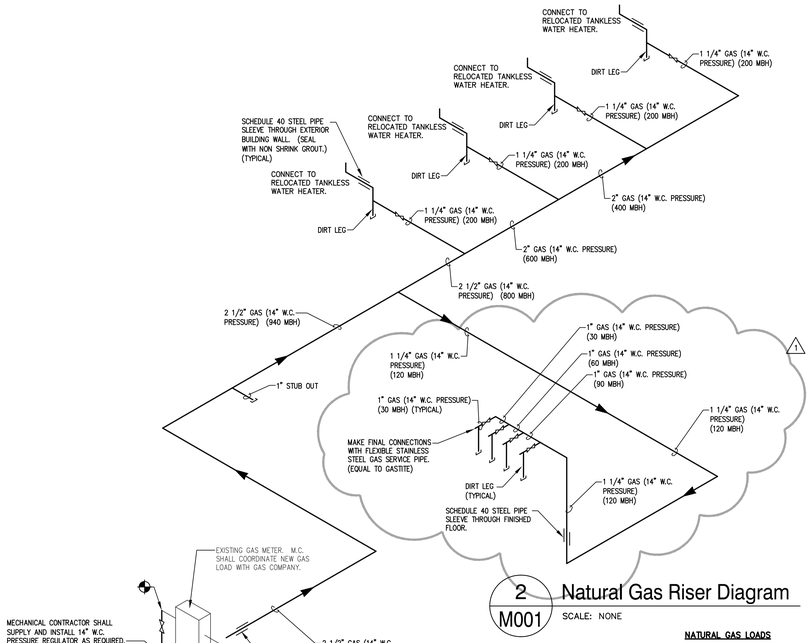


2 M001 Natural Gas Riser Diagram

SCALE: NONE

NATURAL GAS LOADS

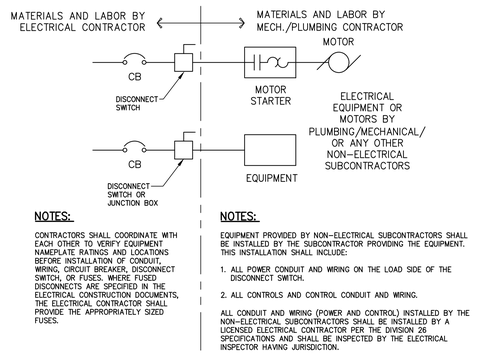
1. DOMESTIC HOT WATER	– 800,000 BTU/HR.
2. GAS DRYERS	– 120,000 BTU/HR.
TOTAL	– 920,000 BTU/HR.

NATURAL GAS SERVICE SIZING

1. SERVICE SIZING IS BASED ON A BUILDING GAS DELIVERY PRESSURE SET AT 11" W.C. DELIVERING (920 MBH).
2. SIZING IS BASED ON TABLES 402.4 (2). (TAKEN FROM THE 2018 NCSBC FUEL GAS CODE.)

NOTE:

1. PAINT ALL EXPOSED GAS PIPING WITH (1) COAT OF OIL BASED PRIMER AND (2) COATS BRIGHT YELLOW OIL BASED PAINT WITH STENCILED LABELS AT 10' INTERVALS.



NOTES:

CONTRACTORS SHALL COORDINATE WITH EACH OTHER TO VERIFY EQUIPMENT NAMEPLATE RATINGS AND LOCATIONS BEFORE INSTALLATION OF CONDUIT, WIRING, CIRCUIT BREAKER, DISCONNECT SWITCH, OR FUSES. WHERE FUSED DISCONNECTS ARE SPECIFIED IN THE ELECTRICAL CONSTRUCTION DOCUMENTS, THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE APPROPRIATELY SIZED FUSES.

NOTES:

EQUIPMENT PROVIDED BY NON-ELECTRICAL SUBCONTRACTORS SHALL BE INSTALLED BY THE SUBCONTRACTOR PROVIDING THE EQUIPMENT. THIS INSTALLATION SHALL INCLUDE:

1. ALL POWER CONDUIT AND WIRING ON THE LOAD SIDE OF THE DISCONNECT SWITCH.
2. ALL CONTROLS AND CONTROL CONDUIT AND WIRING.

ALL CONDUIT AND WIRING (POWER AND CONTROL) INSTALLED BY THE NON-ELECTRICAL SUBCONTRACTORS SHALL BE INSTALLED BY A LICENSED ELECTRICAL CONTRACTOR PER THE DIVISION 26 SPECIFICATIONS AND SHALL BE INSPECTED BY THE ELECTRICAL INSPECTOR HAVING JURISDICTION.

1 M001 Motor / Equipment Installation - Division of Work

SCALE: NONE

RENOVATION KEY NOTES

R1 PROVIDE MINIMUM 3" THICK REINFORCED CONCRETE EQUIPMENT PAD. SECURE TO PAD FOLLOWING MANUFACTURER'S INSTALLATION MANUAL. MAINTAIN REQUIRED CLEARANCES.

R2 RELOCATE EXISTING CHILLED WATER PUMP VFD'S TO LOCATION SHOWN. PROVIDE NEW WIRING AND CONDUIT. RE-COMMISSION. COORDINATE CONTROL WORK WITH ENGINEER AND ELON PROJECT MANAGER.

R3 PROVIDE FIRE DAMPERS AND DAMPER ACCESS DOORS WHERE DUCTS PENETRATE FIRE RATED WALLS.

R4 INSTALL WALL-MOUNTED INDOOR HEAT PUMP APPROXIMATELY ONE FOOT BELOW CEILING.

DEMOLITION KEY NOTES

D1 DISCONNECT AND REMOVE EXISTING STEAM CONVECTOR INDICATED. CAP STEAM AND STEAM CONDENSATE PIPING BELOW FLOOR IN CRAWL SPACE. REPAIR PIPE INSULATION AFFECTED BY DEMOLITION. REPAIR HOLES IN FLOOR LEFT BY DEMOLITION. REMOVE THERMOSTATS AND CONTROL VALVES – SALVAGE FOR OWNER.

D2 VALVE-OFF, DISCONNECT AND REMOVE EXISTING CHILLED WATER VALANCE UNITS INDICATED. REMOVE PIPE TO VALVE AT PIPE RISERS. REPAIR INSULATION. REMOVE THERMOSTATS AND CONTROL VALVES – SALVAGE FOR OWNER.

D3 DEMOLISH EXISTING TOILET EXHAUST DUCT, GRILLES, MANUAL DAMPERS, AND FIRE DAMPERS AS INDICATED.

D4 FACULTY APPARTMENTS 101: DEMOLISH EXISTING SPLIT SYSTEM A/C SYSTEM CURRENTLY SERVING THE EXISTING FACULTY APPARTMENT. DEMOLISH AIR-HANDLING UNIT LOCATED IN CRAWL SPACE AND ALL CONNECTED DUCTWORK, FLOOR SUPPLY REGISTERS, WALL RETURN GRILLE(S), WALL-MOUNTED THERMOSTAT AND ALL CONTROL WIRING. REMOVE OUTDOOR HEAT PUMP UNIT, MOUNTING PAD, REFRIGERANT PIPING, AND ASSOCIATED ELECTRICAL POWER, CONDUIT & WIRING, DISCONNECT AND CONTROLS. REMOVE EXISTING BASEBOARD UNIT IN ROOM 101B. REMOVE EXISTING CLOTHES DRYER VENT DUCT AND WALL CAP. DEMOLISH GAS PIPING CONNECTIONS TO DRYERS. DEMOLISH EXISTING CEILING MOUNTED TOILET EXHAUST FAN AND WALL CAP.

