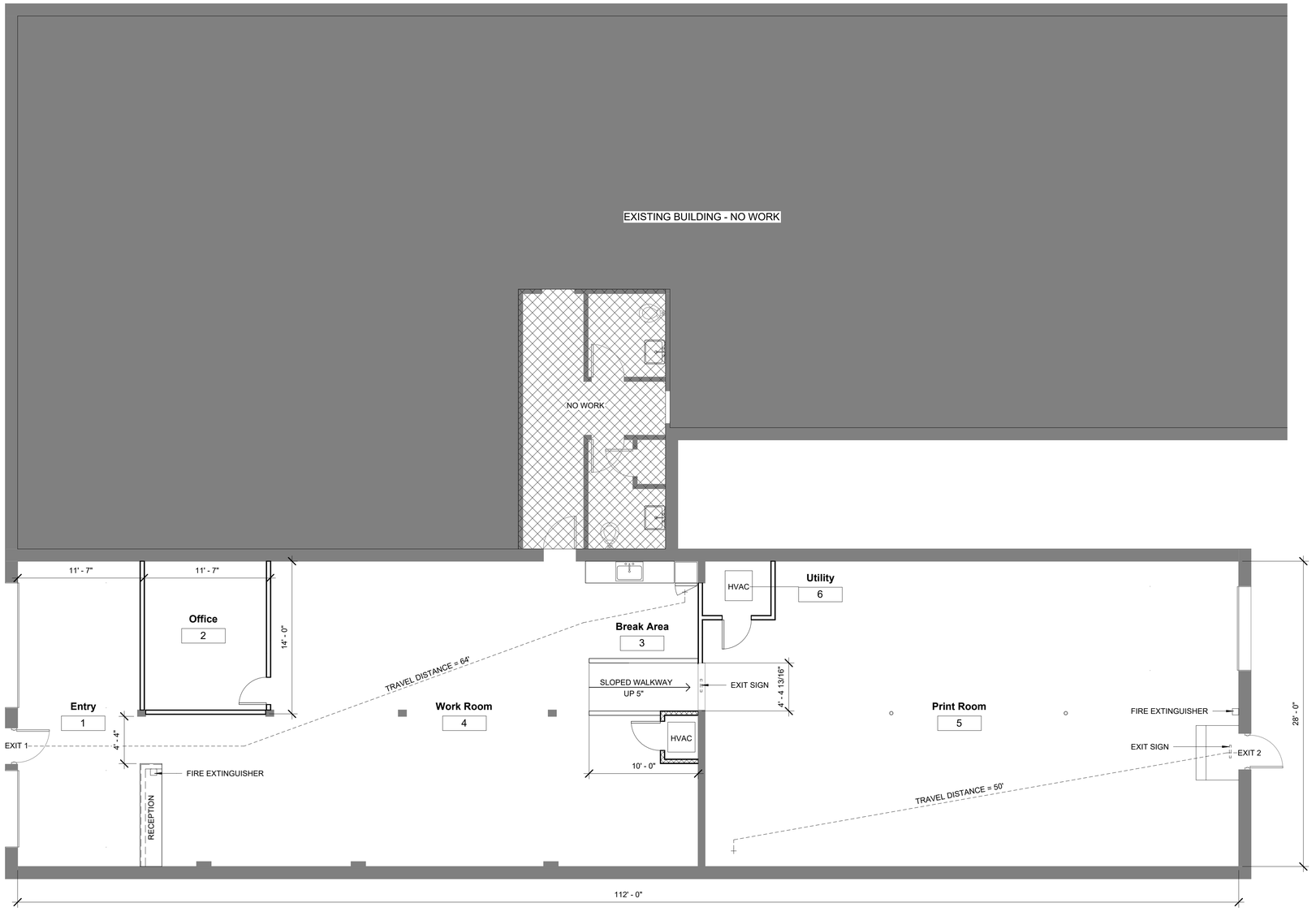
SHEET LIST



1 Level 1 - Code Plan
3/16" = 1'-0"

CODE BASIS:	2018 INTERNATIONAL BUILDING CODE 2018 INTERNATIONAL PLUMBING CODE 2018 INTERNATIONAL MECHANICAL CODE 2018 INTERNATIONAL FUEL GAS CODE 2018 INTERNATIONAL RESIDENTIAL CODE 2018 INTERNATIONAL FIRE CODE 2017 NATIONAL ELECTRICAL CODE ICC/ANSI A117.1-2009, ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES
TENANT USE GROUP:	B - BUSINESS
CONSTRUCTION TYPE:	III-B, UNPROTECTED, NON-SPRINKLERED
ALLOWABLE AREA:	19,000 SF
PROJECT AREA:	3136 SF
OCUPANT LOAD:	20 PEOPLE
EXITS REQUIRED:	2 PER SECTION 1006.3.2
EXIT SEPARATION REQUIRED:	> 1/2 MAX DIAGONAL =102' - 0" PER SECTION 1007.1.1
EXIT WIDTH REQUIRED: EXIT WIDTH PROVIDED	32" FOR EACH DOOR PER SECTION 1010.1.1 EXIT 1 = 36" EXIT 2 = 32"
TRAVEL DISTANCE:	200' PER TABLE 1017.2
ACTIVE FIRE PROTECTION:	NON-SPRINKLERED

PLUMBING FIXTURES

TOILETS REQ'D TOILETS PROVIDED	1 MEN/ 1 WOMEN 1 MEN/ 1 WOMEN
SINKS REQ'D SINK PROVIDED	1 MEN/ 1 WOMEN 1 MEN/ 1 WOMEN
DRINKING FOUNTAIN REQ'D DRINKING FOUNTAIN PROVIDED:	1 AVAILABLE VIA BREAK ROOM SINK
SERVICE SINK REQ'D SERVICE SINK PROVIDED	1 1

JWR ARCHITECTURE

JWR Architecture
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Phone: (515) 408-2817

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Printing Shop
127 SE 3rd St
Lee's Summit, MO 64063

No.	Description	Date

STATE OF MISSOURI
JOSEPH W. RATHERMEL
NUMBER A-2021003850
ARCHITECT

Life Safety

Project number	2022 - 08
Date	09.09.2022
Drawn by	JWR
Checked by	JWR

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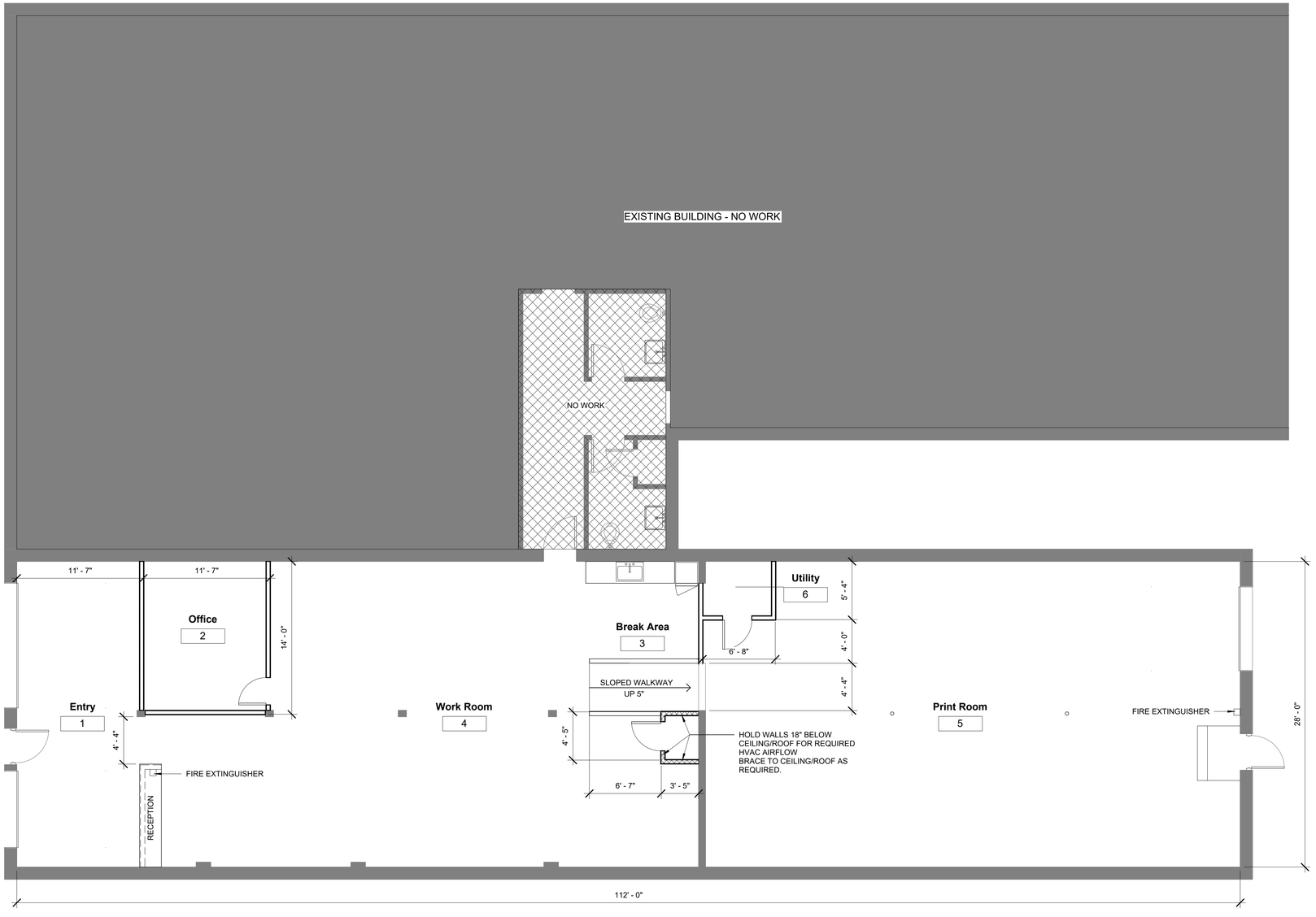

WALL TYPES

EXISTING WALL

MTL STUD - GYP BOTH SIDES - 20 GA. 3 5/8" METAL STUDS @ 16" O.C. WITH 5/8" LIGHT WEIGHT TYPE 'X' GYP. BD. ON BOTH SIDES FOR NEW WALL OR WALL INFILL

MTL STUD - FURRING - 20 GA. 3 5/8" METAL STUDS @ 16" O.C. WITH 5/8" LIGHT WEIGHT TYPE 'X' GYP. BD. ON ONE SIDE FOR NEW WALL OR FURRING

