

ABBREVIATIONS

EQUIPMENT ABBREVIATIONS

REFERENCE SYMBOLS



CONNECTION OF NEW
TO EXISTING



EXTENT OF DEMOLITION WORK

LINE DESIGNATIONS

REGISTERS, GRILLES ABBREVIATIONS

GENERAL NOTES

AIR SYSTEMS

MECHANICAL DRAWING LIST

Lothrop
Associates Architects D.P.C. P.C.

**333 Westchester Avenue
White Plains, New York 10604
914-741-1115**

Engel
Architects
Architectural & Construction Management Services

CBK Engineering P.C.
129 Clove Branch Road Suite 104
Hopewell Junction, N.Y. 12533
T (914) 509-6557 F (914) 509-8162

3	06-27-2025	ISSUED FOR PRICING
2	01-09-2025	ISSUED FOR PERMIT
1	12-20-2024	PROGRESS SET
ISSUE NO.	ISSUE DATE	DESCRIPTION



COOPERATIVE EXTENSION /
PUTNAM COUNTY
PROPOSED BUILDING AT TILLY
FOSTER FARM MECHANICAL /
PLUMBING / ELECTRIC CORNELL
100 NY 312
BREWSTER, NEW YORK, 10509

SYMBOLS, ABBREVIATIONS, DRAWING LIST AND NOTES

PROJECT NO.:	2752-00	SCALE: AS INDICATED
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DRAWING NO.:

M-001

3	06-27-2025	ISSUED FOR PRICING
2	01-09-2025	ISSUED FOR PERMIT
1	12-20-2024	PROGRESS SET
ISSUE NO.	ISSUE DATE	DESCRIPTION



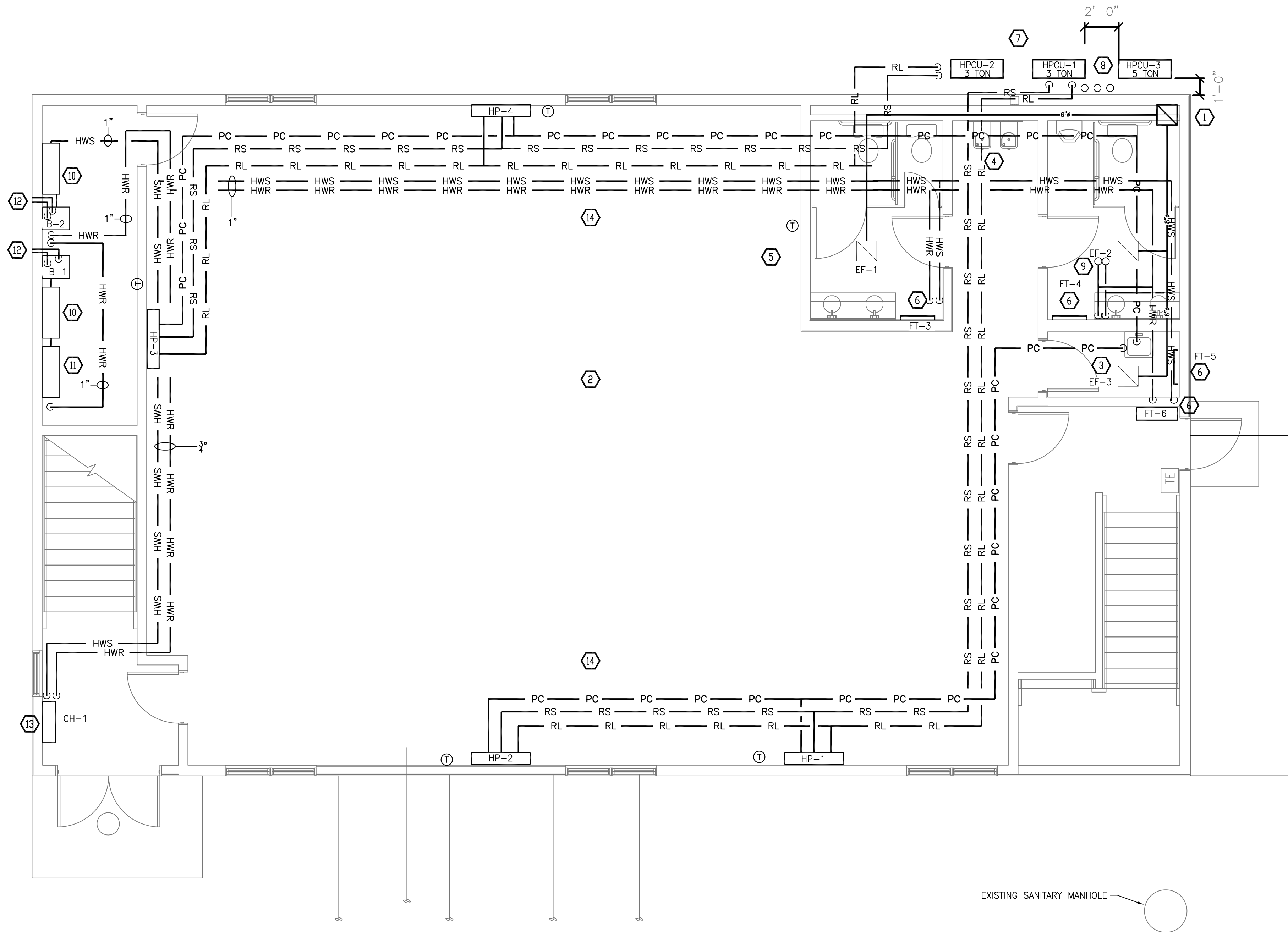
COOPERATIVE EXTENSION /
PUTNAM COUNTY
PROPOSED BUILDING AT TILLY
FOSTER FARM MECHANICAL /
PLUMBING / ELECTRIC CORNELL
100 NY 312
BREWSTER, NEW YORK, 10509

FIRST FLOOR
CONSTRUCTION PLAN

PROJECT NO.: 2752-00 SCALE: AS INDICATED

DRAWING NO.:

M-201



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

- 1 8X8 EXHAUST DUCT UP TO ROOF.

2 RADIANT HEAT SHALL BE WATTS RH SLAB HEAT 3" RADIANT PEX + BARRIER. TUBE SPACING SHALL BE 12" WITH 2195 FEET TOTAL LENGTH. PROVIDE 1" STAINLESS STEEL FLOWMETER MANIFOLD WITH 4 ZONES. PROVIDE V561 PROGRAMMABLE THERMOSTAT WITH FLOOR SENSOR.

3 1" PUMPED CONDENSATE SPILL OVER SLOP SINK.

4 DUCT AND PIPE IN SOFFIT.

5 THERMOSTAT FOR RADIANT HEAT.
- 6 HOT WATER FIN/TUBE. SLANT FIN OR APPROVED EQUAL.

7 RS & RL TO HPCU-1.

8 RS, RL & PD UP TO HP-5 AND 6 IN ATTIC.

9 PIPING UP TO FT-2.

10 INLINE PUMP ASSEMBLY. SEE DWG. P-301.
- 11 RADIANT HEAT MANIFOLD.

12 2" VENTS TO EXTERIOR INSTALL PER MANUFACTURERS REQUIREMENTS.

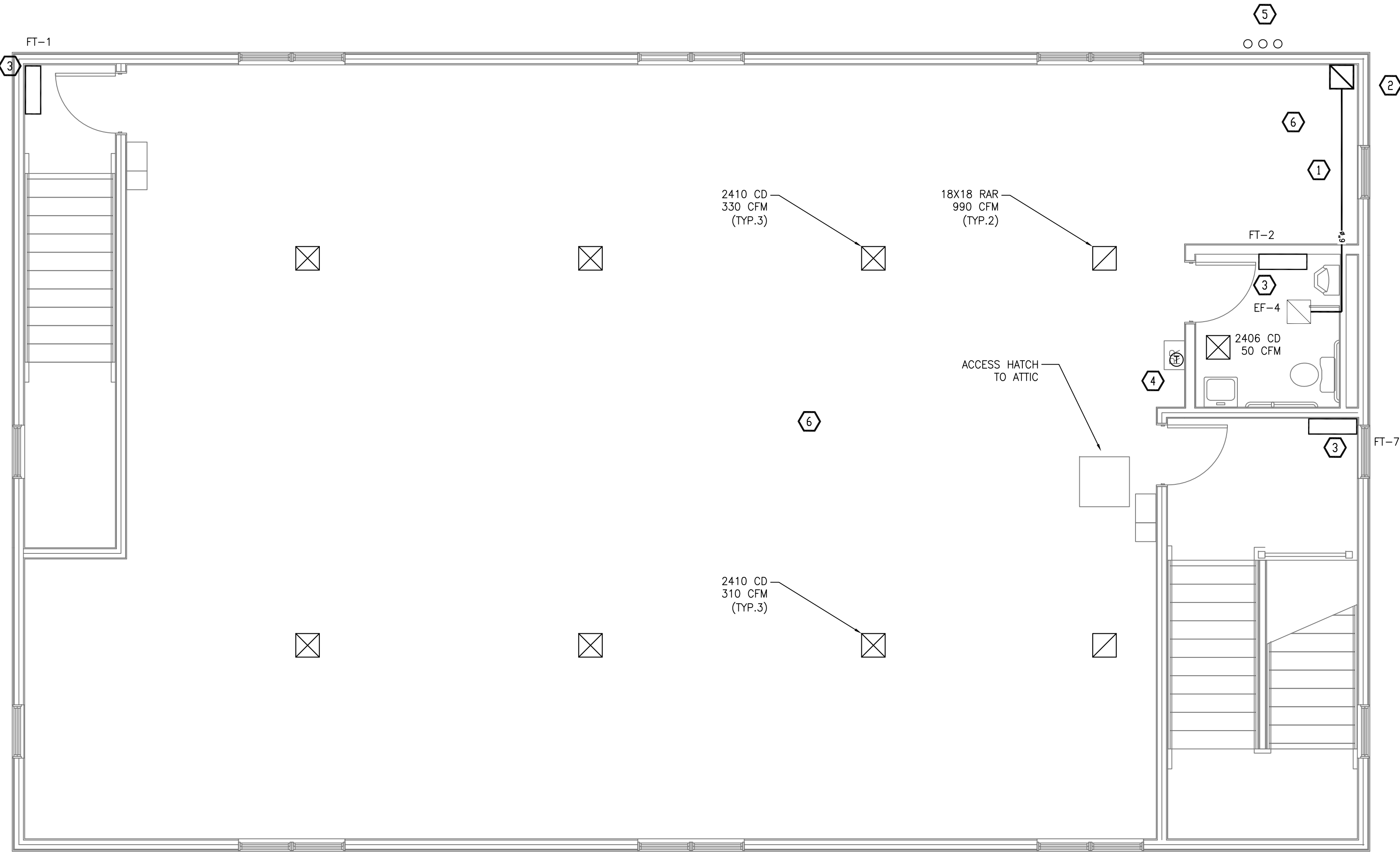
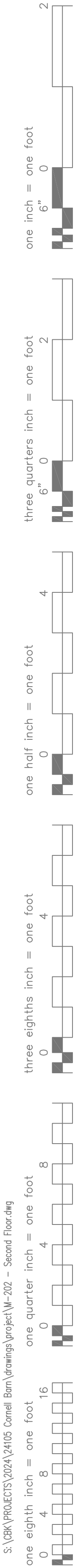
13 CABINET HEATER

14 ANY PIPES OR DUCTS WHICH CAN BE ACCOMMODATED WITHIN THE PROPOSED WOOD TRUSS FRAMING SHOULD BE ROUTED THROUGH THE TRUSS WHERE FEASIBLE.