D5 EXISTING VFD'S TO BE RELOCATED. DISCONNECT SECONDARY CHILLED WATER PUMP VFD'S AND ASSOCIATED CONTROLS. RELOCATE TO NEW ELECTRIC ROOM 101A AS SHOWN. SEE DWG. M201 FOR NEW LOCATION.

D6 DEMOLISH THREE EXISTING TOILET EXHAUST FANS LOCATED IN THE ATTIC AT TOP OF THE EXAUST RISERS. LEAVE EXISTING FAN DISCHARGE DUCT.

LOUVER SCHEDULE

DESIG	SIZE	QTY.	LOCATION	DESCRIPTION	MAX CFM	FREE AREA FT SQ.	APD	MANUF.	MODEL
L-1	24"W X 16"H	1	LAUNDRY ROOM	EXT. ALUM. LOUVER	1030	13.6	0.10"	RUSKIN	ELF6375DX

REMARKS - PROVIDE ALL OF THE FOLLOWING:
1. BIRDSCREEN MOUNTED ON THE EXTERIOR FACE OF THE LOUVER.
2. KYNAR FLOUROCARBON COATING FINISH. COLOR SELECTION BY ARCHITECT.
3. 6" DEEP EXTRUDED ALUMINUM CONSTRUCTION.

EXHAUST FAN SCHEDULE

TAG	MANUF	MODEL NO.	TYPE	SERVICE	DRIVE	CFM	SP (IN.)	RPM	Inlet dBA	BHP	HP	ELEC	CONTROL	LOCATION	REMARKS
EF-1	GREENHECK	USF-13-B3	CENTRIFUGAL	TOILETS	DIRECT	900	0.5	1040	55	0.12	0.33	208/1	SWITCHED	ATTIC SPACE	1,2,3,4,5
EF-2	GREENHECK	USF-13-B3	CENTRIFUGAL	TOILETS	DIRECT	900	0.5	1040	55	0.12	0.33	208/1	SWITCHED	ATTIC SPACE	1,2,3,4,5
EF-3	GREENHECK	USF-13-B3	CENTRIFUGAL	TOILETS	DIRECT	900	0.5	1040	55	0.12	0.33	208/1	SWITCHED	ATTIC SPACE	1,2,3,4,5

REMARKS - PROVIDE THE FOLLOWING:
1. RUBBER-IN-SHEAR OR OPEN-SPRING VIBRATION ISOLATORS
2. VARI-GREEN ECM MOTOR AND HOA CONTROLLER
3. FLEX DUCT CONNECTOR BOTH FAN INLET AND DISCHARGE
4. MOTOR COVER
5. TWO-COAT PROTECTIVE COATING WITH EXPOXY BASECOAT & POLYESTER TOPCOAT
6. ELECTRICAL DISCONNECT

AIR DISTRIBUTION SCHEDULE

DESIG	TYPE	CFM RANGE	CEILING MODULE	CORE STYLE	NECK, INCH	FRAME	MAX.NC	MAX.TP	MANUF	MODEL	FINISH	MATERIAL	REMARKS
A	LOUVERED FACE SIDEWALL EXHAUST	0 - 150	SURFACE	0 DEG DEFL	12 X 6	SURFACE	15	0.10	PRICE	635	OFF-WHITE	ALUMINUM	1 & 2
B	LOUVERED FACE SIDEWALL SUPPLY	880	N/A	0 DEG DEFL	22 X 30	SURFACE	N/A	0.02	PRICE	630	OFF-WHITE	ALUMINUM	2

REMARKS
1. CONFIRM FRAME TYPE FOR WALL-MOUNTED APPLICATION.
2. EXPOSED DUCT MOUNTED.

MULTI-ZONE DUCTLESS SPLIT SYSTEM HEAT PUMP SCHEDULE

DESIG	MODEL	TYPE	SERVES ROOM	SUPPLY FAN		ENTERING AIR TEMPERATURE	NOM. COOLING CAPACITY	EER	SEER	HEATING CAPACITY	MAX. ELEV. DIFFERENCE	MAX. PIPE LENGTH	UNIT	ELECTRICAL DATA		
				CFM (SPEEDS)	SOUND @ SPEEDS								WEIGHT	V / PH	MCA	MOCP
HPU-1	MXZ-SM36NAM-U1	OUTDOOR HEAT PUMP UNIT				95°F DB AMBIENT	36 MBH	13.8	20.65	42 MBH	100 FT	165 FT	278 LB	208/1	29	40 A
WMU-1A	PKFY-P12NLMU-E	WALL-MOUNTED INDOOR UNIT	H-101B	152-191-244-297	24-31-37-41	81 DB °F / 66 DB °F	12.0 MBH			13.5 MBH			68 LB	208/1	0.2 A	15 A
WMU-1B	PKFY-P12NLMU-E	WALL-MOUNTED INDOOR UNIT	H-101F	152-191-244-297	24-31-37-41	81 DB °F / 66 DB °F	12.0 MBH			13.5 MBH			68 LB	208/1	0.2 A	15 A
WMU-1C	PKFY-P15NLMU-E	WALL-MOUNTED INDOOR UNIT	H-101D	222-261-304-353	29-34-37-40	81 DB °F / 66 DB °F	15.0 MBH			17.0 MBH			68 LB	208/1	0.24 A	15 A

NOTES:
1. BASIS OF DESIGN: MITSUBISHI P-SERIES, 410a REFRIGERANT
2. EXPOSED INTERIOR PIPING SHALL BE FITTED WITH LINESET COVER
3. EXPOSED EXTERIOR PIPING SHALL BE FITTED WITH COVER EQUAL TO AIREX E-FLEX GUARD WHITE
4. PROVIDE CONDENSATE PUMP WITH WATER DETECTION UNIT. INTERLOCK HIGH LEVEL SWITCH.
5. REFER TO MANUFACTURERS SPECIFICATIONS FOR MAXIMUM REFRIGERANT PIPING LENGTHS
6. REFER TO MANUFACTURERS SPECIFICATIONS FOR CLEARANCE REQUIREMENTS
7. CRANKCASE HEATER
8. OUTDOOR AIR TEMPERATURE SENSOR
9. FACTORY MOUNTED FILTER LINE DRYER
10. REMOTE WALL MOUNTED, WIRED DIGITAL THERMOSTAT
11. THERMOSTATIC EXPANSION VALVE
12. REFER TO MANUFACTURERS SPECIFICATIONS FOR CONDENSATE DRAINAGE
13. 1-YEAR PARTS AND 5-YEAR COMPRESSOR AND LABOR WARRANTY
14. SOUND IS MAXIMUM SOUND PRESSURE LEVEL dB(A)

PROJECT PHASING

– REFER TO ARCHITECTURAL SHEET A006 FOR ADDITIONAL PROJECT PHASING.

