

MECHANICAL LEGEND

11

EXISTING DUCTWORK

EXISTING WORK

NEW WORK

#

KEYNOTE

View Name

1/8" = 1'-0"

VIEW LABEL WITH SCALE

T

THERMOSTAT

PROJECT NORTH ARROW

UP

DN

UP

DN

UP

DN

UP

DN

UP

DN

SUPPLY DUCT UP

SUPPLY DUCT DN

RETURN DUCT UP

RETURN DUCT DN

EXHAUST DUCT UP

EXHAUST DUCT DN

SIZE - WxH IN INCHES

TRANSITION (SIZE)

SOUND ATTENUATED DUCTWORK

VANED ELBOW; PROVIDE AT EVERY NEW SQUARE AND RECTANGULAR ELBOW

STANDARD RADIUS ELBOW
R = 1.5 x WIDTH

FLEX DUCT

MANUAL VOLUME DAMPER

TAKEOFF SHOE

ABBREVIATIONS

ADJ

ADJUSTABLE

AFF

ABOVE FINISHED FLOOR

BTU

BRITISH THERMAL UNIT

BTU/H

BRITISH THERMAL UNIT PER HOUR

CAP

CAPACITY

CFM

CUBIC FEET PER MINUTE

COND

CONDENSATE

DIA

DIAMETER

DN

DOWN

(E)

EXISTING

EA

EXHAUST AIR

EF

EXHAUST FAN

FLA

FULL LOAD AMPS

HP

HORSEPOWER

HVAC

HEATING, VENTILATION, & AIR CONDITIONING

ID

INSIDE DIAMETER

IE

INLET ELEVATION

MAX

MAXIMUM

MBH

THOUSAND BTUs PER HOUR

MCA

MINIMUM CIRCUIT AMPACITY

MFG

MANUFACTURER

MOCP

MAXIMUM OVERCURRENT PROTECTION

NG

NATURAL GAS

OSA

OUTSIDE AIR

PET

POLYESTER

PH

PHASE

PSI

POUNDS PER SQUARE INCH

RA

RETURN AIR

REQD

REQUIRED

RH

RELATIVE HUMIDITY

RTU

PACKAGED ROOFTOP UNIT

SA

SUPPLY AIR

SP

STATIC PRESSURE

TSP

TOTAL STATIC PRESSURE

TSTAT

THERMOSTAT

TYP

TYPICAL

V

VOLTS

VTR

VENT TO ROOF

WG

WATER GAGE

WT

WEIGHT

GENERAL NOTES:

1. DRAWINGS INDICATE GENERAL MECHANICAL PROJECT SCOPE AND ARE SCHEMATIC IN NATURE. THE DRAWINGS DO NOT NECESSARILY INDICATE OR DESCRIBE ALL OF THE WORK CONTENT REQUIRED FOR A COMPLETE, WORKABLE INSTALLATION. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL COMPONENTS REQUIRED TO MEET THE REQUIRED SYSTEM PERFORMANCE AND THE PROPER EXECUTION AND COMPLETION OF WORK.
2. ARCHITECTURAL AND OTHER EXISTING BUILDING CONDITIONS SHOWN ON THESE PLANS ARE SUBJECT TO FIELD VERIFICATION. CONTRACTOR IS TO REMEDY, AT NO COST TO THE OWNER, ANY DEFICIENCIES CAUSED BY FAILURE TO PERFORM SUCH VERIFICATIONS. NOTIFY ARCHITECT AS SOON AS POSSIBLE OF ANY CONDITIONS IN CONFLICT WITH THESE PLANS.
3. ALL EQUIPMENT IS TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND AS REQUIRED BY MECHANICAL CODE, ELECTRICAL CODE, AND AHJ. VERIFY ADEQUATE ACCESS FOR ROUTINE MAINTENANCE.
4. CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY WIRING, CONTROLS, HARDWARE, FITTINGS, PARTS, AND ACCESSORIES INCLUDING ALL SAFETY DEVICES REQUIRED FOR PROPER OPERATION OF SYSTEM IN ACCORDANCE WITH ALL LOCAL CODE REQUIREMENTS. EQUIPMENT CONTROLS SUCH AS THERMOSTATS, SENSORS, ETC., SHALL BE PROVIDED BY THE UNIT MANUFACTURER AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE STATED.
5. THERMOSTATS SHALL BE INSTALLED 48" AFF WHERE SHOWN ON THE FLOOR PLANS. COORDINATE WITH ARCHITECT.
6. CONCEAL ALL CONNECTIONS (REFRIGERANT, CONDENSATE DRAIN, ELECTRICAL), AND PIPING/ELECTRICAL IN FINISHED AREAS.
7. MAINTAIN WALL/ASSEMBLY RATINGS. PROVIDE FIRE STOP SEALS AS REQUIRED.
8. CONDENSATE DRAIN FROM ROOFTOP UNITS SHALL BE PLUMBED TO STORMWATER TRENCH DRAIN PROVIDED PER CIVIL.

PROJECT DESIGN CONDITIONS (HIGH BAY AREA ONLY):

WINTER DRY BULB TEMPERATURE: 22°F
SUMMER DRY BULB TEMPERATURE: 91.3°F
SUMMER COINCIDENT WET BULB TEMPERATURE: 67.2°F
HIGH BAY HEATING SET POINT TEMPERATURE: 69°F OCCUPIED HOURS, 60°F UNOCCUPIED HOURS
HIGH BAY COOLING SET POINT TEMPERATURE: 71°F OCCUPIED HOURS, 85°F UNOCCUPIED HOURS

RTU OPERATIONAL NOTES:

1. RTU-1 AND RTU-2 SHALL OPERATE INDEPENDENTLY. INDIVIDUALLY THERMOSTATICALLY CONTROLLED.
2. MINIMUM REQUIRED OUTSIDE AIR SHALL BE PROVIDED DURING OCCUPIED HOURS. EACH RTU SUPPLY FAN SHALL SUPPLY 1/2 OF TOTAL REQUIRED OUTSIDE AIR VOLUME.
3. MINIMUM REQUIRED EXHAUST SHALL BE PROVIDED DURING OCCUPIED HOURS. CONTROLS SHALL INCLUDE A MEANS FOR PROGRAMMING OCCUPIED AND UNOCCUPIED FUNCTIONS. EACH RTU POWERED EXHAUST FAN SHALL EXHAUST 1/2 OF TOTAL REQUIRED EXHAUST AIR VOLUME.
4. EACH RTU SHALL OPERATE UNDER UNIT MANUFACTURER'S SUPPLIED CONTROLLER AND SOFTWARE TO MAINTAIN TEMPERED SUPPLY AIR SETPOINT WHILE MAINTAINING A MAXIMUM RETURN AIR RELATIVE HUMIDITY OF 60% (ADJ). THE PROGRAM SHALL BE FROM THE MANUFACTURERS' STANDARD LIBRARY OF CONTROL SEQUENCES THAT IS THOROUGHLY TESTED AND PROVEN.
5. DURING ECONOMIZER HEATING AND COOLING, POWER EXHAUST IS TO MATCH OSA CFM TO MAINTAIN ROOM SP.

