

FIRE PROTECTION NOTES:

- UNLESS NOTED OTHERWISE THE ENTIRE BUILDING SHALL BE PROVIDED WITH WET SPRINKLER FIRE PROTECTION COVERAGE IN ACCORDANCE WITH NFPA 13. THE SYSTEM SHALL BE HYDRAULICALLY DESIGNED. FIRE PROTECTION TRADES SHALL OBTAIN HYDRANT FLOW TEST AS REQUIRED FROM CITY OF DETROIT FIRE MARSHAL.
- FIRE PROTECTION BRANCH MAINS SERVING ELECTRICAL EQUIPMENT ROOMS AND ROOMS INDICATED ON PLAN SHALL BE PROVIDED WITH A SUPERVISED O.S. & Y VALVE IN A WALL BOX IMMEDIATELY OUTSIDE THE ROOM. VALVE SHALL BE ON THE INCOMING LINE SIDE PRIOR TO DISTRIBUTION TO HEADS.
- REFER TO SPECIFICATIONS FOR SPRINKLER HEAD "TYPES" INTENDED FOR USE IN SPECIFIC AREAS.
- FIRE PROTECTION TRADES SHALL SUBMIT PLANS AND CALCULATIONS TO THE CITY OF DETROIT FIRE MARSHALS OFFICE AND TO THE BUILDING'S INSURING AGENCY FOR APPROVAL. CONTRACTOR SHALL THEN MAKE ALL NECESSARY CORRECTIONS AND RE-SUBMIT PLANS AND CALCULATION FOR RECORD TO THE ARCHITECT AS WELL AS THE FIRE MARSHAL.
- FIRE PROTECTION CONTRACTOR SHALL BE RESPONSIBLE TO SURVEY THE EXISTING SYSTEM & DESIGN/BUILD MODIFICATIONS AS REQUIRED FOR EXISTING & NEW SPACES.
- COORDINATE WITH ARCHITECTURAL FLOOR PLANS & REFLECTED CEILING PLANS. OBTAIN AUTOCAD FILES FROM THE ARCHITECT FOR DESIGN PURPOSES IF REQUIRED.

GENERAL HVAC NOTES:

- COORDINATE NEW DUCTWORK WITH EXISTING SITE CONDITIONS. EQUIPMENT MANUFACTURER AND ALL OTHER TRADES TO PREVENT INTERFERENCE. RESIZE & FIELD ROUTE AS REQUIRED. USE EQUIVALENT DUCT SIZING.
- PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURERS RECOMMENDATIONS.
- ALL CORING THROUGH FLOORS SHALL BE BY MECHANICAL CONTRACTOR.
- ALL DUCTWORK SHALL BE ROUTED AS HIGH AS POSSIBLE, UNLESS OTHERWISE NOTED. COORDINATE ROUTING WITH OTHER TRADES TO PREVENT INTERFERENCE.
- BALANCE AIR HANDLING SYSTEMS & DISTRIBUTION INCLUDING SUPPLY, RETURN & OUTDOOR AIR TO INDICATED FLOW RATES. REFER TO HVAC PLAN & VENTILATION SCHEDULE.
- DUCT SIZES TO DIFFUSERS SHALL MATCH NECK SIZE OF EACH. REFER TO SCHEDULES.
- ALL CONCEALED SUPPLY AIR DUCTWORK SHALL BE INSULATED PER SPECIFICATIONS.
- UNLESS NOTED ALL DUCTWORK SHALL BE CONCEALED IN WALLS AND/OR CEILING SPACE.
- SEAL ALL PENETRATIONS THROUGH WALLS PER SPECIFICATIONS.
- COORDINATE EXACT LOCATIONS OF DIFFUSERS AND RETURN GRILLES WITH ARCHITECTURAL AND ELECTRICAL REFLECTED CEILING PLAN.
- COORDINATE T-STAT LOCATIONS WITH ARCHITECT.
- PROVIDE SPIN-IN DAMPERS AT ALL ROUND BRANCH DUCT CONNECTIONS TO DIFFUSERS. PROVIDE MANUAL VOLUME DAMPERS AT EACH BRANCH DUCT AT CONNECTION TO MAIN AS WELL AS IN EACH DUCT AFTER A BRANCH DUCT SPLIT. THESE ARE NOT INDICATED ON PLANS, HOWEVER, ARE REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING LOCATIONS NECESSARY TO PROPERLY BALANCE THE SYSTEM.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF LIGHTS, CEILING DROPS, ELEVATIONS, ETC.
- A SPRINKLER SYSTEM IS REQUIRED FOR THE BUILDING. LOCATE SEMI-RECESSED PENDANT MOUNTED SPRINKLER HEADS TO SUIT THE NEW CEILING CONFIGURATION. SPRINKLER HEADS SHALL BE STANDARD SEMI-RECESSED PENDANT TYPE WITH CHROME PLATED FINISH.
- USE EQUIVALENT DUCT SIZING WHERE REQUIRED FOR FIT & CROSSINGS, ETC.

GENERAL UTILITY NOTES:

- UTILITY INFORMATION, AS SHOWN, INDICATES APPROXIMATE LOCATIONS AND TYPES OF FACILITIES ONLY, AS DISCLOSED TO THIS FIRM BY THE VARIOUS UTILITY COMPANY'S RECORDS. NO GUARANTEE IS GIVEN OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF.
- PRIOR TO CONSTRUCTION, ALL LOCATIONS AND DEPTHS OF EXISTING OVERHEAD AND UNDERGROUND UTILITIES IN CONFLICT WITH THE CONSTRUCTION OF PROPOSED IMPROVEMENTS SHALL BE VERIFIED IN THE FIELD.
- DURING CONSTRUCTION, CONTRACTOR SHALL USE EXTREME CAUTION WHEN OPERATING NEAR OVERHEAD AND/OR BURIED UTILITIES.

CONTROLS:

- INSTALL & CALIBRATE THE PACKAGED CONTROLS PROVIDED WITH THE HEAT PUMP EQUIPMENT PER MFR I.O.M.; WIRING & CONTROLS.
- PROVIDE INSTALL ALL & CALIBRATE ALL CONTROLS AS NECESSARY FOR DOMESTIC WATER HEATING SYSTEM & FIRE PUMP ROOM VENTILATION FAN & LOUVER.
- SEE ALSO SPECIFICATION.

GENERAL MECHANICAL NOTES:

- SHOULD THERE BE ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS & SPECIFICATIONS THE GREATER QUANTITY OR QUALITY WORK SHALL BE PERFORMED. THIS WORK MUST BE SUBMITTED IN WRITING TO ENGINEER PRIOR TO FINAL BID FOR APPROVAL. NO EXTRAS SHALL BE ALLOWED AFTER THAT TIME. THIS SHALL ALSO PERTAIN TO ANY DISCREPANCIES IN THE CONTRACT DOCUMENTS OR BETWEEN TRADES. ALL ITEMS SHALL BE ADDRESSED IN WRITING PRIOR TO FINAL BIDS.
- CONTRACTORS ARE CAUTIONED NOT TO SUBMIT A BID WITHOUT CAREFULLY REVIEWING THE COMPLETE CONTRACT DOCUMENTS INCLUDING ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND ELECTRICAL TRADES, DRAWINGS, AND THE COMPLETE PROJECT MANUAL. NO ADDITIONAL CHARGE TO CONTRACT PRICE WILL BE ALLOWED FOR ADDITIONAL CONTRACTOR EXPENSE RESULTING FROM A FAILURE TO COMPLY WITH THIS REQUIREMENT.
- NO MODIFICATIONS TO THE SPECIFICATIONS, CONSTRUCTION DOCUMENTS, OR INTENT OF THE SCOPE OF WORK SHALL BE ALLOWED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE ENGINEER. ALL MODIFICATIONS, CHANGE ORDERS, ALTERNATES, VALUE ENGINEERING, OR ANY REVISIONS SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT AND ENGINEER FOR REVIEW.
- GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED EQUIPMENT AND OWNER PROVIDED EQUIPMENT. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL TRADES RESPONSIBLE FOR FINAL CONNECTION OF ALL EXISTING AND RELOCATED EQUIPMENT.

GENERAL PLUMBING & PIPING NOTES:

- COORDINATE NEW PIPING WITH EXISTING SITE CONDITIONS, EQUIPMENT, MANUFACTURER, AND ALL OTHER TRADES TO PREVENT INTERFERENCE.
- PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURERS RECOMMENDATIONS.
- ALL CORING THROUGH FLOORS AND FLOOR TRENCHING SHALL BE BY MECHANICAL CONTRACTOR.
- ALL PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE, UNLESS OTHERWISE NOTED. COORDINATE ROUTING WITH OTHER TRADES TO PREVENT INTERFERENCE.
- BALANCE DOMESTIC HOT WATER RETURN WATER SYSTEMS TO INDICATED FLOW RATES.
- ALL PIPING SHALL BE INSULATED PER SPECIFICATIONS.
- ALL PIPING SHALL BE CONCEALED IN WALLS AND/OR CEILING SPACE.
- SEAL ALL PENETRATIONS THROUGH WALLS. REFER TO SPECIFICATIONS.
- SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL PLUMBING FIXTURES.
- COORDINATE ALL LOCATION, SIZE, AND ELEVATIONS OF ALL SLEEVES THROUGH WALLS AND SLABS WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.
- ALL OUTLETS FOR FUTURE CONNECTIONS SHALL BE VALVED, CAPPED, AND INSTALLED TO PERMIT EASY CONNECTION. COORDINATE LOCATION WITH STRUCTURAL AND ARCH. CONDITIONS.
- VERIFY DEPTHS, SIZES, AND LOCATIONS OF EXISTING UTILITIES IN THE FIELD. INCLUDING POINTS OF CONNECTION BEFORE STARTING WORK.
- FAUCETS AND PLUMBING FIXTURES SHALL BE OF WATER CONSERVATION TYPE AND COMPLY WITH THE STATE ENERGY STANDARDS.
- RUN ALL SANITARY PIPING AT 1/8" PER FOOT, MINIMUM SLOPE, UNLESS OTHERWISE NOTED. 1-1/2" TO 2-1/2" PIPES SHALL PITCH AT 1/4" PER FOOT.
- COORDINATE INTERRUPTIONS OF SERVICES INCLUDING WATER, SEWER, AND NATURAL GAS WITH OWNER AND UTILITY COMPANIES A MINIMUM OF 72 HOURS IN ADVANCE OF ALTERATIONS.
- REFER TO ARCH. DRAWINGS FOR PHASING LIMITATIONS ON SEQUENCE OF CONSTRUCTION.
- CONTRACTOR SHALL MAINTAIN ADEQUATE CLEARANCES ABOVE AND AROUND ELECTRICAL PANELS, EQUIPMENT, AND TRANSFORMERS WHEN ROUTING OVERHEAD DOMESTIC WATER, SANITARY, OR STORM PIPING.
- OVERFLOW RAIN CONDUCTORS SHALL BE ROUTED TO EXTERIOR WALL AND SPILLED TO GRADE.
- REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, CONNECTIONS, AND ADDITIONAL REQUIREMENTS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH STATE OF MICHIGAN AND COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
- A PROVIDE TRAP SEAL DEVICE EQUAL TO RECTORSAL SURSAL-PLUS OR J.R. SMITH 2692 QUAD CLOSE. FOR ALL FLOOR DRAINS, FLOOR SINKS WHERE TRAP IS SUBJECT TO EVAPORATION LOSS. CONFIRM ACCEPTANCE OF THIS METHOD WITH LOCAL PLUMBING AUTHORITY.
- PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS.
- ALL VENTS THROUGH THE ROOF MUST BE A MINIMUM OF 10'-0" FROM OUTDOOR AIR INTAKES AND 12" ABOVE THE ROOF.
- JOINTS, FLANGES, UNIONS OR VALVES OF ANY KIND SHALL NOT BE INSTALLED IN THE NATURAL GAS PIPING LOCATED ABOVE CEILING IN A RETURN AIR PLENUM.
- AT EACH CONNECTION OF GAS SUPPLY TO EQUIPMENT, PROVIDE A PIPE UNION, GAS SERVICE COCK, TEE, AND 12" LONG DIRT LEG WITH CAP.
- AS REQUIRED TO HANDLE ELEVATED GAS PRESSURE, PROVIDE GAS PRESSURE REGULATORS AT EQUIPMENT OR IN MAINS SERVING GROUPS OF EQUIPMENT. REGULATORS SHALL BE EQUAL TO MAXITROL 210 SERIES-BALANCED VALVE/POSITIVE LOCK-UP TYPE & CAPABLE OF INTERMITTENT 10 PSI SUPPLY OVERPRESSURE PROTECTION. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY EXISTING DELIVERY PRESSURE & MAXIMUM INLET PRESSURE OF EQUIPMENT & ADJUST DESIGN ACCORDINGLY. COORDINATE WITH THE GAS UTILITY FOR REQUIRED ADJUSTMENTS AT THE SERVICE MANIFOLD NECESSARY TO PROPERLY FIRE ALL EQUIPMENT.
- THE DRAWINGS ARE DIAGRAMMATIC AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS AND COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE ADDITIONAL FITTINGS AND OFFSETS THAT MAY BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, DUCTWORK, PIPING SYSTEMS, ELECTRICAL CONDUIT, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC., AND/OR OTHER SPACE CONSTRAINTS.
- REFER TO PLUMBING FIXTURE SCHEDULE FOR ROUGH-IN PIPE SIZES TO FIXTURES.
- CONDENSATE DRAIN (INSULATED) TO SPILL OVER SERVICE SINK, FLOOR DRAIN OR HUB OUTLET.

NATIONAL GREEN BUILDING STANDARD: SILVER RATING
ALL EQUIPMENT, MATERIALS AND METHODS OF CONSTRUCTION USED FOR THIS PROJECT SHALL COMPLY WITH THE NATIONAL GREEN BUILDING STANDARD ICC-700

MECHANICAL LEGEND				
HOSE BIBB (HB)	REDUCER	HVAC	HEATING VENTILATING & AIR CONDITIONING	
WALL HYDRANT (WHD)	FLEXIBLE DUCT CONNECTION	HV	HEATING VENTILATING UNIT	
FIRE DEPT. SIAMESE CONNECTION	SPIN-IN FITTING WITH VOLUME DAMPER	HW	HOT WATER	
ANCHOR	PENETRATION RADIATION DAMPER	HWR	HOT WATER RETURN	
AIR BALANCING DAMPER	HORIZONTAL DUCT FIRE DAMPER	I.E.	INVERT ELEVATION	
BACKFLOW PREVENTER (BFP)	VERTICAL DUCT FIRE DAMPER	IW	INDIRECT WASTE	
GAS METER	COMBINATION FIRE/SMOKE DAMPER	LAV	LAVATORY	
WATER METER	ABSORBER	MS	MOP SINK	
FLOW SWITCH (FS)	AC	AIR CONDITIONING UNIT	O.A.	OUTSIDE AIR
DIAMETER	ACCU	AIR COOLED CONDENSING UNIT	OED	OPEN END DUCT
PLUG VALVE NON LUBRICATED TYPE (KEYPORT 400 SERIES) (GAS COCK)	A.F.F.	ABOVE FINISHED FLOOR	ORS	OVERFLOW ROOF SUMP
BALL VALVE	AGF	AIR GAP FITTING	R.A.	RETURN AIR
GATE VALVE	AHU	AIR HANDLING UNIT	RG/EG	RETURN GRILLE OR EXHAUST GRILLE
CHECK VALVE	ASR	AUTO SPRINKLER RISER	RS	ROOF SUMP
PRESSURE REGULATING VALVE (PRV)	BT	BATH TUB	S	SINK
RELIEF VALVE	CD	CEILING DIFFUSER	S.A.	SUPPLY AIR
BUTTERFLY VALVE	CFH	CUBIC FEET PER HOUR	SAN	SANITARY
THERMOMETER	CFM	CUBIC FEET PER MINUTE	SH	SHOWER
THERMOSTAT (ELECTRIC)	CO	CLEANOUT	SPR	SANITARY PLUMBING RISER
MANUAL AIR VENT	CU	CONDENSING UNIT	SR	SUPPLY REGISTER
SHOCK ABSORBER	CW	COLD WATER (DOMESTIC)	SS	SERVICE SINK
BALANCING VALVE	DL	DRIP LEG (6" LONG - PIPE SIZE)	V.T.R.	VENT THRU ROOF
GAUGE	DN	DOWN	W	WASTE
UNION	DN-1	DOWNSPOUT NOZZLE	WC	WATER CLOSET
PIPE DOWN	DPR	DOMESTIC WATER PLUMBING RISER	WHD	WALL HYDRANT
PIPE UP	DR	DRAIN LINE	---	DOMESTIC COLD WATER
PIPE TEE	DWH	DOMESTIC WATER HEATER	---	DOMESTIC HOT WATER
STRAINER	EF	EXHAUST FAN	---	DOMESTIC HOT WATER RETURN
FLOOR DRAIN	EWC	ELECTRIC WATER COOLER	FP	FIRE PROTECTION
PIPE GUIDES	FD	FLOOR DRAIN	G	NATURAL GAS
CIRCUIT SETTER	FS	FLOOR SINK	ORC	OVERFLOW ROOF CONDUCTOR
RETURN GRILLE	FTFD	FUNNEL TYPE FLOOR DRAIN	RC	ROOF CONDUCTOR
SUPPLY DIFFUSER	HB	HOSE BIBB	SAN	SANITARY SEWER
EXHAUST GRILLE	HO	HUB OUTLET	ST	STORM SEWER
DOMESTIC BOOSTER PUMP	HP	HEAT PUMP	V	VENT PIPING
SMOKE DAMPER	HP-X-1	INDOOR HEAT PUMP FAN COIL X=TAG NO.	SPR	SANITARY PLUMBING RISER
MOTORIZED DAMPER	HP-X-0	OUTDOOR HEAT PUMP UNIT X=TAG NO.	DPR	DOMESTIC WATER PLUMBING RISER

MECHANICAL DRAWING INDEX	
SHEET NO.	SHEET TITLE
M0.1	MECHANICAL COVER SHEET
FP1.0	FLOOR PLANS - FIRE PROTECTION
P0.1	BASEMENT FLOOR PLAN - UNDERGROUND PLUMBING
P1.0	BASEMENT FLOOR PLAN - PLUMBING
P1.1	FIRST FLOOR PLAN - PLUMBING
P1.2	SECOND FLOOR PLAN - PLUMBING
P1.3	THIRD FLOOR PLAN - PLUMBING
P1.4	FOURTH FLOOR PLAN - PLUMBING
P1.5	ROOF PLAN - PLUMBING
P2.1	PLUMBING SCHEDULES
P2.2	PLUMBING SCHEDULES
P3.1	PLUMBING DETAILS, PIPING DIAGRAMS & RISER DIAGRAMS
P3.2	PLUMBING DETAILS, PIPING DIAGRAMS & RISER DIAGRAMS
M1.0	BASEMENT FLOOR PLAN - HVAC
M1.1	FIRST FLOOR PLAN - HVAC
M1.2	SECOND FLOOR PLAN - HVAC
M1.3	THIRD FLOOR PLAN - HVAC
M1.4	FOURTH FLOOR PLAN - HVAC
M1.5	ROOF PLAN - MECHANICAL
M2.1	MECHANICAL SCHEDULES
M2.2	MECHANICAL SCHEDULES
M3.1	MECHANICAL DETAILS & DIAGRAMS
M3.2	DOAS UNIT DOAS-1 SCHEDULE & DETAILS

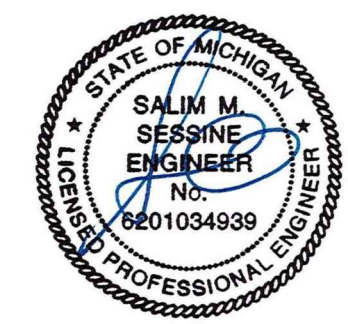
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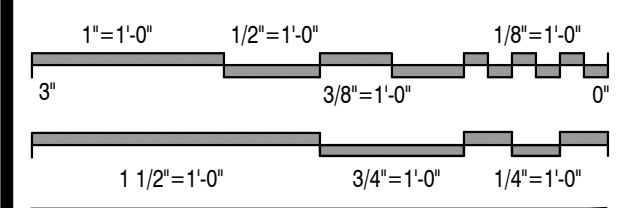
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Project

**Apartment Renovation
LINWOOD APARTMENTS**
2295 W Grand Blvd
Detroit, MI 48208



Issued For	Date
Preliminary Review	01.31.2023
Review & Bids	02.27.2023
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Plan Review Revisions	03.20.2025
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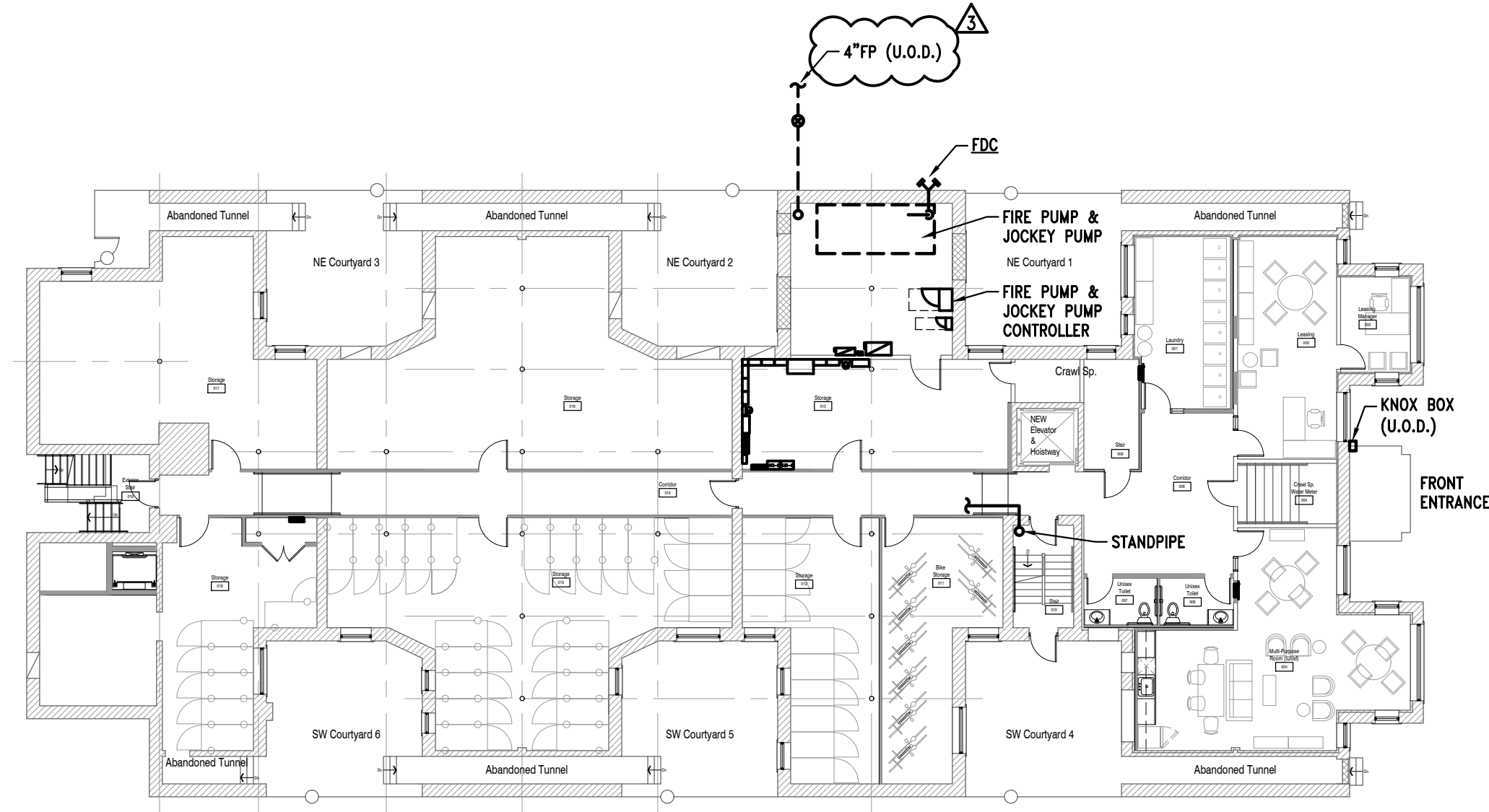
Drawing Title

Mechanical Cover Sheet

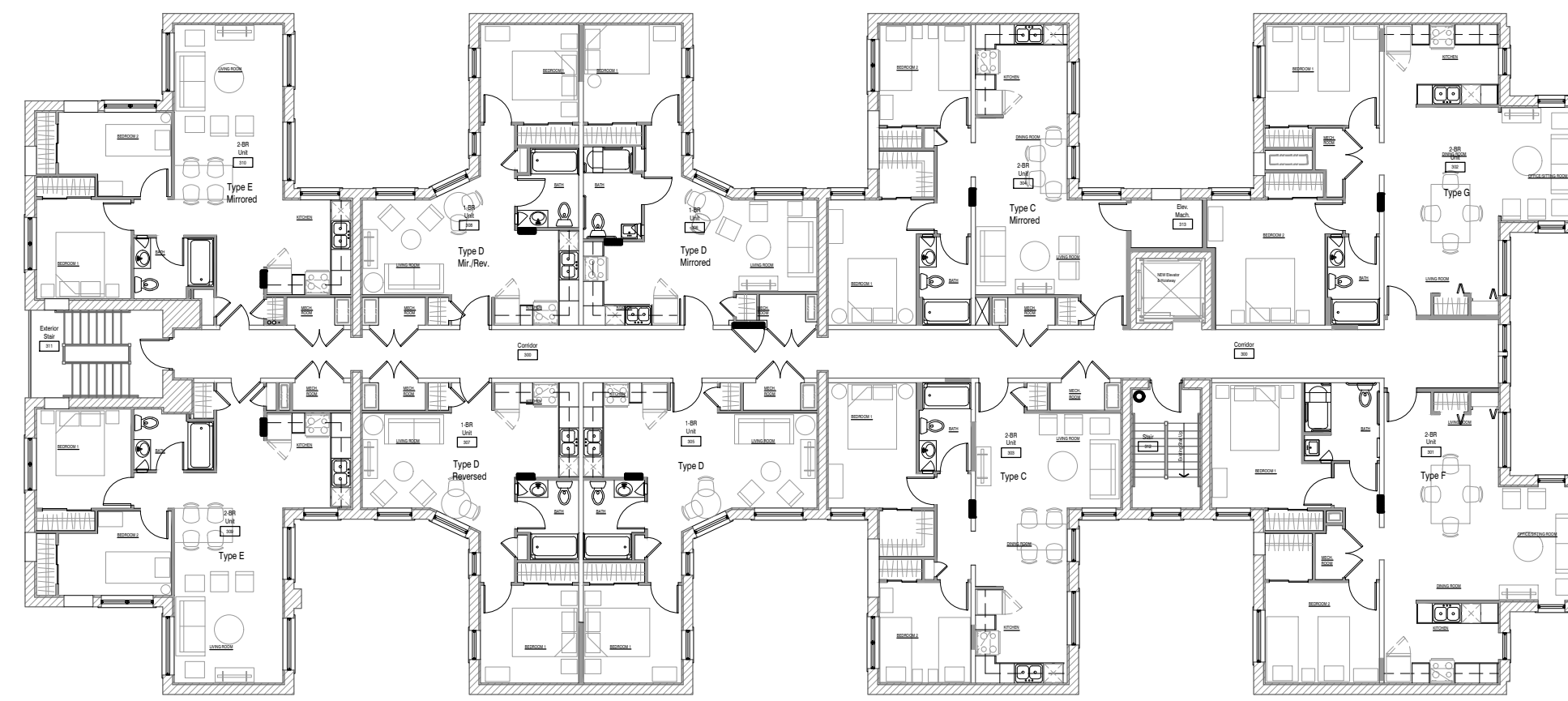
2021-248
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LS SS
Drawn By Checked By
As Noted
Scale

M0.1
Drawing No.