CONSTRUCTION WORK NOTES

S:\BKM\PROJECTS\2024\24105 Cornell Barn\Drawings\project\M-201 - First Floor.dwg
one eighth inch = one foot
one quarter inch = one foot
one half inch = one foot
three eighths inch = one foot
one inch = one foot
one and one eighth inch = one foot
one and one quarter inch = one foot
one and one half inch = one foot
one and three quarters inch = one foot
two inches = one foot
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ninety nine and one quarter inch = one foot
ninety nine and one half inch = one foot
ninety nine and three quarters inch = one foot
one hundred inches = one foot

S:\GK\PROJECTS\2024\24105 Cornell Barn\Drawings\project\M-202 - Second Floor.dwg



1 SECOND FLOOR CONSTRUCTION PLAN
SCALE: 1/4"=1'-0"

CONSTRUCTION WORK NOTES

- 1 DUCT IN SOFFIT.
- 2 8X8 DUCT RISER TO ROOF.
- 3 HOT WATER FINTUBE SLANT FIN OR EQUAL
- 4 THERMOSTAT FOR HP-5 AND HP-6.
- 5 PIPING UP AND DOWN.
- 6 ANY PIPES OR DUCTS WHICH CAN BE ACCOMMODATED WITHIN THE PROPOSED WOOD TRUSS FRAMING SHOULD BE ROUTED THROUGH THE TRUSS WHERE FEASIBLE.

Lothrop
Associates Architects D.P.C. P.C.

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ISSUE NO.	ISSUE DATE	DESCRIPTION



COOPERATIVE EXTENSION /
PUTNAM COUNTY
PROPOSED BUILDING AT TILLY
FOSTER FARM MECHANICAL /
PLUMBING / ELECTRIC CORNELL
100 NY 312
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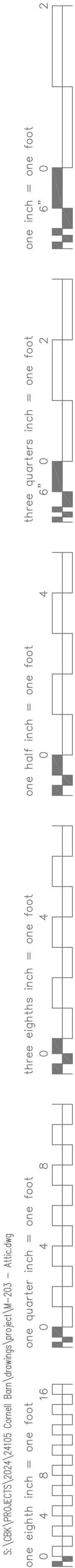
SECOND FLOOR
CONSTRUCTION PLAN

PROJECT NO.: 2752-00 SCALE: AS INDICATED

DRAWING NO.:

M-202

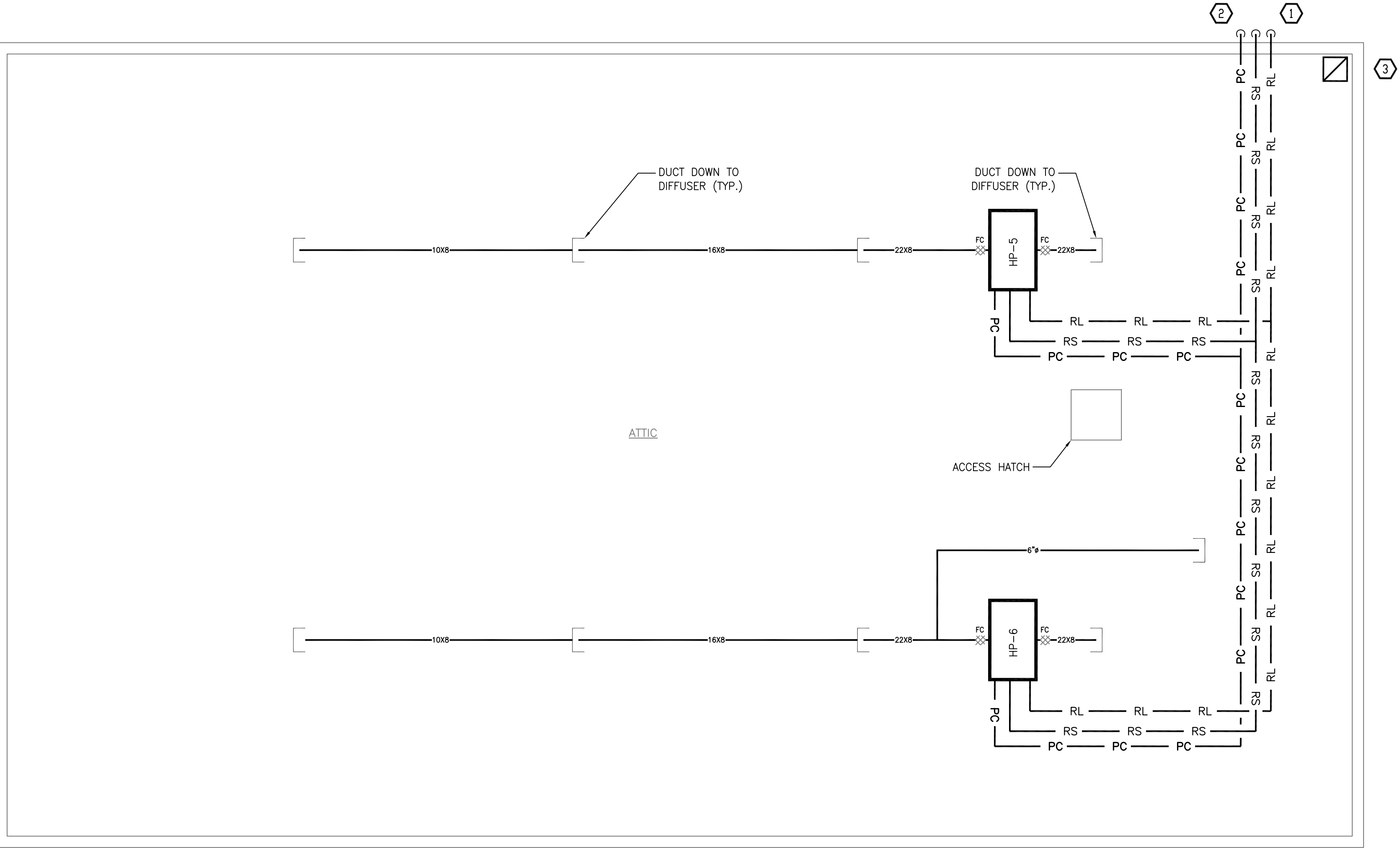
S:\GK\PROJECTS\2024\24105 Cornell Barn\Drawings\project\M-203 - Attic.dwg



CONSTRUCTION WORK NOTES

- 1 RS & RL DOWN TO HPCU-2.
- 2 1" PUMPED CONDENSATE TO 12' ABOVE GROUND.
- 3 8X8 UP TO GOOSENECK ON ROOF.

1 ATTIC CONSTRUCTION PLAN
SCALE: 1/4"=1'-0"



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ATTIC CONSTRUCTION PLAN

PROJECT NO.: 2752-00 SCALE: AS INDICATED

DRAWING NO.:

M-203

S:\06\PROJECTS\2024\24105 Cornell Barn\Drawings\project\M-301 - Schedules.dwg
one eighth inch = one foot

one eighth inch = one foot
one quarter inch = one foot
three eighths inch = one foot
one half inch = one foot
three quarters inch = one foot
one inch = one foot

SPLIT SYSTEM HEAT PUMP UNIT SCHEDULE																							
UNIT NO.	LOCATION	OA CFM	CFM	AIR HANDLER										AIR HANDLER MANUFACTURER & MODEL NO.	A.C.C.U.						A.C.C.U. MANUFACTURER & MODEL NO.	REMARKS	
				EXT. SP.	FAN RPM	BHP	HP	MBH TOT.	MBH SEN.	MBH HEAT	VOLT	PH	M.C.A.		MAX FUSE	VOLT	PH	M.C.A.	MAX FUSE	OPERATING WEIGHT (LBS)			UNIT NO.
HP-1, 2	1ST FLOOR	-	554	.1	-	-	-	15.6	10.5	18	208	1	0.35	15	LENNOX VVMCD1854-4P	208	1	22	30	268	HPCU-1		LENNOX VPD036SGM-SP
HP-3, 4	1ST FLOOR	-	554	.1	-	-	-	15.6	10.5	18	208	1	0.35	15	LENNOX VVMCD1854-4P	208	1	22	30	268	HPCU-2		LENNOX VPD036SGM-SP
HP-5, 6	ATTIC	-	989	.4	-	-	-	26.6	21.3	21.5	208	1	1.2A	15	LENNOX VHICD3054-4P	208	1	32	40	342	HPCU-3	LENNOX VPD060SGM-SP	
REMARKS:																							
1. PROVIDE CONDENSATE PUMP WITH UNITS. PUMP ALL CONDENSATE TO INDIRECT DRAIN.										3. PROVIDE FILTER BOX FOR UNITS HP-5,6.													
2. PROVIDE DRAIN PAN UNDER UNITS HP-1 TO 6 WITH WATER SENSOR. WATER SENSOR SHALL SHUT DOWN UNIT UPON SENSING OF WATER.																							

FAN SCHEDULE																
FAN No.	AREA SERVICED	CFM	TOTAL S.P. IN. WAT.	RPM	O.V. FPM	MOTOR					FAN					MANUFACTURER AND MODEL No.
						BHP	AMPS	VOLT	PH	HZ	DRIVE	TYPE	CLASS	ARR.	ROTATION	
EF-1,2,3,4	TOILETS, UTILITY ROOM	75	.25	1161	—	—	0.17	120	1	60	DIRECT	CEILING	—	—	—	PANASONIC FV-11VQ5
REMARKS: 1. EXHAUST FANS SHALL BE INSTALLED WITH BACK DRAFT DAMPER. 2. EXHAUST FANS SHALL OPERATE ON TIMER SWITCH WITH TIME DELAY ON OFF.																