RTU SCHEDULE

RTU SCHEDULE																						
Tag	Manufacturer (Design Basis)	Model (Design Basis)	SUPPLY AIR				EXHAUST AIR		COOLING				HEATING				ELECTRICAL			Weight	Notes	
			CFM	Outdoor Air CFM	ESP	Fan HP	CFM	Fan HP	Total Capacity	Sensible Capacity	Cooling EAT	Cooling LAT	Gas Input	Total Capacity	EAT	LAT	MOCP	MCA	VOLT/PH/HZ			
RTU-1	Aaon, Inc.	RN-050-3-XXX	15984 CFM	15984 CFM	2.70 in-wg	20	15984 CFM	10	513490 Btu	436760 Btu	76 °F	50 °F	540000 Btu	432000 Btu	53 °F	78 °F	150 A	133 A	460 V/3/60 Hz	6890 lb	1 THRU 10	
RTU-2	Aaon, Inc.	RN-050-3-XXX	15984 CFM	15984 CFM	2.70 in-wg	20	15984 CFM	10	513490 Btu	436760 Btu	76 °F	50 °F	540000 Btu	432000 Btu	53 °F	78 °F	150 A	133 A	460 V/3/60 Hz	6890 lb	1 THRU 10	

- NOTES:
1. ECONOMIZER WITH POWER EXHAUST.
2. REHEAT DEHUMIDIFICATION, REHEAT RH: 47%
3. VARIABLE SPEED COMPRESSOR AND VARIABLE SPEED FANS
4. INSULATED HORIZONTAL DISCHARGE CURB
5. CLOGGED FILTER SWITCH
6. DISCONNECT
7. STAINLESS STEEL DRAIN PAN
8. PHASE AND BROWN OUT PROTECTION
9. DRAIN CONDENSATE TO TRENCH. SEE CIVIL.
10. PROVIDE RETURN DUCT SMOKE DETECTORS

FAN SCHEDULE

Mark	Type.	Manufacturer (Design Basis)	Model (Design Basis)	Air Volume (CFM)	Motor HP	MOCP	Voltage/Ph/Hz	Unit Weight (LBS)	Notes
BEF-1	BATHROOM EXHAUST FAN	Greenheck	SP-A70	80 CFM	0.01	15 A	120/1/60		1
F-1	AIR CURTAIN	Berner International Corp.	IDC20-1168AH-F	22700 CFM	15	100 A	208/3/60	1025	2

- NOTE:
1. PROVIDE OCCUPANCY SENSOR
2. FRONT AIR INTAKE

EXHAUST REQUIREMENTS (PER OMSC 403.4)

Space Name	Area (Az)	Space Type	Exhaust Rate	Total Exhaust
HIGH BAY AREA	20571 SF	Metals Manufacturing	0.50 CFM/SF	10285 CFM

OUTDOOR AIR CALCULATIONS (PER OMSC 403.3)

Name	Space Type	Outdoor Air Method	Outdoor Air per Area (Ra)	Area (Az)	Outdoor Air per Person (Rp)	Number of People (Pz)	Outdoor Airflow (Vbz)
HIGH BAY AREA	Metals Manufacturing	by People and by Area	0.18 CFM/SF	20571 SF	10 CFM	103	4731 CFM

NOTE: INCREASE OUTDOOR AIR TO MATCH EXHAUST REQUIREMENT.

AIR TERMINAL SCHEDULE

Mark	Manufacturer (Design Basis)	Model (Design Basis)	Size	Notes/Comments
EH-1	BROAN	646	6"ø	
RG-1	GREENHECK	ESJ-602	60"x156"	1
SG-1	ANEMOSTAT	ECO 20	24"x10"	

- NOTES:
1. COORDINATE FINISH WITH ARCHITECT.

EDA Award Number: No. 07-01-07446



STEWARDSHIP THROUGH DESIGN™

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MECHANICAL SHEET INDEX

M0.00	LEGEND AND SCHEDULES
M1.00	1ST FLOOR MECHANICAL
M1.10	2ND FLOOR MECHANICAL
M1.20	ATTIC MECHANICAL
M2.00	MECHANICAL DETAILS

AKAAN
architecture + design



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OREGON MANUFACTURING
INNOVATION CENTER R & D

33701 Charles T. Parker
Way Scappoose, Oregon

SCALE: AS SHOWN
DRAWN BY: JJW
CHECKED BY: MJC
CAD FILE: MECHANICAL
DATE: NOV. 22, 2019

REVISIONS	
△	DESCRIPTION

CONTENTS:
LEGEND AND
SCHEDULES

SHEET NO:

M0.00

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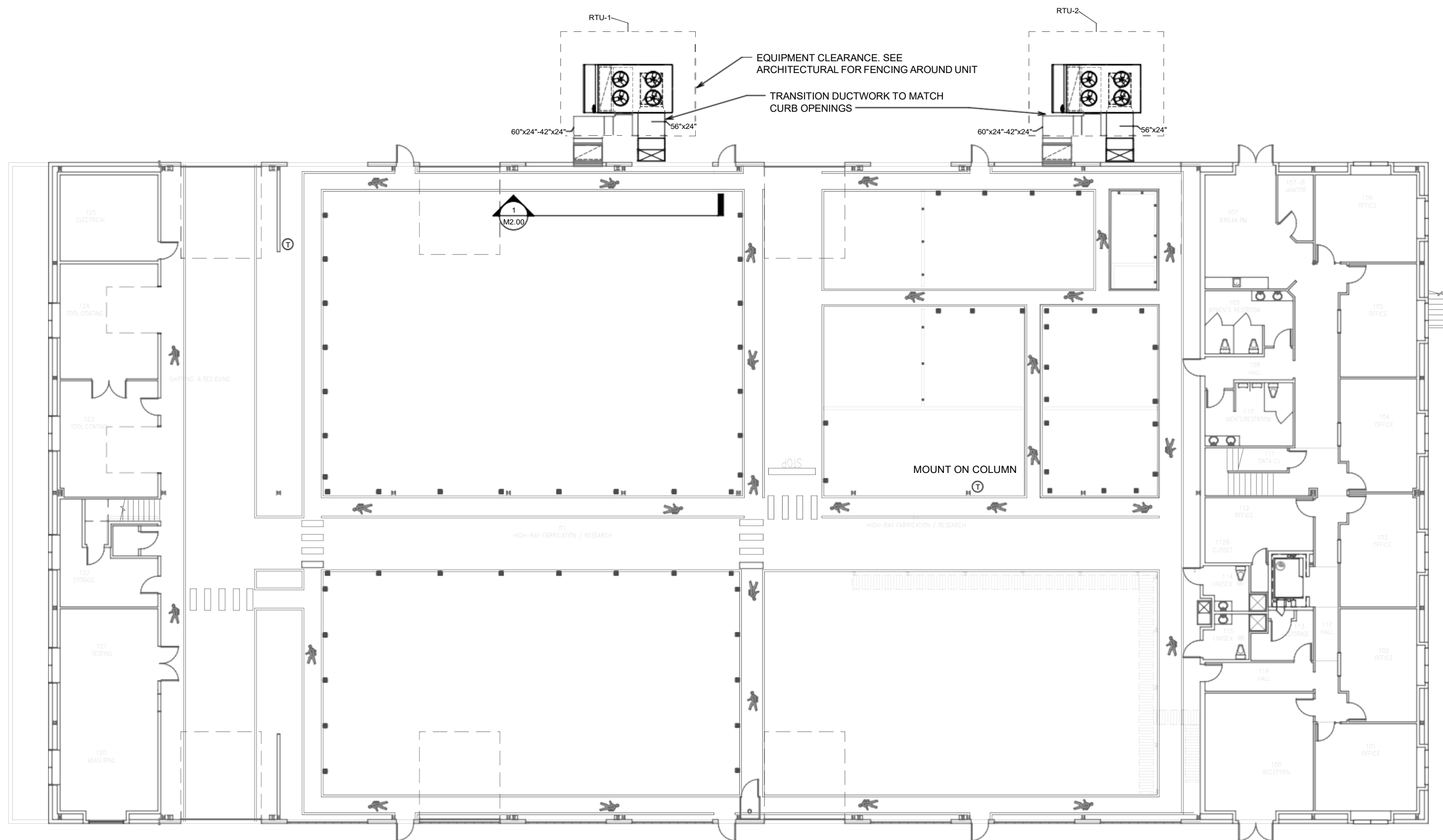
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REVISIONS	
Δ	DESCRIPTION

CONTENTS:
1ST FLOOR
MECHANICAL

SHEET NO:

M1.00



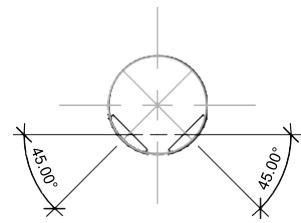
1 1ST FLOOR MECHANICAL
1" = 10'-0"



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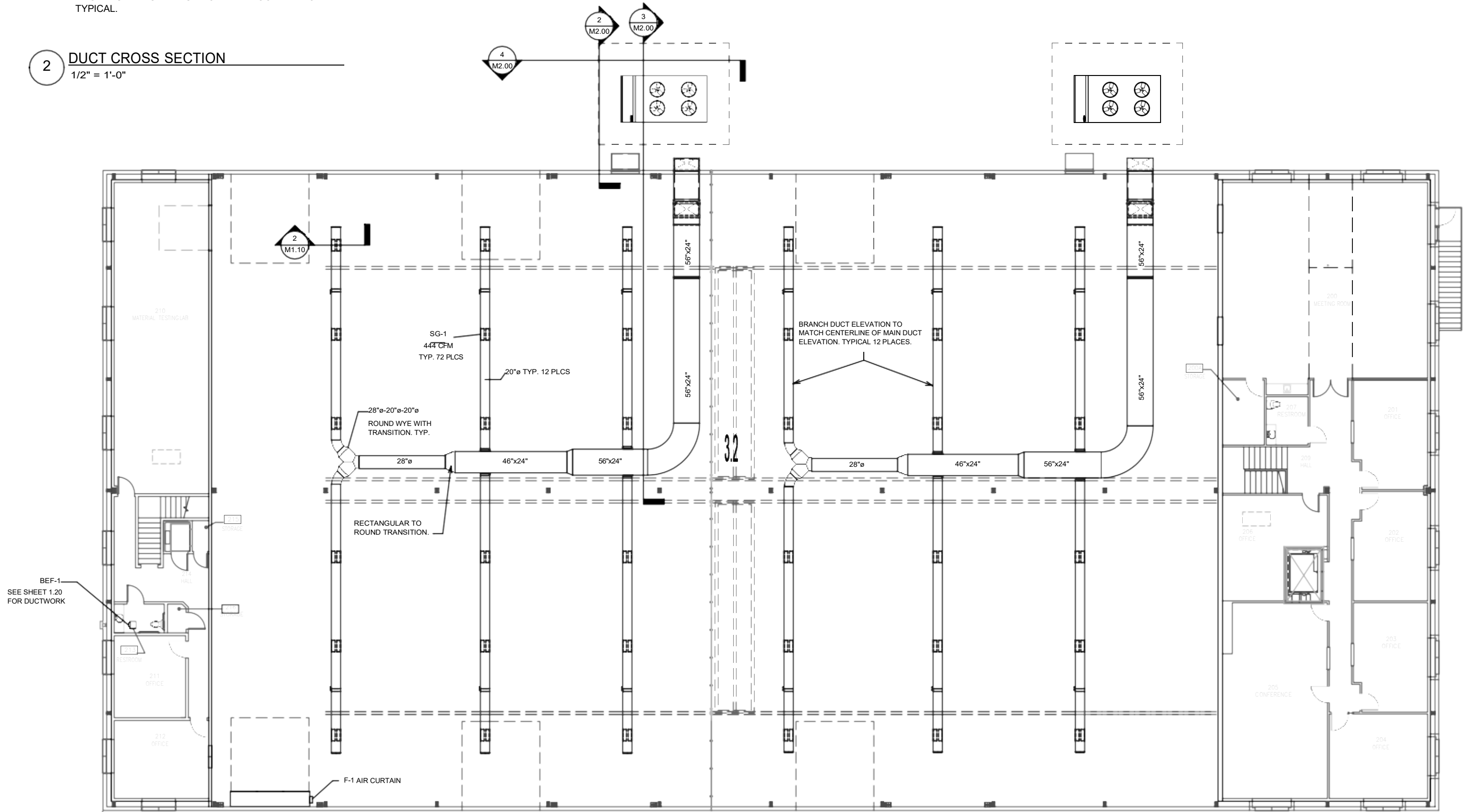
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ANGLE SUPPLY GRILL SG-1 TOWARD FLOOR AS SHOWN.
TYPICAL.

2 DUCT CROSS SECTION
1/2" = 1'-0"



1 2ND FLOOR MECHANICAL
1" = 10'-0"

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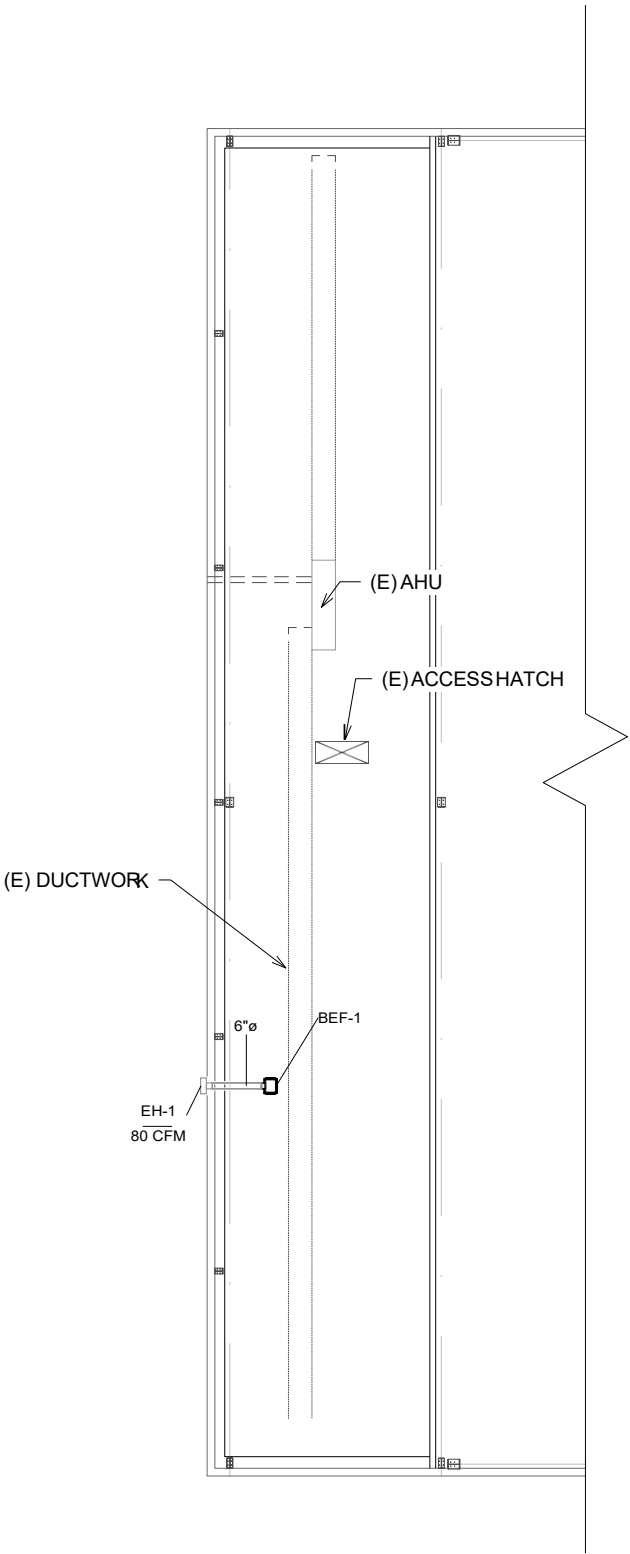
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REVISIONS	
Δ	DESCRIPTION

CONTENTS:
2ND FLOOR
MECHANICAL

SHEET NO:

M1.10



1 ATTIC MECHANICAL
1" = 10'-0"

SHEET NOTES

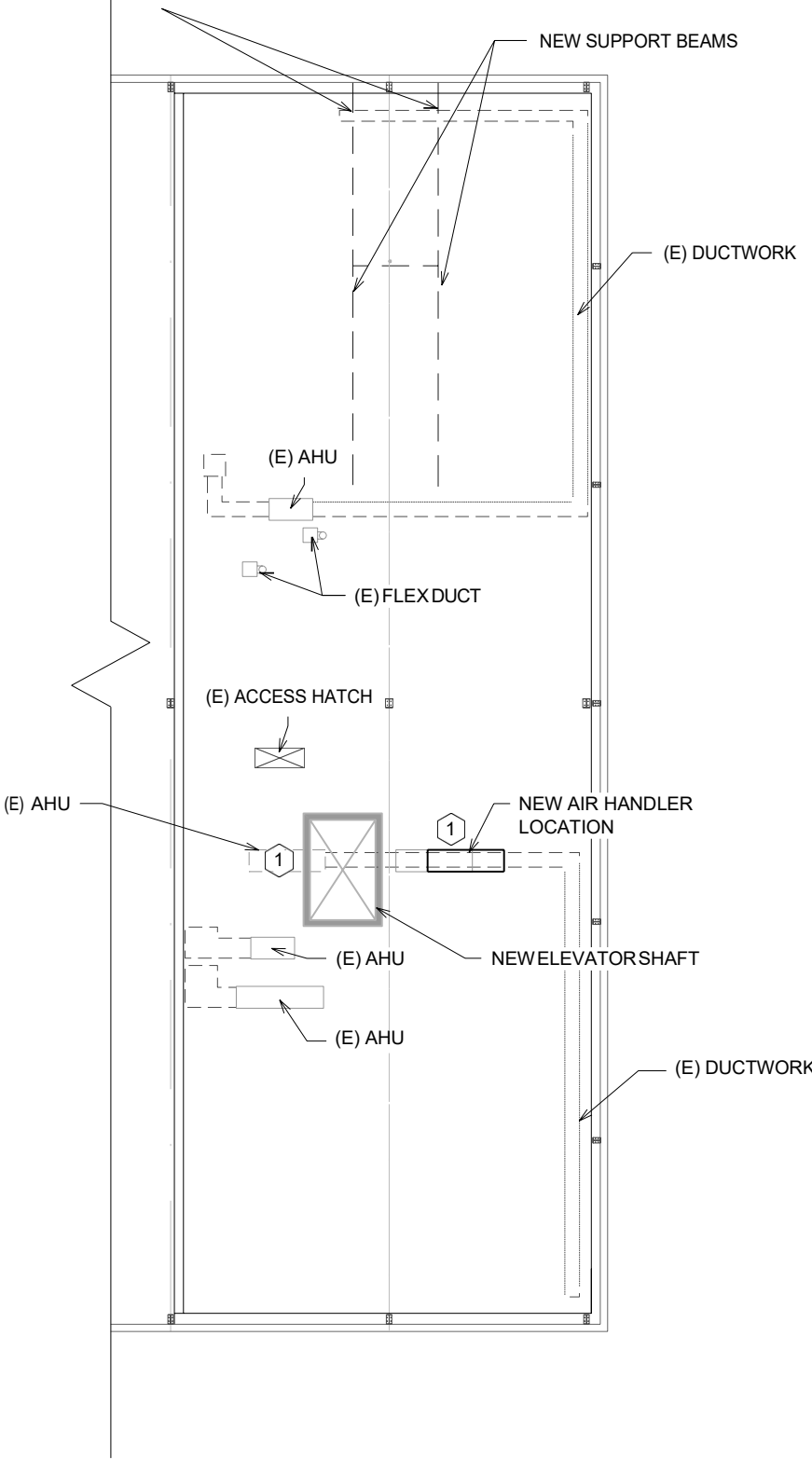
1. PROVIDE SHALLOW PAN CONDENSATE REMOVAL PUMP TO EXISTING ATTIC LOCATED AHU'S, LIBERTY LCU-SP20S OR APPROVED. CONNECT IN FIELD TO (E) DRAIN PAN PIPING. PUMP NOT TO BE INSTALLED ON THE AHU THAT IS BEING RELOCATED ON THE EAST END. RELOCATED AHU IS TO BE INSTALLED SUCH THAT DRAIN PIPING IS SLOPED TO MEET CODE REQUIRED MINIMUM SLOPE.
2. (E) AIR ATTIC MOUNTED AIR HANDLERS TO REMAIN



KEYNOTE LEGEND

- 1 RELOCATE (E) AIR HANDLER AND ASSOCIATED DUCTING, CONDENSATE DRAIN, POWER, PIPES AND CONTROLS. SLOPE CONDENSATE PIPING 1/8" PER FOOT. MAINTAIN (E) DUCT SIZES.

TRIM, REROUTE, AND RESEAL (E) DUCTWORK AND EXTEND
(E) FLEX DUCT TO FIT AROUND NEW SUPPORT BEAM.
MAINTAIN DUCT FLOW AREA. SEE ARCHITECTURAL.



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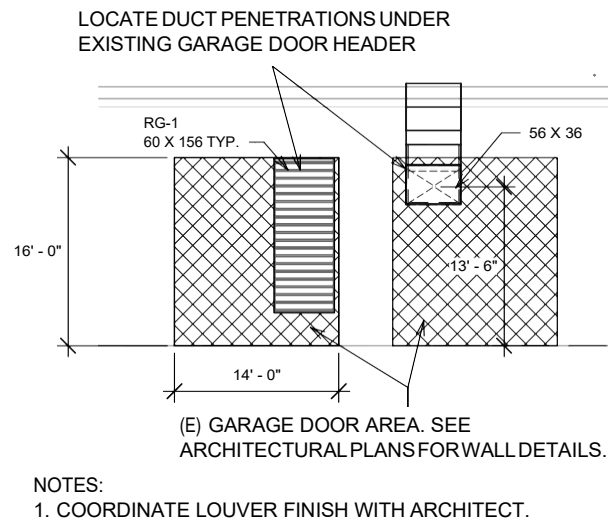
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△	DATE	DESCRIPTION

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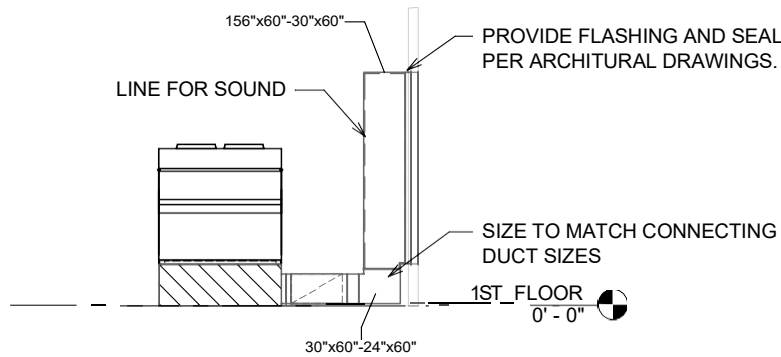
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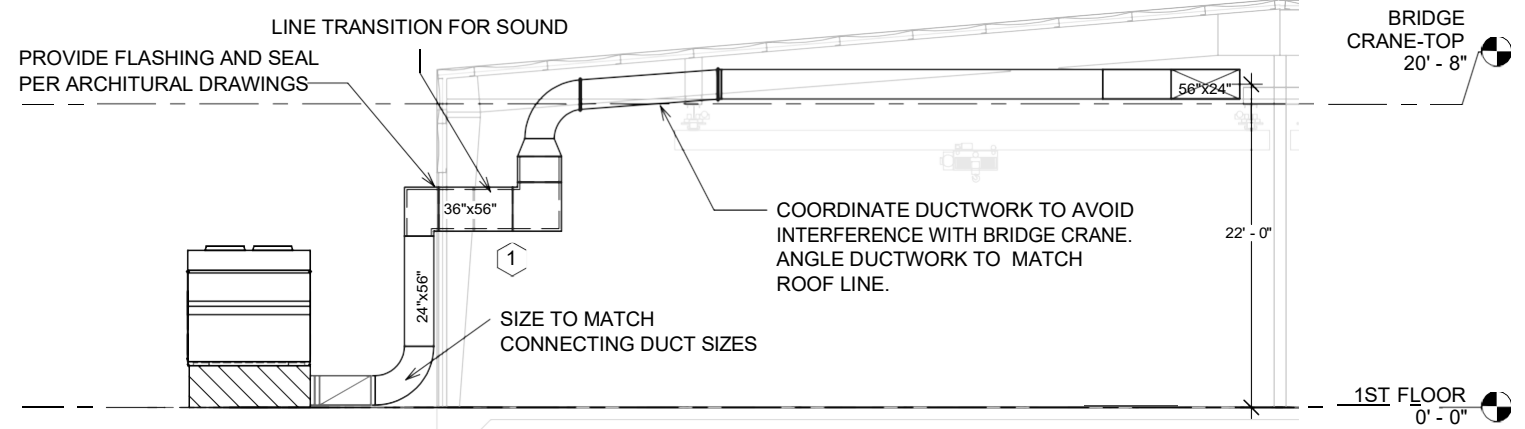
KEYNOTE LEGEND
1 LOCATION APPROXIMATE. COORDINATE DUCT RISER IN FIELD TO AVOID (E) CABLE TRAY.



