM	230	85	5.0	4.4	81.6	67	1.8	47	
FCU-405B-5	A	405B-5 BEDROOM	210	85	4.6	4.1	82.3	67	1.2	45	
FCU-405B-8	A	405B-8 BEDROOM	210	85	4.6	4.1	82.3	67	1.2	45	
FCU-405B-9	A	405B-9 BEDROOM	210	85	4.6	4.1	82.3	67	1.2	45	
FCU-405B-10	A	405B-10 BEDROOM	210	85	4.6	4.1	82.3	67	1.2	45	
FCU-405B-11	A	405B-11 STORAGE RM	460	85	10.0	9.1	78.2	67	1.0	58	
FCU-405B-13	A	405B-13 LIVING ROOM	370	85	9.2	7.2	79.1	67	3.5	56	
FCU-405B-14	A	405B-14 KITCHEN	210	85	4.6	4.0	82.3	67	2.5	45	

NOTES FOR VARIABLE REFRIGERANT FAN COIL UNITS:

- ① UNITS INTERLOCKED/CONNECTED TO ACCU-1
- ② R-410A REFRIGERANT

405B-ACCU-2 VARIABLE REFRIGERANT FAN COIL UNITS ①②											
UNIT NO.	TYPE	SERVICE	CFM		COOLING				HEATING		NOTES
			SA	OA	TOTAL MBH	SENS MBH	EAT DB	EAT WB	TOTAL MBH	EAT DB	
FCU-405B-12	B	IT CLOSET	230	0	6.0	6.0	75	62	N/A	N/A	

NOTES FOR VARIABLE REFRIGERANT FAN COIL UNITS:

- ① UNITS INTERLOCKED/CONNECTED TO ACCU-2
- ② R-410A REFRIGERANT

405B-ACCU-1 & 2 VARIABLE REFRIGERANT AIR-COOLED CONDENSING UNITS ①②											
UNIT NO.	SERVICE	LOCATION	CAPACITY (MBH) ③				ELECTRICAL		NOTES		
			COOLING	EAT	HEATING	EAT	VOLTAGE/PHASE	KW INPUT			
405B-ACCU-1	405B	ON GRADE	50	95	15	10	208/3	CLG	HTG		
405B-ACCU-2	CLOSET	ON GRADE	6.0	95	N/A	N/A	208/3	25.6	27.2		

NOTES FOR VARIABLE REFRIGERANT AIR-COOLED CONDENSING UNITS:

- ① R-410A REFRIGERANT
- ② REFRIGERANT PIPE SIZES AND ROUTING, REFRIGERANT CHARGE, ETC., SHALL BE PROVIDED BY THE MANUFACTURER.
- ③ CAPACITY INDICATED IS MINIMUM REQUIRED CAPACITY AFTER CORRECTIONS FOR DESIGN CONDITIONS, REFRIGERANT PIPE SIZES AND LENGTHS, AND OTHER CORRECTIONS HAVE BEEN ACCOUNTED FOR.

405B-DH-1 DEHUMIDIFIER														
UNIT NO.	LOCATION	BLDG SERVED	TYPE	CFM	MOTOR HP	COMPRESSOR TYPE	ENT. AIR TEMP		TYP. MOISTURE REMOVAL PPD	EFFECTIVE VOLUME	ELECTRICAL			NOTES
							MIN	MAX			KW	PHASE	VOLT	
405B-DH-1	CRAWLSPACE	405B	ADJUSTABLE CONTROL	650	1/2	SCROLL	33	95	56	8630	2.2	1	208	

405B-ET-1 EXPANSION TANKS									
UNIT NO	LOCATION	SERVICE	APPROX. SIZE DxDH	TOTAL VOLUME (GALLONS)	MAXIMUM ACCEPTANCE (GALLONS)	TANK CONNECTION	MAXIMUM WORKING PRESSURE	NOTES	
405B-ET-1	MECHANICAL ROOM	RADIANT FLOOR HOT WATER	9x15	3.2	1.9	3/4"	150		

405B-P1 & P2 PUMPS											
UNIT NO.	TYPE	LOCATION	SERVICE	FLUID	GPM	TOTAL PPD	TEMP.	MIN. NPSHR	MOTOR HP	RPM	NOTES
405B-P1	INLINE CIRC.	MECHANICAL ROOM	RADIANT FLOOR	WATER	2	4	105	-	1/10	3300	
405B-P2	CONDENSATE	CRAWLSPACE	FCU COND.	COND	10	10	55	-	1/10	3300	

405B-EWH-1 SOLAR ELECTRIC WATER HEATER															
UNIT NO	LOCATION	BUILDING SERVED	TYPE	STORAGE CAPACITY (GALLONS)	NO ELEMENTS	WATTS PER ELEMENTS	RECOVERY (GPH)	SOLAR HW COIL		VOLTAGE	PHASE	HZ	APPROX WEIGHT (LBS)	NOTES	
								EWT	LWT						
405B-EWH-1	MECHANICAL ROOM	405B	SOLAR BOOSTER	120	1	4500	21	160	90	120	208	3	60	350	BASE BID & ALT DEDUCT #3