HOT WATER BOILERS SCHEDULE													
UNIT	MFR	MODEL	BOILER DATA			BURNER DATA				LOCATION	HP	ELECTRICAL DATA	REMARKS
			TYPE	INPUT (MBH)	OUTPUT (MBH)	FUEL	FIRING	ELECTRIC VOLT	PH				
B-1	LOCHINVAR	WHB055L	HOT WATER RADIANT HEATING	55	51	PROPANE	ELECTRONIC	120	1	MECHANICAL ROOM	1/4	120V-1PH-60HZ	
B-2	LOCHINVAR	WHB055L	HOT WATER HEAT	55	51	PROPANE	ELECTRONIC	120	1	MECHANICAL ROOM	1/4	120V-1PH-60HZ	
NOTES:													
1. PROVIDE NEUTRALIZER KIT FOR EACH BOILER.													

SPECIFICATIONS

SECTION 2200000 – HEATING, VENTILATION & AIR CONDITIONING

PART 1 – GENERAL

1.01 DESCRIPTION OF THE WORK:

A. HEATING, VENTILATING, AND AIR CONDITIONING WORK INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING AREAS:

1. HEAT PUMPS
2. DUCTWORK AND INSULATION
3. DIFFUSER AND REGISTERS
4. DAMPERS, VENTS
5. THERMOSTATS
6. TESTING AND BALANCING
7. FILTERS
8. PIPING AND INSULATION
9. ELECTRICAL RADIANT HEAT

B. COORDINATE WITH THE ELECTRICAL CONTRACTOR, (EC) THE WIRING, POWER, CONTROL, PROTECTION, AND CIRCUITING OF ALL MECHANICAL EQUIPMENT, INCLUDING BUT NOT LIMITED TO, VALVES, MOTORS, SENSORS, TEMPERATURE CONTROLLERS, AIR HANDLERS, AIR CONDITIONING CONDENSERS, EXHAUST FANS, RESISTANCE HEATING EQUIPMENT, OUTSIDE AIR DAMPERS, SIGNALING AND CONTROL EQUIPMENT, AND OTHER MECHANICAL EQUIPMENT, WHETHER LOW-VOLTAGE OR HIGH-VOLTAGE FOR A COMPLETE HVAC AND PLUMBING SYSTEM, SHOWN ANYWHERE IN THESE DRAWINGS OR DESCRIBED ANYWHERE IN THESE SPECIFICATIONS. SIZE WIRING AND CIRCUITS IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

1.02 QUALITY ASSURANCE:

A. COMPLY WITH PROVISIONS OF THE FOLLOWING CODES, SPECIFICATIONS, AND STANDARDS, EXCEPT WHERE MORE STRINGENT REQUIREMENTS ARE SHOWN OR SPECIFIED. 1. CODES AND STANDARDS: COMPLY WITH THE NEW YORK STATE AND LOCAL CODES: NFPA #90A AND #90B, AND THE RULES AND REGULATIONS OF THE APPLICABLE UTILITY COMPANIES.

B. COORDINATE LOCATION OF DUCTWORK TO AVOID INTERFERENCE WITH LOCATION OF DESIGNATED LIGHTING FIXTURE LOCATIONS. NOTIFY ARCHITECT PRIOR TO CONSTRUCTION OF CONFLICTS WHICH CANNOT BE RESOLVED.

1.03 STANDARDS AND COMPLIANCE:

A. THERMAL PERFORMANCE OF INTERIOR BUILDING ENVELOPE SHALL MEET THE GUIDELINES ESTABLISHED BY ASHRAE.

B. INSTALLATION, DESIGN, CLEARANCES AND PROTECTION OF ALL SUPPLY AND EXHAUST OPENINGS SHALL COMPLY WITH THE NEW YORK STATE AND LOCAL CODES AND ALL MANUFACTURERS' RECOMMENDATIONS.

1.04 COORDINATION WITH DRAWINGS:

A. DRAWINGS REPRESENT A SCHEMATIC LAYOUT OF DUCTS AND DIFFUSERS TO ACHIEVE AN APPROXIMATION OF THE PERFORMANCE INTENDED FOR THE GEOGRAPHIC AREA. SOME ADJUSTMENT IN DUCT DISTRIBUTION, DIFFUSER LOCATION, PLENUM SIZE CHANGES AND OTHER MODIFICATIONS ARE ACCEPTABLE WHEN SUPPORTED WITH SUBMITTALS SHOWING DESIGN DATA, CFM RATINGS, AND OTHER INFORMATION SUPPORTING THE DESIGN INTENTS.

1.05 SUBMITTALS:

A. SUBMIT FOR APPROVAL SHOP DRAWINGS, PRODUCT DATA, FIXTURE AND EQUIPMENT CATALOG CUTS.

1.06 ENERGY CONSERVATION REQUIREMENTS:

A. GENERAL: ALL EQUIPMENT SHALL CONFORM TO THE REQUIREMENTS OF THE NEW YORK STATE AND LOCAL CODE

B. CONTROLS: EACH THERMOSTAT SHALL BE CAPABLE OF BEING SET AS FOLLOWS: 1 EACH THERMOSTAT SHALL BE CAPABLE OF BEING SET FROM 55 DEGREES F TO 85 DEGREES F AND SHALL BE CAPABLE OF OPERATING THE SYSTEM HEATING AND COOLING IN SEQUENCE. IT SHALL BE ADJUSTABLE TO PROVIDE A MINIMUM TEMPERATURE RANGE OF 10 DEGREES F BETWEEN FULL HEATING AND FULL COOLING.

1.08 ACCESSIBILITY:

A. ALL INDIVIDUAL ITEMS OF EQUIPMENT AND COMPONENTS THEREOF SHALL BE COMPLETELY ACCESSIBLE FOR REPAIR, REMOVAL OR REPLACEMENT WITHOUT FUNCTIONAL IMPAIRMENT OR DISMANTLING OF ANY ADJOINING SURFACES OR ASSEMBLIES, AND IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

PART – 2 PRODUCTS

2.01 DUCT WORK, DAMPERS, DIFFUSERS VENTS & THERMOSTATS:

A. ALL DUCT WORK ABOVE SLAB: GALVANIZED STEEL FOR ROUND AND RECTANGULAR SUPPLY AND RETURN DUCTS WHICH SHALL COMPLY WITH SMACNA DUCT MANUAL AND SHEET METAL CONSTRUCTION

B. FOR THE FIRST 10 FEET OF SUPPLY AND RETURN DUCTWORK 1" INTERIOR LINING SHALL BE PROVIDED. ALL DUCTS SHALL BE INSULATED WITH A 1 1/2" R6 FLEXIBLE FIBERGLASS INSULATION FOR THE REMAINDER OF THE INTERIOR SUPPLY AND RETURN DUCTWORK.

C. DIFFUSERS, GRILLES: ALL DIFFUSERS, AND GRILLES, SHALL BE UNITS WITH APPROVED FACE AND FRAME DESIGN, GASKETS, AND BAKED ENAMEL FINISH TITUS OMNI OR APPROVED EQUAL. 1. RETURN AIR GRILLES SHALL BE TITUS 350 OR EQUAL.

D. FLEXIBLE CONNECTIONS: FLEXIBLE CONNECTIONS SHALL BE INSTALLED AT ALL LOCATIONS WHERE DUCT WORK CONNECT TO AIR HANDLING UNITS. CONNECTIONS SHALL BE MANUFACTURED PRODUCTS DESIGNED FOR THIS APPLICATION, AND SHALL BE AT LEAST 3 INCHES IN LENGTH, AND FIRE resistant, with UL testing label.

E. THERMOSTATS: 7-DAY PROGRAMMABLE THERMOSTATS WITH MINIMUM 4 DAILY OCCUPIED & UNOCCUPIED SETTING AND TEMPERATURE-HOLD SETTINGS. MANUFACTURED BY SAUNJON, OR EQUAL, SEE SEQUENCE OF OPERATIONS ON DRAWINGS FOR THERMOSTAT FUNCTION, HEATING AND COOLING MODES, OUTSIDE AIR MODES, AND OTHER OPERATIONS.

F. VOLUME DAMPER: PROVIDE BALANCING DAMPER AT EACH SUPPLY AND RETURN BRANCH AND WHERE OTHERWISE SHOWN ON DRAWINGS.

G. REFRIGERANT PIPING SHALL BE TYPE L REFRIGERANT GRADE WITH 1" ARMAFLEX INSULATION.

H. CONDENSATE PIPING SHALL BE TYPE L COPPER WITH 1" INSULATION.

PART 3 – EXECUTION

3.01 GENERAL

A. COORDINATE LOCATION OF ALL THRU-ROOF VENTS, STACKS AND OTHER PENETRATIONS NOT LESS THAN TEN (10) FEET AWAY FROM THE OUTSIDE AIR INTAKE VENTS (OR OTHER BUILDING OPENINGS) SHOWN ON DRAWINGS.

B. CUTTING AND NOTCHING: ALL CUTTING, NOTCHING, AND DRILLING SHALL BE DONE WITHIN THE LIMITS SET FORTH IN ARCHITECTURAL SPECIFICATIONS OR AS OTHERWISE DESCRIBED IN THIS SECTION.

C. TESTS: EACH SYSTEM SHALL BE TESTED TO INSURE THAT THE INTENT STATED ABOVE HAS BEEN REALIZED. TEMPERATURES AND EQUIPMENT NOISE LEVELS SHALL BE CHECKED TO INSURE PROPER EQUIPMENT OPERATION. AIR FLOW AT EACH DIFFUSER SHALL BE CHECKED TO INSURE PROPER AND UNRESTRICTED FLOW OF AIR THROUGH THE DUCT SYSTEM.

3.02 CLEANING

A. INSTALL NEW, CLEAN, AND FINAL AIR FILTERS IN ALL AIR HANDLERS AFTER COMPLETION OF ALL CONSTRUCTION AND DUCT CLEANING DESCRIBED ABOVE. REMOVE AND DISPOSE OF ALL TEMPORARY AIR FILTERS.

3.03 SEQUENCE OF OPERATION

SEVEN DAY 24 HOUR PROGRAMMABLE THERMOSTAT SHALL CYCLE THE HEAT PUMP TO PROVIDE HEATING OR COOLING AS REQUIRED BY THE SPACE. A HEAT/COOL SWITCH ON THE THERMOSTAT SHALL PUT THE SYSTEM IN THE PROPER MODE OF OPERATION.