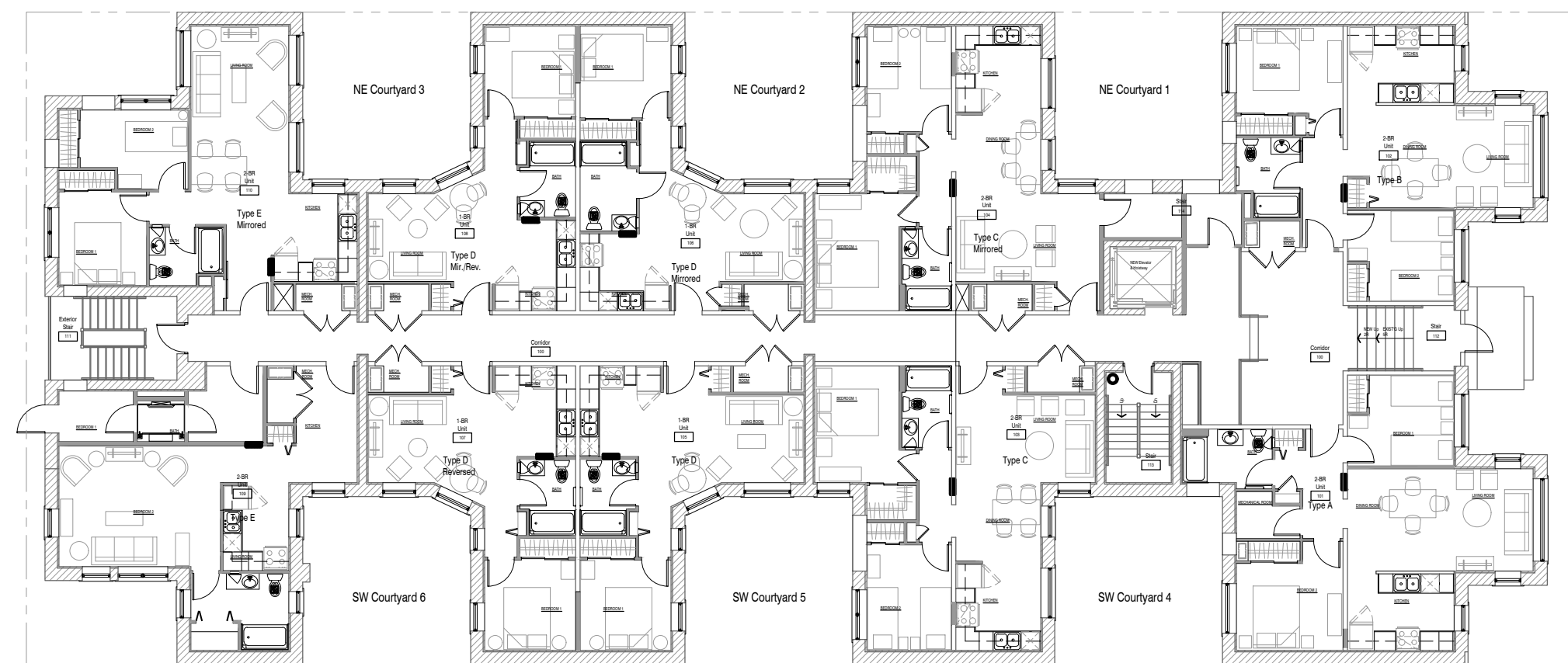
H:\EAM\HANN\Projects\2021\483 Shelter Design\31061 Linwood Apts\CAD\Mech\MO.1 Mechanical Cover Sheet.dwg, 06/02/2026 12:31:35, g3y3an



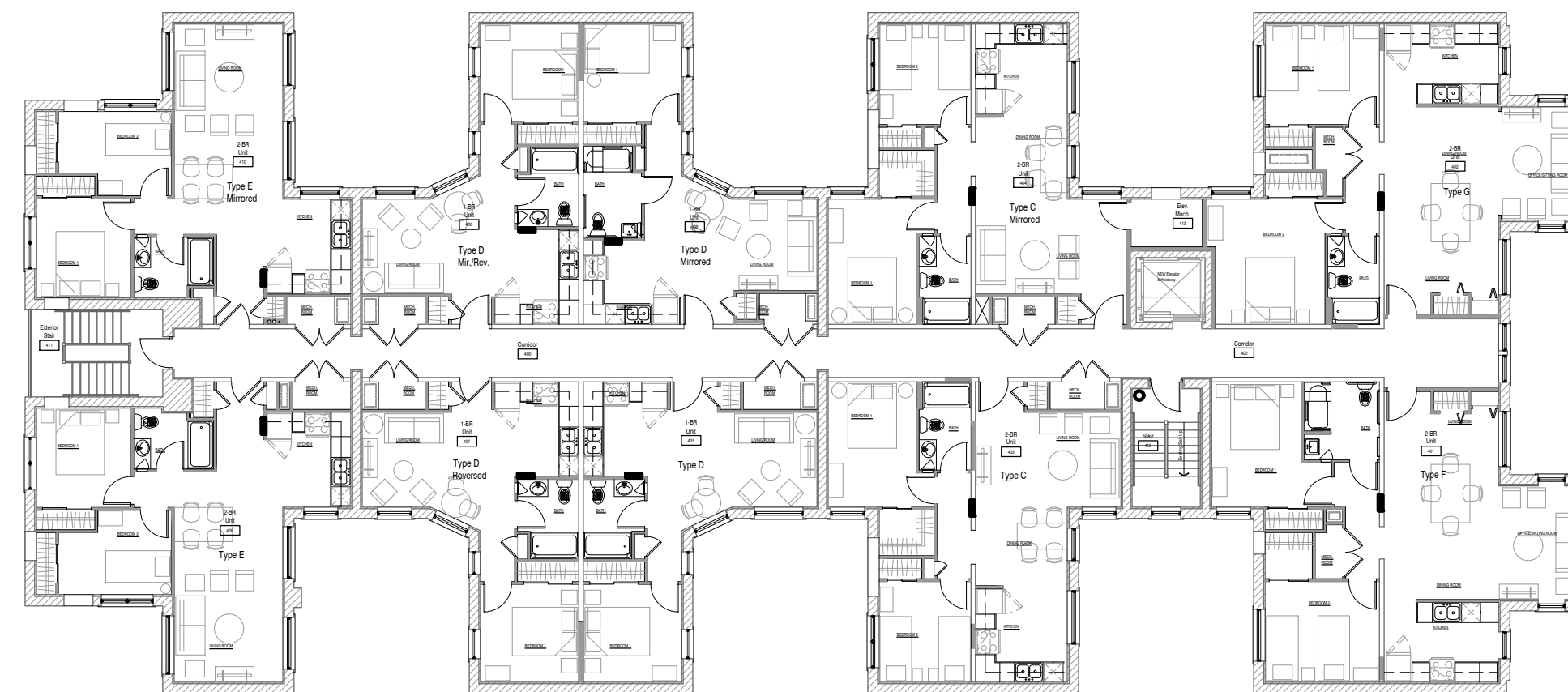
1 Basement Floor Plan - Fire Protection
 FP1.0 Scale: 1/16" = 1'-0"
 North



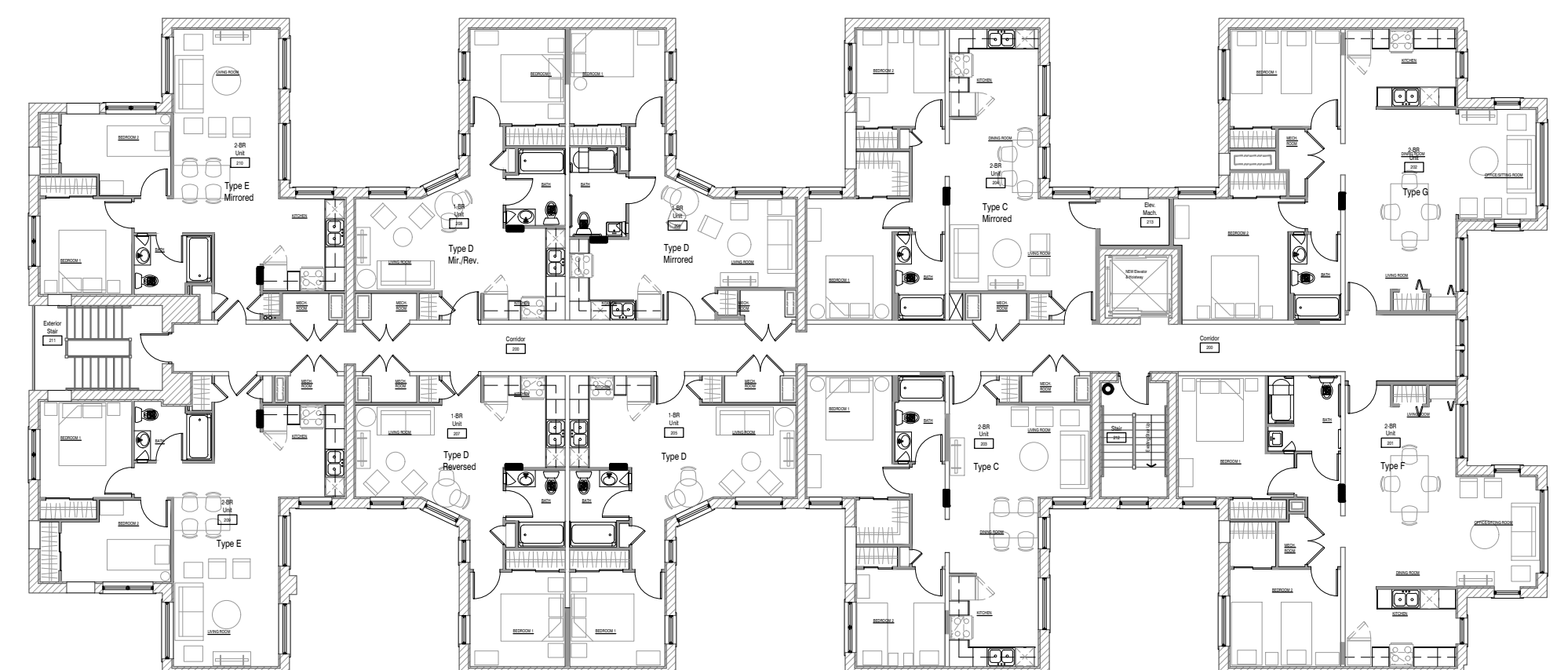
4 Third Floor Plan - Fire Protection
 FP1.0 Scale: 1/16" = 1'-0"
 North



2 First Floor Plan - Fire Protection
 FP1.0 Scale: 1/16" = 1'-0"
 North



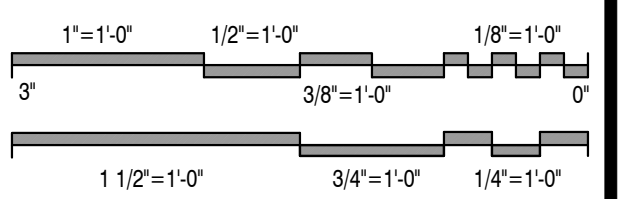
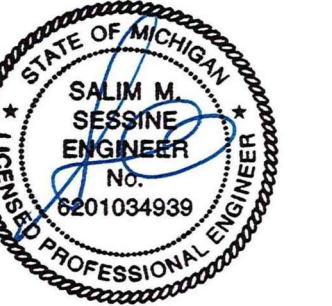
5 Fourth Floor Plan - Fire Protection
 FP1.0 Scale: 1/16" = 1'-0"
 North



3 Second Floor Plan - Fire Protection
 FP1.0 Scale: 1/16" = 1'-0"
 North

FIRE PROTECTION NOTES:

1. FIRE PROTECTION CONTRACT SHALL BE RESPONSIBLE TO DESIGN/BUILD THE SYSTEM AS REQUIRED FOR THE ENTIRE BUILDING.
2. THE ENTIRE BUILDING SHALL BE PROVIDED WITH WET SPRINKLER FIRE PROTECTION COVERAGE IN ACCORDANCE WITH NFPA 13/13R AS APPLICABLE. THE SYSTEM SHALL BE HYDRAULICALLY DESIGNED. FIRE PROTECTION TRADES SHALL OBTAIN HYDRANT FLOW TEST AS REQUIRED FROM CITY OF DETROIT, MI FIRE MARSHAL.
3. FIRE PROTECTION BRANCH MAINS SERVING ELECTRICAL EQUIPMENT ROOMS SHALL BE PROVIDED WITH A SUPERVISED O.S. & Y VALVE IN A WALL BOX IMMEDIATELY OUTSIDE THE ROOM. VALVE SHALL BE ON THE INCOMING LINE SIDE PRIOR TO DISTRIBUTION TO HEADS.
4. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
5. FIRE PROTECTION TRADES SHALL SUBMIT PLANS AND CALCULATIONS TO THE CITY OF DETROIT, MI FIRE MARSHALS OFFICE AND TO THE BUILDING'S INSURING AGENCY FOR APPROVAL. CONTRACTOR SHALL THEN MAKE ALL NECESSARY CORRECTIONS AND RE-SUBMIT PLANS AND CALCULATION FOR RECORD TO THE ARCHITECT AS WELL AS THE FIRE MARSHAL.
6. COORDINATE WITH ARCHITECTURAL FLOOR PLANS & REFLECTED CEILING PLANS. OBTAIN AUTOCAD FILES FROM THE ARCHITECT FOR DESIGN PURPOSES IF REQUIRED. SURVEY EXISTING SYSTEM, RISERS, ETC. AS NECESSARY FOR NEW DESIGN.
7. A FIRE PUMP WILL BE REQUIRED. DESIGN & INSTALLATION BY THIS CONTRACTOR.
8. COORDINATE WITH MECHANICAL TRADES FOR NEW DUCTWORK AND PIPING ROUTING AND CEILING REMOVALS AS REQUIRED TO INSTALL NEW WORK. DUE TO LIMITED CEILING SPACE, DUCTWORK ROUTING WILL TAKE PRECEDENCE OVER PIPING AND FIRE PROTECTION.
9. REFER TO ALL TRADES NEW WORK PLANS, AND THIS DRAWING AND NOTES DETERMINE EXTENT OF SCOPE.
10. COORDINATE WITH FIRE ALARM & ELECTRICAL TRADES FOR ASSOCIATED WORK.
11. PROVIDE A STANDPIPE SYSTEM WITH HOSE STATIONS IN COMPLIANCE WITH CODE.
12. COORDINATE WITH DETROIT CITY STANDARDS & FIRE MARSHAL REVIEW COMMENTS.

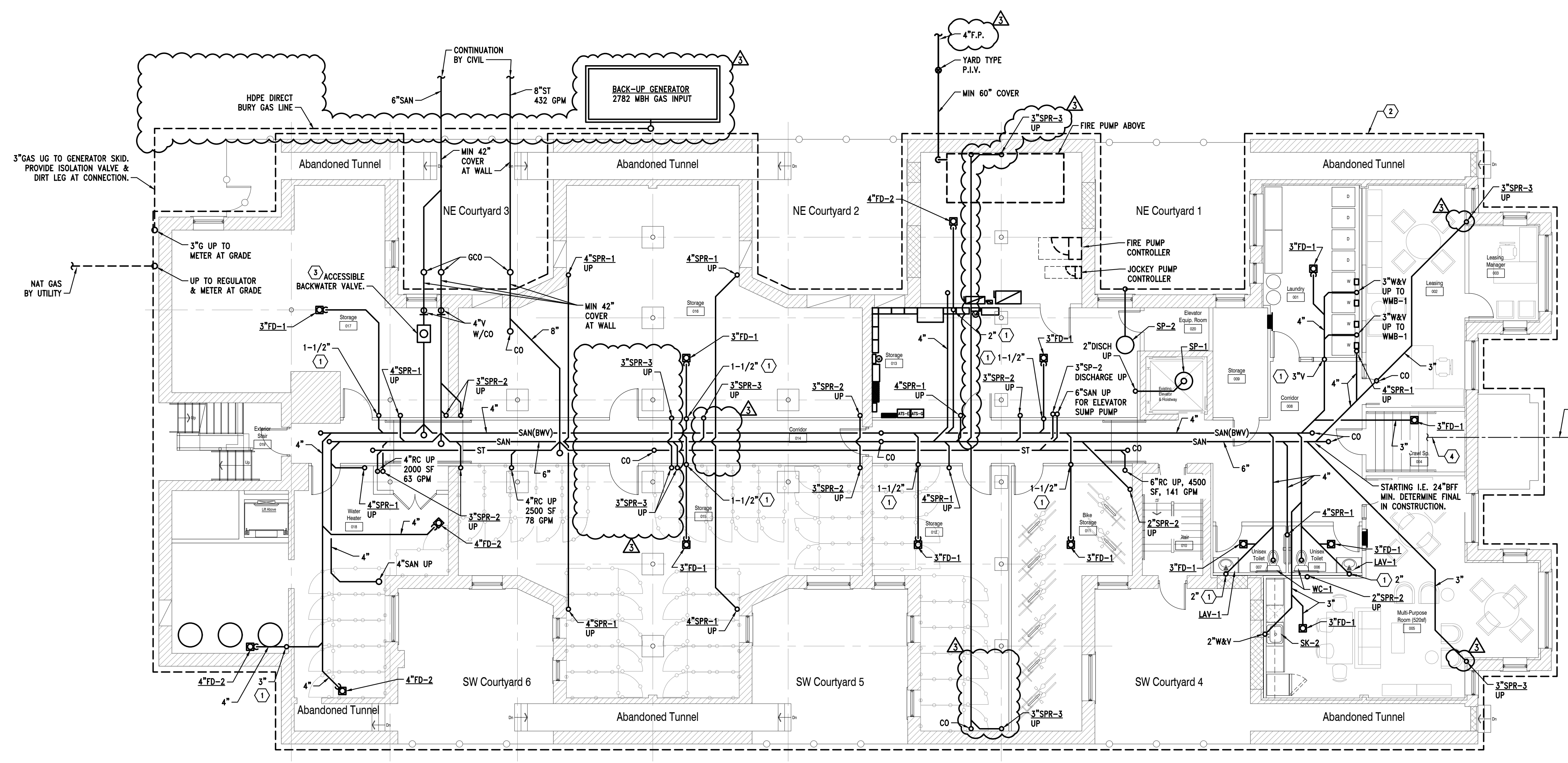


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Drawing Title
**Floor Plans
 - Fire Protection**

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FP1.0
 Drawing No.



KEYED NOTES:

- ① VENT UP TO AAV IN VENTILATED WALL BOX.
- ② PROVIDE NEW 6" HDPE CORRUGATED & PERFORATED FOOTING DRAINAGE PIPE EQUAL TO COREX MFR WITH SEDIMENT SOCK. INCLUDE EXCAVATION & BACKFILL & REPAIR GRADE. PROVIDE DEDUCT ALTERNATE IF EX. PIPE IS FOUND TO BE IN GOOD CONDITION & ABLE TO BE RE-USED. INCLUDE INSPECTION & ASSESSMENT OF PIPE CONDITION, ROUTING, ETC. IN BASE BID.
- ③ PROVIDE BACKWATER VALVE ASSEMBLY PER DETAIL ON P3.1.
- ④ EX. 3" CW TO SERVICE METER IN CRAWL SPACE. SEE P1.0.

1
P0.1 **Basement Floor Plan - Underground Plumbing**
Scale: 1/8" = 1'-0"
North



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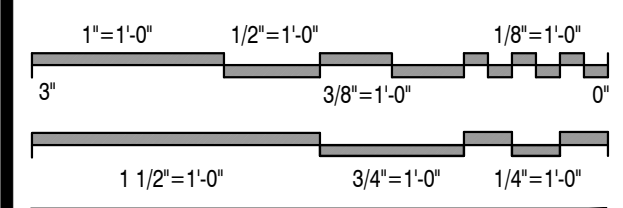
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Project

**Apartment Renovation
LINWOOD APARTMENTS**
2295 W Grand Blvd
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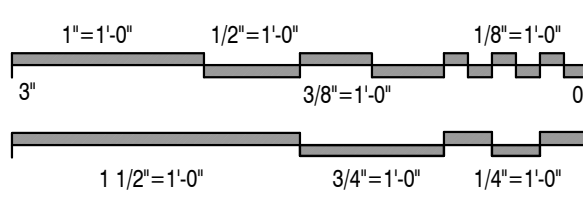
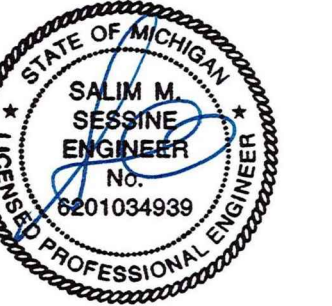
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Drawing Title
**Basement Floor Plan -
Underground Plumbing**

2021-248
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Scale _____

P0.1
Drawing No. _____

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Drawing Title

**First Floor Plan
- Plumbing**

2021-248
Project No. _____
LS _____ SS _____
Drawn By _____ Checked By _____
As Noted _____
Scale _____

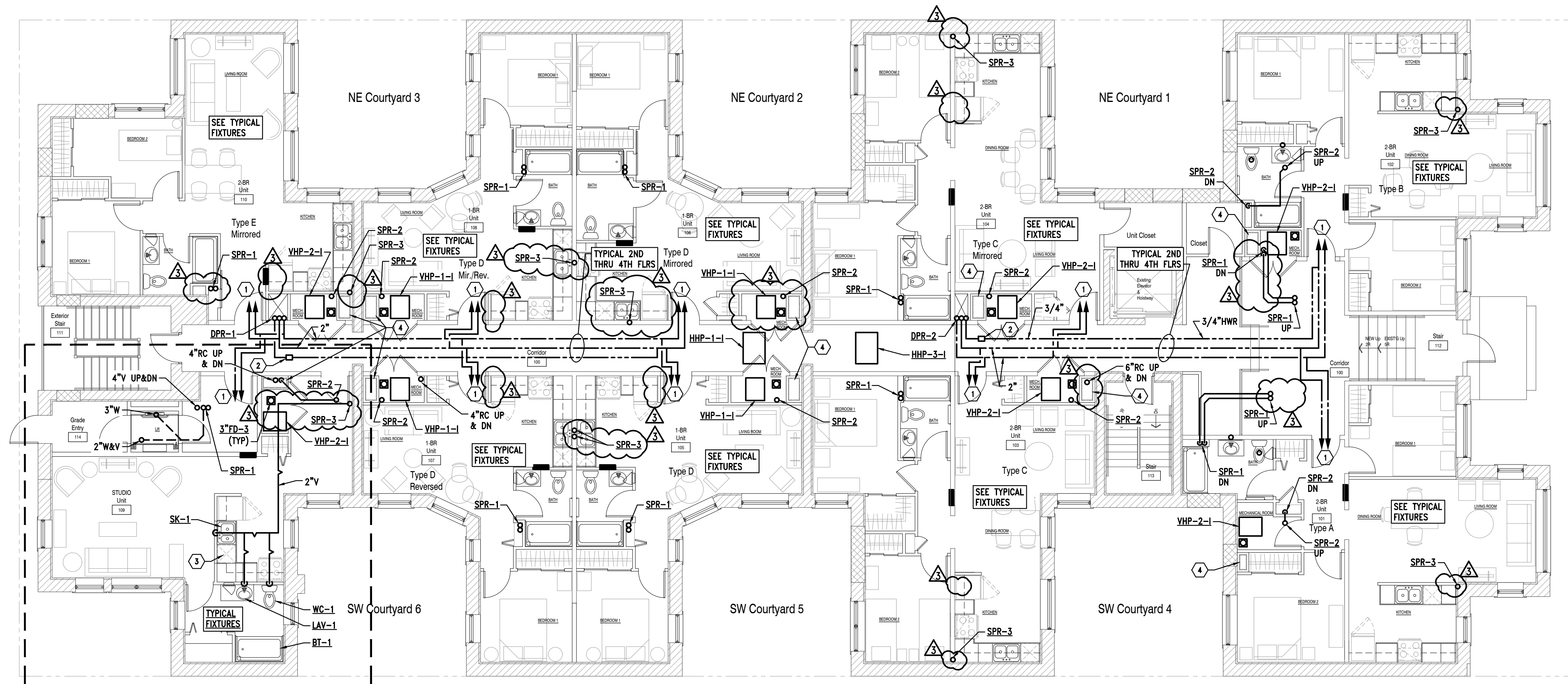
P1.1
Drawing No.

KEYED NOTES:

- ① 1" HW & CW TO APARTMENT WITH ISOLATION VALVES. SEE DETAIL.
- ② CIRCUIT SOLVER AUTOMATIC DOMESTIC HWR FLOW REGULATING VALVE.
- ③ PROVIDE ROUGH-IN & FINAL HOOK-UP FOR UNDER COUNTER DISHWASHER (TYPICAL).
- ④ 2 HOUR RATED REFRIGERANT CHASE BY ARCHITECTURAL TRADES. SEE CHASE DETAIL ON SHEET M3.1.

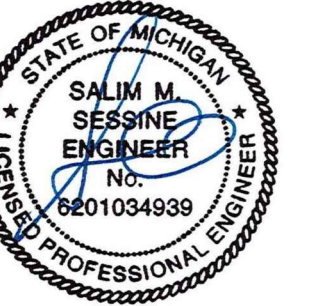
NOTES

- 1. REFER TO PLUMBING RISER DIAGRAMS ON P3.1 FOR TYPICAL RISERS & PIPING TO FIXTURES.



1 First Floor Plan - Plumbing
P1.1 Scale: 1/8" = 1'-0"
North

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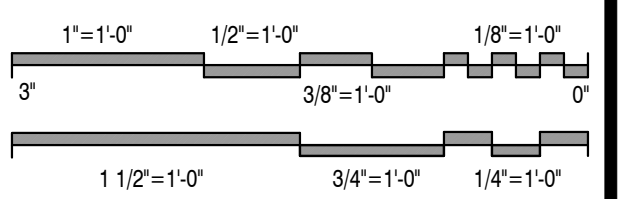
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Project

**Apartment Renovation
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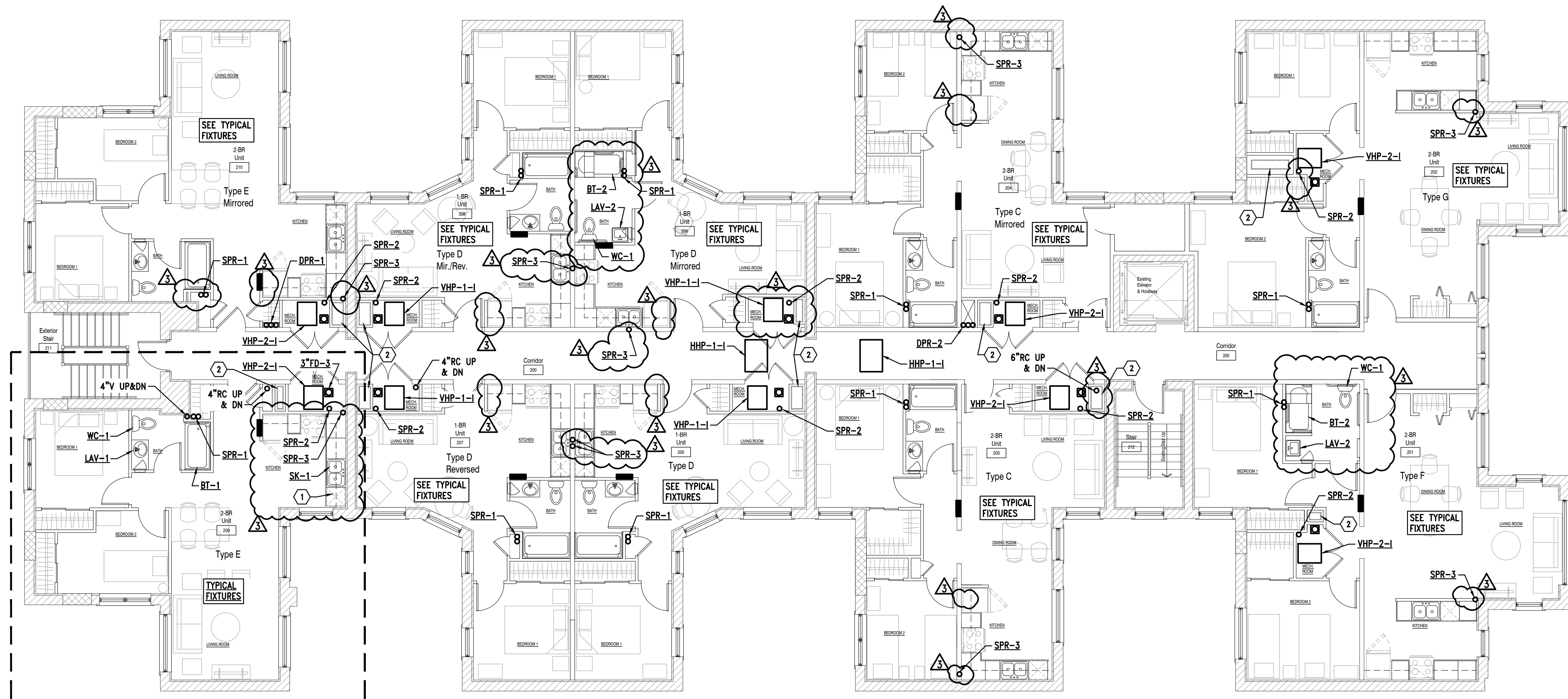
Issued For	Date
Preliminary Review	01.31.2023
Review & Bids	02.27.2023
Bids & Permits	08.12.2024
Plan Review Revisions	03.20.2025
MSHDA Revisions	05.07.2026

Drawing Title
**Second Floor Plan
- Plumbing**

2021-248
Project No.
LS
Drawn By
As Noted
Scale

SS
Checked By

P1.2
Drawing No.