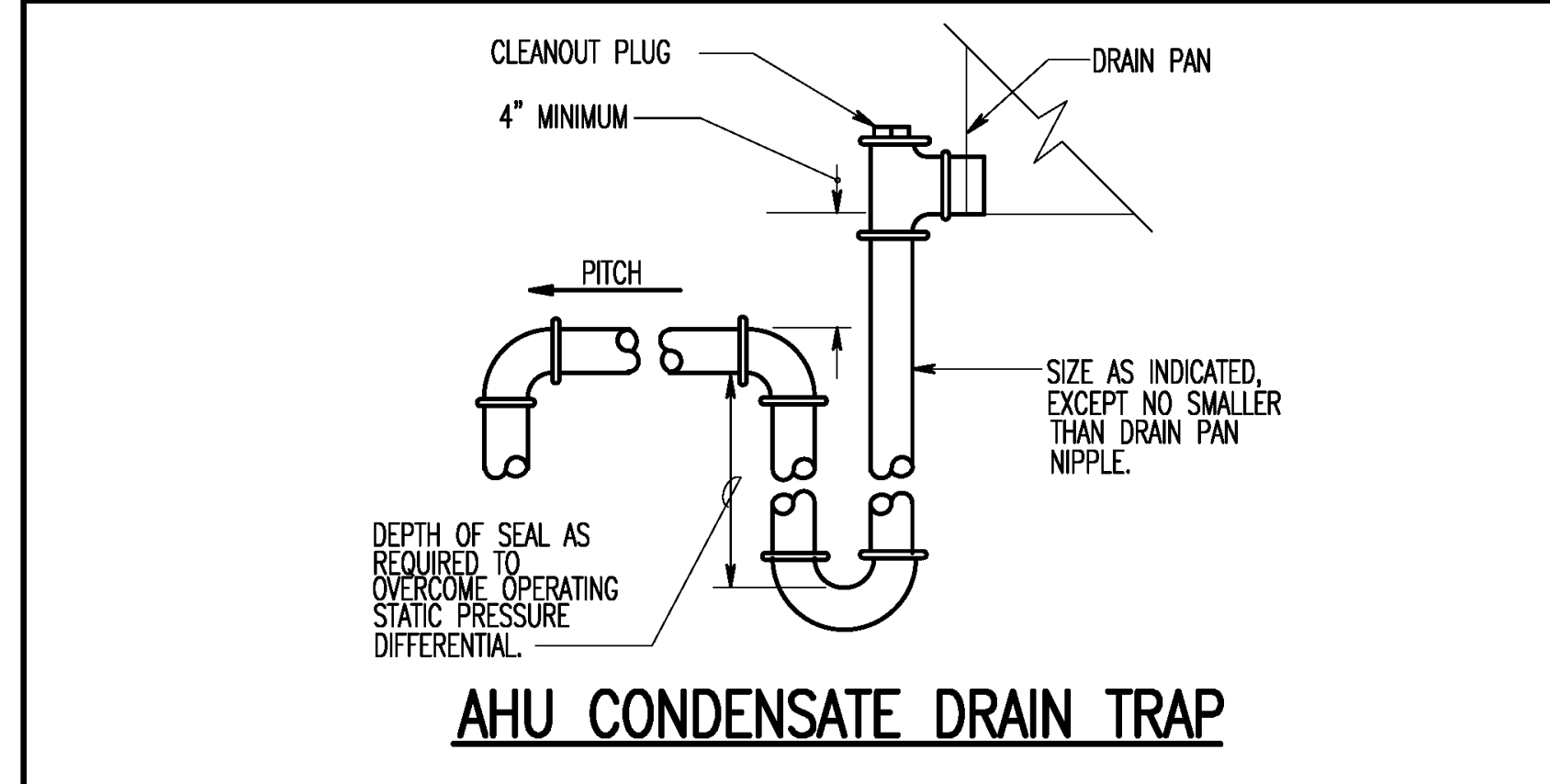
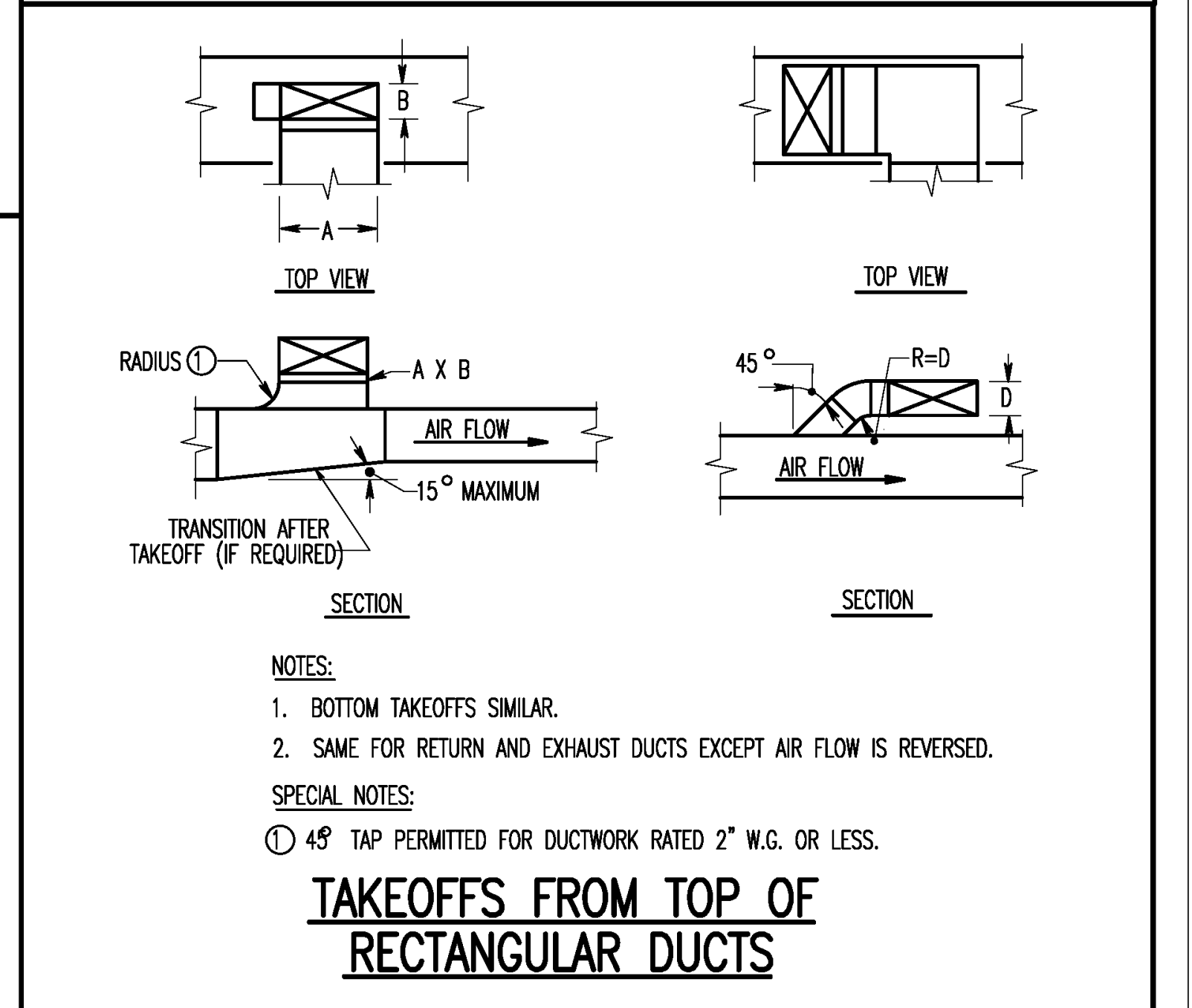
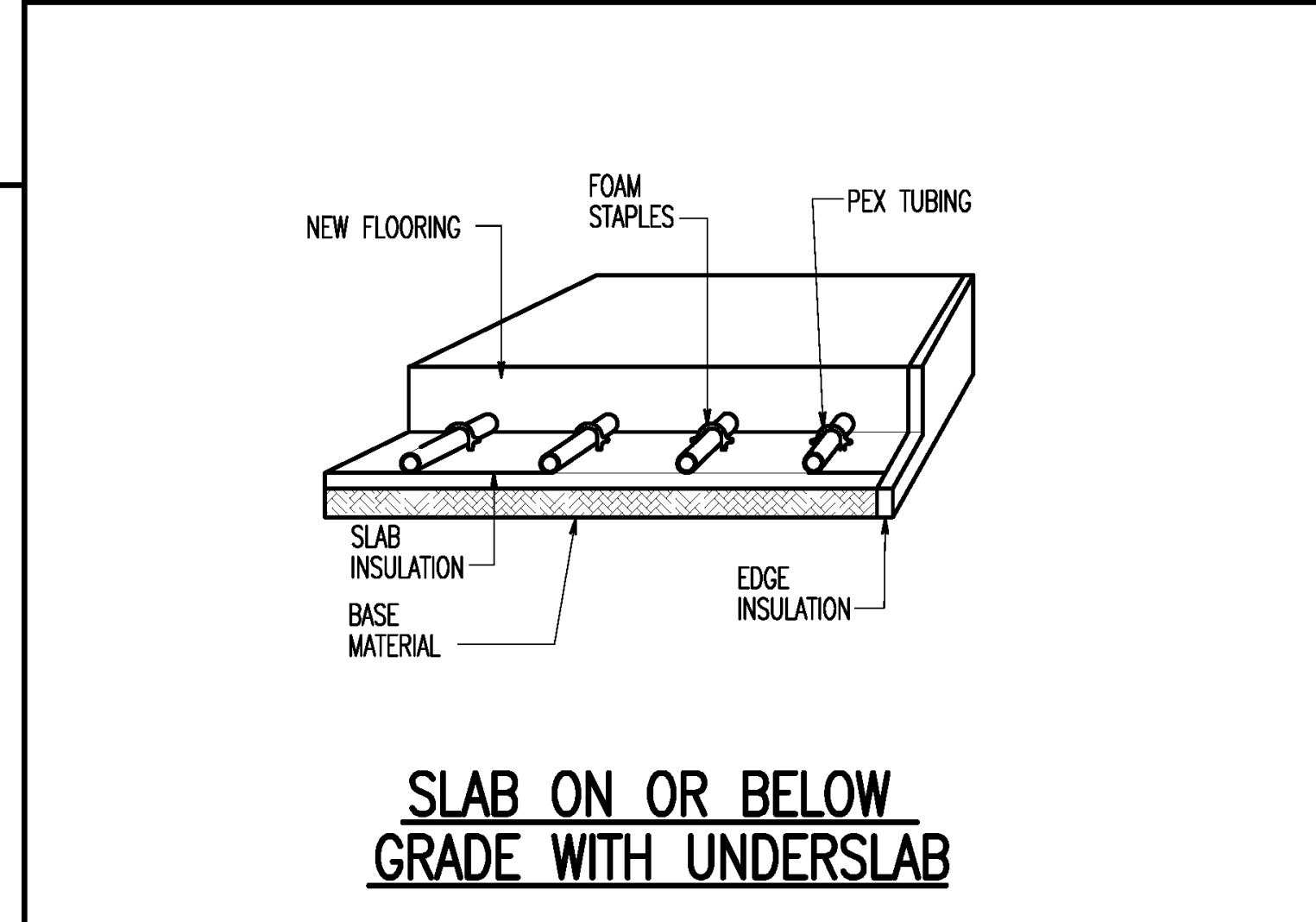
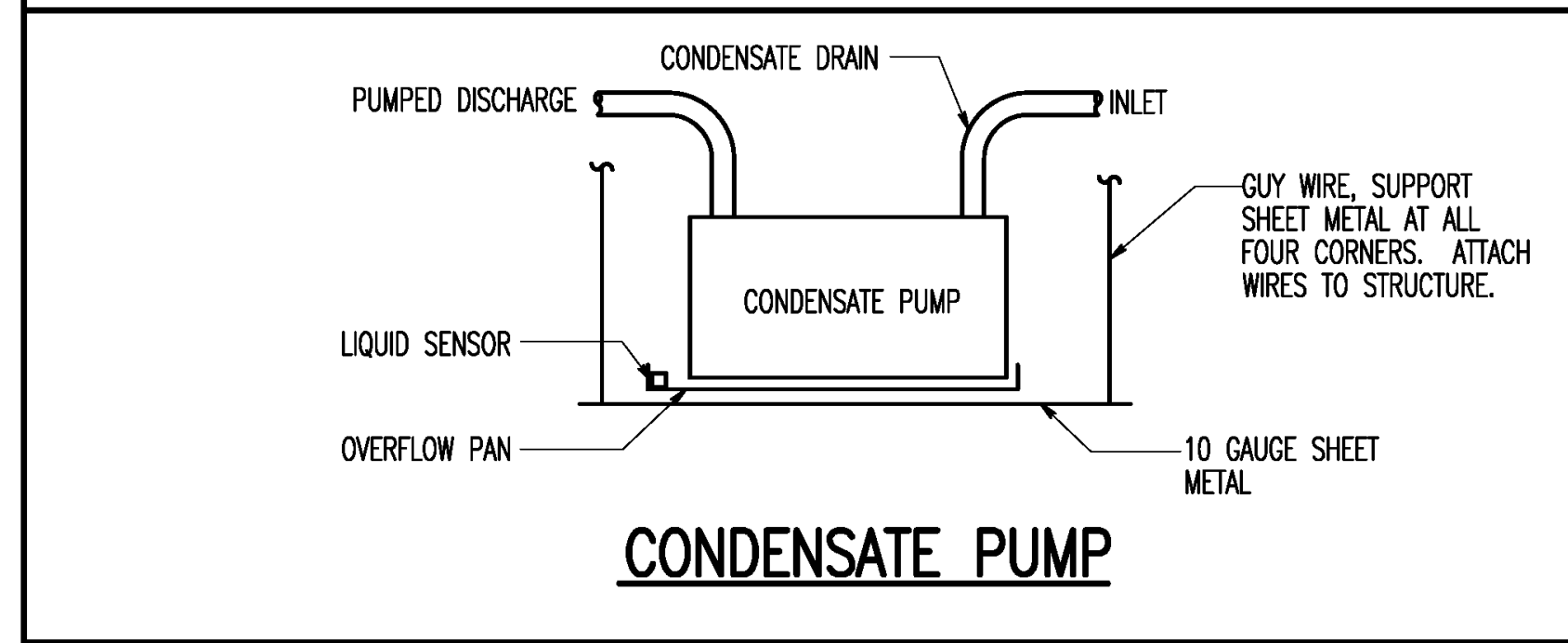
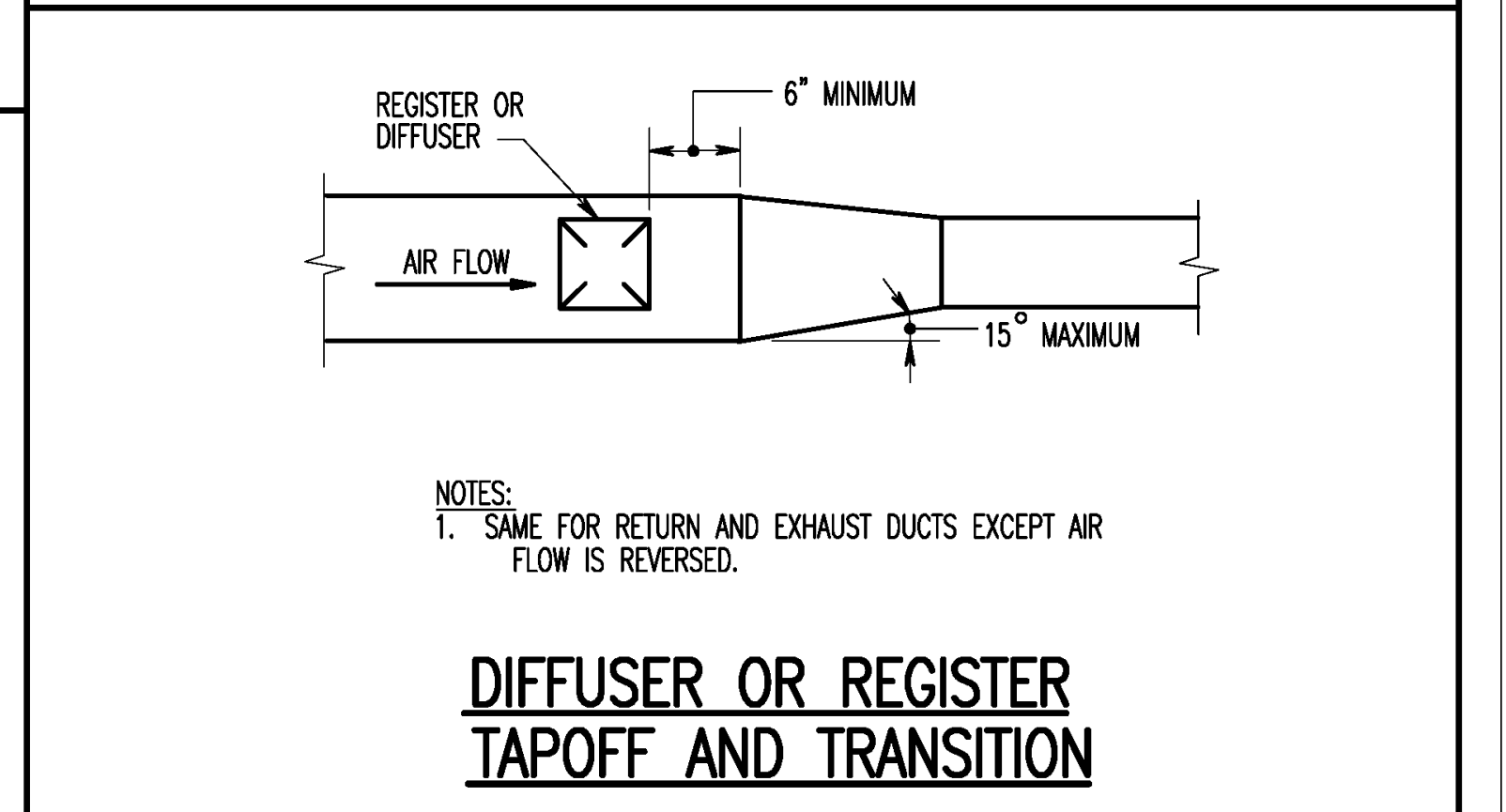
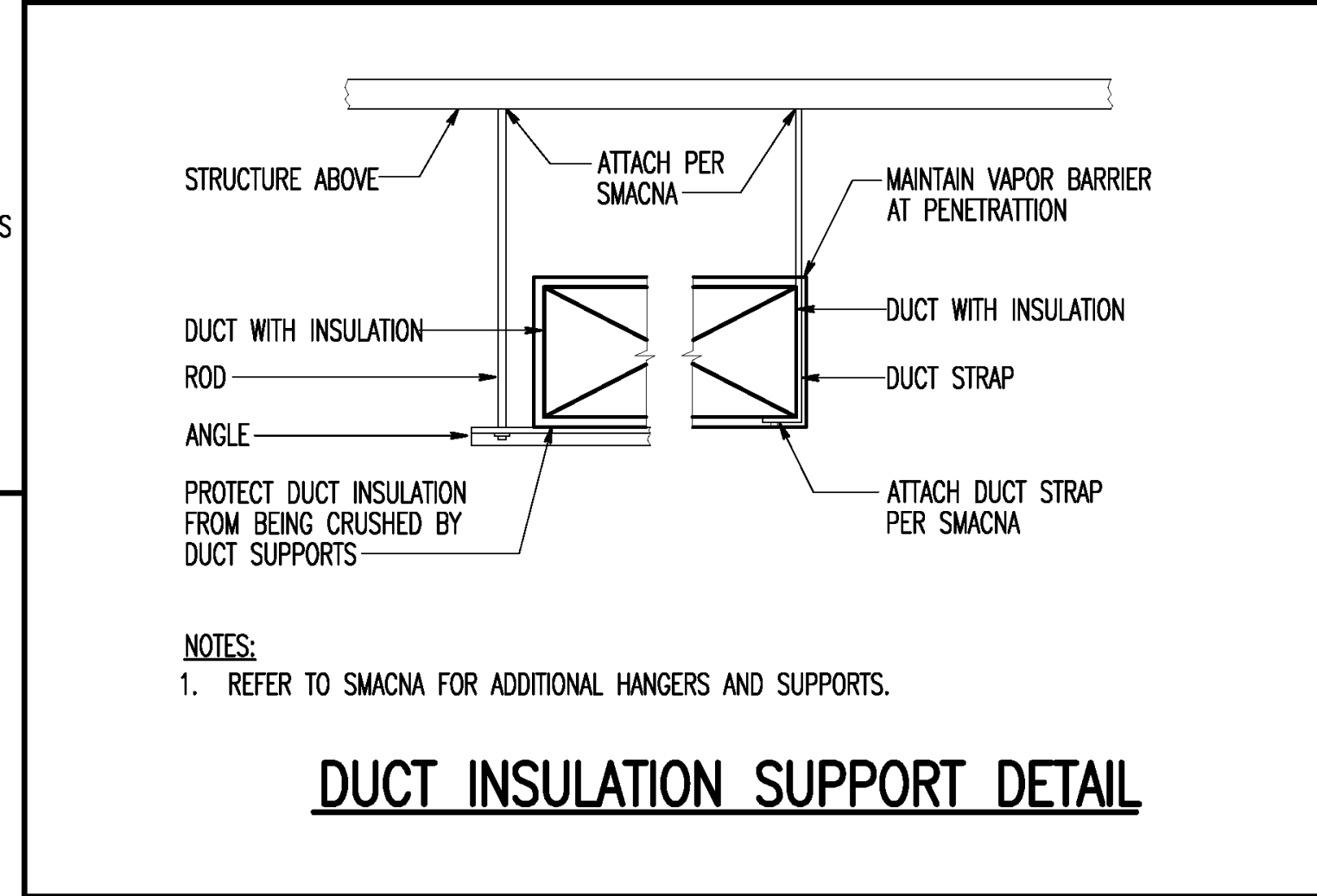
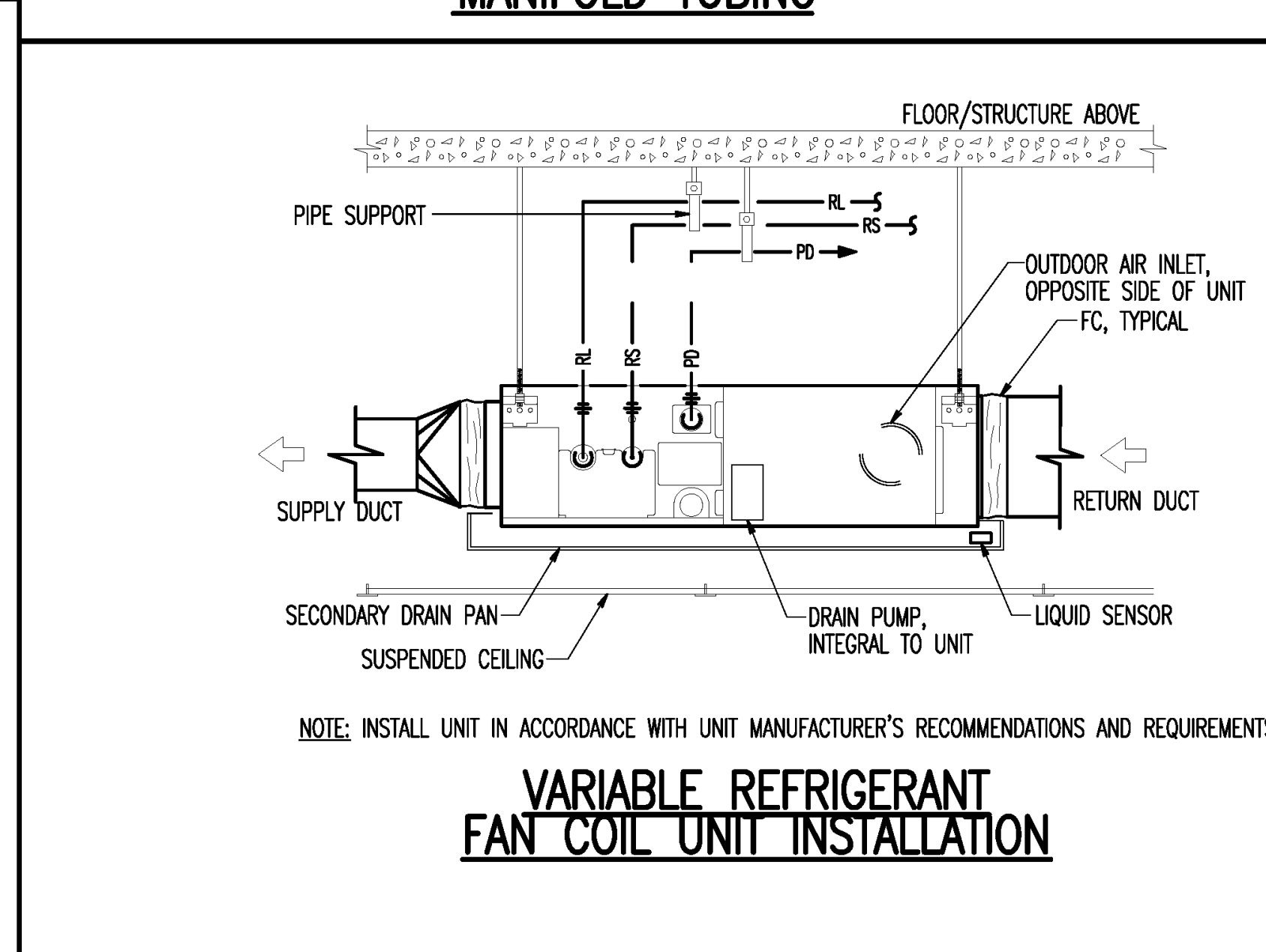
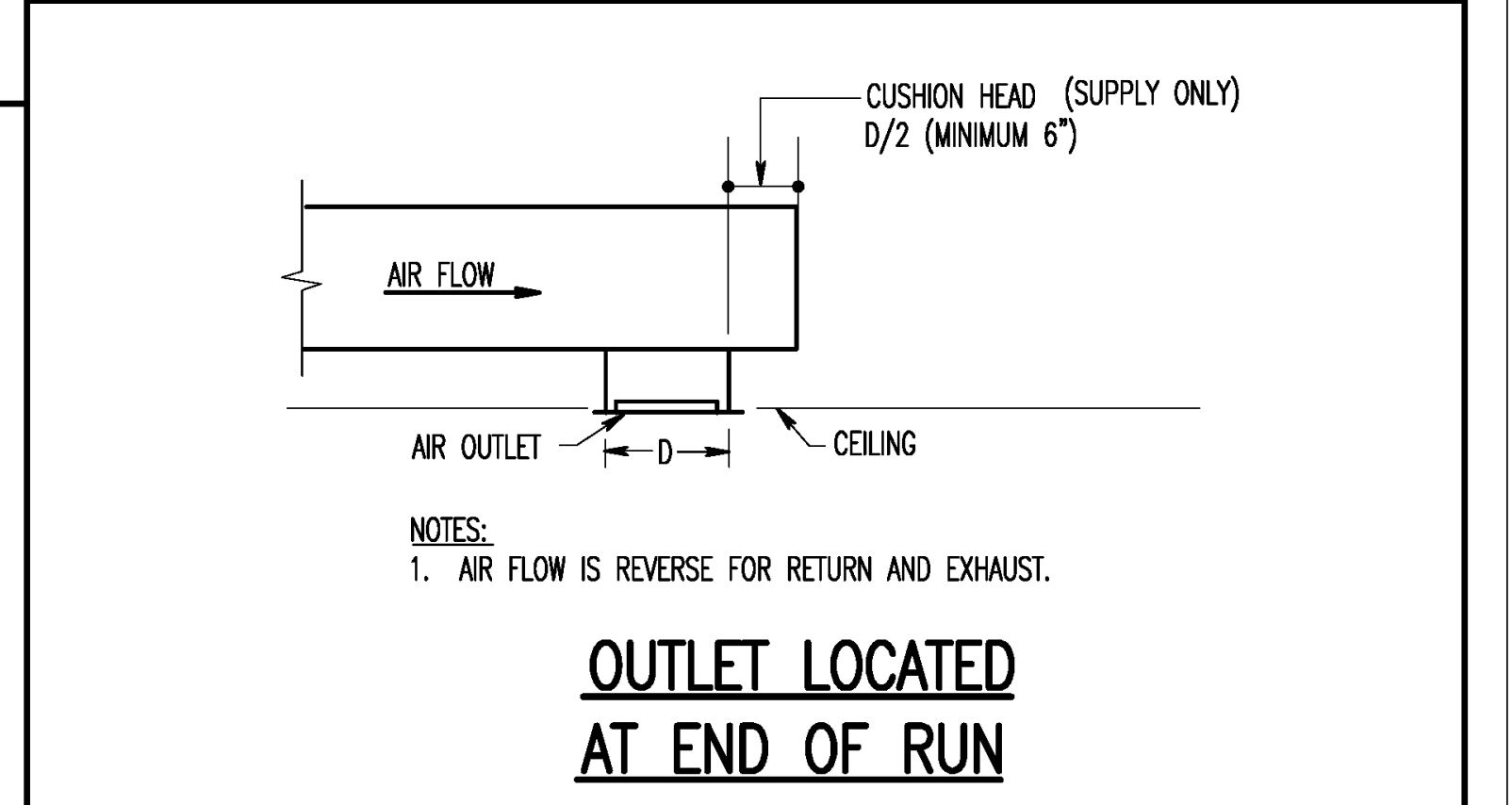
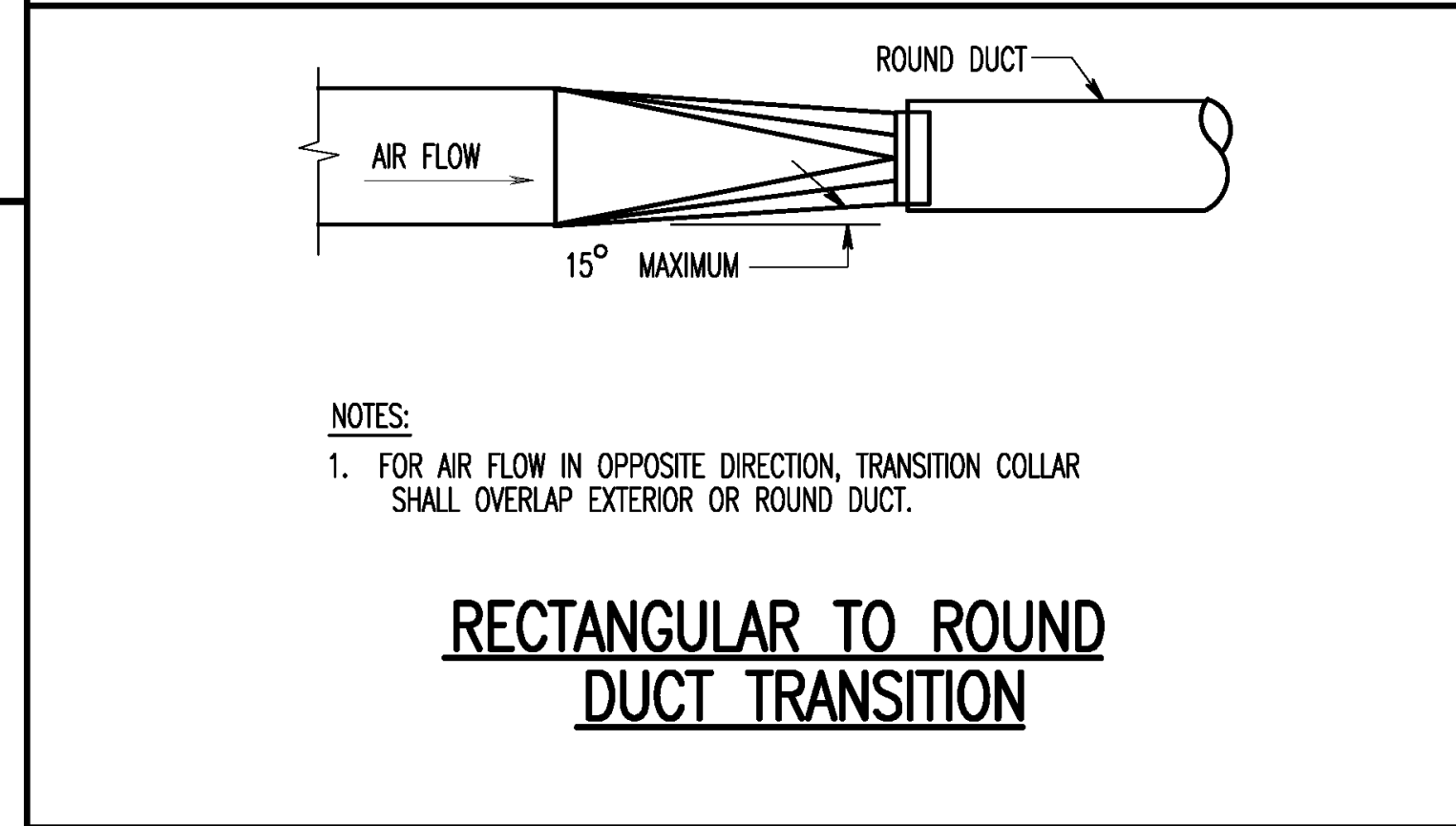
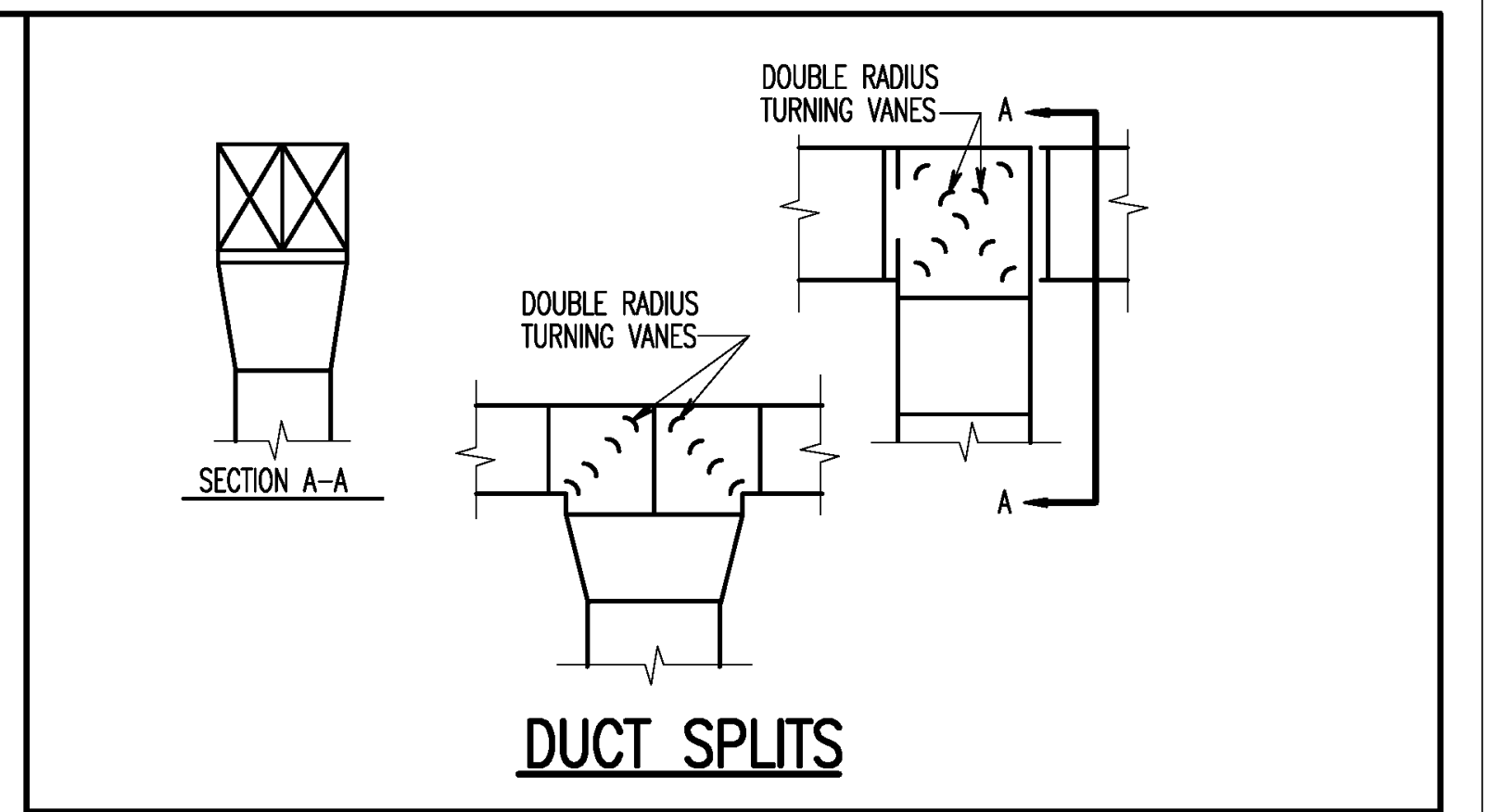
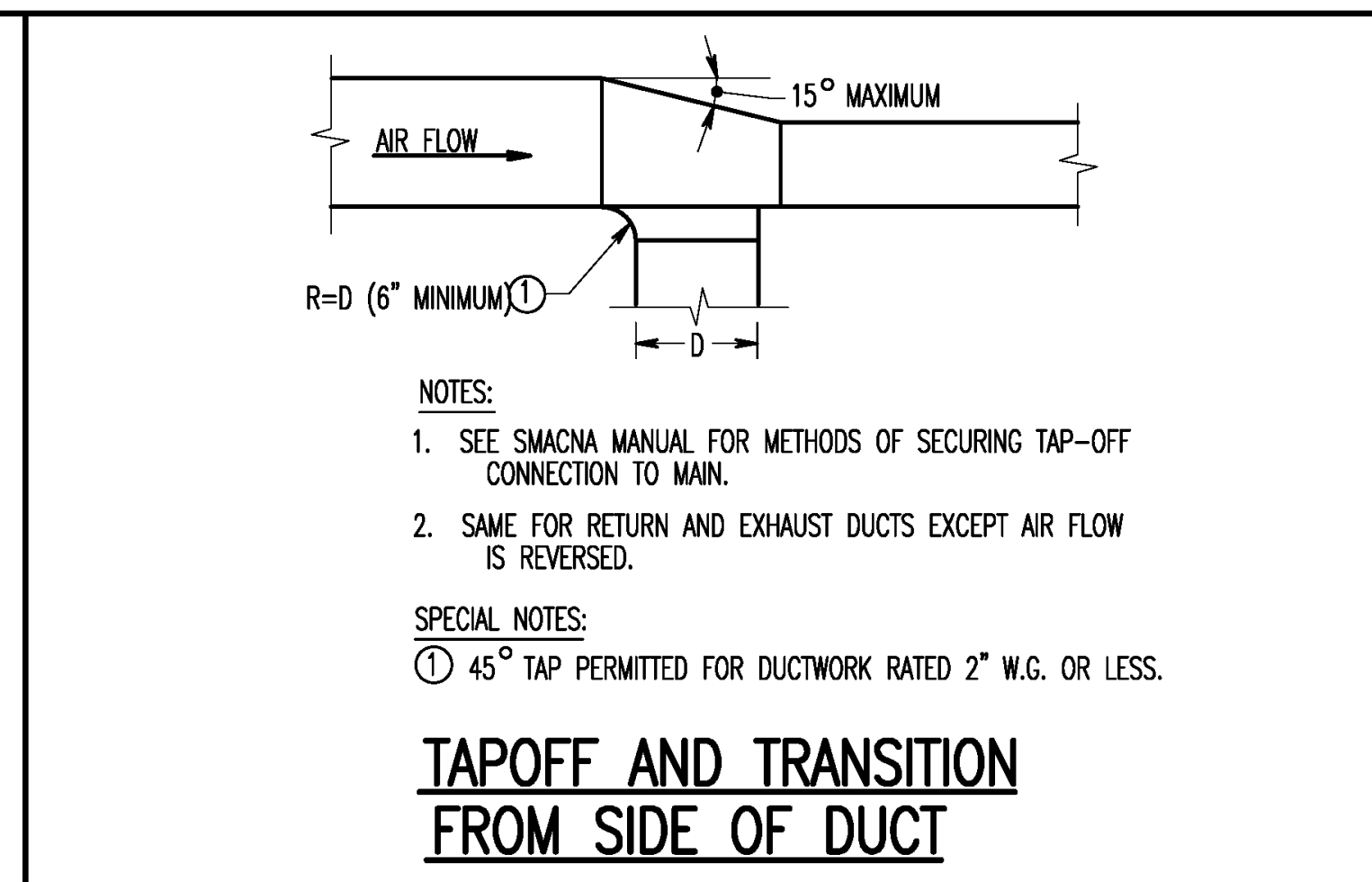
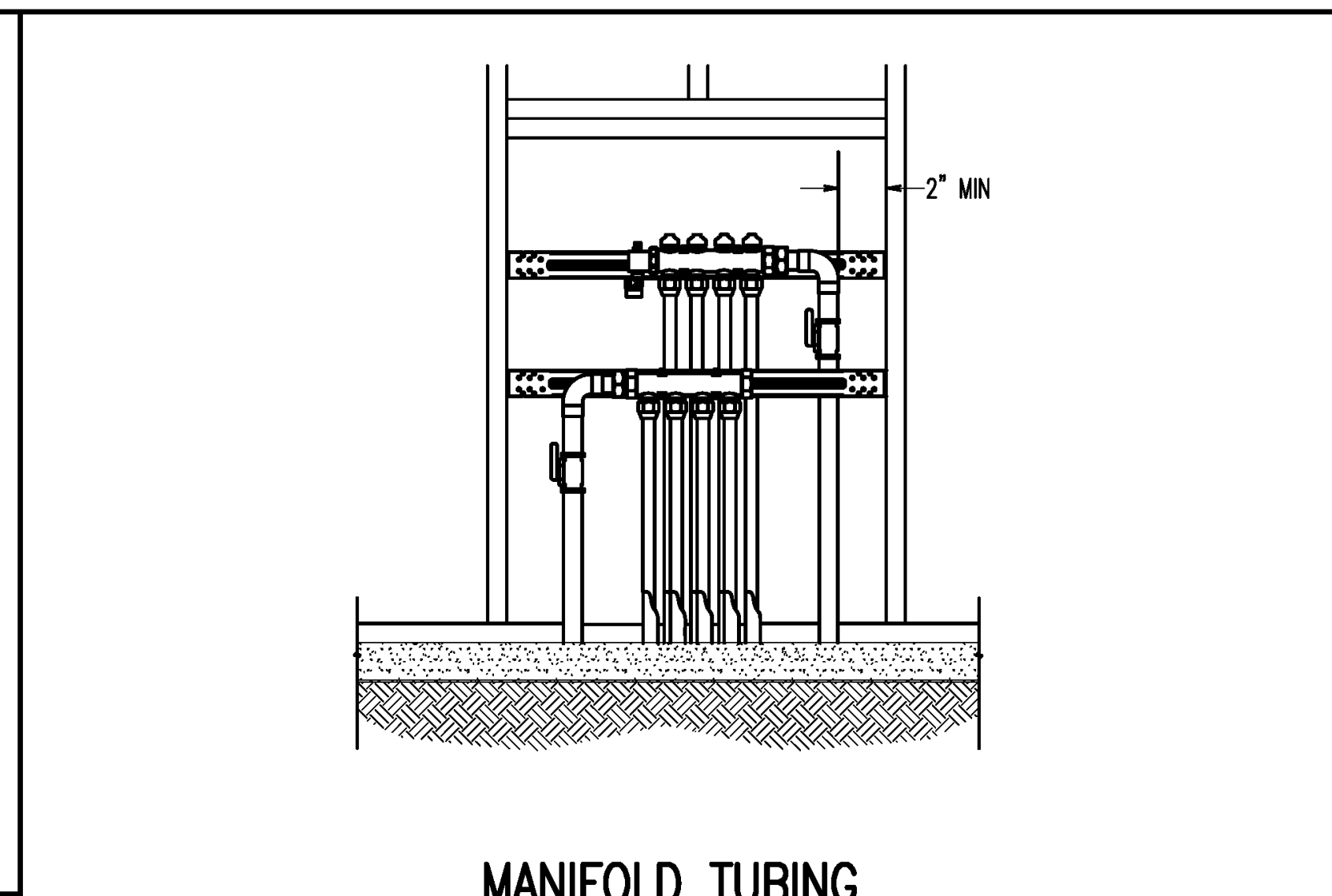
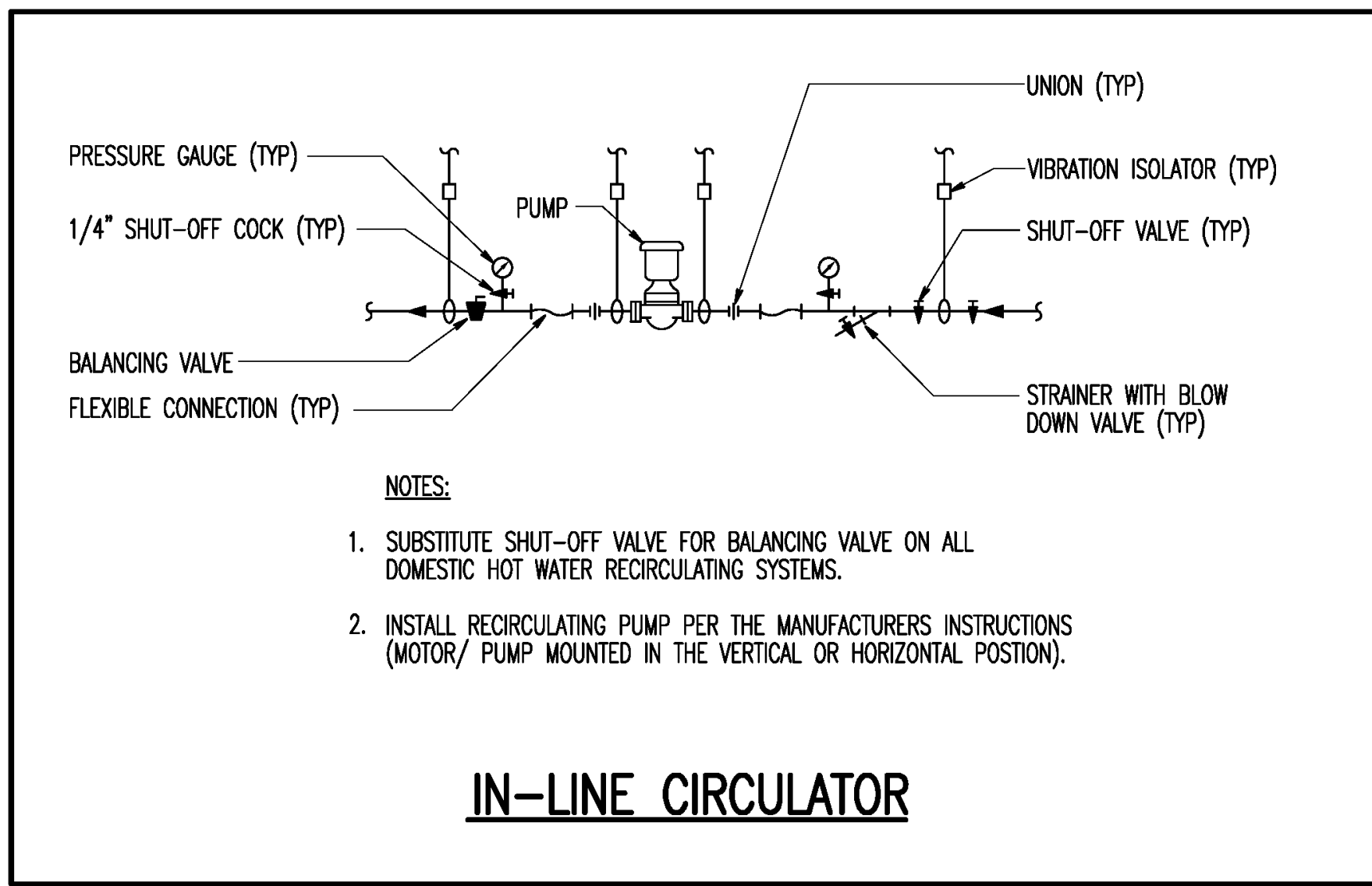
405B-EWH-1 ELECTRIC WATER HEATER ①														
UNIT NO	LOCATION	BUILDING SERVED	TYPE	STORAGE CAPACITY (GALLONS)	NO ELEMENTS	WATTS PER ELEMENTS	RECOVERY (GPH)	WATER		VOLTAGE	PHASE	HZ	APPROX WEIGHT (LBS)	NOTES
								EWT	LWT					
405B-EWH-1	MECHANICAL ROOM	405B	SOLAR BOOSTER	120	1	4500	21	90	120	208	3	60	350	ALT DEDUCT #4