EXHAUST FAN SHALL OPERATE FROM A WALL SWITCH.

FINTUBE SHALL BE CONTROLLED BY A BUILT-IN THERMOSTAT (DANFOSS OR EQUAL).

THE 4 SECTIONS OF RADIANT HEAT SHALL BE CONTROLLED BY A CENTRAL THERMOSTAT.

RADIANT BOILER SHALL CYCLE TO MAINTAIN SUPPLY TEMPERATURE OF 110°F WHEN OUTSIDE AIR TEMPERATURE IS BELOW 60°F (ADJUSTABLE). PUMP HWP-2 SHALL BE ON BELOW 60°F. PUMP HWP-4 SHALL CYCLE ON AND OFF AS DETERMINED BY ROOM THERMOSTAT.

HEATING BOILER SHALL CYCLE TO MAINTAIN SUPPLY TEMPERATURE OF 180°F MAX TO 140°F MIN RESET BY OUTSIDE AIR TEMPERATURE OF 10°F TO 60°F (ADJUSTABLE). HEATING PUMP SHALL ADJUST SPEED BASED ON HEAD PRESSURE. PUMP HWP-1 SHALL TURN ON WHEN TEMPERATURE IS BELOW 60 °F. PUMP HWP-3 SHALL RUN CONTINUOUSLY BELOW 60°F. SPEED SHALL BE DETERMINED BY PRESSURE SENSOR.

3.04 AIR SYSTEM BALANCE & CERTIFICATION

A. PERFORM AIR BALANCE AND CERTIFICATION OF ALL HEATING, COOLING, AND VENTILATING SYSTEMS WITH A TESTING LABORATORY CERTIFIED BY ONE OF THE FOLLOWING AGENCIES:

1. AABC CERTIFIED INDEPENDENT TESTING AND BALANCING AGENCY.

2. NATIONAL ENVIRONMENTAL BALANCING BUREAU CERTIFIED INDEPENDENT AGENCY (NEBB) THE AIR BALANCE REPORTS IS TO BE PROVIDED ENGINEER AT TIME OF MECHANICAL INSPECTION.

B. ADJUST ALL VOLUME DAMPERS AND/OR ADJUST SHEAVES TO OBTAIN AIRFLOW INDICATED ON THE CONTRACT DOCUMENTS. ADJUST ALL MINIMUM AND MAXIMUM AIRFLOW VALUES FOR EXISTING AND NEW VAV BOXES AND FAN POWERED BOXES.

C. TEST REPORTS: SUBMIT THE FOLLOWING REPORTS TO ENGINEER FROM TESTING LABORATORY, WITH COPY TO THE OWNER. PREPARE REPORTS TO INCLUDE THE FOLLOWING MINIMUM INFORMATION:

1. INDICATE DEFICIENCIES IN SYSTEM THAT WOULD PREENT PROPER TESTING, ADJUSTING, AND BALANCING OF SYSTEMS AND EQUIPMENT TO ACHIEVE SPECIFIED PERFORMANCE.

2. SUBMIT COPIES OF REPORT FOR REVIEW PRIOR TO FINAL ACCEPTANCE OF BUILDING. PROVIDE FINAL COPIES FOR INCLUSION IN OPERATING AND MAINTENANCE MANUALS.

3.05 OPERATION AND MAINTENANCE MANUAL

A. PROVIDE OPERATION AND MAINTENANCE MANUALS FOR ALL EQUIPMENT PROVIDED UNDER THIS CONTRACT. THESE MANUALS SHALL ALSO INCLUDE THE APPROVED SHOP DRAWINGS OF THE EQUIPMENT. THE MANUALS SHALL ALL BE CONTAINED IN 3 RING BINDER TABBED FOR EACH PIECE OF EQUIPMENT. PROVIDE 4 COPIES OF THE APPROVED MANUAL.

HOT WATER FINTUBE SCHEDULE							
UNIT NO.	AREA SERVED	CAPACITY PER FOOT <BTUH>	LENGTH <FT>	ELEMENT TYPE	ROWS	GPM	MANUFACTURER & MODEL NO.
FT-1,2,3,4,5	VARIOUS	1440	2	H-1	2	1	SLANT FIN 351-14
FT-6,7	STAIRWELL	1440	3	H-1	2	1	SLANT FIN 351-14
REMARKS:							
1. PROVIDE SELF-CONTAINED DANFOSS VALVES FOR EACH FINTUBE.							
2. CONTRACTOR SHALL PROVIDE ALL NECESSARY HARDWARE AND ACCESSORIES FOR THE INSTALLATION.							

PUMP SCHEDULE								
UNIT NO.	GPM	HD FT H2O	RPM	MOTOR HP.	ELECTRICAL DATA	CONNECTIONS		TYPE
						SUCT.	DISCH.	
HWP-1,2	8	20	2700	0.6	120V-1PH-60HZ	1 1/2"	1 1/2"	IN LINE
HWP-3	4	20	2700	0.6	120V-1PH-60HZ	1 1/2"	1 1/2"	IN LINE
HWP-4	8	20	2700	0.6	120V-1PH-60HZ	1 1/2"	1 1/2"	IN LINE
REMARKS:								
1. PROVIDE AFD STARTERS FOR HWP-1,2,3 AND 4 WITH H-0-A.								

HOT WATER CABINET HEATER SCHEDULE							
UNIT NO.	AREA SERVED	CAPACITY <MBTU>	GPM	FAN SECTION			MANUFACTURER & MODEL NO.
				MOTOR HP	CFM	RPM	
CH-1	ENTRY	11.9	1	1/60	250	-	MODINE C02
REMARKS:							
1. CABINET HEATER SHALL HAVE BUILT-IN THERMOSTAT.							
2. CONTRACTOR SHALL PROVIDE ALL NECESSARY HARDWARE AND ACCESSORIES FOR THE INSTALLATION.							
3. CH-1 SHALL HAVE 1 ROW COIL.							

Lothrop
Associates Architects D.P.C. P.C.

333 Westchester Avenue
White Plains, New York 10604
914-741-1115

Engel
Architects
Architectural & Construction Management Services

CBK Engineering P.C.
129 Clove Branch Road Suite 104
Hopewell Junction , N.Y. 12533
T (914) 509-6557 F (914) 509-8162

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COOPERATIVE EXTENSION /
PUTNAM COUNTY
PROPOSED BUILDING AT TILLY
FOSTER FARM MECHANICAL /
PLUMBING / ELECTRIC CORNELL
100 NY 312
BREWSTER, NEW YORK, 10509