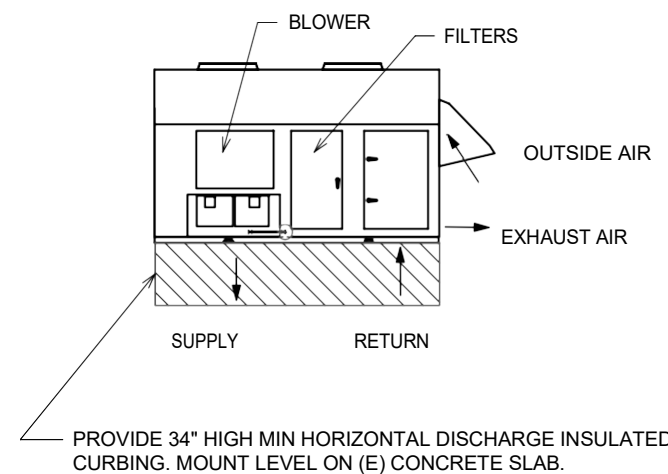
1 EXT. DUCT PENETRATION
1" = 10'-0"



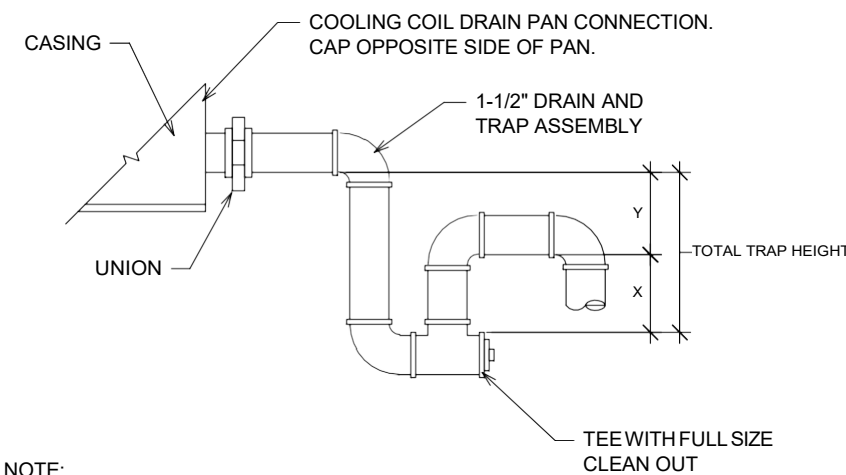
2 RETURN DUCT ELEVATION TYP. OF 2 PLCS
1/8" = 1'-0"



3 SUPPLY DUCT SECTION TYP. OF 2 PLCS
1/8" = 1'-0"

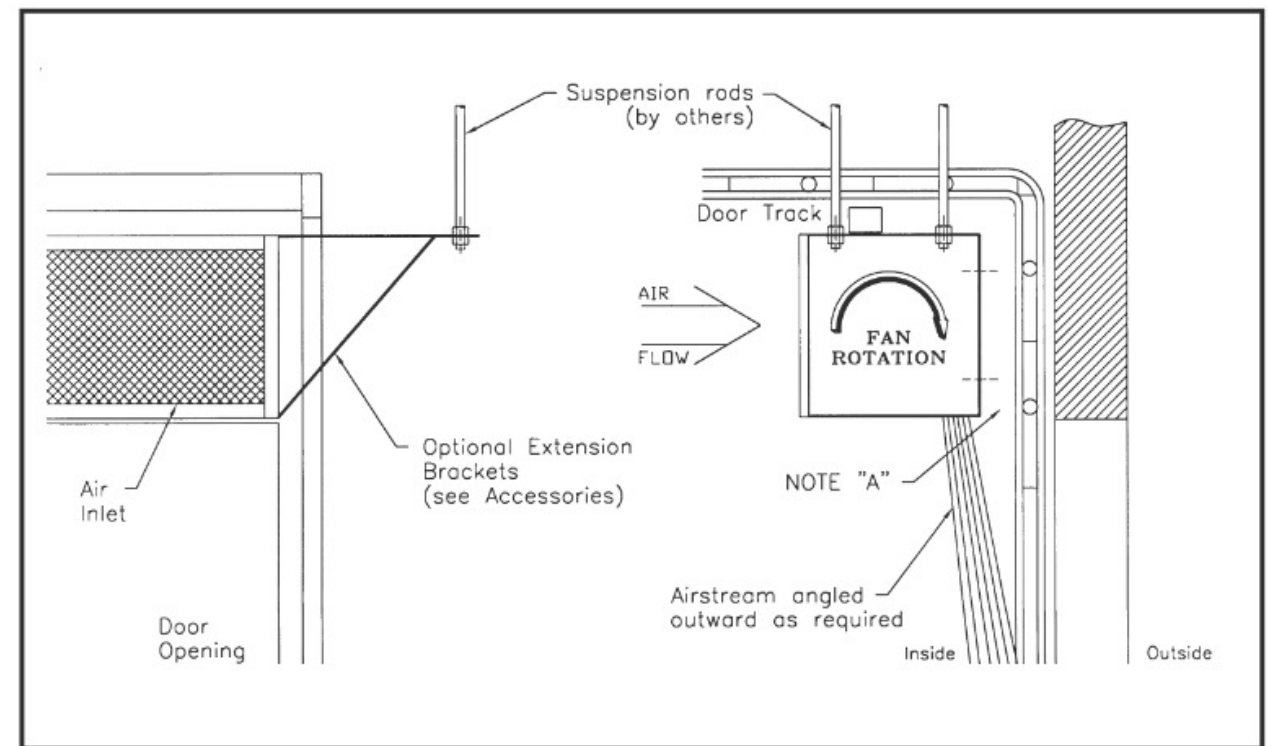


4 RTU ELEVATION
3/16" = 1'-0"



- NOTE:
- NEGATIVE PRESSURE CASING
1. DRAIN PAN AT NEGATIVE STATIC PRESSURE.
 2. X=1/2(Y) MINIMUM 2" REQUIRED.
 3. "Y" MUST BE 1" PLUS CASING STATIC PRESSURE. MINIMUM 3" HEIGHT REQUIRED.

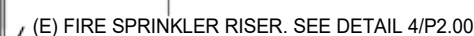
5 CONDENSATE TRAP DETAIL
N.T.S.



NOTE:
WITH DOOR IN THE FULL OPEN POSITION, VERIFY THAT NOTHING IS OBSTRUCTING THE AIRFLOW AT THE DISCHARGE NOZZLE.