PHASE 1:
1. REPLACE EXHAUST DUCTWORK
2. REPLACE EXHAUST FAN IN ATTIC
3. ADD FIRE DAMPERS

PHASE 2:
1. UPFIT FACULTY AND GRAD STUDENT APARTMENTS

GENERAL NOTES

1. PROVIDE ALL WORK, EQUIPMENT, SERVICES, LABOR, AND MATERIALS NECESSARY FOR THE INSTALLATION OF MECHANICAL SYSTEMS AS DESCRIBED OR IMPLIED BY THE CONTRACT DOCUMENTS.
2. THE DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO INCLUDE EVERY DETAIL OF CONSTRUCTION, MATERIALS, AND EQUIPMENT. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING CONDITIONS. ADJUSTMENTS IN THESE LOCATIONS SHALL BE MADE BY THE CONTRACTOR TO FULLY COORDINATE WITH BUILDING CONDITIONS. INSTALL ALL EQUIPMENT SO THAT ALL CODE-REQUIRED AND MANUFACTURER-RECOMMENDED SERVICING CLEARANCES ARE MAINTAINED.
3. VISIT THE SITE OF THIS PROJECT AND BECOME THOROUGHLY FAMILIAR WITH ALL EXISTING FIELD CONDITIONS. VERIFY EVERY ASPECT OF THE PROPOSED WORK AS DESCRIBED OR IMPLIED BY THE CONTRACT DOCUMENTS.
4. REVIEW THE CONTRACT DOCUMENTS OF ALL TRADES AND COORDINATE ALL WORK WITH THE OTHER TRADES AS NECESSARY TO AVOID CONFLICTS AND INTERFERENCES.
5. ALL WORK AND MATERIALS SHALL COMPLY WITH APPLICABLE STATE, LOCAL, AND NATIONAL CODES (INCLUDING OSHA). COMPLIANCE WITH THE LATEST EDITION OF THE NORTH CAROLINA STATE BUILDING CODE AND THESE SPECIFICATIONS SHALL BE THE ABSOLUTE MINIMUM STANDARD OF ACCEPTANCE.
6. PROVIDE ALL CUTTING AND PATCHING NECESSARY FOR THE PROPER INSTALLATION OF WORK AND TO REPAIR ANY DAMAGE DONE DURING DEMOLITION OR RENOVATION.
7. IN THE EVENT THE CONTRACTOR CHOOSES TO USE PRODUCTS OTHER THAN THE BASIS OF DESIGN, HE ASSUMES FULL RESPONSIBILITY FOR COORDINATION AND INTEGRATION OF SUCH ITEMS. THE FUNCTIONAL DESIGN INTEGRITY OF ALL SYSTEMS AND COMPONENTS SHALL BE MAINTAINED. ANY ADDITIONAL COST RESULTING FROM SAID SUBSTITUTION SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. ARCHITECTURAL AND STRUCTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER THE ENGINEERING DRAWINGS REGARDING BUILDING CONSTRUCTION, DIMENSION AND ARRANGEMENT. LINES THAT REQUIRE SLOPE, SUCH AS PLUMBING WASTE LINES SHALL TAKE PRECEDENCE OVER ELECTRICAL LINES AND OTHER TRADES. CONTRACTOR SHALL COORDINATE CLOSELY WITH ALL TRADES TO AVOID CONFLICTS AND SHALL PROVIDE ALL OFFSETS AND EQUIPMENT AS REQUIRED TO FIT THE MECHANICAL AND ELECTRICAL WORK INTO THE AVAILABLE SPACE.
9. READ ALL NOTES AND REMARKS SUPPLIED ON EQUIPMENT SCHEDULES.
10. INSTALL MANUAL VOLUME DAMPERS IN SUPPLY, RETURN, AND EXHAUST SYSTEMS FOR EACH AIR DISTRIBUTION DEVICE AND AS REQUIRED FOR SYSTEM AIR BALANCING. LOCATE DAMPERS FOR EASE OF ACCESS.
11. ALL AIR DISTRIBUTION DEVICES, SHALL BE COORDINATED WITH THE OTHER BUILDING TRADES FOR PROPER LOCATION AND TO PREVENT INTERFERENCE WITH THE LIGHTS, PLUMBING, CONDUIT, ETC.
12. COORDINATE ALL SERVICE OUTAGES WITH OWNER.
13. COORDINATE LIGHT, PIPING, AND DUCT LOCATIONS CLOSELY WITH E.C. PRIOR TO BEGINNING WORK.
14. LOW PRESSURE FLEXIBLE DUCT SHALL BE OF A LENGTH NO GREATER THAN 5'–0" AND SHALL CONTAIN NO MORE THAN ONE BEND, THAT BEND BEING NO GREATER THAT 90° WITH A MINIMUM RADIUS OF ONE AND ONE–HALF THE DUCT DIAMETER (.5 X D).
15. SEAL ALL NEW DUCTWORK WITH 'HARDCAST'
16. ALL ITEMS THAT REQUIRE ACCESS, I.E. FOR OPERATING, CLEANING, SERVICING, MAINTENANCE, AND CALIBRATION, SHALL BE EASILY AND SAFELY ACCESSIBLE INCLUDING BUT NOT LIMITED TO ALL TYPES OF VALVES, FILTERS AND STRAINERS, TRANSMITTERS, AND CONTROL DEVICES.
17. IN AREAS OF THE BUILDING WHERE EXISTING DUCTS, PIPING, CONDUITS, CONTROLS, LIGHTS, AND ITEMS OF EQUIPMENT ARE TO REMAIN AND MAY INTERFERE WITH THE INSTALLATION OF NEW SYSTEMS, THE MECHANICAL CONTRACTOR SHALL COORDINATE AND MAKE ADJUSTMENTS IN THE NEW AND EXISTING SYSTEMS TO MAKE INSTALLATION OF THE NEW SYSTEMS AS INDICATED.
18. RE–INSULATE ALL EXISTING DUCTWORK AND PIPING TO REMAIN WHEN AFFECTED BY NEW WORK.
19. THE EXISTING STEAM LINES IN THE CRAWLSPACE ARE ROUTED ALONG THE EXTERIOR WALLS. CARE SHOULD BE TAKEN WHEN ACCESSING THE CRAWLSPACE TO PREVENT DAMAGING THE PIPING INSULATION. THE CONTRACTOR SHALL SURVEY THE CRAWLSPACE AND DOCUMENT ANY EXISTING DAMAGE TO THE PIPING INSULATION PRIOR TO INITIATING WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING THE PIPING INSULATION WHERE EXISTING DAMAGE WAS NOT REPORTED PRIOR TO CONSTRUCTION.