INTERIOR LOW WALL - 25 GA. 3 5/8" METAL STUDS @ 16" O.C. WITH 5/8" LIGHT WEIGHT TYPE 'X' GYP BD. ON BOTH SIDES UNLESS OTHERWISE SHOWN ON ELEVATIONS. REFER INTERIOR ELEVATIONS FOR HEIGHT & CAP MATERIAL

UNDER-COUNTER WALL - 25 GA. 3 5/8" METAL STUDS @ 16" O.C. WITH 5/8" LIGHT WEIGHT TYPE 'X' GYP BD. ON BOTH SIDES UNLESS OTHERWISE SHOWN ON ELEVATIONS. REFER INTERIOR ELEVATIONS FOR HEIGHT & CAP MATERIAL

1 Wall Types
3/16" = 1'-0"

2 Level 1
3/16" = 1'-0"

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No.	Description	Date

STATE OF MISSOURI
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NUMBER A-2021003850
ARCHITECT

First Floor

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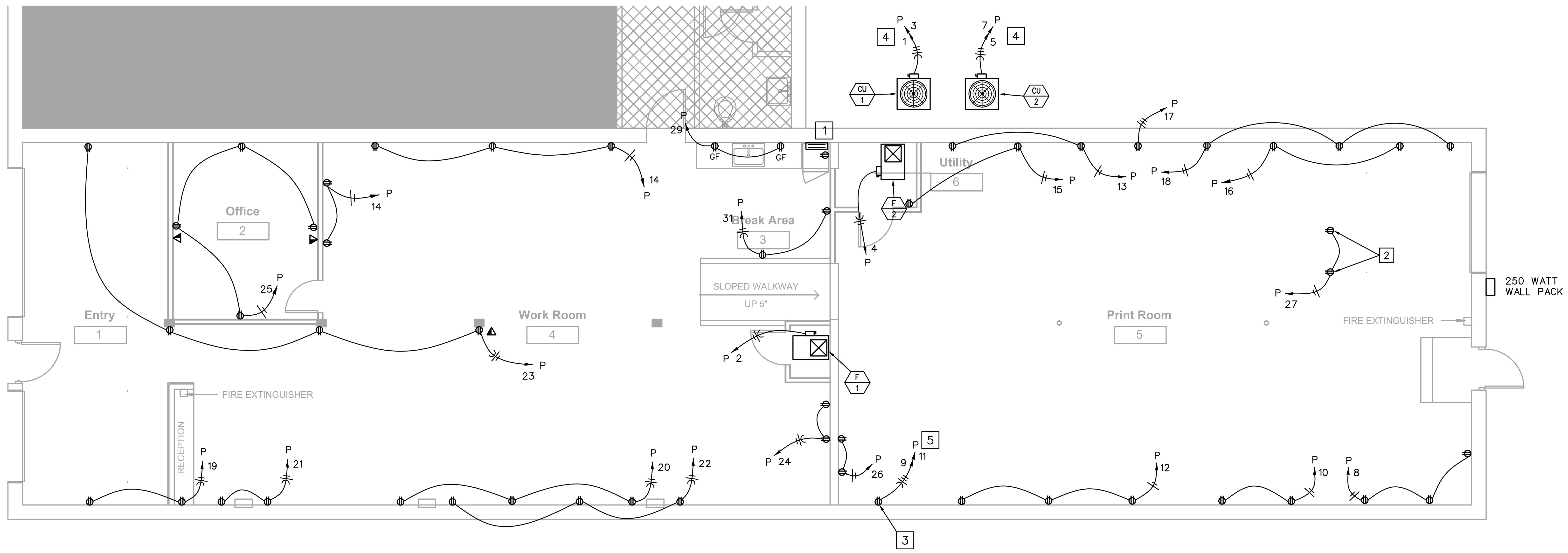
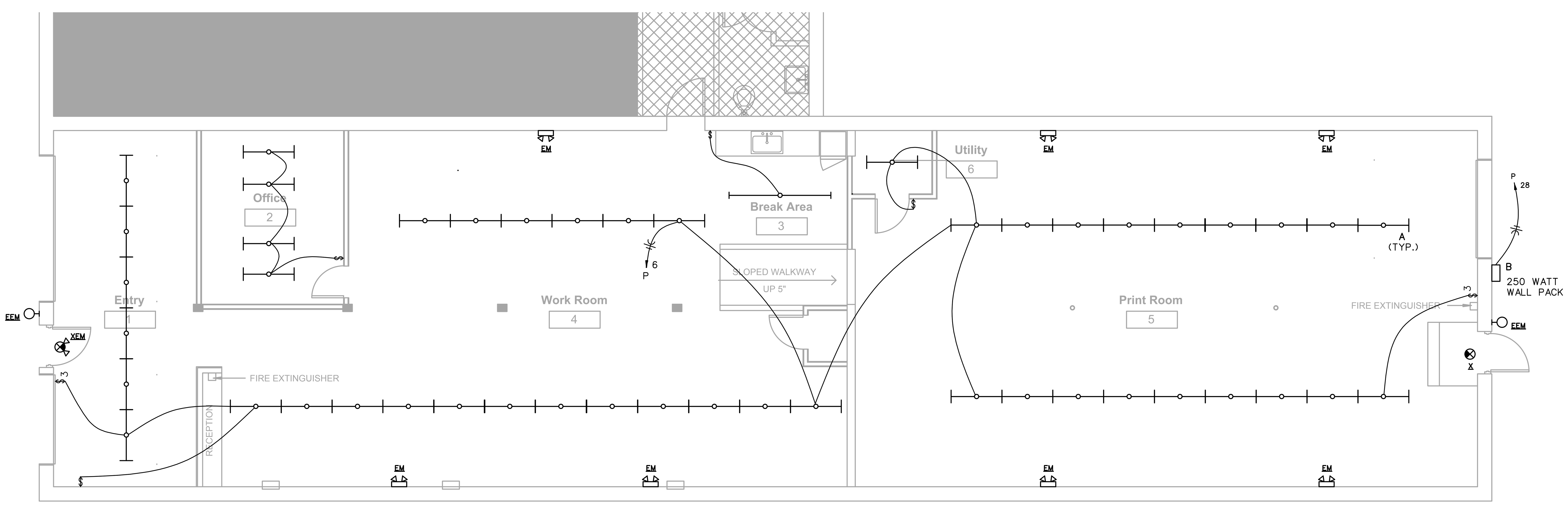


1ST LEVEL POWER PLAN

3/16" = 1'-0"



1ST LEVEL LIGHTING PLAN

3/16" = 1'-0"

POWER PLAN NOTES #:

1. EXISTING 200-AMP, 240-V, SINGLE PHASE PANELBOARD.
2. CORD DROP FROM CEILING.
3. ROTO-PHASE CONVERTER.
4. 3/4" C WITH THREE #6 CU AND ONE #10 G.
5. 3/4" C WITH THREE #10 CU AND ONE #10 G.

ELECTRICAL GENERAL NOTES

A) COORDINATE TYPE AND LOCATION OF LIGHT FIXTURES WITH THE OWNER.

B) COORDINATE NEMA RATING OF APPLIANCE PLUGS WITH THE EQUIPMENT SPECIFICATIONS.

C) ALL RECEPTACLES WITHIN 6' OF WATER BEARING FIXTURES, EXTERIOR OUTLETS AND ALL OUTLETS IN KITCHEN AREAS SHALL BE GFI STYLE OR THE CIRCUIT SERVING THOSE DEVICES SHALL BE PROTECTED BY MEANS OF A GFI CIRCUIT BREAKER.

D) OUTLET AND SWITCH BOXES INSTALLED IN RATED WALLS SHALL BE PROVIDED WITH UL LISTED PUTTY PADS TO PROTECT THE RATING OF THE WALL.

E) CONNECT ALL NIGHT LIGHT, EXIT LIGHT AND EMERGENCY LIGHT FIXTURES TO UNSWITCHED HOT-LEG OF NEAREST 120V LIGHTING CIRCUIT IN SAME AREA.

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Gladfelter Engineering Group