SCHEDULES AND
SPECIFICATIONS

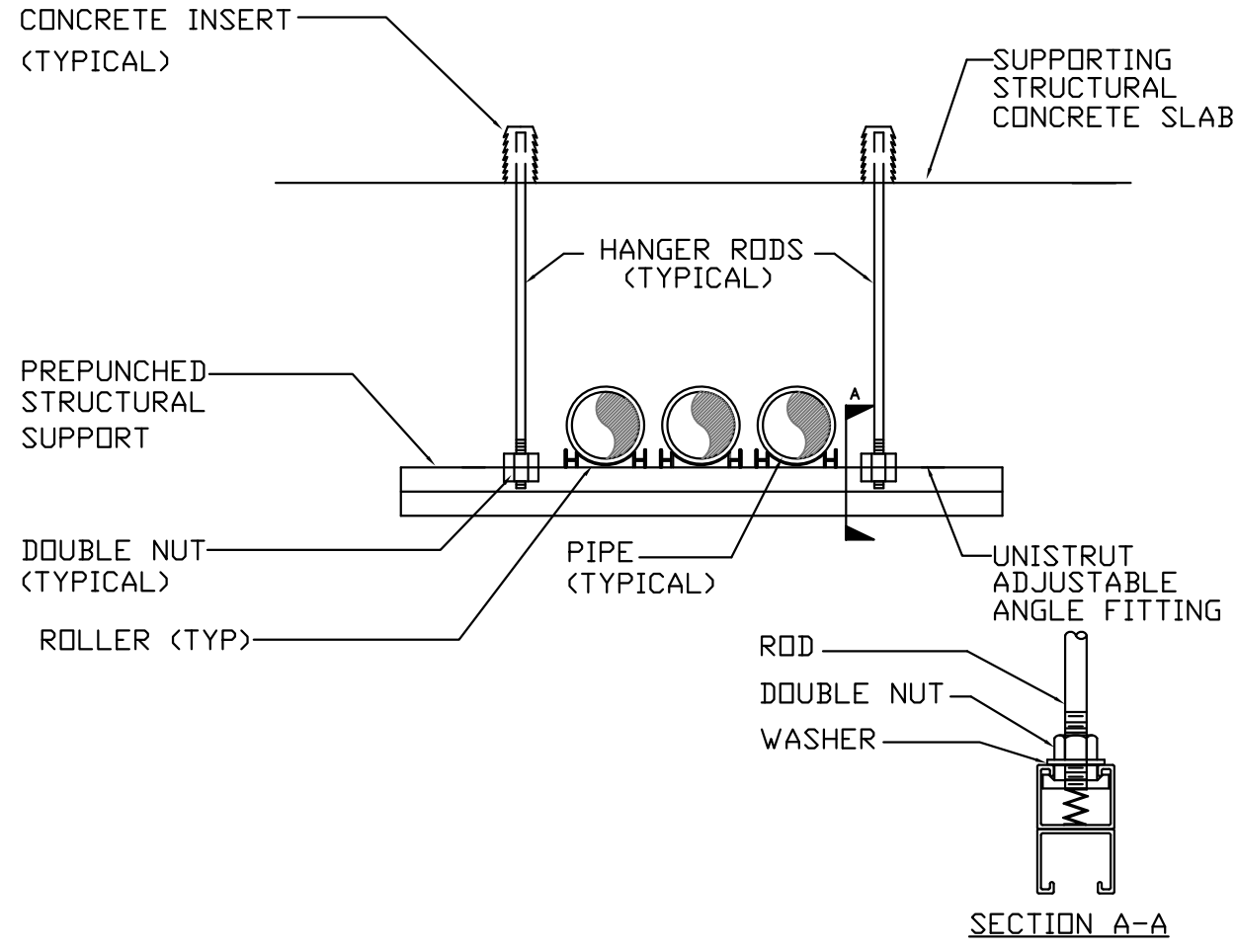
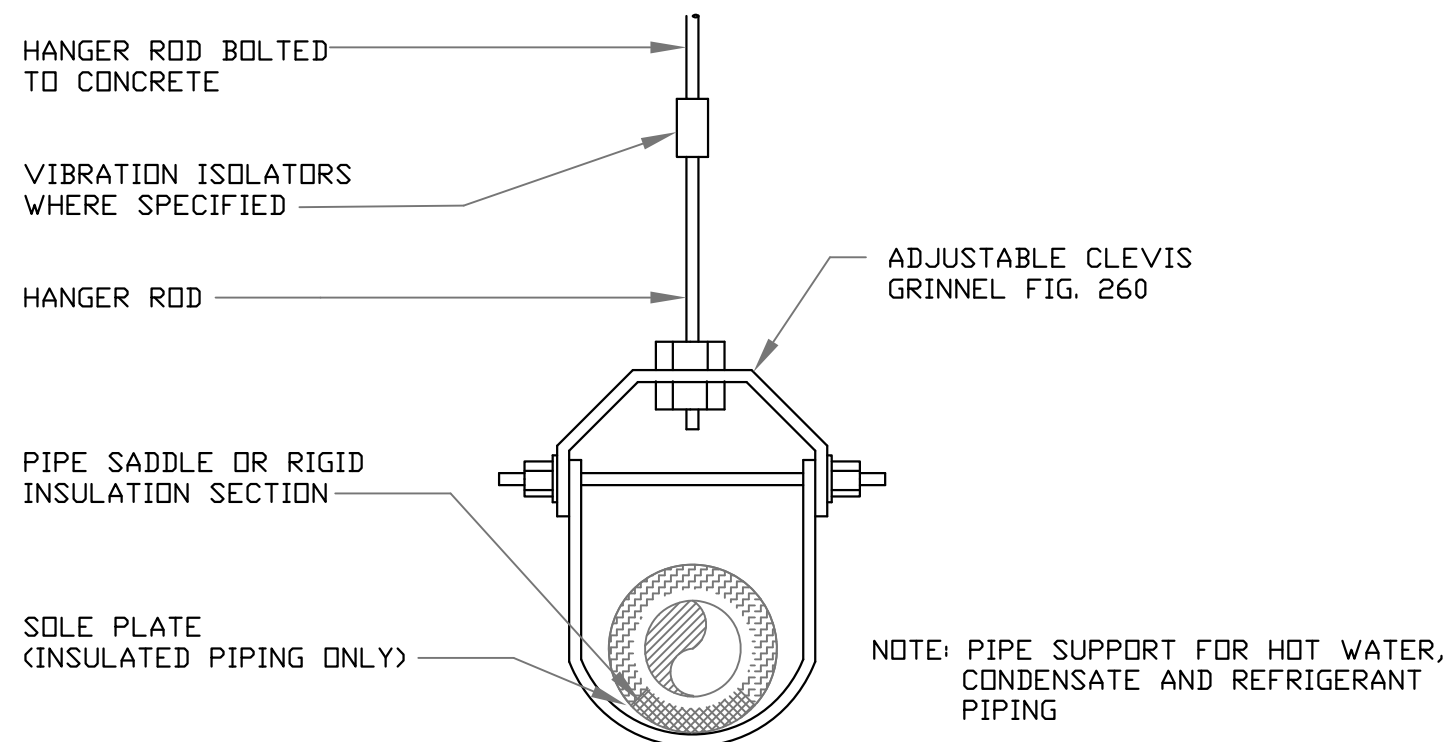
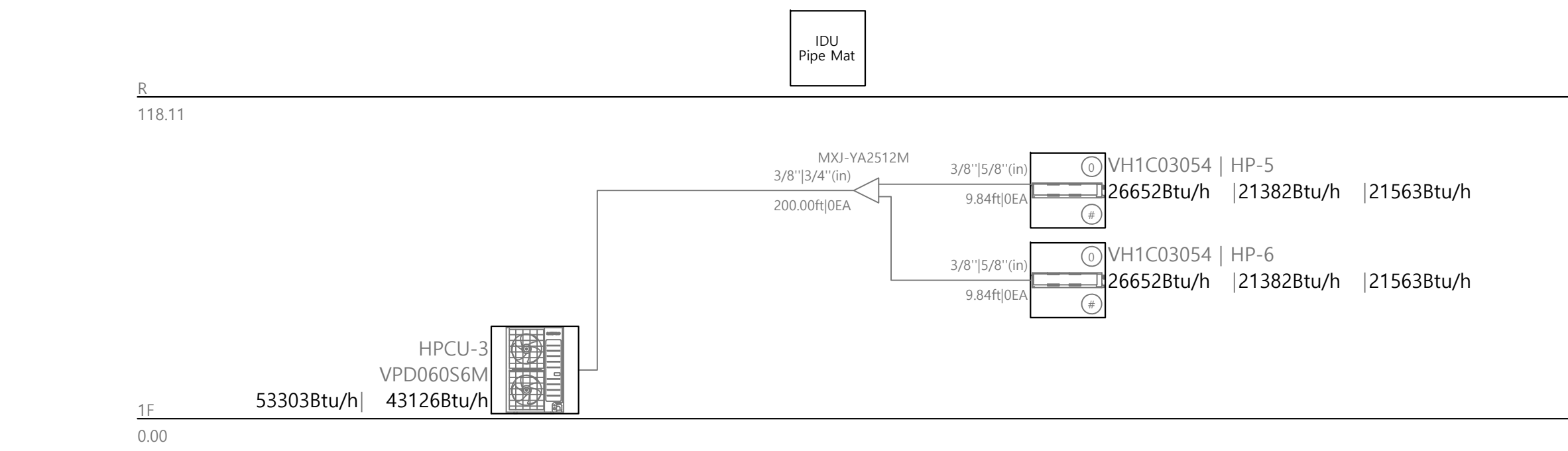
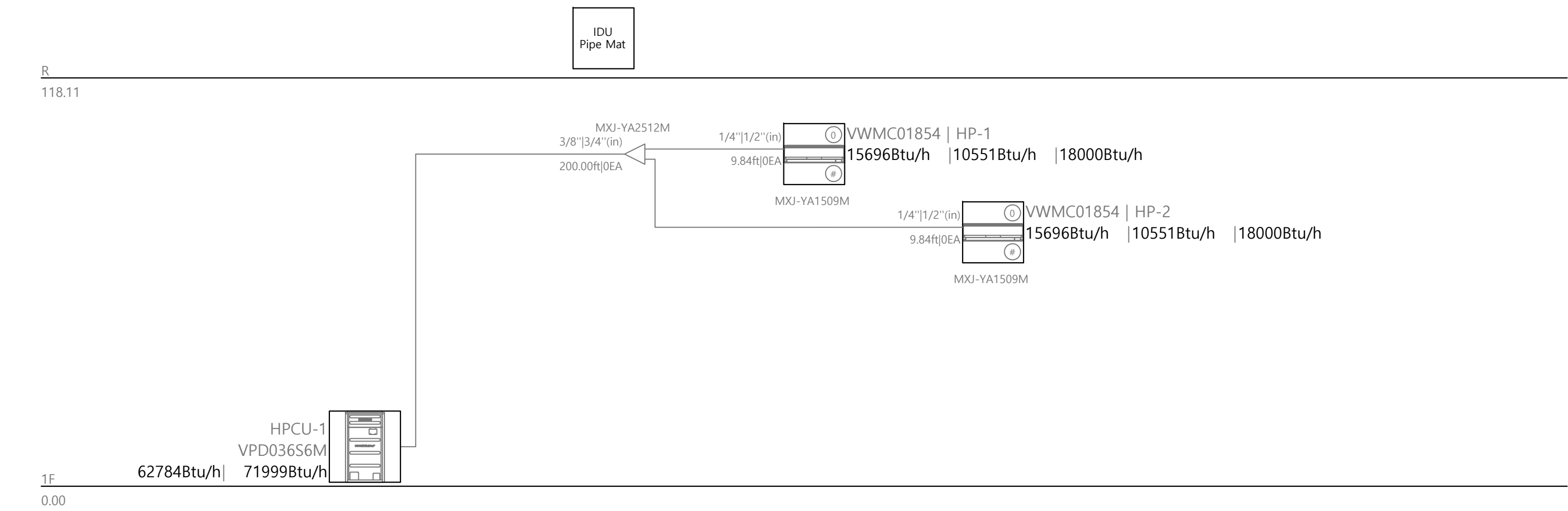
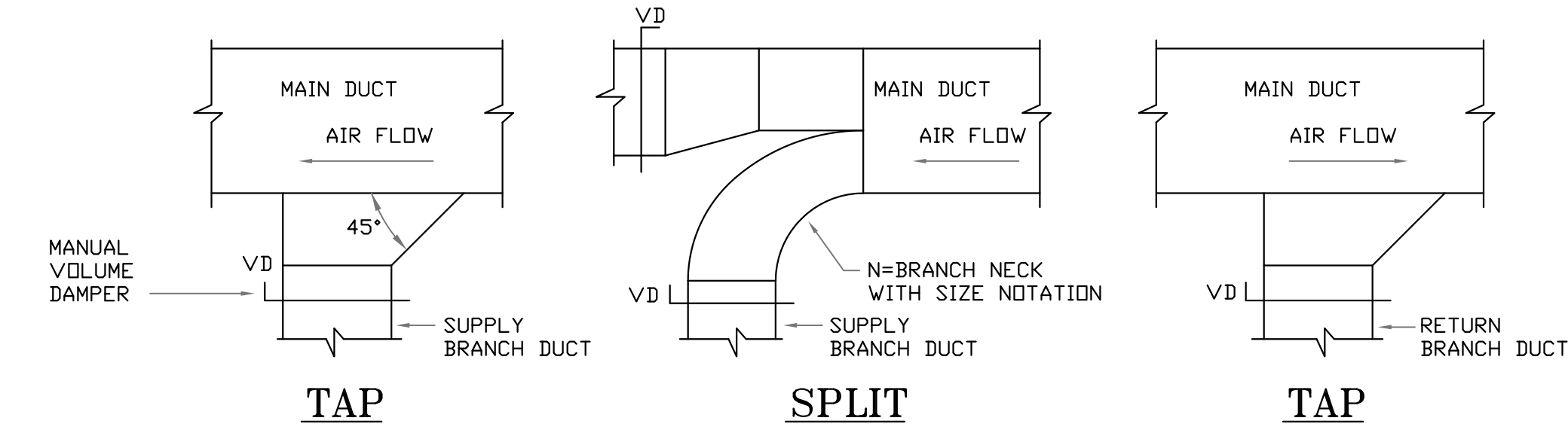
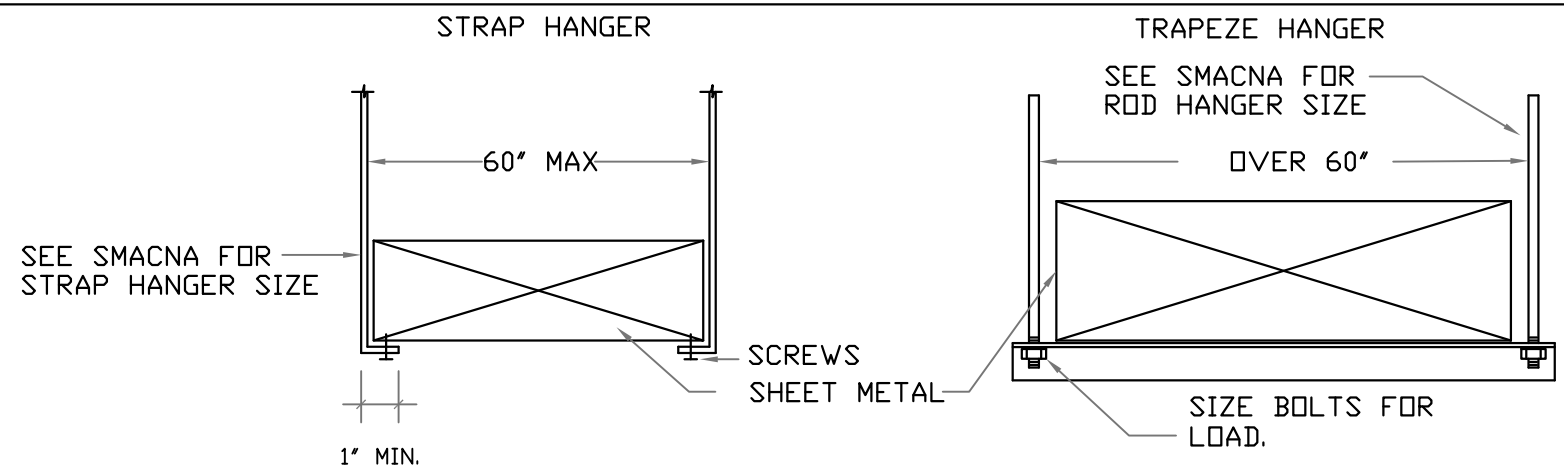
PROJECT NO.: 2752-00 SCALE: AS INDICATED