GENERAL DEMOLITION NOTES

1. THE DEMOLITION PLAN IS INTENDED TO PROVIDE THE CONTRACTOR WITH A GENERAL KNOWLEDGE OF THE EXISTING CONDITIONS WITHIN THE PROJECT AREA. EXISTING EQUIPMENT, STRUCTURE, DUCTWORK, ETC. LOCATED ON DRAWING WERE DERIVED FROM EXISTING DRAWINGS AND LIMITED FIELD OBSERVATIONS. THIS DRAWING MAY NOT BE ALL INCLUSIVE OF SERVICES THAT EXIST IN THE PROJECT AREA. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS DEMOLITION WORK. FIELD CONDITIONS SHALL GOVERN. ANY DEVIATIONS IMPACTING WORK SHOWN ON THESE DOCUMENTS SHALL BE REPORTED TO THE ARCHITECT AND ENGINEER PRIOR TO BEGINNING DEMOLITION. BEGINNING OF DEMOLITION SHALL SIGNIFY CONTRACTORS ACCEPTANCE OF EXISTING CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR ALL REQUIRED DEMOLITION WHETHER SHOWN ON THE PLANS OR NOT.
2. COORDINATE THE WORK WITH OTHER TRADES INVOLVED. COORDINATE NEW WORK WITH EXISTING ELEMENTS SUCH AS THE BUILDING STRUCTURE AND ARCHITECTURAL FEATURES, SPRINKLER PIPING, LIGHTS, PLUMBING PIPING, AND ELECTRICAL CONDUIT. COST OF REROUTING DUCTWORK OR PIPING DUE TO CONFLICTS WITH EXISTING CONDITIONS SHALL BE PAID BY CONTRACTOR.
3. CONTRACTOR SHALL REMOVE AND RELOCATE EXISTING ROOM THERMOSTATS, TEMPERATURE SENSORS, EXHAUST FAN SWITCHES, ETC. WHERE NECESSARY. REMOVED THERMOSTATS SHALL BE RETURNED TO OWNER.
4. PROPERLY REMOVE AND DISPOSE OF ALL EXISTING TO BE REMOVED HVAC EQUIPMENT, DUCTWORK, AIR DISTRIBUTION DEVICES, SYSTEMS ETC. CONSULT WITH OWNER AND OBTAIN OWNERS APPROVAL PRIOR TO DISPOSAL OF REMOVED MATERIAL.
5. PATCH HOLES LEFT IN WALLS AND FLOORS AFTER REMOVAL OF EXISTING DUCTWORK, CONDUIT, ETC. TO MATCH NEW OR EXISTING CONSTRUCTION AND FIRE RATING. THIS INCLUDES ANY EXISTING OPENINGS IN RATED WALLS OR FLOORS.
6. WHERE ANY EXISTING VALANCE UNIT IS SCHEDULED FOR REMOVAL, THE CONTRACTOR SHALL REMOVE AND SALVAGE FIN–TUBE, THERMOSTAT, CONTROL VALVE, CONTROL WIRING, CIRCUIT SETTERS, ETC. OFFER OWNER THE FIRST RIGHT OF REFUSAL FOR SALVAGED EQUIPMENT. DELIVER SALVAGED EQUIPMENT TO ELON UNIVERSITY PHYSICAL PLANT.
7. WHERE ANY EXISTING STEAM RADIATOR IS SCHEDULED TO BE REMOVED SALVAGE ALL RADIATOR THERMOSTATIC CONTROL VALVES AND DELIVER TO ELON UNIVERSITY PHYSICAL PLANT.
8. EXISTING ISOLATION VALVES AT STEAM RADIATORS ARE TO REMAIN AND BE REUSED. DO NOT REMOVE ISOLATION VALVES DURING RENOVATION.
9. THE EXISTING STEAM LINES IN THE CRAWLSPACE ARE ROUTED ALONG THE EXTERIOR WALLS. CARE SHOULD BE TAKEN WHEN ACCESSING THE CRAWLSPACE TO PREVENT DAMAGING THE PIPING INSULATION. THE CONTRACTOR SHALL SURVEY THE CRAWLSPACE AND DOCUMENT ANY EXISTING DAMAGE TO THE PIPING INSULATION PRIOR TO INITIATING WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING THE PIPING INSULATION WHERE DAMAGE WAS NOT REPORTED PRIOR TO CONSTRUCTION.

DUCTWORK SYMBOLS LEGEND

T ATU–1	THERMOSTAT – SERVICE: AIR TERMINAL UNIT 1
18/14	RECTANGULAR DUCT (W/H) INSIDE CLEAR DIM.
	NEW DUCT
	EXISTING DUCT
	EXISTING DUCT/EQUIPMENT TO BE DEMOLISHED
VD	MANUAL VOLUME DAMPER / BALANCING DAMPER (VD)
	SUPPLY AIR DUCT IN SECTION
	RETURN DUCT IN SECTION
	EXHAUST DUCT IN SECTION
	DUCTWORK TURNING DOWN
	DUCTWORK TURNING UP
	SIDEWALL AIR DISTRIBUTION DEVICE
	END OF DEMOLITION
	CONNECT TO EXISTING
— LPC —	LOW PRESSURE CONDENSATE
— LPS —	LOW PRESSURE STEAM

MECHANICAL SHEET INDEX

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214 East Lebanon Av., Elon, NC 27244

Key Plan

Revisions

No.	Date	Description
1	4/14/23	BULLETIN #1

Original drawing is 30" x 42". Do not scale contents of this drawing.

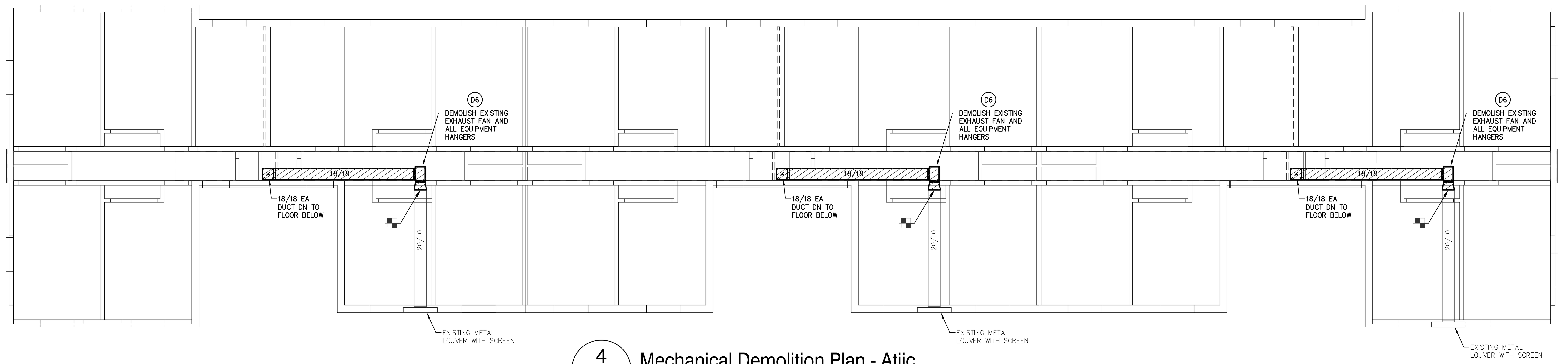
Project Number: 22-009
Drawn: RAS
Checked: CTC
Date: 12/09/2022