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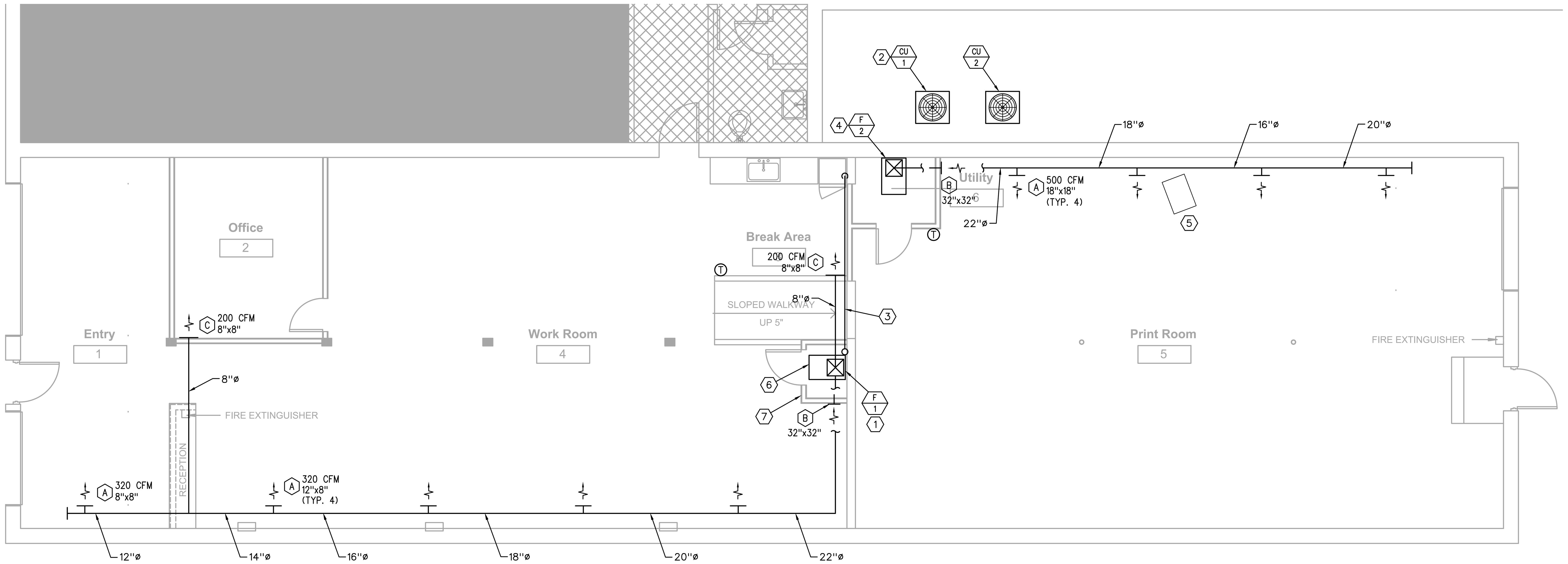
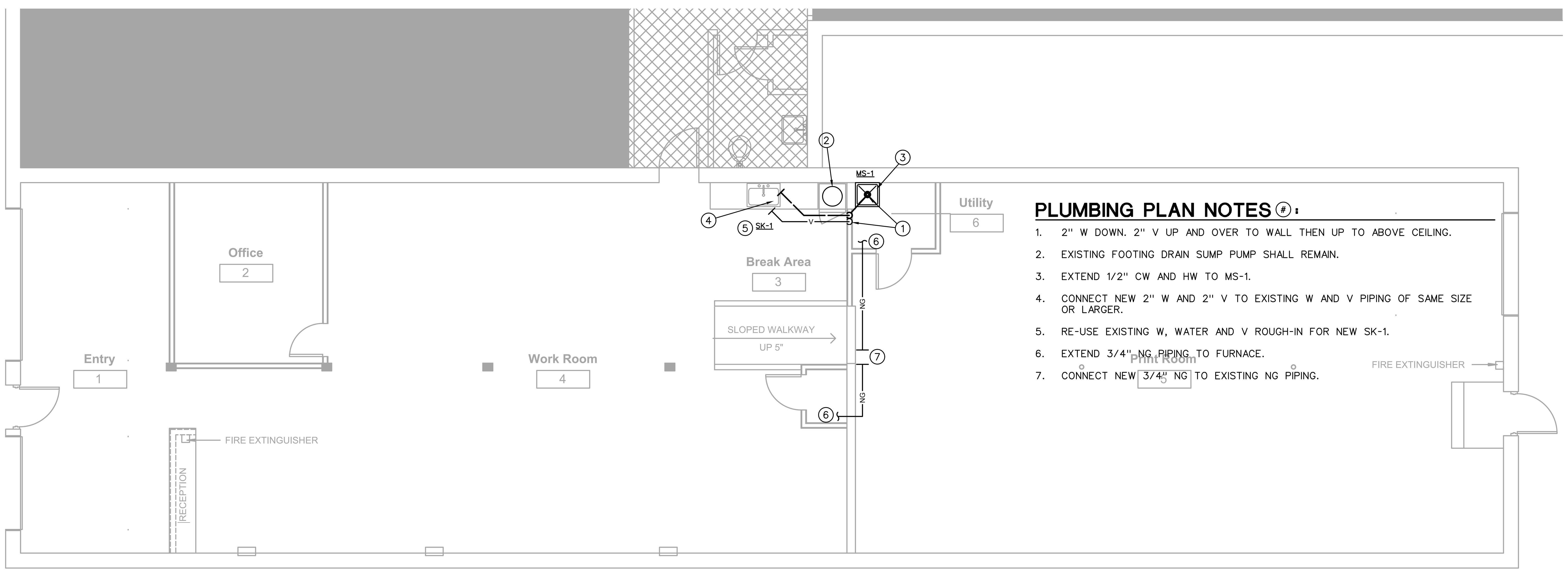
Drawn: JEE/SWB/GPG
Date: 2022/09/09
Sheet Number: E200



1ST LEVEL MECHANICAL FLOOR PLAN

3/16" = 1'-0"



PLUMBING PLAN NOTES (#):

1. 2" W DOWN. 2" V UP AND OVER TO WALL THEN UP TO ABOVE CEILING.
2. EXISTING FOOTING DRAIN SUMP PUMP SHALL REMAIN.
3. EXTEND 1/2" CW AND HW TO MS-1.
4. CONNECT NEW 2" W AND 2" V TO EXISTING W AND V PIPING OF SAME SIZE OR LARGER.
5. RE-USE EXISTING W, WATER AND V ROUGH-IN FOR NEW SK-1.
6. EXTEND 3/4" NG PIPING TO FURNACE.
7. CONNECT NEW 3/4" NG TO EXISTING NG PIPING.

1ST LEVEL PLUMBING FLOOR PLAN

3/16" = 1'-0"

MECHANICAL PLAN NOTES (#):

1. EXISTING 5-TON FURNACE RELOCATED TO THIS LOCATION. SEE "FURNACE DETAIL", SHEET MP300.
2. EXISTING 5-TON CONDENSING UNIT TO REMAIN.
3. 3/4" PVC CONDENSATE DRAIN RUN ACROSS FLOOR TO DISCHARGE TO EXISTING FOUNDATION DRAIN SUMP PUMP.
4. SEE "HIGH EFFICIENCY FURNACE DETAIL", SHEET MP300.
5. REMOVE EXISTING UNIT HEATER AND GAP GAS PIPING.CAP FLUE ABOVE ROOF.
6. REPlLACE EXISTING SHEET METAL FLUE WITH NEW TYPE B FLUE. SIZE PER FURNACE MANUFACTURER.
7. DO NOT EXTEND WALL TO ROOF. LEAVE OPEN TO ALLOW FOR COMBUSTION AIR FOR FURNACE.

MECHANICAL GENERAL NOTES (SPLIT SYSTEMS)

A) COORDINATE LOCATION OF CEILING DIFFUSERS AND RETURN GRILLES WITH ARCHITECTURAL REFLECTED CEILING PLAN.

B) CONTRACTOR SHALL INSURE THAT A PROPER RETURN AIR PATH EXISTS FROM EACH SPACE. WHERE NOT OTHERWISE INDICATED AND IN RETURN AIR PLENUM APPLICATIONS, PROVIDE FLANGED RETURN AIR OPENINGS ABOVE CEILING LEVEL, THRU WALLS TO STRUCTURE, SO THAT RETURN AIR VELOCITY AND PRESSURE DROP DOES NOT EXCEED 1000 FPM AND 0.065"WG/100' RESPECTIVELY.

C) MAINTAIN 10'-0" SEPARATION FOR OUTSIDE AIR INTAKES AND EXHAUST FAN OUTLETS AND PLUMBING VENTS.

D) TEMPERATURE CONTROL INCLUDES ALL CONTROL WIRING FOR COMPLETE OPERATION OF SPLIT SYSTEMS BY MECHANICAL CONTRACTOR.

PLUMBING PLAN NOTES (#):

1. 2" W DOWN. 2" V UP AND OVER TO WALL THEN UP TO ABOVE CEILING.
2. EXISTING FOOTING DRAIN SUMP PUMP SHALL REMAIN.
3. EXTEND 1/2" CW AND HW TO MS-1.
4. CONNECT NEW 2" W AND 2" V TO EXISTING W AND V PIPING OF SAME SIZE OR LARGER.
5. RE-USE EXISTING W, WATER AND V ROUGH-IN FOR NEW SK-1.
6. EXTEND 3/4" NG PIPING TO FURNACE.
7. CONNECT NEW 3/4" NG TO EXISTING NG PIPING.

PLUMBING GENERAL NOTES

A) ALL FIXTURES USED SPECIFICALLY FOR HANDWASHING PURPOSES (LAVATORIES, HAND SINKS, ETC.) SHALL BE PROVIDED WITH A TEMPERING VALVE TO TEMPER THE HOT WATER TO THE FIXTURE (MAXIMUM OF 105-DEGREES F).

B) SEE "PLUMBING RISER DIAGRAMS", SHEET MP300, FOR PIPING NOT SHOWN ON THE PLANS.

C) REUSE EXISTING PLUMBING TO GREATEST EXTENT POSSIBLE. MODIFY AS REQUIRED TO ACCOMODATE NEW FIXTURES.

D) REMOVE AND REPAIR FLOOR TO A LIKE CONDITION WHERE REQUIRED FOR INSTALLATION OF NEW FIXTURES.

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Date:	Issued for:
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Project number: 22-171

Drawn: JEE/SWB/GPG

Date: 2022/09/09

Sheet Number:

MP200

FIXTURE BRANCH SCHEDULE

FIXTURE	WASTE	VENT	COLD	HOT
Water Closet (ft)	4"	2"	½"	---
Water Closet (fv)	4"	2"	1"	---
Urinal	2"	1 ½"	3/4"	---
Lavatory	1 ½"	1 ½"	½"	½"
Sink	2"	1 ½"	½"	½"
Triple Sink	2"	1 ½"	(2) ½"	(2) ½"
Shower, Tub	2"	1 ½"	½"	½"
Water Fountain	1 ½"	1 ½"	½"	---
Janitor Sink (flr)	3"	2"	3/4"	3/4"
Janitor Sink (wall)	2"	1 ½"	½"	½"
Floor Drain	2"	1 ½"	---	---
Floor Sink	3"	2"	---	---
Eqpt Floor Drain	3"	2"	---	---
Hub Drain	2"	1 ½"	---	---
Dishwasher	2"	1 ½"	---	½"
Washer Box	2"	1 ½"	½"	½"
Ice Maker	---	---	½"	---
FPWH, HB	---	---	3/4"	---

1. Minimum waste or vent size below slab on grade shall be 2".
2. Size as shown on drawings and diagrams, but not less than listed.

WATER HAMMER ARRESTOR SCHEDULE

MARK NO.	MANUFACTURER	MODEL NO.	PDI UNIT RATING	FIXTURE UNIT CAPACITY	REMARKS
AA	SIOUX CHIEF	660 SERIES	AA	4 (SINGLE FIXT)	X
A	SIOUX CHIEF	652	A	1 - 11	X
B	SIOUX CHIEF	653	B	12 - 32	X
C	SIOUX CHIEF	654	C	33 - 60	X
D	SIOUX CHIEF	655	D	61 - 113	X
X	X	X	X	X	X

NOTES:
1. INSTALL IN AN ACCESSIBLE LOCATION IN ACCORDANCE WITH THE PLUMBING CODE.