- NOTES FOR ELECTRIC WATER HEATER
- ① UNIT SHALL BE ENERGY-STAR COMPLIANT

HVAC DESIGN DATA												
DESIGN CONDITIONS	SUMMER						WINTER			LOWEST AVERAGE ANNUAL DEWPOINT		
	TEMP		WET BULB TEMP		% HUMIDITY		TEMP		DEWPOINT TEMP		% HUMIDITY	
	°F	°C	°F	°C	%	°F	°C	°F	°C		%	
OUTDOOR DESIGN CONDITIONS	93.3	[34]	73.9	[23]	40	14.6	[-10]	1	[-17]	N/A	0.3	[-18]
INDOOR AREA DESIGN CONDITIONS												
BEDROOM	75	[24]	65	[18]	60	70	[21]	27	[-3]	20		
CRAWLSPACE	N/A	N/A	N/A	N/A	N/A	50	[10]	N/A	N/A	N/A		
KITCHEN	75	[24]	65	[18]	60	70	[21]	N/A	N/A	N/A		
GENERATOR ROOM	75	[24]	65	[18]	60	70	[21]	27	[-3]	20		
CONFERENCE ROOM	80	[27]	69	[21]	60	70	[21]	N/A	N/A	N/A		
TOILET	N/A	N/A	N/A	N/A	N/A	70	[21]	N/A	N/A	N/A		