DRAWING NO.:

M-301

S:\WORK\PROJECTS\2024\24105 Cornell Barn\Drawings\project\M-302 - Details and Diagrams.dwg
one eighth inch = one foot

one eighth inch = one foot
one quarter inch = one foot
one half inch = one foot
three eighths inch = one foot
one inch = one foot
one and one eighth inch = one foot
one and one quarter inch = one foot
one and one half inch = one foot
one and three quarters inch = one foot
two inches = one foot
three inches = one foot
four inches = one foot
five inches = one foot
six inches = one foot
seven inches = one foot
eight inches = one foot
nine inches = one foot
ten inches = one foot
eleven inches = one foot
twelve inches = one foot
thirteen inches = one foot
fourteen inches = one foot
fifteen inches = one foot
sixteen inches = one foot
seventeen inches = one foot
eighteen inches = one foot
nineteen inches = one foot
twenty inches = one foot
twenty one inches = one foot
twenty two inches = one foot
twenty three inches = one foot
twenty four inches = one foot
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twenty seven inches = one foot
twenty eight inches = one foot
twenty nine inches = one foot
thirty inches = one foot
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thirty three inches = one foot
thirty four inches = one foot
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forty one inches = one foot
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forty three inches = one foot
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forty nine inches = one foot
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sixty seven inches = one foot
sixty eight inches = one foot
sixty nine inches = one foot
seventy inches = one foot
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eighty seven inches = one foot
eighty eight inches = one foot
eighty nine inches = one foot
ninety inches = one foot
ninety one inches = one foot
ninety two inches = one foot
ninety three inches = one foot
ninety four inches = one foot
ninety five inches = one foot
ninety six inches = one foot
ninety seven inches = one foot
ninety eight inches = one foot
ninety nine inches = one foot
one hundred inches = one foot