DIFFUSER SCHEDULE

MARK NO.	MANUFACTURER	MODEL NO.	FACE SIZE (INCHES)	MOUNTING	REMARKS
A	TITUS	S300FL	-	DUCT	1-3
B	TITUS	272RL	-	DUCT	1-3
C	TITUS	23RL	-	SURFACE	1,2

NOTES:
1. SEE THE PLANS FOR NECK SIZE.
2. COLOR PER ARCHITECT.
3. PROVIDE DAMPER AT DUCT TAKE-OFF EXCEPT PROVIDE GRILLE MOUNTED DAMPER WHERE OUTLET IS ABOVE INACCESSIBLE CEILING.

CU - CONDENSING UNIT SCHEDULE

MARK NO.	MANUFACTURER	MODEL NO.	TOTAL MBH	AMBIENT F	STAGES	UNIT EER	ELECTRICAL VOLT	ELECTRICAL ø	ELECTRICAL HZ	ELECTRICAL MCA	ELECTRICAL MOCP	REMARKS
2	LENNOX	EL14XC1-060-230	57	95	1	12.5	208	1	60	30	50	1-3

NOTES:
1. PROVIDE WITH 5 YEAR COMPRESSOR WARRANTY, COIL HAIL GUARDS, REFRIGERANT LINE SET WITH ALL MANUFACTURER RECOMMENDED ACCESSORIES.
2. DISCONNECT BY ELECTRICAL CONTRACTOR.
3. MOUNT ON 4" CONCRETE EQUIPMENT PAD.

F - FURNACE SCHEDULE (NATURAL GAS HEAT)

MARK NO.	MANUFACTURER	MODEL NO.	SUPPLY					HEATING		ELECTRICAL			REFRIGERANT COIL					REMARKS
			CFM	MIN O.A. CFM	RPM	EXT. S.P. IN W.G.	HP	MBH INPUT	MBH OUTPUT	VOLT	ø	HZ	MODEL NO.	TOTAL MBH	SENS. MBH	EDB °F	EWB °F	
2	LENNOX	ML196UH135XE60D	2000	-	-	0.5	1	132	127	120	1	60	X	57	46.9	80	67	1-4

NOTES:
1. PROVIDE WITH 10 YEAR HEAT EXCHANGER WARRANTY, COIL MATCHED TO CONDENSING UNIT, 7 DAY PROGRAMMABLE NIGHT SETBACK MICROPROCESSOR THERMOSTAT (OR ROOM SENSOR WITH REMOTE CONTROLLER IF SO INDICATED), THROWAWAY FILTERS WITH SIDE ACCESS HOUSING, NEOPRENE PAD ISOLATORS.
2. PIPE PVC FLUE & COMBUSTION AIR PER MANUFACTURER RECOMMENDATIONS. PROVIDE CONCENTRIC COMBUSTION/VENT KIT WHERE INDICATED.
3. PIPE COIL & FURNACE CONDENSATE DRAIN TO FD OR OTHER APPROVED RECEPTOR. TRAP AS REQUIRED.
4. DISCONNECT SWITCH, WHERE REQUIRED, BY ELECTRICAL CONTRACTOR.

PLUMBING FIXTURE SCHEDULE

A. INSTALL PLUMBING FIXTURES AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. VERIFY ROUGH-IN REQUIREMENTS WITH MANUFACTURER'S DRAWINGS AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE WATER-CONSERVING FIXTURES AND APPURTENANCES IF/AS REQUIRED BY LOCAL AUTHORITIES. CONFIRM ALL LOCATIONS AND MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS AND/OR SPECIFICATIONS. CAULK FIXTURES TO WALLS/FLOORS. SET COUNTER MOUNTED SINKS AND LAVATORIES IN A BED OF CAULK. THE SPECIFIED PLUMBING FIXTURES, OR APPROVED EQUALS, SHALL BE USED UNLESS OTHERWISE NOTED OR INDICATED.

B. MOP SINK (MS-1), STERN WILLIAMS #SB-900, CONSTRUCTED OF TERRAZZO, 32" SQUARE BY 12" HIGH (COORDINATE SIZE WITH ARCHITECTURAL PLANS), CHROME-PLATED CAST BRASS DRAIN (CAST INTEGRAL) WITH STAINLESS STEEL CAP. PROVIDE WITH DELTA #28T2383 FAUCET WITH VACUUM BREAKER, LEVER HANDLES, 3/4" HOSE THREAD SPOUT WITH 48" LONG HOSE, WALL SUPPORT, INTEGRAL STOPS AND ROUGH CHROME-PLATED FINISH..

C. SINK (SK-1), JUST #SL-2217-A-GR, SINGLE COMPARTMENT, 18 GAUGE TYPE 304 STAINLESS STEEL, SELF RIMMING, UNDERSIDE FULLY UNDERCOATED WITH SOUND DAMPENING MATERIAL, 3 HOLE PUNCH, NOMINAL DIMENSIONS OF 22"X17"X7-1/2" DEEP. PROVIDE WITH DELTA COMMERCIAL #27T2934 HEAVY DUTY DECKMOUNT SINK FAUCET, 6" RIGID/SWIVEL GOOSENECK SPOUT, 8" CENTERS, 2.0 GPM VANDAL-RESISTANT AERATOR, BASKET STRAINER DRAIN, 1-1/2" TAILPIECE, 3/8-INCH FLEXIBLE RISER W/ANGLE SUPPLIES WITH LOOSE KEY STOPS, 1-1/2-INCH INLET 2-INCH OUTLET CHROME PLATED CAST BRASS "P" TRAP W/CLEANOUT PLUG, ESCUTCHEON W/SET SCREW AND 4" VANDAL-RESISTANT WRIST BLADE HANDLES.

D. FLOOR DRAINS (FD-1), WADE #1100-G5-1-27. RATED FOR GENERAL LIGHT DUTY USE WITH CAST IRON BODY WITH FLANGE, SEEPAGE OPENINGS,INTEGRAL REVERSING CLAMPING COLLAR, TRAP PRIMER CONNECTION, 5" SQUARE NICKEL BRONZE ADJUSTIBLE STRAINER, SEDIMENT BUCKET AND HEEL PROOF GRATE, PROVIDE WITH SEPARATE DEEP SEAL "P" TRAP (SEE PLANS FOR SIZE).

E. EQUIPMENT DRAINS (ED-1) WADE #1100-94 ADJUSTABLE CAST IRON FLOOR DRAIN WITH FLANGE, SEEPAGE OPENINGS, INTEGRAL CLAMPING COLLAR, EXTENSION ADAPTER INSTALLED ABOVE THE FLOOR ELEVATION APPROXIMATELY 3/4" TO PREVENT WATER ON THE FLOOR FROM ENTERING DRAIN AND 1/2" PLUGGED TRAP PRIMER CONNECTION. PROVIDE WITH SEPARATE DEEP SEAL "P" TRAP (SEE PLANS FOR SIZE).

F. FINISHED FLOOR CLEANOUTS; (FFCO) WADE #6000-1-2-S CAST IRON FLOOR CLEANOUT WITH FLANGE, PLASTIC TAPERED PLUG AND SQUARE NICKEL BRONZE ADJUSTABLE TOP. PROVIDE WITH CARPET CLEANOUT MARKER WHEN CLEANOUT IS LOCATED BELOW CARPET. COORDINATE WITH ARCHITECTURAL PLANS.

G. FINISHED WALL CLEANOUTS: (FWCO) WADE #8560, W/ 8304-85-6 CAST IRON CLEANOUT TEE WITH BRASS PLUG AND 6" ROUND STAINLESS STEEL ACCESS COVER. J.R. SMITH FIGURE 4530. PROVIDE DUCO CAST IRON WALL CLEANOUT TEE WITH COUNTERSUNK PLUG. DELETE COVER PLATE IF CLEANOUT IS IN EXPOSED LOCATION.

H. ALL FIXTURES USED SPECIFICALLY FOR HANDWASHING PURPOSES (LAVATORIES, HAND SINKS, ETC.) SHALL BE PROVIDED WITH A TEMPERING VALVE TO TEMPER THE HOT WATER TO THE FIXTURE (MAXIMUM OF 105-DEGREES F).

MECHANICAL SYMBOLS

- NEW SHEET METAL DUCTWORK & SIZE.
- NEW SHEET METAL DUCTWORK & SIZE.
- SUPPLY AIR DUCT OR OUTSIDE AIR INTAKE.
- RETURN AIR DUCT OR EXHAUST AIR DUCT.
- DIRECTION OF RETURN AIRFLOW.
- T — THERMOSTAT OR TEMPERATURE SENSOR.
- CD — CONDENSATE DRAIN.
- ELBOW DOWN.
- ELBOW UP.
- SA — SUPPLY AIR.
- OA — OUTSIDE AIR.
- RA — RETURN AIR.
- EA — EXHAUST AIR.
- CU — CONDENSING UNIT.
- EF — EXHAUST FAN.
- RTU — ROOFTOP UNIT.
- PLAN NOTE DESIGNATION.
- PLAN REVISION DESIGNATION.
- CONNECT TO EXISTING.
- MECHANICAL EQUIPMENT DESIGNATION - TOP PORTION IS EQUIPMENT (RTU, EF, HP, ETC.), BOTTOM PORTION IS NO. OR LETTER (SEE APPROPRIATE SCHEDULE).

PLUMBING SYMBOLS

- EXISTING TO REMAIN.
- NEW PIPING WORK.
- DOMESTIC COLD WATER (CW).
- DOMESTIC HOT WATER (HW).
- HOT WATER RECIRCULATION (HWR).
- V — PLUMBING VENT ABOVE FLOOR (V).
- SAN — SANITARY WASTE ABOVE FLOOR (W).
- SANITARY WASTE BELOW FLOOR (W).
- NG — GAS (NATURAL) (NG).
- ELBOW DOWN.
- ELBOW UP.
- TEE DOWN.
- TEE UP.
- CAP.
- PIPE UNION.
- 1/4 TURN SHUT-OFF VALVE.
- CHECK VALVE.
- PUMP
- VTR — VENT THRU ROOF (VTR).
- ETR — EXISTING TO REMAIN.
- PLAN NOTE DESIGNATION.
- PLAN REVISION DESIGNATION.
- CONNECT TO EXISTING.
- PLUMBING EQUIPMENT DESIGNATION - TOP PORTION IS EQUIPMENT (HW, RTU, ETC.), BOTTOM PORTION IS NO. OR LETTER (SEE APPROPRIATE SCHEDULE).