ROOM AIR BALANCE SCHEDULE																							
ROOM NO	ROOM NAME	AIR COOLED CONDENSING UNIT	TERMINAL UNIT	INDIVIDUAL ROOM TEMP CONTROL	SUPPLY				RETURN OR EXHAUST				ROOM AIR FLOW		ROOM AIR BALANCE	NET INFILTRATION		NET EXFILTRATION		REMARKS			
					CFM	L/S	# OF AIR DEVICES	AIR DEVICE MARK	SUPPLY FAN	RETURN OR EXHAUST (R/E)	CFM	L/S	# OF AIR DEVICES	AIR DEVICE MARK		RETURN OR EXHAUST FAN	CV	VAV	CFM		[L/s]	CFM	[L/s]
405B-4	BEDROOM 1	405B-ACCU-1	FCU-405B-4	Y	230	[110]	1	SR-1	N/A	R	145	[88]	1	RR-1	N/A	X	POS	0	[ ]	85	[40]	----	
405B-4A	BATHROOM 1	N/A	N/A	N/A	0	[ ]	0	N/A	N/A	E	100	[47]	1	N/A	EF-1	X	NEG	100	[47]	0	[ ]	----	
405B-5	BEDROOM 5	405B-ACCU-1	FCU-405B-5	Y	210	[99]	1	SR-1	N/A	R	125	[59]	1	RR-1	N/A	X	POS	0	[ ]	85	[40]	----	
405B-5A	BATHROOM 5	N/A	N/A	N/A	0	[ ]	0	N/A	N/A	E	100	[47]	1	N/A	EF-5	X	NEG	100	[47]	0	[ ]	----	
405B-6	TOILET	N/A	N/A	N/A	0	N/A	0	N/A	N/A	E	100	[47]	1	N/A	EF-6	X	NEG	100	[47]	0	[ ]	----	
405B-8	BEDROOM 4	405B-ACCU-1	FCU-405B-8	Y	210	[99]	1	SR-1	N/A	R	125	[59]	1	RR-1	N/A	X	POS	0	[ ]	85	[40]	----	
405B-8A	BATHROOM 4	N/A	N/A	N/A	0	N/A	0	N/A	N/A	E	100	[47]	1	N/A	EF-4	X	NEG	100	[47]	0	[ ]	----	
405B-9	BEDROOM 2	405B-ACCU-1	FCU-405B-9	Y	210	[99]	1	SR-1	N/A	R	125	[59]	1	RR-1	N/A	X	POS	0	[ ]	85	[40]	----	
405B-9A	BATHROOM 2	N/A	N/A	N/A	0	[ ]	0	N/A	N/A	E	100	[47]	1	N/A	EF-2	X	NEG	100	[47]	0	[ ]	----	
405B-10	BEDROOM 3	405B-ACCU-1	FCU-405B-10	Y	210	[99]	1	SR-1	N/A	R	125	[59]	1	RR-1	N/A	X	POS	0	[ ]	85	[40]	----	
405B-10A	BATHROOM 3	N/A	N/A	N/A	0	[ ]	0	N/A	N/A	E	100	[47]	1	N/A	EF-3	X	NEG	100	[47]	0	[ ]	----	
405B-11	STORAGE ROOM	405B-ACCU-1	FCU-405B-11	Y	465	[220]	2	SR-1	N/A	R	380	[180]	2	RR-1	N/A	X	POS	0	[ ]	85	[40]	----	
405B-12	IT CLOSET	405B-ACCU-2	FCU-405B-12	Y	0	[ ]	0	N/A	N/A	R	0	[ ]	0	N/A	N/A	X	NEU	0	[ ]	0	[ ]	----	
405B-13	LIVING ROOM	405B-ACCU-1	FCU-405B-13	Y	370	[170]	2	SR-1	N/A	R	285	[130]	2	RR-1	N/A	X	POS	0	[ ]	85	[40]	----	
405B-14	KITCHEN	405B-ACCU-1	FCU-405B-14	Y	210	[99]	1	SR-1	N/A	R/E	125	[59]	1	RR-1	N/A	X	POS	0	[ ]	85	[40]	----	

FANS												
UNIT NO.	TYPE	LOCATION	SERVICE	CFM	SP	MOTOR				NOTES		
						BHP	HP	WATTS	PHASE VOLTS			
405B-SF-1	INLINE	CRAWLSPACE	OUTDOOR AIR	700	0.60	0.12	0.25	-	1	120		
405B-EF-1	CLG CAB	BATHROOM 1	EXHAUST AIR	100	0.10	-	-	80	1	120	①	
405B-EF-2	CLG CAB	BATHROOM 2	EXHAUST AIR	100	0.10	-	-	80	1	120	①	
405B-EF-3	CLG CAB	BATHROOM 3	EXHAUST AIR	100	0.25	-	-	80	1	120	①	
405B-EF-4	CLG CAB	BATHROOM 4	EXHAUST AIR	100	0.25	-	-	80	1	120	①	
405B-EF-5	CLG CAB	BATHROOM 5	EXHAUST AIR	100	0.25	-	-					



5" = 1'-0"  
 1 1/2" = 1'-0"  
 1" = 1'-0"  
 3/8" = 1'-0"  
 1/2" = 1'-0"  
 1/4" = 1'-0"  
 1/8" = 1'-0"

Revisions by the VA	09/19/2019
100% Construction Documents Submission	05/11/13
95% Construction Documents Submission	05/10/13
80% Design Development Submission	03/28/13
Revisions:	Date

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Stamp/Seal

Drawing Title  
**MECHANICAL DETAILS**

Approved: Project Director

Project Title  
**BUILDING 405B RENOVATION**

Location  
**MARTINSBURG, WV**

Date  
 05/31/2013

Checked  
 MTM

Drawn  
 ADL

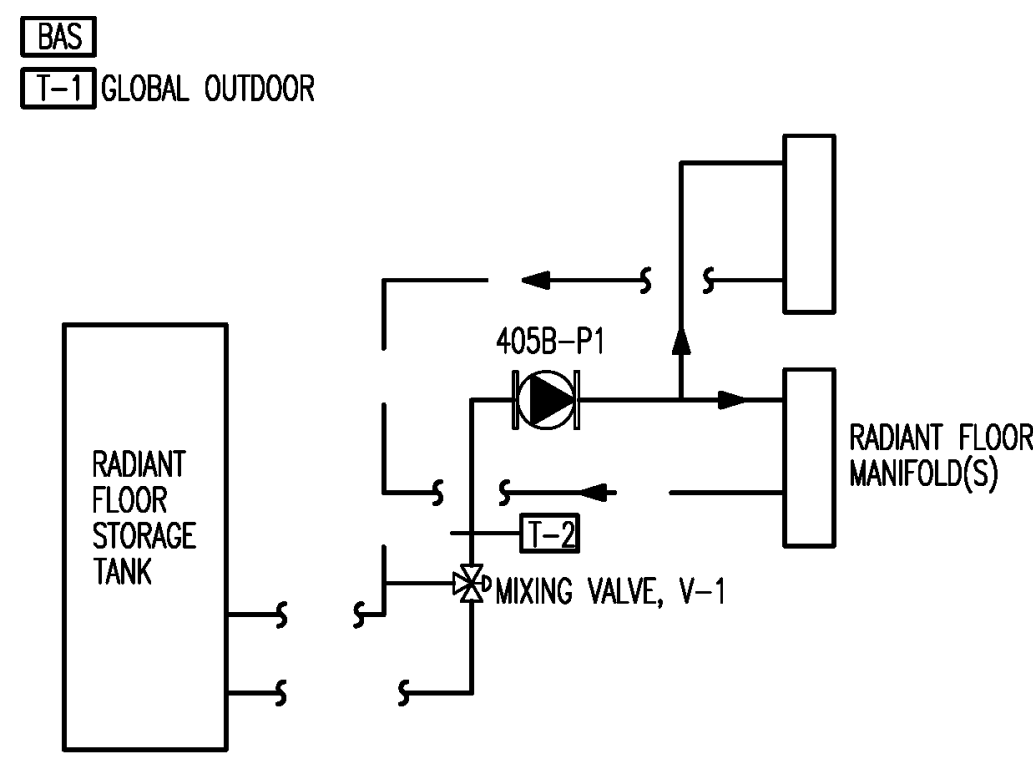
VA Project Number  
**613-13-115**

Building Number  
**405B**

Drawing Number  
**MH301**

Office of Construction and Facilities Management  
 Department of Veterans Affairs





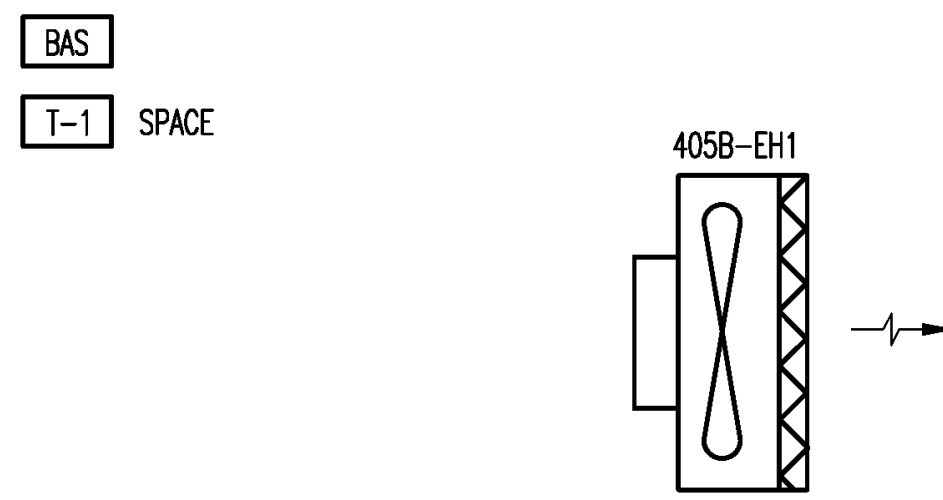
**RADIANT FLOOR SYSTEM**

ALTERNATE DEDUCT #4

1. WHEN TEMPERATURE AT T-1 IS ABOVE 50 DEG F (ADJUSTABLE), 405B-P1 AND RADIANT FLOOR STORAGE TANK SHALL BE DE-ENERGIZED.
2. WHEN TEMPERATURE AT T-1 IS BELOW 50 DEG F (ADJ.) 405B-P1 AND RADIANT FLOOR STORAGE TANK SHALL BE ENERGIZED.
3. RADIANT FLOOR STORAGE TANK SHALL, THROUGH INTERNAL AQUASTAT, MAINTAIN 110 DEG F.
4. TEMPERATURE SENSOR, T-2, SHALL MODULATE MIXING VALVE, V-1, TO MAINTAIN 105 DEG F.

**INPUT/OUTPUT SUMMARY**

SYSTEM	GRAPHIC	INDICATION			ALARM			CONTROL			REMARKS					
		STATUS	TEMPERATURE	DIFFERENTIAL PRESSURE	POSITION	HERTZ	STATUS	HIGH	CRITICAL	MAINTENANCE		PROGRAM S/S	ON-OFF-AUTO	MODULATE	MAX / MIN	OPEN / CLOSE
120 GAL WATER HEATER	X															405B-EWH1
PUMP							X			X	X					405B-P1

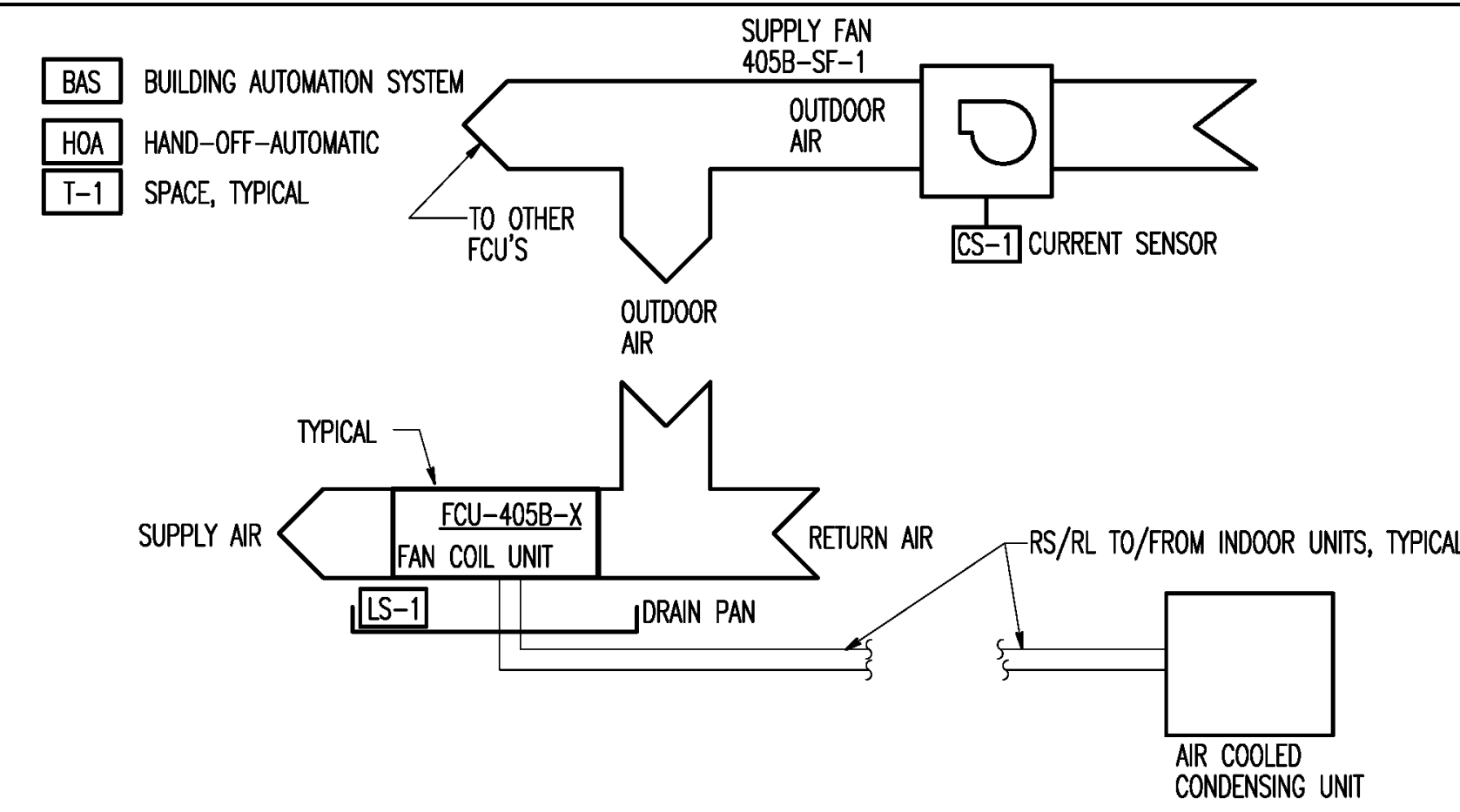


**ELECTRIC UNIT HEATER**

1. SPACE TEMPERATURE SENSOR SHALL ENERGIZE FAN AND ELECTRIC COIL, THROUGH MANUFACTURER'S SUPPLIED CONTROLS, TO MAINTAIN 50 DEG F. (ADJUSTABLE)

**INPUT/OUTPUT SUMMARY**

SYSTEM	GRAPHIC	INDICATION			ALARM			CONTROL			REMARKS					
		STATUS	TEMPERATURE	DIFFERENTIAL PRESSURE	POSITION	HERTZ	STATUS	HIGH	CRITICAL	MAINTENANCE		PROGRAM S/S	ON-OFF-AUTO	MODULATE	MAX / MIN	OPEN / CLOSE
UNIT HEATER	X															405B-EH1
TEMPERATURE			X							X	X					T-1



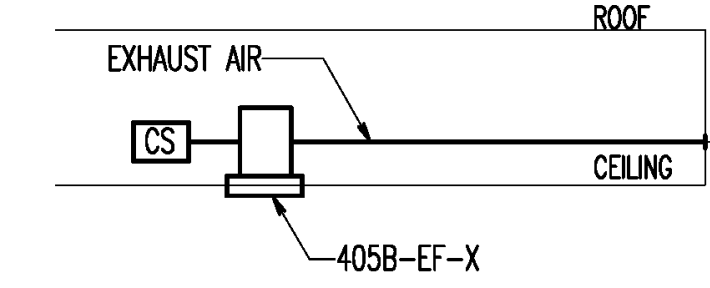
**VARIABLE REFRIGERANT FLOW - FAN COIL**

1. WHEN HAND-OFF-AUTOMATIC SWITCH (HOA) IS IN "HAND" OR "AUTOMATIC" MODE, SUPPLY FAN 405B-SF-1 AND ALL FAN COIL UNITS SHALL RUN CONTINUOUSLY. AIR COOLED CONDENSING UNIT SHALL MODULATE THROUGH MANUFACTURER'S SUPPLIED CONTROLS TO REJECT HEAT FROM THE REFRIGERANT SYSTEM.
2. SPACE THERMOSTAT, T-1, SHALL CONTROL ASSOCIATED FAN COIL UNIT, THROUGH MANUFACTURER'S SUPPLIED CONTROLS TO MAINTAIN SPACE TEMPERATURE, 75 DEG F (ADJUSTABLE).
3. THE BAS SHALL MONITOR POSITIONS OF HOA.
4. WHEN LIQUID SENSOR, LS-1, DETECTS FLUID, ITS RESPECTIVE FAN COIL UNIT SHALL STOP AND ALARM TO BAS.

**INPUT/OUTPUT SUMMARY**

SYSTEM	GRAPHIC	INDICATION			ALARM			CONTROL			REMARKS					
		STATUS	TEMPERATURE	DIFFERENTIAL PRESSURE	POSITION	HERTZ	STATUS	HIGH	CRITICAL	MAINTENANCE		PROGRAM S/S	ON-OFF-AUTO	MODULATE	MAX / MIN	OPEN / CLOSE
FAN COIL UNIT	X	X	X							X	X					FCU-405B-X
OA SUPPLY FAN	X	X	X							X	X					405B-SF-1, CS-1*
AIR COOLED CONDENSING UNIT	X	X										X				405B-ACCU-1
TEMPERATURE			X							X						T-1
LIQUID SENSOR																LS-1

\*PROVIDES NO CONTROL FUNCTION



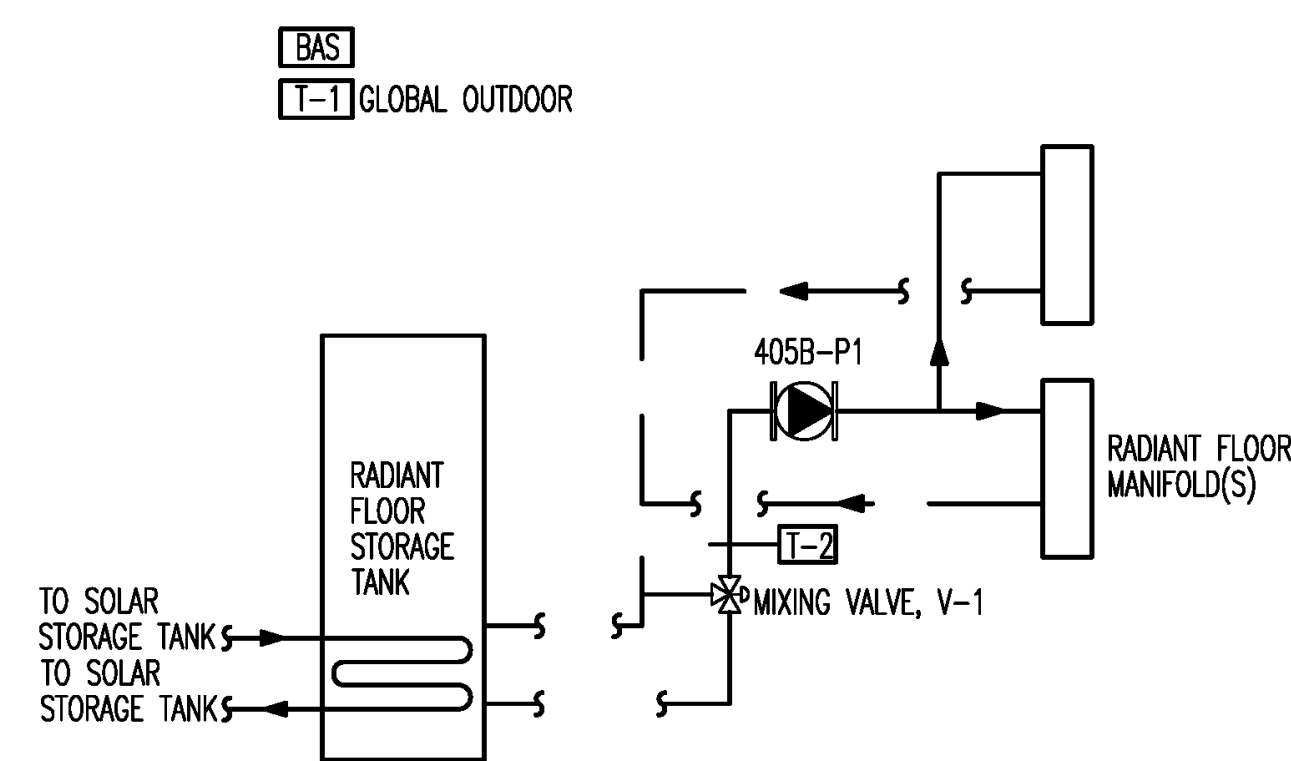
**EXHAUST FAN**

1. FAN SHALL BE STARTED AND STOPPED THROUGH MOTOR DISCONNECT SWITCH. SEE ELECTRICAL DRAWINGS FOR LOCATION.

**INPUT/OUTPUT SUMMARY**

SYSTEM	GRAPHIC	INDICATION			ALARM			CONTROL			REMARKS					
		STATUS	TEMPERATURE	DIFFERENTIAL PRESSURE	POSITION	HERTZ	STATUS	HIGH	CRITICAL	MAINTENANCE		PROGRAM S/S	ON-OFF-AUTO	MODULATE	MAX / MIN	OPEN / CLOSE
EXHAUST FANS	X	X								X						CS*