1 Second Floor Plan - Plumbing
P1.2 Scale: 1/8" = 1'-0"
North

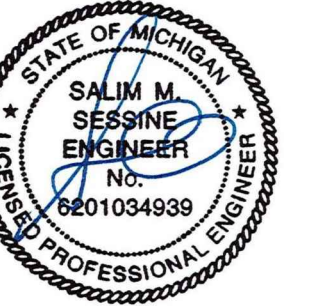
KEYED NOTES:

- ① PROVIDE ROUGH-IN & FINAL HOOK-UP FOR UNDER COUNTER DISHWASHER (TYPICAL).
- ② 2 HOUR RATED REFRIGERANT CHASE BY ARCHITECTURAL TRADES. SEE CHASE DETAIL ON SHEET M3.1.

NOTES

- 1. REFER TO PLUMBING RISER DIAGRAMS ON P3.1 FOR TYPICAL RISERS & PIPING TO FIXTURES.

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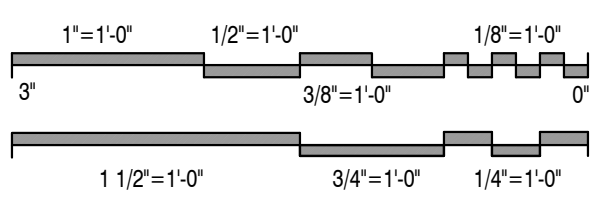
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Drawing Title

**Third Floor Plan
- Plumbing**

2021-248

Project No.

LS

SS

Drawn By

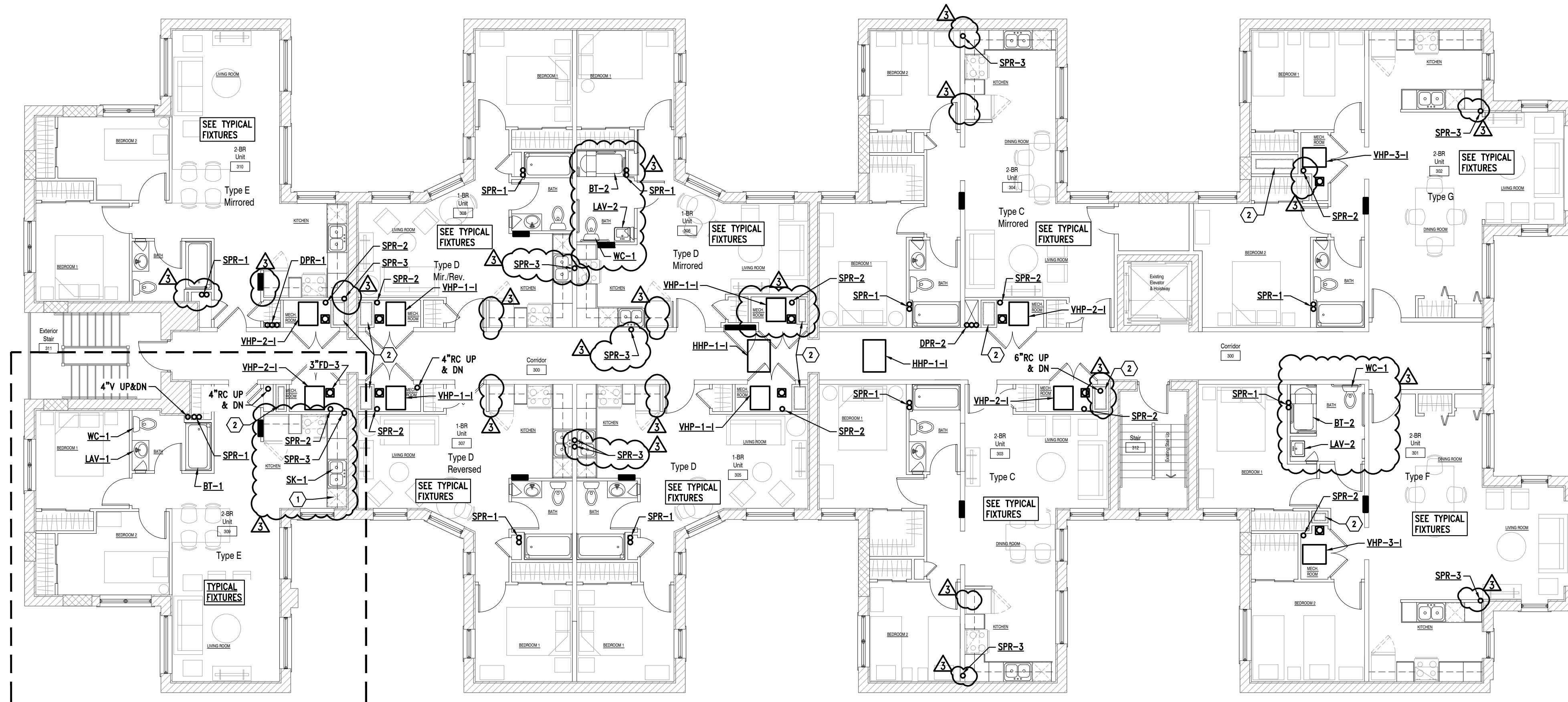
Checked By

As Noted

Scale

P1.3

Drawing No.



1 Third Floor Plan - Plumbing
P1.3 Scale: 1/8" = 1'-0"



KEYED NOTES:

- ① PROVIDE ROUGH-IN & FINAL HOOK-UP FOR UNDER COUNTER DISHWASHER (TYPICAL).
- ② 2 HOUR RATED REFRIGERANT CHASE BY ARCHITECTURAL TRADES. SEE CHASE DETAIL ON SHEET M3.1.

NOTES

- 1. REFER TO PLUMBING RISER DIAGRAMS ON P.3.1 FOR TYPICAL RISERS & PIPING TO FIXTURES.



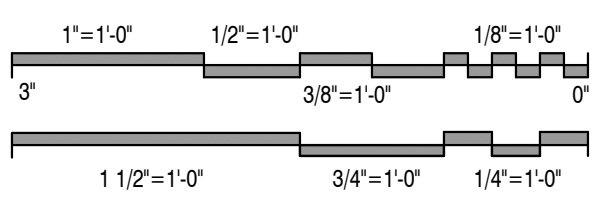
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MSHDA Revisions	05.07.2026

Drawing Title
**Fourth Floor Plan
- Plumbing**

2021-248
Project No. _____
LS _____ SS _____
Drawn By _____ Checked By _____
As Noted _____
Scale _____

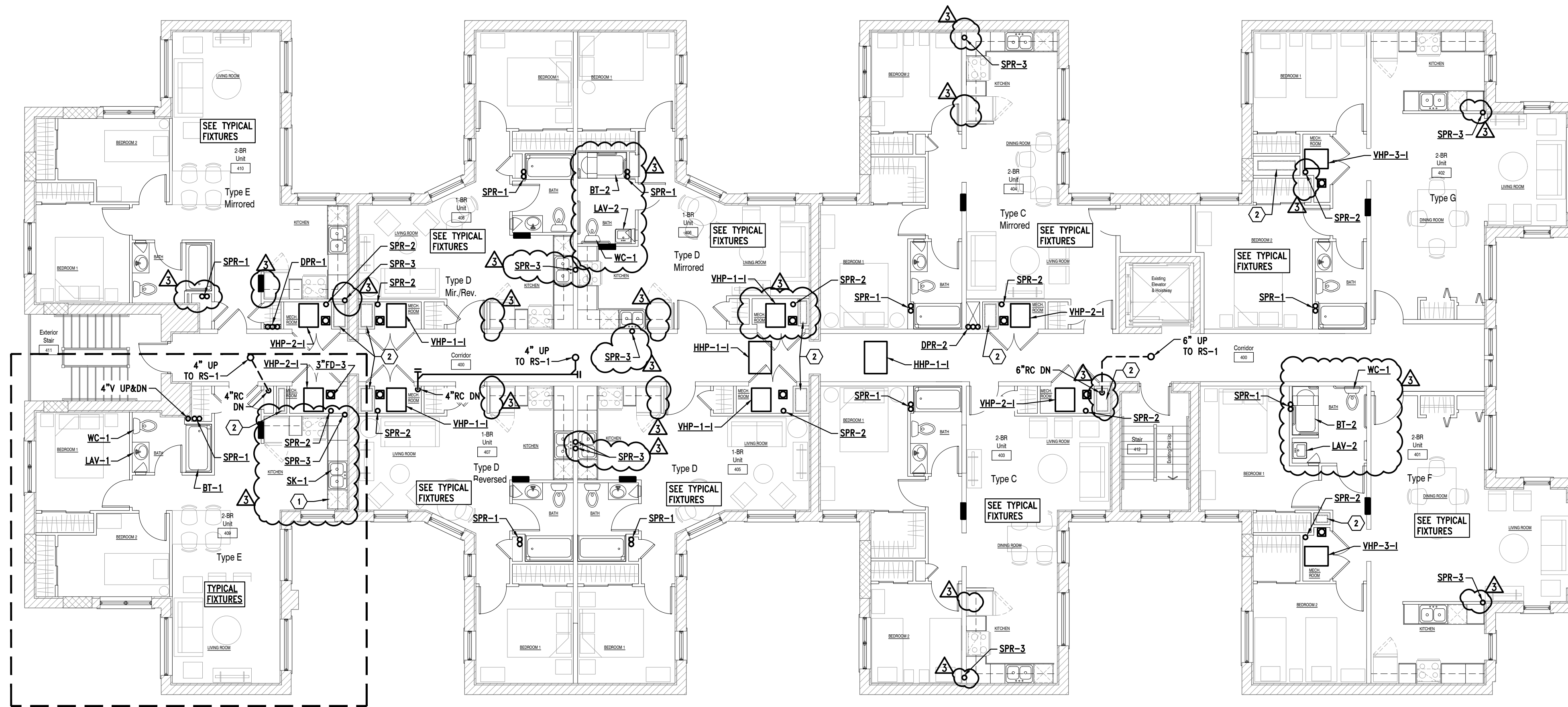
P1.4
Drawing No.

KEYED NOTES:

- ① PROVIDE ROUGH-IN & FINAL HOOK-UP FOR UNDER COUNTER DISHWASHER (TYPICAL).
- ② 2 HOUR RATED REFRIGERANT CHASE BY ARCHITECTURAL TRADES. SEE CHASE DETAIL ON SHEET M3.1.

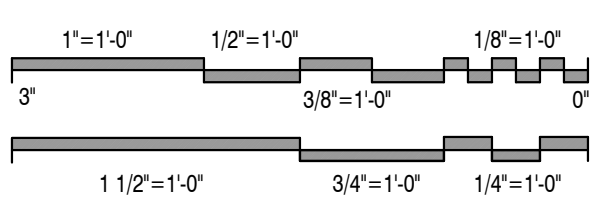
NOTES

- 1. REFER TO PLUMBING RISER DIAGRAMS ON P3.1 FOR TYPICAL RISERS & PIPING TO FIXTURES.



1 Fourth Floor Plan - Plumbing
P1.4 Scale: 1/8" = 1'-0"
North

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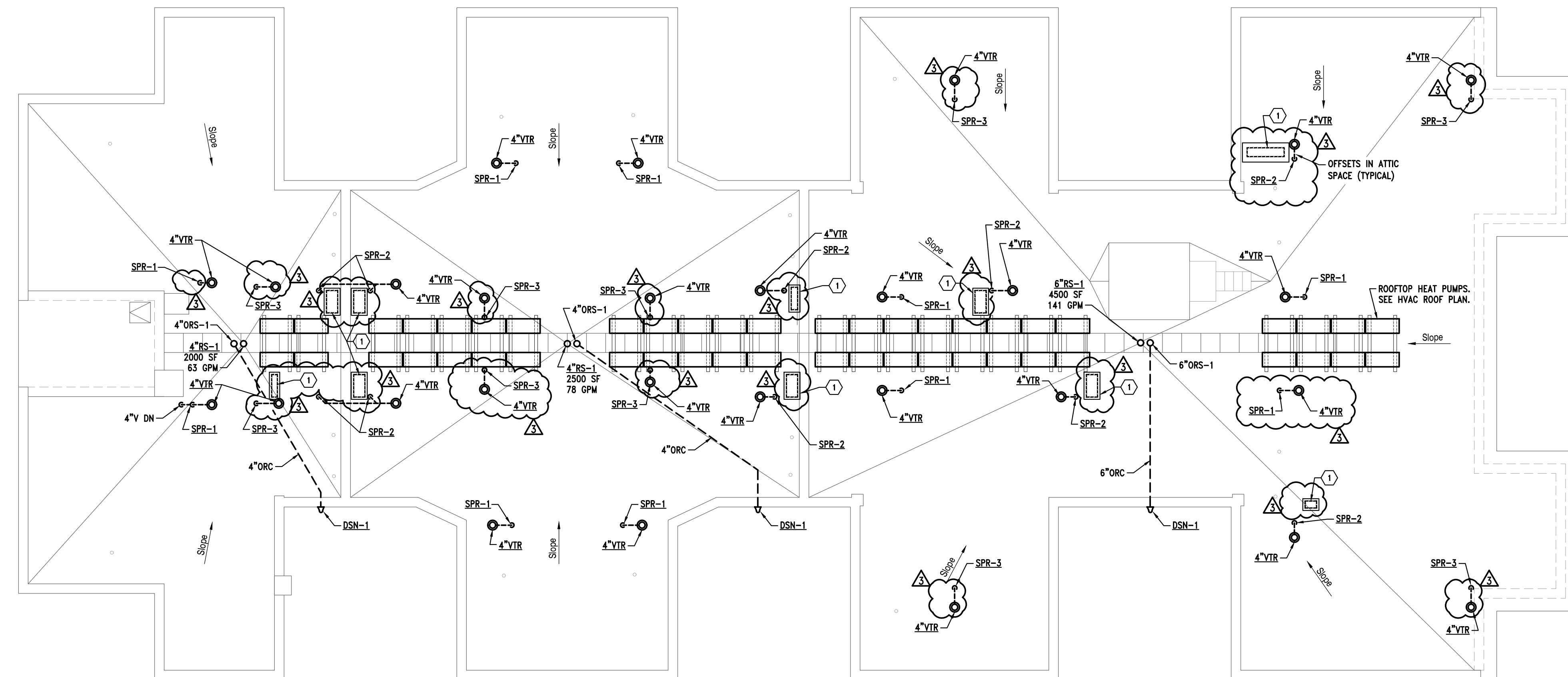
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Drawing Title

Roof Plan - Plumbing

2021-248
Project No. _____
LS _____ SS _____
Drawn By _____ Checked By _____
As Noted
Scale _____

P1.5
Drawing No.



KEYED NOTES:

- 1. REFRIGERANT CHASE CURB & ROOF CAP. SEE DETAIL ON M3.1. PROVIDE ROUTING OF DX PIPING. CONTROLS WIRING IN CONDUIT, ETC. ON ROOF. PROVIDE PIPE SUPPORTS PER DETAIL. M.T. SHALL FIELD ROUTE. SEE ALSO M1.5.

NOTES

- 1. REFER TO PLUMBING RISER DIAGRAMS ON P4.1 FOR TYPICAL RISERS.
- 2. ROOF DRAINAGE LOAD IS BASED ON 3 IN/HOUR.

1 Roof Plan - Plumbing
P1.5 Scale: 1/8" = 1'-0"
North

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Plumbing Fixture Schedule													
Tag	Item	Make	Model Name & Description	Fixture Material	Flow	Water Supply		DFU's	Minimum Pipe Connection Sizes				Notes & Accessories
						C	H		W	V	CW	HW	
WC-1 ADA	Elongated Two Piece Water Closet Floor Mount ADA	Gerber	GVP21518 Viper® two piece ADA compliant elongated water closet with insulated sweat free tank and lid locking device GVP28592LL, 12" rough-in, Fluidmaster fill valve, 3" flush valve. MAP Score to be 1000g or higher.	Vitreous China	1.6 gpf	5		4	4"	2"	1/2"	-	Limited life time warranty on vitreous china parts and 10 year warranty on all plumbing trim and fill valves in non-commercial setting Jones Stephens C2200500 Slow-Close elongated plastic seat
LAV-1	Lavatory Drop-in Single Lever Faucet ADA	Gerber	G0012844 Luxoval™ vitreous china 20" x 17" white oval drop-in lavatory with front overflow, G0040024 Viper™ single handle chrome lavatory faucet with metal touch down drain, 43040 0.5 gpm aerator, ZR361 p-trap, ZB804-XL-LRLK-PC loose key stop lavatory supply kit, ZR361-NT trap wrap	Vitreous China	0.5 gpm	Point 0.5 Private 1.5	Point 0.5 Private 1.5	1	1 1/2"	2"	1/2"	1/2"	ASSE 1070 protected, ADA Compliant NSF / ANSI 372 Lead-Free Limited Lifetime Faucet Warranty Approved 1/2" x 1/2" ASSE 1070 thermostatic mixing valve
LAV-2	Lavatory Wall Mount Battery Sensor Faucet ADA	Zurn	Z5364 300 1.81 AS L-N vitreous china 20" x 18" white wall hung lavatory, ZR361BX p-trap, G0040024 Viper™ single handle chrome lavatory faucet with metal touch down drain, 43040 0.5 gpm aerator, ZB804-XL-LR-PC stop lavatory supply kit, Z8446-1-NT trap wrap and 38-ZV3870XLT ASSE 1070 thermostatic mixing valve	Vitreous China	0.5	1.5	1.5	1	1 1/2"	2"	1/2"	1/2"	Provide .N 0.5gpm Lammar Spout Solid cast brass faucet ASSE 1070 protected, ADA Compliant Z1231-EZ Lav carrier with uprights
SH-1	ADA Shower Trim	Florestone Gerber	Model 40-62H white one piece gelcoated fiberglass shower with factory installed grab bars, vertical grab bar, soap dish, curtain rod, naugahyde folding seat, slide/grab bar and 2" brass drain. OD: 62" x 39" x 77" shower valve with stops handheld shower, 24" grab bar, 69" hose, inline vacuum breaker, and showerhead	Fiberglass	2.5 gpm	1	1	2	2"	1 1/2"	1/2"	1/2"	ANSI Z-124.2 Thermostatic mixing valve, ASSE 1016 certified Provide curtain Right or left hand as shown on drawings Install specified bathroom floor drain in from of each shower
BT-1	Tub & Shower 2 Piece	Florestone Gerber	Model 2PC-6032TS-3WTB two-piece tub & shower with apron, back wall shelves, acrylic towel bar, and slip resistance floor. OD 60" x 31 1/2" x 73" G009165TC Viper single handle pressure balance tub and shower valve with ceramic disc valving, diverter tub spout, 6" shower arm and single function showerhead	Acrylic	1.5 gpm	1	1	2	1 1/2"	1 1/2"	1/2"	1/2"	Chrome finish on trim ANSI Z-124.2, IAPMO Listed Drain on end as shown on drawings Front side installation WaterSense listed
BT-1	Bathtub	Boolz Gerber	Soaking bath tub with a slip-resistant bottom with high gloss porcelain enamel finish and attached support/leveling pad. OD 60" x 30" x 16 5/8"	Porcelain Enamel on Steel									
BT-1	Bathtub (ADA)	Fleurco Gerber	Motif series B2M06032 R or L acrylic alcove style bath tub with fiberglass reinforcement and large bather capacity of 62 gallons. 59 3/4" L x 32" W x 21" H G009165TC Viper single handle pressure balance tub and shower valve with ceramic disc valving, diverter tub spout, 6" shower arm and single function showerhead	Lucite Acrylic	2.2	1	1	2					Right or Left hand configuration as shown on plans 10 year limited warranty
BT-2	Bathtub	Clarion	Model: MP7911LX or MP7911RX, 60" Tub/Shower w/ 18" Apron & Left or Right Hand Drain. Barrier-Free Unit Only. Color White. Accessorized to meet the ICC A117.1-2017 Standard (ADA Compliant). Upper soap dish must have 12" minimum clear above the gripping surface of the bar or not be located above the gripping surface of the bar.	Acrylic									24" Grab Bar (BAR-24NZ) [QTY. 3] 18" Grab Bar (BAR-18NZ) [QTY. 2] FOLDING SEAT (SEAT-310H-1) Soap Dish (SOAPDISH-ROUND) [QTY. 2] Curtain Rod (CR-55)
MS-1	Mop Sink 24" x 24"	Zurn	Z1996.09.215.A.04.07 white mop service basin with Z843M1-RC faucet, dome strainer, hose with bracket, mop hanger, stainless steel wall guards and stainless steel rim guards.	High-density composite	2.5 gpm			2	3"	2"	1/2"	1/2"	Wall guards to be installed on all adjacent walls Faucet to have adjustable swivel inlets & vacuum breaker
SK-1	Single Lever Faucet	Elkay	Elkay LK1000CR single lever handle faucet with ceramic disc cartridge	Chrome	1.5 gpm	1	1				1/2"	1/2"	ADA Compliant ASME A112.18.1/CSA B125.1, NSF 61, NSF 372
SK-1	Garbage Disposer	Moen	Moen GXP33c Garbage disposer		1/3 hp								
SK-1	Double Bowl Drop in Sink	Elkay Dayton	Dayton DSE23322 stainless steel self-rim double bowl sink, 6-9/16" deep OD 33" Left to Right by 22" Front to Back Minimum Cabinet Size 36" wide	22 Gauge Stainless Steel				2	1 1/2"	1 1/2"			ASME A112.19.3/CSA B45.4 Jones Stephens P38007 20 gauge 1 1/4" p-trap, S10301 angle stops, S04-021 chrome plated supplies, Moen GXP33c Garbage disposer 1/3 hp ASME A112.18.1/CSA B125.1, NSF 61, NSF 372
SK-1	Double Bowl Drop in Sink ADA	Elkay Dayton	Dayton GE23322 stainless steel self-rim double bowl sink, 5-3/8" deep OD 33" Left to Right by 22" Front to Back Minimum Cabinet Size 36" wide	22 Gauge Stainless Steel				2	1 1/2"	1 1/2"			ADA compliant, ASME A112.19.3/CSA B45.4 Jones Stephens P38007 20 gauge 1 1/4" p-trap, S10301 angle stops, S04-021 chrome plated supplies, Moen GXP33c Garbage disposer 1/3 hp ASME A112.18.1/CSA B125.1, NSF 61, NSF 372
SK-2	Single Bowl Drop-in Sink	Elkay	LR2522PD Lusterone finish single bowl top mount sink stainless steel single bowl sink with rear drain, side & bottom sound deadening pads OD 25" Left to Right by 22" Front to Back, ... Bowl ID 21" x 15 3/4" x 8 1/8" Minimum cabinet size 30" wide Elkay LK6000CR single lever gooseneck with pull out spray and ceramic disc valve	18 Gauge Type 304 Stainless Steel		1	1	2	1 1/2"	1 1/2"	1/2"	1/2"	ASME A112.19.3/CSA B45.4 Jones Stephens P38007 20 gauge 1 1/4" p-trap, S10301 angle stops, S04-021 chrome plated supplies, Moen GXP33c Garbage disposer 1/3 hp ASME A112.18.1/CSA B125.1, NSF 61, NSF 372

Drainage Specialties Schedule												
Tag	Item	Make	Model Name & Description	Fixture Material	Drainage Fixture Units	Outlet Sizes Available	Minimum Pipe Connection Sizes				Notes/ Accessories	
							W	V	CW	HW		
RS-1	Roof Drain	Zurn	FLOFORCE model ZC100-DR-EA 15" diameter high efficient flow performing all cast iron roof drain with deck plate/sump receiver, drain riser and adjustable extension to meet required ASHRAE 90.1-2013 roof insulation standard. Must have these approximate GPM flow rates with 4 foot vertical pipe connected and 3" of ponding: 3" NH 349, 4" NH 580, 6"NH 757 8" NH 829	Cast Iron Body & Dome		2", 3", 4", 6", 8"	As shown on plans					Provide fixed extension and adjustable extension to meet ASHRAE 90.1-2013 R-30 requirements for Zones 5 & 6 (7 1/2" for rigid foam)
ORS-1	Overflow Roof Drain	Zurn	FLOFORCE model ZC100-DR-EA-89 15" diameter high efficient flow performing all cast iron roof drain with deck plate/sump receiver, drain riser, 2" external water dam and adjustable extension to meet required ASHRAE 90.1-2013 roof insulation standard.	Cast Iron Body & Dome		2", 3", 4", 6", 8"	As shown on plans					Provide fixed extension and adjustable extension to meet ASHRAE 90.1-2013 R-30 requirements for Zones 5 & 6 (7 1/2" for rigid foam)
DSN-1	Downspout Nozzle	Zurn	Model Z-199-DC stainless steel downspout nozzle with hinged perforated strainer	Stainless Steel		3", 4", 6", 8", 10", 12", 15"	As shown on plans					Connection as required to match piping
FD-1	Floor Drain	Zurn	Model E2-PV floor drain with PVC plastic body and 5" round nickel bronze adjustable top up to 1-1/4" of post pour adjustment, tilt correction shims and rough-in cover and ASSE 1072 trap seal	Nickel Bronze top, PVC body	2	2,3,4"	As shown on plans					Provide SureSeal trap seal Provide model E2Z-PV model if deck flange required
FD-2	Mechanical Room Drain	Zurn	Z541 Cast iron 12" diameter heavy-duty floor drain with clamp collar, and sediment bucket	Cast Iron	2	3,4,6"	As shown on plans					Provide Green Drain trap seal
FD-3	Mechanical Room Drain	Zurn	Z1731 Cast iron 9" diameter heavy-duty floor drain with clamp collar, and sediment bucket	Cast Iron	2	3,4,6"	As shown on plans					Provide Green Drain trap seal
CO-1	Finished Floor Cleanout	Zurn	Model E2C-PV cleanout with PVC plastic body and 5" round nickel bronze adjustable top up to 1-1/4" of vertical post pour adjustment, tilt correction shims and rough-in cover	Nickel Bronze top, PVC body		2,3,4,6"	As shown on plans					Provide model E2C2-PV model if deck flange required
CO-3	Exterior Cleanout	Zurn	Model ZN1474-N cast iron floor access housing with round heavy-duty NB top and internal cleanout	Nickel Bronze Top, Cast Iron Body			As shown on plans					Vandal-proof screws
WCO-1	Wall Cleanout	Zurn	Model CO2530-SS7 7" diameter stainless steel cleanout cover with screw	Stainless Steel			As shown on plans					Vandal-proof screws
WH-1	Exterior Wall Hydrant	Zurn	Model Z1320-CXL self-draining, non-freeze, anti-siphon wall hydrant with vandal-resistant integral vacuum breaker, and chrome-plated rough bronze body	Chrome Plated Rough Bronze		3/4"				1/2 or 3/4		See Architectural drawings for wall thickness Lead-Free
HB-1	Hose Bibb	Zurn	Model Z1341-C12-RG rough chrome 3/4" hose bib with flange and Z1399-VB vacuum breaker, handle or loose key	Rough Chrome		1/2" & 3/4"				1/2 or 3/4		ASSE 1011 Compliant
WHA	Water Hammer Arrestors	Zurn / Wilkins	Model 1250 series water hammer arrestor	Copper								As Required by Plumbing Code Per PDI locations

Backflow Prevention Schedule (This list is not all inclusive, verify with authority having jurisdiction)												
Tag	Item	Make	Model Name & Description	Protection	Standard	Applications	Sizes	Notes & Accessories				
RPZ	Reduced Pressure Backflow Preventer	Zurn / Wilkins	Model 375ASTFSC reduced pressure backflow preventer with strainer, maximum pressure 175 psi and maximum temperature of 180 degrees Fahrenheit	Highest hazard Back pressure Back siphonage	ASSE 1013	Water Service	4"	Provide with factory Strainer & Air Gap Use 475V series for space savings on 2 1/2 to 10" devices 375XLS 180 degrees maximum 375AST 140 degrees max				
DCV	Dual Check with Vent	Zurn / Wilkins	Model 740F carbonated beverage backflow preventer with vent and integral stainless steel strainer, female NPT by female NPT or J513 flare, maximum pressure 150 psi and maximum temperature of 130 degrees Fahrenheit	Highest hazard Back pressure	ASSE 1022	Carbonated and Other Beverage Supply Lines	3/8"	Provide with stainless steel body. Run discharge line to nearest drain 130 degrees maximum				

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Architect of Record

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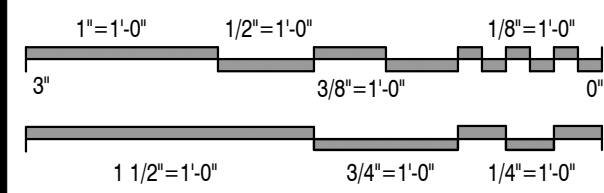
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Drawing Title
Plumbing Schedules

2021-248
Project No. LS SS
Drawn By Checked By
As Noted
Scale
P2.1
Drawing No.