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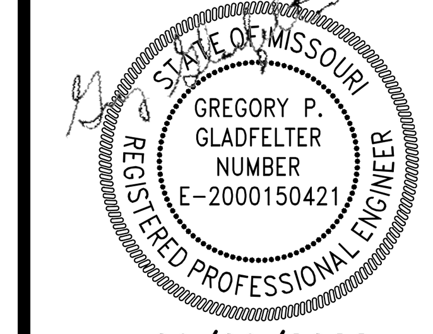

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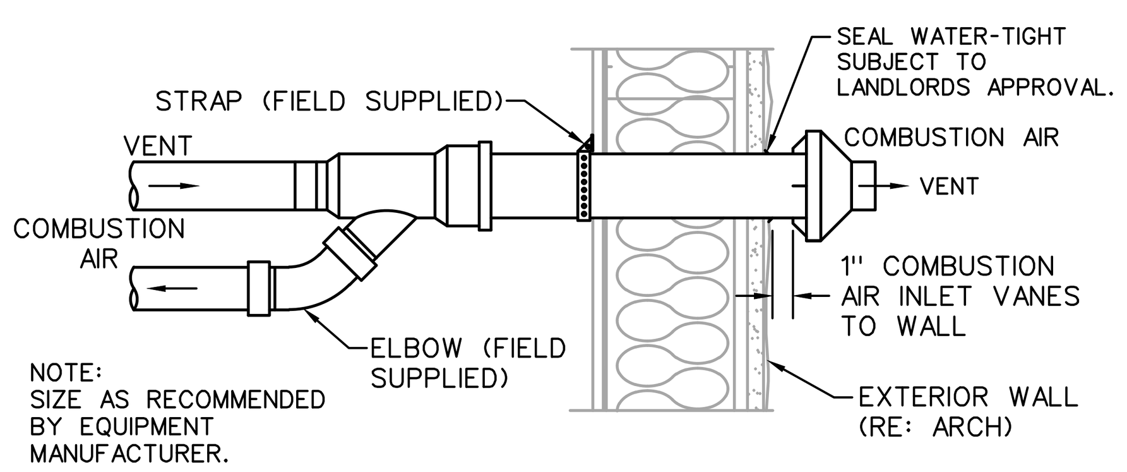
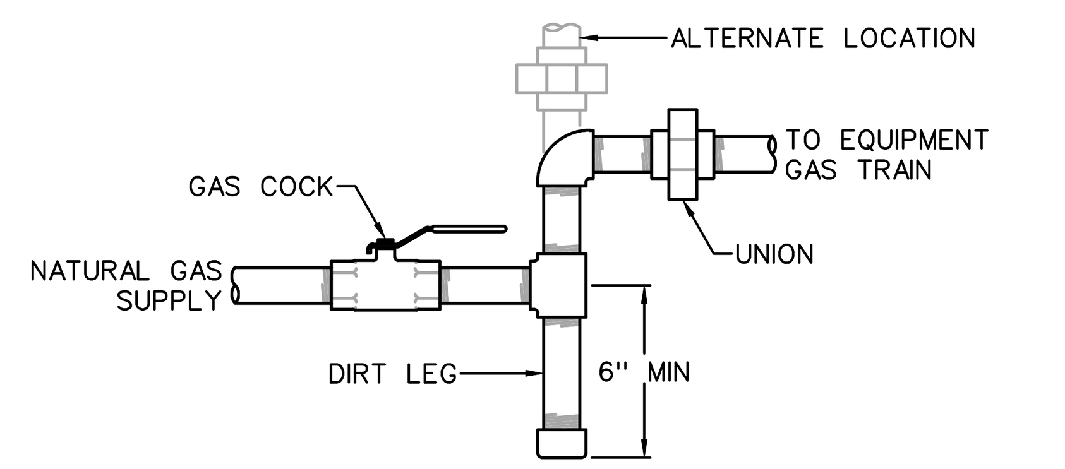
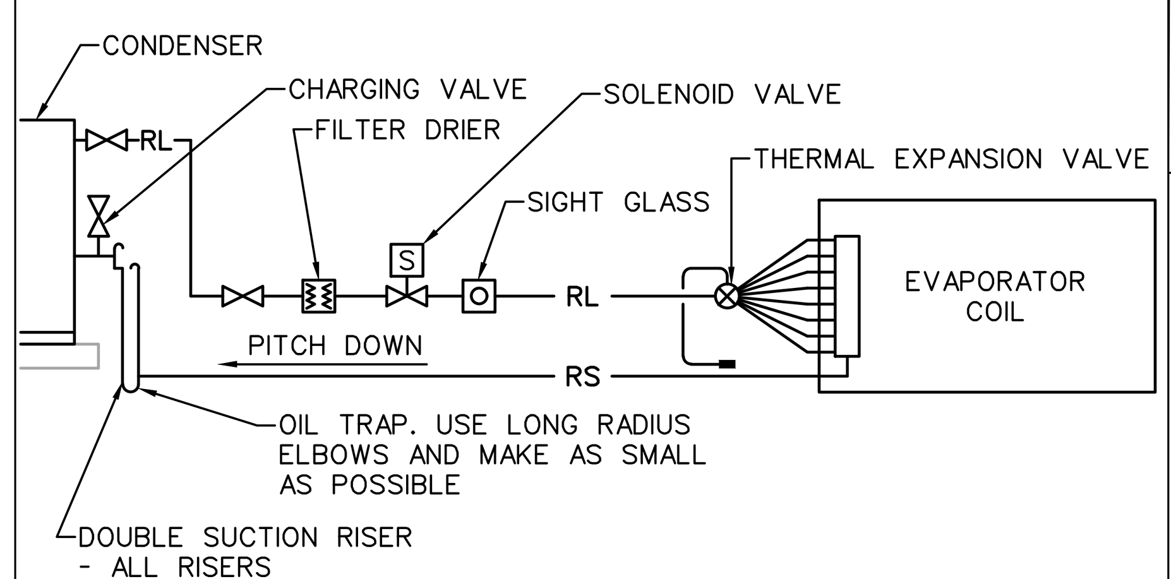


NOTE:
SIZE AS RECOMMENDED BY EQUIPMENT MANUFACTURER.

1 / MP301 CONCENTRIC PVC FLUE TERMINAL DETAIL
NO SCALE



2 / MP301 GAS EQUIPMENT CONNECTION DETAIL
NO SCALE



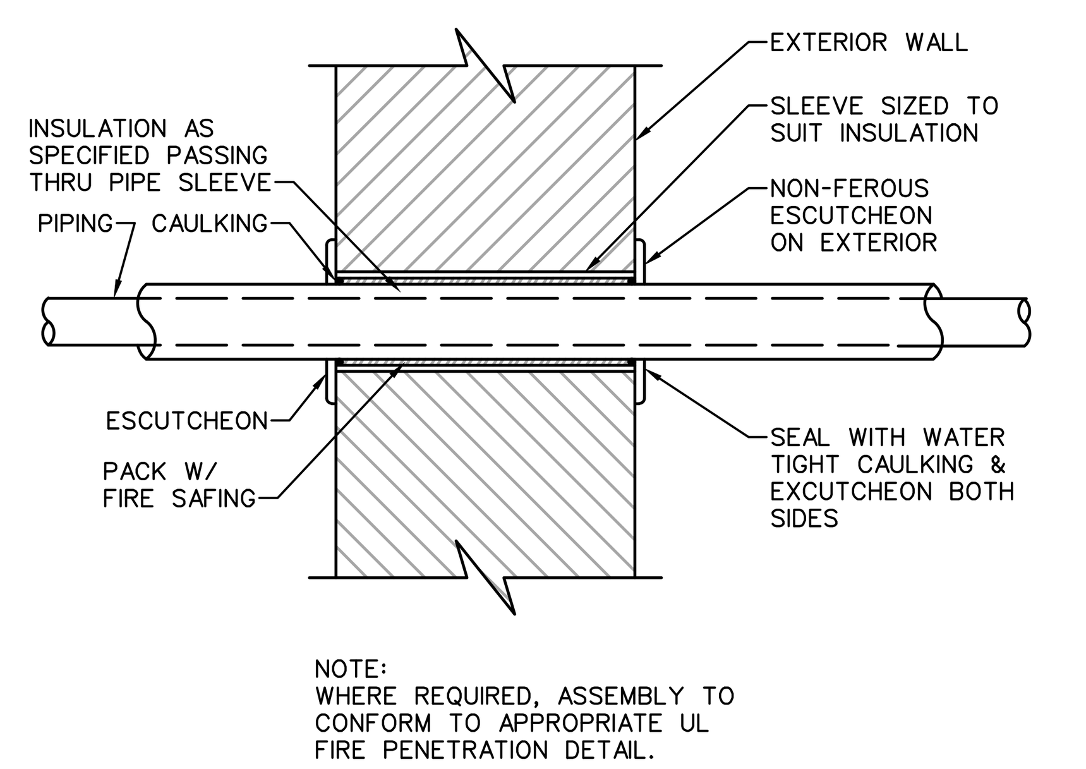
NOTE:
REFRIGERANT PIPE SIZES SHALL BE AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.

INCLUDE ALL REFRIGERATION ACCESSORIES AS RECOMMENDED BY EQUIPMENT MANUFACTURER.

COORDINATE THE EXACT ROUTING AND LOCATION OF PIPING WITH ALL FIELD CONDITIONS.