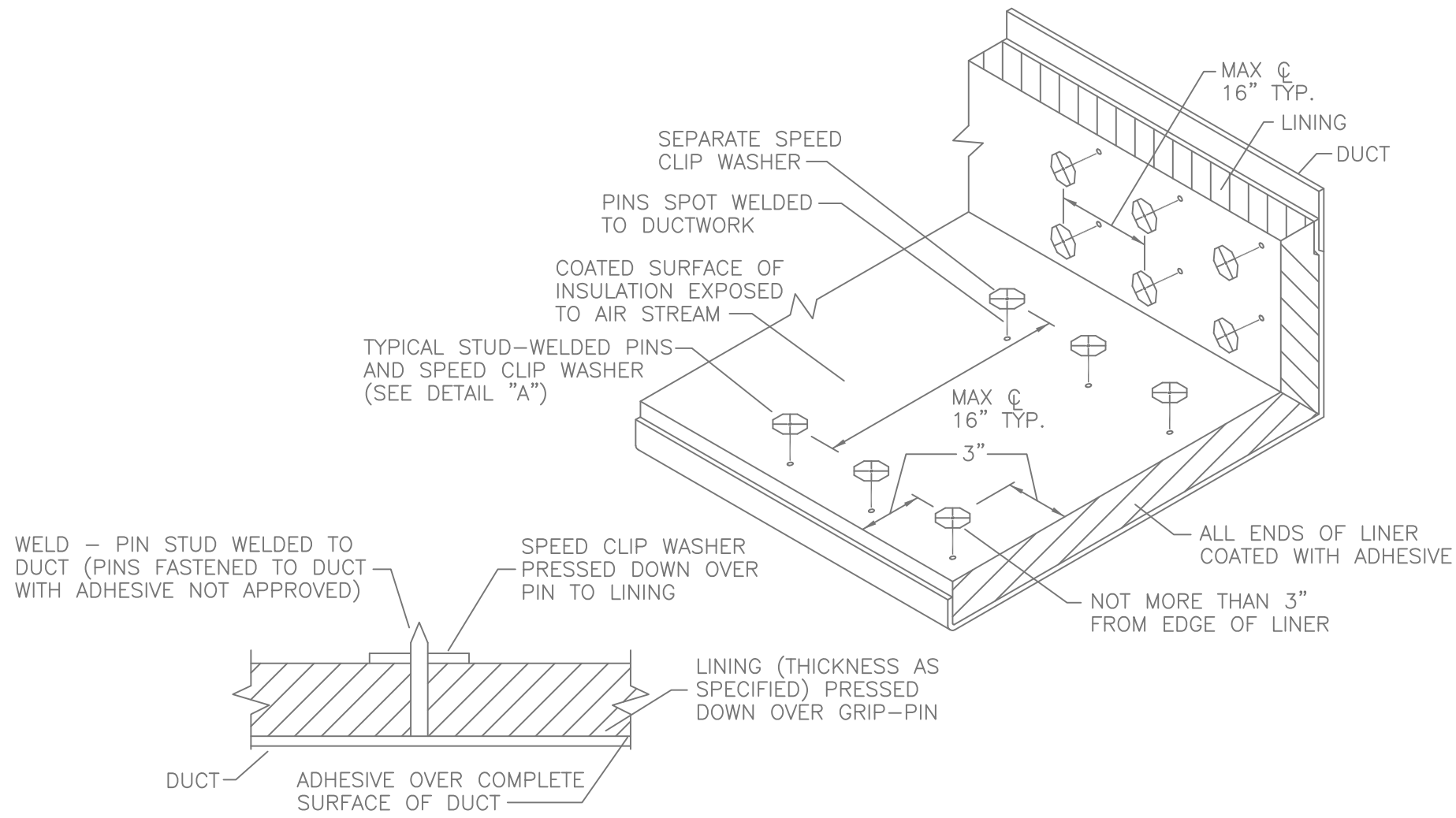


TYPICAL FOR 2 OR MORE

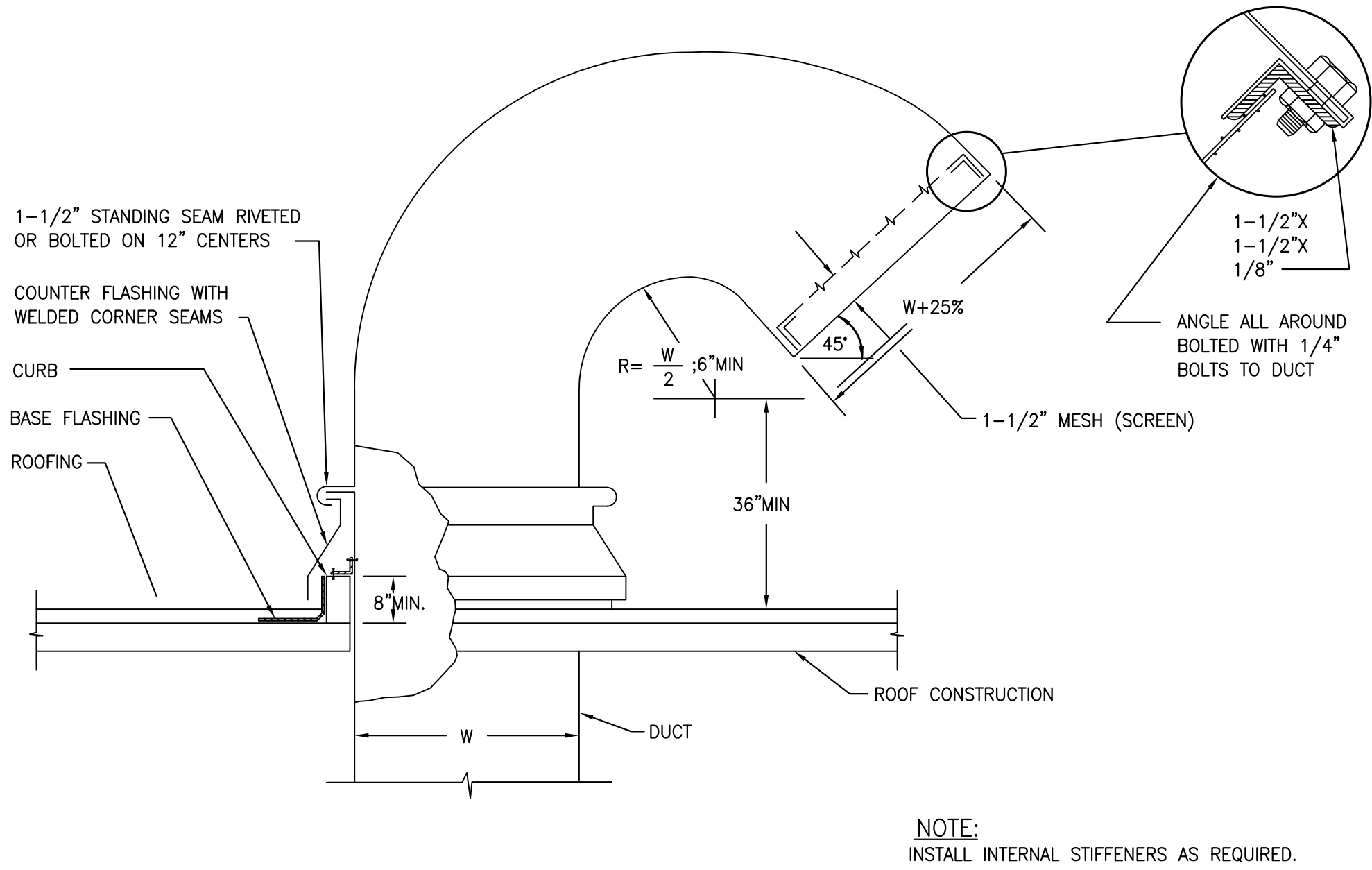
NOTE

① SPACING OF TRAPEZE HANGERS SHALL BE BASED ON THE CLOSEST SPACING REQUIRED BY THE APPLICABLE PRODUCT TRANSPORTED.

6 PIPE HANGER DETAIL
SCALE: NOT TO SCALE

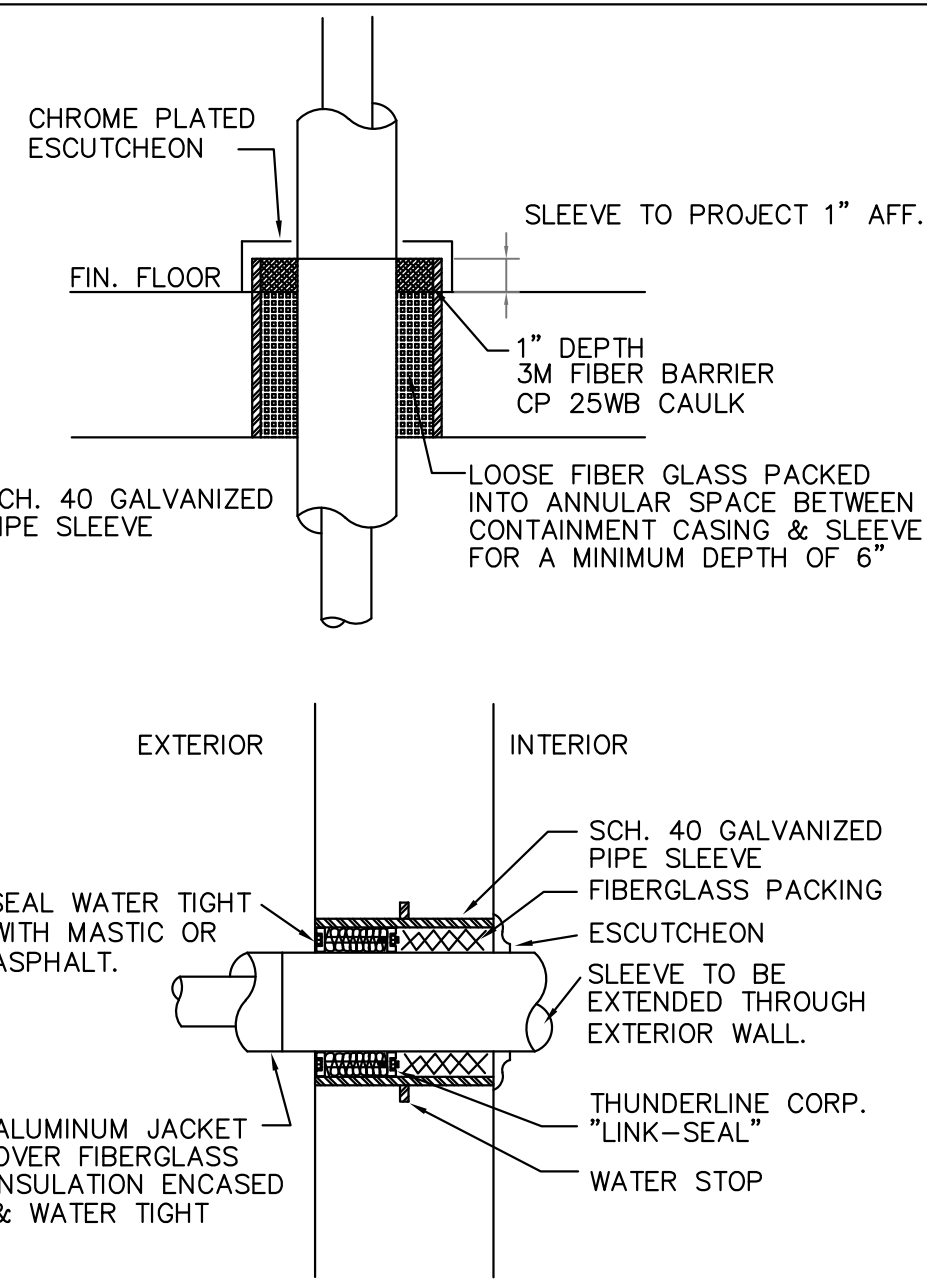


8 DUCT LINING INSTALLATION DETAIL
SCALE: NOT TO SCALE



9 GOOSENECK DETAIL
SCALE: NOT TO SCALE

NOTE:
INSTALL INTERNAL STIFFENERS AS REQUIRED.



7 PIPE SLEEVE DETAIL
SCALE: NOT TO SCALE

Lothrop
Associates Architects D.P.C. P.C.

333 Westchester Avenue
White Plains, New York 10604
914-741-1115

Engel
Architects
Architectural & Construction Management Services

CBK Engineering P.C.
129 Clove Branch Road Suite 104
Hopewell Junction, N.Y. 12533
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COOPERATIVE EXTENSION /
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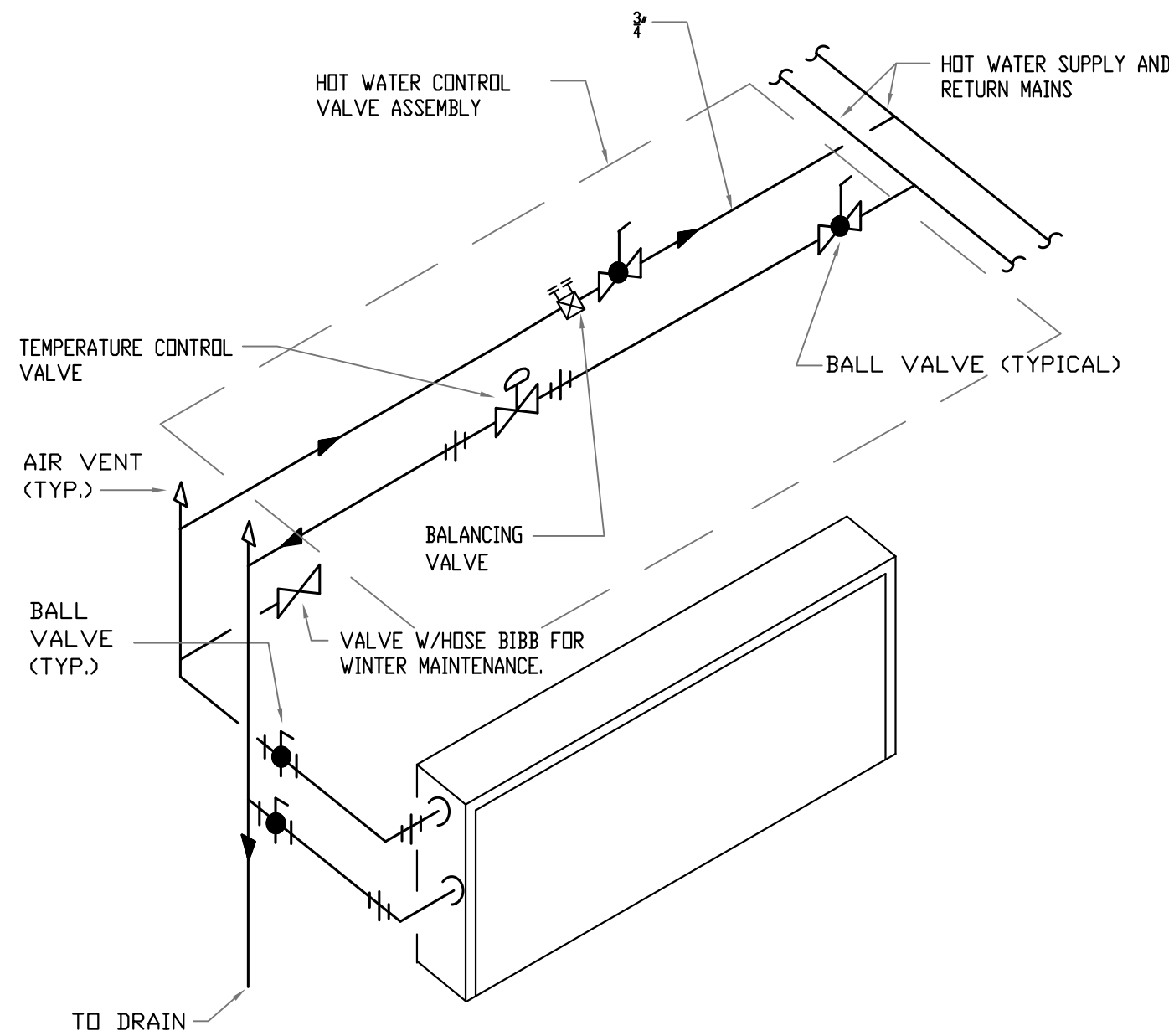
DETAILS AND DIAGRAMS