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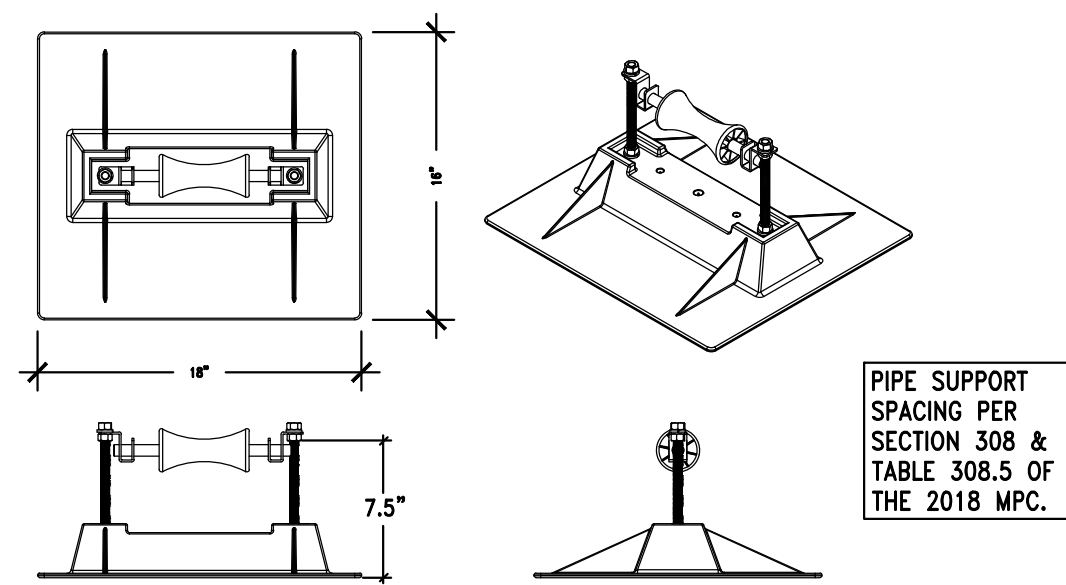
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WATER HEATING SCHEDULE				
TAG	ITEM	MAKE, MODEL, DESCRIPTION & PERFORMANCE	ELECTRICAL DATA	NOTES AND ACCESSORIES
DWH-1, 2, & 3	GAS FIRED DOMESTIC WATER HEATERS	BOCKOT300N2-A, 119/125 GAL TANK, FULLY MODULATING GAS HEATER, 300 MBH MAX NAT GAS INPUT, 80 MBH MIN NAT GAS INPUT, 357 GPH RECOVERY AT 100 DEG F RISE, 480 GPH FIRST HOUR DELIVERY, 99% THERMAL EFFICIENCY, 79" HEIGHT X 33" DIA, MIN GAS PRESSURE 3.5 IN WC, AUTOMATIC CATHODIC CORROSION PROTECTION SYSTEM, PVC/CPVC/ABS VENTING, LCD USER INTERFACE WITH BMS INTERFACE, ECOMATE INSULATION, GLASS FUSED TO STEEL WATER TANK AND HX, SCAQMD CERTIFIED ULTRA-LOW NOX, NATURAL GAS FIRED, STEALTH QUIET OPERATION, FITS THROUGH A 36" DOOR, CONCENTRIC VENT KIT, TURBOFLUE HIGH PERFORMANCE HX, 1,100 LBS SHIPPING, 2,141 LBS OPERATING WEIGHTS, 120V PLUG-IN POWER CORD, T&P RELIEF VALVE	120/1/60, <5AMPS,	PROVIDE ACID CONDENSATE WASTE NEUTRALIZER WITH EACH HEATER, INSTALL PER MFR IOM
ET-1	DOMESTIC HW EXPANSION TANK	BELL & GOSSETT PTZ-100V, BLADDER RTYPE, 45 GALLON TANK, 30 GALLONS ACCEPTANCE VOLUME, VERTICAL TANK, FDA APPROVED POLYPROPYLENE LINER AND BUTYL DIAPHRAGM, ASME CONSTRUCTION, 240 F MAX OPERATING TEMP, 150 PSIG MAX WORKING PRESSURE, 110 LBS SHIPPING WEIGHT, TANK MOUNTED BLADDER INTEGRITY MONITOR AND AIR PRESSURE GAUGE,	NA	BASED ON 900 GALLONS SYSTEM VOLUME, 40 F MIN COLD FILL TEMP, 160 F MAX SYSTEM TEMP POTENTIAL, 60 PSI FILL PRESSURE, 14.7 PSI ATMOSPHERIC PRESSURE,
CP-1	DOMESTIC HW CIRCULATING PUMP - BUILDING RETURN	BELL AND GOSSETT PL-45B, ALL BRONZE LEAD FREE POTABLE HOT WATER CIRCULATOR, LEAD FREE BRONZE BODY, STAINLESS STEEL FACE PLATE, 30% GLASS FILLED NORYL OMPPELLER, CARBON STEEL SHAFT, STAINLESS STEEL SHAFT SLEEVE, MECHANICAL CARBON ON SILICON CARBIDE SEAL, SEALED PRECISION STEEL BALL BEARING PERMANENTLY LUBRICATED, ODP MOTOR, EPDM ELASTOMERS.	115/1/60, 1/6 HP	SEE PIPING DIAGRAM, PROVIDE COMBINATION TIMECLOCK AND AQUASTAT.

SUMP PUMP SCHEDULE																		
TAG	LOCATION	SERVICE	TYPE	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	GPM	MIN. HEAD (FT H2O)	ELECTRICAL					SUMP BASIN				NOTES & ACCESSORIES	
								NO. OF PUMPS	SIMULTANEOUS PUMP OPERATION	HP EACH PUMP	VOLTAGE	AMPS	DISCONNECT	BASIN MATERIAL	BASIN DIA (IN)	BASIN DEPTH (IN)		COVER TYPE
SP-1	ELEVATOR PIT	ELEVATOR SUMP PIT PUMP	SIMPLEX SUBMERSIBLE	ZOELLER	161	50	35	1		1/2	120/1/60	15	BY ELECTRICAL TRADES	PREFABRICATED FIBERGLASS	24"	36"	FRAME AND PERFORATED COVER PROVIDED BY SUMP PUMP MFR.	1
SP-2	LOWER LEVEL PARKING	DRAIN TILE	DUPLEX SUBMERSIBLE	ZOELLER	J161	75 EA/ 150 TOTAL	20	2	YES, ON HIGH LEVEL FLOAT ACTIVATION	1/2	208/3/60	6.4	BY ELECTRICAL TRADES	PREFABRICATED FIBERGLASS	48"	96"	SOLID TRAFFIC DUTY	2
NOTES AND ACCESSORIES																		
1	SIMPLEX ELEVATOR SUMP & PUMP SYSTEM WITH PUMP, CONTROL PANEL, FLOAT SWITCHES AND WIRING, FIBERGLASS SUMP WITH ANTI FLOAT RING, MISC. FITTINGS, PERFORATED COVER FOR 100 GPM DRAINAGE, CHECK VALVE, SHUTOFF VALVE, FIELD WIRING BY MT PER MFR IOM.																	
2	DUPLEX STORM SUMP & PUMP SYSTEM WITH PUMPS, DUPLEX CONTROL PANEL, FLOAT SWITCHES & WIRING, FIBERGLASS SUMP WITH ANTI FLOAT RING, PUMP REMOVAL SYSTEM, MISC FITTINGS, HEAVY DUTY COVER WITH PUMP ACCESS, INSPECTION PORT, CHECK VALVES, ISOLATION VALVES, FIELD WIRING BY MT PER MFR. IOM.																	

DOMESTIC WATER BOOSTER PUMP																			
TAG	LOCATION	SERVICE	TYPE	BASIS OF DESIGN MANUFACTURER	EACH PUMP MODEL NUMBER	NUMBER OF PUMPS	EACH PUMP FLOW	STATION MODEL NUMBER	SYSTEM TOTAL DESIGN GPM	GPM EACH PUMP	SUCTION PRESSURE (PSI)	STATION DISCHARGE PRESSURE (PSI)	MOTOR HP (EACH)	INLET AND OUTLET PIPE DIA. (IN)	VOLTAGE	FLA	POWER CONNECTION	DISCONNECT	REMARKS
DWBP-1	RISER ROOM	ENTIRE BUILDING	DUPLEX	BELL & GOSSETT MiniBoost Extreme MBX2D30B	10HM03	2	50% OF DESIGN	MiniBoost Extreme MBX2D30B	105	52.5	23	70	3	3" Victaulic	208/3/60	21.2	SINGLE POINT	NON-FUSED BY MFR INTEGRAL WITH BOOSTER PANEL	1
1	PACKAGED PRE-PIPED, PRE-WIRED VARIABLE SPEED PRESSURE BOOSTER SYSTEM WITH TWO PUMPS EACH AT 50% OF LOAD, SKID MOUNTED WITH PUMPS, VFD'S AND CONTROLLER, PRESSURE SENSOR SUPPLIED WITH BOOSTER, HIGH PRESSURE CUT-OUT SET AT 90 PSIG ON THE DISCHARGE OF THE BOOSTER, HYDRO-PNEUMATIC TANK: B&G WTA-403, 34 GALLONS, 23 GALLONS ACCEPTANCE VOLUME.																		

CONNECTED GAS LOAD SUMMARY AND NOTES						
TAG	ITEM	MIN EFFICIENCY (%)	QUANTITY	HIGH FIRE INPUT (MBH)	TOTAL MBH	REQUIRED GAS PRESSURE RANGE AT EQUIPMENT
GENERATOR	BASIS OF DESIGN EMERGENCY GENERATOR - KOHLER 250REZXB	NA	1	2,782	2,782	7 - 11 IN WC
DWH-1, 2, & 3	DOMESTIC WATER HEATERS	99	3	300	900	3.5" WC MIN.
DOAS-1	DEDICATED OUTSIDE AIR SYSTEM	NA	1	118	118	7 - 14 IN WC
SERVICE REQUIREMENT: TOTAL MBH & RECOMMENDED MINIMUM DELIVERY PRESSURE					3,800	11 IN WC
NATURAL GAS SERVICE NOTES:						
1) COORDINATE NEW GAS SERVICE WITH THE GAS UTILITY COMPANY.						
2) GENERAL CONTRACTOR SHALL ASSIST THE OWNER WITH APPLYING FOR AND OBTAINING GAS SERVICE WORK FROM THE UTILITY.						
3) SUMMARY TABLE INFORMATION IS ESTIMATED GAS INPUT AND REQUIRED PRESSURE. CONFIRM ACTUAL WITH PURCHASED EQUIPMENT AND ADJUST DESIGN ACCORDINGLY						
4) GAS DELIVERY PRESSURE SHALL BE PROVIDED AND ADJUSTED BY THE UTILITY TO BE ADEQUATE FOR ALL EQUIPMENT WITHOUT ISSUE.						
5) ONLY AS REQUIRED BY PURCHASED EQUIPMENT, PROVIDE BALANCED VALVE POSITIVE LOCK-UP GAS PRESSURE REGULATORS EQUAL TO MAXITROL 210 FOR EQUIPMENT WHERE DELIVERY PRESSURE EXCEEDS THE MAXIMUM RECOMMENDED INLET PRESSURE OF THE EQUIPMENT. PROPERLY VENT ALL REGULATORS TO THE OUTDOORS AND IN COMPLIANCE WITH THE INTERNATIONAL FUEL GAS CODE AND EQUIPMENT MFR'S IOM. SELECT REGULATORS TO PROVIDE INTERMITTENT 10 PSIG OVER PRESSURE PROTECTION ABOVE THE NORMAL LINE PRESSURE TO THE EQUIPMENT.						

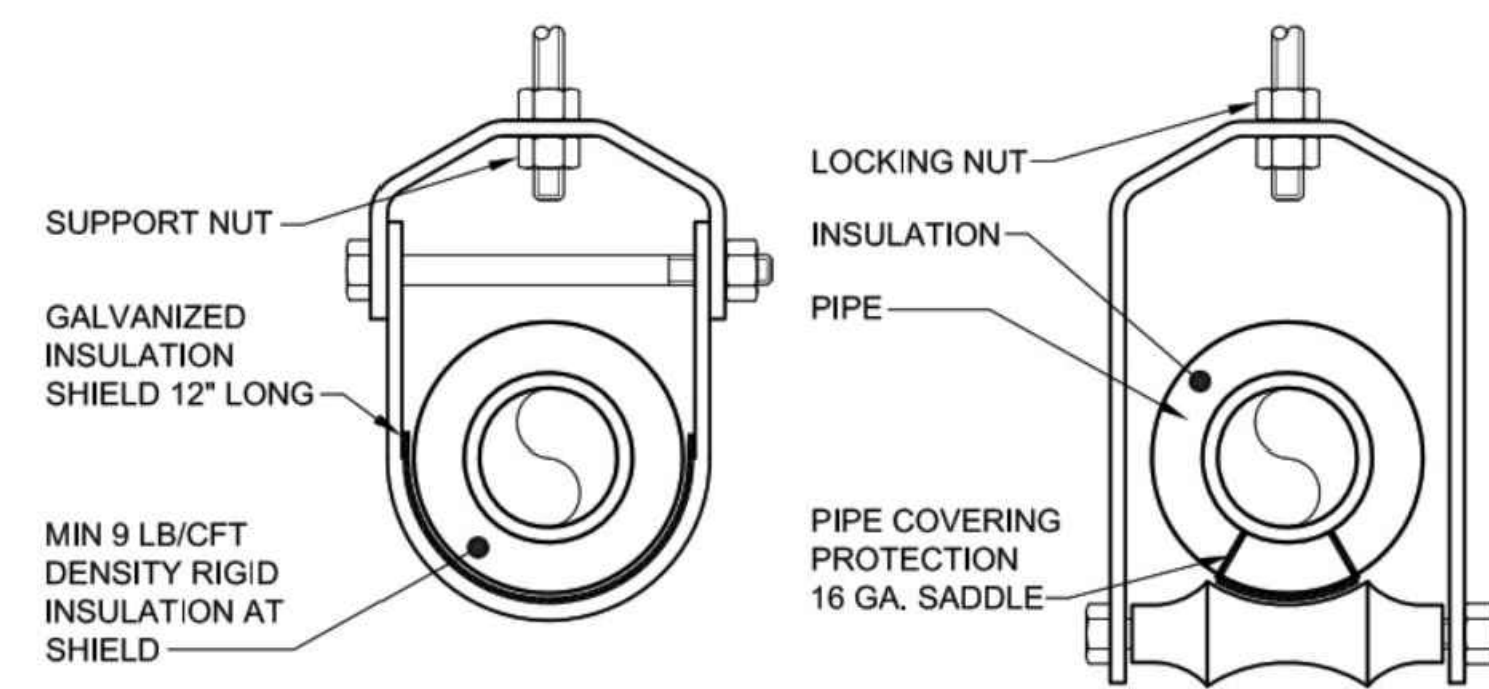


POLYCARBONATE PIPE SUPPORTS MIRO MODEL 6-RAH-7 P:

FOR UP TO 6" ID AND 8.5" OD PIPE. ADJUSTABLE CLEARANCE HEIGHT. A ROLLER BEARING PIPE SUPPORT USED TO SUPPORT ROOF MOUNTED GAS PIPES. UNIQUE DESIGN ABSORBS THERMAL EXPANSION AND CONTRACTION OF PIPES THUS PREVENTING DAMAGE TO THE ROOF MEMBRANE. PIPES REST ON A SELF-LUBRICATING ROLLER WHICH IS A 304 STAINLESS STEEL ROD AND A POLYCARBONATE RESIN ROLLER. THE PIPE SUPPORT BASE IS MADE OF STURDY POLYCARBONATE RESIN. THE ROLLER IS POLYCARBONATE AND ALL METAL PARTS ARE MADE OF STAINLESS STEEL. PIPESTAND WILL ACCOMMODATE UP TO 6" INSIDE DIAMETER PIPE OR UP TO 8.5" OUTSIDE DIAMETER PIPES. SUPPORT SPACING IS 10 FOOT CENTERS. PLACE BASE SHEETS ON ROOFING BEFORE GRAVEL IF ANY. INSTALL GAS PIPE TO ALLOW FOR EXPANSION AND CONTRACTION. PRIMER COAT AND PAINT EXTERIOR GAS PIPE.

SUPPORT OF PIPE ON ROOF

NO SCALE

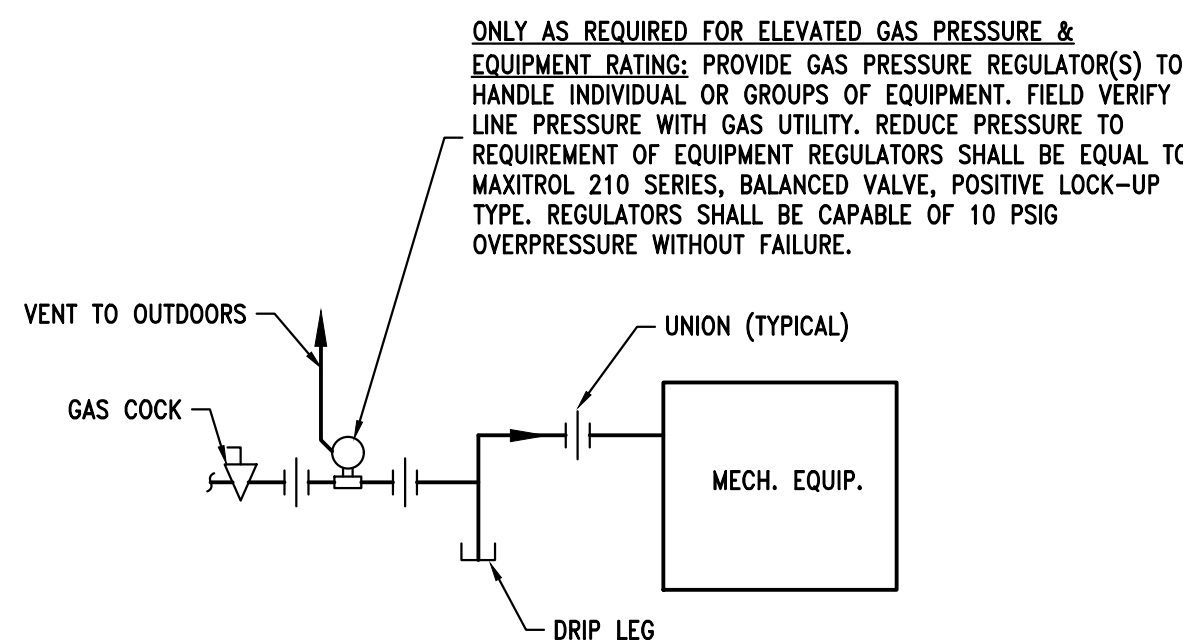


HEAVY DUTY CLEVIS HANGER

(FOR 1/2" UP TO INCLUDING 3" PIPE)

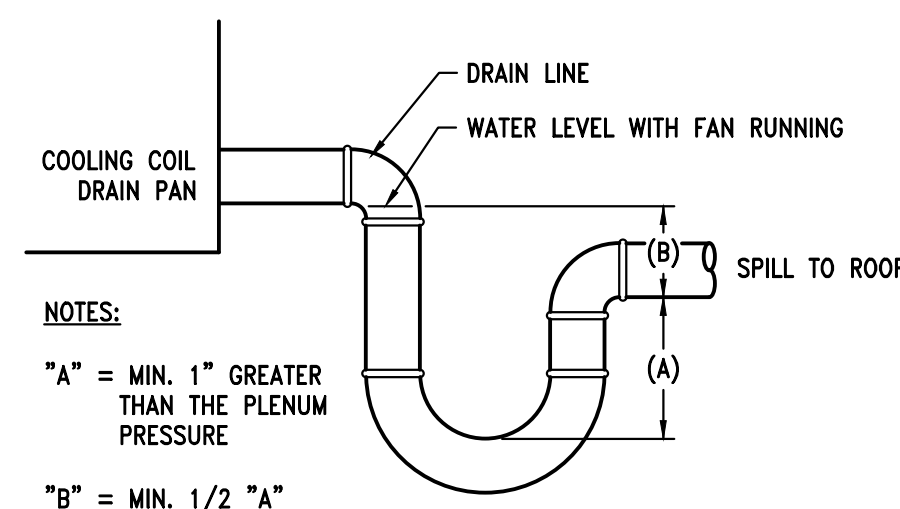
ADJUSTABLE HANGER WITH ROLLER

(FOR 4" TO 6" PIPE)



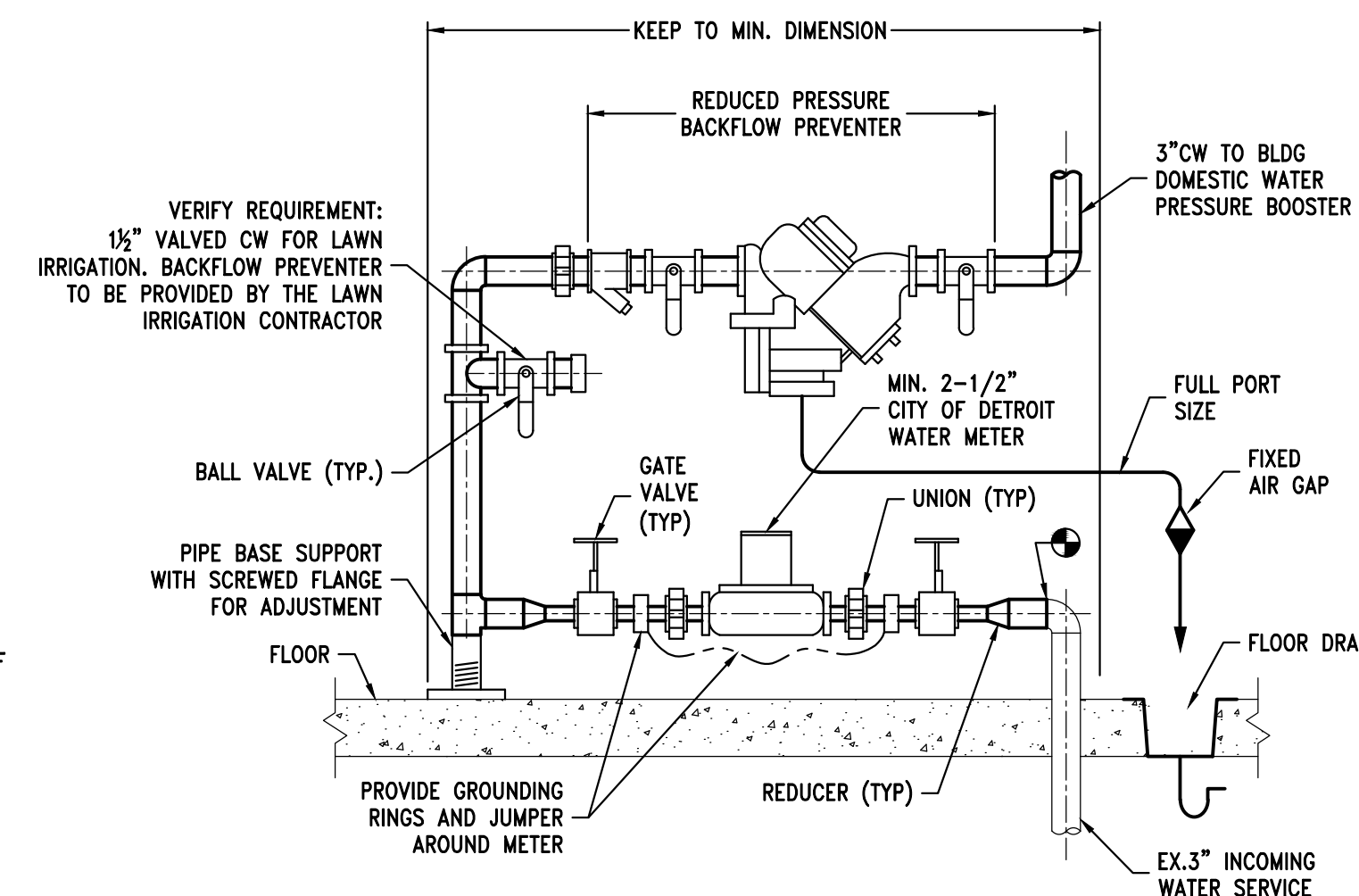
GAS CONNECTION DETAIL

NO SCALE



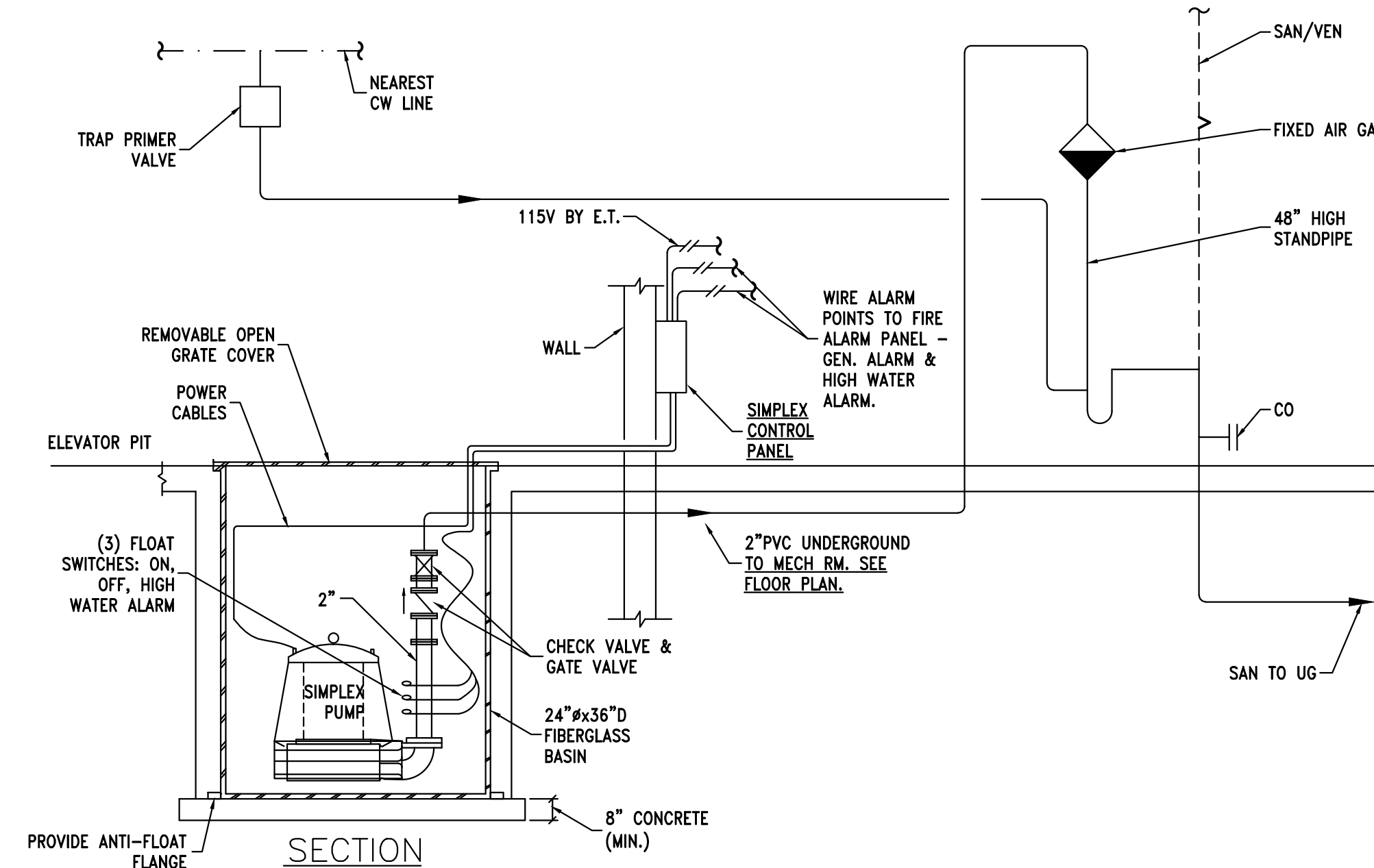
COOLING COIL DRAIN DETAIL

NO SCALE



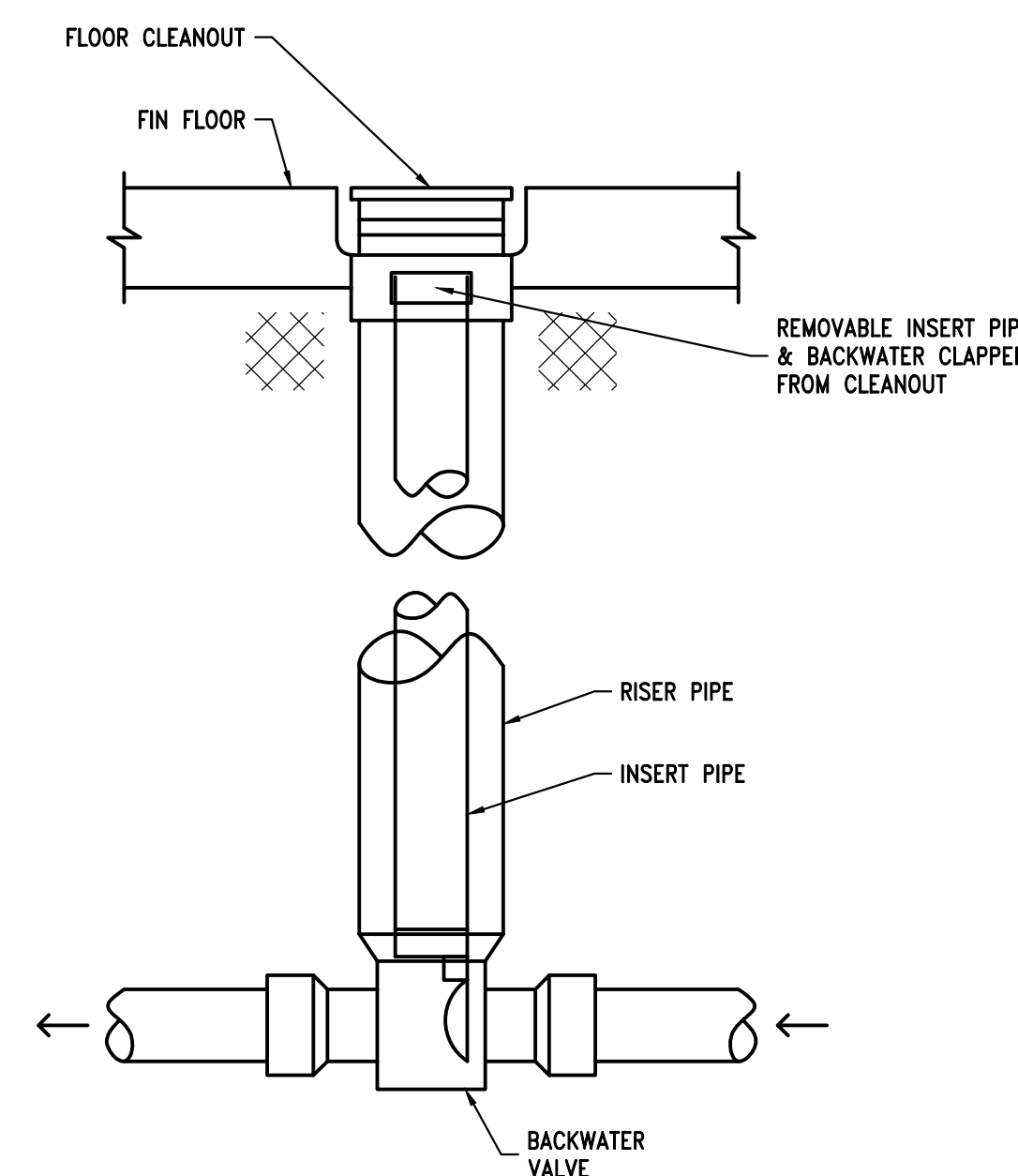
WATER METER DETAIL

NO SCALE



SIMPLEX SUBMERSIBLE ELEVATOR PIT SUMP PUMP DETAIL

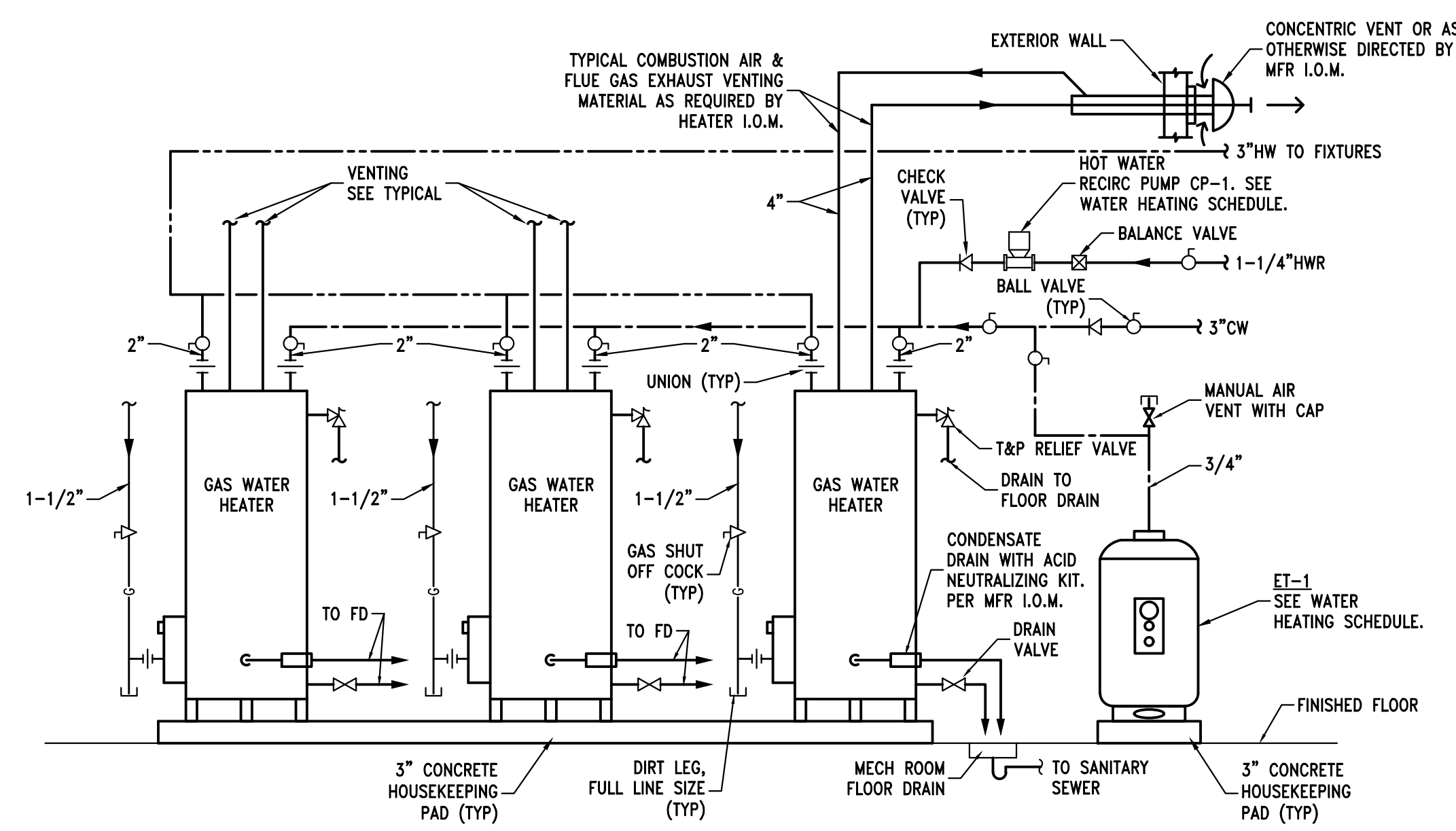
NO SCALE



BACKWATER VALVE DETAIL

NO SCALE

- BASED ON RECTORSEAL PVC CLEANCHECK.
- MEETS IPC & IRC CODES & ASME & ICC-ES STANDARDS.



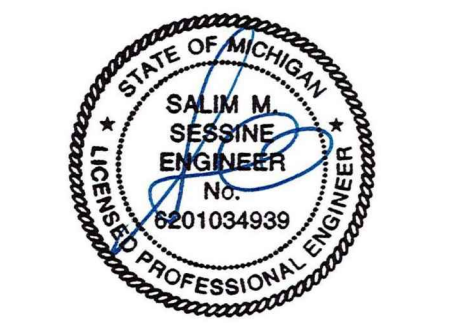
GAS FIRED WATER HEATER PIPING DIAGRAM

NO SCALE

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Architect of Record



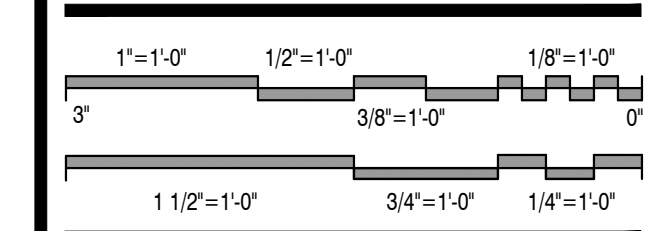
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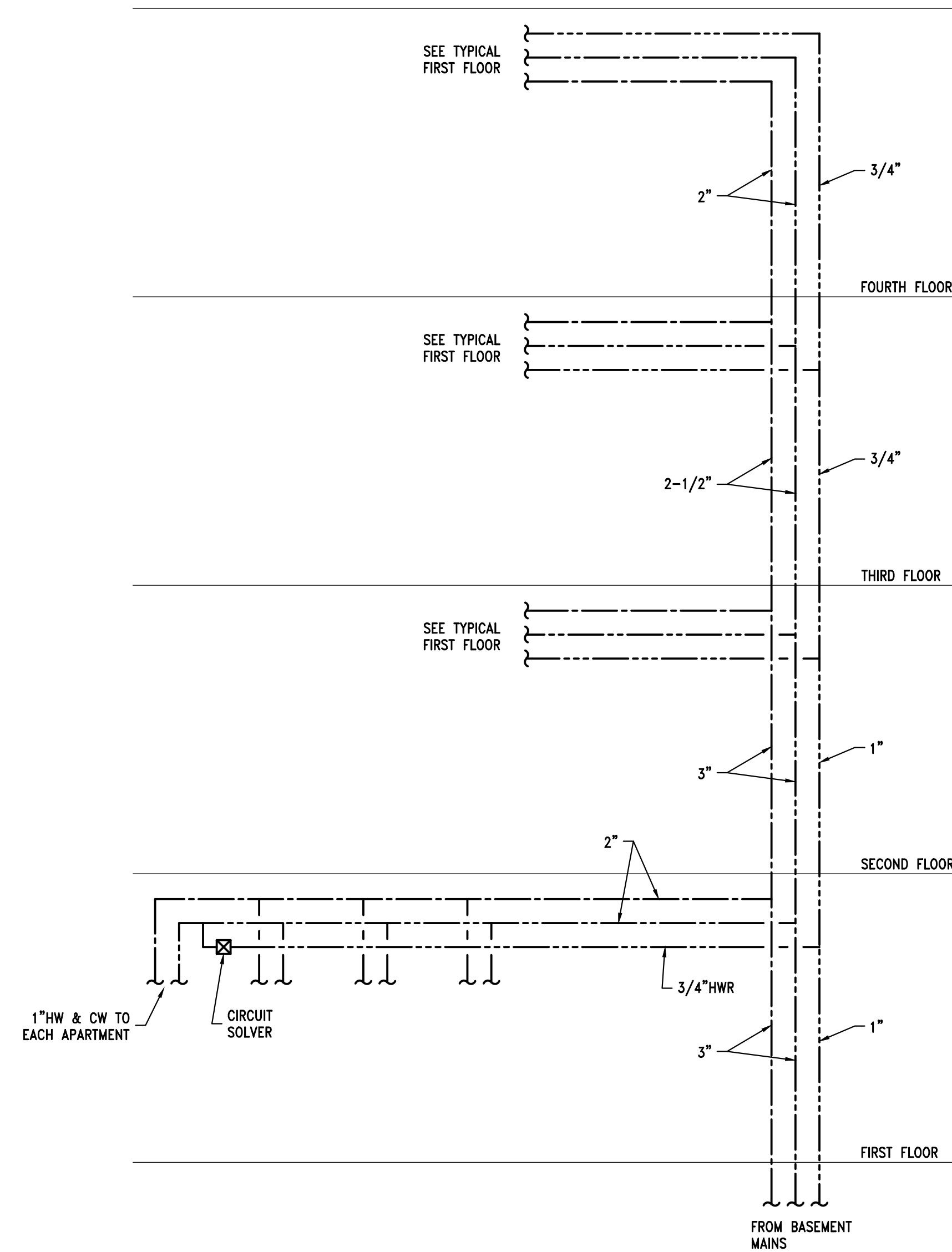
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Drawing Title
**Plumbing Details, Piping
Diagrams & Riser
Diagrams**

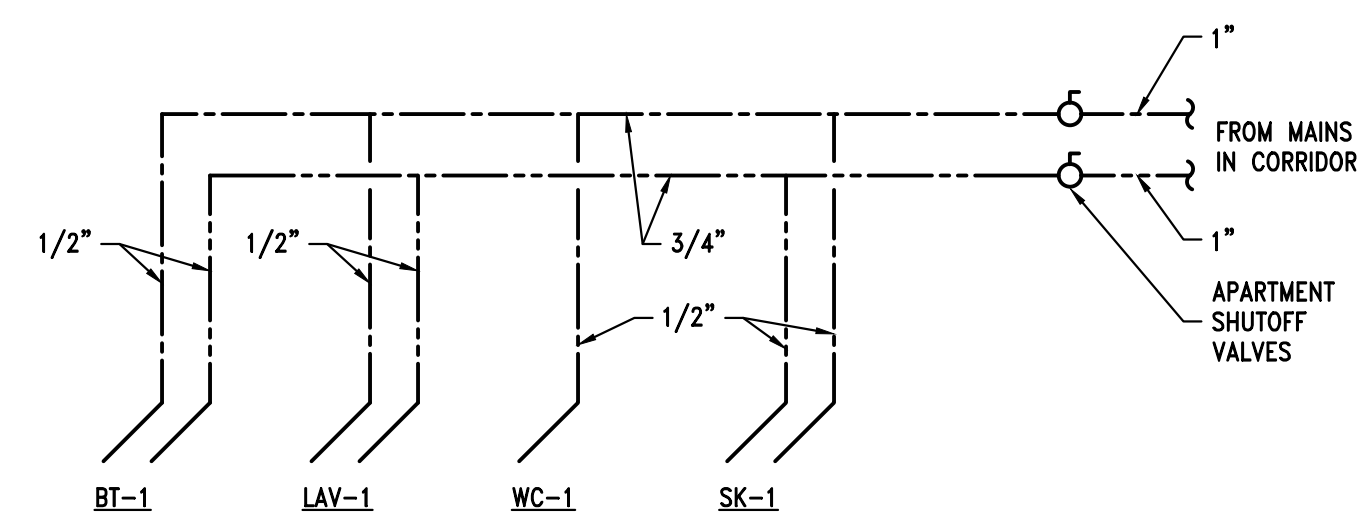
2021-248
Project No. _____
LS _____ SS _____
Drawn By _____ Checked By _____
As Noted _____
Scale _____

P3.1
Drawing No. _____

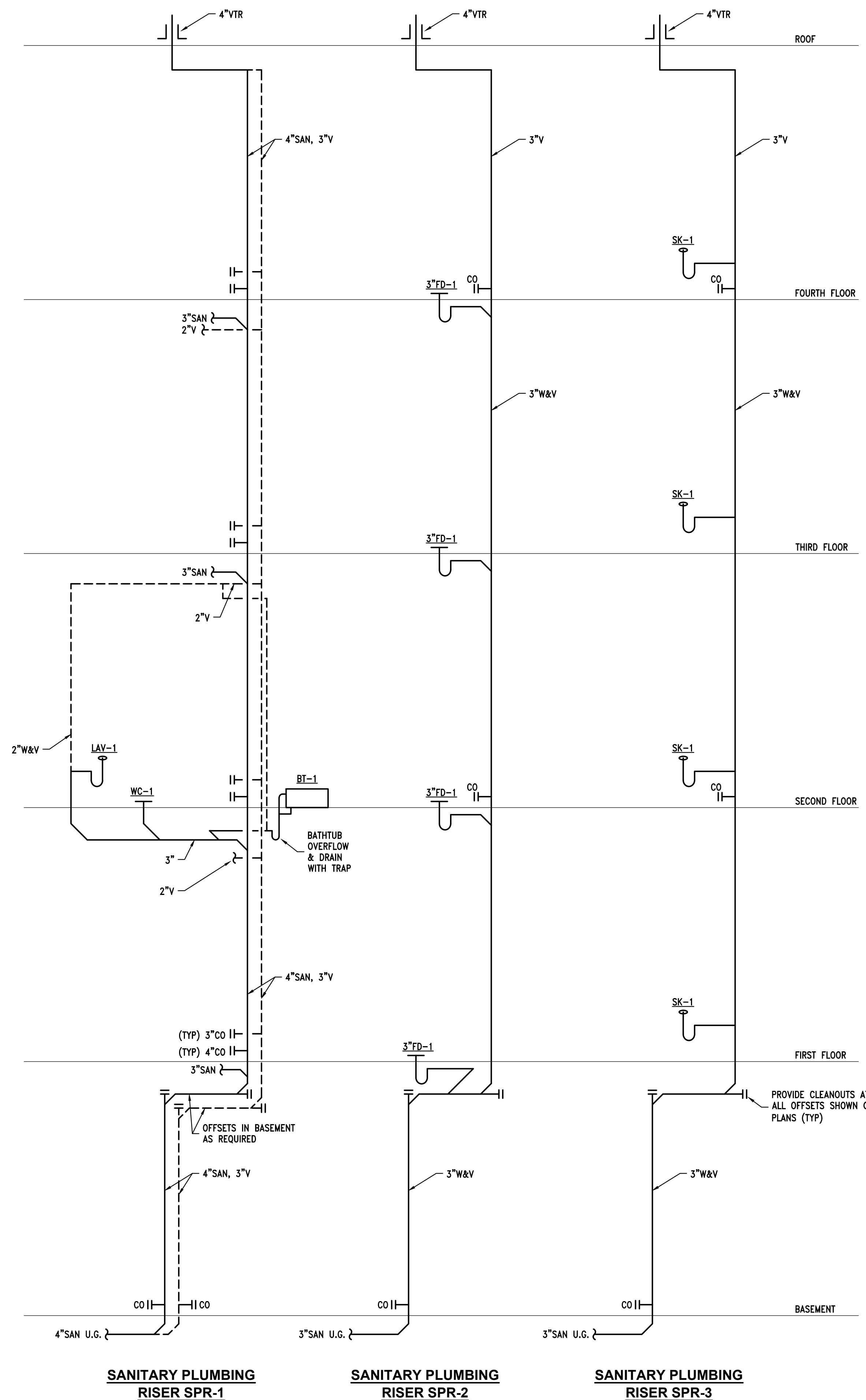
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DPR-1 & DPR-2 PIPING DIAGRAM
NO SCALE



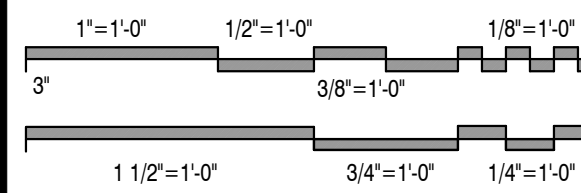
TYPICAL APARTMENT DOMESTIC WATER PIPING & WATER METER DIAGRAM
NO SCALE



SANITARY PLUMBING RISER SPR-1

SANITARY PLUMBING RISER SPR-2

SANITARY PLUMBING RISER SPR-3



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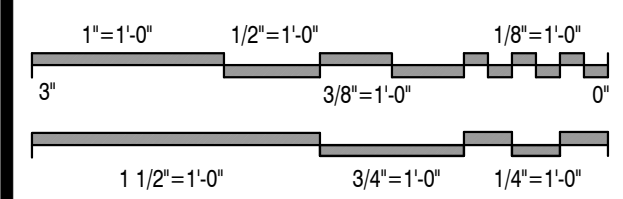
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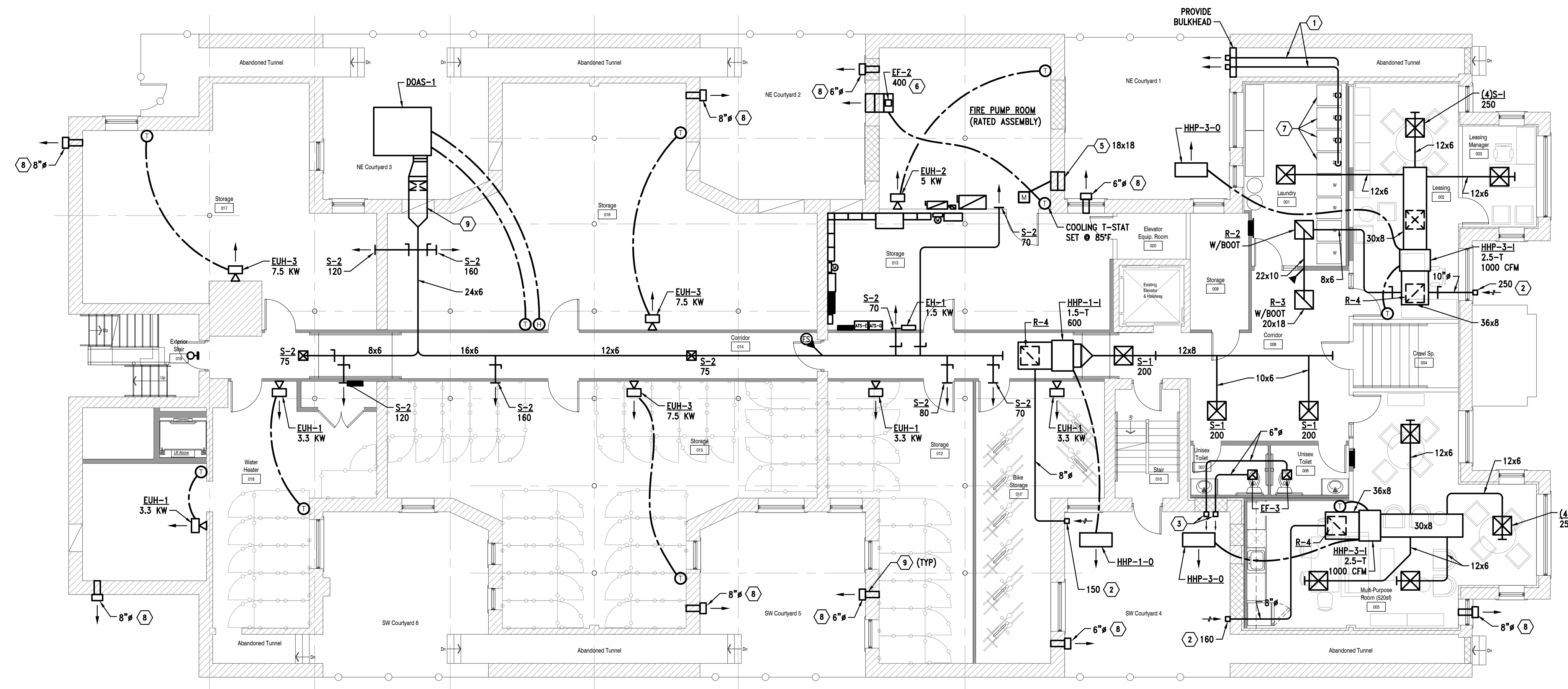


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Drawing Title
**Basement Floor Plan
- HVAC**

2021-248
Project No. _____
LS _____ SS _____
Drawn By _____ Checked By _____
As Noted _____
Scale _____

M1.0
Drawing No.



KEYED NOTES:

- ① 4" RESIDENTIAL DRYER VENTS. ROUTE INDIVIDUALLY & TERMINATE OUTDOORS WITH HOODED WALL CAP WITH BACKDRAFT DAMPER. ROUTE IN ABANDONED TUNNEL IF ACCESSIBLE.
- ② HOODED WALL CAP FOR O.A. INTAKE. BALANCE TO INDICATED CFM. PROVIDE GRAVITY DAMPER IN DIRECTION OF FLOW. SEE DETAIL. MATCH NECK TO DUCT SIZE.
- ③ HOODED WALL CAP WITH BACKDRAFT DAMPER & EXHAUST DUCT FROM BATHROOM CEILING EXHAUST FAN. SEE DETAIL.
- ④ PROVIDE MERV 8 FILTER RACK ON VERTICAL HEATPUMP RETURN OPENING IN SIDE OF CABINET.
- ⑤ STORMPROOF LOUVER EQUAL TO GREENHECK ESD-435, MOTORIZED DAMPER, INTERLOCK TO EF-2.
- ⑥ WALL PROP EXHAUST FAN OPERATES FOR SPACE COOLING T-STAT SET @ 80°F.
- ⑦ RESIDENTIAL CLOTHES DRYERS. OWNER PURCHASED. INSTALL VENTING PER MFR I.O.M.
- ⑧ HOODED WALL CAP - EXHAUST/RELIEF WITH BACKDRAFT DAMPER - DRYER VENT TYPE. MATCH SIZING ON PLAN.
- ⑨ COORDINATE WALL PENETRATIONS WITH ARCH TRADES (TYP).

1 Basement Floor Plan - HVAC
M1.0 Scale: 1/8" = 1'-0"
North

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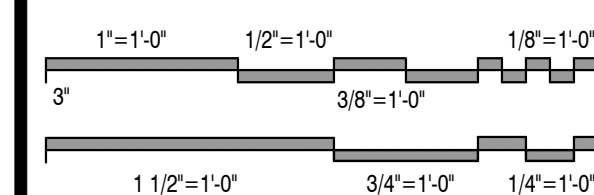
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Drawing Title

**First Floor Plan
- HVAC**

2021-248

Project No.

LS

SS

Drawn By

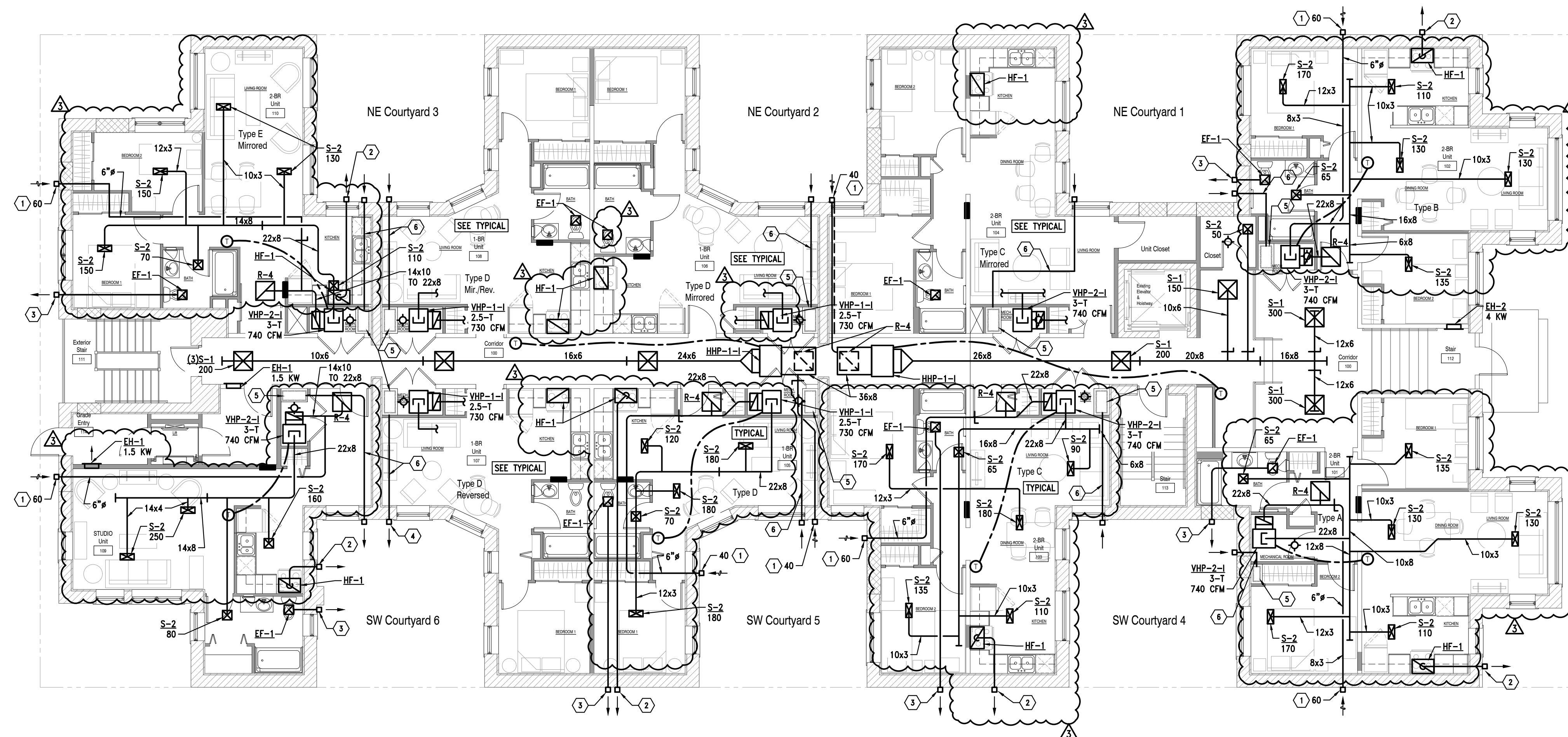
Checked By

As Noted

Scale

M1.1

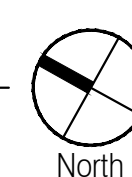
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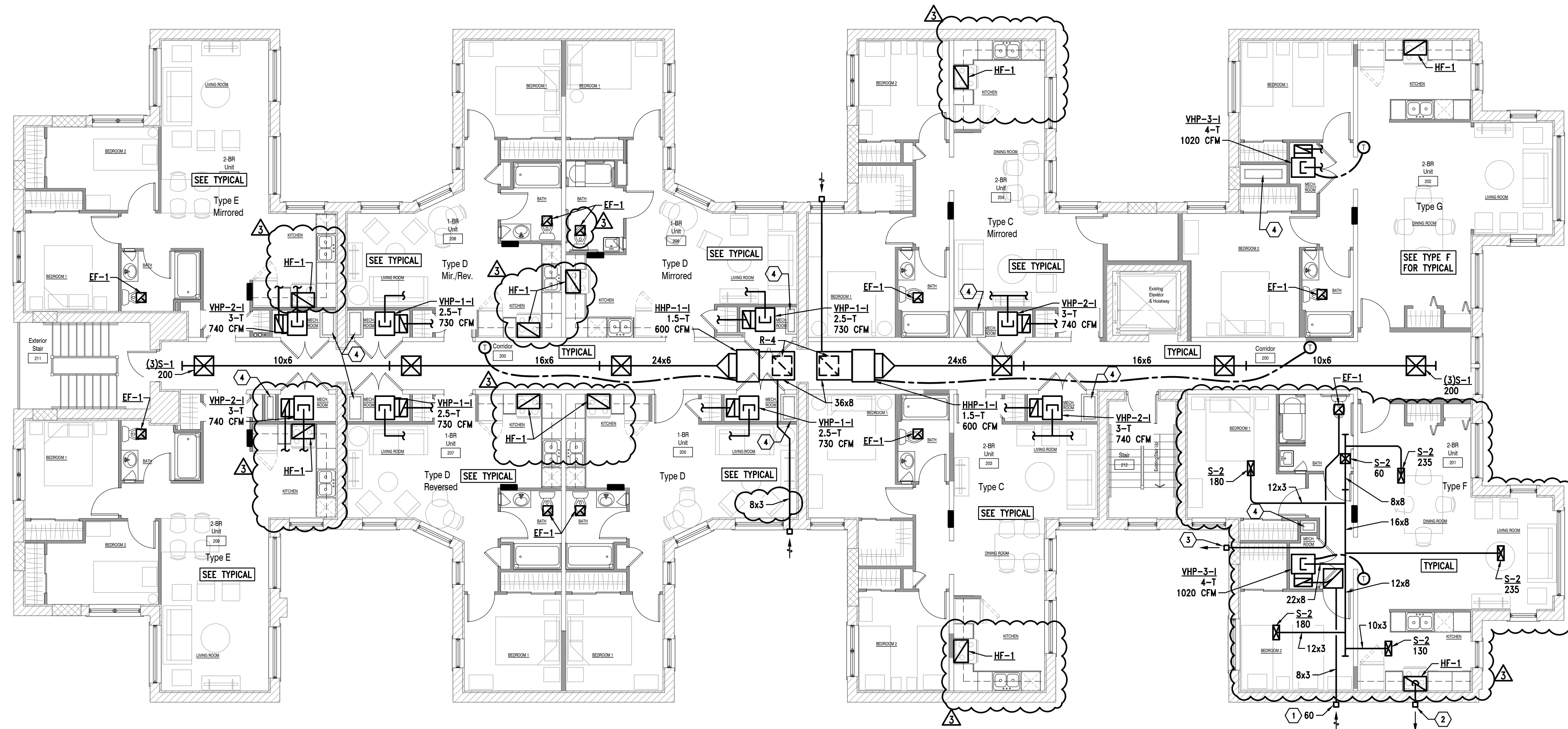


KEYED NOTES:

- ① 6" NECK HOODED WALL CAP ON INTAKE. BALANCE TO INDICATED CFM. PROVIDE GRAVITY DAMPER. SEE DETAIL.
- ② 8" (UOD) HOODED WALL CAP WITH BACKDRAFT DAMPER & SPIRAL EXHAUST DUCT FROM RANGE HOOD/FAN WITH FIRE PROOF DUCTWRAP INSULATED. SEE DETAIL.
- ③ 6" NECK HOODED WALL CAP WITH BACKDRAFT DAMPER & EXHAUST DUCT FROM BATHROOM CEILING EXHAUST FAN. SEE DETAIL.
- ④ 4" SPIRAL DUCT WITH HOODED WALL CAP.
- ⑤ 2 HOUR RATED REFRIGERANT CHASE BY ARCHITECTURAL TRADES. SEE CHASE DETAIL ON SHEET M3.1.
- ⑥ REFRIGERANT CHASE VENT: 4" SPIRAL DUCT WITH HOODED WALL CAP & SEALED CONNECTION TO BASE OF CHASE IN CEILING. SEE DETAIL ON M3.1.

1 First Floor Plan - HVAC
M1.1 Scale: 1/8" = 1'-0"





KEYED NOTES:

- ① 6" NECK HOODED WALL CAP OR INTAKE. BALANCE TO INDICATED CFM. PROVIDE GRAVITY DAMPER. SEE DETAIL.
- ② 8" (UOD) HOODED WALL CAP WITH BACKDRAFT DAMPER & SPIRAL EXHAUST DUCT FROM RANGE HOOD/FAN WITH FIRE PROOF DUCTWRAP INSULATED. SEE DETAIL.
- ③ 6" NECK HOODED WALL CAP WITH BACKDRAFT DAMPER & EXHAUST DUCT FROM BATHROOM CEILING EXHAUST FAN. SEE DETAIL.
- ④ 2 HOUR RATED REFRIGERANT CHASE BY ARCHITECTURAL TRADES. SEE CHASE DETAIL ON SHEET M3.1.

1 Second Floor Plan - HVAC
 M1.2 Scale: 1/8" = 1'-0"
 North

REFER TO FIRST FLOOR PLAN - HVAC FOR TYPICAL



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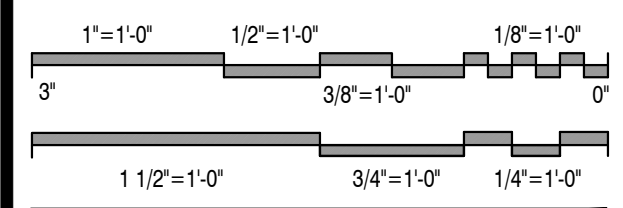
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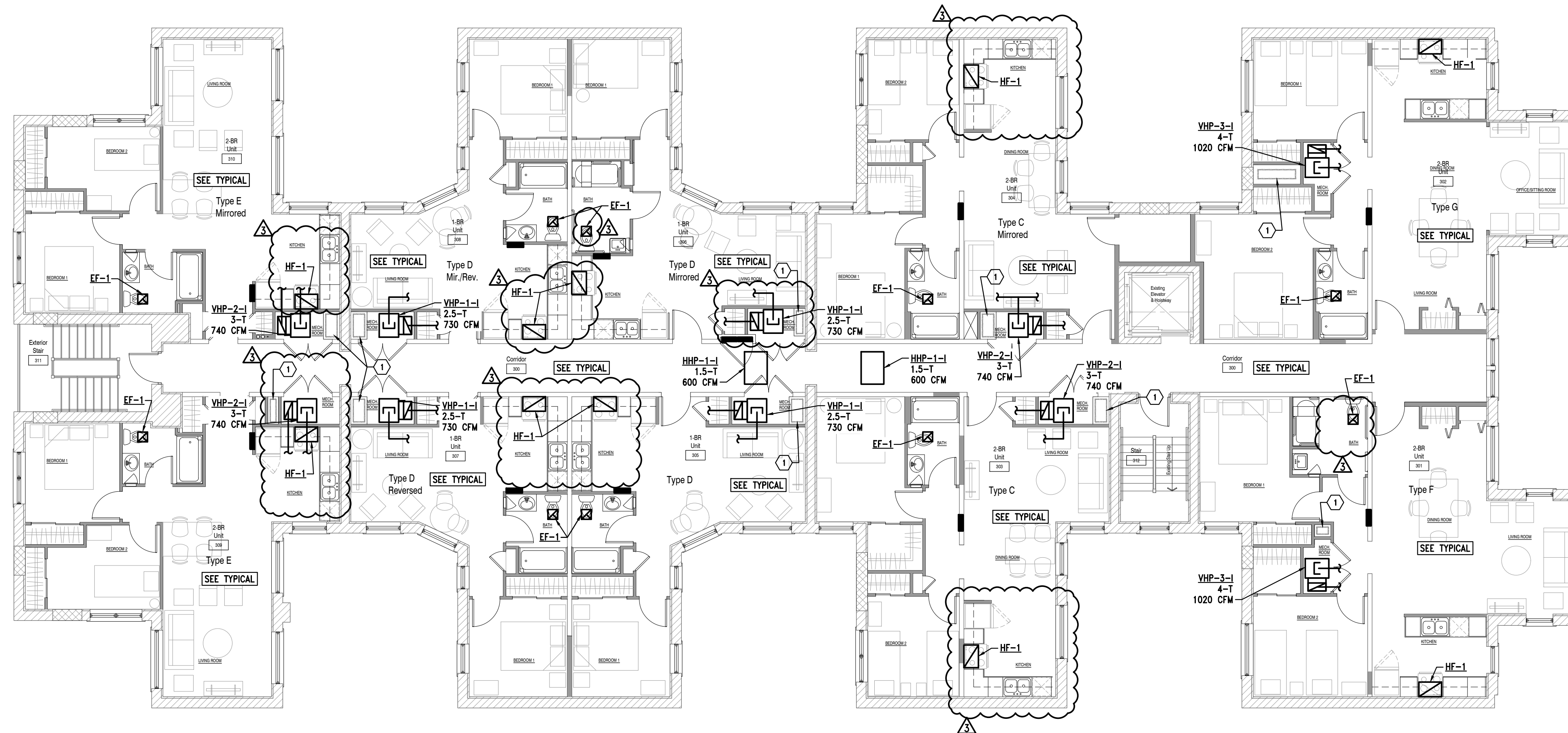
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Drawing Title
**Second Floor Plan
 - HVAC**

2021-248
 Project No. _____
 LS _____ SS _____
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 As Noted _____
 Scale _____

M1.2
 Drawing No.

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KEYED NOTES:

① 2 HOUR RATED REFRIGERANT CHASE BY ARCHITECTURAL TRADES. SEE CHASE DETAIL ON SHEET M3.1.

1
M1.3 Third Floor Plan - HVAC
Scale: 1/8" = 1'-0"
North

REFER TO FIRST & SECOND FLOOR PLANS - HVAC FOR TYPICAL



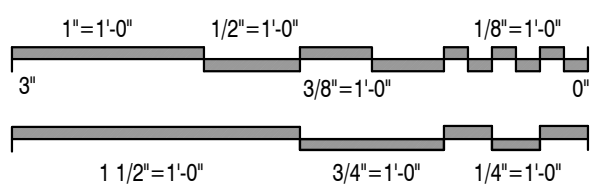
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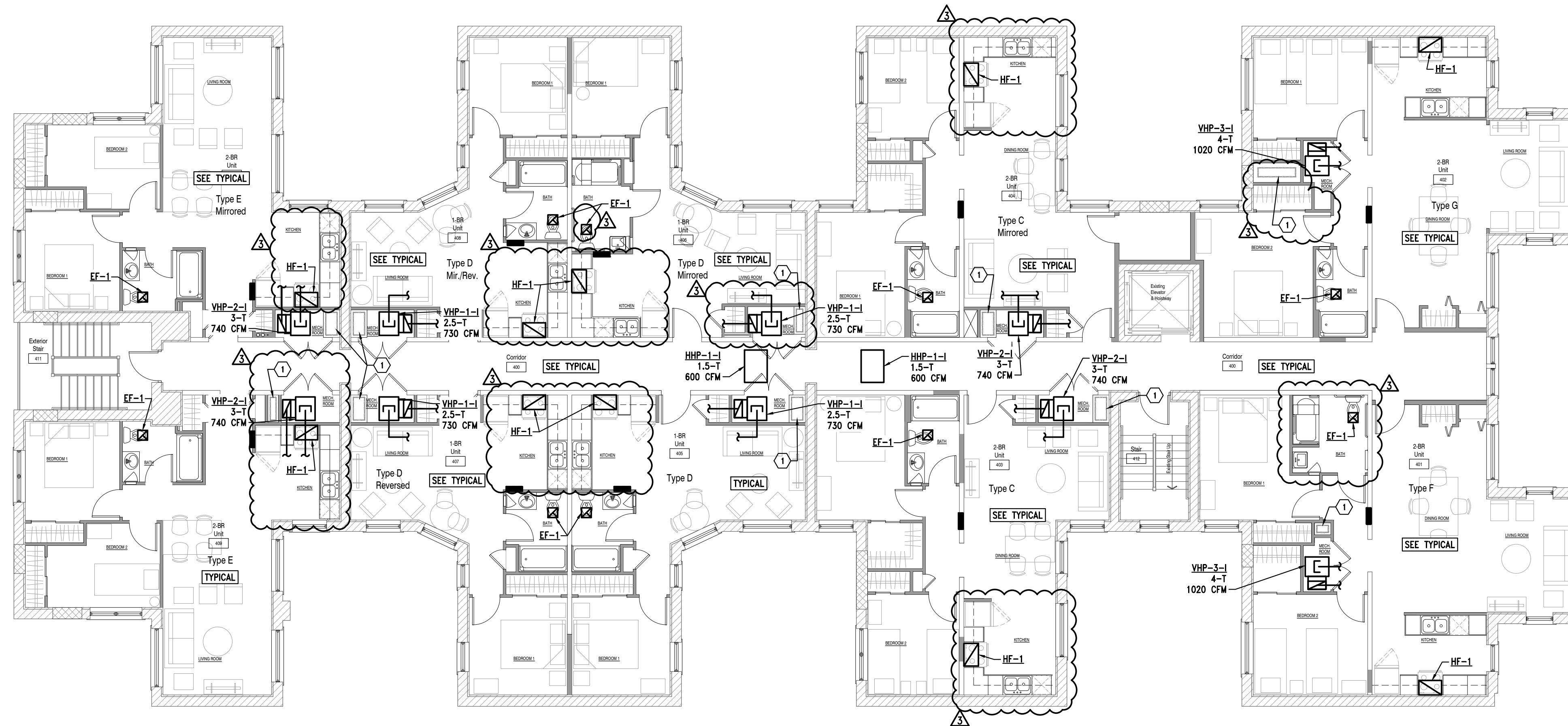
Drawing Title

**Third Floor Plan
- HVAC**

2021-248
Project No.
LS
Drawn By
As Noted
Scale

SS
Checked By

M1.3
Drawing No.



KEYED NOTES:

① 2 HOUR RATED REFRIGERANT CHASE BY ARCHITECTURAL TRADES. SEE CHASE DETAIL ON SHEET M3.1.

1
M1.4 Fourth Floor Plan - HVAC
Scale: 1/8" = 1'-0"

REFER TO FIRST & SECOND FLOOR PLANS - HVAC FOR TYPICAL



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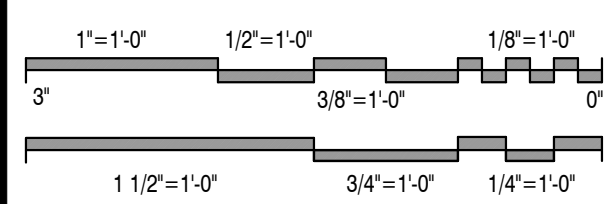
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Drawing Title

**Fourth Floor Plan
- HVAC**

2021-248

Project No.

LS

Drawn By

As Noted

Scale

Scale

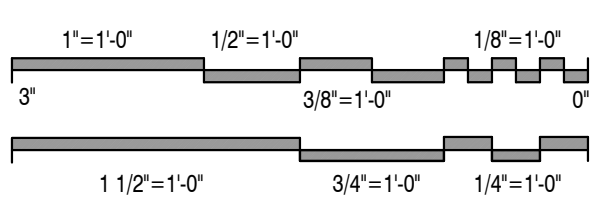
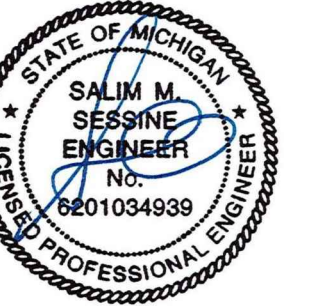
M1.4

Drawing No.

SS

Checked By

Scale



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Drawing Title
Roof Plan - Mechanical

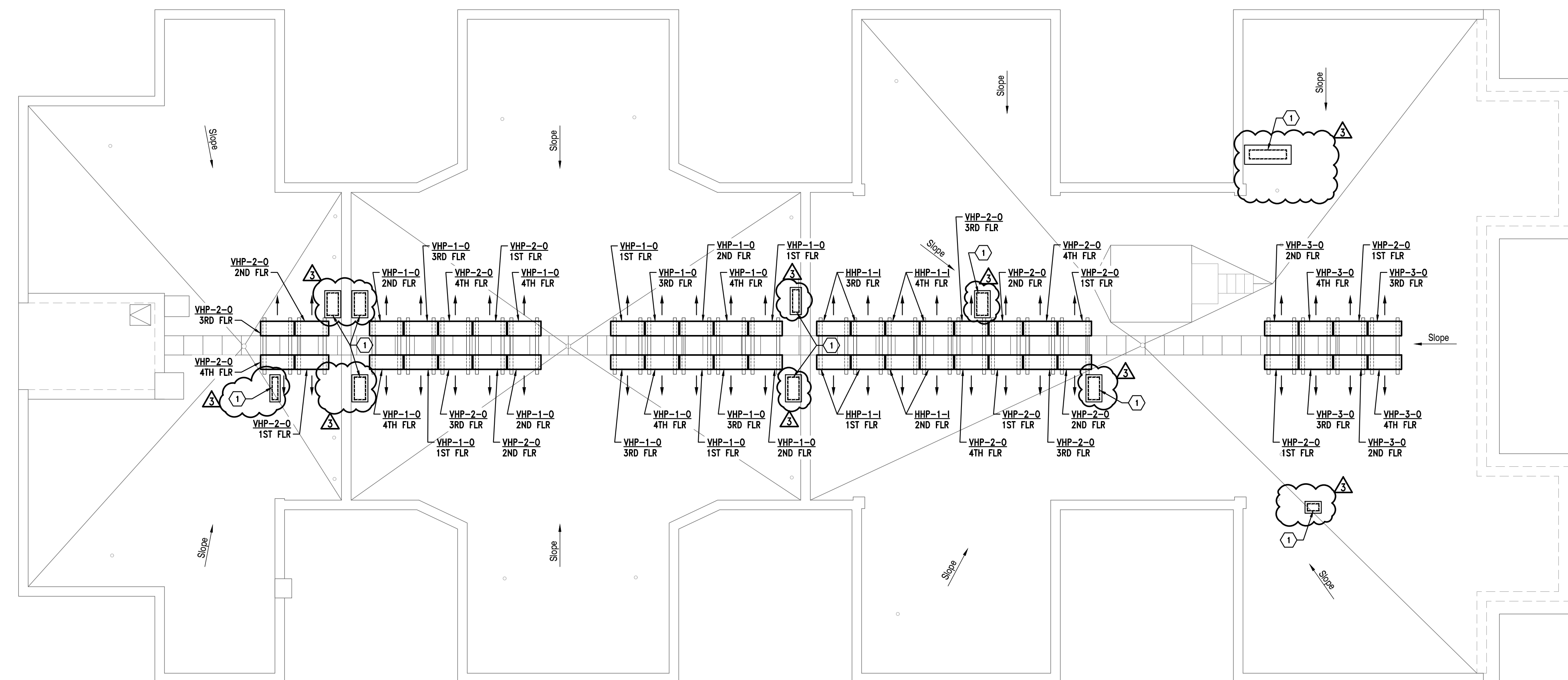
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Project No.
LS
Drawn By
As Noted
Scale

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Checked By

M1.5
Drawing No.

KEYED NOTES:

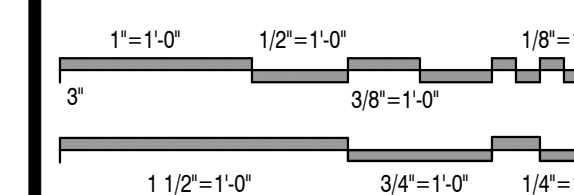
- 1 REFRIGERANT CHASE CURB & ROOF CAP. SEE DETAIL ON M3.1. PROVIDE ROUTING OF DX PIPING. CONTROLS WIRING IN CONDUIT, ETC. ON ROOF. PROVIDE PIPE SUPPORTS PER DETAIL. M.T. SHALL FIELD ROUTE.



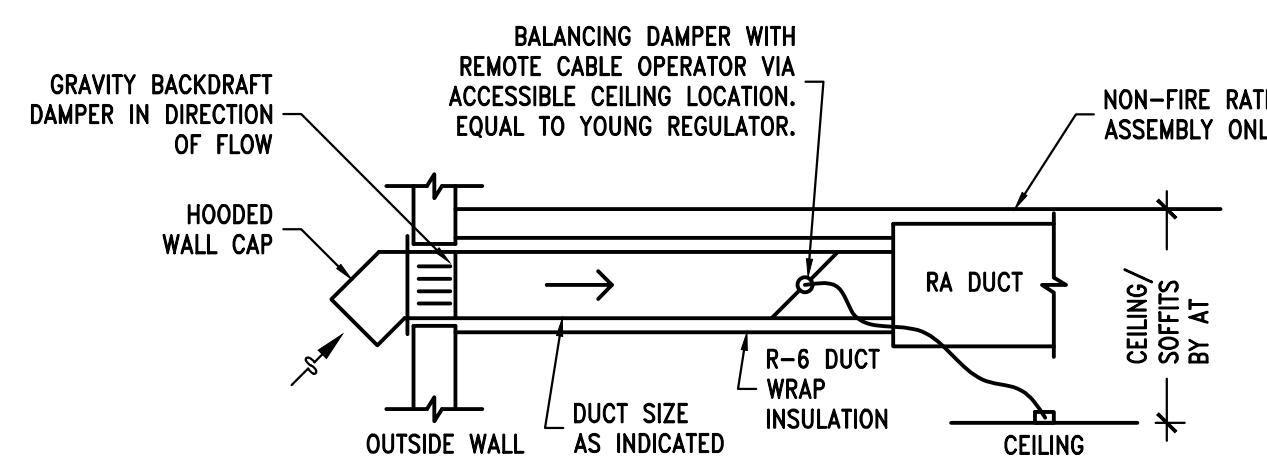
1 Roof Plan - Mechanical
M1.5 Scale: 1/8" = 1'-0"
North

H:\EAM\MAIN\Projects\2021\MS Shelter Design\1061 Linwood Apts\CAD\Mech\M1.5 Roof Plan - Mechanical.dwg, 06/02/2025 12:32:40, gshah