6 AIR CURTAIN MOUNTING DETAIL NOT BY ENGINEER OF RECORD
N.T.S.

1 EXISTING HOSE BIBB LOCATION.



1 1ST FLOOR PLUMBING - OVERALL
1" = 10'-0"



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CONTENTS:
2ND FLOOR
PLUMBING

SHEET NO:

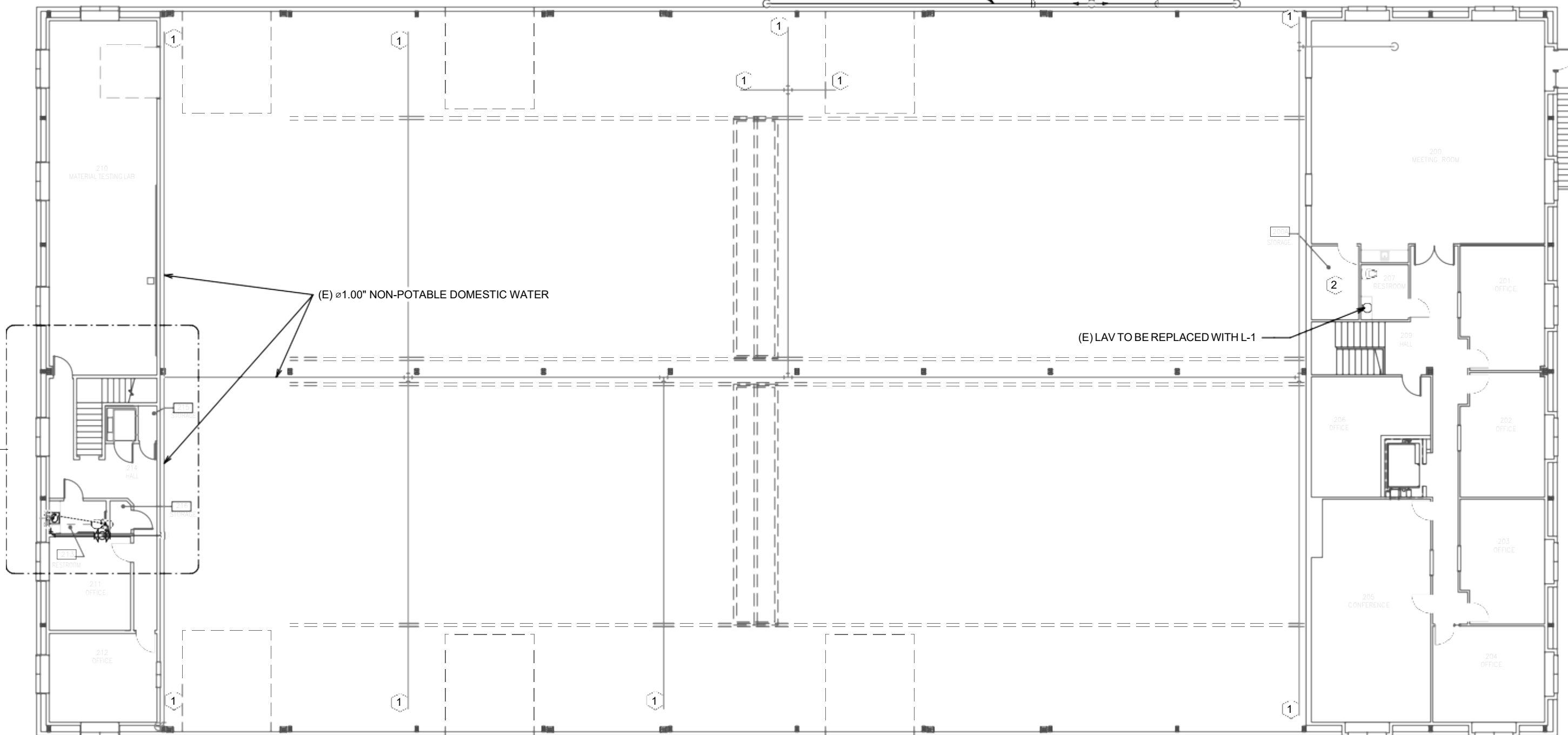
P1.10

KEYNOTE LEGEND

- (E) DOMESTIC WATER PIPING TO (E) HOSE BIBBS OR EQUIPMENT.
- CA EXISTING PLUMBING FROM FIXTURES BEING REMOVED. SEE ARCHITECTURAL FOR DEMO PLANS.

ROUTE NG PIPING ON BUILDING EXTERIOR AT 17'
AFG BETWEEN RTU 1 & 2
PIPING TO BE PAINTED TO MATCH BUILDING
EXTERIOR. COORDINATE COLOR WITH ARCHITECT