PROJECT NO.: 2752-00 SCALE: AS INDICATED

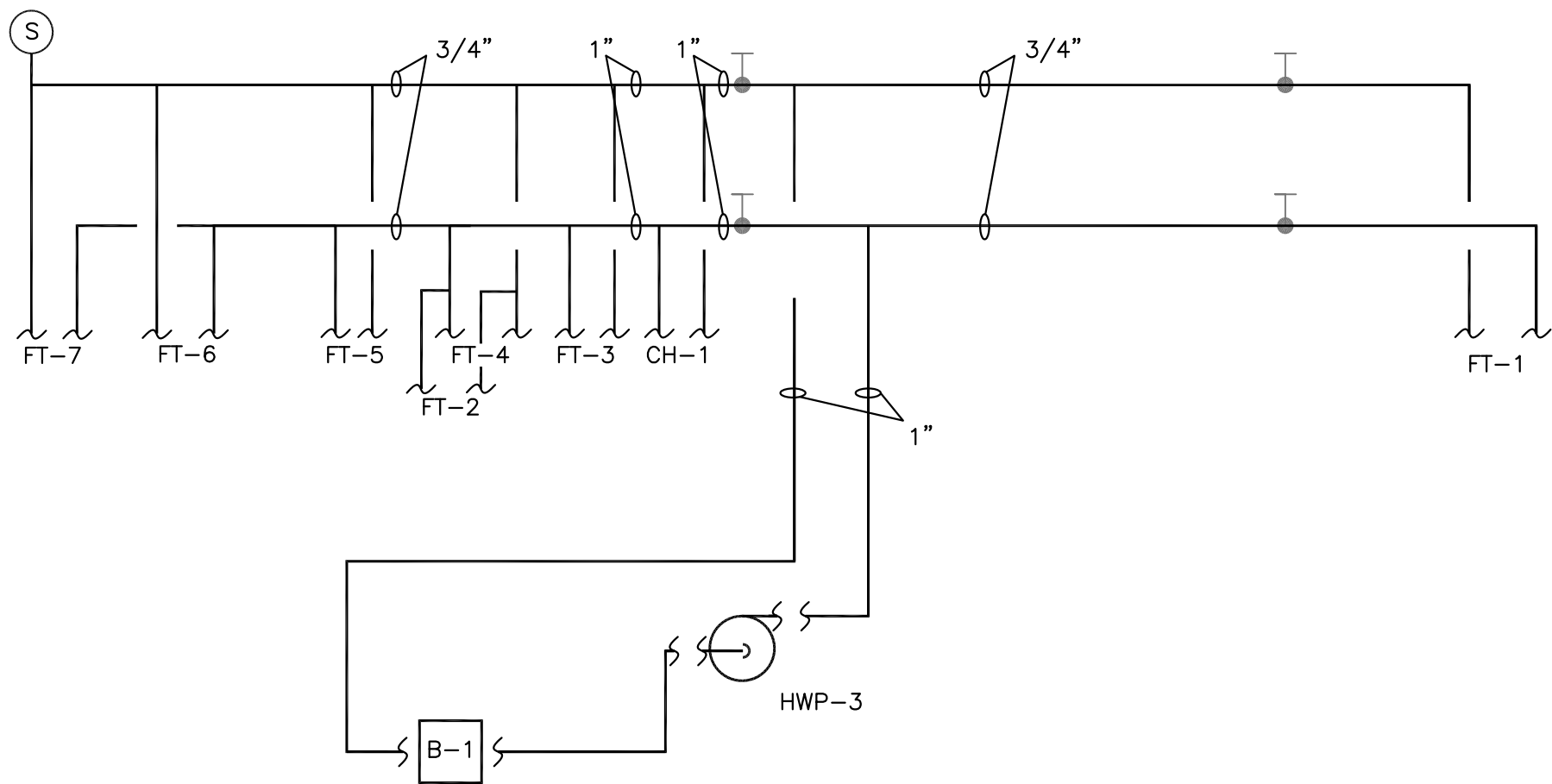
DRAWING NO.:

M-302

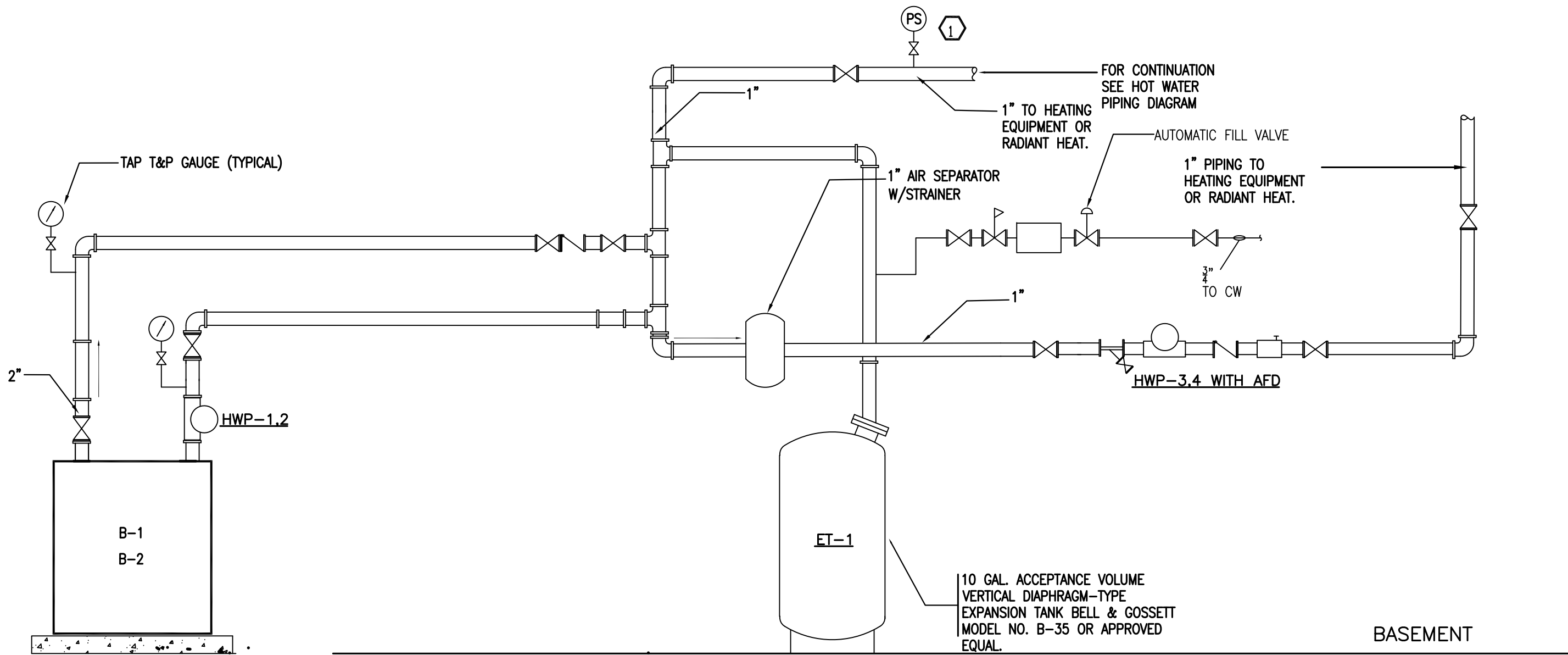
SPECIFICATIONS



1 HOT WATER FINTUBE/CABINET HEATER PIPING DIAGRAM
SCALE: NOT TO SCALE



2 HOT WATER PIPING RISER DIAGRAM
SCALE: NOT TO SCALE



3 HOT WATER PIPING DIAGRAM
SCALE: NOT TO SCALE

MINIMUM PIPE INSULATION THICKNESS (INCHES)							
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (inches)				
	CONDUCTIVITY Btu x in/h x ft ² x °F ⁻¹	NEW RATING TEMPERATURE*F	<1	1 TO <1-1/2	1-1/2 TO <4	4 TO <8	≥8
>350	0.32 - 0.34	250	4.5	5.0	5.0	5.0	5.0
251 - 350	0.29 - 0.32	200	3.0	4.0	4.5	4.5	4.5
201 - 250	0.27 - 0.30	150	2.5	2.5	2.5	3.0	3.0
141 - 200	0.25 - 0.34	125	1.5	1.5	2.0	2.0	2.0
105 - 140	0.21 - 0.28	100	1.0	1.0	1.5	1.5	1.5
40 - 60	0.21 - 0.27	75	0.5	0.5	1.0	1.0	1.0
<40	0.20 - 0.26	75	0.5	0.5	1.0	1.0	1.5

- a. FOR PIPES SMALLER THAN 1-1/2 INCHES (38mm) AND LOCATED IN PARTITIONS WITHIN CONDITIONED SPACES, REDUCTION OF THESE THICKNESSES BY 1 INCH (25mm) SHALL BE PERMITTED BEFORE THICKNESS ADJUSTMENT REQUIRED BY FOOTNOTE B, BUT TO A THICKNESS LESS THAN 1 INCH (25mm)
- b. FOR INSULATION OUTSIDE THE STATED CONDUCTIVITY RANGE, THE MINIMUM THICKNESS (T) SHALL BE DETERMINED AS FOLLOWS
- $$T = r((1+t/r) \quad K/k-1)$$
- WHERE:
T= MINIMUM INSULATION THICKNESS
r= ACTUAL OUTSIDE RADIUS OF PIPE.
t= INSULATION THICKNESS LISTED IN THE TABLE FOR APPLICABLE FLUID TEMPERATURE AND PIPE SIZE.
K= CONDUCTIVITY OF ALTERNATE MATERIAL AT MEAN RATING TEMPERATURE INDICATED FOR THE APPLICABLE FLUID TEMPERATURE Btu x in/h x ft x °F) AND
K= THE UPPER VALUE OF THE CONDUCTIVITY RANGE LISTED IN THE TABLE FOR THE APPLICABLE FLUID TEMPERATURE
- c. FOR DIRECT-BURIED HEATING AND HOT WATER SYSTEM PIPING, REDUCTION OF THESE THICKNESSES BY 1-1/2 INCHES (38mm) SHALL BE PERMITTED (BEFORE THICKNESS ADJUSTMENT REQUIRED IN FOOTNOTE B BUT NOT TO THICKNESS LESS THAN 1 INCH (25mm)
- ALL INSULATION WILL COMPLY WITH TABLE C403.2.1 OF THE NYS ENERGY CONSTRUCTION CODE.

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PUTNAM COUNTY
PROPOSED BUILDING AT TILLY
FOSTER FARM MECHANICAL /
PLUMBING / ELECTRIC CORNELL
100 NY 312
BREWSTER, NEW YORK, 10509

SCHEDULES AND
SPECIFICATIONS

PROJECT NO.: 2752-00 SCALE: AS INDICATED

DRAWING NO.:

M-303