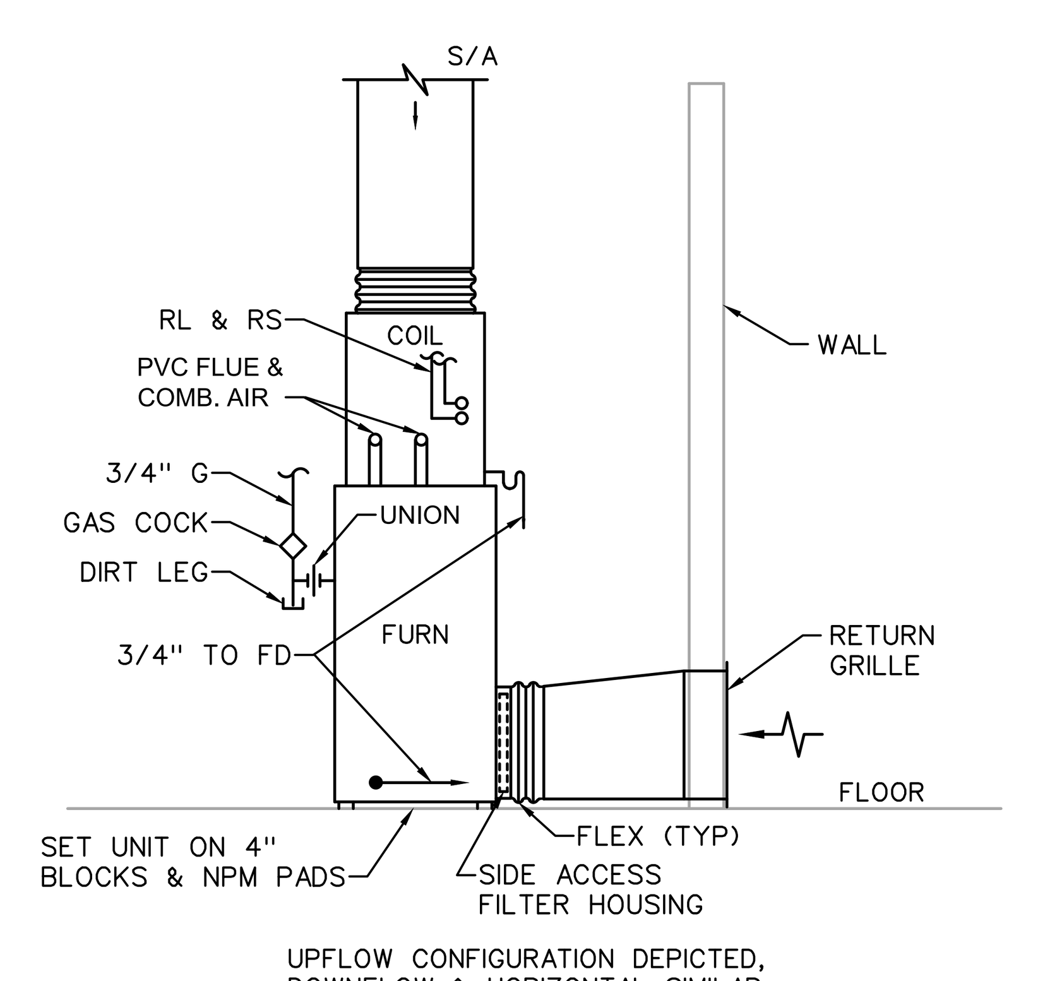
WHERE SHOWN, PROVIDE HOT GAS BYPASS FOR 1ST STAGE REFRIGERATION PIPED PER MANUFACTURER RECOMMENDATONS

3 / MP301 SCHEMATIC REFRIGERANT PIPING DETAIL
NO SCALE

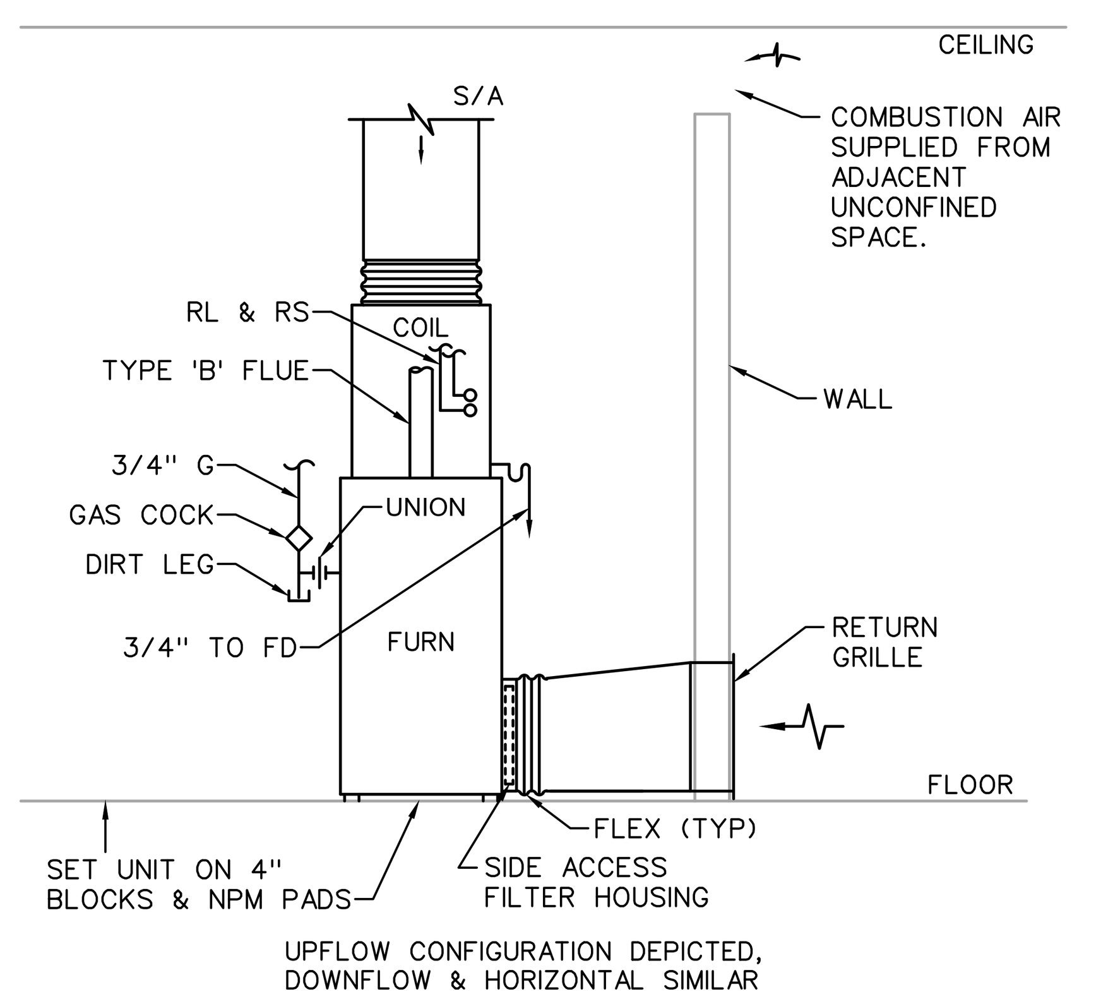


NOTE:
WHERE REQUIRED, ASSEMBLY TO CONFORM TO APPROPRIATE UL FIRE PENETRATION DETAIL.

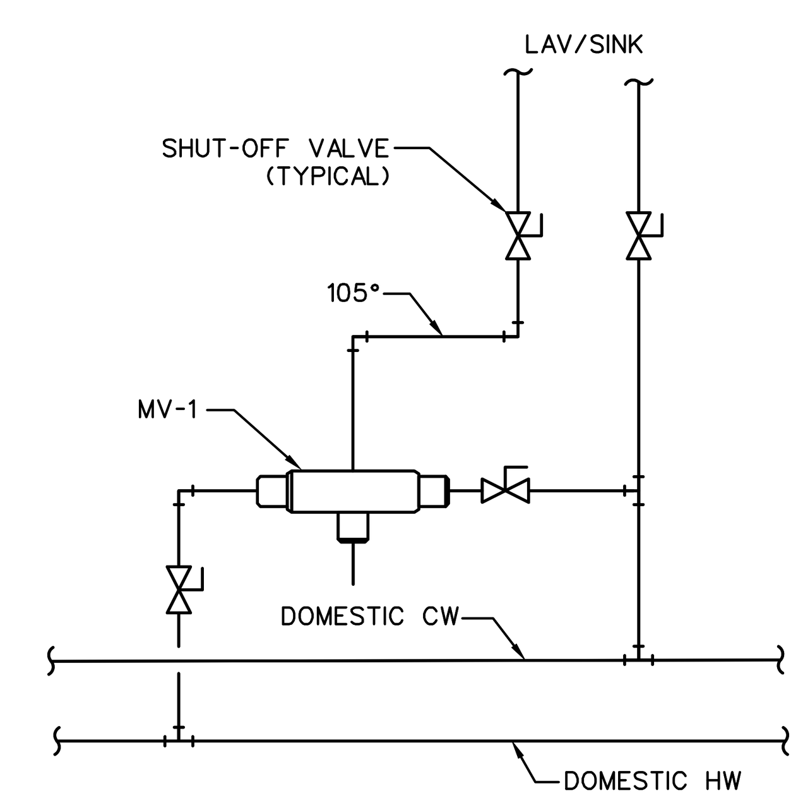
4 / MP301 EXTERIOR WALL PIPE PENETRATION DETAIL
NO SCALE



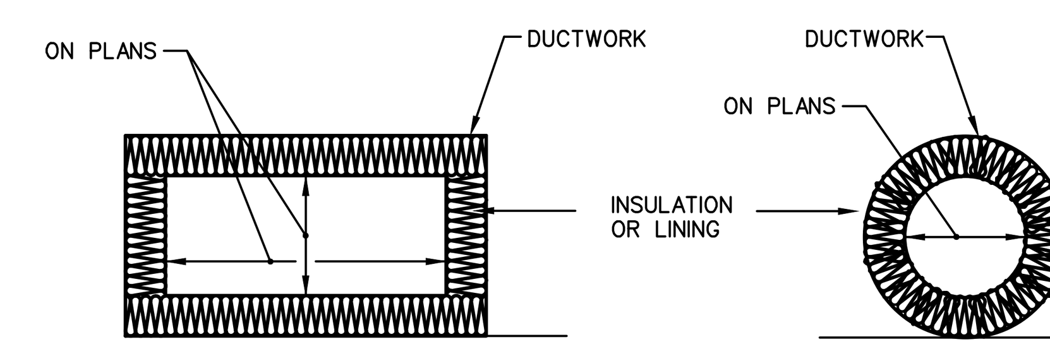
5 / MP301 TYPICAL HIGH EFFICIENCY FURNACE DETAIL
NO SCALE
UP THRU 4 TONS