Sheet Title

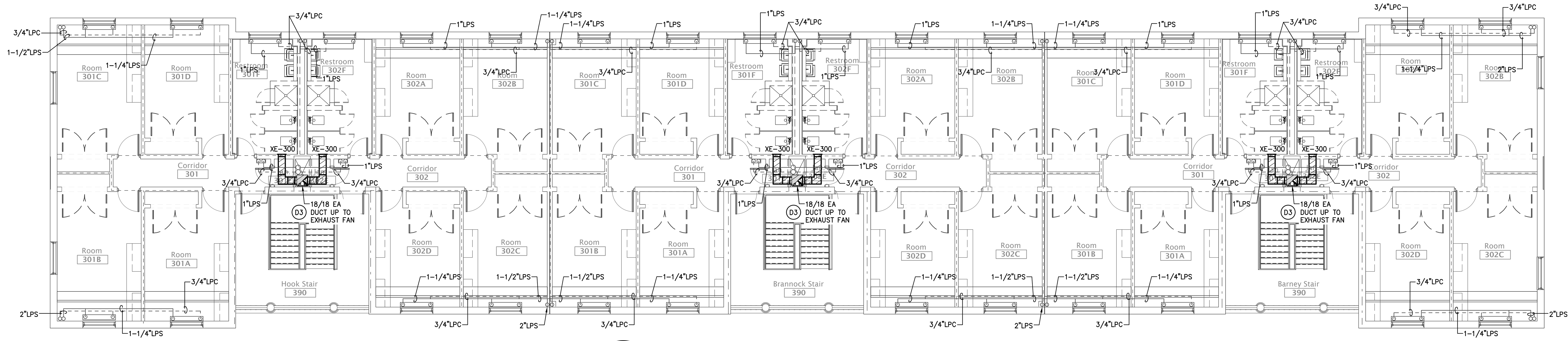
Mechanical Legends, Notes, Abbreviations and Schedules

Sheet Number

M001



4 M101 Mechanical Demolition Plan - Atiic
SCALE: 1/8" = 1'-0"



3 M101 Mechanical Demolition Plan - Level 3
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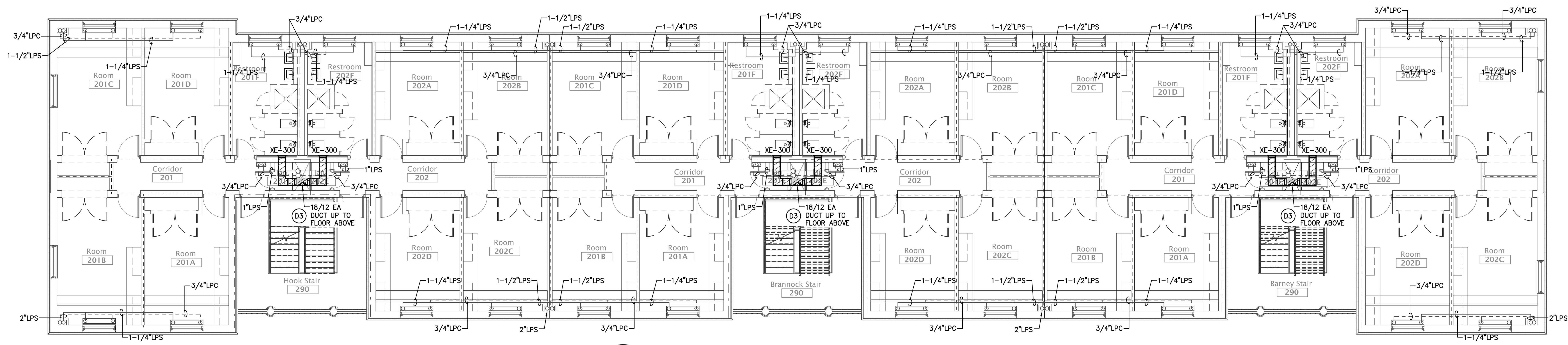

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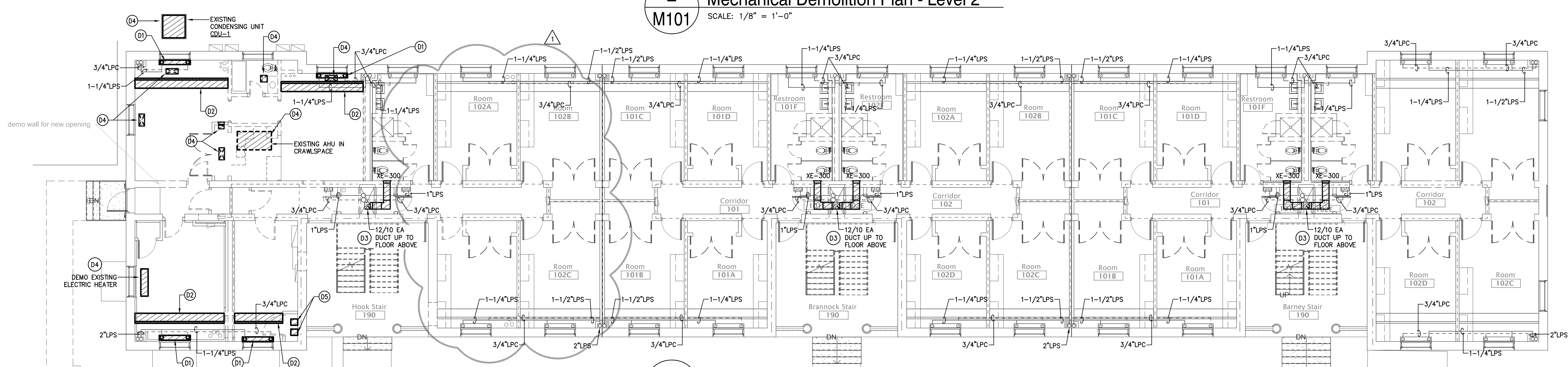

1 M101 Mechanical Demolition Plan - Level 1
SCALE: 1/8" = 1'-0"

ALTERNATE M-1

REPLACE EXISTING STEAM PIPING TO STEAM CONVECTORS LOCATED UNDER ALL WINDOWS AND ADJACENT TO ALL RESTROOMS. INSULATE PIPE PER SPECIFICATIONS. ORIGINAL (1965) EXISTING STEAM PIPING DRAWINGS ARE AVAILABLE FROM ENGINEER.