3/4"ø NG
1"ø NG DN
3/4"ø NG



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1		
2		
3		
4		
5		

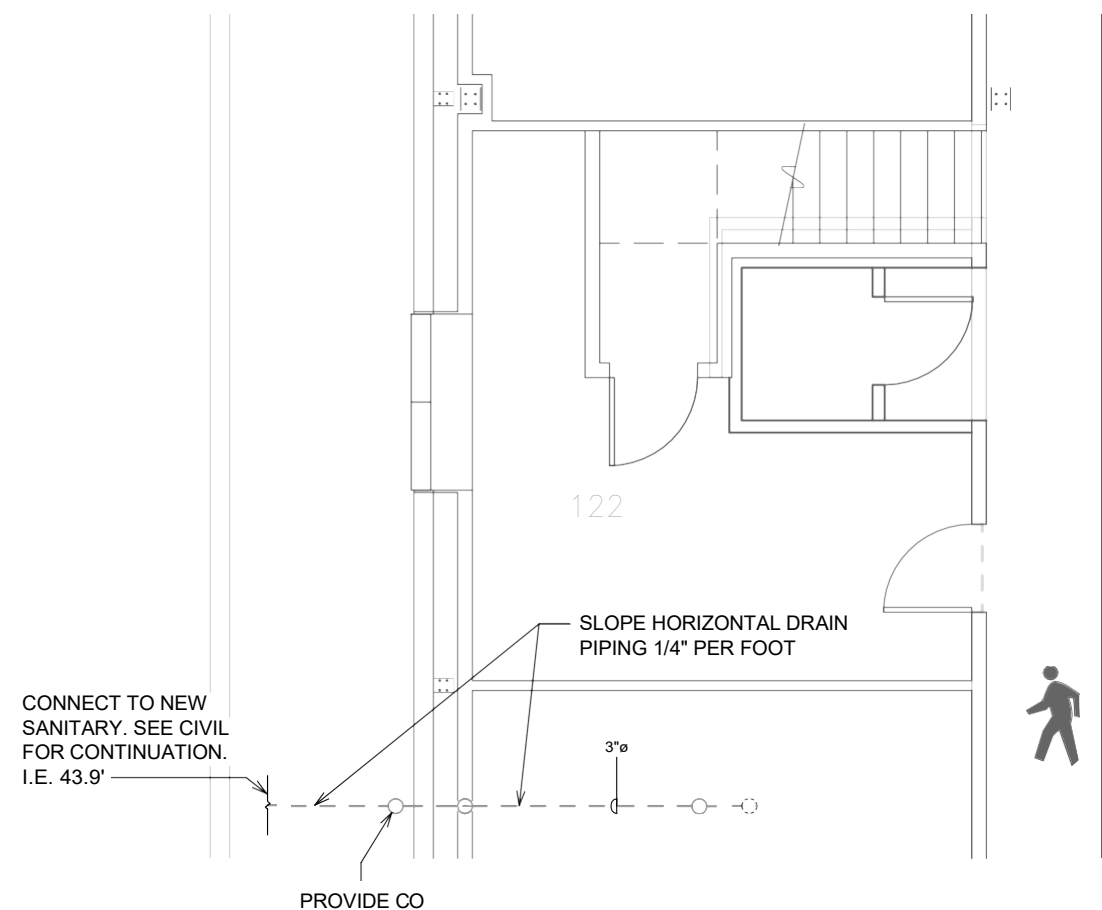
CONTENTS:
PLUMBING -
DETAIL VIEWS

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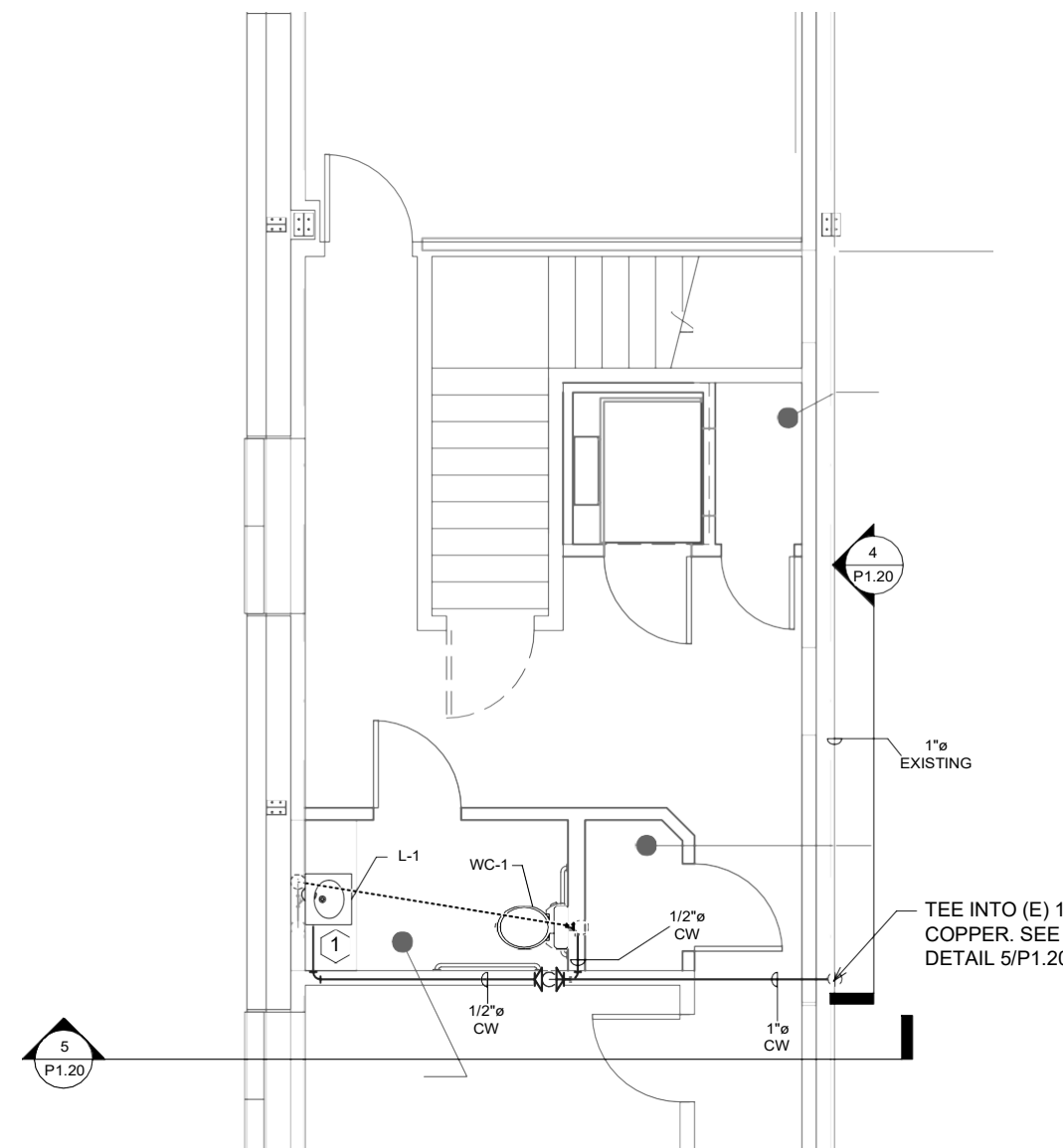
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KEYNOTE LEGEND

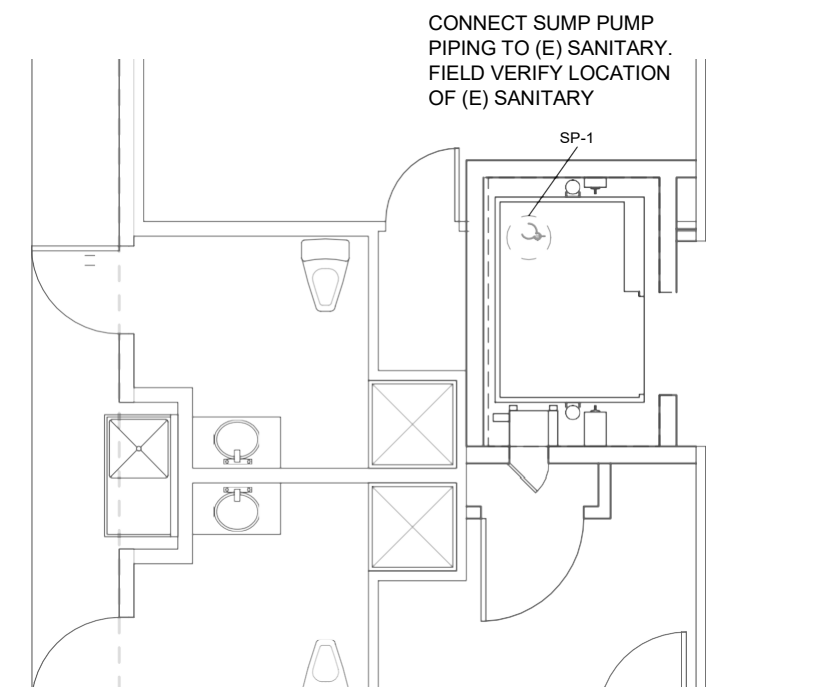
- 1 LOCATE POINT OF USE WATER HEATER TO THE SOUTH OF THE SINK. MOUNT UNDERSINK IN A LOCATION NOT TO INTERFERE WITH ADA CLEARANCES. PROVIDE ADA GUARDS.



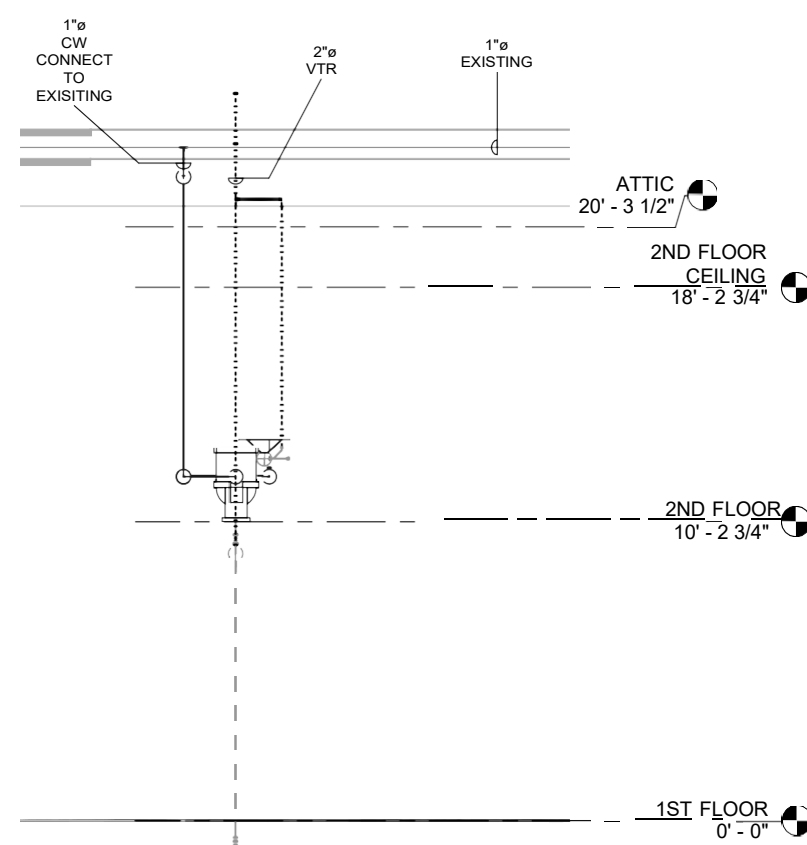
1 1ST FLOOR WEST
1/4" = 1'-0"