6 / MP301 TYPICAL STANDARD EFFICIENCY FURNACE DETAIL
NO SCALE
UP THRU 4 TONS



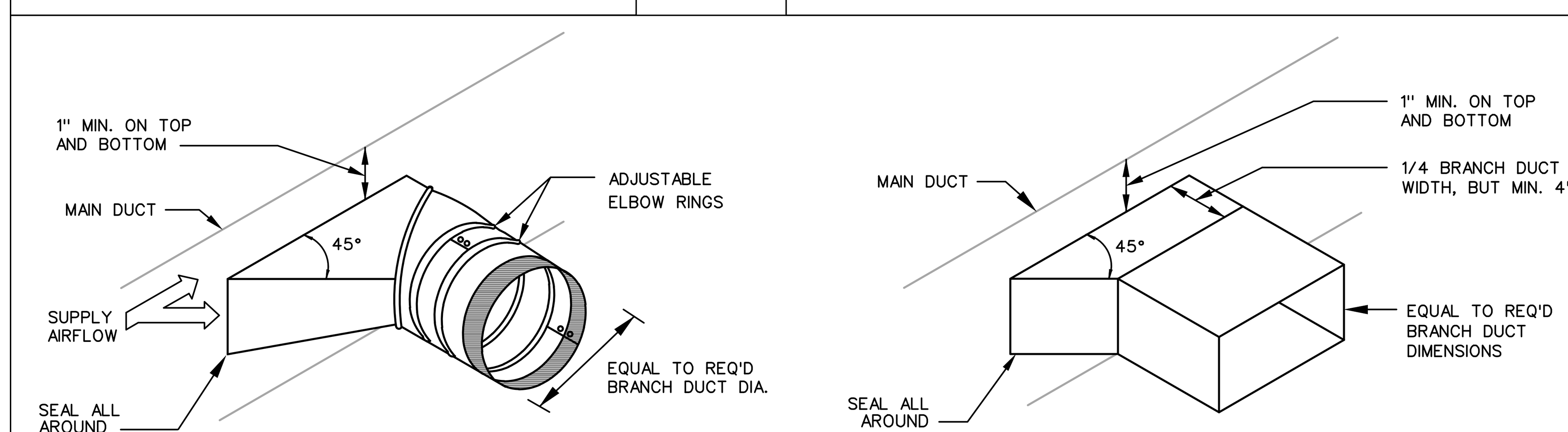
7 / MP301 MIXING VALVE DETAIL
NO SCALE



DUCT INSULATION SCHEDULE							NOTES
	INTERNAL INSULATION			EXTERNAL INSULATION			
	1/2"	1"	OTHER	1"	2"	OTHER	
LOW VELOCITY DUCTS:							
RETURN DUCTS		o					1
SUPPLY DUCTS (RECT.)		o					
SUPPLY DUCTS (ROUND)					o		3,4
EXHAUST DUCTS	o			o			2
OUTSIDE AIR DUCTS				o			
RELIEF DUCTS	o						1
MEDIUM/HIGH VELOCITY DUCTS:							
ROUND SUPPLY				o			
FLAT OVAL SUPPLY				o			

NOTES:
1. INSULATION SHALL BE INSTALLED WHEN INDICATED OTHERWISE IN THE CONSTRUCTION DOCUMENTS. OTHERWISE, NO INSULATION IS REQUIRED.
2. INSULATION IS REQUIRED WITHIN 6'-0" OF TERMINATION POINT OF EXHAUST AIR. RECTANGULAR DUCTS SHALL BE LINED, ROUND DUCTS SHALL BE WRAPPED.
3. CONCEALED ROUND SUPPLY AIR DUCTS AND ROUND SUPPLY AIR DUCTS IN UNCONDITIONED SPACES SHALL BE INSULATED AS INDICATED AND SHALL INCLUDE A VAPOR BARRIER TO PREVENT CONDENSATION FROM FORMING ON COLD METAL SURFACES. NO INSULATION IS REQUIRED FOR ROUND SUPPLY AIR DUCT EXPOSED IN CONDITIONED SPACES UNLESS INDICATED OTHERWISE.
4. AT CONTRACTORS OPTION, GALVANIZED STEEL ROUND DOUBLE WALL DUCT MAY BE USED WHERE ROUND SUPPLY AIR DUCTS ARE REQUIRED TO BE INSULATED. DOUBLE WALL DUCT SHALL BE LINX LINDLAB SPIRO-SAFE SPIRAL LOCKSEAM DUCTWORK. SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
5. AT CONTRACTOR'S OPTION, ROUND DUCT LINER MAY BE USED WHERE ROUND SUPPLY AIR DUCTS ARE REQUIRED TO BE INSULATED. DUCT LINER SHALL BE JOHNS MANVILLE SPIRACOUSTIC PLUS, OR APPROVED EQUAL, 1.5" THICK (R6.4). SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

9 / MP301 INSULATED OR LINED DUCT DETAIL
NO SCALE



8 / MP301 TYPICAL BRANCH TAKEOFF FITTING DETAIL
NO SCALE

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Date:	Issued for:
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Date: 2022/09/09
Sheet Number:

MP301

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PLUMBING SPECIFICATION

1. INSTALLATION SHALL BE IN ACCORDANCE WITH THE 2018 INTERNATIONAL PLUMBING AND FUEL GAS CODES, NFPA 90A AND 101 AND ALL STATE AND LOCAL CODES, ORDINANCES AND REGULATIONS.
2. ALL WATER BEARING PIPING SHALL BE SLOPED FOR DRAINAGE WITH BALL DRAIN VALVES AT LOW POINTS.
3. DRAINAGE PIPING SHALL BE SLOPED IN ACCORDANCE WITH CODE, BUT NOT LESS THAN 1/8" PER FOOT FOR 3" AND LARGER PIPING AND 1/4" PER FOOT FOR 2-1/2" AND SMALLER PIPING. ALL INVERT ELEVATIONS SHALL BE COORDINATED WITH THE STRUCTURAL FOOTINGS.
4. PROVIDE DIELECTRIC UNIONS AT ALL CONNECTIONS BETWEEN DISSIMILAR METALS.
5. CAULK AND SEAL ALL DUCT AND PIPING PENETRATIONS OF EXTERIOR OR DEMISING WALLS.
6. THE CONTRACTOR SHALL TAKE CARE TO MAINTAIN THE INTEGRITY OF ALL FIRE RATED AND SOUND RATED ASSEMBLIES.
7. ABOVE GROUND WASTE AND VENT PIPING SHALL BE SCHEDULE 40 PVC WITH SOLVENT CEMENT JOINTS, EXCEPT USE STANDARD WEIGHT NO-HUB CAST IRON IN AIR PLENUMS. VENT PIPING MAY BE SCHEDULE 40 GALVANIZED STEEL WITH SCREWED JOINTS. PAINT ALL EXTERIOR PIPING WITH UV RESISTANT PAINT.
8. ABOVE GROUND WATER PIPING SHALL BE COPPER OR CROSS LINKED POLYETHELYNE (PEX).
9. SERVICE VALVES FOR WATER PIPING SYSTEMS UP THRU 2" SHALL BE 1/4 TURN, 150 LB. BALL VALVE WITH BRONZE CHROME PLATED BALL AND TFE SEATS, NIBCO S-585-70.
10. COPPER DOMESTIC WATER PIPING SHALL BE INSULATED WITH 1" FIBERGLASS WITH ALL SERVICE JACKET OR COMPARABLE UNICELLULAR INSULATION WITH SMOKE/FLAME RATING OF 25/50. WHEN INSTALLED WITHIN A CHASE ALONG AN EXTERIOR WALL, THE INSULATION SHALL BE 1-1/2" FIBERGLASS AND THE PIPING SHALL BE LOCATED ON THE INTERIOR SIDE OF THE BUILDING WALL INSULATION.
11. PROVIDE PLUMBING FIXTURES AS SCHEDULED OR SELECTED BY OWNER WITH ALL REQUIRED TRIM AND ACCESSORIES FOR A COMPLETE WORKING AND CODE COMPLIANT INSTALLATION. PROVIDE STOP VALVES AND WATER HAMMER ARRESTORS, SIZED AS INDICATED OR PER MANUFACTURER FOR EACH FIXTURE OR EACH GROUP OF FIXTURES. REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATION OF THE FIXTURES.
12. TEST AND CLEAN PIPING SYSTEMS PER INDUSTRY STANDARDS. PRESSURE TEST OF PRESSURE PIPING SHALL BE AT 1-1/2 TIMES THE ANTICIPATED OPERATING PRESSURE, BUT NOT LESS THAN 50 PSIG FOR 2 HOURS. NON-PRESSURIZED SYSTEMS SHALL BE TESTED WITH 10' WATER COLUMN ABOVE NORMAL OPERATING CONDITIONS OR 5 PSI FOR 2 HOURS. THERE SHALL BE NO MEASURABLE DROP DURING THE TEST PERIOD.

ELECTRICAL GENERAL NOTES

A) CONTRACTOR SHALL COORDINATE INSTALLATION REQUIREMENTS AND SCHEDULING OF ALL WORK WITH ARCHITECT AND GENERAL CONTRACTOR.

B) INSTALLATION SHALL COMPLY WITH THE 2017 EDITION OF N.E.C. AND LOCAL AUTHORITY HAVING JURISDICTION.

C) CONTRACTOR SHALL BE LICENSED TO PERFORM WORK IN MUNICIPALITY WHERE PROJECT IS LOCATED.

D) ALL WIRING SHALL BE INSTALLED IN CONDUIT. EMT CONDUIT WITH SET SCREW FITTINGS MAY BE UTILIZED WHERE PERMITTED BY CODE. MINIMUM CONDUIT SIZE SHALL BE 1/2".

E) ALL WIRING SHALL BE COPPER WITH 600 VOLT INSULATION AND COLOR CODED, UNLESS NOTED OTHERWISE.

ALUMINUM WIRING SHALL ONLY BE USED FOR FEEDERS FROM TRANSFORMER TO METER CENTER. ALUMINUM CONDUCTORS SHALL BE ALCAN STABILOY AA-8030 SERIES, 600 VOLT INSULATION.

G) CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMIT AND INSPECTION FEES.

H) MC CABLE AND NM CABLE MAY BE INSTALLED WHERE PERMITTED BY CODE. CONDUCTORS SHALL BE MINIMUM #12 GAUGE AND COPPER.

I) INSTALL BLANK COVER PLATE ON ALL PULL BOXES AND JUNCTION BOXES.

J) TYPEWRITTEN PANELBOARD DIRECTORY SHALL BE PROVIDED FOR PANELBOARD AND CORRECTLY FILLED OUT.

K) CONTRACTOR SHALL COORDINATE INSTALLATION OF ELECTRICAL WORK WITH ALL OTHER TRADES INVOLVED WITH CONSTRUCTION OF PROJECT.

L) ALL WIRING DEVICES SHALL BE RATED 20 AMP, OR AS NOTED ON DRAWINGS. COORDINATE LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.

M) CONTRACTOR SHALL FIELD VERIFY EXACT ROUTING OF ALL CONDUITS TO NEW EQUIPMENT.

N) FURNISH MATERIALS AND LABOR FOR A COMPLETE AND OPERATIONAL ELECTRICAL INSTALLATION.

O) MATERIAL AND EQUIPMENT SHALL BE NEW AND SHALL BEAR THE 'UL' LABELS AS REQUIRED.