VENTILATION AIR COMPLIANCE SCHEDULE																							
ROOM NAME	ROOM NUMBER	FLOOR	OCCUPANCY CLASSIFICATION/ DESCRIPTION	FLOOR AREA SQ. FT.	CEILING HEIGHT	CODE OCCUPANT DENSITY/ 1000 SF	OCCUPANCY	NUMBER OF PLUMBING FIXTURES OR FLOOR AREA (SQ. FT.)	TABLE 403.3 2015 MICHIGAN MECH CODE & ASHRAE 62.1 2010 REQUIREMENTS										DESIGN AIR BALANCE				
									CODE OA & EA RATES				CALCULATED MINIMUM OUTDOOR AIR REQUIRED (CFM) BASED ON PEOPLE	CALCULATED MINIMUM OUTDOOR AIR REQUIRED BASED ON AIR CHANGES (CFM)	TOTAL EXHAUST FOR BATHROOMS	TOTAL EXHAUST FOR KITCHEN	ROOM SUPPLY AIR (CFM)	TOTAL EXHAUST AIR (CFM)	MINIMUM OA (%)	MIN OUTDOOR VENTILATION AIR BALANCE (CFM)	CFM/ SF SUPPLY AIR	SUPPLY AIR UNITS	
									OA CFM / SF	EA CFM / PERSON	EA CFM / FUTURE OR SQ. FT.	OA AIR CHANGES/ HOUR											
BASEMENT H&V SPACES																							
STORAGE	017	BASEMENT	MECH/ELEC UTILITY ROOM	613	9	0	0	0.06					46	0				120	100	120	0.20	ERV-1	
STORAGE	018	BASEMENT	MECH/ELEC UTILITY ROOM	638	9	0	0	0.06					48	0				120	100	120	0.19		
STORAGE	016	BASEMENT	STORAGE ROOMS	884	9	0	0	0.12					133	0				160	100	160	0.18		
STORAGE	015	BASEMENT	STORAGE ROOMS	884	9	0	0	0.12					134	0				160	100	160	0.18		
FIRE PUMP	013	BASEMENT	MECH/ELEC UTILITY ROOM	323	9	0	0	0.06					24	0				70	100	70	0.22		
ELECTRICAL ROOMS	013	BASEMENT	MECH/ELEC UTILITY ROOM	372	9	0	0	0.06					28	0				70	100	70	0.19		
STORAGE	012	BASEMENT	STORAGE ROOMS	391	9	0	0	0.12					59	0				80	100	80	0.20		
BIKE STORAGE	011	BASEMENT	STORAGE ROOMS	327	9	0	0	0.12					49	0				70	100	70	0.21		
CORRIDOR	008	BASEMENT	CORRIDORS	752	9	0	0	0.06					56	0				150	100	150	0.20		
UNSEX TOILET	006	BASEMENT	TOILET ROOM	45	9	0	0						0	0	70			0	70	0	0		0.00
UNSEX TOILET	007	BASEMENT	TOILET ROOM	45	9	0	0						0	0	70			0	70	0	0		0.00
BUILDING TOTALS				5,264			0						577	0				1,000		1,000			
SPLIT HEAT PUMP SYSTEMS																							
LAUNDRY	001	BASEMENT	COIN OPERATED LAUNDRY	217	9	20	1	0.06	7.50				26	0				250	12	30	1.15	HHP-34	
LEASING	002	BASEMENT	OFFICE SPACES	294	9	5	1	0.06	5.00				28	0				500	12	60	1.70		
LEASING MANAGER	003	BASEMENT	OFFICE SPACES	88	9	5	1	0.06	5.00				13	0				250	12	30	2.84		
CORRIDOR	014	BASEMENT	CORRIDORS	476	9	0	0	0.06					36	0				800	10	60	1.26		
MULTI-PURPOSE ROOM	005	BASEMENT	MULTI-PURPOSE ASSEMBLY	547	9	SEATING	19	0.06	5.00				160	0				1,000		160	1.83	HHP-34	
TWO (2) BEDROOM APARTMENT	TYPE E	1ST FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	655	9		3		15.00	0.35			56	34	50	100		740	150	60	1.13	VHP-24	
TWO (2) BEDROOM APARTMENT	TYPE E	1ST FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	655	9		3		15.00	0.35			56	34	50	100		740	150	60	1.13	VHP-24	
ONE (1) BEDROOM APARTMENT	TYPE D	1ST FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
ONE (1) BEDROOM APARTMENT	TYPE D	1ST FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
ONE (1) BEDROOM APARTMENT	TYPE D	1ST FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
ONE (1) BEDROOM APARTMENT	TYPE D	1ST FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
TWO (2) BEDROOM APARTMENT	TYPE C	1ST FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	690	9		3		15.00	0.35			56	36	50	100		740	150	60	1.07	VHP-24	
TWO (2) BEDROOM APARTMENT	TYPE C	1ST FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	690	9		3		15.00	0.35			56	36	50	100		740	150	60	1.07	VHP-24	
TWO (2) BEDROOM APARTMENT	TYPE A	1ST FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	750	9		3		15.00	0.35			56	39	50	100		740	150	60	0.99	VHP-24	
TWO (2) BEDROOM APARTMENT	TYPE B	1ST FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	690	9		3		15.00	0.35			56	36	50	100		740	150	60	1.07	VHP-24	
CORRIDOR 100/ BUILDING ENTRANCE	100	1ST FLOOR	CORRIDORS	505	9		0	0.06					38	0				1,000	0	40	1.98	HHP-34	
CORRIDOR 100/ INTERIOR	100	1ST FLOOR	CORRIDORS	464	9		0	0.06					36	0				800	0	40	1.29	HHP-14	
TWO (2) BEDROOM APARTMENT	TYPE E	2ND FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	655	9		3		15.00	0.35			56	34	50	100		740	150	60	1.13	VHP-24	
TWO (2) BEDROOM APARTMENT	TYPE E	2ND FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	655	9		3		15.00	0.35			56	34	50	100		740	150	60	1.13	VHP-24	
ONE (1) BEDROOM APARTMENT	TYPE D	2ND FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
ONE (1) BEDROOM APARTMENT	TYPE D	2ND FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
ONE (1) BEDROOM APARTMENT	TYPE D	2ND FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
ONE (1) BEDROOM APARTMENT	TYPE D	2ND FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
TWO (2) BEDROOM APARTMENT	TYPE C	2ND FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	690	9		3		15.00	0.35			56	36	50	100		740	150	60	1.07	VHP-24	
TWO (2) BEDROOM APARTMENT	TYPE C	2ND FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	690	9		3		15.00	0.35			56	36	50	100		740	150	60	1.07	VHP-24	
TWO (2) BEDROOM APARTMENT	TYPE F	2ND FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	903	9		3		15.00	0.35			56	47	50	100		1,020	150	60	1.13	VHP-34	
TWO (2) BEDROOM APARTMENT	TYPE G	2ND FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	690	9		3		15.00	0.35			56	36	50	100		1,020	150	60	1.48	VHP-34	
CORRIDOR 200/	100	2ND FLOOR	CORRIDORS	700	9		0	0.06					53	0	50	100		1,200	0	60	1.71	2 X HHP-14	
TWO (2) BEDROOM APARTMENT	TYPE E	3RD FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	655	9		3		15.00	0.35			56	34	50	100		740	150	60	1.13	VHP-24	
TWO (2) BEDROOM APARTMENT	TYPE E	3RD FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	655	9		3		15.00	0.35			56	34	50	100		740	150	60	1.13	VHP-24	
ONE (1) BEDROOM APARTMENT	TYPE D	3RD FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
ONE (1) BEDROOM APARTMENT	TYPE D	3RD FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
ONE (1) BEDROOM APARTMENT	TYPE D	3RD FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
ONE (1) BEDROOM APARTMENT	TYPE D	3RD FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
TWO (2) BEDROOM APARTMENT	TYPE C	3RD FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	690	9		3		15.00	0.35			56	36	50	100		740	150	60	1.07	VHP-24	
TWO (2) BEDROOM APARTMENT	TYPE C	3RD FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	690	9		3		15.00	0.35			56	36	50	100		740	150	60	1.07	VHP-24	
TWO (2) BEDROOM APARTMENT	TYPE F	3RD FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	903	9		3		15.00	0.35			56	47	50	100		1,020	150	60	1.13	VHP-34	
TWO (2) BEDROOM APARTMENT	TYPE G	3RD FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	690	9		3		15.00	0.35			56	36	50	100		1,020	150	60	1.48	VHP-34	
CORRIDOR 300/	100	3RD FLOOR	CORRIDORS	700	9		0	0.06					53	0	50	100		1,200	0	60	1.71	2 X HHP-14	
TWO (2) BEDROOM APARTMENT	TYPE E	4TH FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	655	9		3		15.00	0.35			56	34	50	100		740	150	60	1.13	VHP-24	
TWO (2) BEDROOM APARTMENT	TYPE E	4TH FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	655	9		3		15.00	0.35			56	34	50	100		740	150	60	1.13	VHP-24	
ONE (1) BEDROOM APARTMENT	TYPE D	4TH FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
ONE (1) BEDROOM APARTMENT	TYPE D	4TH FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
ONE (1) BEDROOM APARTMENT	TYPE D	4TH FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
ONE (1) BEDROOM APARTMENT	TYPE D	4TH FLOOR	PRIVATE DWELLINGS, 1 BEDROOM/ 1 BATH - LIVING AREAS	445	9		2		15.00	0.35			38	23	50	100		730	150	40	1.64	VHP-14	
TWO (2) BEDROOM APARTMENT	TYPE C	4TH FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	690	9		3		15.00	0.35			56	36	50	100		740	150	60	1.07	VHP-24	
TWO (2) BEDROOM APARTMENT	TYPE C	4TH FLOOR	PRIVATE DWELLINGS, 2 BEDROOM/ 1 BATH - LIVING AREAS	690	9		3		15.00	0.35			56	36	50	100							

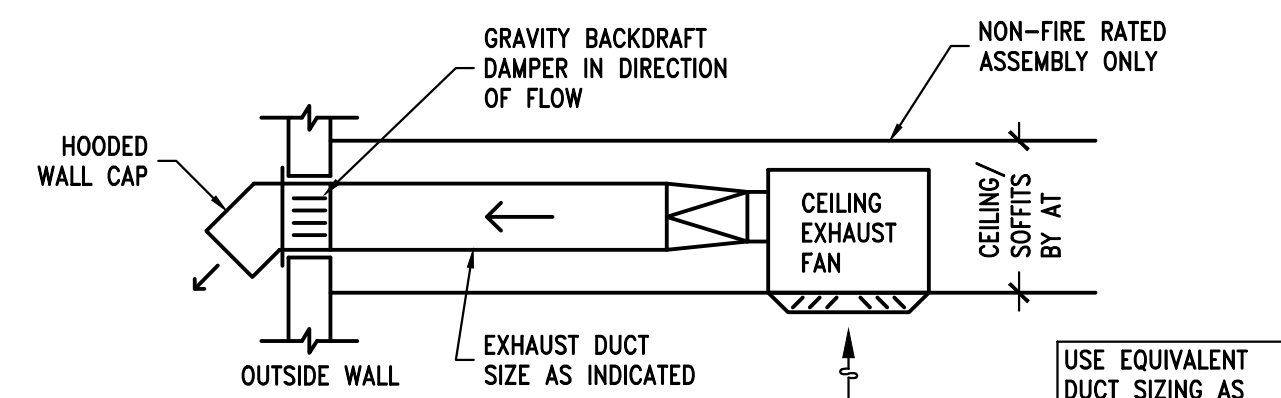


Issued For	Date
Preliminary Review	01.31.2023
Review & Bids	02.27.2023
Bids & Permits	08.12.2024
Plan Review Revisions	03.20.2025
MSHDA Revisions	05.07.2026



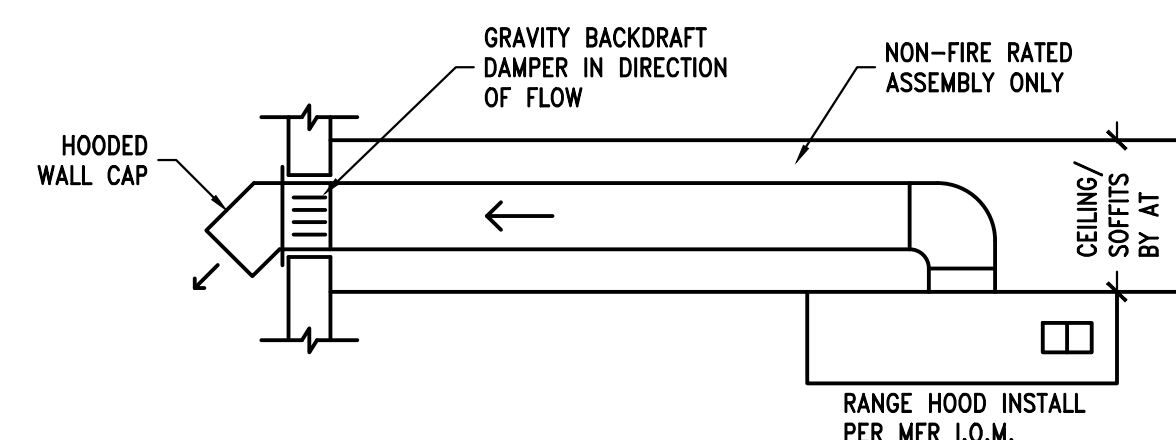
TYPICAL OUTSIDE AIR INTAKE

NO SCALE



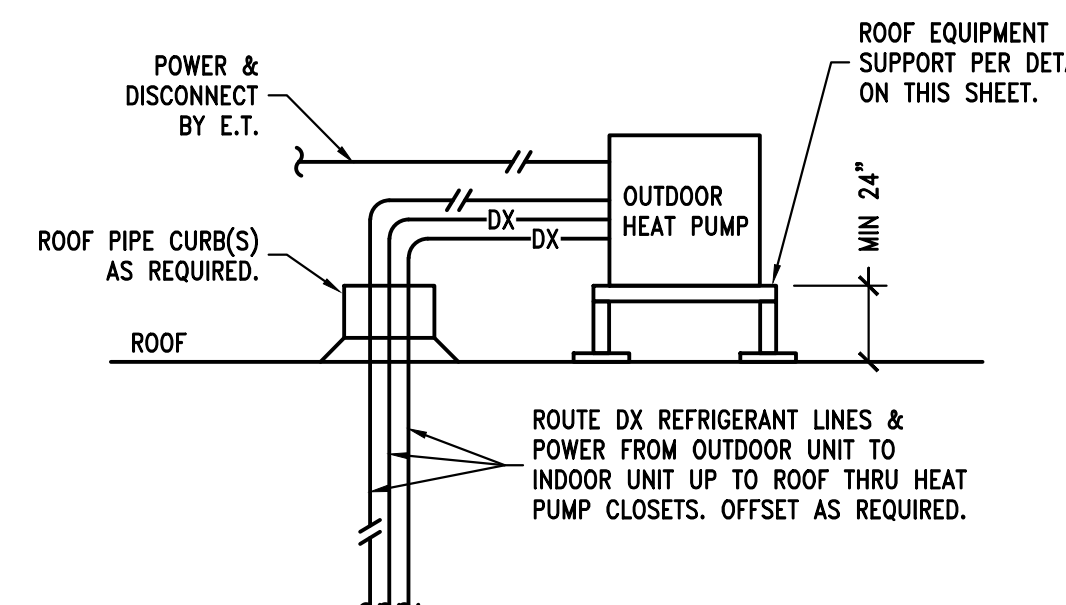
CEILING EXHAUST FAN DETAIL

NO SCALE



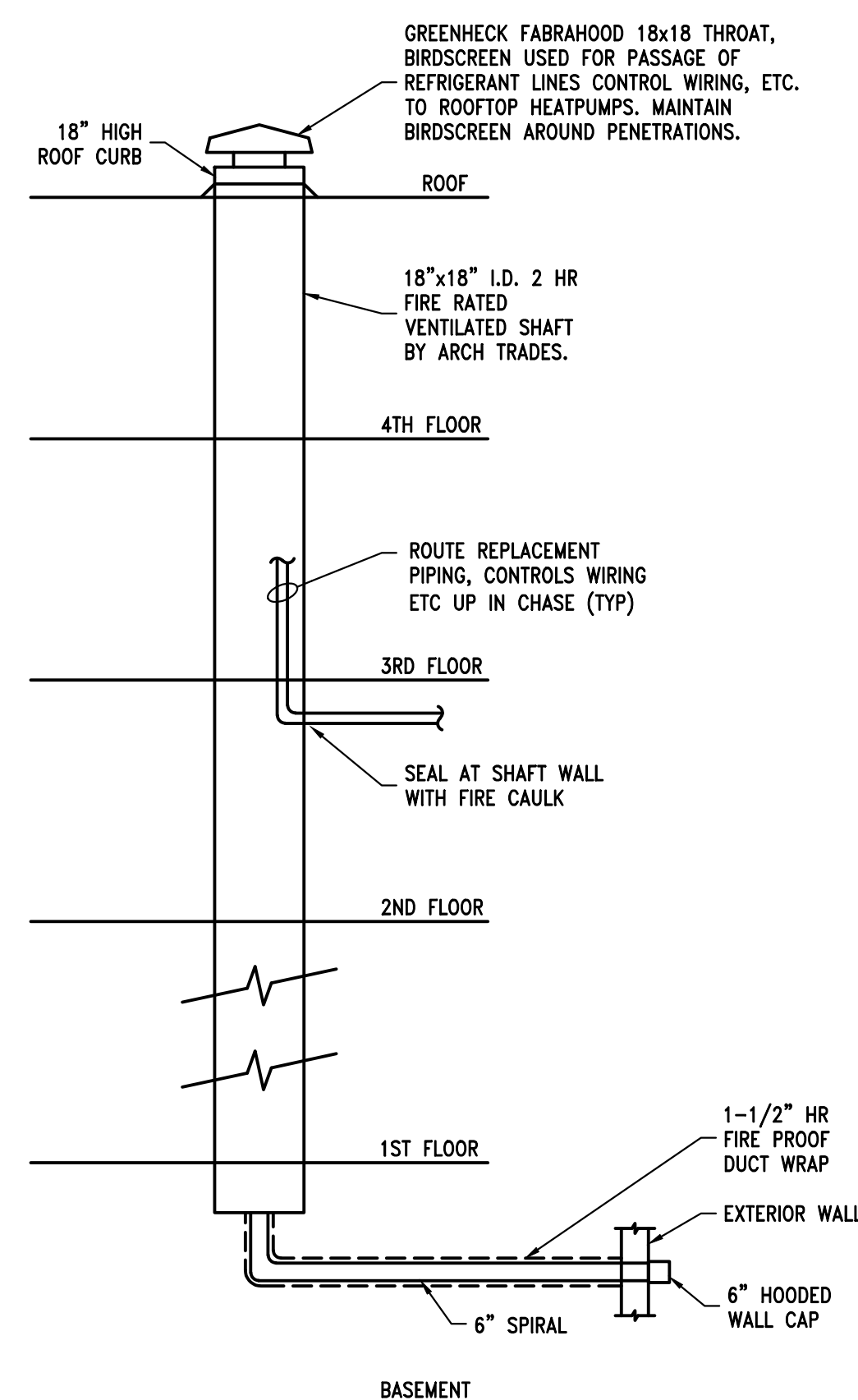
DOMESTIC KITCHEN RANGE EXHAUST FAN DETAIL

NO SCALE



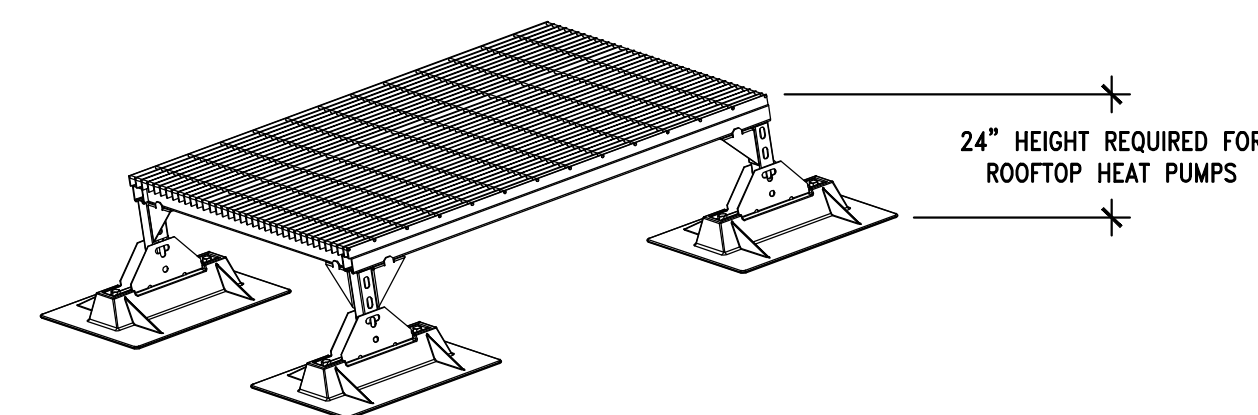
APARTMENT HEAT PUMP DIAGRAM

NO SCALE



REFRIGERANT CHASE DETAIL

NO SCALE

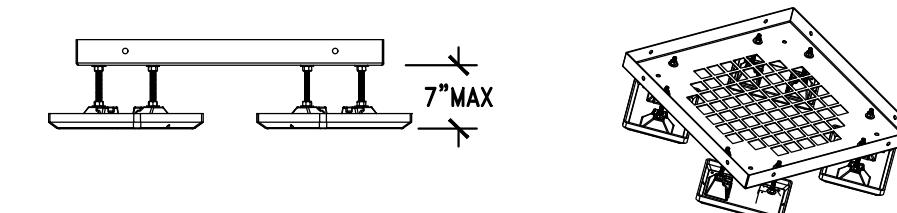


POLYCARBONATE STAINLESS GALVANIZED MECHANICAL SUPPORTS MIRO MODEL MECH SUPPORT-HD:

PRODUCT DESCRIPTION: MIRO MECHANICAL UNIT SUPPORTS ARE SUPPORTS TO ELEVATE ROOFTOP MECHANICAL UNITS SUCH AS AIR CONDITIONING OR OTHER DEVICES. THE MECHANICAL UNIT SUPPORTS ARE DESIGNED SO THAT THE MECHANICAL UNITS REST IN HEAVY-DUTY CORNER OR SIDE SUPPORTS WHICH ARE CONNECTED TO BASES DESIGNED WITH MIRO TECHNOLOGY TO PROTECT THE ROOF MEMBRANE. THE MECHANICAL UNIT SUPPORTS ARE ADJUSTABLE IN THAT THE STRUT CAN BE SELECTED TO THE APPROPRIATE HEIGHT AND THERE IS PROVIDED AN ADDITIONAL THREADED ROD WHICH ALLOWS FINE ADJUSTMENT TO LEVEL THE ROOF-TOP UNITS. ALL METAL PIECES ARE MADE OUT OF HOT-DIP GALVANIZED STEEL FOR OUTDOOR WEATHERING PROTECTION. THE MIRO MECHANICAL UNIT SUPPORT CONSISTS OF (1) A MIRO DESIGNED BASE WITH GENTLY CURVED EDGES TO PROTECT THE ROOF MEMBRANE AND TO DISTRIBUTE THE WEIGHT OVER THE MAXIMUM ROOF SURFACE, (2) HOT-DIP GALVANIZED STEEL STRUT AND ALL-THREAD HEIGHT ADJUSTABLE COLUMN.

ROOF MECHANICAL EQUIPMENT SUPPORT

NO SCALE



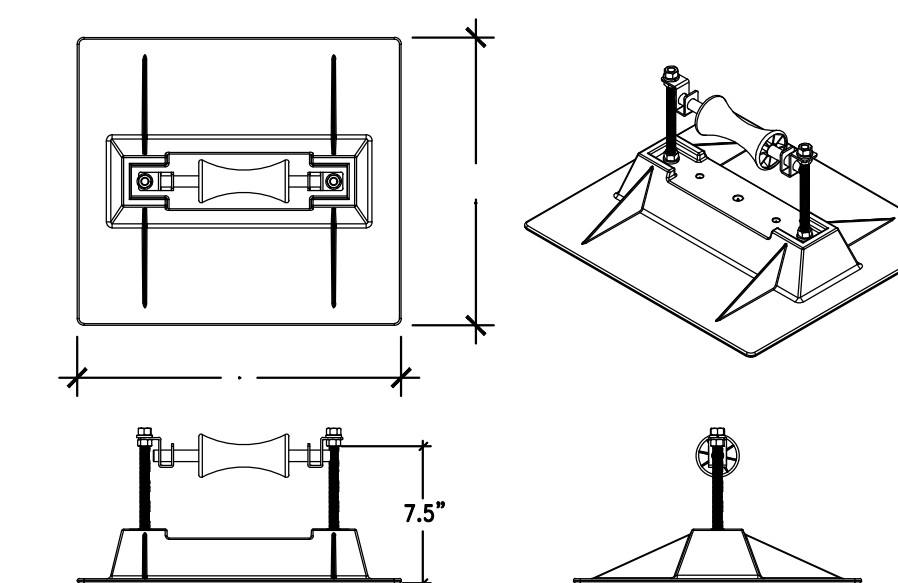
THE HOT-DIP GALVANIZED SHEET FOR EACH MECHANICAL UNIT SUPPORT COMES IN 18" BY 18", 24" BY 24", 24" BY 30", 30" BY 30" AND 36" BY 36". CUSTOM UNITS CAN BE PROVIDED.

POLYCARBONATE MECHANICAL SUPPORTS MIRO MODEL MECH SUPPORT-LD:

PRODUCT DESCRIPTION: MIRO MECHANICAL UNIT SUPPORTS ARE SUPPORTS TO ELEVATE ROOFTOP MECHANICAL UNITS SUCH AS AIR CONDITIONING OR OTHER DEVICES. THE MECHANICAL UNIT SUPPORTS ARE DESIGNED SO THAT THE MECHANICAL UNITS REST IN HEAVY-DUTY CORNER OR SIDE SUPPORTS WHICH ARE CONNECTED TO BASES DESIGNED WITH MIRO TECHNOLOGY TO PROTECT THE ROOF MEMBRANE. THE MECHANICAL UNIT SUPPORTS ARE ADJUSTABLE IN THAT THE STRUT CAN BE SELECTED TO THE APPROPRIATE HEIGHT AND THERE IS PROVIDED AN ADDITIONAL THREADED ROD WHICH ALLOWS FINE ADJUSTMENT TO LEVEL THE ROOF-TOP UNITS. ALL METAL PIECES ARE MADE OUT OF HOT-DIP GALVANIZED STEEL FOR OUTDOOR WEATHERING PROTECTION. THE MIRO MECHANICAL UNIT SUPPORT CONSISTS OF (1) FOUR MIRO DESIGNED BASES WITH GENTLY CURVED EDGES TO PROTECT THE ROOF MEMBRANE AND TO DISTRIBUTE THE WEIGHT OVER THE MAXIMUM ROOF SURFACE, (2) HOT-DIP GALVANIZED SHEET AND ALL-THREAD HEIGHT ADJUSTABLE COLUMN.

ROOF MECHANICAL EQUIPMENT SUPPORT

NO SCALE



PIPE SUPPORT SPACING PER SECTION 308 & TABLE 308.5 OF THE 2018 MPC.

POLYCARBONATE PIPE SUPPORTS MIRO MODEL 6-RAH-7 P:

FOR UP TO 6" ID AND 8.5" OD PIPE. ADJUSTABLE CLEARANCE HEIGHT. A ROLLER BEARING PIPE SUPPORT USED TO SUPPORT ROOF MOUNTED GAS PIPES. UNIQUE DESIGN ABSORBS THERMAL EXPANSION AND CONTRACTION OF PIPES THUS PREVENTING DAMAGE TO THE ROOF MEMBRANE. PIPES REST ON A SELF-LUBRICATING ROLLER WHICH IS A 304 STAINLESS STEEL ROD AND A POLYCARBONATE RESIN ROLLER. THE PIPE SUPPORT BASE IS MADE OF STURDY POLYCARBONATE RESIN. THE ROLLER IS POLYCARBONATE AND ALL METAL PARTS ARE MADE OF STAINLESS STEEL. PIPESTAND WILL ACCOMMODATE UP TO 6" INSIDE DIAMETER PIPE OR UP TO 8.5" OUTSIDE DIAMETER PIPES. SUPPORT SPACING IS 10 FOOT CENTERS. PLACE BASE SHEETS ON ROOFING BEFORE GRAVEL IF ANY. INSTALL GAS PIPE TO ALLOW FOR EXPANSION AND CONTRACTION. PRIMER COAT AND PAINT EXTERIOR GAS PIPE.