RATED WALL LEGEND	
— — —	1 HOUR-RATED FIRE BARRIER
- - -	1 HOUR-RATED FIRE PARTITIONS

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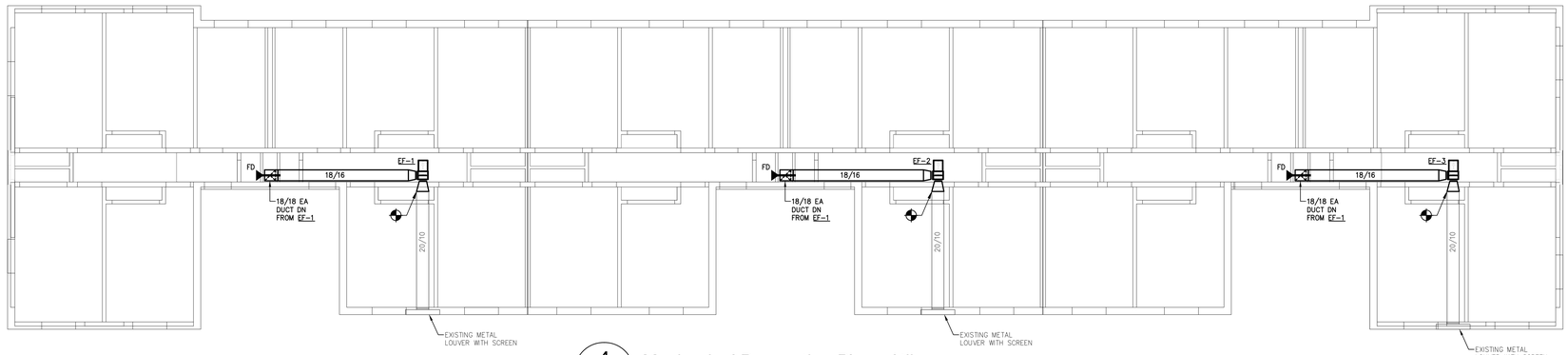
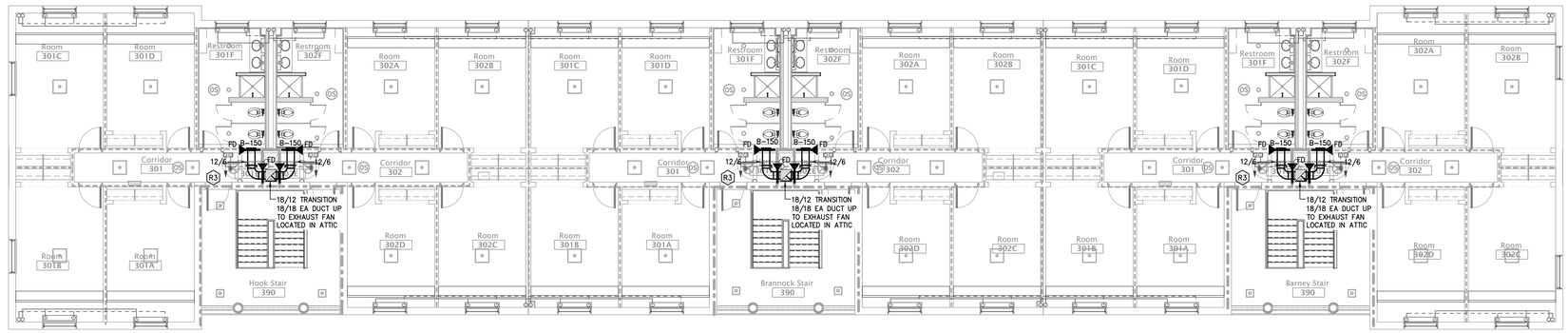
Sheet Title
Mechanical Demolition Plan

Sheet Number
M101



4 M201 Mechanical Renovation Plan - Atiic
SCALE: 1/8" = 1'-0"



3 M201 Mechanical Renovation Plan - Level 3
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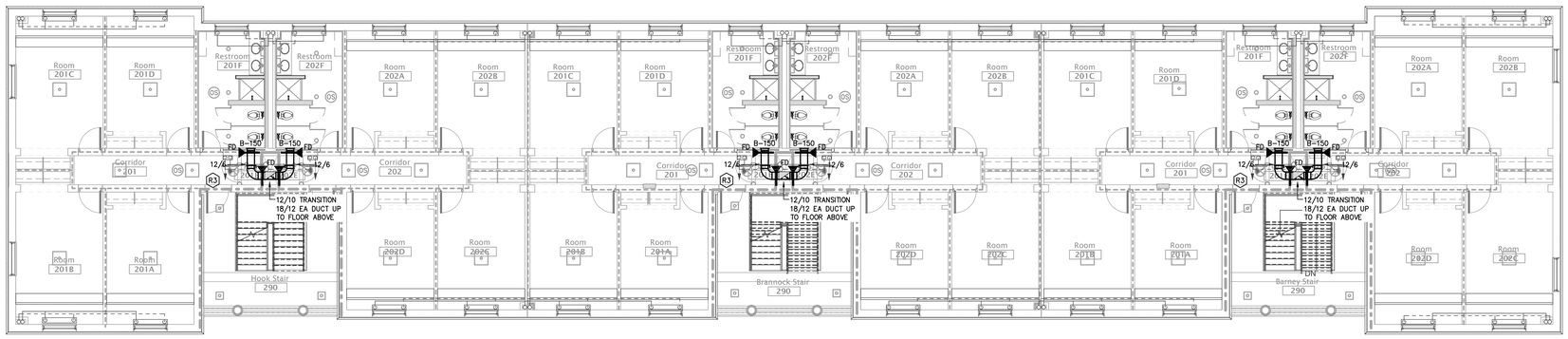

2 M201 Mechanical Renovation Plan - Level 2
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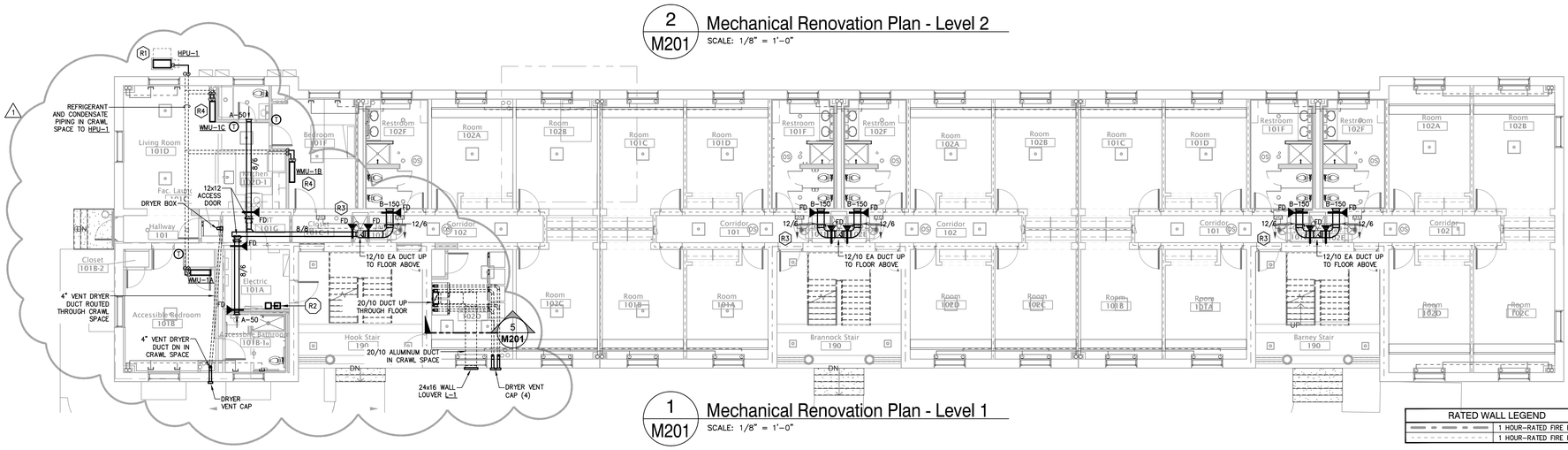
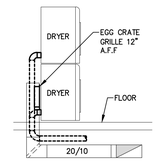


1 M201 Mechanical Renovation Plan - Level 1
SCALE: 1/8" = 1'-0"



5 M201 Mechanical Section
SCALE: 1/4" = 1'-0"

RENOVATION NOTES

- ALL NEW TOILET EXHAUST DUCT AND DRYER VENT SHALL BE ALUMINUM

RATED WALL LEGEND	
	1 HOUR-RATED FIRE BARRIER
	1 HOUR-RATED FIRE PARTITIONS

N

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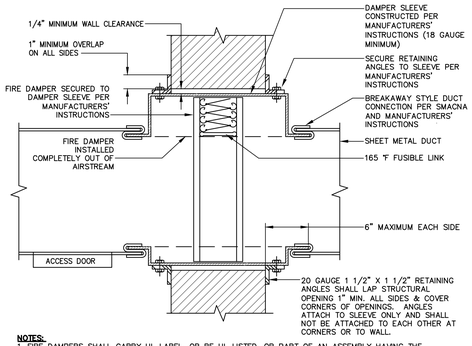
Sheet Title

Mechanical Renovation Plan

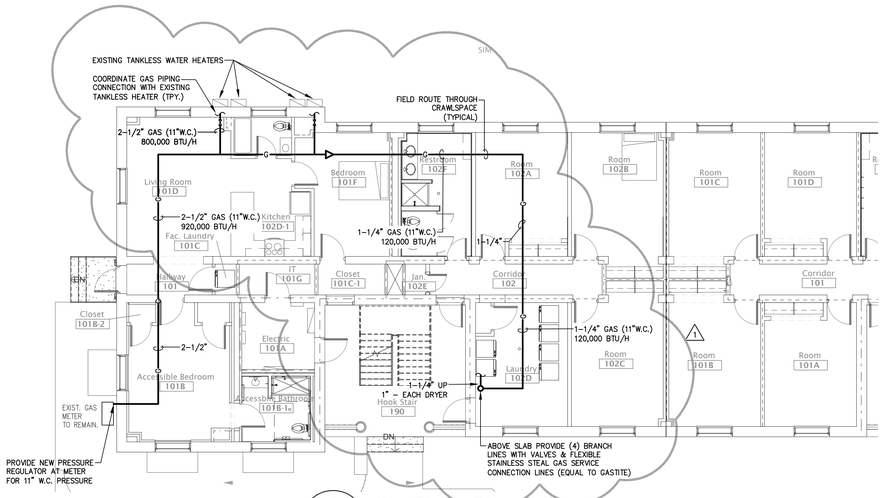
Sheet Number

M201



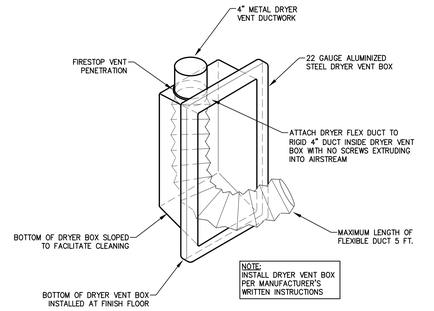
NOTES:
1. FIRE DAMPERS SHALL CARRY UL LABEL, OR BE UL LISTED, OR PART OF AN ASSEMBLY HAVING THE REQUIRED HOURLY RATING OF UL TESTS AND INSTALLED IN ACCORDANCE WITH THE LISTING.
2. THIS TYPICAL FIRE DAMPER IS GENERIC GUIDANCE ONLY. INSTALL FIRE DAMPER IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION DETAILS. DO NOT VARY FROM THOSE INSTRUCTIONS IN ANY WAY. DO NOT FIRESTOP THE GAP BETWEEN THE FIRE DAMPER SLEEVE AND THE PENETRATION UNLESS SPECIFICALLY REQUIRED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. VERTICAL POSITION SHOWN. HORIZONTAL INSTALLATION SIMILAR. DAMPER SHALL BE SPRING LOADED WHEN HORIZONTAL.
4. FIRE DAMPER FREE AREA SHALL BE EQUAL TO DUCTWORK AREA. PROVIDE DAMPER WITH CURTAIN OUT OF AIRSTREAM. FOR LARGE DUCTS WHERE MULTIPLE DAMPER ASSEMBLY IS REQUIRED FREE AREA SHALL INCLUDE WIDTH OF DAMPER FRAMES AND REINFORCING PLATES.
5. PROVIDE DUCT INSULATION AS REQUIRED ALL AROUND DUCT & DAMPER SLEEVE & VAPOR SEAL AT DUCT & WALL
6. DAMPERS SHALL BE RATED FOR BI-DIRECTIONAL AIRFLOW, DYNAMIC DUTY, AND RATED FOR MINIMUM 2,500 FT/MIN. AIRFLOW VELOCITY

7 / M301 Fire Damper Detail
SCALE: NONE

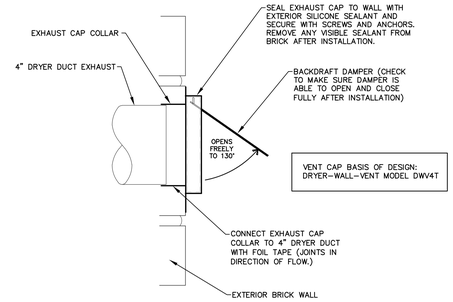


6 / M301 Gas Piping Plan
SCALE: 1/8" = 1'-0"

NOTE:
REFER TO GAS RISER DIAGRAM 2 ON SHEET M001 FOR ADDITIONAL INFORMATION.



3 / M301 Dryer Vent Box Connection
SCALE: NONE

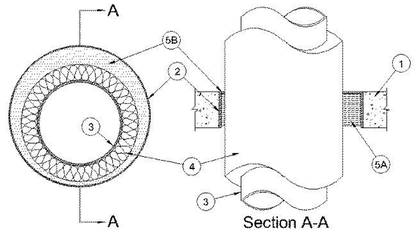


2 / M301 Vent Cap Detail
SCALE: NONE

System No. C-AJ-5091

January 13, 2015

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Ratings — 0 and 1 Hr (See Items 2 and 4)	FT Ratings — 0 and 1 Hr (See Items 2 and 4)
L Rating At Ambient — 4 CFM/sq ft	FH Rating — 2 Hr
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Ratings — 0 and 1 Hr (See Items 2 and 4)
	L Rating At Ambient —4 CFM/sq ft
	L Rating At 400 F —Less Than 1 CFM/sq ft



1. **Floor or Wall Assembly —** Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 29 in. (737 mm).