P) CONTRACTOR SHALL COORDINATE INSTALLATION OF EQUIPMENT FURNISHED BY OTHERS.

Q) PANELBOARD, TRANSFORMERS, MAIN DISTRIBUTION PANEL AND DISCONNECT SWITCHES SHALL BE MANUFACTURED BY ITE/SIEMENS OR EQUAL.

R) PVC (SCHEDULE 40) CONDUIT MAY BE USED FOR CONDUITS INSTALLED BELOW FINISHED GRADE OR CONCRETE FLOOR SLAB. PROVIDE WITH APPROVED FITTINGS.

S) DISCONNECT SWITCHES SHALL BE MANUFACTURED BY ITE/SIEMENS OR EQUAL. NEMA 1 FOR INDOOR INSTALLATION AND NEMA 3R FOR OUTDOOR INSTALLATION.

T) ALL LIGHT FIXTURES AND DEVICES MOUNTED IN CEILING SHALL BE BRACED TO RESIST SEISMIC FORCES IN ACCORDANCE WITH IBC, NEC, AND LOCAL AUTHORITY HAVING JURISDICTION.

U) VOICE/DATA AND THERMOSTAT OUTLET BOXES SHALL BE PROVIDED AND INSTALLED WITH 3/4" CONDUIT STUBBED UP OUT TOP OF BOX TO ABOVE ACCESSIBLE CEILING. PROVIDE BUSHING ON END OF CONDUIT.

V) EMERGENCY AND EXIT LIGHT FIXTURES SHALL BE PROVIDED WITH BATTERY BACK-UP FOR MINIMUM OF (90) MINUTES. EMERGENCY AND EXIT LIGHT FIXTURES SHALL BE CONNECTED TO HOT LEG OF CIRCUIT, NOT SWITCHED.

W) NEW PANELBOARDS SHALL BE ITE/SIEMENS TYPE 'P2' OR APPROVED EQUAL, WITH BOLT-ON CIRCUIT BREAKERS, ALUMINUM BUS, NEMA 1 ENCLOSURE, GROUND, AND NEUTRAL BUS. AIC RATING TO MATCH EXISTING SYSTEM. EQUALS BY SQUARE 'D', G.E., OR CUTLER-HAMMER.

MECHANICAL SPECIFICATION

1. INSTALLATION SHALL BE IN ACCORDANCE WITH THE 2018 INTERNATIONAL MECHANICAL AND FUEL GAS CODES, NFPA 90A AND 101 AND ALL STATE AND LOCAL CODES, ORDINANCES AND REGULATIONS.
2. COOLING EQUIPMENT LOCATED WHERE DAMAGE FROM OVERFLOW COULD OCCUR AND ELSEWHERE AS INDICATED, SHALL BE MOUNTED IN SECONDARY CONTAINMENT PANS WITH HIGH WATER ALARM SENSOR TO SHUT DOWN THE EQUIPMENT. THE DRAIN PAN SHALL BE PIPED TO FLOOR DRAIN, TO EXTERIOR OR ELSEWHERE AS SHOWN, MINIMUM SIZE SHALL BE 3/4".
3. COORDINATE EXACT LOCATIONS AND ORIENTATION OF EQUIPMENT WITH ARCHITECTURAL AND STRUCTURAL REQUIREMENTS. EQUIPMENT SHALL BE SCREENED IN ACCORDANCE WTIH LOCAL JURISDICTION REQUIREMENTS AND AS SHOWN ON ARCHITECTURAL DRAWINGS.
4. DUCTWORK FABRICATION AND INSTALLATION SHALL BE IN ACCORDANCE WITH SMACNA STANDARDS.
5. ALL DUCTWORK SHALL BE SHEET METAL, CONSTRUCTED TO SMACNA STANDARDS, MINIMUM OF 2" WG PRESSURE CLASS AND SEAL CLASS 'C' MINIMUM. ALL LONGITUDINAL AND TRANSVERSE JOINTS TO BE SEALED, EXCEPT AS OTHERWISE NOTED. ROUND AND FLEX DUCT CONNECTIONS SHALL BE MADE WITH SPIN COLLARS WITH EXTRACTORS AND VOLUME DAMPERS.
6. RECTANGULAR DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS. CONTRACTOR SHALL INCLUDE AN ALLOWANCE FOR 1" DUCT LINER IN LOW VELOCITY DUCTS WHERE APPLICABLE. CONCEALED ROUND DUCTS SHALL BE INSULATED WITH 2" DUCT WRAP. EXPOSED ROUND DUCTS DO NOT NEED TO BE INSULATED.
7. PROVIDE FLEXIBLE FABRIC CONNECTORS AT ALL DUCTWORK CONNECTIONS TO ROTATING EQUIPMENT. CONNECTORS EXPOSED TO SUNLIGHT SHALL BE MADE OF UV RESISTANT MATERIAL.
8. TRAP ALL CHILLED CONDENSATE DRAINS AS DETAILED OR AS REQUIRED. PROVIDE A TRAP DEPTH 1" GREATER THAT SYSTEM FAN DEVELOPED STATIC PRESSURE. INSURE AND CERTIFY THAT CONDENSATE DRAINS ARE POSITIVELY SLOPED AT 1"/20' MINIMUM IN DIRECTION OF FLOW.
9. CAULK AND SEAL ALL DUCT AND PIPING PENETRATIONS OF EXTERIOR OR DEMISING WALLS. THE CONTRACTOR SHALL TAKE CARE TO MAINTAIN THE INTEGRITY OF ALL FIRE RATED AND SOUND RATED ASSEMBLIES.
10. REFRIGERANT PIPING SHALL BE TYPE 'ACR' COPPER WITH BRAZED JOINTS OR MANUFACTURER'S STANDARD PRE-CHARGED LINE SETS WITH COMPRESSION JOINTS.
11. ALL REFRIGERANT PIPING SHALL BE SIZED AND WITH ALL ACCESSORIES AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
12. REFRIGERANT SUCTION LINES TO BE INSULATED WITH 1" UNICELLULAR INSULATION, ALL JOINTS SEALED. INSULATION SHALL BE 25/50 SMOKE AND FIRE RATED. PAINT ALL EXTERIOR INSULATION WITH UV RESISTANT PAINT.
13. TEST AND CLEAN PIPING SYSTEMS PER INDUSTRY STANDARDS. PRESSURE TEST OF PRESSURE PIPING SHALL BE AT 1-1/2 TIMES THE ANTICIPATED OPERATING PRESSURE, BUT NOT LESS THAN 50 PSIG FOR 2 HOURS. NON-PRESSURIZED SYSTEMS SHALL BE TESTED WITH 10' WATER COLUMN ABOVE NORMAL OPERATING CONDITIONS OR 5 PSI FOR 2 HOURS. THERE SHALL BE NO MEASURABLE DROP DURING THE TEST PERIOD.
14. TEST AND BALANCE ALL SYSTEMS.

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER	LAMP	VOLTS / WATTS
A	LITHONIA 4' LONSTRIP, PENDANT, 4000K	LED	120 / 35.3
B	WALLPACK	LED	120 / 250
EM	EXITRONIX #LED90	(2) LED HEADS WITH UNIT	120 / 10
EEM	EXITRONIX #MLED	WEATHERPROOF LED REMOTE	6 / 8
X	EXITRONIX #VEX-U-BP-WB-WH-120-R	RED LED WITH UNIT	120 / 10
XEM	EXITRONIX #VLED-1-WH-EL90-R	RED LED AND (2) LED HEADS WITH UNIT	120 / 15

NOTES:
1. TYPE 'X' AND/OR 'XEM' FIXTURES SHALL HAVE 12 WATTS OF REMOTE CAPACITY AND POWER TYPE 'EEM'.

PANEL P 240 VOLTS ☐ 200 A. BUS ■ SERVICE ENTRANCE
1 PHASE ☐ 200 A. MAIN BREAKER ☐ FEED THRU LUGS
SECTION 1 OF 1 3 WIRE ☐ MAIN LUGS ONLY ☐ SUBFEED LUGS

CIRC. NO.	CIRCUIT DESCRIPTION	CIRC. BRKR. AMPS	CIRC. BRKR. POLES	VA	Ø	CIRC. NO.	CIRCUIT DESCRIPTION	CIRC. BRKR. AMPS	CIRC. BRKR. POLES	VA
1	CU-1	40	2	3432	A	2	FURNACE F-1	20	1	1000
3				3432	B	4	FURNACE F2	20	1	1000
5	CU-2	40	2	3432	A	6	LIGHTING	20	1	1440
7				3432	B	8	RECEPTACLES	20	1	540
9	ROTO-PHASE CONVERTER	30	2	2800	A	10	RECEPTACLES	20	1	360
11				2800	B	12	RECEPTACLES	20	1	540
13	RECEPTACLES	20	1	360	A	14	RECEPTACLES	20	1	360
15	RECEPTACLES	20	1	360	B	16	RECEPTACLES	20	1	360
17	RECEPTACLES	20	1	180	A	18	RECEPTACLES	20	1	540
19	RECEPTACLES	20	1	360	B	20	RECEPTACLES	20	1	540
21	RECEPTACLES	20	1	360	A	22	RECEPTACLES	20	1	540
23	RECEPTACLES	20	1	720	B	24	RECEPTACLES	20	1	360
25	RECEPTACLES	20	1	720	A	26	RECEPTACLES	20	1	360
27	RECEPTACLES	20	1	360	B	28	EXT. LIGHTING	20	1	250
29	RECEPTACLES	20	1	360	A	30	SPARE	20	1	-
31	RECEPTACLES	20	1	360	B	32	SPARE	20	1	-

TOTAL CONNECTED LOAD 42180 VA

☐ SURFACE MOUNTED
☐ FLUSH MOUNTED

DEMAND FACTORS:
LIGHTS @ 125 % = 2113 VA
RECEPTS @ 100 % = 8640 VA
RECEPTS @ 50 % = - VA
OTHER @ 100 % = 15728 VA
TOTAL DEMAND LOAD = 26481 VA

NEUTRAL BUS 100 %
POWER FACTOR 100 %
DEMAND CURRENT 110.4 AMPS

STATE OF MISSOURI
GREGORY P. GLADFELTER
NUMBER E-2000150421
REGISTERED PROFESSIONAL ENGINEER
09/09/2022

BRIDGET SCHUMER PRINTING SHOP
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LEE'S SUMMIT, MO 64063

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