\*PROVIDES NO CONTROL FUNCTION



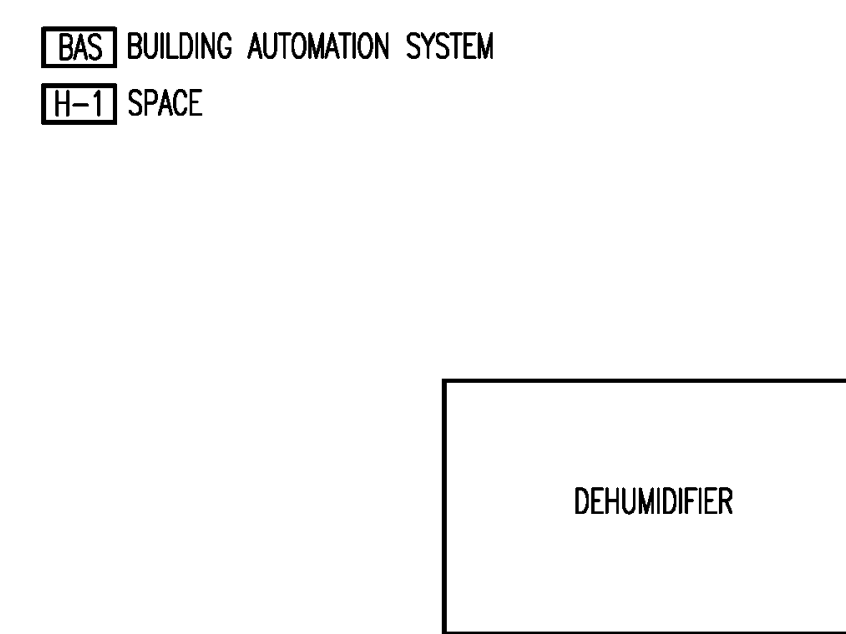
**RADIANT FLOOR SYSTEM**

BASE BID & ALTERNATE DEDUCT #3

1. WHEN TEMPERATURE AT T-1 IS ABOVE 50 DEG F (ADJUSTABLE), 405B-P1 AND RADIANT FLOOR STORAGE TANK SHALL BE DE-ENERGIZED.
2. WHEN TEMPERATURE AT T-1 IS BELOW 50 DEG F (ADJ.) 405B-P1 AND RADIANT FLOOR STORAGE TANK SHALL BE ENERGIZED.
3. RADIANT FLOOR STORAGE TANK SHALL, THROUGH SOLAR MANUFACTURER'S SUPPLIED CONTROLS, MAINTAIN 110 DEG F.
4. TEMPERATURE SENSOR, T-2, SHALL MODULATE MIXING VALVE, V-1, TO MAINTAIN 105 DEG F.

**INPUT/OUTPUT SUMMARY**

SYSTEM	GRAPHIC	INDICATION			ALARM			CONTROL			REMARKS					
		STATUS	TEMPERATURE	DIFFERENTIAL PRESSURE	POSITION	HERTZ	STATUS	HIGH	CRITICAL	MAINTENANCE		PROGRAM S/S	ON-OFF-AUTO	MODULATE	MAX / MIN	OPEN / CLOSE
120 GAL WATER HEATER	X															405B-EWH1
PUMP							X			X	X					405B-P1

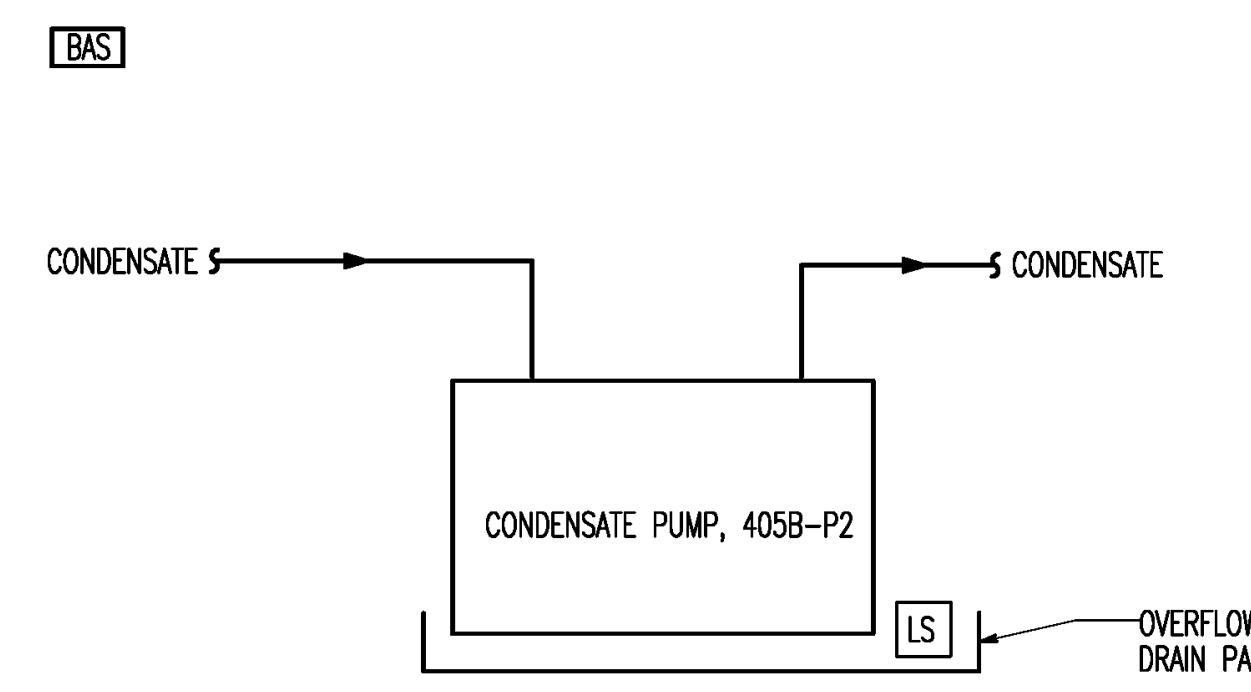


**DEHUMIDIFIER**

1. ON A RISE IN RELATIVE HUMIDITY, RH, AT SPACE HUMIDITY SENSOR, H-1, ABOVE 60% H-1 SHALL START DE-HUMIDIFIER AND THROUGH MANUFACTURER'S SUPPLIED CONTROLS, MAINTAIN 50% RH.
2. ON A FALL IN RH AT H-1 BELOW 45% RH, DE-HUMIDIFIER SHALL STOP.

**INPUT/OUTPUT SUMMARY**

SYSTEM	GRAPHIC	INDICATION			ALARM			CONTROL			REMARKS					
		STATUS	RELATIVE HUMIDITY	DIFFERENTIAL PRESSURE	POSITION	HERTZ	STATUS	HIGH	CRITICAL	MAINTENANCE		PROGRAM S/S	ON-OFF-AUTO	MODULATE	MAX / MIN	OPEN / CLOSE
DEHUMIDIFIER	X															405B-DH1
HUMIDITY SENSOR			X							X	X					H-1

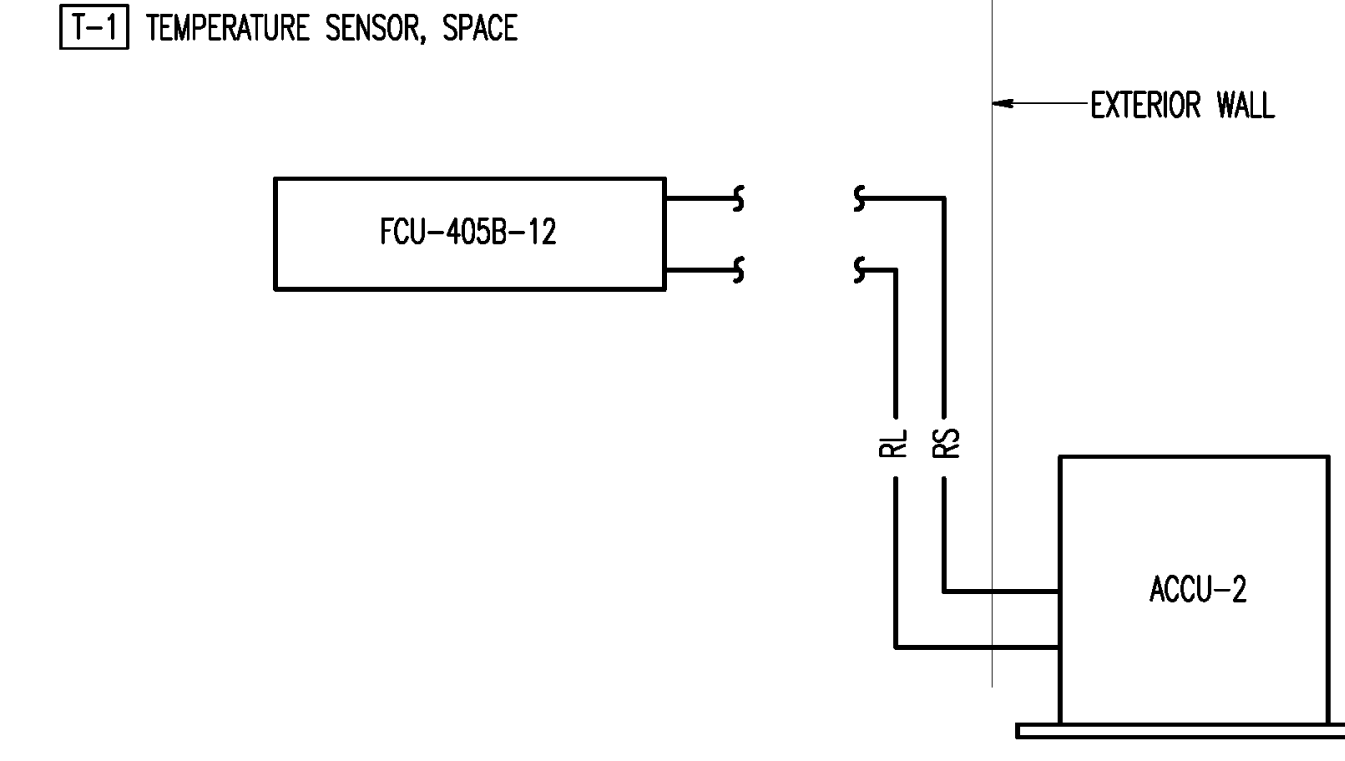


**CONDENSATE PUMP W/ OVERFLOW DRAIN PAN**

1. LIQUID SENSOR, LS, SHALL INITIATE A LOCAL AUDIBLE ALARM AND ALARM TO BAS UPON DETECTION OF LIQUID.

**INPUT/OUTPUT SUMMARY**

SYSTEM	GRAPHIC	INDICATION			ALARM			CONTROL			REMARKS					
		STATUS	TEMPERATURE	DIFFERENTIAL PRESSURE	POSITION	HERTZ	STATUS	HIGH	CRITICAL	MAINTENANCE		PROGRAM S/S	ON-OFF-AUTO	MODULATE	MAX / MIN	OPEN / CLOSE
CONDENSATE PUMP	X															405B-P2
LIQUID SENSOR										X						LS



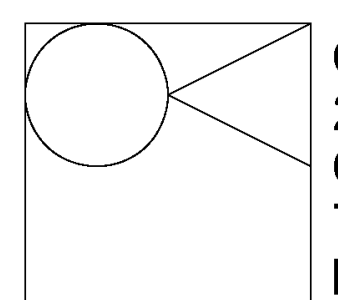
**ACCU-2/FCU-405B-12**

1. OUTDOOR AIR COOLED CONDENSING UNIT, 405B-ACCU-2, SHALL MODULATE THROUGH MANUFACTURER'S SUPPLIED CONTROLS TO REJECT HEAT FROM REFRIGERANT SYSTEM.
2. SPACE THERMOSTAT, T-1, SHALL CONTROL FAN COIL UNIT THROUGH MANUFACTURER'S SUPPLIED CONTROLS, TO MAINTAIN 75 DEG F (ADJUSTABLE).

**INPUT/OUTPUT SUMMARY**

SYSTEM	GRAPHIC	INDICATION			ALARM			CONTROL			REMARKS					
		STATUS	TEMPERATURE	DIFFERENTIAL PRESSURE	POSITION	HERTZ	STATUS	HIGH	CRITICAL	MAINTENANCE		PROGRAM S/S	ON-OFF-AUTO	MODULATE	MAX / MIN	OPEN / CLOSE
AIR COOLED CONDENSING UNIT	X	X								X	X					405B-ACCU-2
FAN COIL UNIT	X									X	X					FCU-405B-12
TEMPERATURE			X													T-1

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Stamp/Seal

Drawing Title

**AUTOMATIC CONTROLS**

Approved: Project Director

Project Title

**BUILDING 405B RENOVATION**

Location

**MARTINSBURG, WV**

Date

05/31/2013

Checked

MTM

Drawn

ADL

VA Project Number

613-13-115

Building Number

405B

Drawing Number

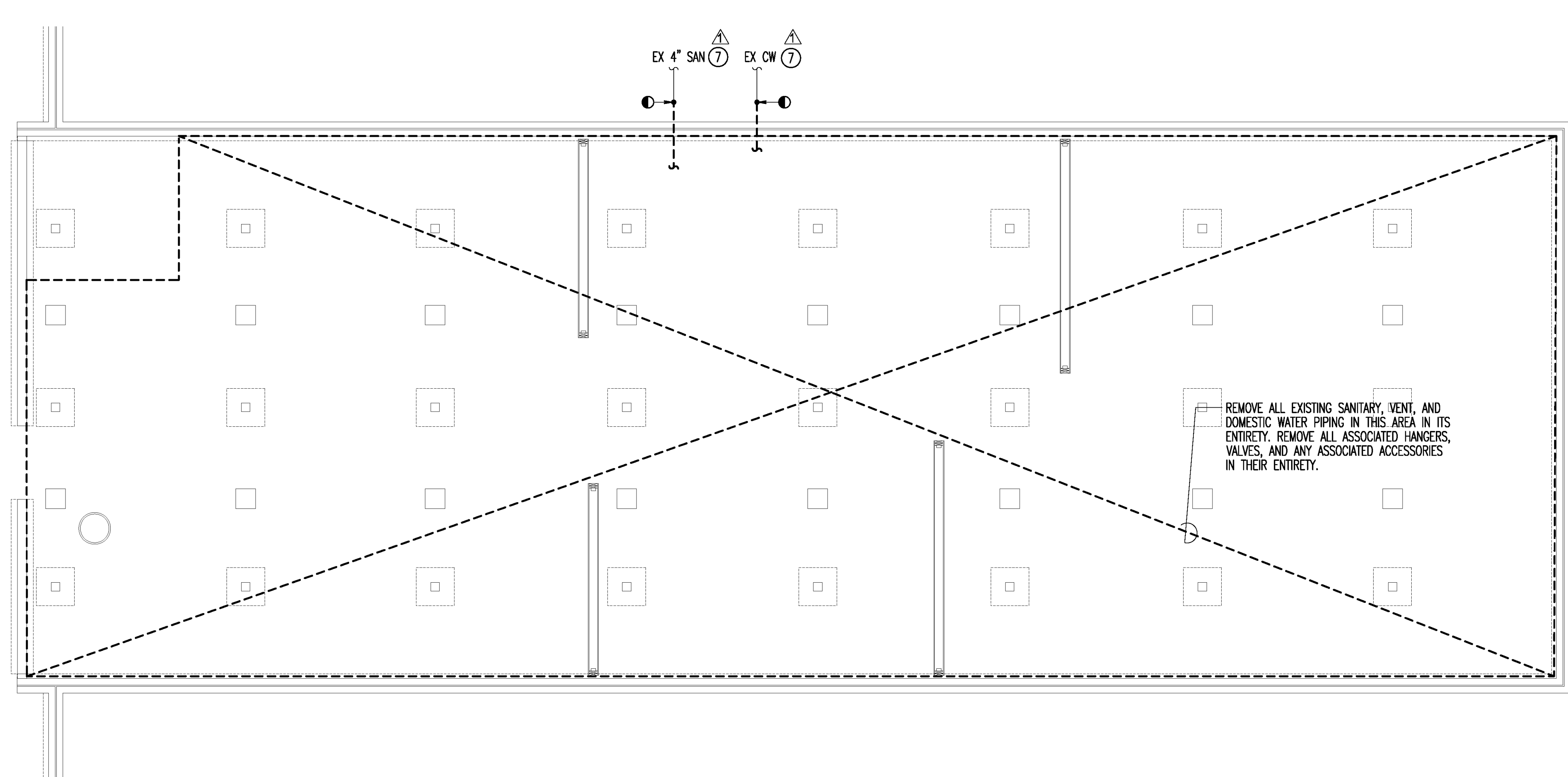
**MH401**

**Office of Construction and Facilities Management**

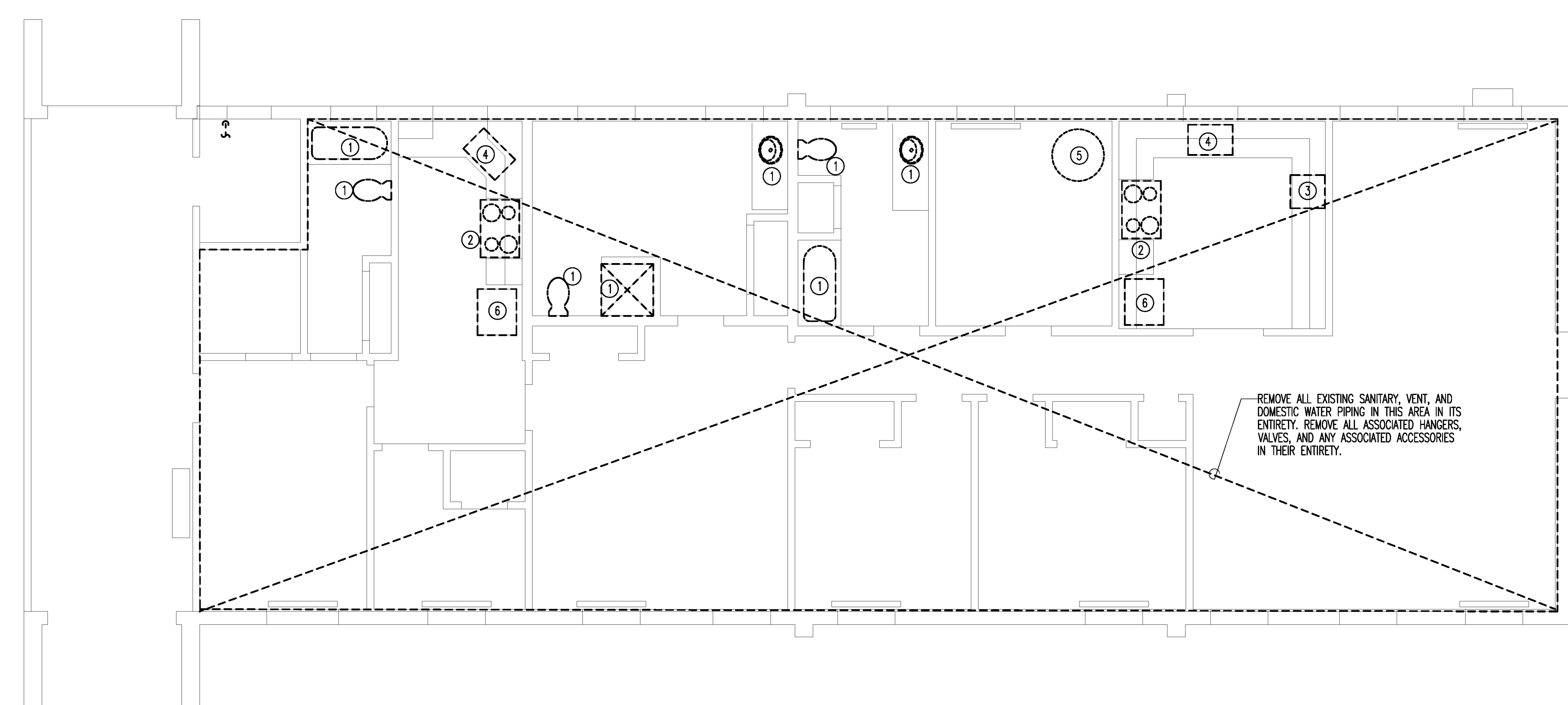


Revisions by the VA	Date
100% Construction Documents Submission	09/19/2013
95% Construction Documents Submission	05/13/13
80% Design Development Submission	02/28/13
Revisions:	Date