SUPPORT OF PIPE ON ROOF

NO SCALE

FAN INFORMATION										ELECTRICAL INFORMATION										COOLING INFORMATION										REHEAT INFORMATION										GAS HEAT INFORMATION										HEAT PUMP INFORMATION										NOTES									
FAN UNIT NO.	TAG	QTY	DOAS/RTU MODEL #	MANUFACTURER	BLOWER	RETURN AIR CFM	MAX OUTSIDE AIR CFM	TOTAL CFM	WEIGHT (LBS)	ESP	HP	BHP	PHASE	VOLT	MCA	MOCP	DB	WB	DB	WB	DP	TOTAL	SENS.	IEER	ISMRE	DISCHARGE DB	DISCHARGE WB	DESIRED	MAX	MOISTURE REMOVAL RATE	GAS TYPE	INPUT BTU/h	OUTPUT BTU/h	TEMP RISE	REQUIRED INPUT GAS PRESSURE	ENTERING TEMP	MAX TEMP RISE	DISCHARGE TEMP	COP																														
1	DOAS-1	1	CAS-HVAC1-1.125-13-6T-DOAS	CAPITVEARE	13P-1	0	1000	1000	1200	0.750	1.00	0.52	3	208	31.5A	35A	81.9°F	75.9°F	51.1°F	49.2°F	47.7°F	84.0 MBH	32.2 MBH	19.5	9.2	70.0°F	57.1°F	20.7 MBH	56 MBH	46.8 LBS/HR	NATURAL	117521	95192	80°F	7 IN. W.C. - 14 IN. W.C.	40.0°F	46.0°F	86.0°F	3.6	1,2,3,4,5,6,7,8,9,10,11,12,13,14																													

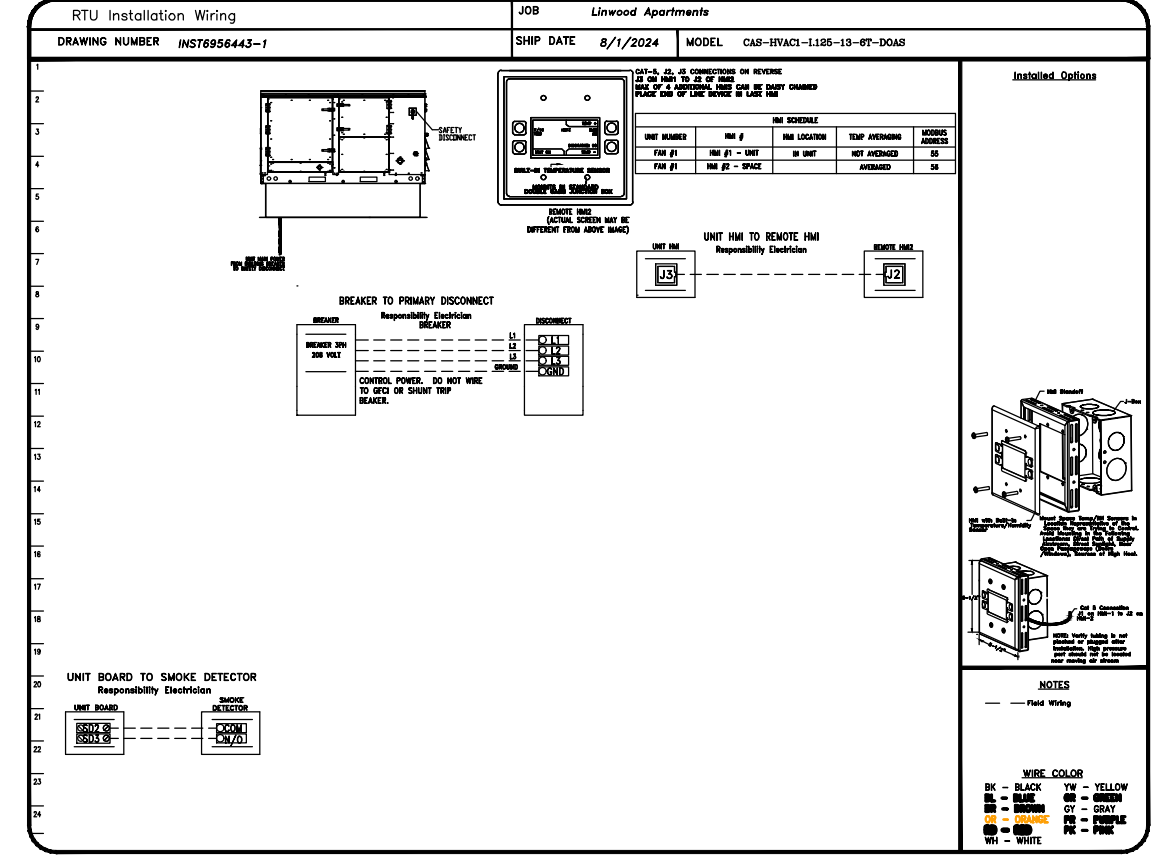
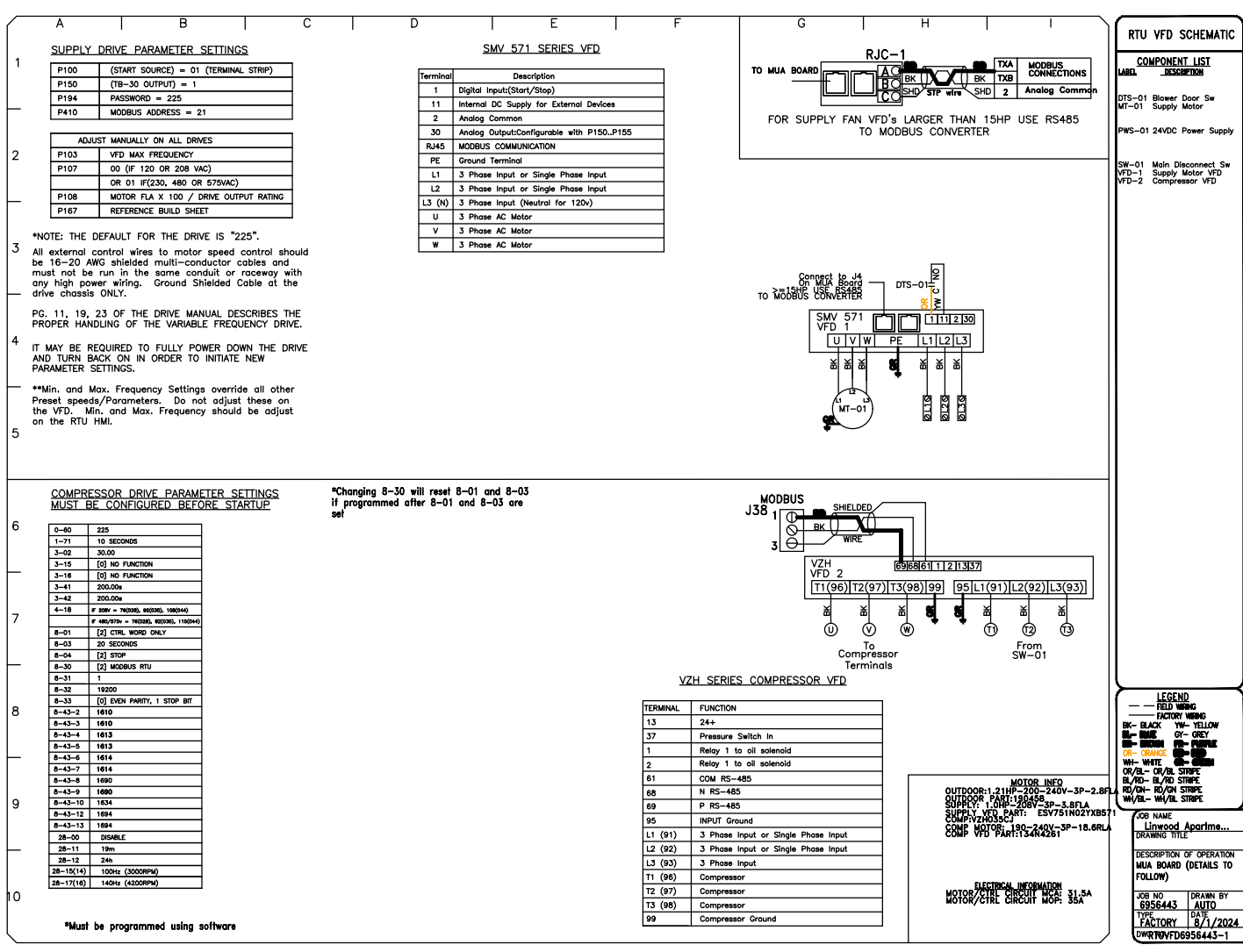
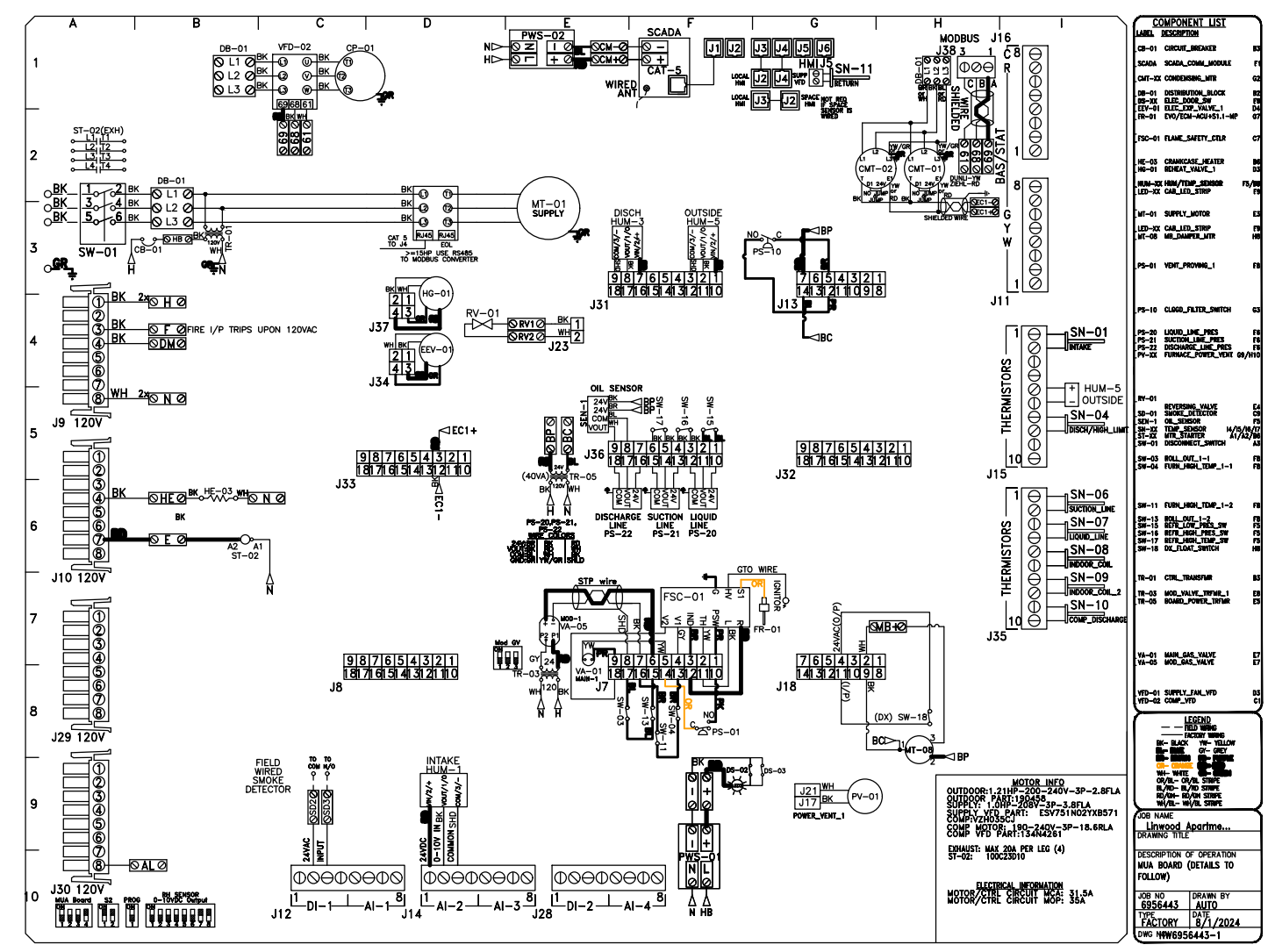
FOR QUESTIONS, CALL THE
 Detroit Mechanical
 REGION 123
 PHONE: (248) 658 - 0509
 EMAIL: reg123@capitveare.com

FAN UNIT NO.	TAG	QTY	DESCRIPTION
1		1	INLET PRESSURE GAUGE, 0-35"
1		1	MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, 1 FURNACE
1		1	TOTAL CFM MONITORING
1		1	INTAKE FIRESTAT SET TO 135°F
1		1	FREESTAT
1		1	DISCHARGE FIRESTAT SET TO 240°F
1		1	SHIP LOOSE GAS STRAINER 3/4"
1		1	SINGLE POINT ELECTRICAL CONNECTION FOR RTU 750VA TRANSFORMER USED, IF A NON-DCV
1		1	PREWIRE CONTROLS THIS UNIT, THE #18, #47, "MA", OR "EZ" PREWIRE OPTION MUST BE SELECTED. DOES NOT PROVIDE SUPPLY STARTER IN PREWIRE
1		1	CASING BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED
1		1	2" MERV 13 FILTERS FOR RTU (QTY. 4)
1		1	2" MERV 8 FILTERS FOR RTU (QTY. 4)
1		1	OVERHEAT STAT
1		1	VFD FACTORY MOUNTED AND WIRED IN RTU COMMERCIAL CONTROL VESTIBULE
1		1	RTU FIXED 100% OA INTAKE CONTROL
1		1	RTU CURB DUCT HANGER
1		1	COMMERCIAL SMOKE DETECTOR/ALARM INTERLOCK - ALARM SUPPLIED BY OTHERS
1		1	EXHAUST CONTACTOR AFTER AIRFLOW SWITCH - FIELD WIRED
1		1	CLOSED FILTER SWITCH - NOTIFICATION ON HW
1		1	RTU NO RETURN - 100% OA
1		1	VAV PACKAGE W/ MANUAL/DOCC CONTROL (571 VFD INCLUDED)
1		1	RTU SIDE DISCHARGE
1		1	6 TON MODULATING COOLING OPTION WITH HEAT PUMP, 208/230V, R410A REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECM CONDENSING FANS
1		1	6 TON MODULATING REHEAT OPTION WITH HEAT PUMP - SPACE DEWPOINT CONTROL - R410A
1		1	5 YEAR ENTIRE UNIT PARTS WARRANTY, 10 YEAR ENTIRE UNIT PARTS WARRANTY WITH REMOTE MONITORING AND CAPTIVEARE SERVICE CONTRACT, 20 YEAR STAINLESS STEEL FURNACE PARTS WARRANTY (SEE ADDITIONAL DETAILS)
1		1	EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET

NO	ON FAN	WEIGHT	ITEM	SIZE
1	# 1	103 LBS	CURB	41,000"W X 71,000"L X 20,000"H INSULATED.

FAN UNIT NO.	TAG	MOTOR	SOUND DATA				OCTAVE BAND SOUND DATA							
			LWA	SONES @ 5 FT	DB @ 5 FT	DISTANCE (FT)	63 HZ	125 HZ	250 HZ	500 HZ	1 KHZ	2 KHZ	4 KHZ	8 KHZ
1	SUPPLY		80.4	19.5	70.1	5	81.8	81.6	78.1	75.4	75.7	72.2	69.6	71.6

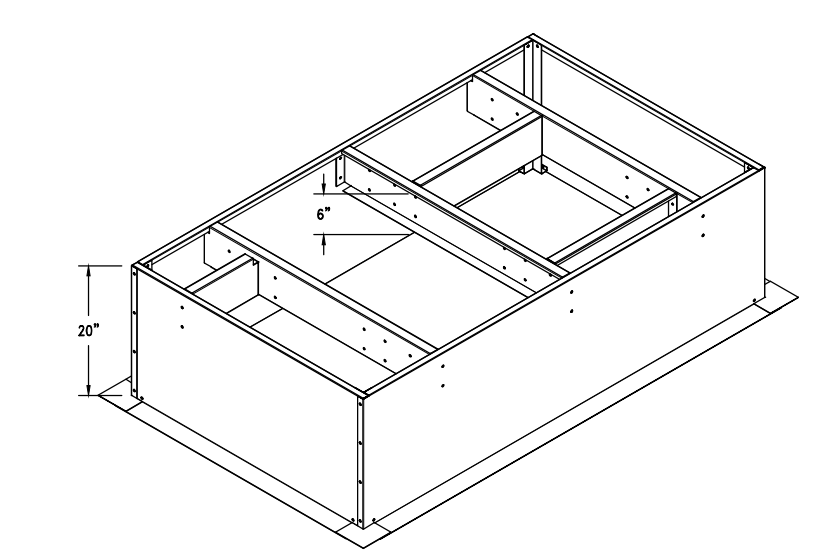
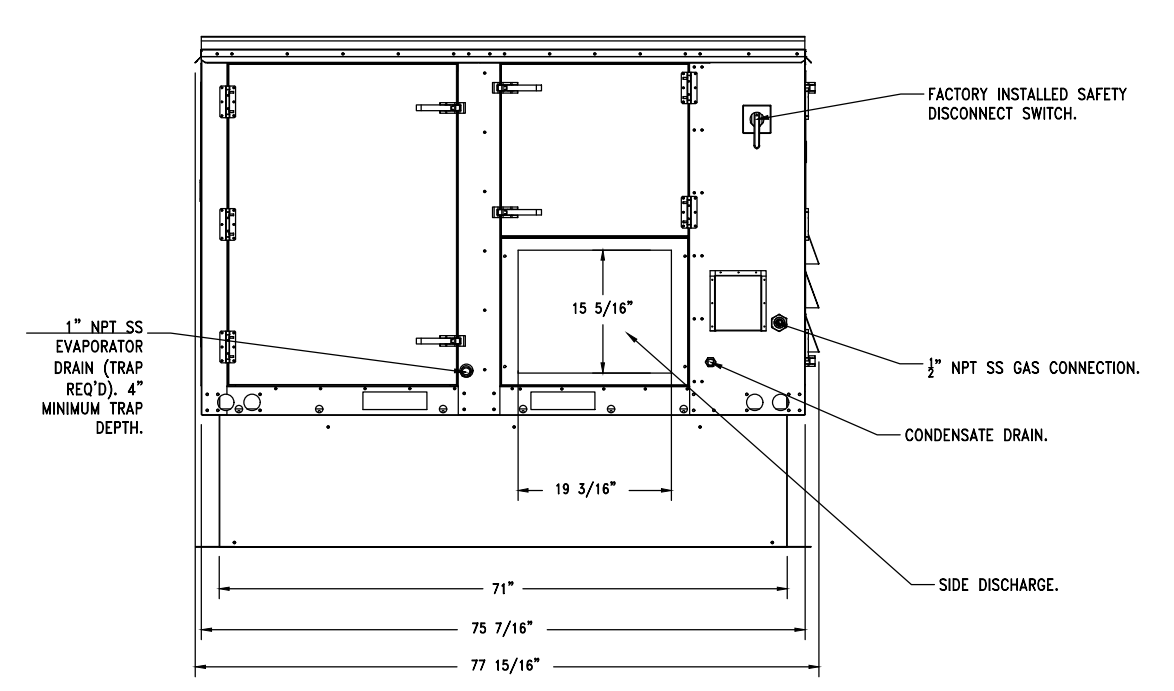
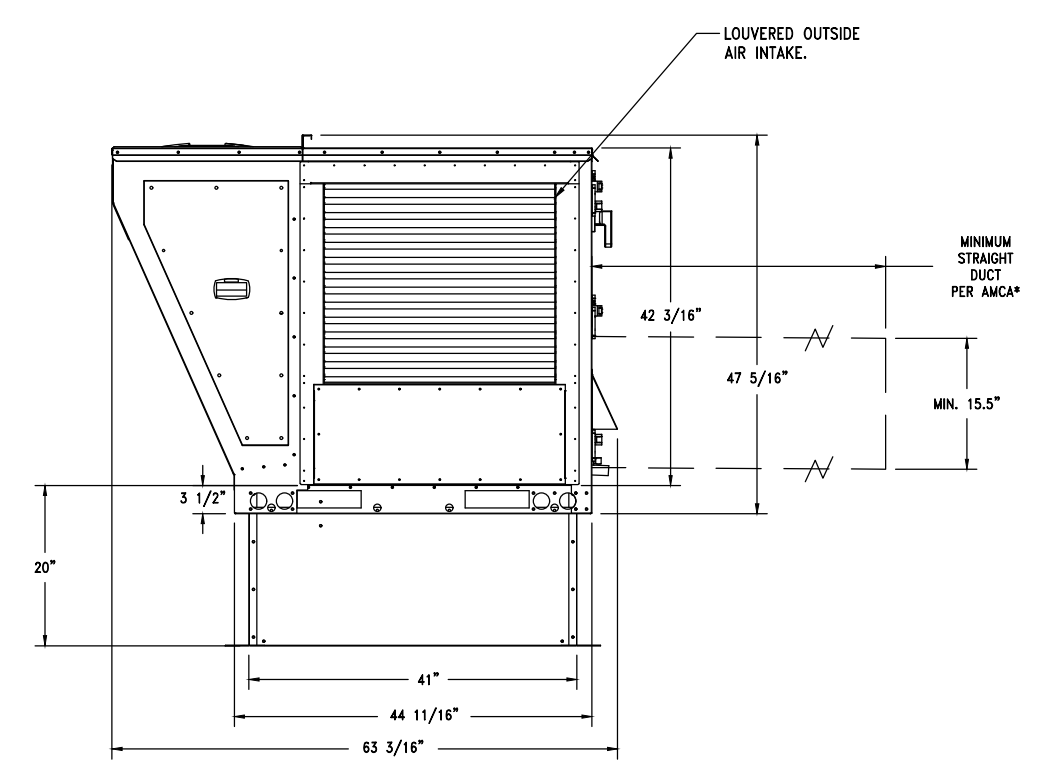
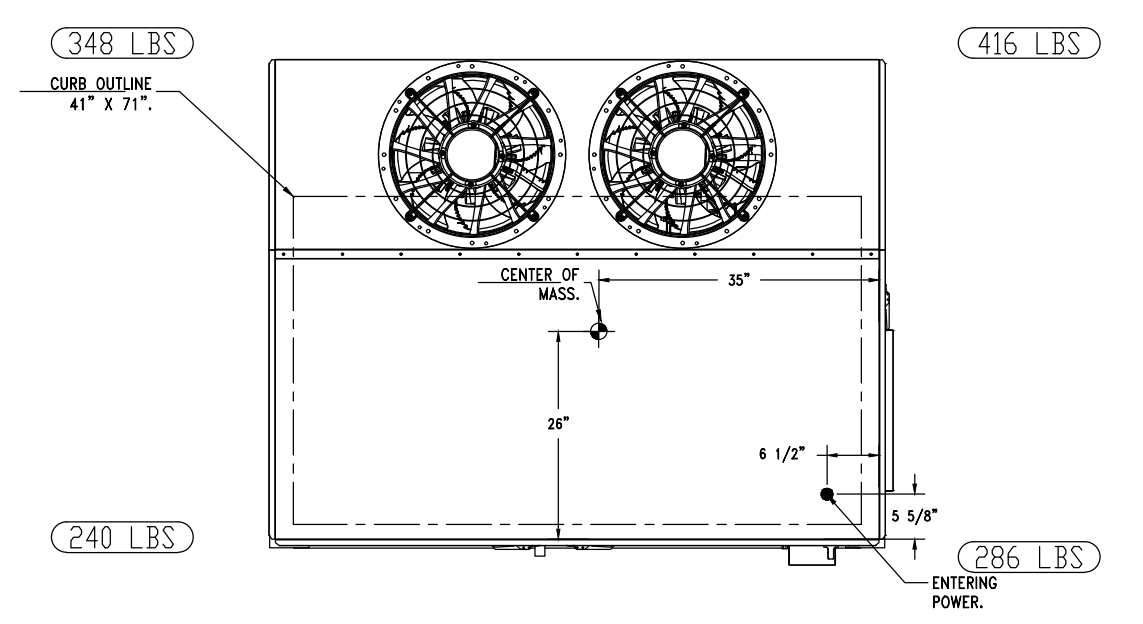
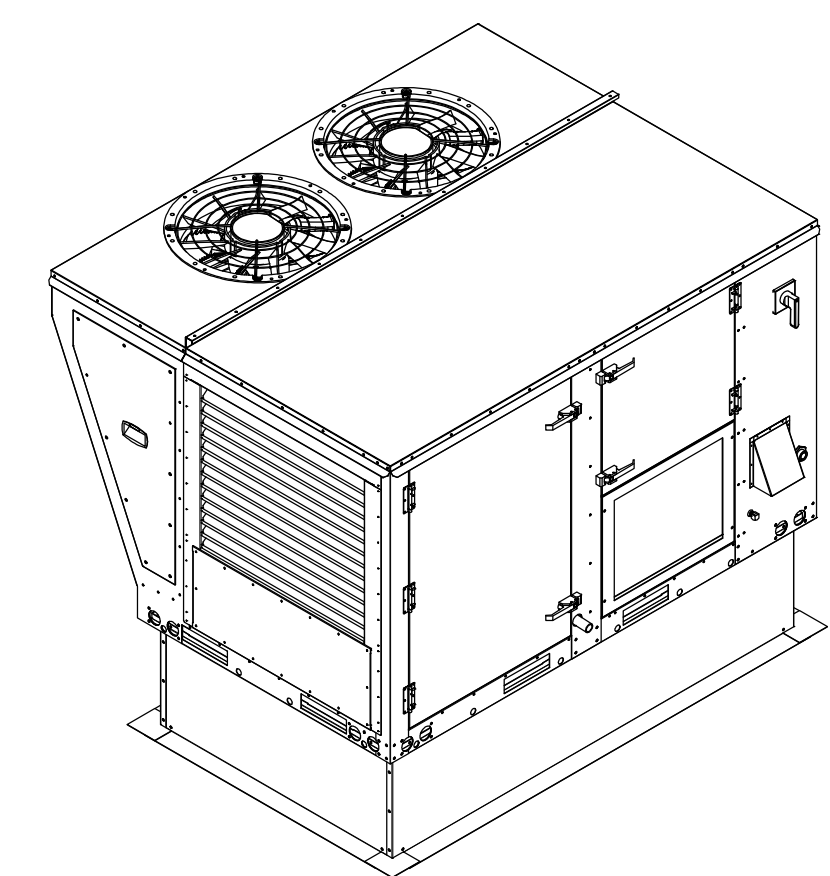
UNIT NUMBER	HMI #	HMI SCHEDULE	HMI LOCATION	TEMP AVERAGING	MODBUS ADDRESS
FAN #1	HMI #1 - UNIT	IN UNIT	NOT AVERAGED	SS	
FAN #1	HMI #2 - SPACE	AVERAGED		56	



FAN #1 CAS-HVAC1-1.125-13-6T-DOAS - HEATER

- NOTES:
- DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
 - _____ DENOTES CORNER WEIGHT.
 - ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.
 - CONNECTION FROM BREAKER TO UNITS SAFETY DISCONNECT SWITCH TO BE COPPER WIRE ONLY.
 - EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET.

*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT. SUGGESTED STRAIGHT DUCT SIZE IS 15.5" x 19.25".



REVISIONS	DESCRIPTION	DATE

CAPTIVEARE
 Detroit Mechanical
 38255 West Ten Mile Road, Farmington Hills, MI, 48335
 PHONE: (248) 658 - 0509 FAX: 9195168735 EMAIL: reg123@capitveare.com

Linwood Apartments
 FARMINGTON, MI, 48334

DATE: 8/1/2024
 DWG.#: 6956443
 DRAWN BY:
 SCALE: 1/2" = 1'-0"
 MASTER DRAWING
 SHEET NO. 1

SHELTER

104 W. Fourth Street
 Suite 303
 Royal Oak, Michigan 48067

248.629.7153 ph.
 248.629.7154 fax

www.SHELTERSTUDIOLLC.com

Architect of Record

Professional Engineer Seal for Salim M. Sessing, State of Michigan, License No. 6201034939.

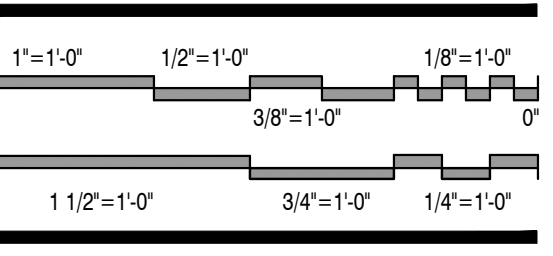
EAM Engineers, Inc.
 Electrical and Mechanical Consulting Engineers
 180 Oak Road, Bloomfield Hills, MI 48304
 Phone 248.528.6570 Fax 248.528.1642
 www.eam-engineers.com eam@eam-engineers.com
 Job No. 483-21061

Owner

DEVELOP DETROIT
 1452 Randolph Street, Suite 300
 Detroit, MI 48226

Project

**Apartment Renovation
 LINWOOD APARTMENTS**
 2295 W Grand Blvd
 Detroit, MI 48208



Issued For	Date
Preliminary Review	01.31.2023
Review & Bids	02.27.2023
Bids & Permits	08.12.2024
Plan Review Revisions	03.20.2025
MSHDA Revisions	05.07.2026

Project No.	SS
LS	Checked By
As Noted	Scale

Drawing Title

**DOAS Unit DOAS-1
 Schedule & Details**

2021-248

Project No.

LS SS

Drawn By Checked By

As Noted

Scale

M3.2
 Drawing No.