See **Concrete Blocks** (CAZT) category in the Fire Resistance directory for names of manufacturers.

2. **Metallic Sleeve —** (Optional) — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces or extending a max of 3 in. (76 mm) above floor or beyond both surfaces of wall. If the steel sleeve extends beyond the top surface of the floor or both surfaces of the wall, the T Rating of the firestop system is 0 hr.

2A. **Sheet Metal Sleeve —** (Optional) - Max 6 in. (152 mm) diam, min 26 ga galv steel provided with a 26 ga galv steel square flange spot welded to the sleeve at approximately mid-height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. (51 mm) larger than the sleeve diam. The sleeve is to be cast in place flush with bottom surface of floor and may extend a max of 1 in. (25 mm) above the top surface of the floor.

2B. **Sheet Metal Sleeve —** (Optional) - Max 12 in. (305 mm) diam, min 24 ga galv steel provided with a 24 ga galv steel square flange spot welded to the sleeve at approximately mid-height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. (51 mm) larger than the sleeve diam. The sleeve is to be cast in place flush with bottom surface of floor and may extend a max of 1 in. (25 mm) above the top surface of the floor.

3. **Through Penetrants —** One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:

A. **Steel Pipe —** Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.

C. **Copper Pipe —** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

D. **Copper Tubing —** Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

4. **Pipe Covering —** Min 1/2 in. (13 mm) to max 2 in. (51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m^3) glass fiber units jacketed on the outside with an all-service jacket. Longitudinal joints sealed with metal fasteners or factory-applied, self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the edge of the periphery of the opening shall be min 1/2 in. (13 mm) to max 12 in. (305 mm). **When thickness of pipe covering is less than 2 in. (51 mm), the T Rating for the firestop system is 0 hr.**

See **Pipe Equipment Covering — Materials** — (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

4A. **Pipe Covering —** (Not Shown) — As an alternate to Item 4, max 2 in. (51 mm) thick cylindrical calcium silicate (min 14 pcf or 224 kg/m^3) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 18 AWG stainless steel wire spaced max 12 in. (305 mm) OC. The annular space shall be min 1/2 in. (13 mm) to max 12 in. (305 mm).

5. **Firestop System —** The firestop system shall consist of the following:

A. **Packing Material —** Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.

B. **Fill, Void or Cavity Material* — Sealant —** Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

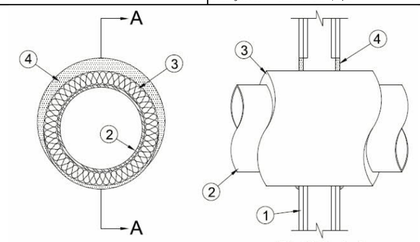
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

5 / M301 Insulated Pipe Through Concrete 2-HR
SCALE: NONE

System No. W-L-5029

July 17, 2015

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4)	F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4)
T Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)	FT Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)
L Rating At Ambient — 4 CFM/Sq Ft	FH Ratings — 1, 2 and 3 Hr (See Items 1, 2 and 4)
L Rating At 400 F — Less Than 1 CFM/Sq Ft	FTH Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)
	L Rating At Ambient — 4 CFM/Sq Ft
	L Rating At 400 F — Less Than 1 CFM/Sq Ft



1. **Wall Assembly —** The 1, 2 or 3 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide for 1 and 2 hr F and FH rating and 3-1/2 in. (89 mm) wide for 3 hr F and FH rating and spaced max 24 in. (610 mm) OC.

B. **Gypsum Board* —** Min 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 18-5/8 in. (473 mm).

The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrants —** One metallic pipe or tubing to be installed within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:

A. **Steel Pipe —** Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.

C. **Copper Tubing —** Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing. **When the hourly F or FH Rating of the firestop system is 3 hr, the nom diam of copper tube shall not exceed 4 in. (102 mm).**

D. **Copper Pipe —** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe. **When the hourly F or FH Rating of the firestop system is 3 hr, the nom diam of copper pipe shall not exceed 4 in. (102 mm).**

3. **Pipe Covering* —** Nom 1, 1-1/2 or 2 in. (25, 38 or 51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m^3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. For 1 and 2 hr F and FH Ratings, the annular space between insulated penetrant and periphery of opening shall be min 0 in. (point contact) to max 1-7/8 in. (48 mm). For 3 hr F and FH Ratings, the annular space shall be min 0 in. (point contact) to max 1-1/4 in. (32 mm).

See **Pipe and Equipment Covering — Materials** (BRGU) category in the Building Material Directory for the names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

The hourly T, FT, FTH Ratings of the firestop system are 1/2 hr for 1 hr rated walls and 1 hr for 2 hr rated walls. For 3 hr rated walls, the hourly T, FT and FTH Ratings when steel and iron pipes are used are 1 hr. For 3 hr rated walls, the hourly T, FT and FTH Ratings when copper penetrants are used are 1-1/4 hr for 2 in. (51 mm) thick pipe covering and 0 hr for pipe covering thickness less than 2 in. (51 mm).

3A. **Pipe Covering* —** (Not Shown) — As an alternate to Item 3, max 2 in. (51 mm) thick cylindrical calcium silicate (min 14 pcf) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 18 AWG stainless steel wire spaced max 12 in. (305 mm) OC. When the alternate pipe covering is used, the T and FT Rating shall be as specified in item 3 above.

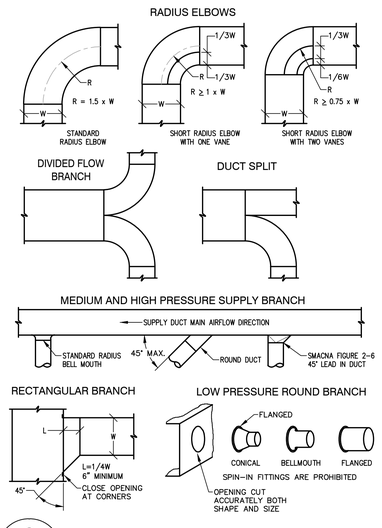
See **Pipe and Equipment Covering — Materials** (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

4. **Fill, Void or Cavity Material* — Sealant —** For 1 and 2 hr F and FH Rating, min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. For 3 hr F and FH Rating, min 1 in. (25 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point contact location between pipe covering and gypsum board, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe covering/gypsum board interface on both surfaces of wall.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

4 / M301 Insulated Pipe Through Gypsum Wall 2-HR
SCALE: NONE



2 / M301 Low Pressure Branch Duct Details
SCALE: NONE

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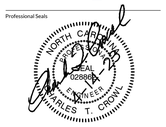
Professional Seals



Owner Proj. #

Hook Brannock Barney Residence (HBB) Hall Renovation, Elon University

214 East Lebanon Av., Elon, NC 27244

Key Plan

Revisions

No.	Date	Description
1	4/14/23	BULLETIN #1

Original drawing is 30" x 42". Do not scale contents of this drawing.

Project Number: 22-009
Drawn: RAS
Checked: CTC
Date: 12/09/2022

Sheet Title

Mechanical Details and Gas Piping Plan

Sheet Number

M301