6"  
3" = 1'-0"  
1'  
1 1/2" = 1'-0"  
6"  
1" = 1'-0"  
6"  
3/4" = 1'-0"  
4"  
1/2" = 1'-0"  
4"  
3/8" = 1'-0"  
8"  
1/4" = 1'-0"  
16"  
1/8" = 1'-0"  
4"

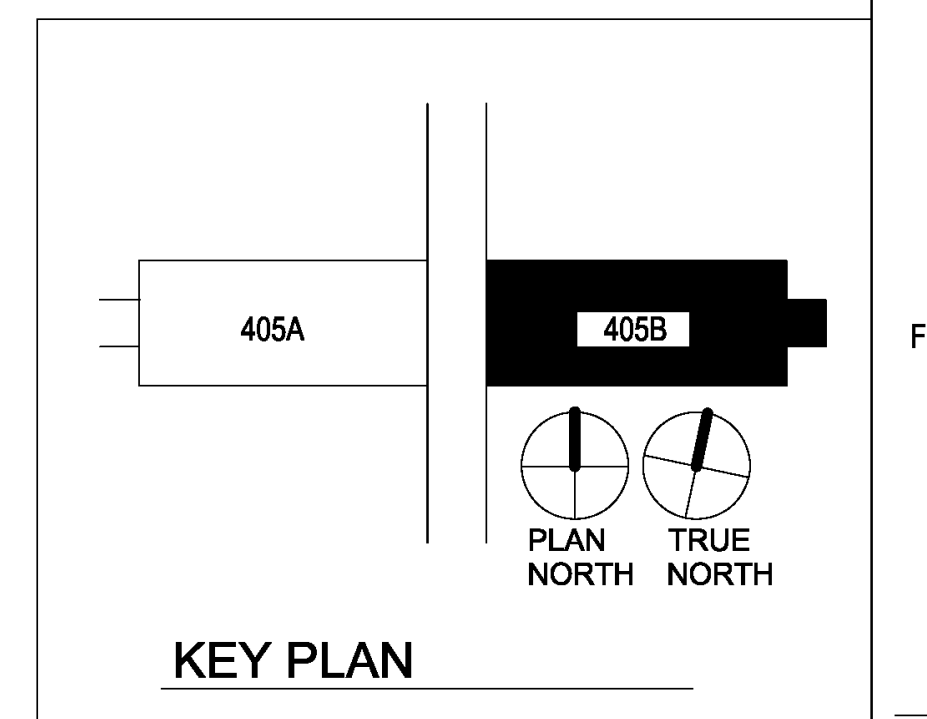


1 CRAWL SPACE PLAN - PLUMBING DEMOLITION  
SCALE: 1/4" = 1'-0"



2 FIRST FLOOR PLAN - PLUMBING DEMOLITION  
SCALE: 1/4" = 1'-0"

- DRAWING NOTES: (APPLICABLE TO THIS DRAWING ONLY)  
 1. EXISTING SHOWN WITH LIGHT WEIGHT LINE, ---  
 2. DEMOLITION WORK SHOWN WITH HEAVY WEIGHT, DASHED LINE, - - - -
- SPECIAL NOTES: (APPLICABLE TO THIS DRAWING ONLY)  
 ① REMOVE EXISTING PLUMBING FIXTURE. REMOVE ALL ASSOCIATED DOMESTIC WATER PIPING, SANITARY AND VENT PIPING, HANGERS, VALVES AND ANY ASSOCIATED ACCESSORIES.  
 ② REMOVE EXISTING RANGE AND TURN OVER TO THE VA. REMOVE ALL ASSOCIATED ACCESSORIES.  
 ③ REMOVE EXISTING DISHWASHER AND TURN OVER TO THE VA. REMOVE ALL ASSOCIATED DOMESTIC WATER PIPING, SANITARY AND VENT PIPING, HANGERS, VALVES AND ANY ASSOCIATED ACCESSORIES.  
 ④ REMOVE EXISTING SINK. REMOVE EXISTING GARBAGE DISPOSAL BENEATH SINK. REMOVE ALL ASSOCIATED DOMESTIC WATER PIPING, SANITARY AND VENT PIPING, HANGERS, VALVES AND ANY ASSOCIATED ACCESSORIES.  
 ⑤ REMOVE EXISTING DOMESTIC HOT WATER GENERATOR AND TURN OVER TO THE VA.  
 ⑥ REMOVE EXISTING REFRIGERATOR AND TURN OVER TO THE VA.  
 △⑦ REMOVE PIPE TO MAIN REPLACE WITH NEW



1/4" = 1'-0"  
0 2 4 8 12 FT

Revisions by the VA	09/19/2019
100% Construction Documents Submission	05/31/13
95% Construction Documents Submission	05/10/13
80% Design Development Submission	03/28/13
Revisions:	Date

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Stamp/Seal

Drawing Title  
**PLUMBING DEMOLITION**

Approved: Project Director

Project Title  
**BUILDING 405B RENOVATION**

Location  
**MARTINSBURG, WV**

Date  
 05/31/2013

Checked  
 MTM

Drawn  
 ADL

VA Project Number  
**613-13-115**

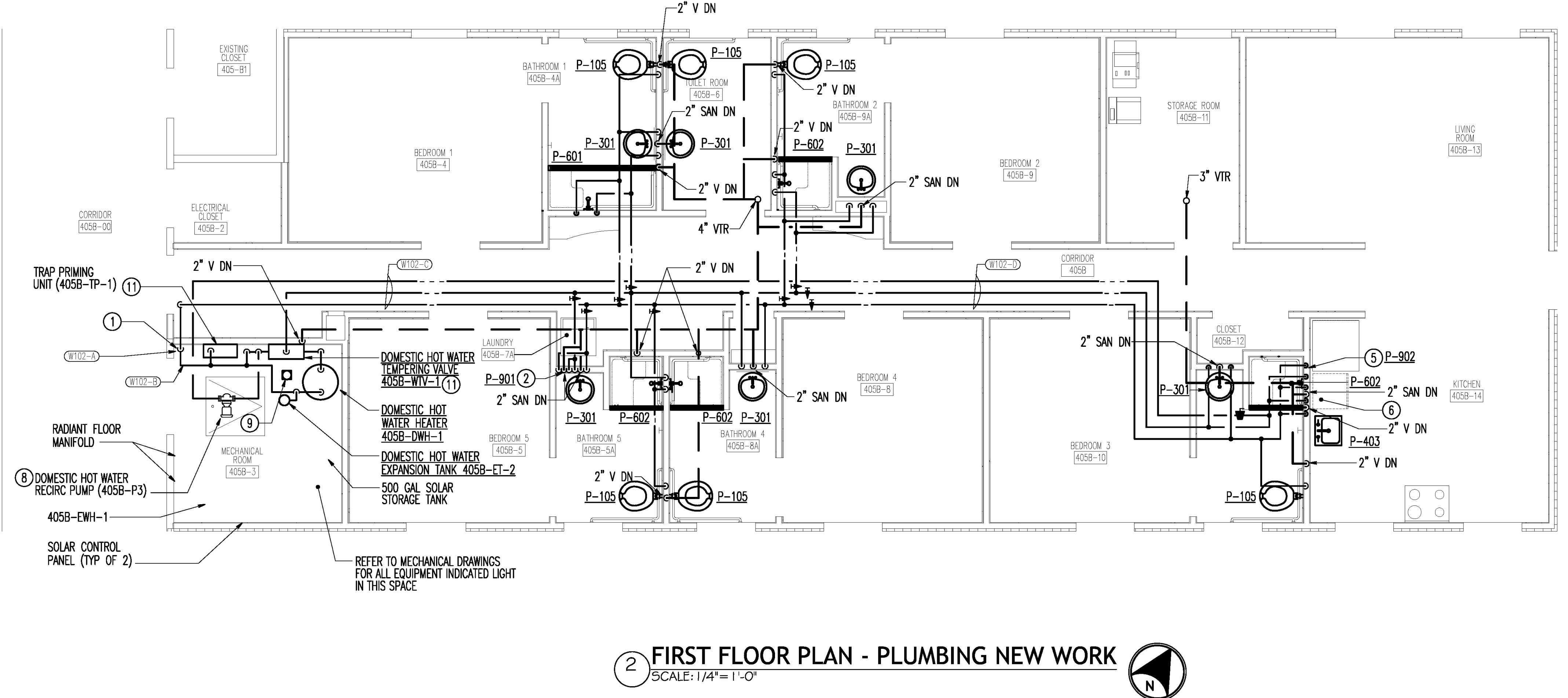
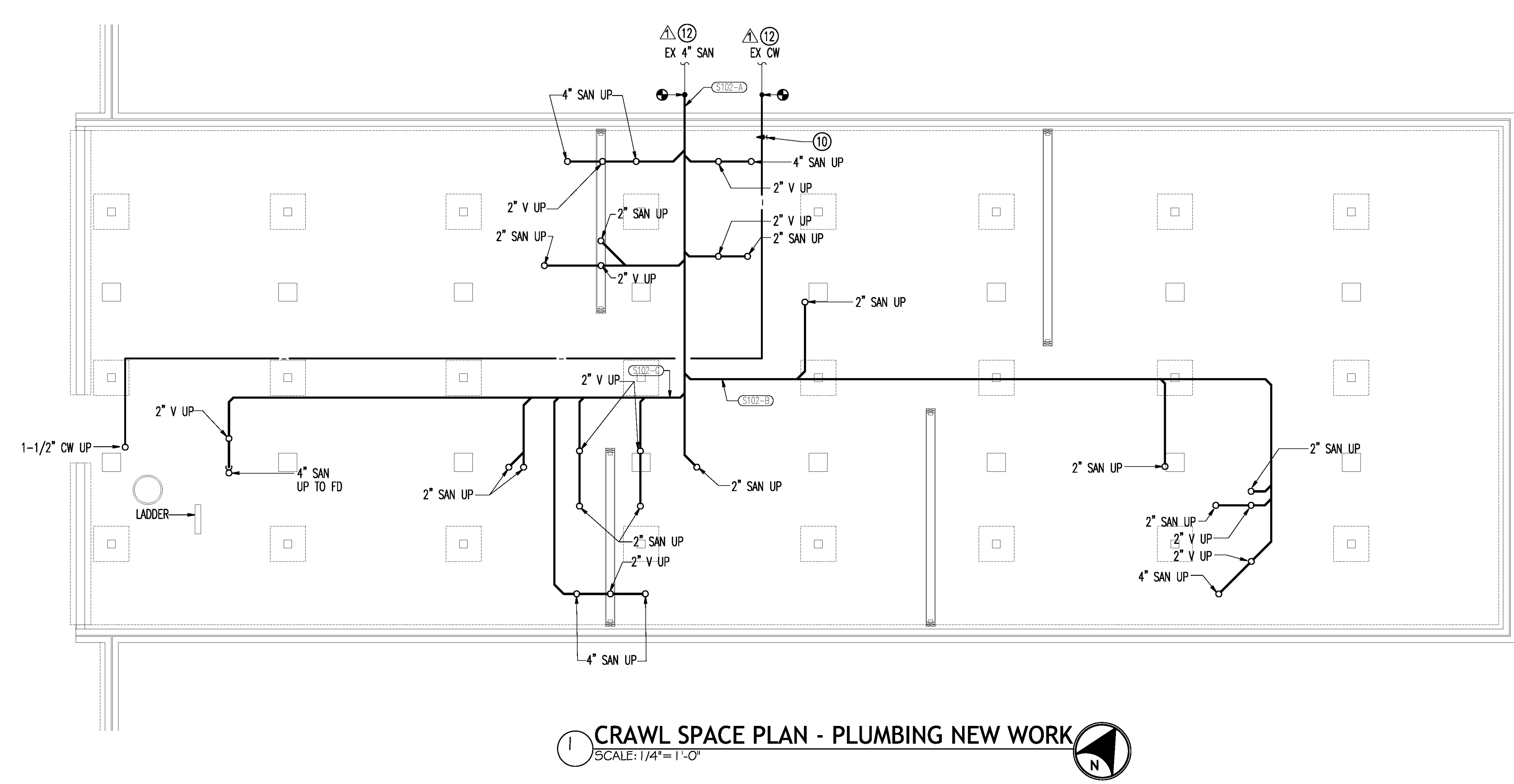
Building Number  
**405B**

Drawing Number  
**PL101**

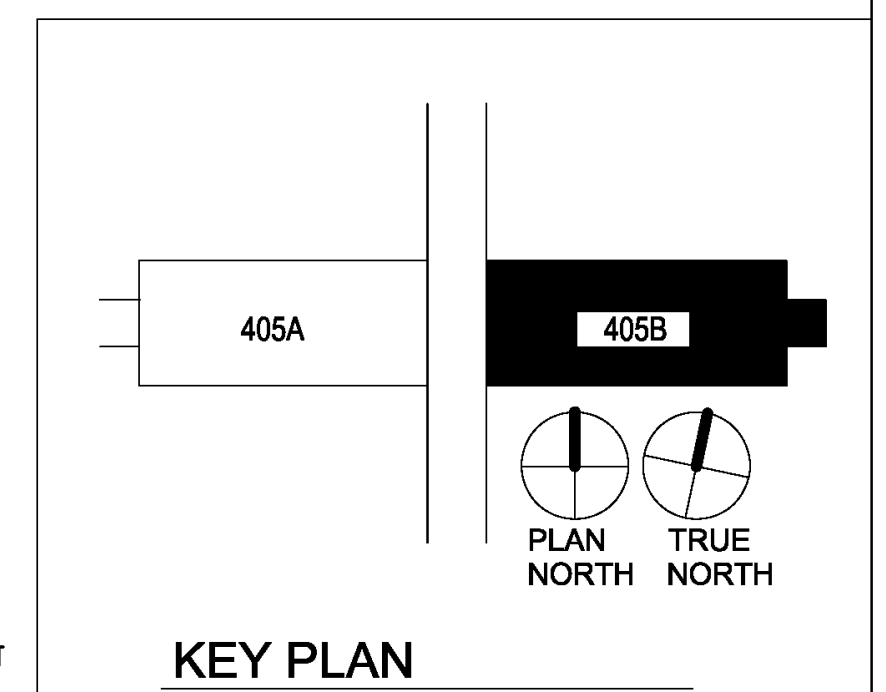
**Office of Construction and Facilities Management**

Department of Veterans Affairs

6"  
 3" = 1'-0"  
 1"  
 1 1/2" = 1'-0"  
 6"  
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 1"  
 3/8" = 1'-0"  
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 1"  
 1/4" = 1'-0"  
 6"  
 1"  
 1/8" = 1'-0"  
 6"  
 1"



- DRAWING NOTES:** (APPLICABLE TO THIS DRAWING ONLY)
1. NEW WORK SHOWN WITH HEAVY WEIGHT LINE, \_\_\_\_\_
  2. EXISTING SHOWN WITH LIGHT WEIGHT LINE, \_\_\_\_\_
- SPECIAL NOTES:** (APPLICABLE TO THIS DRAWING ONLY)
- ① 2-1/2" CW DN. PROVIDE ULTRASONIC WATER METER AND DOUBLE CHECK BACKFLOW PREVENTER IN VERTICAL. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
  - ② 1/2" CW/HW DN TO P-901. MOUNT BOTTOM OF P-901 AT 48" AFF. CONTRACTOR SHALL FIELD COORDINATE.
  - ③ 2" SAN DN.
  - ④ 2" V DN.
  - ⑤ 1/2" CW DN TO P-902. MOUNT BOTTOM OF REFRIGERATOR ICE MAKER BOX, 12" AFF. CONTRACTOR SHALL FIELD COORDINATE.
  - ⑥ PROVIDE 1/2" HW AND SHUT-OFF VALVE INSIDE KITCHEN SINK BASE CABINET AND EXTEND TO DISHWASHER AND P-403.
  - ⑦ 2" V UP.
  - ⑧ SUPPORT FROM ABOVE.
  - ⑨ 4" FD-1.
  - ⑩ PROVIDE READILY ACCESSIBLE SHUT-OFF VALVE WITH BLEED.
  - ⑪ MOUNT TOP OF PANEL 60 INCHES AFF.
- ⚠️ ⑫ PROVIDE NEW PIPE TO THE MAINS. ON SANITARY LINE PROVIDE CLEANOUT BEFORE TURN DOWN. ON WATER LINE PROVIDE SHUTOFF VALVE IN A VALVE BOX.  
 ⚠️ ⑬ ALL VENTS THROUGH THE ROOF SHALL BE 3" MIN. THEY MAY BE REDUCED TO 2" AT LEAST 12" BELOW THE ROOF INSULATION IF ALLOWED BY CODE.



1/4" = 1' - 0"

Revisions:	Date
Revisions by the VA	09/19/2019
100% Construction Documents Submission	06/31/13
95% Construction Documents Submission	05/10/13
80% Design Development Submission	03/28/13

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Stamp/Seal

Drawing Title  
**PLUMBING NEW WORK**

Approved: Project Director

Project Title  
**BUILDING 405B RENOVATION**

Location  
**MARTINSBURG, WV**

Date  
 05/31/2013

Checked  
 MTM

Drawn  
 ADL

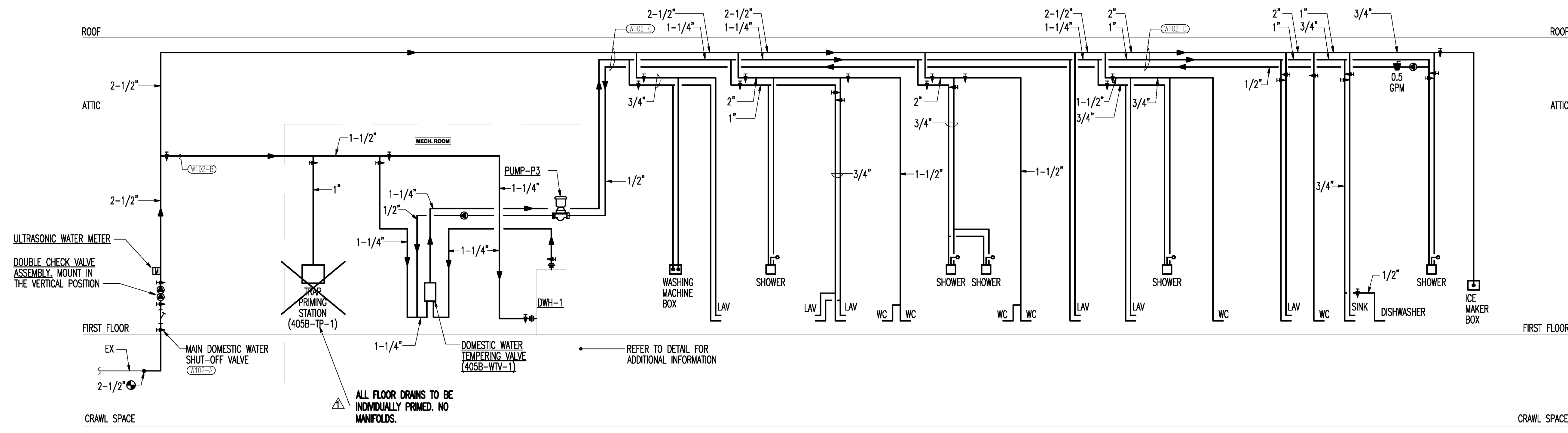
VA Project Number  
**613-13-115**

Building Number  
**405B**

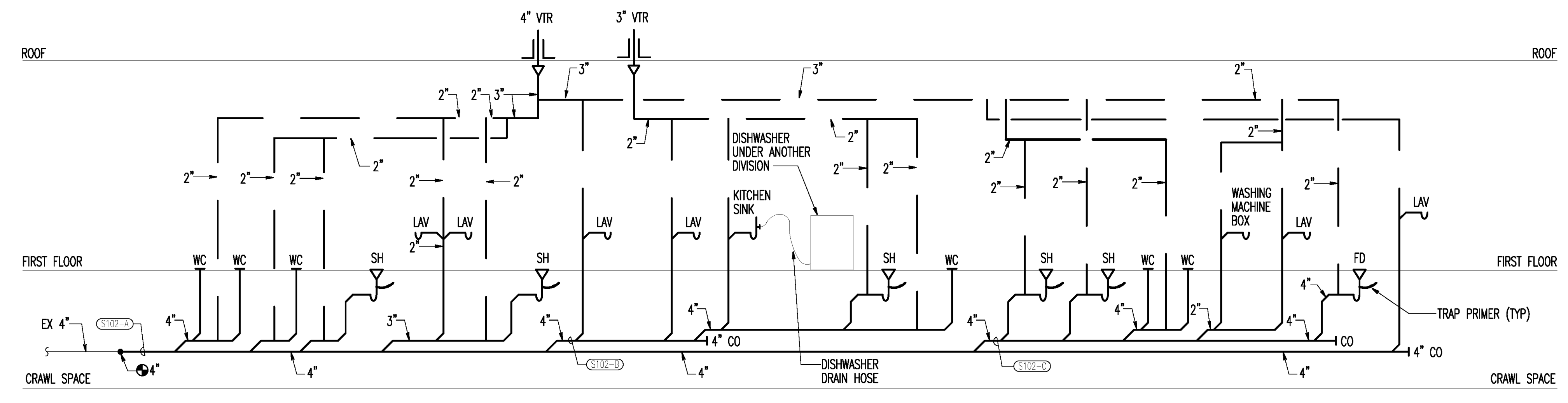
Drawing Number  
**PL102**

Office of Construction and Facilities Management

Department of Veterans Affairs



1 DOMESTIC WATER RISER DIAGRAM  
NOT TO SCALE



2 SANITARY AND VENT RISER DIAGRAM  
NOT TO SCALE

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Stamp/Seal

Drawing Title  
**PLUMBING RISERS**

Approved: Project Director

Project Title  
**BUILDING 405B  
RENOVATION**

Location  
**MARTINSBURG, WV**

Date  
05/31/2013

Checked  
MTM

Drawn  
ADL

VA Project Number  
**613-13-115**

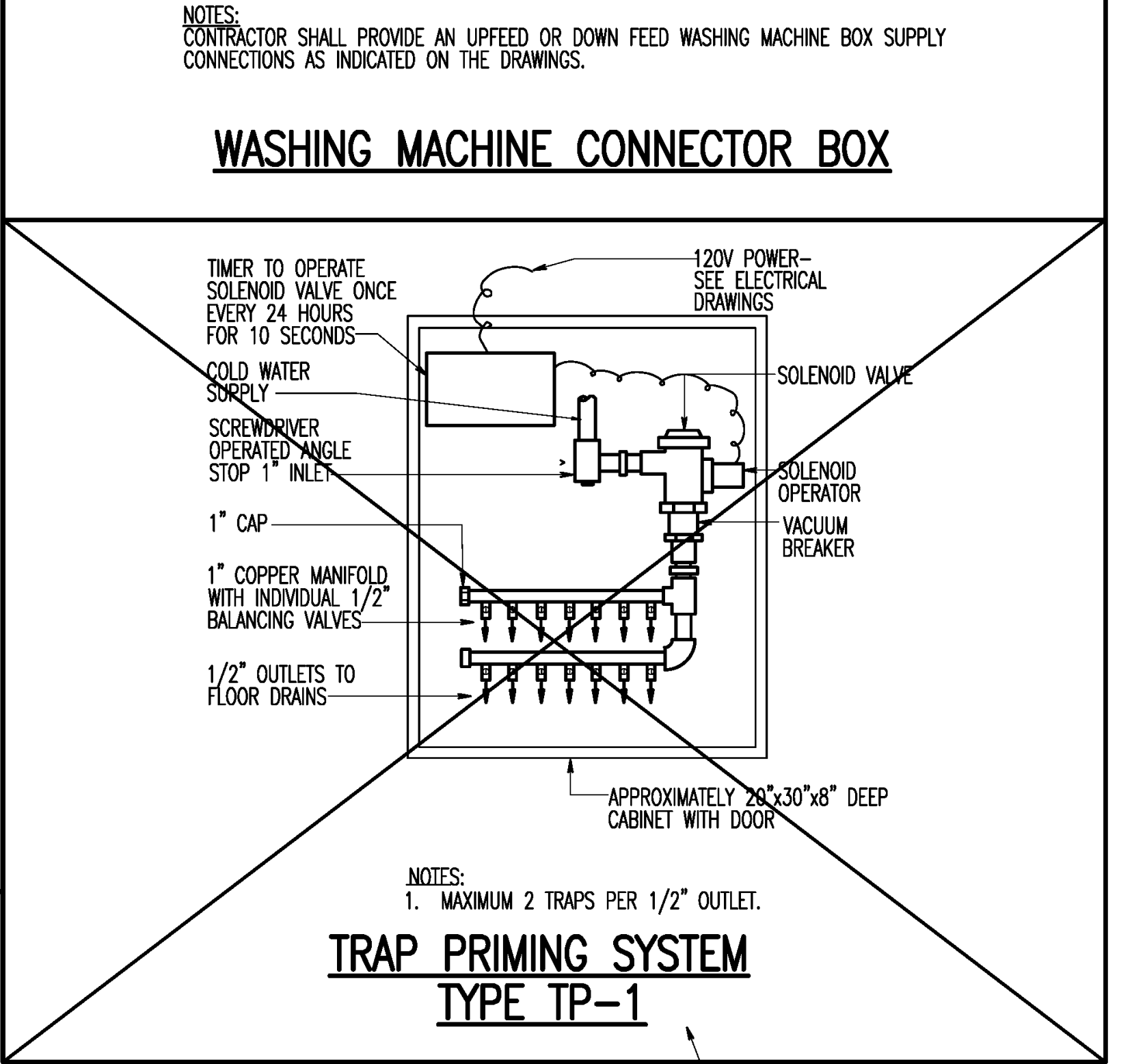
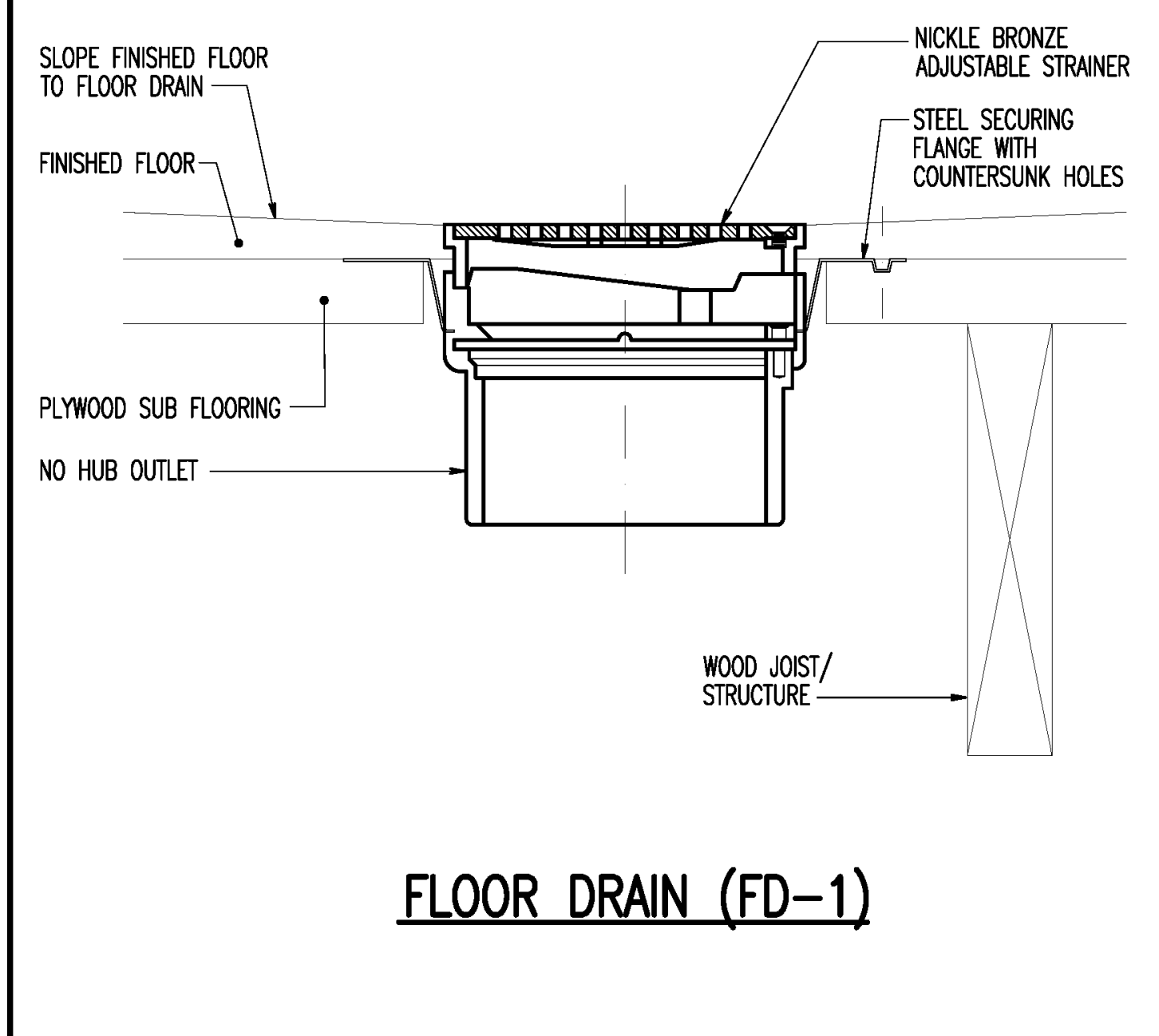
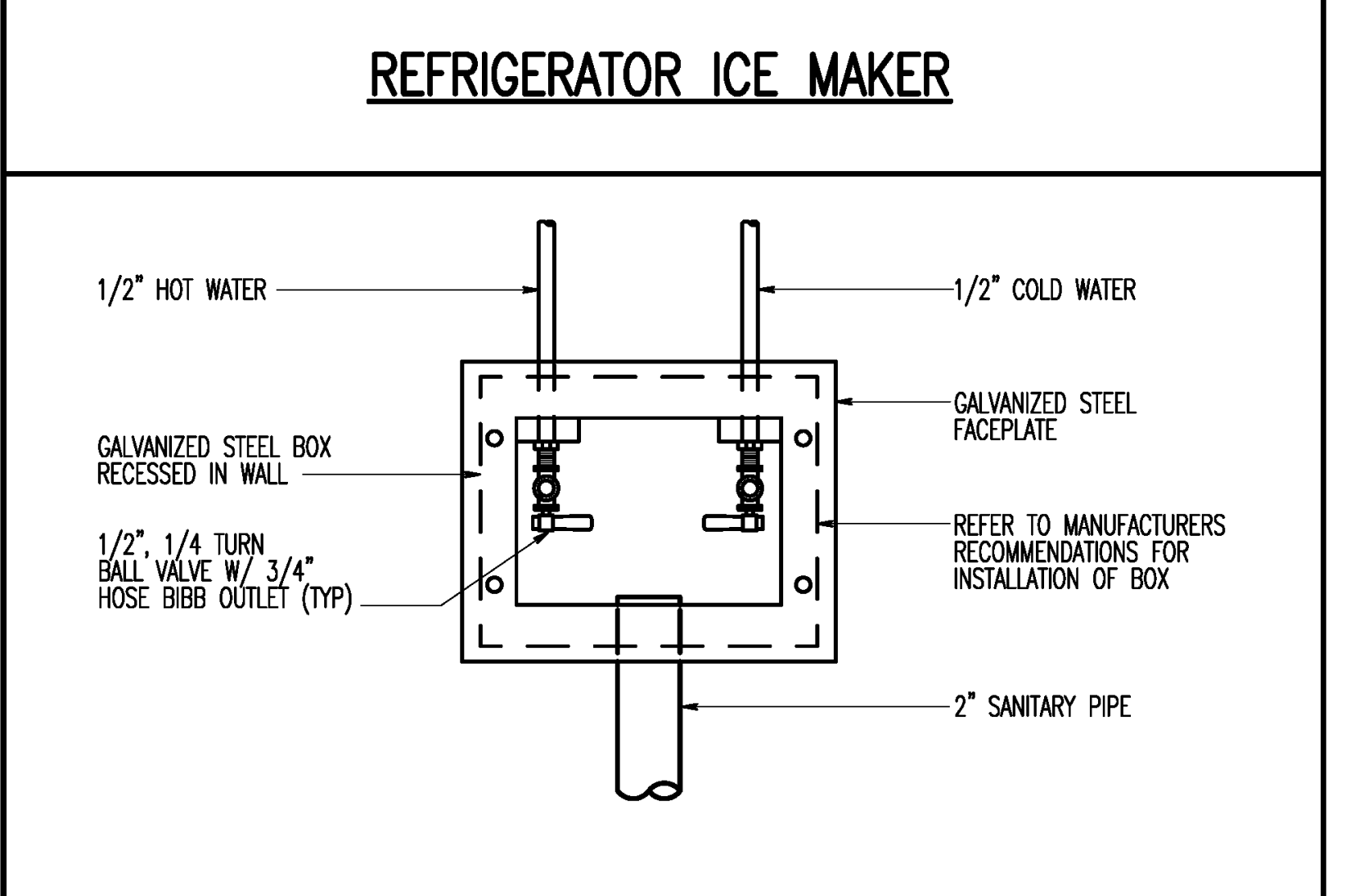
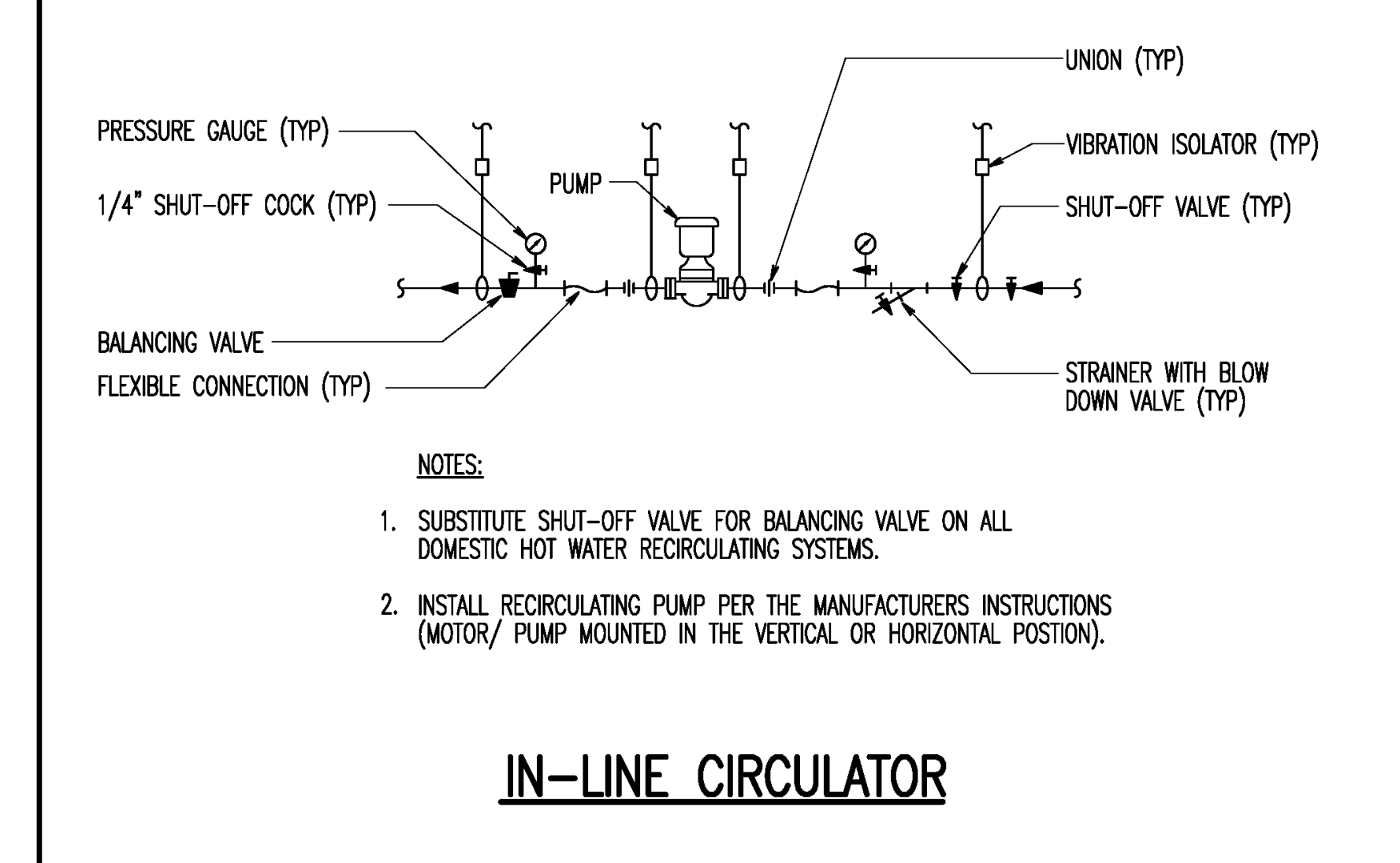
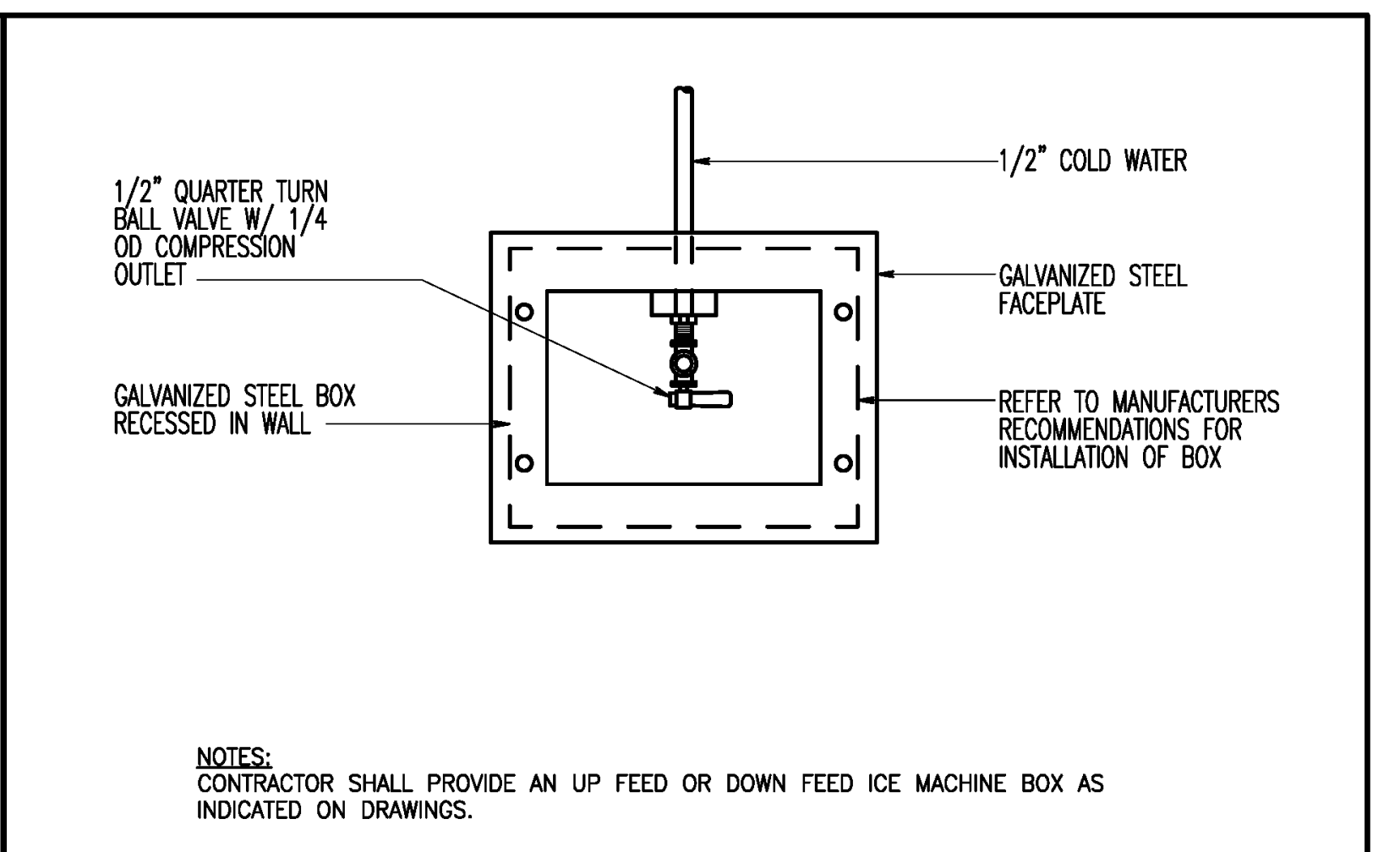
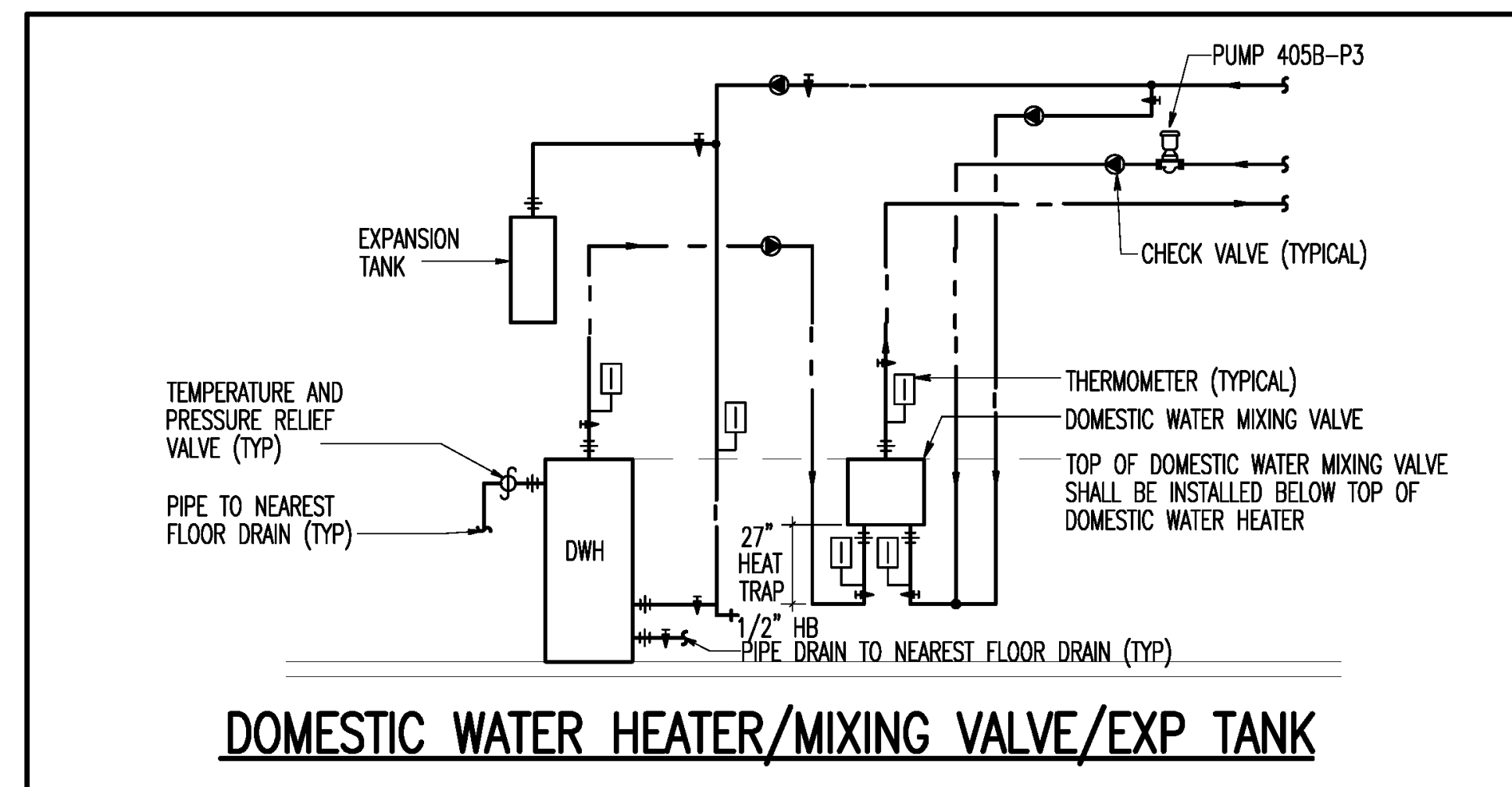
Building Number  
**405B**

Drawing Number  
**PL201**

Office of  
Construction  
and Facilities  
Management

Department of  
Veterans Affairs

Revisions by the VA	09/19/2019
100% Construction Documents Submission	05/11/13
95% Construction Documents Submission	05/10/13
80% Design Development Submission	03/28/13
Revisions:	Date



ALL FLOOR DRAINS TO BE INDIVIDUALLY PRIMED. NO MANIFOLDS.

Revisions:	Date
Revisions by the VA	09/19/2019
100% Construction Documents Submission	05/11/13
95% Construction Documents Submission	05/10/13
80% Design Development Submission	03/28/13

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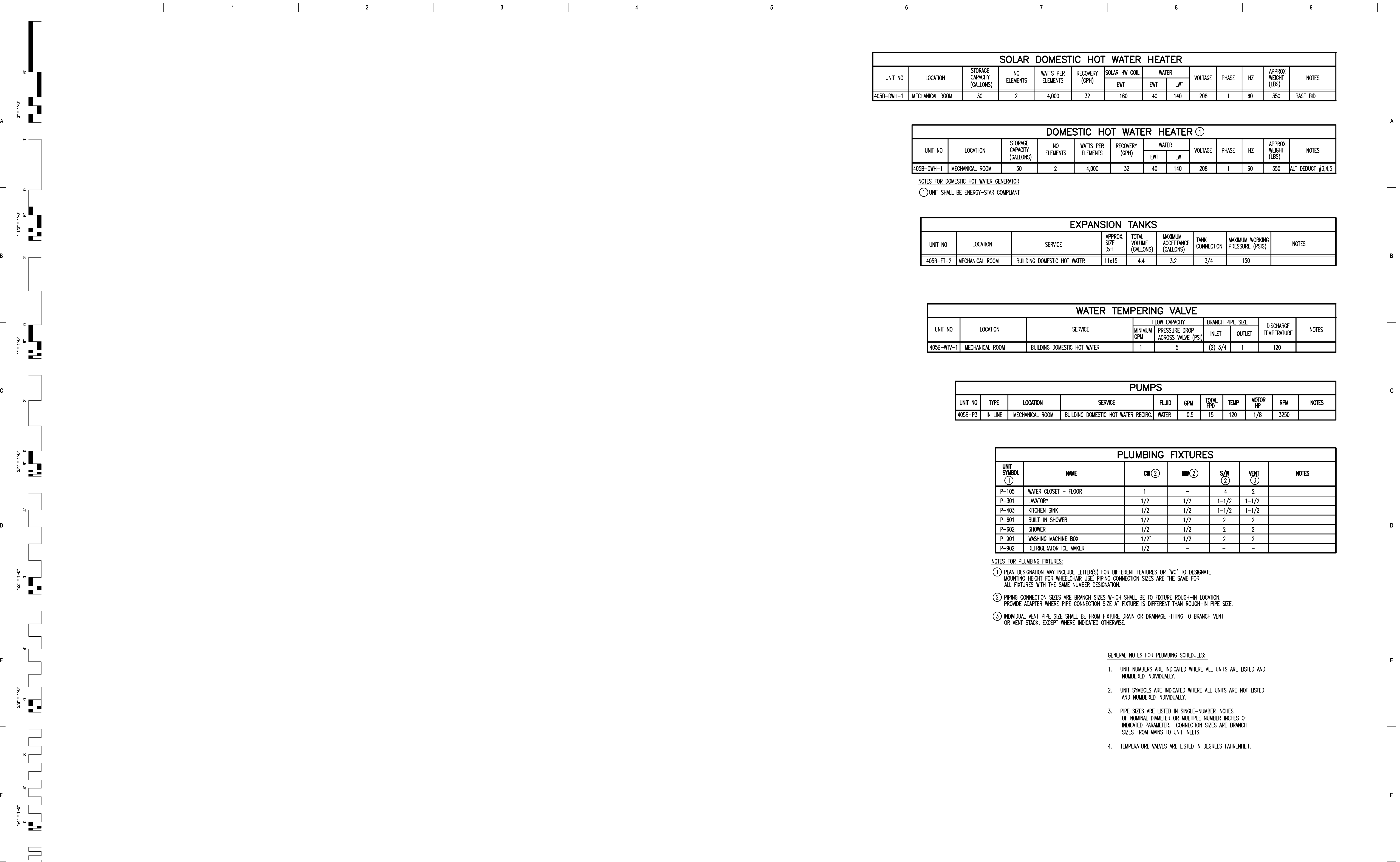
Stamp/Seal

Drawing Title  
**PLUMBING DETAILS**  
Approved: Project Director

Project Title  
**BUILDING 405B RENOVATION**  
Location  
**MARTINSBURG, WV**  
Date  
05/31/2013  
Checked  
MTM  
Drawn  
ADL

VA Project Number  
**613-13-115**  
Building Number  
**405B**  
Drawing Number  
**PL301**

Office of Construction and Facilities Management  
Department of Veterans Affairs



SOLAR DOMESTIC HOT WATER HEATER													
UNIT NO	LOCATION	STORAGE CAPACITY (GALLONS)	NO ELEMENTS	WATTS PER ELEMENTS	RECOVERY (GPH)	SOLAR HW COIL			VOLTAGE	PHASE	HZ	APPROX WEIGHT (LBS)	NOTES
						EWT	EWT	LWT					
405B-DWH-1	MECHANICAL ROOM	30	2	4,000	32	160	40	140	208	1	60	350	BASE BID

DOMESTIC HOT WATER HEATER ①													
UNIT NO	LOCATION	STORAGE CAPACITY (GALLONS)	NO ELEMENTS	WATTS PER ELEMENTS	RECOVERY (GPH)	WATER			VOLTAGE	PHASE	HZ	APPROX WEIGHT (LBS)	NOTES
						EWT	LWT						
405B-DWH-1	MECHANICAL ROOM	30	2	4,000	32	40	140		208	1	60	350	ALT DEDUCT #3,4,5

NOTES FOR DOMESTIC HOT WATER GENERATOR  
 ① UNIT SHALL BE ENERGY-STAR COMPLIANT

EXPANSION TANKS									
UNIT NO	LOCATION	SERVICE	APPROX. SIZE DxH	TOTAL VOLUME (GALLONS)	MAXIMUM ACCEPTANCE (GALLONS)	TANK CONNECTION	MAXIMUM WORKING PRESSURE (PSIG)	NOTES	
405B-ET-2	MECHANICAL ROOM	BUILDING DOMESTIC HOT WATER	11x15	4.4	3.2	3/4	150		

WATER TEMPERING VALVE								
UNIT NO	LOCATION	SERVICE	FLOW CAPACITY		BRANCH PIPE SIZE		DISCHARGE TEMPERATURE	NOTES
			MINIMUM GPM	PRESSURE DROP ACROSS VALVE (PSI)	INLET	OUTLET		
405B-WTV-1	MECHANICAL ROOM	BUILDING DOMESTIC HOT WATER	1	5	(2) 3/4	1	120	

PUMPS											
UNIT NO	TYPE	LOCATION	SERVICE	FLUID	GPM	TOTAL FPD	TEMP	MOTOR HP	RPM	NOTES	
405B-P3	IN LINE	MECHANICAL ROOM	BUILDING DOMESTIC HOT WATER RECIRC.	WATER	0.5	15	120	1/8	3250		

PLUMBING FIXTURES						
UNIT SYMBOL ①	NAME	CW ②	HW ②	S/W ②	VENT ③	NOTES
P-105	WATER CLOSET - FLOOR	1	-	4	2	
P-301	LAVATORY	1/2	1/2	1-1/2	1-1/2	
P-403	KITCHEN SINK	1/2	1/2	1-1/2	1-1/2	
P-601	BUILT-IN SHOWER	1/2	1/2	2	2	
P-602	SHOWER	1/2	1/2	2	2	
P-901	WASHING MACHINE BOX	1/2"	1/2	2	2	
P-902	REFRIGERATOR ICE MAKER	1/2	-	-	-	

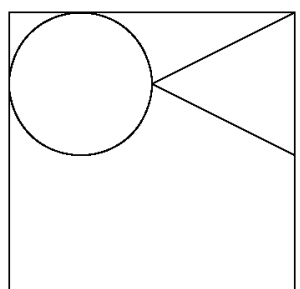
NOTES FOR PLUMBING FIXTURES:

- PLAN DESIGNATION MAY INCLUDE LETTER(S) FOR DIFFERENT FEATURES OR "WC" TO DESIGNATE MOUNTING HEIGHT FOR WHEELCHAIR USE. PIPING CONNECTION SIZES ARE THE SAME FOR ALL FIXTURES WITH THE SAME NUMBER DESIGNATION.
- PIPING CONNECTION SIZES ARE BRANCH SIZES WHICH SHALL BE TO FIXTURE ROUGH-IN LOCATION. PROVIDE ADAPTER WHERE PIPE CONNECTION SIZE AT FIXTURE IS DIFFERENT THAN ROUGH-IN PIPE SIZE.
- INDIVIDUAL VENT PIPE SIZE SHALL BE FROM FIXTURE DRAIN OR DRAINAGE FITTING TO BRANCH VENT OR VENT STACK, EXCEPT WHERE INDICATED OTHERWISE.

GENERAL NOTES FOR PLUMBING SCHEDULES:

- UNIT NUMBERS ARE INDICATED WHERE ALL UNITS ARE LISTED AND NUMBERED INDIVIDUALLY.
- UNIT SYMBOLS ARE INDICATED WHERE ALL UNITS ARE NOT LISTED AND NUMBERED INDIVIDUALLY.
- PIPE SIZES ARE LISTED IN SINGLE-NUMBER INCHES OF NOMINAL DIAMETER OR MULTIPLE NUMBER INCHES OF INDICATED PARAMETER. CONNECTION SIZES ARE BRANCH SIZES FROM MAINS TO UNIT INLETS.
- TEMPERATURE VALVES ARE LISTED IN DEGREES FAHRENHEIT.

Revisions:	Date
Revisions by the VA	09/19/2019
100% Construction Documents Submission	05/11/13
95% Construction Documents Submission	05/10/13
80% Design Development Submission	03/28/13

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Stamp/Seal

Drawing Title  
**PLUMBING SCHEDULES**  
 Approved: Project Director

Project Title  
**BUILDING 405B RENOVATION**  
 Location  
**MARTINSBURG, WV**  
 Date  
 05/31/2013  
 Checked  
 MTM  
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VA Project Number  
**613-13-115**  
 Building Number  
**405B**  
 Drawing Number  
**PL401**

Office of Construction and Facilities Management  
 Department of Veterans Affairs