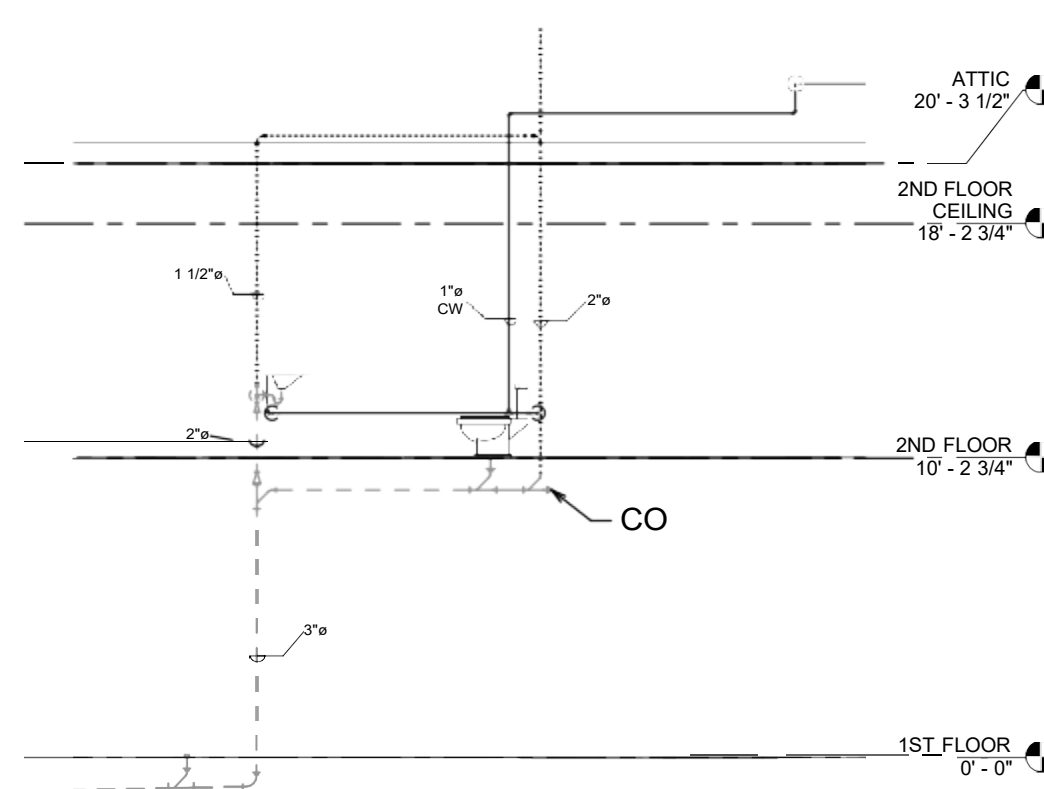
2 2ND FLOOR WEST
1/4" = 1'-0"



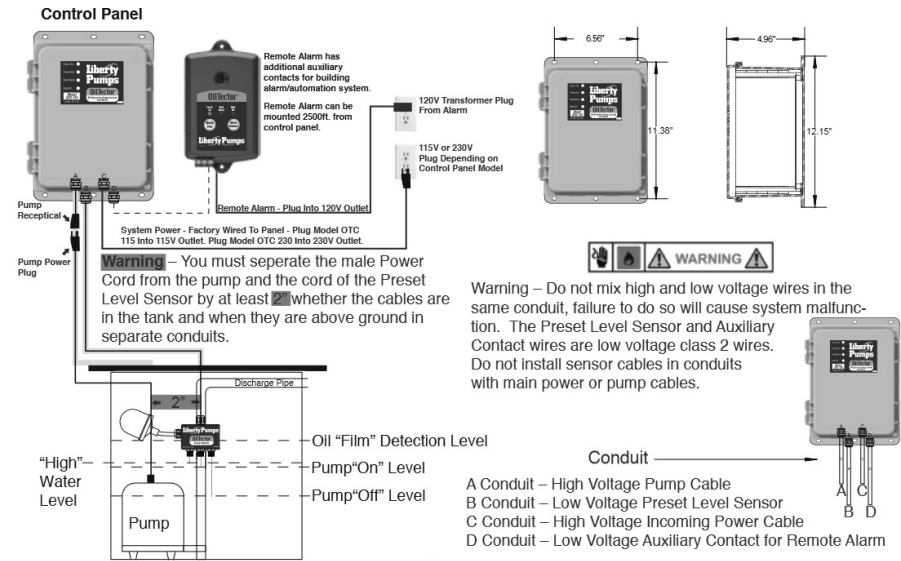
3 1ST FLOOR EAST
1/4" = 1'-0"



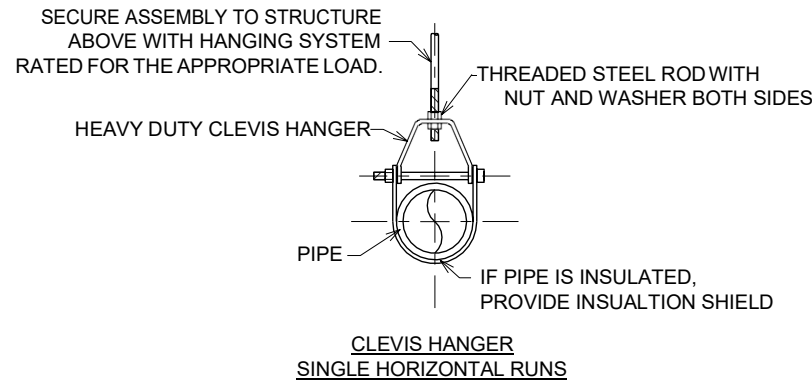
4 WEST FACING PLUMBING RISERS
1/4" = 1'-0"



5 NORTH FACING PLUMBING RISERS
1/4" = 1'-0"



1 **ELEVATOR SUMP PUMP DETAIL NOT BY ENGINEER OF RECORD**
N.T.S.



2 **PIPE HANGER AND SUPPORT DETAIL**
N.T.S.



4 **FIRE RISER DETAIL**
N.T.S.

PROJECT TEAM:

CIVIL ENGINEER:
AKS ENGINEERING & FORESTRY
12965 SW Herman Road, Suite 100
Tualatin, OR 97062
P: 503.563.6151
F: 503.563.6152

STRUCTURAL ENGINEER:
PETERSON STRUCTURAL ENGINEERS
9400 SW Barnes Road, Suite 100
Portland, OR 97225
P: 503.292.1635

MEP ENGINEER:
FLUENT ENGINEERING INC.
2110 State Street
Salem, Oregon 97301
P: 503-447-5030

OWNER:
OMIC R&D / OREGON TECH.
Procurement and Contract Services
27500 SW Parkway Avenue
Wilsonville, OR 97070

OWNER'S REPRESENTATIVE:
CRAIG CAMPBELL, Executive Director
OMIC R&D
33701 Charles T. Parker Way
Scappoose, Oregon 97056
503-983-0573

SCALE: AS SHOWN
DRAWN BY: JJW
CHECKED BY: MJC
CAD FILE: MECHANICAL
DATE: NOV. 22, 2019

REVISIONS		
△	DATE	DESCRIPTION

CONTENTS:
**PLUMBING
DETAILS**

SHEET NO: