HVAC ABBREVIATIONS

(D)	DEMOLISH
(E)	EXISTING
(N)	NEW
AC	AIR CONDITIONING
ACCU	AIR COOLED CONDENSING UNIT
ACU	AIR CONDITIONING UNIT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AL	ALUMINUM
APD	AIR PRESSURE DROP
APPROX	APPROXIMATE
ARCH	ARCHITECT, ARCHITECTURAL
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR CONDITIONING ENGINEERS
AUTO	AUTOMATIC
BD	BAROMETRIC DAMPER
BDD	BACK DRAFT DAMPER
BHP	BRAKE HORSE POWER
BLDG	BUILDING
BOD	BOTTOM OF DUCT
BOT	BOTTOM
BTU	BRITISH THERMAL UNIT
C	COMMON
C/W	COORDINATE WITH
CAB	CABINET
CFM	CUBIC FEET PER MINUTE
CL	CENTERLINE
CLG	CEILING
CONC	CONCRETE
CU	CONDENSING UNIT
D	DEPTH, DEEP
DB	DRY BULB TEMPERATURE
DDC	DIRECT DIGITAL CONTROL
DIA/Ø	DIAMETER
DIFF	DIFFUSER
DN	DOWN
DS	DEW POINT SENSOR
DUC	DOOR UNDER CUT
DWG	DRAWING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	EXHAUST GRILLE
EL	ELEVATION
ELEC	ELECTRIC, ELECTRICAL
ELEV	ELEVATOR
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
EXH	EXHAUST
EXT	EXTERIOR
F	FAHRENHEIT
FC	FAN COIL
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FP	FIRE PROTECTION
FPM	FEET PER MINUTE
FSD	COMBINATION FIRE/SMOKE DAMPER
FT	FEET
FT HD	FEET OF HEAD
FUR	FURNACE
G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HS	HUMIDITY SENSOR
HT	HEIGHT/HIGH
HTR	HEATER
HVAC	HEATING/VENTILATION, AIR CONDITIONING
HW	HOT WATER (DOMESTIC)
HX	HEAT EXCHANGER
IBC	INTERNATIONAL BUILDING CODE

ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IECC	INTERNATIONAL ENERGY CONSERVATION CODE
IFGC	INTERNATIONAL FUEL GAS CODE
IMC	INTERNATIONAL MECHANICAL CODE
IN WC	INCHES OF WATER COLUMN
INSUL	INSULATION, INSULATE
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LVR	LOUVER
MA	MILLIAMPS
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MOCP	MAXIMUM OVER CURRENT PROTECTION
MTD	MOUNTED
MUA	MAKE UP AIR UNIT
N	NEUTRAL
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NO/#	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPNG	OPENING
OSA	OUTSIDE AIR
PH	PREHEAT
PREFAB	PREFABRICATED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
R/RAD	RADIUS
RA	RETURN AIR
RE:	REFERENCE
REG	REGISTER
REQ'D	REQUIRED
RG	RETURN AIR GRILLE
RH	REHEAT
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
RR	RETURN REGISTER
RS	REFRIGERANT SUCTION
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SCHED	SCHEDULE
SD	SMOKE DETECTOR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SG	SUPPLY AIR GRILLE
SHT	SHEET
SP	STATIC PRESSURE
SPEC(S)	SPECIFICATION(S)
SQ. FT.	SQUARE FEET
STD	STANDARD
TD	TEMPERATURE DIFFERENCE
TEMP	TEMPERATURE
TS	TEMPERATURE SENSOR
TXV	THERMAL EXPANSION VALVE
TYP	TYPICAL
UH	UNIT HEATER
UV	UNIT VENTILATOR
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VIF	VERIFY IN FIELD
VVF	VARIABLE VOLUME-FAN POWERED
VVR	VARIABLE VOLUME-REHEAT
W	WIDE, WIDTH
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WC	WATER COLUMN

MECHANICAL DUCTWORK SYMBOLS

- SUPPLY DIFFUSER (ARROWS INDICATE THROW) - (4-WAY SHOWN)
- RETURN GRILLE
- EXHAUST GRILLE
- FABRIC DUCT
- ROUND DUCT/ FLUE THRU ROOF OR FLOOR
- FLEX DUCT
- SUPPLY DUCT THRU ROOF OR FLOOR
- RETURN DUCT THRU ROOF OR FLOOR
- EXHAUST DUCT THRU ROOF OR FLOOR
- OUTSIDE AIR DUCT THRU ROOF OR FLOOR
- BALANCE DAMPER
- OPPOSED BLADE DAMPER
- PARALLEL BLADE DAMPER
- BACKDRAFT DAMPER
- SIDEWALL OR DOOR GRILLE
- F/S — COMBINATION FIRE/SMOKE DAMPER
- S — SMOKE DETECTOR (DUCT MOUNTED)
- SUPPLY AIR ELBOW UP
- 20"X18" — DIMENSION DESCRIPTION: 1ST FIGURE = SIDE SHOWN, 2ND FIGURE = SIDE NOT SHOWN, ALL SIZES IN INCHES (TYPICAL)
- SUPPLY AIR ELBOW DOWN
- RETURN AIR ELBOW UP
- RETURN AIR ELBOW DOWN
- EXHAUST AIR ELBOW UP
- EXHAUST AIR ELBOW DOWN
- OUTSIDE AIR ELBOW UP
- OUTSIDE AIR ELBOW DOWN
- 36"X12" / 24"X12" / 30° MAX — DOUBLE SIDE TRANSITION
- 36"X12" / 24"X12" / 30° MAX — SINGLE SIDE TRANSITION
- ELBOW UP
- ELBOW DOWN
- ELBOW - RADIUS (R) = 1.5 X DIA
- ELBOW - RADIUS (R) = 1.5 X W
- 90° OR 45° ELBOW
- 90° TAKE-OFF
- 15° MAX — SIZE TRANSITION
- SQUARE TO ROUND TRANSITION
- 90° MITERED BELOW
- DUCT DOWN
- ACOUSTICALLY-LINED DUCTWORK
- DUCT — VOLUME DAMPER WITH OPPOSED BLADES
- RADIUS SPLITTER TAKE-OFF
- 45° TAKE-OFF
- 90° CONICAL TAKE-OFF
- DUCT DOWN
- ANGLE TAKE-OFF
- RADIUS TAKE-OFF

MECHANICAL PIPING SYMBOLS

- ## ##-## — SHEET NOTES
- XX ## — EQUIPMENT CALLOUT (STANDARD)
- CD 100 CFM — DIFFUSER & FABRIC DUCT CALLOUT (STANDARD)
- 1 — REVISION
- C — FURNISHED AND INSTALLED BY CONTROLS CONTRACTOR
- E — FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR
- M — FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR
- M/E — FURNISHED BY MECH INSTALLED AND WIRED BY ELECTRICAL
- C/M — FURNISHED BY CONTROLS. INSTALLED BY MECHANICAL
- E/M — FURNISHED AND WIRED BY ELECTRICAL INSTALLED BY MECH
- M/C — FURNISHED AND INSTALLED BY MECHANICAL WIRED BY CONTROLS
- C/E — FURNISHED BY CONTROLS WIRED AND INSTALLED BY ELECTRICAL

MECHANICAL CONTROLS SYMBOLS

- DISCONNECT SWITCH
- FUSE
- ON-OFF SWITCH
- NORMALLY OPEN ELECTRICAL CONTACT (NO)
- NORMALLY CLOSED ELECTRICAL CONTACT (NC)
- T (ROOM OR UNIT#) — THERMOSTAT
- TS (ROOM OR UNIT#) — WALL-MOUNT TEMPERATURE SENSOR
- HS (ROOM OR UNIT#) — HUMIDITY SENSOR
- PR (ROOM OR UNIT#) — PRESSURE SWITCH
- R (ROOM OR UNIT#) — SMOKE DETECTOR RESET
- TS — TEMPERATURE SENSOR (DUCT OR PIPE MOUNTED)
- HS — HUMIDITY SENSOR (DUCT MOUNTED)
- TS — TEMPERATURE SENSOR (AVERAGING TYPE)

DRAWING INDEX

MECHANICAL GENERAL NOTES

A. ALL WORK SHALL COMPLY WITH THE OWNERS REQUIREMENTS, AND WITH ALL APPLICABLE STATE AND LOCAL CODES, OR AUTHORITY HAVING JURISDICTION.

B. COORDINATE INSTALLATION WITH THE WORK OF OTHER TRADES PRIOR TO STARTING. IN THE EVENT THAT CONFLICTS ARE FOUND WITH THE WORK OF OTHER TRADES, BRING ALL SUCH CONFLICTS TO THE ARCHITECT'S ATTENTION FOR RESOLUTION PRIOR TO PROCEEDING WITH THE WORK IN THAT AREA. DEFICIENCIES CAUSED BY FAILURE TO PERFORM SUCH VERIFICATIONS SHALL BE CORRECTED AT NO ADDITIONAL EXPENSE TO OWNER. IMMEDIATELY NOTIFY ARCHITECT OF CONDITIONS IN CONFLICT WITH THE PLANS.

C. HVAC CONTRACTOR IS RESPONSIBLE FOR COORDINATING FINAL LOCATIONS OF DIFFUSERS, REGISTERS AND GRILLES WITH ARCHITECTURAL REFLECTED CEILING PLANS. CONTRACTOR SHALL NOT DEVIATE FROM REFLECTED CEILING PLAN UNLESS THERE ARE EXTENUATING JOB SITE CONDITIONS.

D. FOR LOW PRESSURE DUCTWORK, WHERE RECTANGULAR DUCT IS INDICATED ON PLANS, EQUIVALENT SIZE ROUND DUCT MAY BE USED. EQUIVALENT SIZE RECTANGULAR DUCT MAY BE USED IN PLACE OF ROUND DUCT, EXCEPT IN EXPOSED AREAS. EQUIVALENT RECTANGULAR SIZE MAY NOT BE USED ON DUCTS EXPOSED TO VIEW OR AS INDICATED OTHERWISE.

E. PROVIDE SEISMIC RESTRAINTS FOR ALL PIPING EQUIPMENT, AND DUCTWORK AS RECOMMENDED IN SMACNA "SEISMIC RESTRAINT MANUAL GUIDELINES FOR MECHANICAL EQUIPMENT", LATEST EDITION. CONSULT LOCAL SEISMIC CODES FOR THE SEISMIC RATING OF THE AREA IN WHICH THE PROJECT IS BEING BUILT.

F. SUBSTITUTIONS OF EQUIPMENT OTHER THAN AS SPECIFIED SHALL BE THE COMPLETE RESPONSIBILITY OF THE HVAC CONTRACTOR. ANY ADDITIONAL ELECTRICAL, STRUCTURAL, MECHANICAL OR ARCHITECTURAL REQUIREMENTS SHALL BE PROVIDED AT NO ADDITIONAL EXPENSE TO OWNER.

G. DEMOLITION: REMOVE ALL DUCTWORK, VAV UNITS AND AIR OUTLETS FROM THE FORMER TENANT SPACE, AND ELSEWHERE AS NECESSARY, AND DISPOSE OF OFF SITE.

H. LOCATIONS OF POINTS OF CONNECTION TO EXISTING TENANT SUPPLY AIR DUCT ARE APPROXIMATE. VERIFY ACTUAL LOCATIONS OF ALL POINTS OF CONNECTION IN FIELD.

I. PRIOR TO BIDDING, OBTAIN A COPY OF THE SPECIFICATIONS AND PLANS, VISIT THE JOB SITE, TAKE ALL NECESSARY MEASUREMENTS, NOTE EXISTING CONDITIONS, AND GATHER ALL OTHER INFORMATION NEEDED FOR AN ACCURATE BID. ALLOWANCES WILL NOT BE MADE FOR EXTRA COSTS RESULTING FROM FAILURE TO NOTE EXISTING CONDITIONS.

J. CONTRACTOR SHALL PROVIDE ALL NECESSARY TRANSITIONS TO AVOID CONFLICT WITH OTHER DUCTWORK, PIPING, STRUCTURE, ETC. AS PART OF THIS CONTRACT. WHEREVER AVAILABLE SPACE ALLOWS, OFFSETS SHALL BE MADE WITH 45 DEGREE ELBOWS WITH TURNING VANES.

K. DUCTWORK SIZES NOTED ON DRAWINGS ARE FREE AREA SIZES. HVAC CONTRACTOR SHALL BE RESPONSIBLE TO COMPENSATE FOR INSULATION, ETC.

L. ALL SQUARE SUPPLY DIFFUSERS SHALL BE 4-WAY THROW UNLESS INDICATED OTHERWISE ON PLAN.

M. ALL ELBOWS ARE STANDARD RADIUS (R=3W/2) UNLESS NOTED OTHERWISE. DO NOT SUBSTITUTE MITERED ELBOWS FOR RADIUS ELBOWS UNLESS APPROVED IN WRITING BY THE ENGINEER OF RECORD.

N. PROVIDE ACCESS DOORS IN DUCTWORK FOR RESETTING OF FIRE/SMOKE DAMPERS WHERE INDICATED AND AS REQUIRED BY SPECIFICATIONS OR CODE.

O. FIRE DAMPERS SHALL BE 1-1/2 HOUR RATED UNLESS OTHERWISE NOTED. RE: DIVISION 23 SECTION "AIR DUCT ACCESSORIES" FOR SPECIFICATIONS.

P. ALL WIRING, PIPING, AND EQUIPMENT INSTALLED IN PLENUMS SHALL BE PLENUM RATED OR INSTALLED IN CONDUIT.

Q. THERMOSTATS, TEMPERATURE SENSORS, AND CO2 SENSORS SHALL BE INSTALLED AT 48" AFF UNLESS NOTED OTHERWISE. COORDINATE JUNCTION BOX INSTALLATION WITH ELECTRICAL CONTRACTOR.

R. PIPING PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRESTOPPED IN ACCORDANCE WITH 2018 IBC SECTION 714.

S. OUTSIDE AIR INTAKES SHALL BE INSTALLED WITH A MINIMUM SEPARATION OF 10'-0" FROM ALL EXHAUST AIR DISCHARGE, GAS FLUES, AND PLUMBING VENTS.

T. MATERIALS UTILIZED WITHIN RETURN PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25, AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50.

U. OWNER WILL BE PURSUING IDAHO POWER INCENTIVES FOR NEW CONSTRUCTION AND MAJOR RENOVATION PROJECTS. CONTRACTOR SHALL PROVIDE CUTSHEETS AND OTHER SUPPORTING DOCUMENTATION AS REQUESTED BY IDAHO POWER TO SUPPORT OWNER REGARDING HVAC EQUIPMENT, CONTROLS, ECONOMIZERS, ETC. THIS INCLUDES PRE-APPLICATION BEFORE PROJECT IS COMPLETE AND FINAL APPLICATION WITH PROOF OF PERFORMANCE AND PROOF OF PURCHASE WITHIN 90 DAYS OF PROJECT COMPLETION.

V. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.

SUBMITTAL REVIEW NOTES

A. STRICT ADHERENCE TO AIA A201 WILL BE OBSERVED WHEN REVIEWING ALL SUBMITTALS. OBTAIN A COPY AND BE FAMILIAR WITH CONTRACTOR RESPONSIBILITIES WHEN SUBMITTING ON PROPOSED PRODUCTS. ANY SUBMITTAL NOT MARKED AS BEING IN CONFORMANCE WITH THE CONTRACT DOCUMENTS WILL BE RETURNED “NOT REVIEWED”.

B. SUBMITTALS MUST BE BROKEN OUT ACCORDING TO SPECIFICATION SECTION. COMBINED SUBMITTALS WITH MULTIPLE SPECIFICATION SECTIONS WILL BE RETURNED “NOT REVIEWED”.

C. SUBMITTALS MUST INCLUDE ONLY INFORMATION RELEVANT TO THE PROJECT AND BE CLEARLY MARKED WHAT THE PROPOSED PRODUCTS ARE. EXCESSIVELY LENGTHY SUBMITTALS INCLUDING COPIOUS AMOUNTS OF IRRELEVANT INFORMATION AND/OR NOT CLEARLY MARKED WILL BE RETURNED “NOT REVIEWED”.

D. SUBMITTALS FOR VALUE ENGINEERING ITEMS NEGOTIATED BETWEEN THE CONTRACTOR AND THE OWNER WILL BE RETURNED “NOT REVIEWED”. THE CONTRACTOR ASSUMES COMPLETE RESPONSIBILITY AND LIABILITY FOR VALUE ENGINEERING ITEMS NOT APPROVED BY THIS OFFICE.

E. THE CONTRACTOR MAY SUBMIT UP TO FIVE SUBMITTALS TO THE OFFICE AT ANY ONE TIME. THESE FIVE SUBMITTALS WILL BE RETURNED WITHIN FIVE BUSINESS DAYS. IF MORE THAN FIVE SUBMITTALS ARE IN FOR REVIEW AT ANY ONE TIME, ONE ADDITIONAL BUSINESS DAY WILL BE REQUIRED FOR EACH SUBMITTAL.

F. EXPEDITED REVIEW FOR LONG LEAD ITEMS WILL BE PERFORMED AT OUR DISCRETION. PAST EXPERIENCE WITH THE SUBMITTING CONTRACTOR WILL BE A FACTOR IN OUR DECISION TO PERFORM AN EXPEDITED REVIEW.

PROFESSIONAL ENGINEER LICENSED 19613 STATE OF IDAHO JOSEPH HUFF
Digitally signed by Joseph Huff
Date: 2023.03.31 12:53:40-06'00'

JOSEPH HUFF, P.E.
200 BROAD STREET
BOISE, IDAHO
PHONE: 208-343-4635 • FAX: 208-343-1858

THERON W. WARD JUDICIAL BUILDING REMODEL & EXPANSION

427 Shoshone St N Twin Falls, ID

CSHQA
200 BROAD STREET
BOISE, ID 83702
(208) 343-4635 • FAX (208) 343-1858
http://www.cshqa.com

AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

REVISED

SHEET TITLE

HVAC COVER SHEET

SHEET

M00

ORIGINAL SHEET SIZE 36" x 48"

3/31/2023 11:36:15 AM

COMcheck Software Version 4.1.1.0

Mechanical Compliance Certificate

Project Information

Energy Code:	2018 IECC
Project Title:	Theron J. Ward Judicial Building Remodel & Expansion
Location:	Boise, Idaho
Climate Zone:	5b
Project Type:	New Construction

Construction Site:
427 Shoshone St.
Twin Falls, ID 83301

Owner/Agent:

Designer/Contractor:
Joseph Huff
CSHQA
200 W. Broad St.
Boise, ID 83702

Additional Efficiency Package(s)

Reduced interior lighting power. Requirements are implicitly enforced within interior lighting allowance calculations.

Mechanical Systems List

Quantity **System Type & Description**

1 3-Ton RTU (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 110 kBtu/h
Proposed Efficiency = 80.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 31 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 16.10 SEER, Required Efficiency: 14.00 SEER
Fan System: 3-Ton RTU -- Compliance (Brake HP method) : Passes

Fans:
FAN 1 Supply, Constant Volume, 1200 CFM, 1.5 motor nameplate hp, 0.9 design brake hp (0.9 max. BHP), 0.3 fan efficiency grade

9 4-Ton RTU (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 110 kBtu/h
Proposed Efficiency = 80.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 44 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 16.10 SEER, Required Efficiency: 14.00 SEER
Fan System: 4-Ton RTU -- Compliance (Brake HP method) : Passes

Fans:
FAN 2 Supply, Constant Volume, 1600 CFM, 3.0 motor nameplate hp, 1.6 design brake hp (1.6 max. BHP), 0.3 fan efficiency grade

6 5-Ton RTU (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 110 kBtu/h
Proposed Efficiency = 80.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 57 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 16.10 SEER, Required Efficiency: 14.00 SEER
Fan System: 5-Ton RTU -- Compliance (Brake HP method) : Passes

Fans:
FAN 3 Supply, Constant Volume, 2000 CFM, 3.0 motor nameplate hp, 1.8 design brake hp (1.8 max. BHP), 0.3 fan efficiency grade
FAN 4 Exhaust, Constant Volume, 2000 CFM, 0.5 motor nameplate hp, 0.3 design brake hp (0.3 max. BHP), 0.4 fan efficiency grade

4 6-Ton RTU (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 125 kBtu/h
Proposed Efficiency = 80.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 67 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 13.00 EER, Required Efficiency: 11.00 EER + 12.6 IEER
Fan System: 6-Ton RTU -- Compliance (Brake HP method) : Passes

Quantity **System Type & Description**

Fans:
FAN 5 Supply, Constant Volume, 2400 CFM, 3.0 motor nameplate hp, 1.8 design brake hp (1.8 max. BHP), 0.3 fan efficiency grade
FAN 6 Exhaust, Constant Volume, 2400 CFM, 1.0 motor nameplate hp, 0.5 design brake hp (0.5 max. BHP), 0.6 fan efficiency grade

1 7.5-Ton RTU (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 180 kBtu/h
Proposed Efficiency = 81.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 82 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 12.80 EER, Required Efficiency: 11.00 EER + 12.6 IEER
Fan System: 7.5-Ton RTU -- Compliance (Brake HP method) : Passes

Fans:
FAN 7 Supply, Constant Volume, 3000 CFM, 5.0 motor nameplate hp, 3.0 design brake hp (3.0 max. BHP), 0.3 fan efficiency grade
FAN 8 Exhaust, Constant Volume, 3000 CFM, 1.0 motor nameplate hp, 0.5 design brake hp (0.5 max. BHP), 0.6 fan efficiency grade

2 8.5-Ton RTU (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 180 kBtu/h
Proposed Efficiency = 81.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 94 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 13.50 EER, Required Efficiency: 11.00 EER + 12.6 IEER
Fan System: 8.5-Ton RTU -- Compliance (Brake HP method) : Passes

Fans:
FAN 9 Supply, Constant Volume, 3400 CFM, 5.0 motor nameplate hp, 3.3 design brake hp (3.3 max. BHP), 0.3 fan efficiency grade
FAN 10 Exhaust, Constant Volume, 3400 CFM, 1.0 motor nameplate hp, 0.5 design brake hp (0.5 max. BHP), 0.6 fan efficiency grade

1 DOAS-1 (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 200 kBtu/h
Proposed Efficiency = 80.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 91 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 12.10 EER, Required Efficiency: 11.00 EER + 12.6 IEER
Fan System: DOAS-1 -- Compliance (Motor nameplate HP method) : Passes

Fans:
FAN 11 Supply, Constant Volume, 2400 CFM, 4.0 motor nameplate hp, 0.3 fan efficiency grade

1 DOAS-2 (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 120 kBtu/h
Proposed Efficiency = 80.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 37 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 14.00 SEER, Required Efficiency: 14.00 SEER
Fan System: DOAS-2 -- Compliance (Motor nameplate HP method) : Passes

Fans:
FAN 12 Supply, Constant Volume, 1000 CFM, 4.0 motor nameplate hp, 0.3 fan efficiency grade

8 1-Ton Heat Pump (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 14 kBtu/h,
Proposed Efficiency = 10.30 HSPF, Required Efficiency = 8.20 HSPF
Cooling Mode: Capacity = 12 kBtu/h,
Proposed Efficiency = 21.40 SEER, Required Efficiency: 14.00 SEER
Fan System: 1-Ton HP -- Compliance (Motor nameplate HP method) : Passes

Fans:
FAN 13 Supply, Constant Volume, 400 CFM, 0.2 motor nameplate hp, 0.3 fan efficiency grade
FAN 14 Exhaust, Constant Volume, 1590 CFM, 0.1 motor nameplate hp, 0.3 fan efficiency grade

8 1.5-Ton Heat Pump (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 19 kBtu/h,
Proposed Efficiency = 10.40 HSPF, Required Efficiency = 8.20 HSPF

Quantity **System Type & Description**

Cooling Mode: Capacity = 18 kBtu/h,
Proposed Efficiency = 20.20 SEER, Required Efficiency: 14.00 SEER
Fan System: 1.5-Ton HP -- Compliance (Motor nameplate HP method) : Passes

Fans:
FAN 15 Supply, Constant Volume, 600 CFM, 0.2 motor nameplate hp, 0.5 fan efficiency grade
FAN 16 Exhaust, Constant Volume, 1590 CFM, 0.1 motor nameplate hp, 0.3 fan efficiency grade

3 2-Ton Heat Pump (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 26 kBtu/h,
Proposed Efficiency = 10.40 HSPF, Required Efficiency = 8.20 HSPF
Cooling Mode: Capacity = 24 kBtu/h,
Proposed Efficiency = 19.00 SEER, Required Efficiency: 14.00 SEER
Fan System: 2-Ton HP -- Compliance (Motor nameplate HP method) : Passes

Fans:
FAN 17 Supply, Constant Volume, 800 CFM, 0.3 motor nameplate hp, 0.3 fan efficiency grade
FAN 18 Exhaust, Constant Volume, 1940 CFM, 0.1 motor nameplate hp, 0.3 fan efficiency grade

1 3-Ton Heat Pump (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 38 kBtu/h,
Proposed Efficiency = 11.20 HSPF, Required Efficiency = 8.20 HSPF
Cooling Mode: Capacity = 33 kBtu/h,
Proposed Efficiency = 18.20 SEER, Required Efficiency: 14.00 SEER
Fan System: 3-Ton HP -- Compliance (Motor nameplate HP method) : Passes

Fans:
FAN 19 Supply, Constant Volume, 1200 CFM, 0.6 motor nameplate hp, 0.3 fan efficiency grade
FAN 20 Exhaust, Constant Volume, 3880 CFM, 0.1 motor nameplate hp, 0.3 fan efficiency grade

4 1-Ton Cooling Only (Single Zone):
Cooling: 1 each - Split System, Capacity = 24 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: Low Capacity Residential
Proposed Efficiency = 20.00 SEER, Required Efficiency: 13.00 SEER
Fan System: 1-Ton Cooling Only -- Compliance (Motor nameplate HP method) : Passes

Fans:
FAN 21 Supply, Constant Volume, 400 CFM, 0.2 motor nameplate hp, 0.3 fan efficiency grade
FAN 22 Exhaust, Constant Volume, 1590 CFM, 0.1 motor nameplate hp, 0.3 fan efficiency grade

1 EUH-1 (Single Zone):
Heating: 1 each - Unit Heater, Electric, Capacity = 8 kBtu/h
No minimum efficiency requirement applies
Fan System: EUH-1 -- Compliance (Motor nameplate HP method) : Passes

Fans:
FAN 23 Supply, Constant Volume, 300 CFM, 0.1 motor nameplate hp, 0.2 fan efficiency grade

1 EUH-2 (Single Zone):
Heating: 1 each - Unit Heater, Electric, Capacity = 14 kBtu/h
No minimum efficiency requirement applies
Fan System: EUH-2 -- Compliance (Motor nameplate HP method) : Passes

Fans:
FAN 24 Supply, Constant Volume, 160 CFM, 0.1 motor nameplate hp, 0.2 fan efficiency grade

1 Water Heater 1:
Gas Storage Water Heater, Capacity: 65 gallons, Input Rating: 125 kBtu/h w/ Circulation Pump
Proposed Efficiency: 96.00 % Et, Required Efficiency: 80.00 % Et

1 Water Heater 2:
Gas Storage Water Heater, Capacity: 90 gallons, Input Rating: 175 kBtu/h w/ Circulation Pump
Proposed Efficiency: 96.00 % Et, Required Efficiency: 80.00 % Et

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COM*check* Version 4.1.1.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Joseph Huff	[signature]	3/24/2022
Name - Title	Signature	Date

PROFESSIONAL ENGINEER LICENSED 19613 STATE OF IDAHO JOSEPH HUFF

Digitally signed by Joseph Huff
Date: 2023.03.31 12:53:40-06'00'

ORIGINAL DOCUMENTS ARE HELD AT CSHQA, INC. OFFICE, 200 W BROAD STREET, BOISE, ID 83702

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AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

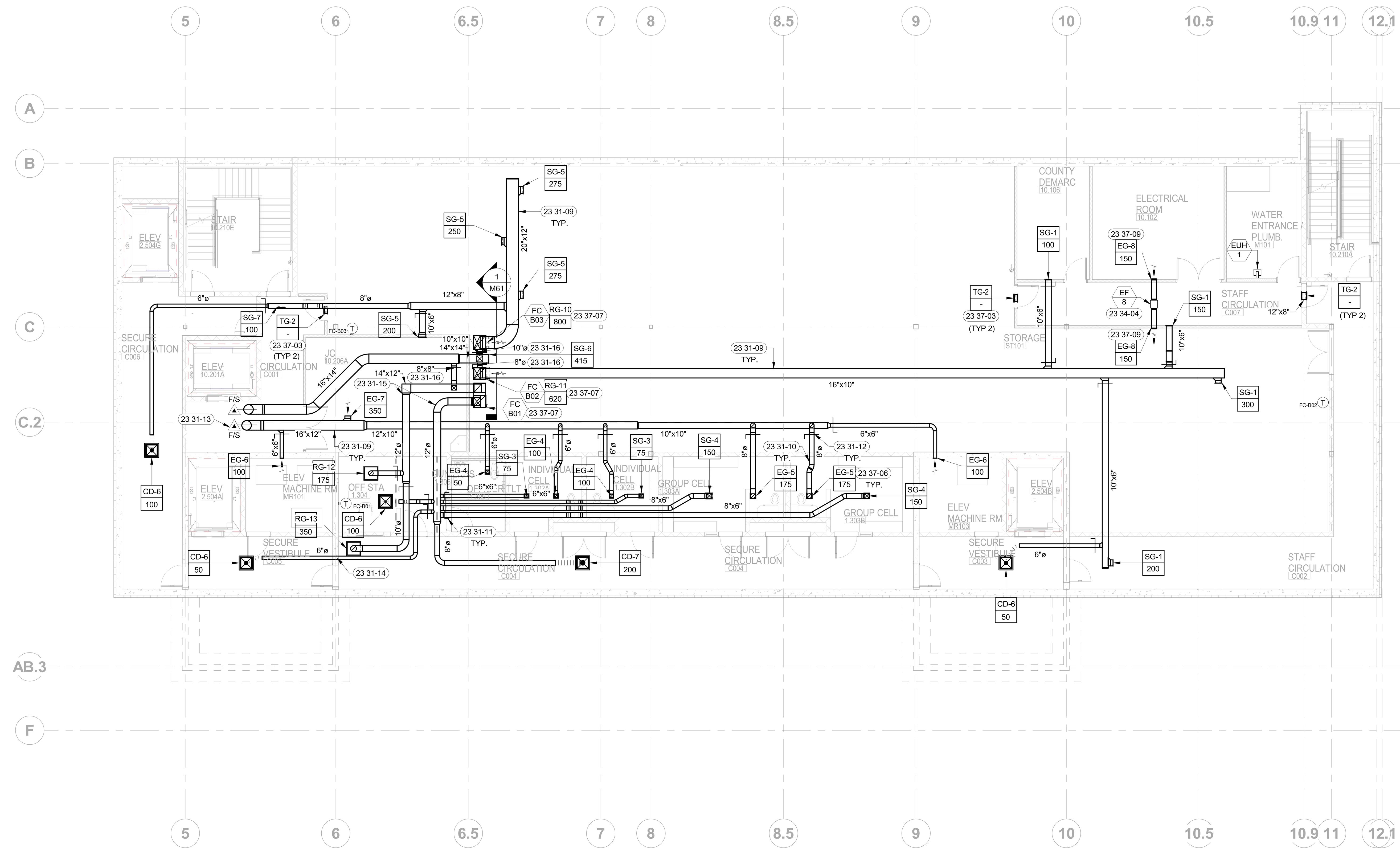
REVISED

SHEET TITLE
ENERGY COMPLIANCE

SHEET
M01

ORIGINAL SHEET SIZE 36" x 48"

3/31/2023 11:36:15 AM



1 HVAC PLAN - BASEMENT
1/8" = 1'-0"

GENERAL NOTES:

A. FOR LOW PRESSURE DUCTWORK, WHERE RECTANGULAR DUCT IS INDICATED ON PLANS, EQUIVALENT SIZE ROUND DUCT MAY BE USED. EQUIVALENT SIZE RECTANGULAR DUCT MAY BE USED IN PLACE OF ROUND DUCT, EXCEPT IN EXPOSED AREAS. EQUIVALENT RECTANGULAR SIZE MAY NOT BE USED ON DUCTS EXPOSED TO VIEW OR AS INDICATED OTHERWISE.

B. CONTRACTOR SHALL PROVIDE ALL NECESSARY TRANSITIONS TO AVOID CONFLICT WITH OTHER DUCTWORK, PIPING, STRUCTURE, ETC. AS PART OF THIS CONTRACT. WHEREVER AVAILABLE SPACE ALLOWS, OFFSETS SHALL BE MADE WITH 45 DEGREE ELBOWS WITH TURNING VANES.

C. DUCTWORK SIZES NOTED ON DRAWINGS ARE FREE AREA SIZES. HVAC CONTRACTOR SHALL BE RESPONSIBLE TO COMPENSATE FOR INSULATION, ETC.

D. ALL SQUARE SUPPLY DIFFUSERS SHALL BE 4-WAY THROW UNLESS INDICATED OTHERWISE ON PLAN.

E. PROVIDE TURNING VANES IN ALL MITERED ELBOWS AND BULL HEAD TEES.

F. PROVIDE ACCESS DOORS IN DUCTWORK FOR RESETTING OF FIRE/SMOKE DAMPERS WHERE INDICATED AND AS REQUIRED BY SPECIFICATIONS OR CODE.

G. FIRE DAMPERS SHALL BE 1-1/2 HOUR RATED UNLESS OTHERWISE NOTED. RE: DIVISION 23 SECTION "AIR DUCT ACCESSORIES" FOR SPECIFICATIONS.

H. ALL WIRING, PIPING, AND EQUIPMENT INSTALLED IN PLENUMS SHALL BE PLENUM RATED OR INSTALLED IN CONDUIT.

I. THERMOSTATS, TEMPERATURE SENSORS, AND CO2 SENSORS SHALL BE INSTALLED AT 48" AFF UNLESS NOTED OTHERWISE. COORDINATE JUNCTION BOX INSTALLATION WITH ELECTRICAL CONTRACTOR.

J. PIPING PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRESTOPPED IN ACCORDANCE WITH 2018 IBC SECTION 714.

K. OUTSIDE AIR INTAKES SHALL BE INSTALLED WITH A MINIMUM SEPARATION OF 10'-0" FROM ALL EXHAUST AIR DISCHARGE, GAS FLUES, AND PLUMBING VENTS.

L. MATERIALS UTILIZED WITHIN RETURN PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25, AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50.

##-## SHEET NOTES:

23 31-09 ROUTE DUCTWORK TIGHT TO BOTTOM OF STRUCTURE. ALL DUCTWORK SHALL BE MOUNTED AT 9'6" AFF MINIMUM. ROUTE DUCTWORK BENEATH JOISTS.

23 31-10 ROUTE DUCTWORK BETWEEN JOIST WEBBING. DUCTS ROUTED BETWEEN JOIST WEBBING SHALL BE A MAXIMUM OF 12"Ø. COORDINATE PENETRATION LOCATIONS IN FIELD PRIOR TO START OF WORK.

23 31-11 ALL MANUAL VOLUME DAMPERS SERVING SUPPLY GRILLES IN SECURE CEILINGS SHALL BE INSTALLED IN ACCESSIBLE LOCATION ABOVE CEILING IN ROOM 1.304 OFF STA.

23 31-12 ALL MANUAL VOLUME DAMPERS SERVING EXHAUST GRILLES IN SECURE CEILINGS SHALL BE INSTALLED IN ACCESSIBLE LOCATION IN STORAGE ROOM ST101.

23 31-13 DUCT PENETRATION THROUGH FLOOR SHALL BE PROTECTED BY FIRE/SMOKE DAMPER. RE: M71-9 1-1/2 HOUR FIRE/SMOKE DAMPER AT FLOOR DETAIL FOR MORE INFORMATION.

23 31-14 CORE DRILLE 9"Ø MAXIMUM OPENING. GROUND PENETRATING RADAR (GPR) SCAN AND LOCATE CMU/CONC WALL REINFORCING PRIOR TO CORE DRILLING. DO NOT CUT OR DAMAGE ANY EXISTING REINFORCING.

23 31-15 DUCTWORK ROUTED HIGH IN SPACE BETWEEN JOISTS.

23 31-16 CONNECT OUTSIDE AIR DUCTWORK TO FAN COIL RETURN WITH MANUAL VOLUME DAMPER. BALANCE OSA INFLOW PER M83-84 CODE REQUIRED VENTILATION RATES.

23 34-04 INSTALL FAN HIGH AND TIGHT TO STRUCTURE IN HALLWAY. PROVIDE ALL NECESSARY COMPONENTS AND SUPPORTS FOR COMPLETE INSTALLATION. CONNECT TO WALL MOUNTED THERMOSTAT. EXHAUST FAN SHALL RUN CONTINOUSLY WHILE TEMPERATURE IN SPACE IS ABOVE 75°F.

23 37-03 MOUNT TRANSFER GRILLE ON WALL AT 8' 0" A.F.F. TO CENTER OF GRILLE. PROVIDE DUCTWORK TO FIT, AND DUCT THROUGH WALL TO OTHER GRILLE.

23 37-06 ALL GRILLES LOCATED IN CELLS OR HOLDING AREAS SHALL MEET QUALIFICATIONS FOR SUICIDE DETERRENT MAXIMUM SECURITY.

23 37-07 MOUNT VERTICAL AIR HANDLER ON GROUND WITH A RETURN PLENUM BELOW UNIT, RE:M71-15 VERTICAL FAN COIL MOUNTING DETAIL. MOUNT RETURN GRILLE TO SIDE OF PLENUM WITH OPPOSED BLADE DAMPER FOR AIRFLOW BALANCING.

23 37-09 MOUNT EXHAUST GRILL 9' 6" A.F.F. TO BOTTOM OF GRILLE.

LEGEND:

(RE: M00 FOR ADDITIONAL INFORMATION)

SUPPLY DIFFUSER	SUPPLY DUCT THRU ROOF OR FLOOR
RETURN GRILLE	RETURN DUCT THRU ROOF OR FLOOR
EXHAUST GRILLE	EXHAUST DUCT THRU ROOF OR FLOOR
SIDEWALL OR DOOR GRILLE	OUTSIDE AIR DUCT THRU ROOF OR FLOOR
FIRE DAMPER	ROUND DUCT/ FLUE THRU ROOF OR FLOOR
F/S FIRE/SMOKE DAMPER	T (ROOM OR UNIT#) THERMOSTAT
S SMOKE DETECTOR (DUCT MOUNTED)	TS (ROOM OR UNIT#) WALL-MOUNT TEMPERATURE SENSOR
OPPOSED BLADE DAMPER	HS (ROOM OR UNIT#) HUMIDITY SENSOR
PARALLEL BLADE DAMPER	PR (ROOM OR UNIT#) PRESSURE SWITCH
FLEX DUCT	R (ROOM OR UNIT#) SMOKE DETECTOR RESET
BALANCE DAMPER	$ (ROOM OR UNIT#) SWITCH
FABRIC DUCT	WC 1-A FIXTURE OR EQUIPMENT CALLOUT (STANDARD)
	CD 100 CFM DIFFUSER & FABRIC DUCT CALLOUT (STANDARD)

PROFESSIONAL ENGINEER LICENSED 19613 STATE OF IDAHO JOSEPH HUFF

Digitally signed by Joseph Huff
Date: 2023.03.31 12:53:40-06'00'

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PROJECT	DATE
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JF	JH

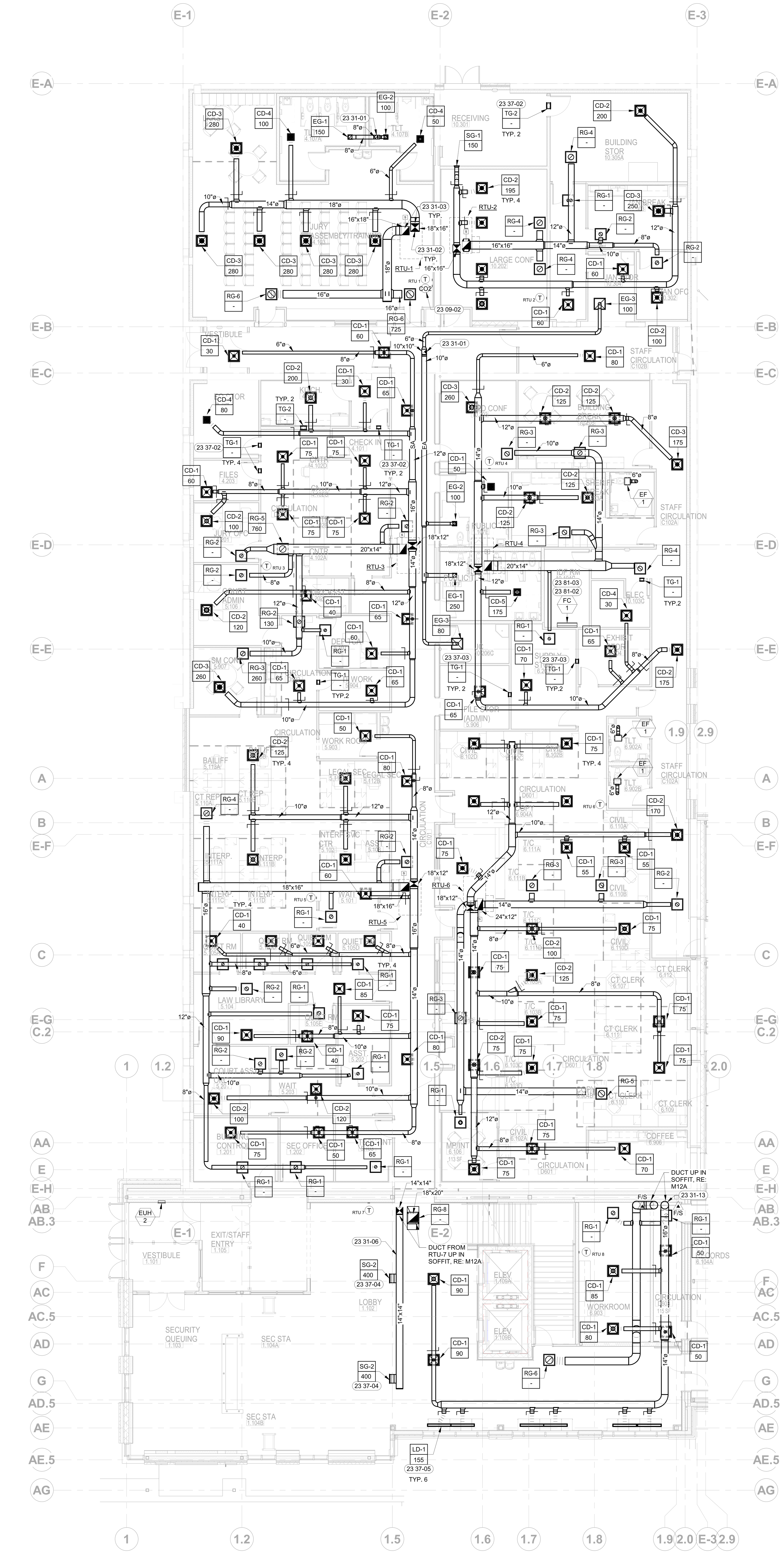
REVISED

SHEET TITLE
HVAC PLAN BASEMENT

SHEET
M10

ORIGINAL SHEET SIZE 36" x 48"

3/31/2023 11:36:17 AM



HVAC PLAN LEVEL 1 AREA A
1 — 1/8" = 1'-0"

GENERAL NOTES:

A. FOR LOW PRESSURE DUCTWORK, WHERE RECTANGULAR DUCT IS INDICATED ON PLANS, EQUIVALENT SIZE ROUND DUCT MAY BE USED. EQUIVALENT SIZE RECTANGULAR DUCT MAY BE USED IN PLACE OF ROUND DUCT, EXCEPT IN EXPOSED AREAS. EQUIVALENT RECTANGULAR SIZE MAY NOT BE USED ON DUCTS EXPOSED TO VIEW OR AS INDICATED OTHERWISE.

B. CONTRACTOR SHALL PROVIDE ALL NECESSARY TRANSITIONS TO AVOID CONFLICT WITH OTHER DUCTWORK, PIPING, STRUCTURE, ETC. AS PART OF THIS CONTRACT. WHEREVER AVAILABLE SPACE ALLOWS, OFFSETS SHALL BE MADE WITH 45 DEGREE ELBOWS WITH TURNING VANES.

C. DUCTWORK SIZES NOTED ON DRAWINGS ARE FREE AREA SIZES. HVAC CONTRACTOR SHALL BE RESPONSIBLE TO COMPENSATE FOR INSULATION, ETC.

D. ALL SQUARE SUPPLY DIFFUSERS SHALL BE 4-WAY THROW UNLESS INDICATED OTHERWISE ON PLAN.

E. PROVIDE TURNING VANES IN ALL MITERED ELBOWS AND BULL HEAD TEES.

F. PROVIDE ACCESS DOORS IN DUCTWORK FOR RESETTING OF FIRE/SMOKE DAMPERS WHERE INDICATED AND AS REQUIRED BY SPECIFICATIONS OR CODE.

G. FIRE DAMPERS SHALL BE 1-1/2 HOUR RATED UNLESS OTHERWISE NOTED. RE: DIVISION 23 SECTION "AIR DUCT ACCESSORIES" FOR SPECIFICATIONS.

H. ALL WIRING, PIPING, AND EQUIPMENT INSTALLED IN PLENUMS SHALL BE PLENUM RATED OR INSTALLED IN CONDUIT.

I. THERMOSTATS, TEMPERATURE SENSORS, AND CO2 SENSORS SHALL BE INSTALLED AT 48" AFF UNLESS NOTED OTHERWISE. COORDINATE JUNCTION BOX INSTALLATION WITH ELECTRICAL CONTRACTOR.

J. PIPING PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRESTOPPED IN ACCORDANCE WITH 2018 IBC SECTION 714.

K. OUTSIDE AIR INTAKES SHALL BE INSTALLED WITH A MINIMUM SEPARATION OF 10'-0" FROM ALL EXHAUST AIR DISCHARGE, GAS FLUES, AND PLUMBING VENTS.

L. MATERIALS UTILIZED WITHIN RETURN PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25, AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50.

M. INTERNALLY LINE FIRST TEN FEET FROM UNIT OF ALL RETURN AND SUPPLY DUCTS FOR SOUND ATTENUATION.

##-## SHEET NOTES:

23 09-02 PROVIDE CO2 SENSOR AND MOUNT ON WALL. RE: HVAC CONTROLS SHEETS. COORDINATE LOCATION WITH ELECTRICAL.

23 31-01 EXHAUST DUCT UP TO ROOF MOUNTED EXHAUST FAN. PROVIDE TRANSITIONS. REFER TO DOWNBLAST ROOF EXHAUST FAN DETAIL.

23 31-02 SUPPLY/RETURN DUCT UP TO ROOFTOP UNIT. PROVIDE DUCT LINER IN ALL DUCT DROPS FROM RTU AND FIRST ELBOWS. MAKE TRANSITION TO INDICATED SIZE HIGH INSIDE STRUCTURE. REFER TO ROOF MOUNTED RTU DETAIL. TYPICAL OF ALL SUPPLY DROPS FROM RTU'S IN AREA.

23 31-03 HANG DUCT TIGHT TO UNDERSIDE OF ROOF STRUCTURE.

23 31-06 ROUTE DUCT OVER IN SOFFIT UNDER SECOND LEVEL FLOOR IN LOCATION SHOWN. COORDINATE WITH ARCHITECTURAL PLANS AND VERIFY LOCATION IN FIELD BEFORE START OF WORK.

23 31-13 DUCT PENETRATION THROUGH FLOOR SHALL BE PROTECTED BY FIRE/SMOKE DAMPER. RE: M71-9 1-1/2 HOUR FIRE/SMOKE DAMPER AT FLOOR DETAIL FOR MORE INFORMATION.

23 37-02 MOUNT TRANSFER GRILLE ABOVE DOOR AT 8' 0" A.F.F. TO CENTER OF GRILLE. PROVIDE DUCTWORK TO FIT, AND DUCT THROUGH WALL TO OTHER GRILLE.

23 37-03 MOUNT TRANSFER GRILLE ON WALL AT 8' 0" A.F.F. TO CENTER OF GRILLE. PROVIDE DUCTWORK TO FIT, AND DUCT THROUGH WALL TO OTHER GRILLE.

23 37-04 MOUNT SUPPLY GRILLE ON EXTERIOR WALL OF SOFFIT AT 12'0" TO CENTER OF GRILLE.

23 37-05 INSTALL ADJACENT LINEAR DIFFUSERS IN LINE TO APPEAR AS ONE LINEAR DIFFUSER. PROVIDE MOUNTING FRAMES AND CONNECTIONS AS REQUIRED FOR COMPLETE INSTALLATION, RE: HVAC SCHEDULES AND M71-5 LINEAR SLOT DIFFUSER ON PLENUM DETAIL.

23 81-02 INSTALL FAN COIL UNIT SO THE CONDENSATE DRAIN CONNECTION/OVERFLOW IS LOCATED AWAY FROM SERVER RACKS.

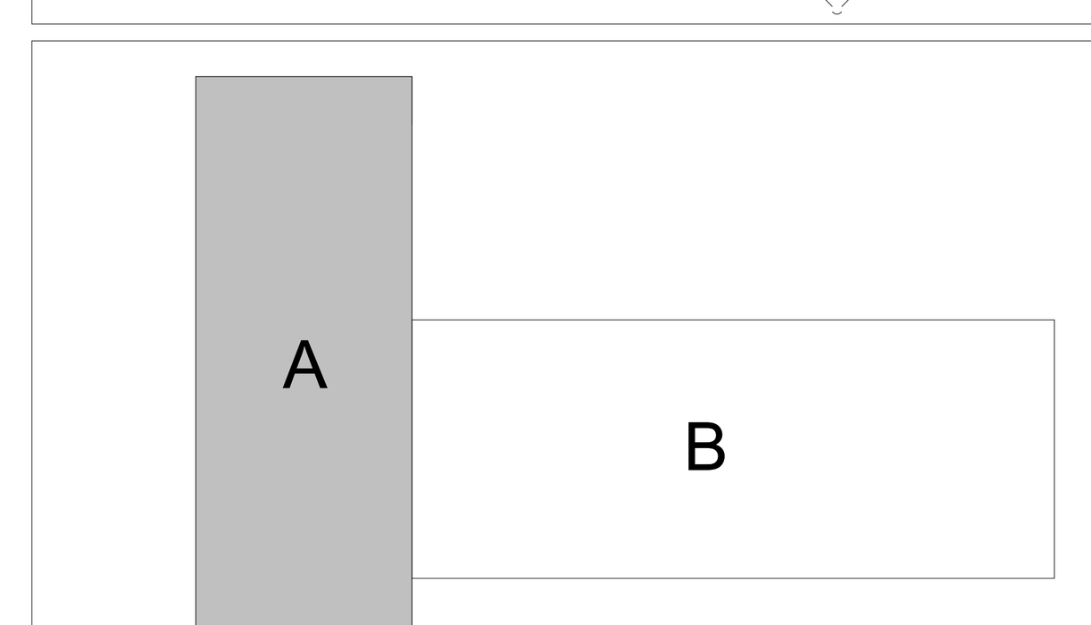
23 81-03 RE: M71-19 SPLIT SYSTEMS CONNECTIONS SCHEMATIC.

LEGEND:

(RE: M00 FOR ADDITIONAL INFORMATION)

- SUPPLY DIFFUSER
- RETURN GRILLE
- EXHAUST GRILLE
- SIDEWALL OR DOOR GRILLE
- FIRE DAMPER
- FIRE/SMOKE DAMPER
- SMOKE DETECTOR (DUCT MOUNTED)
- OPPOSED BLADE DAMPER
- PARALLEL BLADE DAMPER
- FLEX DUCT
- BALANCE DAMPER
- FABRIC DUCT
- SUPPLY DUCT THRU ROOF OR FLOOR
- RETURN DUCT THRU ROOF OR FLOOR
- EXHAUST DUCT THRU ROOF OR FLOOR
- OUTSIDE AIR DUCT THRU ROOF OR FLOOR
- ROUND DUCT/ FLUE THRU ROOF OR FLOOR
- T (ROOM OR UNIT#) THERMOSTAT
- TS (ROOM OR UNIT#) WALL-MOUNT TEMPERATURE SENSOR
- HS (ROOM OR UNIT#) HUMIDITY SENSOR
- PR (ROOM OR UNIT#) PRESSURE SWITCH
- R (ROOM OR UNIT#) SMOKE DETECTOR RESET
- $ (ROOM OR UNIT#) SWITCH
- WC 1-A FIXTURE OR EQUIPMENT CALLOUT (STANDARD)
- CD 100 DIFFUSER & FABRIC DUCT CALLOUT (STANDARD) — CFM

KEY PLAN:



PROFESSIONAL ENGINEER LICENSED 19613 STATE OF IDAHO JOSEPH HUFF

Digitally signed by Joseph Huff
Date: 2023.06.19 14:16:20-06'00'

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AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

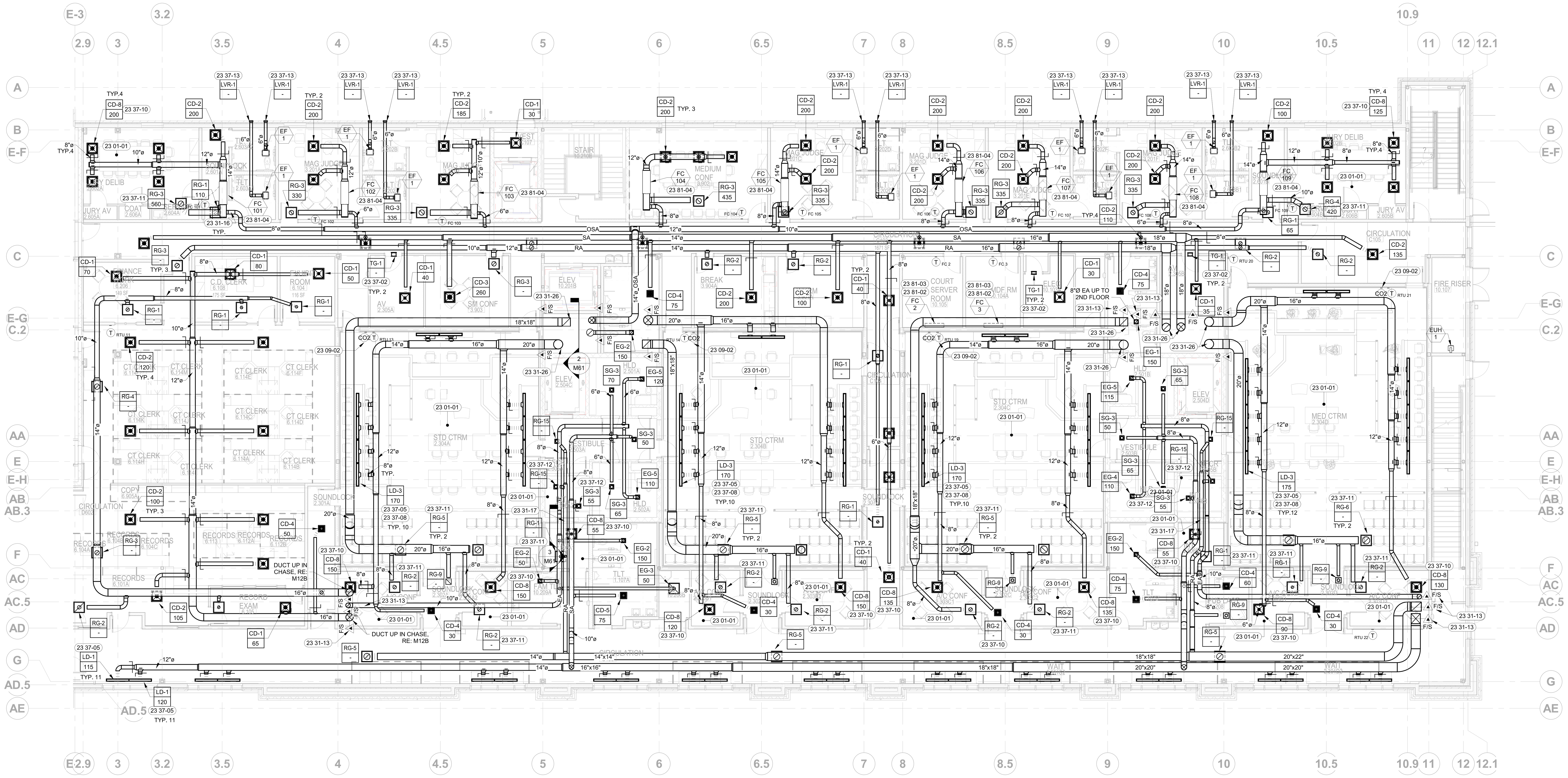
REVISED

SHEET TITLE
HVAC PLAN LEVEL 1 - AREA A

SHEET
M11A

ORIGINAL SHEET SIZE 36" x 48"

6/19/2023 12:59:51 PM



1 HVAC PLAN LEVEL 1 AREA B
1/8" = 1'-0"

GENERAL NOTES:

A. FOR LOW PRESSURE DUCTWORK, WHERE RECTANGULAR DUCT IS INDICATED ON PLANS, EQUIVALENT SIZE ROUND DUCT MAY BE USED. EQUIVALENT SIZE RECTANGULAR DUCT MAY BE USED IN PLACE OF ROUND DUCT, EXCEPT IN EXPOSED AREAS. EQUIVALENT RECTANGULAR SIZE MAY NOT BE USED ON DUCTS EXPOSED TO VIEW OR AS INDICATED OTHERWISE.

B. CONTRACTOR SHALL PROVIDE ALL NECESSARY TRANSITIONS TO AVOID CONFLICT WITH OTHER DUCTWORK, PIPING, STRUCTURE, ETC. AS PART OF THIS CONTRACT. WHEREVER AVAILABLE SPACE ALLOWS, OFFSETS SHALL BE MADE WITH 45 DEGREE ELBOWS WITH TURNING VANES.

C. DUCTWORK SIZES NOTED ON DRAWINGS ARE FREE AREA SIZES. HVAC CONTRACTOR SHALL BE RESPONSIBLE TO COMPENSATE FOR INSULATION, ETC.

D. ALL SQUARE SUPPLY DIFFUSERS SHALL BE 4-WAY THROW UNLESS INDICATED OTHERWISE ON PLAN.

E. PROVIDE TURNING VANES IN ALL MITERED ELBOWS AND BULL HEAD TEES.

F. PROVIDE ACCESS DOORS IN DUCTWORK FOR RESETTING OF FIRE/SMOKE DAMPERS WHERE INDICATED AND AS REQUIRED BY SPECIFICATIONS OR CODE.

G. FIRE DAMPERS SHALL BE 1-1/2 HOUR RATED UNLESS OTHERWISE NOTED. RE: DIVISION 23 SECTION "AIR DUCT ACCESSORIES" FOR SPECIFICATIONS.

H. ALL WIRING, PIPING, AND EQUIPMENT INSTALLED IN PLENUMS SHALL BE PLENUM RATED OR INSTALLED IN CONDUIT.

I. THERMOSTATS, TEMPERATURE SENSORS, AND CO2 SENSORS SHALL BE INSTALLED AT 48" AFF UNLESS NOTED OTHERWISE. COORDINATE JUNCTION BOX INSTALLATION WITH ELECTRICAL CONTRACTOR.

J. PIPING PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRESTOPPED IN ACCORDANCE WITH 2018 IBC SECTION 714.

K. OUTSIDE AIR INTAKES SHALL BE INSTALLED WITH A MINIMUM SEPARATION OF 10'-0" FROM ALL EXHAUST AIR DISCHARGE, GAS FLUES, AND PLUMBING VENTS.

L. MATERIALS UTILIZED WITHIN RETURN PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25, AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50.

M. INTERNALLY LINE FIRST TEN FEET FROM UNIT OF ALL RETURN AND SUPPLY DUCTS FOR SOUND ATTENUATION.

(## ##-##) SHEET NOTES:

23 01-01 ROOM WITH STC-RATED ASSEMBLIES, RE: G71-72 AND ARCH PLANS. ALL DUCTWORK PENETRATIONS INTO AND OUT OF ROOM MUST BE SOUND CAULKED FOR ATTENUATION. ALL AIR DISTRIBUTION IN ROOM TO BE SUPPLIED WITH FIBER-BOARD PLENUM OR METAL PLENUM WITH LINING, RE: M72-1 AND M72-2, SOUND ATTENUATED PLENUM DETAILS. CONNECT BRANCH DUCT TO DIFFUSER WITH ACOUSTICAL FLEX DUCT. COORDINATE WITH ARCHITECTURAL PLANS FOR SOUND WALL ASSEMBLY LOCATIONS.

23 09-02 PROVIDE CO2 SENSOR AND MOUNT ON WALL. RE: HVAC CONTROLS SHEETS. COORDINATE LOCATION WITH ELECTRICAL.

23 31-13 DUCT PENETRATION THROUGH FLOOR SHALL BE PROTECTED BY FIRE/SMOKE DAMPER. RE: M71-9 1-1/2 HOUR FIRE/SMOKE DAMPER AT FLOOR DETAIL FOR MORE INFORMATION.

23 31-16 CONNECT OUTSIDE AIR DUCTWORK TO FAN COIL RETURN WITH MANUAL VOLUME DAMPER. BALANCE OSA INFLOW PER M83-84 CODE REQUIRED VENTILATION RATES.

23 31-17 ROUTE DUCT(S) FROM MAIN CLOSE TOGETHER AND PENETRATE SHEER WALL IN OPENING AT 10' 8" A.F.F. TO BOTTOM OF LARGEST DUCT. COORDINATE WITH STRUCTURAL DRAWINGS FOR EXACT OPENING LOCATION AND VERIFY IN FIELD BEFORE START OF WORK. RE: HVAC SECTIONS.PENETRATION TO BE ACOUSTICALLY INSULATED AND SOUND-CAULKED PER HVAC DETAILS.

23 31-26 ROUTE DUCT DOWN FROM RTU IN SHAFT. RE: M12B FOR CONTINUATION AND M61-2 FOR TYPICAL OFFSET IN SHAFT.

23 37-02 MOUNT TRANSFER GRILLE ABOVE DOOR AT 8' 0" A.F.F. TO CENTER OF GRILLE. PROVIDE DUCTWORK TO FIT, AND DUCT THROUGH WALL TO OTHER GRILLE.

23 37-05 INSTALL ADJACENT LINEAR DIFFUSERS IN LINE TO APPEAR AS ONE LINEAR DIFFUSER. PROVIDE MOUNTING FRAMES AND CONNECTIONS AS REQUIRED FOR COMPLETE INSTALLATION, RE: HVAC SCHEDULES AND M71-5 LINEAR SLOT DIFFUSER ON PLENUM DETAIL.

23 37-08 INSTALL LINEAR DIFFUSER(S) IN SOFFIT, SURFACE-MOUNTED TO EXTERIOR OF SOFFIT BOTTOM. COORDINATE WITH ARCHITECTURAL PLANS. PROVIDE BRANCH DUCT WITH YOUNG REGULATOR MODEL 5020CC WITH 270-275 OPERATOR PER HVAC SCHEDULES.

23 37-10 INSTALL SUPPLY DIFFUSER IN ROOM WITH STC-RATED ASSEMBLIES WITH SOUND-ATTENTUATING PLENUM, RE:M72-2 SOUND ATTENUATED PLENUM ON CEILING DIFFUSER DETAIL. CONNECT BRANCH DUCT TO PLENUM ON DIFFUSER WITH ACOUSTICAL FLEX DUCT.

23 37-11 INSTALL RETURN GRILLE IN ROOM WITH STC-RATED ASSEMBLIES WITH SOUND-ATTENTUATING PLENUM, RE:M72-1 CEILING RETURN/EXHAUST CONNECTION WITH ACOUSTIC-LINED PLENUM DETAIL. CONNECT BRANCH DUCT TO PLENUM ON DIFFUSER WITH ACOUSTICAL FLEX DUCT.

23 37-12 CONNECT BRANCH DUCT TO SECURE GRILLE WITH ACOUSTICAL FLEX DUCT.

23 37-13 MOUNT LVR-1 ON EXTERIOR WALL, AS SHOWN, AT 11'0" A.F.F., RE: ARCHITECTURAL.

23 81-02 INSTALL FAN COIL UNIT SO THE CONDENSATE DRAIN CONNECTION/OVERFLOW IS LOCATED AWAY FROM SERVER RACKS.

23 81-03 RE: M71-19 SPLIT SYSTEMS CONNECTIONS SCHEMATIC.

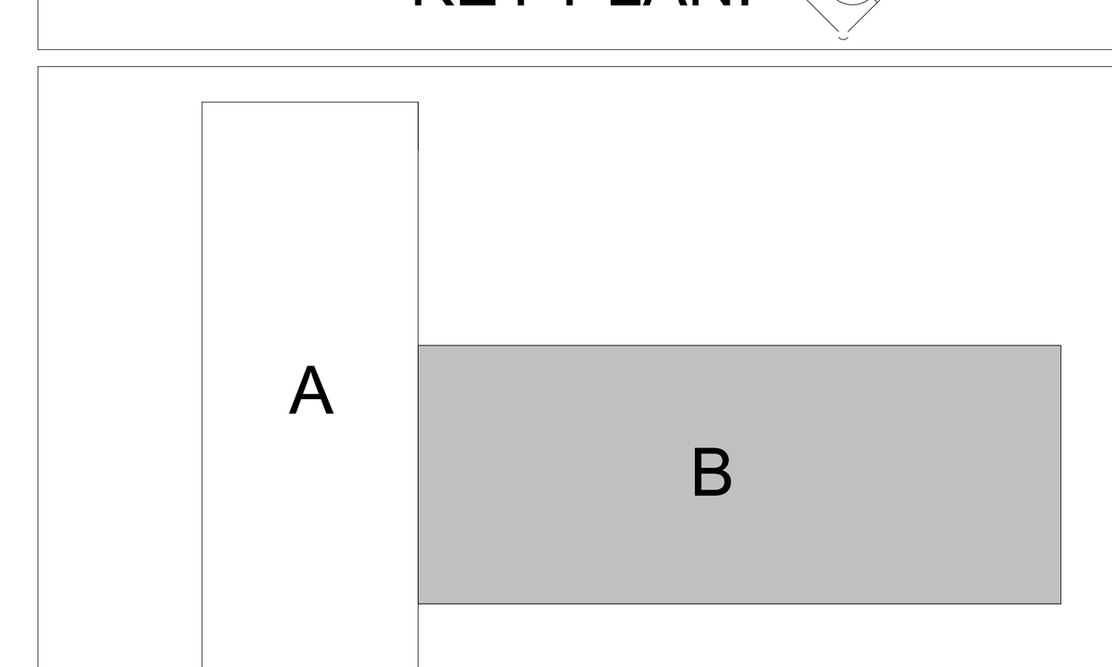
23 81-04 RE: M71-14 FAN COIL MOUNTING DETAI AND M71-19 SPLIT SYSTEMS CONNECTIONS SCHEMATIC.

LEGEND:

(RE: M00 FOR ADDITIONAL INFORMATION)

SUPPLY DIFFUSER	SUPPLY DUCT THRU ROOF OR FLOOR
RETURN GRILLE	RETURN DUCT THRU ROOF OR FLOOR
EXHAUST GRILLE	EXHAUST DUCT THRU ROOF OR FLOOR
SIDEWALL OR DOOR GRILLE	OUTSIDE AIR DUCT THRU ROOF OR FLOOR
FIRE DAMPER	ROUND DUCT/ FLUE THRU ROOF OR FLOOR
F/S FIRE/SMOKE DAMPER	T (ROOM OR UNIT#) THERMOSTAT
S SMOKE DETECTOR (DUCT MOUNTED)	TS (ROOM OR UNIT#) WALL-MOUNT TEMPERATURE SENSOR
OPPOSED BLADE DAMPER	HS (ROOM OR UNIT#) HUMIDITY SENSOR
PARALLEL BLADE DAMPER	PR (ROOM OR UNIT#) PRESSURE SWITCH
FLEX DUCT	R (ROOM OR UNIT#) SMOKE DETECTOR RESET
BALANCE DAMPER	$ (ROOM OR UNIT#) SWITCH
FABRIC DUCT	WC 1-A FIXTURE OR EQUIPMENT CALLOUT (STANDARD)
	CD 100 (CFM) DIFFUSER & FABRIC DUCT CALLOUT (STANDARD)

KEY PLAN:



Digitally signed by Joseph Huff
Date: 2023.06.19 14:16:20-06'00'

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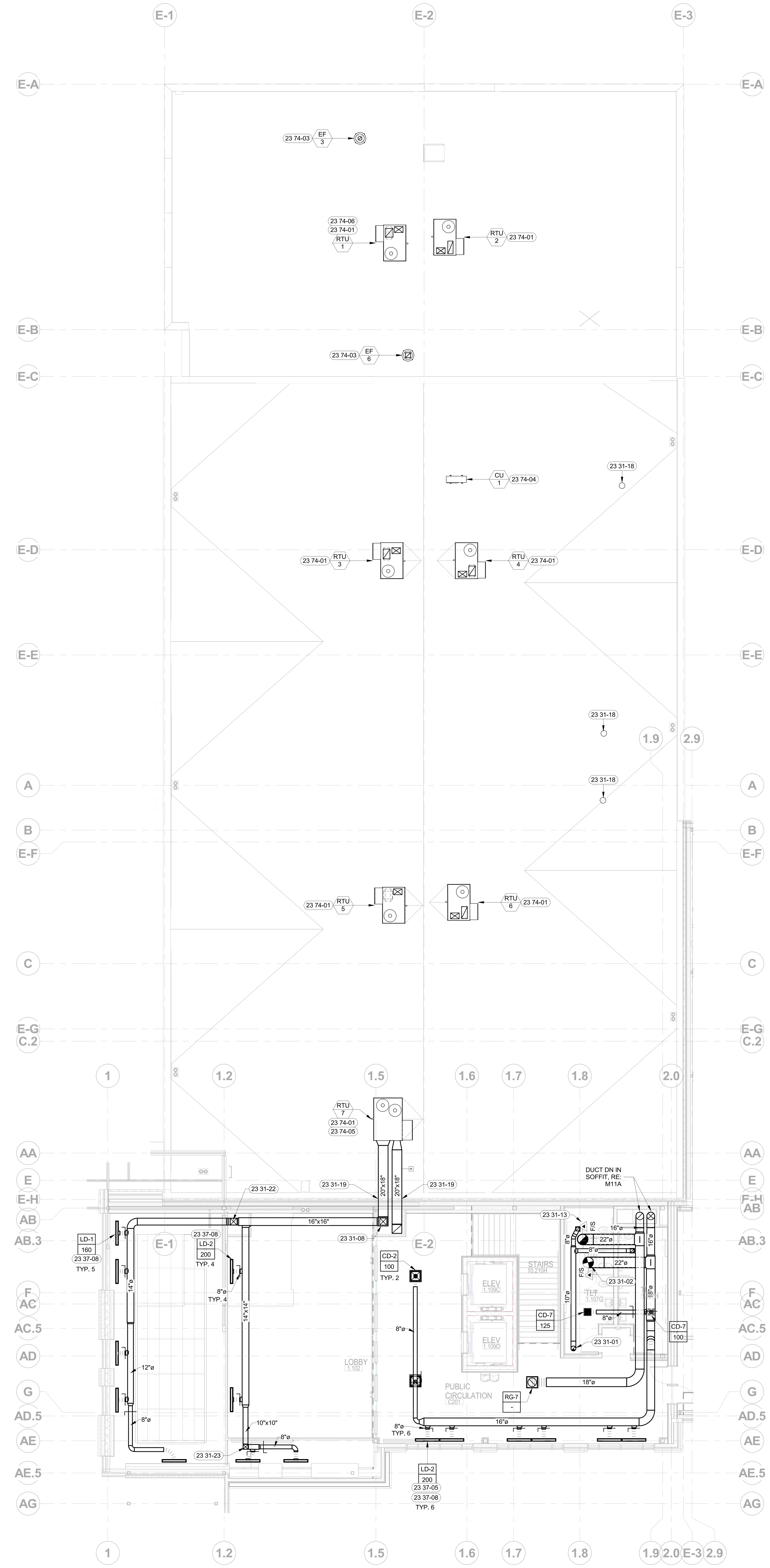
REVISED

SHEET TITLE
HVAC PLAN LEVEL 1 - AREA B

SHEET
M11B

ORIGINAL SHEET SIZE 36" x 48"



1 HVAC PLAN - LEVEL 2 AREA A
1/8" = 1'-0"

GENERAL NOTES:

A. CONTRACTOR SHALL PROVIDE ALL NECESSARY TRANSITIONS TO AVOID CONFLICT WITH OTHER DUCTWORK, PIPING, STRUCTURE, ETC. AS PART OF THIS CONTRACT. WHEREVER AVAILABLE SPACE ALLOWS, OFFSETS SHALL BE MADE WITH 45 DEGREE ELBOWS WITH TURNING VANES.

B. CONTRACTOR SHALL INSTALL LABELS ON ALL ROOFTOP MECHANICAL EQUIPMENT. SEE SPECIFICATION SECTION 230553.

C. CONTRACTOR SHALL SECURELY FASTEN ALL ROOFTOP MECHANICAL EQUIPMENT TO ROOF CURBS. REFER TO HVAC DETAIL SHEET.

D. DUCTWORK SIZES NOTED ON DRAWINGS ARE FREE AREA SIZES. HVAC CONTRACTOR SHALL BE RESPONSIBLE TO COMPENSATE FOR INSULATION, ETC.

E. PROVIDE TURNING VANES IN ALL MITERED ELBOWS AND BULL HEAD TEES.

F. PROVIDE ACCESS DOORS IN DUCTWORK FOR RESETTING OF FIRE/SMOKE DAMPERS WHERE INDICATED AND AS REQUIRED BY SPECIFICATIONS OR CODE.

G. FIRE DAMPERS SHALL BE 1-1/2 HOUR RATED UNLESS OTHERWISE NOTED.
RE: DIVISION 23 SECTION "AIR DUCT ACCESSORIES" FOR SPECIFICATIONS.

H. PIPING PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRESTOPPED IN ACCORDANCE WITH 2015 IBC SECTION 713.

I. OUTSIDE AIR INTAKES SHALL BE INSTALLED WITH A MINIMUM SEPARATION OF 10'-0" FROM ALL EXHAUST AIR DISCHARGE, GAS FLUES, AND PLUMBING VENTS.

J. ALL EXPOSED ROOF MOUNTED DUCTWORK SHALL BE PROPERLY SUPPORTED, INSULATED AND SEALED PER HVAC DETAILS AND SPECIFICATIONS.

K. INTERNALLY LINE FIRST TEN FEET FROM UNIT OF ALL RETURN AND SUPPLY DUCTS FOR SOUND ATTENUATION.

##-## SHEET NOTES:

23 31-01 EXHAUST DUCT UP TO ROOF MOUNTED EXHAUST FAN. PROVIDE TRANSITIONS. REFER TO DOWNBLAST ROOF EXHAUST FAN DETAIL.

23 31-02 SUPPLY/RETURN DUCT UP TO ROOFTOP UNIT. PROVIDE DUCT LINER IN ALL DUCT DROPS FROM RTU AND FIRST ELBOWS. MAKE TRANSITION TO INDICATED SIZE HIGH INSIDE STRUCTURE. REFER TO ROOF MOUNTED RTU DETAIL. TYPICAL OF ALL SUPPLY DROPS FROM RTU'S IN AREA.

23 31-08 ROUTE DUCT FROM RTU 7 DOWN IN SOFFIT. COORDINATE WITH ARCHITECTURAL PLANS AND VERIFY LOCATION AND SIZE OF ALL SOFFITS IN ENTRANCE/LOBBY AREA IN FIELD BEFORE START OF WORK.

23 31-13 DUCT PENETRATION THROUGH FLOOR SHALL BE PROTECTED BY FIRE/SMOKE DAMPER. RE: M71-9 1-1/2 HOUR FIRE/SMOKE DAMPER AT FLOOR DETAIL FOR MORE INFORMATION.

23 31-18 EXHAUST PENETRATION THROUGH ROOF. TERMINATE OF ROOF WITH ROOF CAP AND BIRD SCREEN. INSTALL A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES. RE: M71-12 CEILING MOUNTED EXHAUST FAN DETAIL FOR MORE INFORMATION.

23 31-19 MOUNT DUCTWORK ON ROOF AND PENETRATE EXTERIOR WALL. RE: DETAILS M71-7 DUCT THROUGH EXTERIOR WALL AND M71-16 PITCHED EXTERIOR DUCTWORK ON ROOF FOR MORE INFORMATION.

23 31-22 ROUTE DUCTWORK DOWN IN SOFFIT AND OVER TO LOWER CEILING SOFFIT. COORDINATE WITH ARCHITECTURAL PLANS FOR MORE INFORMATION.

23 31-23 ROUTE DUCTWORK UP IN SOFFIT AND OVER TO DIFFUSERS IN SOFFIT. COORDINATE WITH ARCHITECTURAL PLANS FOR MORE INFORMATION.

23 37-08 INSTALL LINEAR DIFFUSER(S) IN SOFFIT, SURFACE-MOUNTED TO EXTERIOR OF SOFFIT BOTTOM. COORDINATE WITH ARCHITECTURAL PLANS. PROVIDE BRANCH DUCT WITH YOUNG REGULATOR MODEL 5020CC WITH 270-275 OPERATOR PER HVAC SCHEDULES.

23 74-01 INSTALL ROOFTOP UNIT ON PREMANUFACTURED 14" TALL VIBRATION ISOLATION CURB. RE: M72-3 AC UNIT WITH SPRING RAIL MOUNTING DETAIL. RE:STRUCTURAL.

23 74-03 INSTALL EXHAUST FAN ON PREMANUFACTURED 14" TALL CURB. INSTALL A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES. RE: M71-13 ROOF EXHAUST FAN DETAIL FOR MORE INFORMATION. RE: STRUCTURAL.

23 74-04 FURNISH AND INSTALL MANUFACTURER RECOMMENDED 12" TALL CONDENSER STAND SECURE TO ROOF. VERIFY ALL MANUFACTURER RECOMMENDED UNIT CLEARANCES FOR PERFORMANCE AND MAINTENANCE ARE MET PRIOR TO INSTALL. RE: M71-18 CONDENSER/HEAT PUMP UNIT ROOFTOP MOUNTING DETAIL.

23 74-05 INSTALL ROOFTOP UNIT MINIMUM 8'0" AWAY FROM NEAREST WALL. COORDINATE WITH STRUCTURAL PLANS.

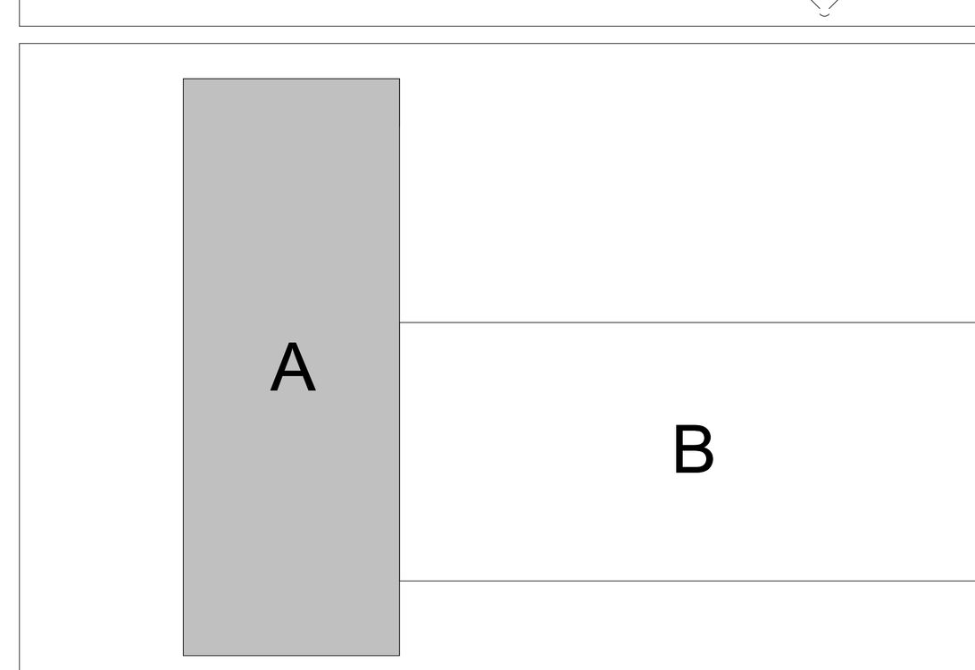
23 74-06 UNIT FURNISHED WITH DEMAND-CONTROL VENTILATION, RE: HVAC SCHEDULES. ECONOMIZER TO MODULATE OSA INTAKE PER CO2 SENSOR OUTPUT. RE: HVAC CONTROLS SHEETS.

LEGEND:

(RE: M00 FOR ADDITIONAL INFORMATION)

SUPPLY DIFFUSER	SUPPLY DUCT THRU ROOF OR FLOOR
RETURN GRILLE	RETURN DUCT THRU ROOF OR FLOOR
EXHAUST GRILLE	EXHAUST DUCT THRU ROOF OR FLOOR
SIDEWALL OR DOOR GRILLE	OUTSIDE AIR DUCT THRU ROOF OR FLOOR
FIRE DAMPER	ROUND DUCT/ FLUE THRU ROOF OR FLOOR
F/S FIRE/SMOKE DAMPER	T (ROOM OR UNIT#) THERMOSTAT
S SMOKE DETECTOR (DUCT MOUNTED)	TS (ROOM OR UNIT#) WALL-MOUNT TEMPERATURE SENSOR
OPPOSED BLADE DAMPER	HS (ROOM OR UNIT#) HUMIDITY SENSOR
PARALLEL BLADE DAMPER	PR (ROOM OR UNIT#) PRESSURE SWITCH
FLEX DUCT	R (ROOM OR UNIT#) SMOKE DETECTOR RESET
BALANCE DAMPER	$ (ROOM OR UNIT#) SWITCH
FABRIC DUCT	WC 1-A FIXTURE OR EQUIPMENT CALLOUT (STANDARD)
	CD 100 CFM DIFFUSER & FABRIC DUCT CALLOUT (STANDARD)

KEY PLAN:



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JOSEPH HUFF, P.E.

AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

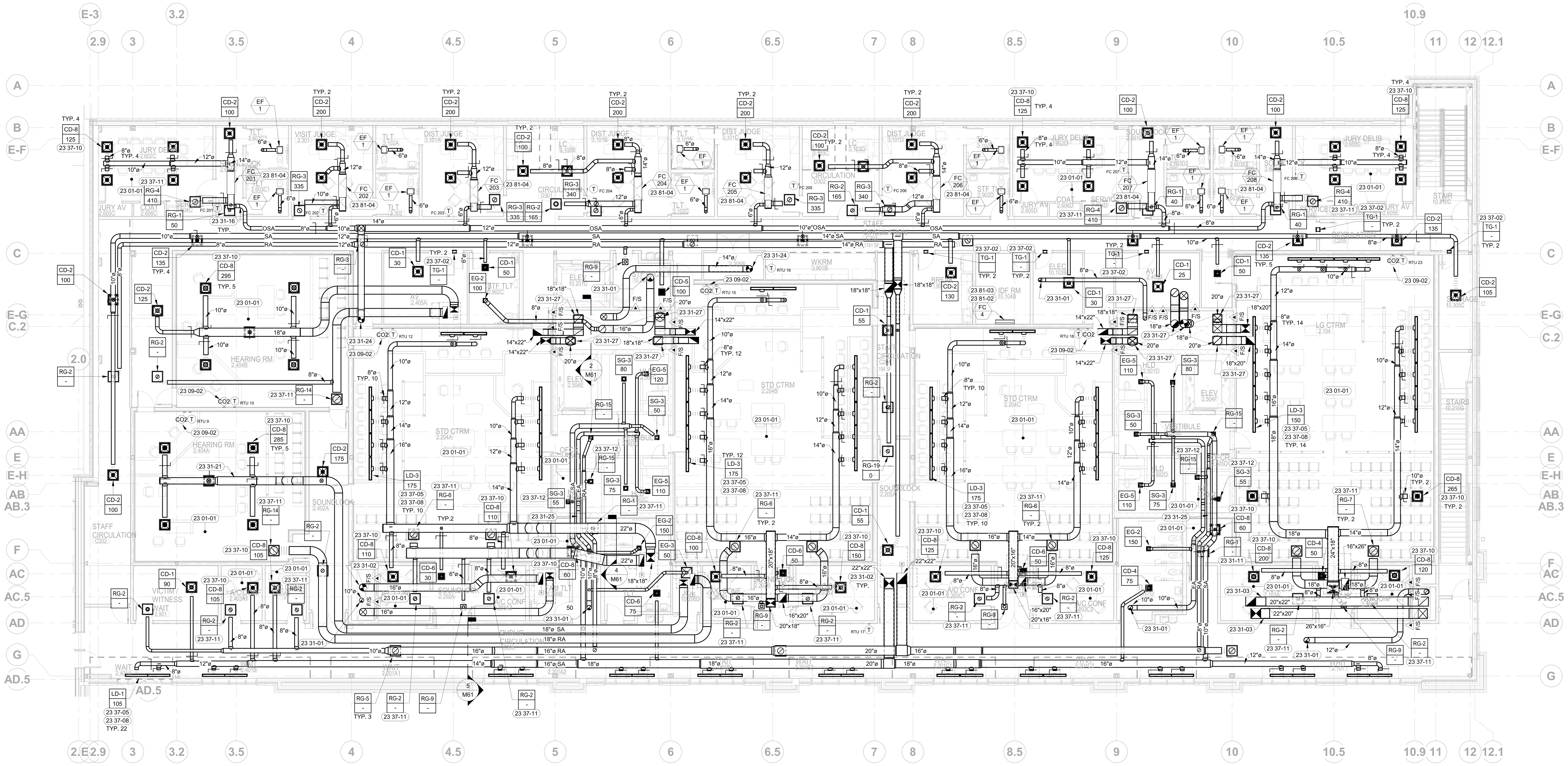
REVISED

SHEET TITLE
HVAC PLAN LEVEL 2 - AREA A

SHEET
M12A

ORIGINAL SHEET SIZE 36" x 48"

3/31/2023 11:36:39 AM



1 HVAC PLAN - LEVEL 2 AREA B
1/8" = 1'-0"

GENERAL NOTES:

A. FOR LOW PRESSURE DUCTWORK, WHERE RECTANGULAR DUCT IS INDICATED ON PLANS, EQUIVALENT SIZE ROUND DUCT MAY BE USED. EQUIVALENT SIZE RECTANGULAR DUCT MAY BE USED IN PLACE OF ROUND DUCT, EXCEPT IN EXPOSED AREAS. EQUIVALENT RECTANGULAR SIZE MAY NOT BE USED ON DUCTS EXPOSED TO VIEW OR AS INDICATED OTHERWISE.

B. CONTRACTOR SHALL PROVIDE ALL NECESSARY TRANSITIONS TO AVOID CONFLICT WITH OTHER DUCTWORK, PIPING, STRUCTURE, ETC. AS PART OF THIS CONTRACT. WHEREVER AVAILABLE SPACE ALLOWS, OFFSETS SHALL BE MADE WITH 45 DEGREE ELBOWS WITH TURNING VANES.

C. DUCTWORK SIZES NOTED ON DRAWINGS ARE FREE AREA SIZES. HVAC CONTRACTOR SHALL BE RESPONSIBLE TO COMPENSATE FOR INSULATION, ETC.

D. ALL SQUARE SUPPLY DIFFUSERS SHALL BE 4-WAY THROW UNLESS INDICATED OTHERWISE ON PLAN.

E. PROVIDE TURNING VANES IN ALL MITERED ELBOWS AND BULL HEAD TEES.

F. PROVIDE ACCESS DOORS IN DUCTWORK FOR RESETTING OF FIRE/SMOKE DAMPERS WHERE INDICATED AND AS REQUIRED BY SPECIFICATIONS OR CODE.

G. FIRE DAMPERS SHALL BE 1-1/2 HOUR RATED UNLESS OTHERWISE NOTED. RE: DIVISION 23 SECTION "AIR DUCT ACCESSORIES" FOR SPECIFICATIONS.

H. ALL WIRING, PIPING, AND EQUIPMENT INSTALLED IN PLENUMS SHALL BE PLENUM RATED OR INSTALLED IN CONDUIT.

I. THERMOSTATS, TEMPERATURE SENSORS, AND CO2 SENSORS SHALL BE INSTALLED AT 48" AFF UNLESS NOTED OTHERWISE. COORDINATE JUNCTION BOX INSTALLATION WITH ELECTRICAL CONTRACTOR.

J. PIPING PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRESTOPPED IN ACCORDANCE WITH 2018 IBC SECTION 714.

K. OUTSIDE AIR INTAKES SHALL BE INSTALLED WITH A MINIMUM SEPARATION OF 10'-0" FROM ALL EXHAUST AIR DISCHARGE, GAS FLUES, AND PLUMBING VENTS.

L. MATERIALS UTILIZED WITHIN RETURN PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25, AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50.

M. INTERNALLY LINE FIRST TEN FEET FROM UNIT OF ALL RETURN AND SUPPLY DUCTS FOR SOUND ATTENUATION.

##-## SHEET NOTES:

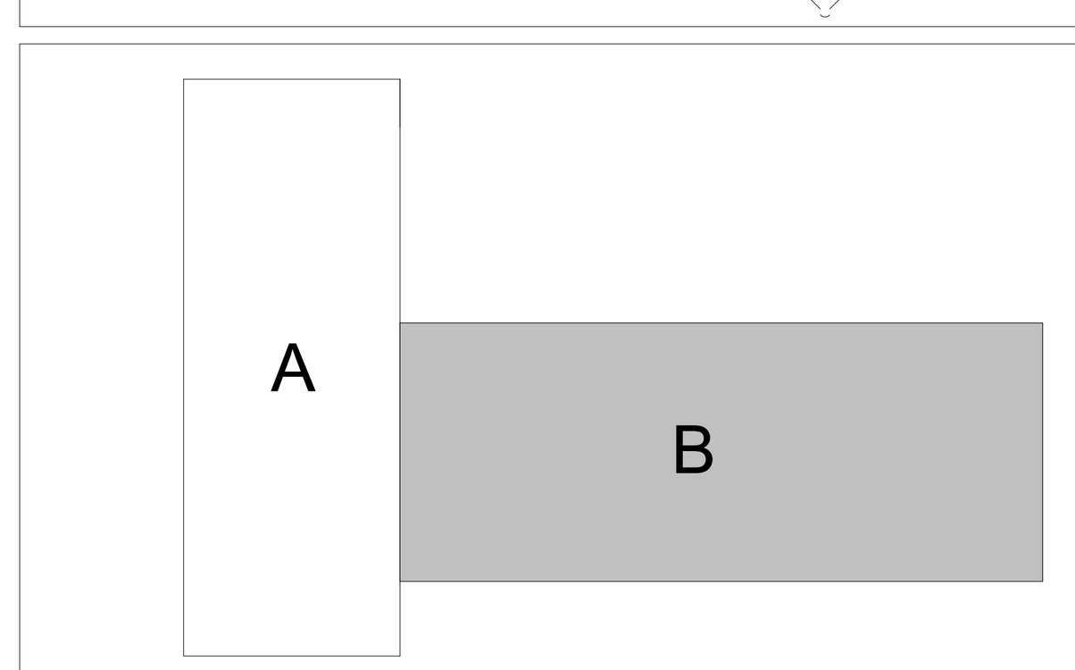
23 01-01	ROOM WITH STC-RATED ASSEMBLIES, RE: G71-72 AND ARCH PLANS. ALL DUCTWORK PENETRATIONS INTO AND OUT OF ROOM MUST BE SOUND CAULKED FOR ATTENUATION. ALL AIR DISTRIBUTION IN ROOM TO BE SUPPLIED WITH FIBER-BOARD PLENUM OR METAL PLENUM WITH LINING, RE: M72-1 AND M72-2, SOUND ATTENUATED PLENUM DETAILS. CONNECT BRANCH DUCT TO DIFFUSER WITH ACOUSTICAL FLEX DUCT. COORDINATE WITH ARCHITECTURAL PLANS FOR SOUND WALL ASSEMBLY LOCATIONS.
23 09-02	PROVIDE CO2 SENSOR AND MOUNT ON WALL. RE: HVAC CONTROLS SHEETS. COORDINATE LOCATION WITH ELECTRICAL.
23 31-01	EXHAUST DUCT UP TO ROOF MOUNTED EXHAUST FAN. PROVIDE TRANSITIONS. REFER TO DOWNBLAST ROOF EXHAUST FAN DETAIL.
23 31-02	SUPPLY/RETURN DUCT UP TO ROOFTOP UNIT. PROVIDE DUCT LINER IN ALL DUCT DROPS FROM RTU AND FIRST ELBOWS. MAKE TRANSITION TO INDICATED SIZE HIGH INSIDE STRUCTURE. REFER TO ROOF MOUNTED RTU DETAIL. TYPICAL OF ALL SUPPLY DROPS FROM RTU'S IN AREA.
23 31-03	HANG DUCT TIGHT TO UNDERSIDE OF ROOF STRUCTURE.
23 31-11	ALL MANUAL VOLUME DAMPERS SERVING SUPPLY GRILLES IN SECURE CEILINGS SHALL BE INSTALLED IN ACCESSIBLE LOCATION ABOVE CEILING IN ROOM 1.304 OFF STA.
23 31-16	CONNECT OUTSIDE AIR DUCTWORK TO FAN COIL RETURN WITH MANUAL VOLUME DAMPER. BALANCE OSA INFLOW PER M83-84 CODE REQUIRED VENTILATION RATES.
23 31-21	ROUTE SUPPLY DUCT AT 12' 0" A.F.F. DROP MAIN SUPPLY AND RETURN FROM RTU TO MATCH HEIGHT.
23 31-24	OUTSIDE AIR DUCT UP TO ROOFTOP DOAS UNIT. PROVIDE DUCT LINER IN DUCT DROP AND FIRST ELBOW. MAKE TRANSITION TO INDICATED SIZE HIGH INSIDE STRUCTURE.
23 31-25	ROUTE DUCT(S) FROM MAIN CLOSE TOGETHER AND PENETRATE SHEER WALL IN OPENING AT 13' 1" A.F.F. TO BOTTOM OF LARGEST DUCT. COORDINATE WITH STRUCTURAL DRAWINGS FOR EXACT OPENING LOCATION AND VERIFY IN FIELD BEFORE START OF WORK. RE: HVAC SECTIONS. PENETRATION TO BE ACOUSTICALLY INSULATED AND SOUND-CAULKED PER HVAC DETAILS.
23 31-27	ROUTE DUCT DOWN FROM RTU IN SHAFT. RE: M11B FOR CONTINUATION AND M61-2 FOR TYPICAL OFFSET IN SHAFT.
23 37-02	MOUNT TRANSFER GRILLE ABOVE DOOR AT 8' 0" A.F.F. TO CENTER OF GRILLE. PROVIDE DUCTWORK TO FIT, AND DUCT THROUGH WALL TO OTHER GRILLE.
23 37-05	INSTALL ADJACENT LINEAR DIFFUSERS IN LINE TO APPEAR AS ONE LINEAR DIFFUSER. PROVIDE MOUNTING FRAMES AND CONNECTIONS AS REQUIRED FOR COMPLETE INSTALLATION, RE: HVAC SCHEDULES AND M71-5 LINEAR SLOT DIFFUSER ON PLENUM DETAIL.
23 37-08	INSTALL LINEAR DIFFUSER(S) IN SOFFIT, SURFACE-MOUNTED TO EXTERIOR OF SOFFIT BOTTOM. COORDINATE WITH ARCHITECTURAL PLANS. PROVIDE BRANCH DUCT WITH YOUNG REGULATOR MODEL 5020CC WITH 270-275 OPERATOR PER HVAC SCHEDULES.
23 37-10	INSTALL SUPPLY DIFFUSER IN ROOM WITH STC-RATED ASSEMBLIES WITH SOUND-ATTENTUATING PLENUM, RE:M72-2 SOUND ATTENUATED PLENUM ON CEILING DIFFUSER DETAIL. CONNECT BRANCH DUCT TO PLENUM ON DIFFUSER WITH ACOUSTICAL FLEX DUCT.
23 37-11	INSTALL RETURN GRILLE IN ROOM WITH STC-RATED ASSEMBLIES WITH SOUND-ATTENTUATING PLENUM, RE:M72-1 CEILING RETURN/EXHAUST CONNECTION WITH ACOUSTIC-LINED PLENUM DETAIL. CONNECT BRANCH DUCT TO PLENUM ON DIFFUSER WITH ACOUSTICAL FLEX DUCT.
23 37-12	CONNECT BRANCH DUCT TO SECURE GRILLE WITH ACOUSTICAL FLEX DUCT.
23 81-02	INSTALL FAN COIL UNIT SO THE CONDENSATE DRAIN CONNECTION/OVERFLOW IS LOCATED AWAY FROM SERVER RACKS.
23 81-03	RE: M71-19 SPLIT SYSTEMS CONNECTIONS SCHEMATIC.
23 81-04	RE: M71-14 FAN COIL MOUNTING DETAI AND M71-19 SPLIT SYSTEMS CONNECTIONS SCHEMATIC.

LEGEND:

(RE: M00 FOR ADDITIONAL INFORMATION)

SUPPLY DIFFUSER	SUPPLY DUCT THRU ROOF OR FLOOR
RETURN GRILLE	RETURN DUCT THRU ROOF OR FLOOR
EXHAUST GRILLE	EXHAUST DUCT THRU ROOF OR FLOOR
SIDEWALL OR DOOR GRILLE	OUTSIDE AIR DUCT THRU ROOF OR FLOOR
FIRE DAMPER	ROUND DUCT/ FLUE THRU ROOF OR FLOOR
F/S FIRE/SMOKE DAMPER	T (ROOM OR UNIT#) THERMOSTAT
S SMOKE DETECTOR (DUCT MOUNTED)	TS (ROOM OR UNIT#) WALL-MOUNT TEMPERATURE SENSOR
OPPOSED BLADE DAMPER	HS (ROOM OR UNIT#) HUMIDITY SENSOR
PARALLEL BLADE DAMPER	PR (ROOM OR UNIT#) PRESSURE SWITCH
FLEX DUCT	R (ROOM OR UNIT#) SMOKE DETECTOR RESET
BALANCE DAMPER	$ (ROOM OR UNIT#) SWITCH
FABRIC DUCT	WC 1-A FIXTURE OR EQUIPMENT CALLOUT (STANDARD)
	CD 100 DIFFUSER & FABRIC DUCT CALLOUT (STANDARD) — CFM

KEY PLAN:



PROFESSIONAL ENGINEER LICENSED 19613 STATE OF IDAHO JOSEPH HUFF
Digitally signed by Joseph Huff
Date: 2023.06.19 14:16:20-06'00'

JOSEPH HUFF, P.E.
200 BROAD STREET
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AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

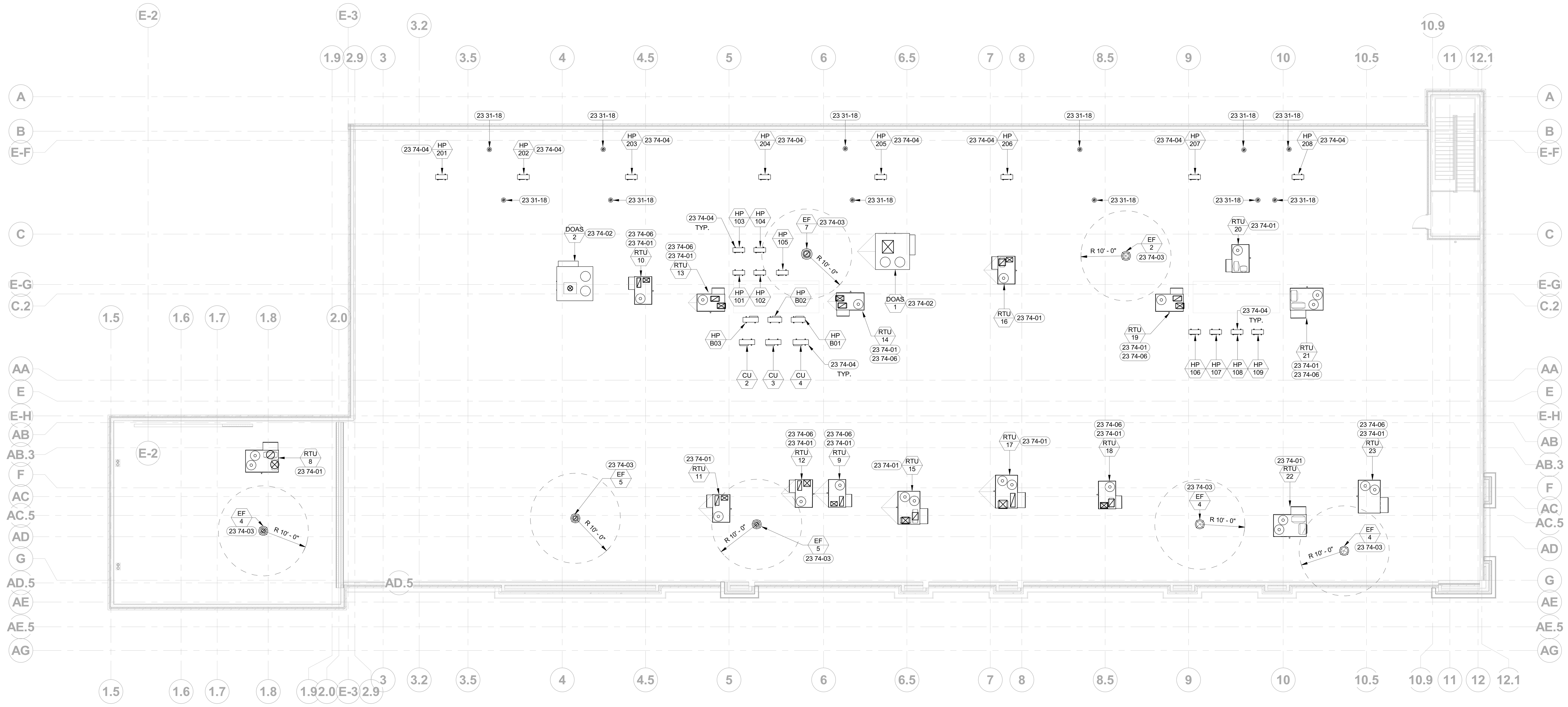
REVISED

SHEET TITLE
HVAC PLAN LEVEL 2 - AREA B

SHEET
M12B

ORIGINAL SHEET SIZE 36" x 48"

6/19/2023 1:00:15 PM



1 HVAC ROOF PLAN
3/32" = 1'-0"

GENERAL NOTES:

A. CONTRACTOR SHALL PROVIDE ALL NECESSARY TRANSITIONS TO AVOID CONFLICT WITH OTHER DUCTWORK, PIPING, STRUCTURE, ETC. AS PART OF THIS CONTRACT. WHEREVER AVAILABLE SPACE ALLOWS, OFFSETS SHALL BE MADE WITH 45 DEGREE ELBOWS WITH TURNING VANES.

B. CONTRACTOR SHALL INSTALL LABELS ON ALL ROOFTOP MECHANICAL EQUIPMENT. SEE SPECIFICATION SECTION 230553.

C. CONTRACTOR SHALL SECURELY FASTEN ALL ROOFTOP MECHANICAL EQUIPMENT TO ROOF CURBS. REFER TO HVAC DETAIL SHEET.

D. DUCTWORK SIZES NOTED ON DRAWINGS ARE FREE AREA SIZES. HVAC CONTRACTOR SHALL BE RESPONSIBLE TO COMPENSATE FOR INSULATION, ETC.

E. PROVIDE TURNING VANES IN ALL MITERED ELBOWS AND BULL HEAD TEES.

F. PROVIDE ACCESS DOORS IN DUCTWORK FOR RESETTING OF FIRE/SMOKE DAMPERS WHERE INDICATED AND AS REQUIRED BY SPECIFICATIONS OR CODE.

G. FIRE DAMPERS SHALL BE 1-1/2 HOUR RATED UNLESS OTHERWISE NOTED. RE: DIVISION 23 SECTION "AIR DUCT ACCESSORIES" FOR SPECIFICATIONS.

H. PIPING PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRESTOPPED IN ACCORDANCE WITH 2018 IBC SECTION 714.

I. OUTSIDE AIR INTAKES SHALL BE INSTALLED WITH A MINIMUM SEPARATION OF 10'-0" FROM ALL EXHAUST AIR DISCHARGE, GAS FLUES, AND PLUMBING VENTS.

J. ALL EXPOSED ROOF MOUNTED DUCTWORK SHALL BE PROPERLY SUPPORTED, INSULATED AND SEALED PER HVAC DETAILS AND SPECIFICATIONS.

##-## SHEET NOTES:

23 31-18 EXHAUST PENETRATION THROUGH ROOF. TERMINATE OF ROOF WITH ROOF CAP AND BIRD SCREEN. INSTALL A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES. RE: M71-12 CEILING MOUNTED EXHAUST FAN DETAIL FOR MORE INFORMATION.

23 74-01 INSTALL ROOFTOP UNIT ON PREMANUFACTURED 14" TALL VIBRATION ISOLATION CURB. RE: M72-3 AC UNIT WITH SPRING RAIL MOUNTING DETAIL. RE:STRUCTURAL.

23 74-02 INSTALL DEDICATED OUTSIDE AIR UNIT ON PREMANUFACTURED 24" TALL VIBRATION ISOLATION CURB. RE: STRUCTURAL.

23 74-03 INSTALL EXHAUST FAN ON PREMANUFACTURED 14" TALL CURB. INSTALL A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES. RE: M71-13 ROOF EXHAUST FAN DETAIL FOR MORE INFORMATION. RE: STRUCTURAL.

23 74-04 FURNISH AND INSTALL MANUFACTURER RECOMMENDED 12" TALL CONDENSER STAND SECURE TO ROOF. VERIFY ALL MANUFACTURER RECOMMENDED UNIT CLEARANCES FOR PERFORMANCE AND MAINTENANCE ARE MET PRIOR TO INSTALL. RE: M71-18 CONDENSER/HEAT PUMP UNIT ROOFTOP MOUNTING DETAIL.

23 74-06 UNIT FURNISHED WITH DEMAND-CONTROL VENTILATION, RE: HVAC SCHEDULES. ECONOMIZER TO MODULATE OSA INTAKE PER CO2 SENSOR OUTPUT. RE: HVAC CONTROLS SHEETS.

LEGEND:

(RE: M00 FOR ADDITIONAL INFORMATION)

- SUPPLY DUCT THRU ROOF OR FLOOR
- RETURN DUCT THRU ROOF OR FLOOR
- EXHAUST DUCT THRU ROOF OR FLOOR
- OUTSIDE AIR DUCT THRU ROOF OR FLOOR
- ROUND DUCT/ FLUE THRU ROOF OR FLOOR
- WC 1-A FIXTURE OR EQUIPMENT CALLOUT (STANDARD)

KEY PLAN:

A	B

THERON W. WARD JUDICIAL BUILDING REMODEL & EXPANSION

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JOSEPH HUFF, P.E.

AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	---

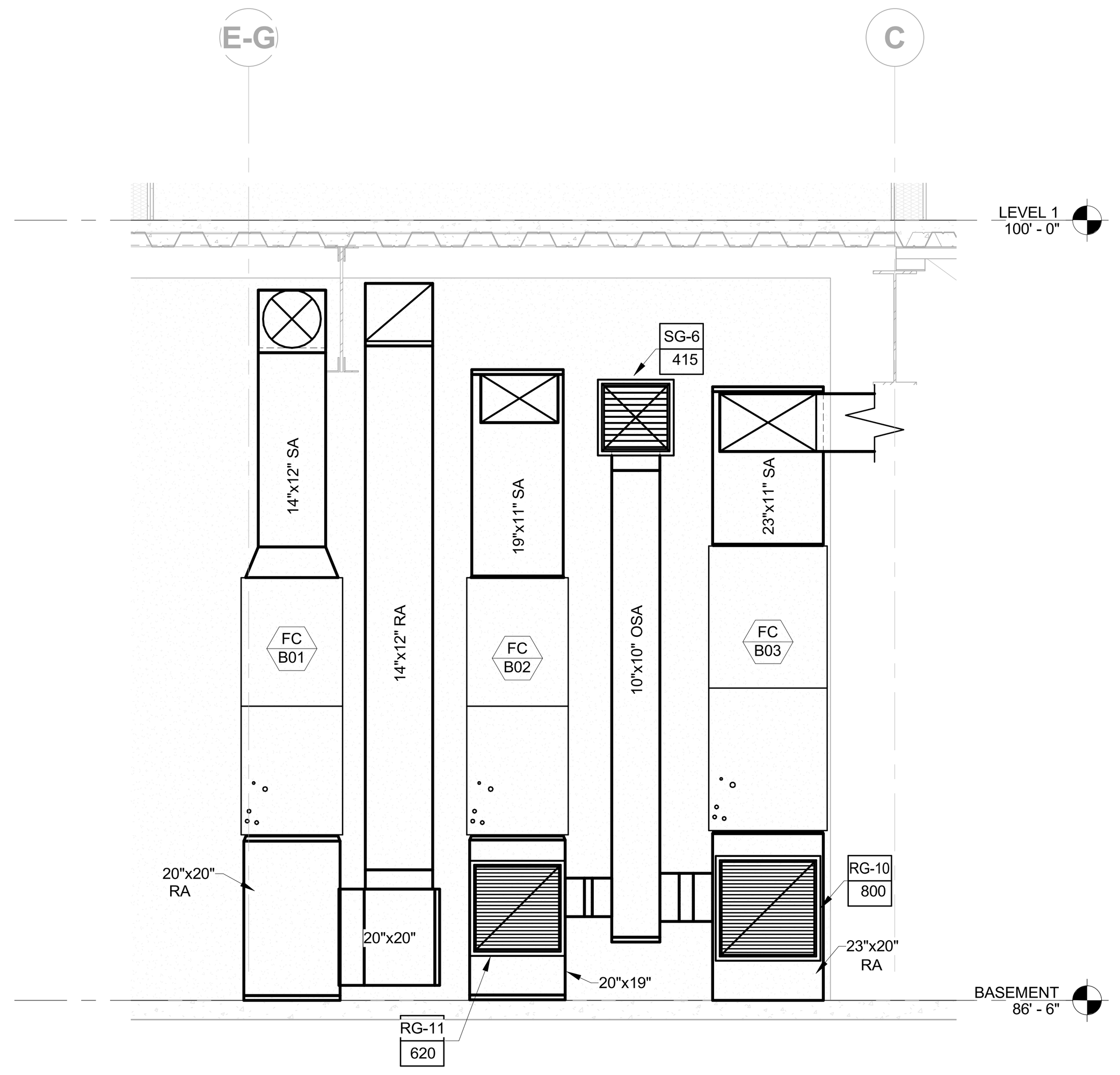
REVISED

SHEET TITLE
HVAC ROOF PLAN

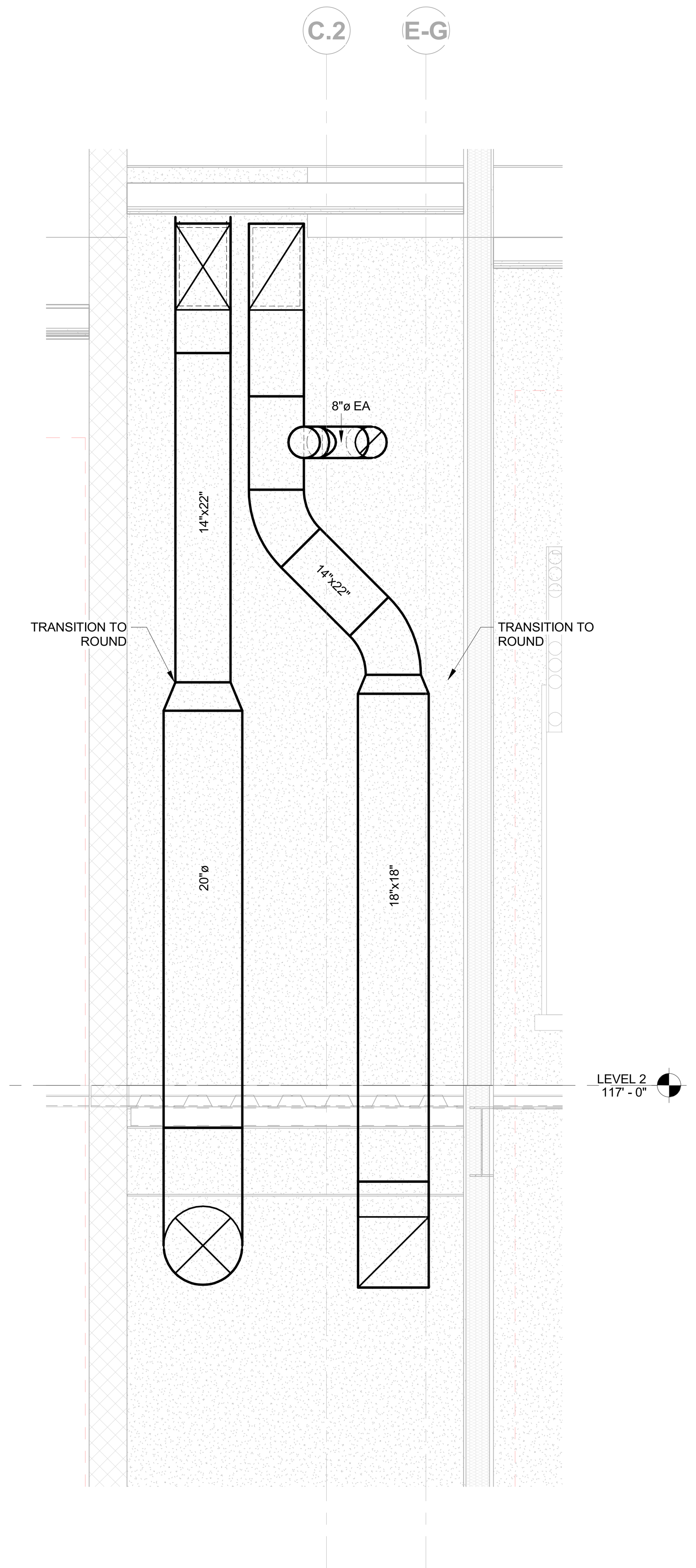
SHEET
M13

ORIGINAL SHEET SIZE 36" x 48"

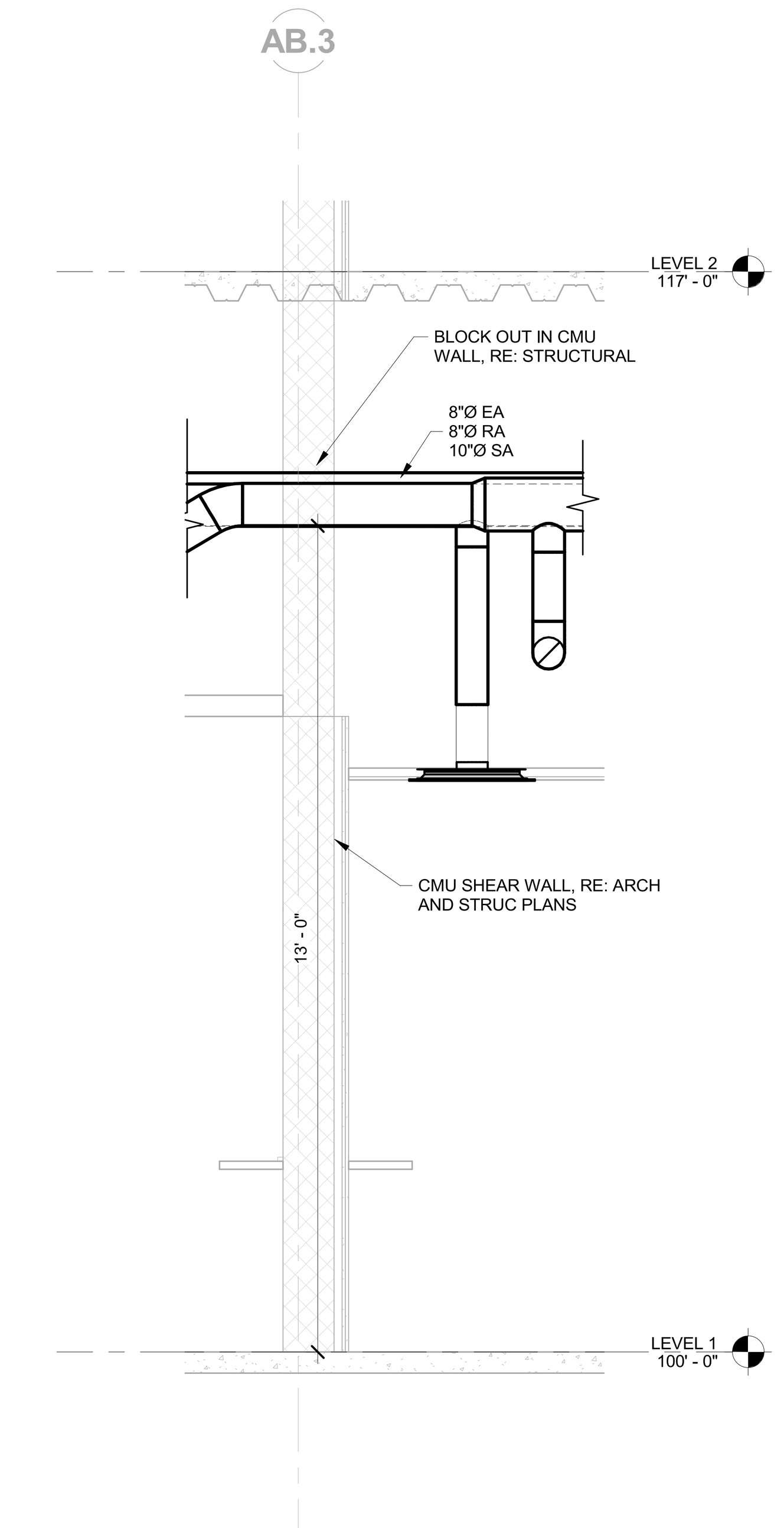
3/31/2023 11:36:53 AM



1 BASEMENT FAN COILS
1/2" = 1'-0"



2 DUCT OFFSET IN SHAFT
1/2" = 1'-0"



3 DUCT SECTIONS, CMU SHEAR WALL PENETRATIONS, LEVEL 1
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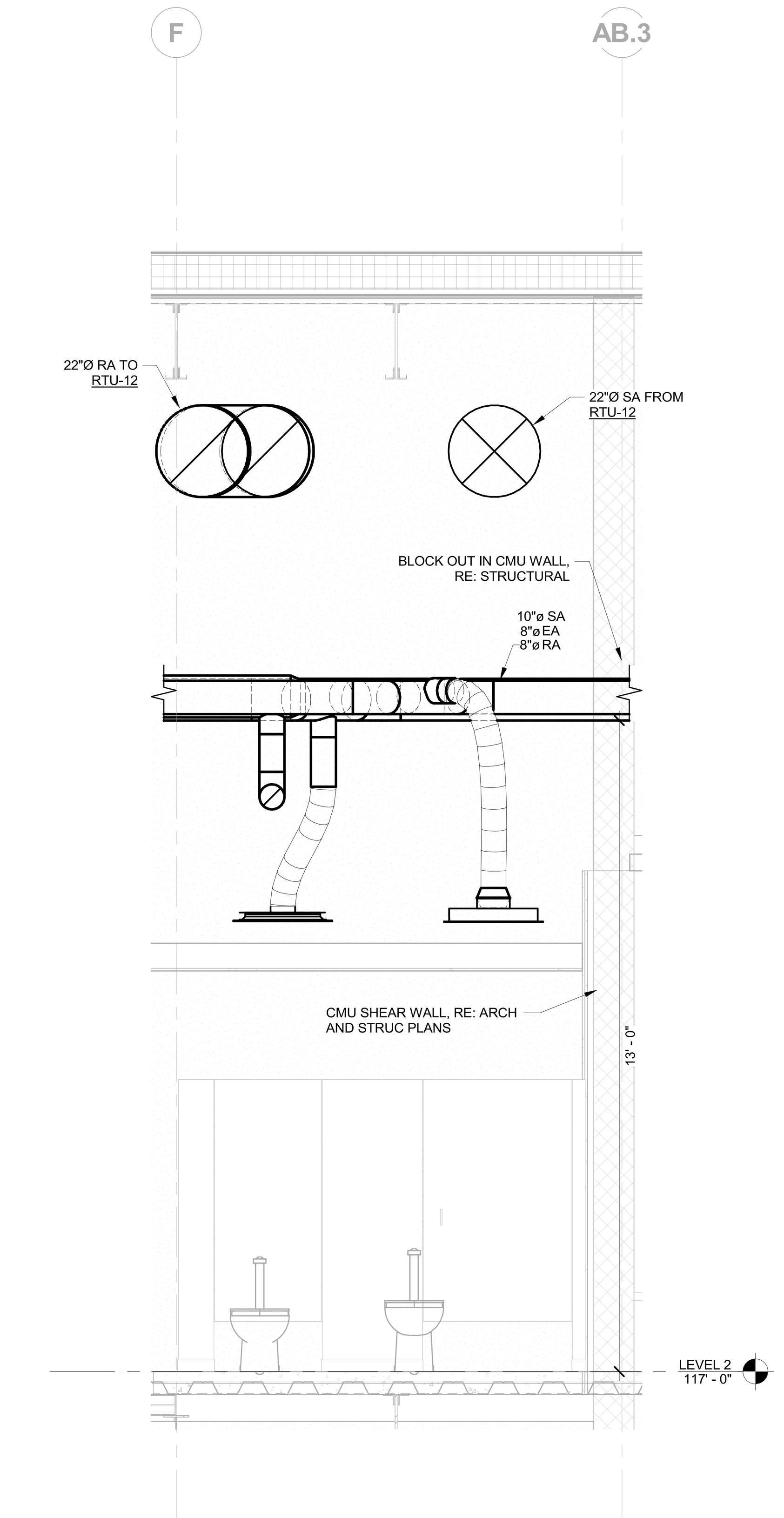
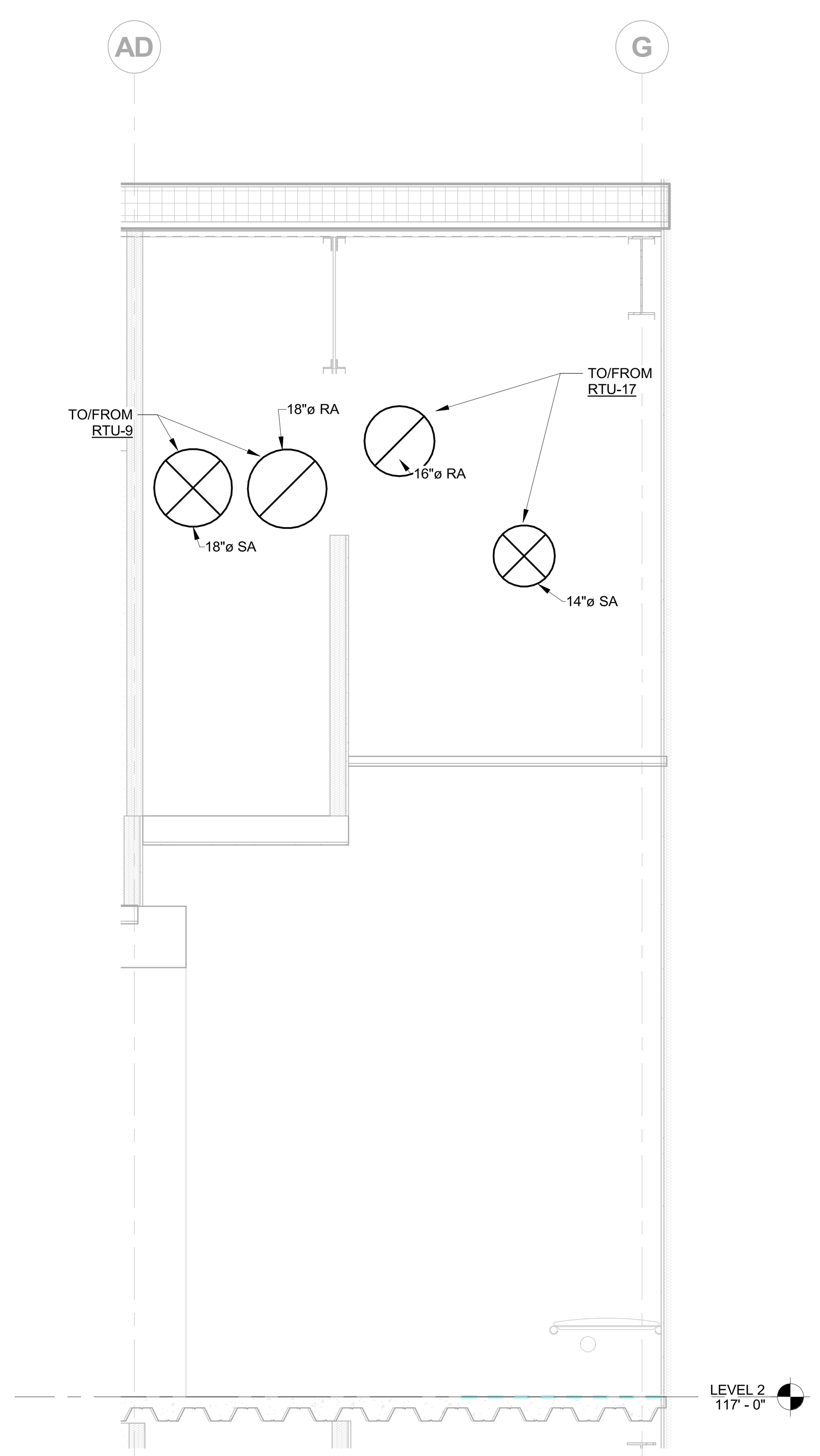


4 DUCT SECTIONS, CMU SHEAR WALL PENETRATIONS, LEVEL 2
1/2" = 1'-0"



5 DUCT SECTIONS, HALLWAY
1/2" = 1'-0"

3/31/2023 11:36:56 AM

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AGENCY REVIEW SET

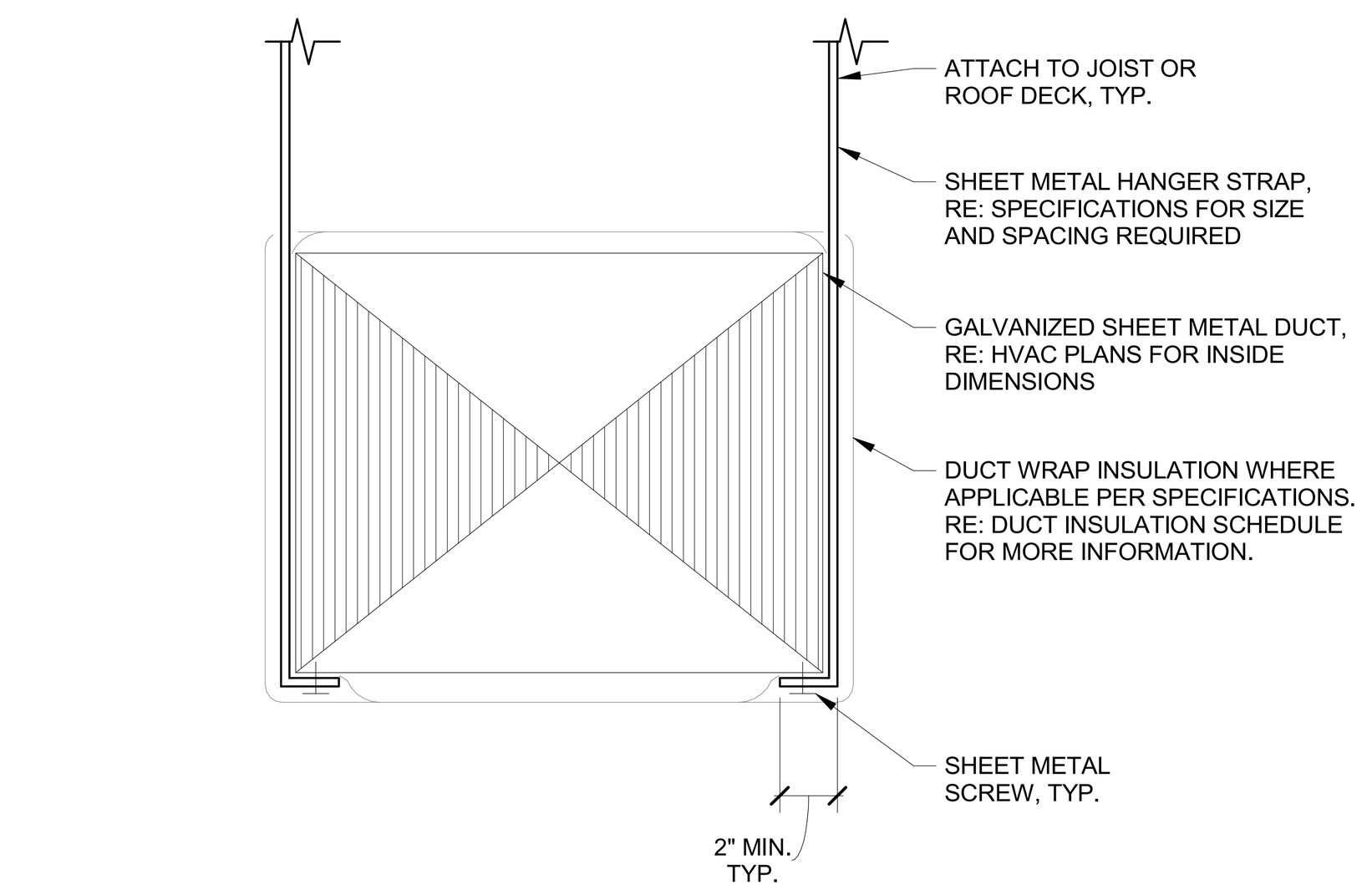
PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

REVISED

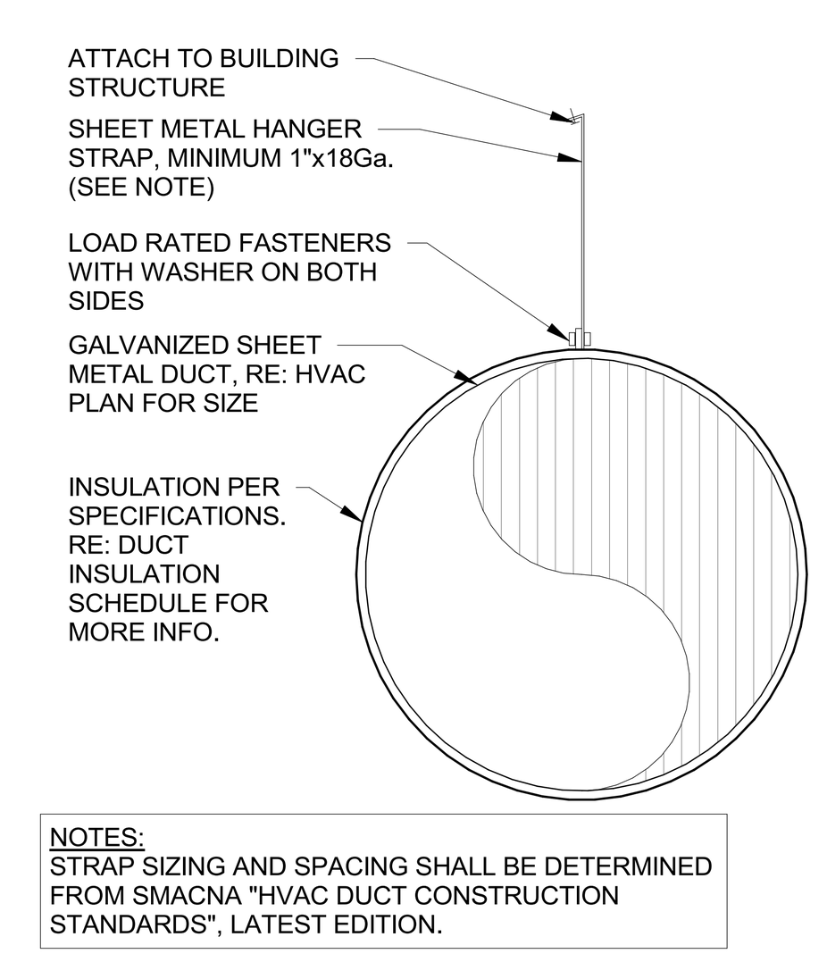
SHEET TITLE
HVAC SECTIONS

SHEET
M61

ORIGINAL SHEET SIZE 36" x 48"



1 RECTANGULAR DUCT SUPPORT
NTS



2 ROUND DUCT SUPPORT
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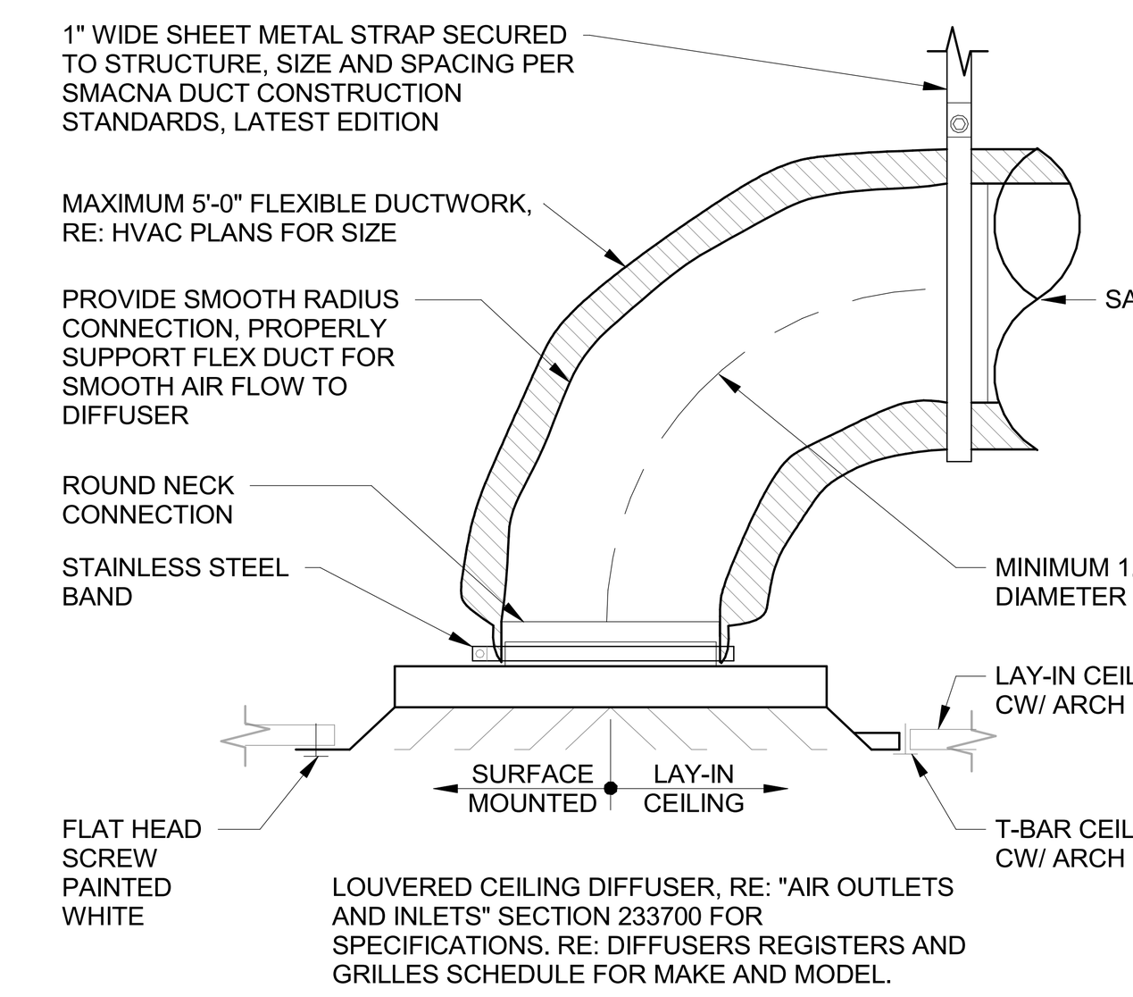

3 CEILING DIFFUSER CONNECTION
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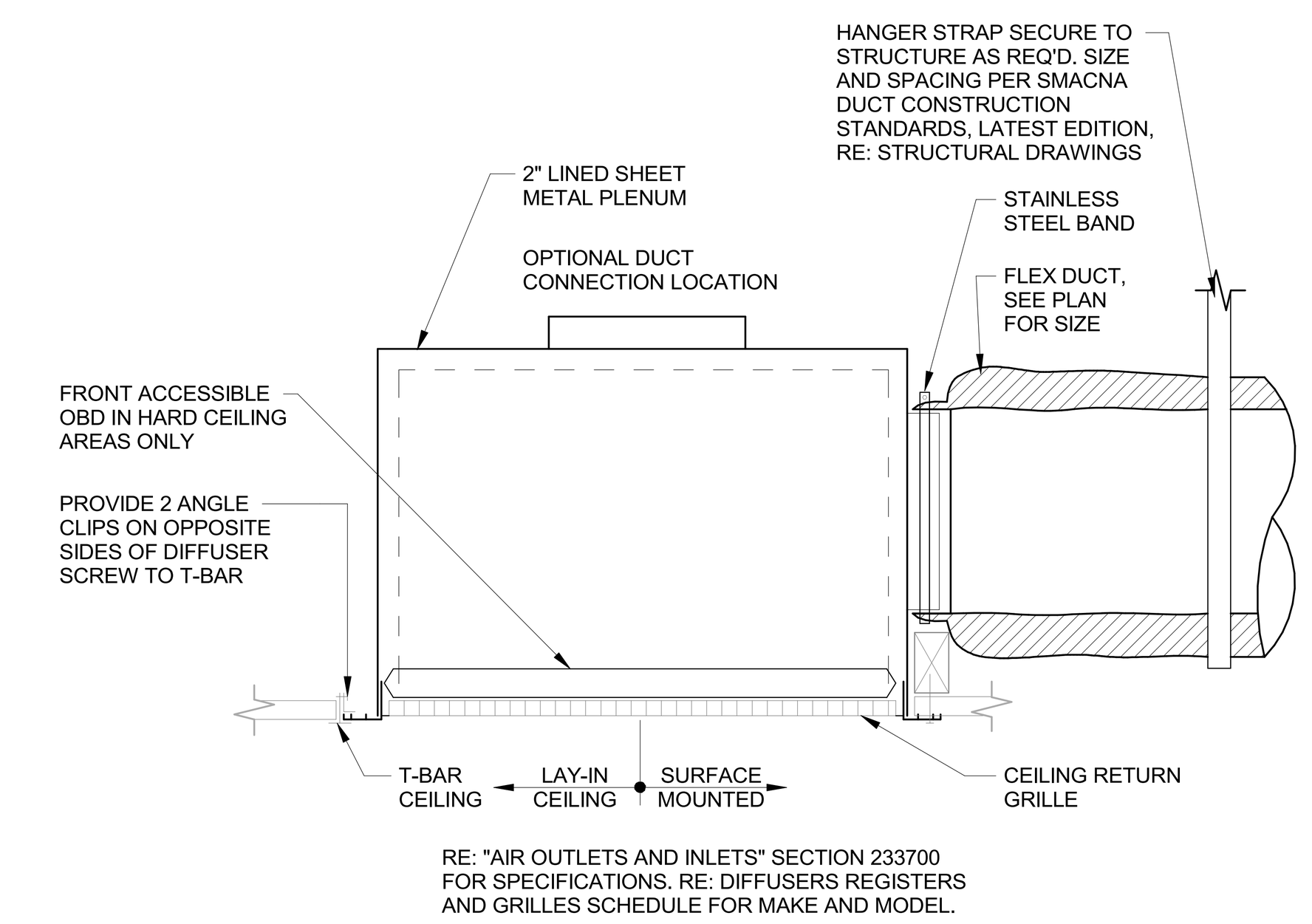
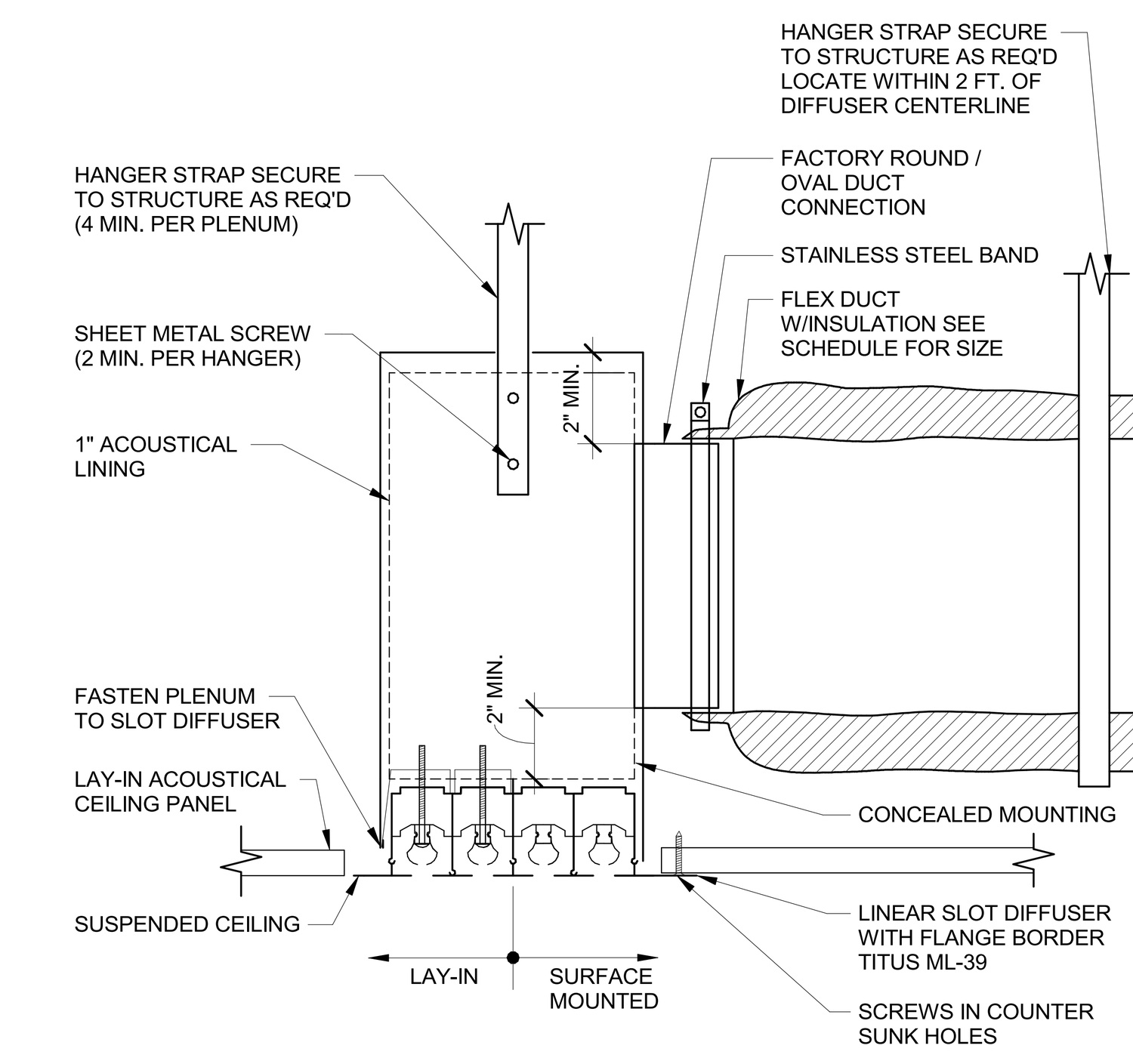
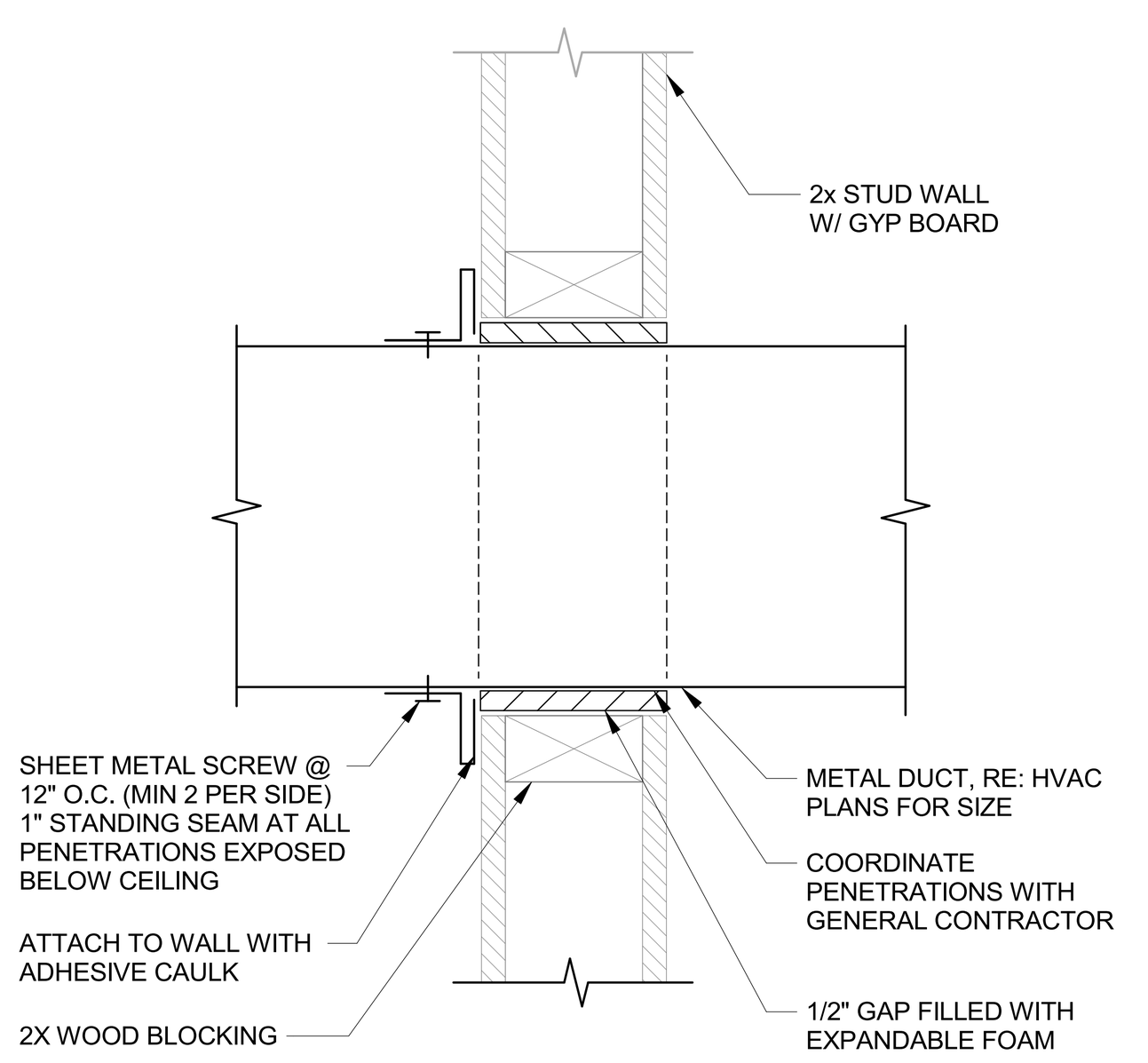


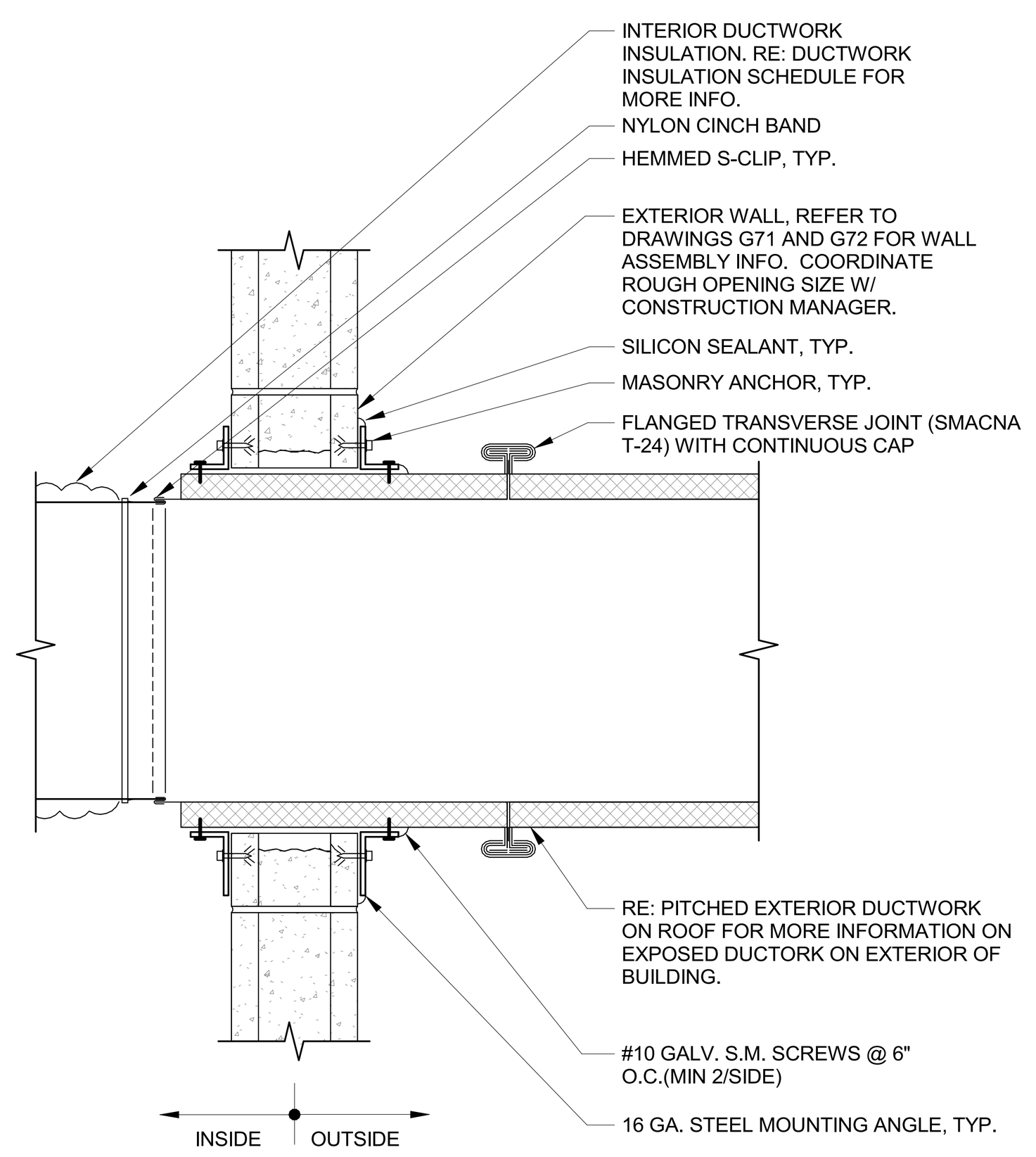
4 CEILING RETURN/EXHAUST CONNECTION
NTS



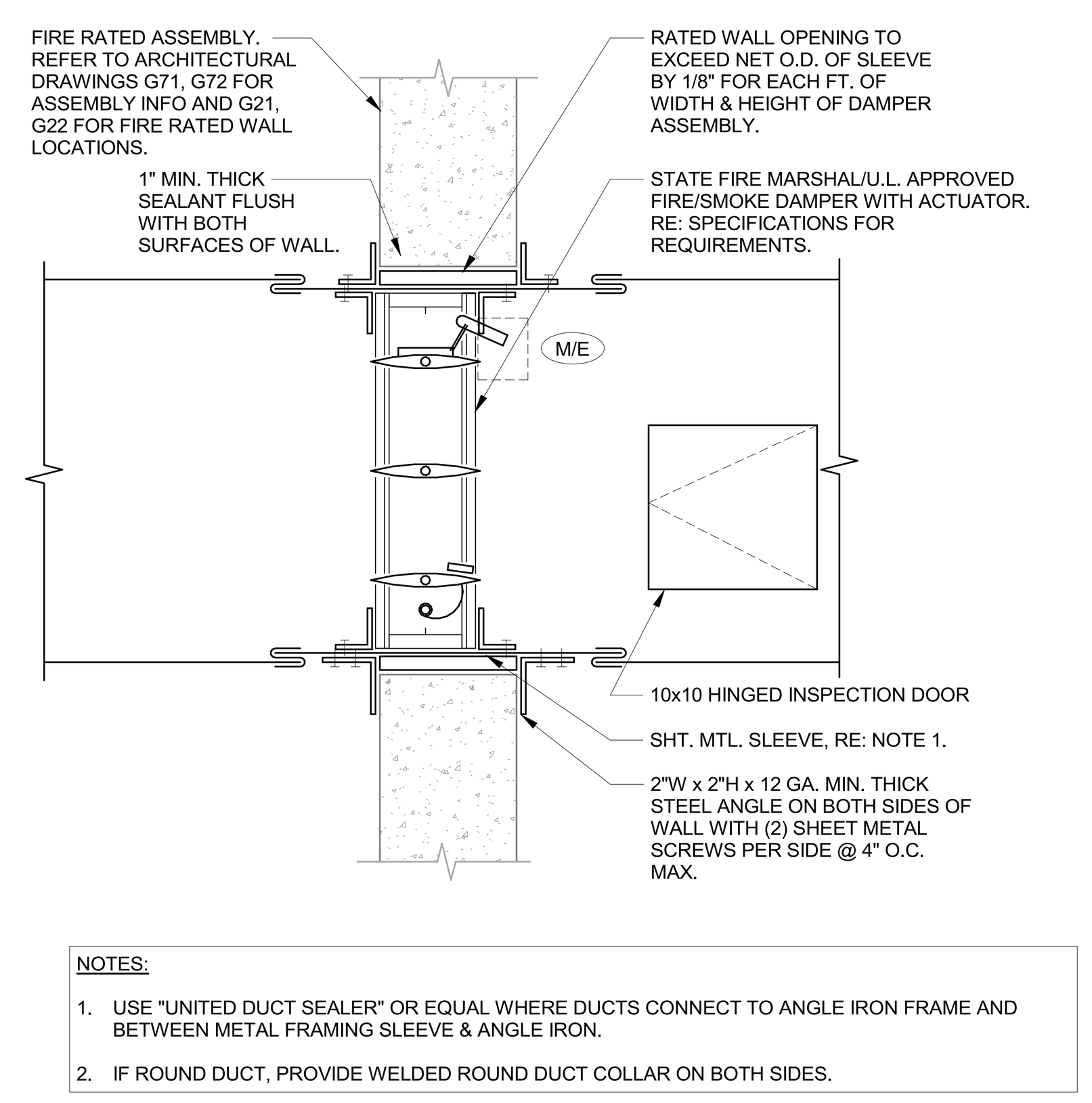
5 LINEAR SLOT DIFFUSER ON PLENUM
NTS



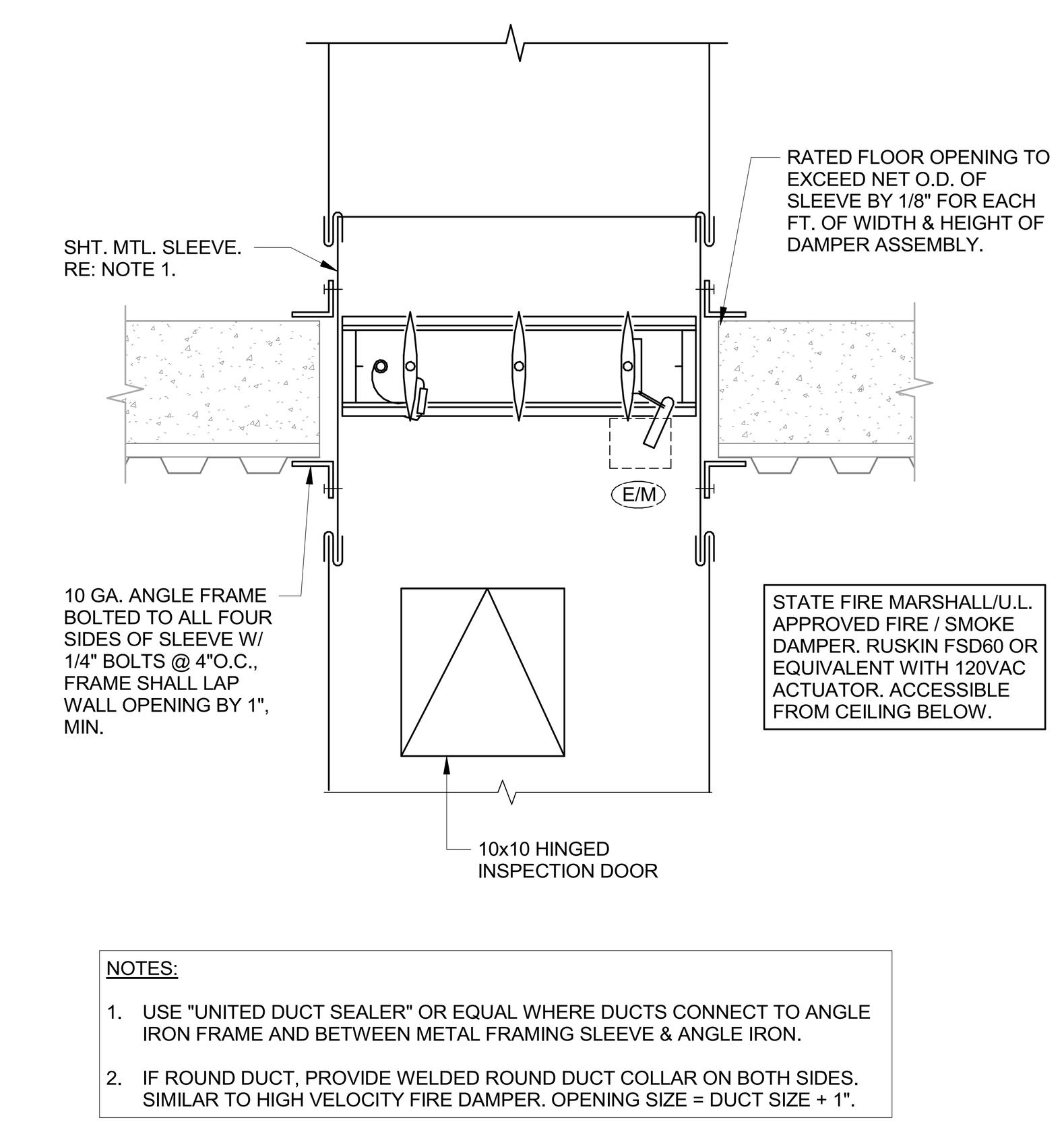
6 DUCT PENETRATION THRU WOOD STUD WALL
NTS



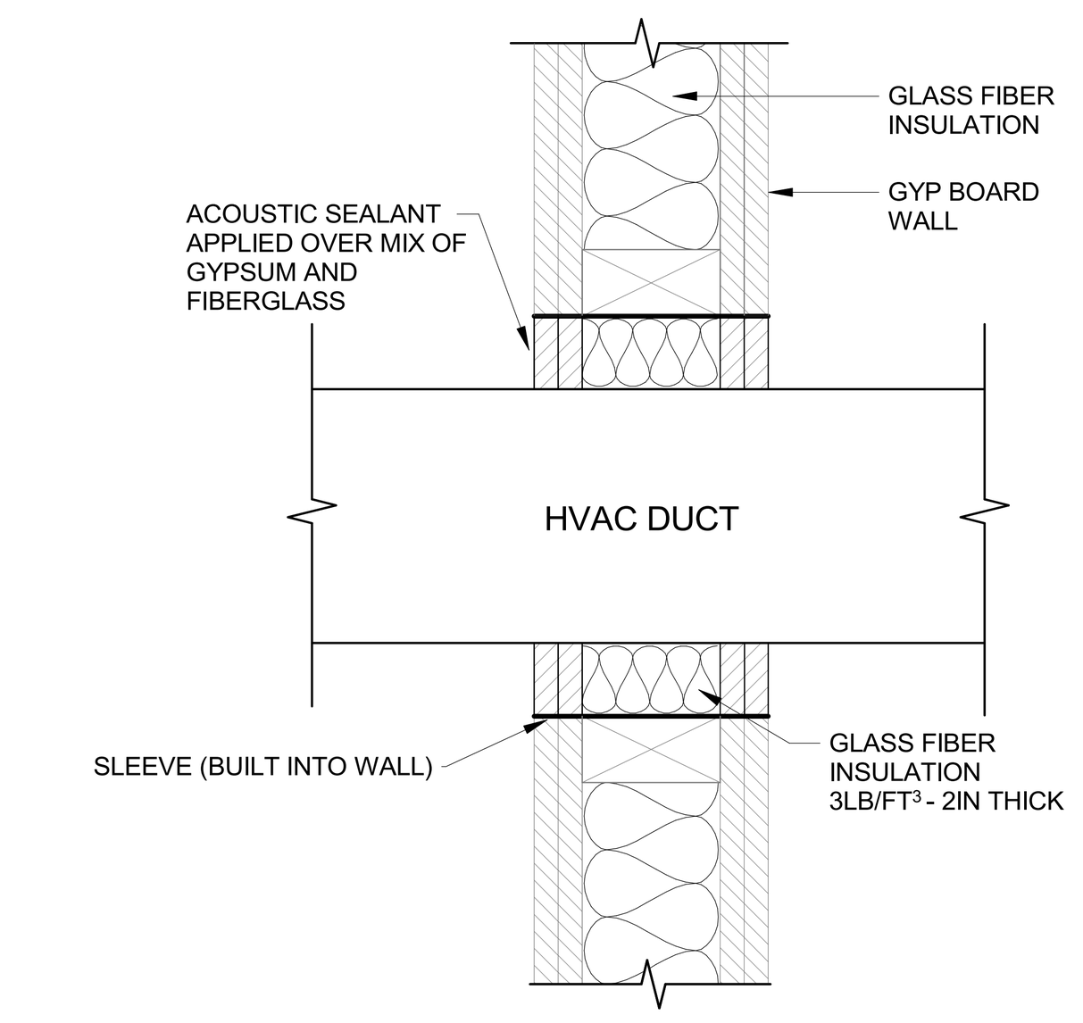
7 DUCT THRU EXTERIOR WALL
NTS



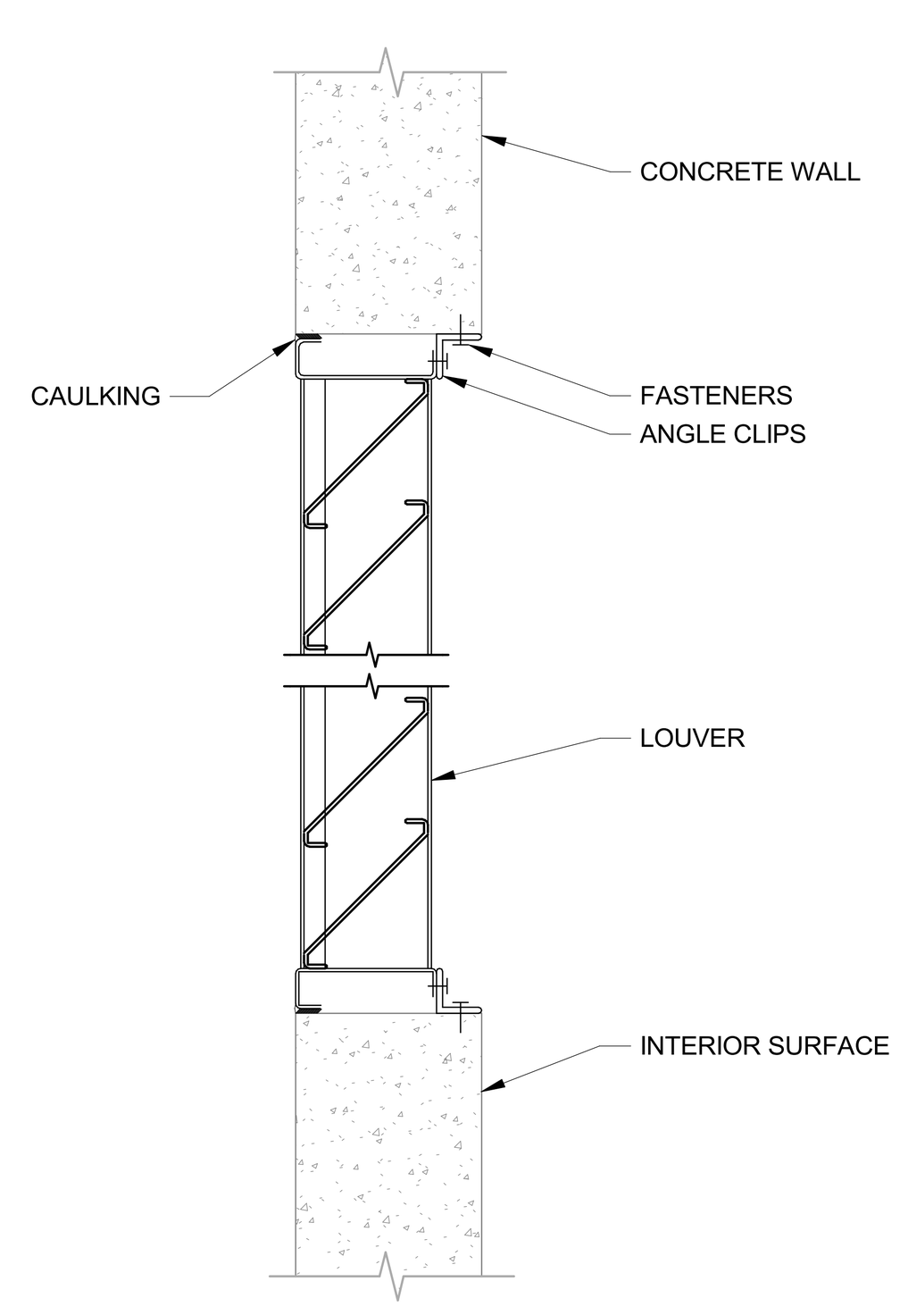
8 1-1/2 HOUR FIRE/SMOKE DAMPER
NTS



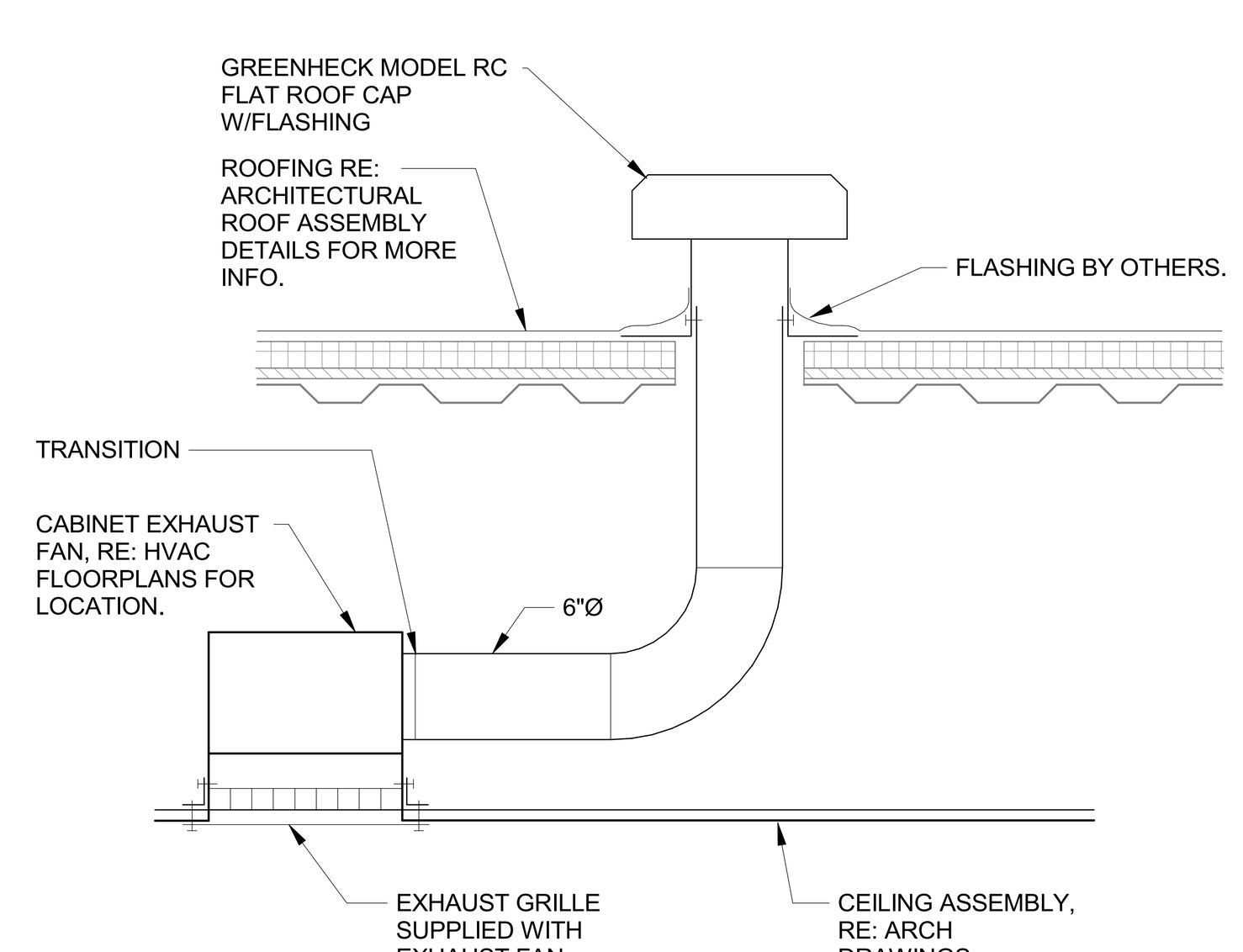
9 1-1/2 HOUR FIRE/SMOKE DAMPER AT FLOOR
NTS



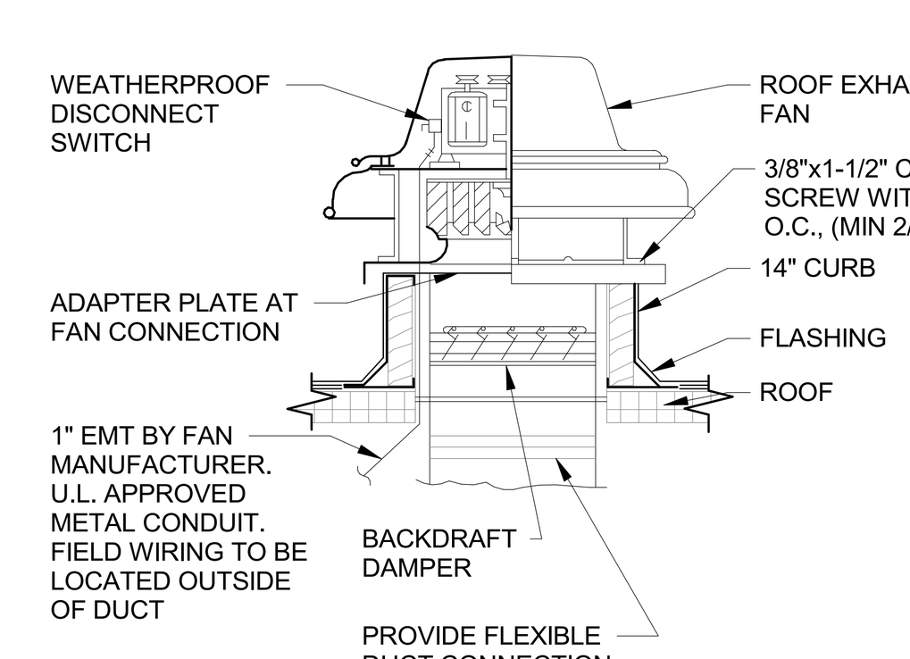
10 DUCT PENETRATION THRU SOUND RATED ASSEMBLY
NTS



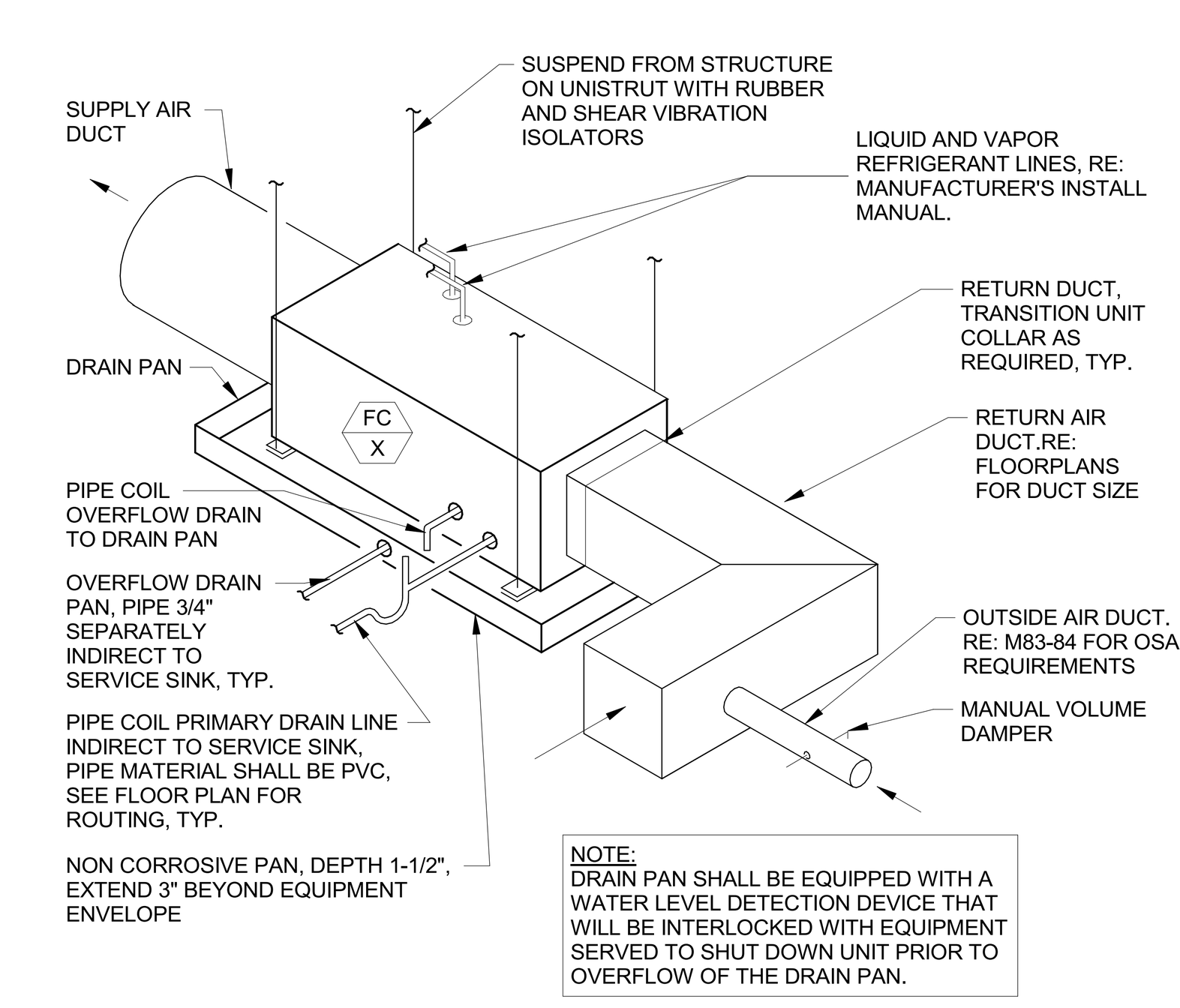
11 LOUVER ON CMU WALL
NTS



12 CEILING MOUNTED EXHAUST FAN
NTS



13 ROOF EXHAUST FAN
NTS



14 FAN COIL MOUNTING
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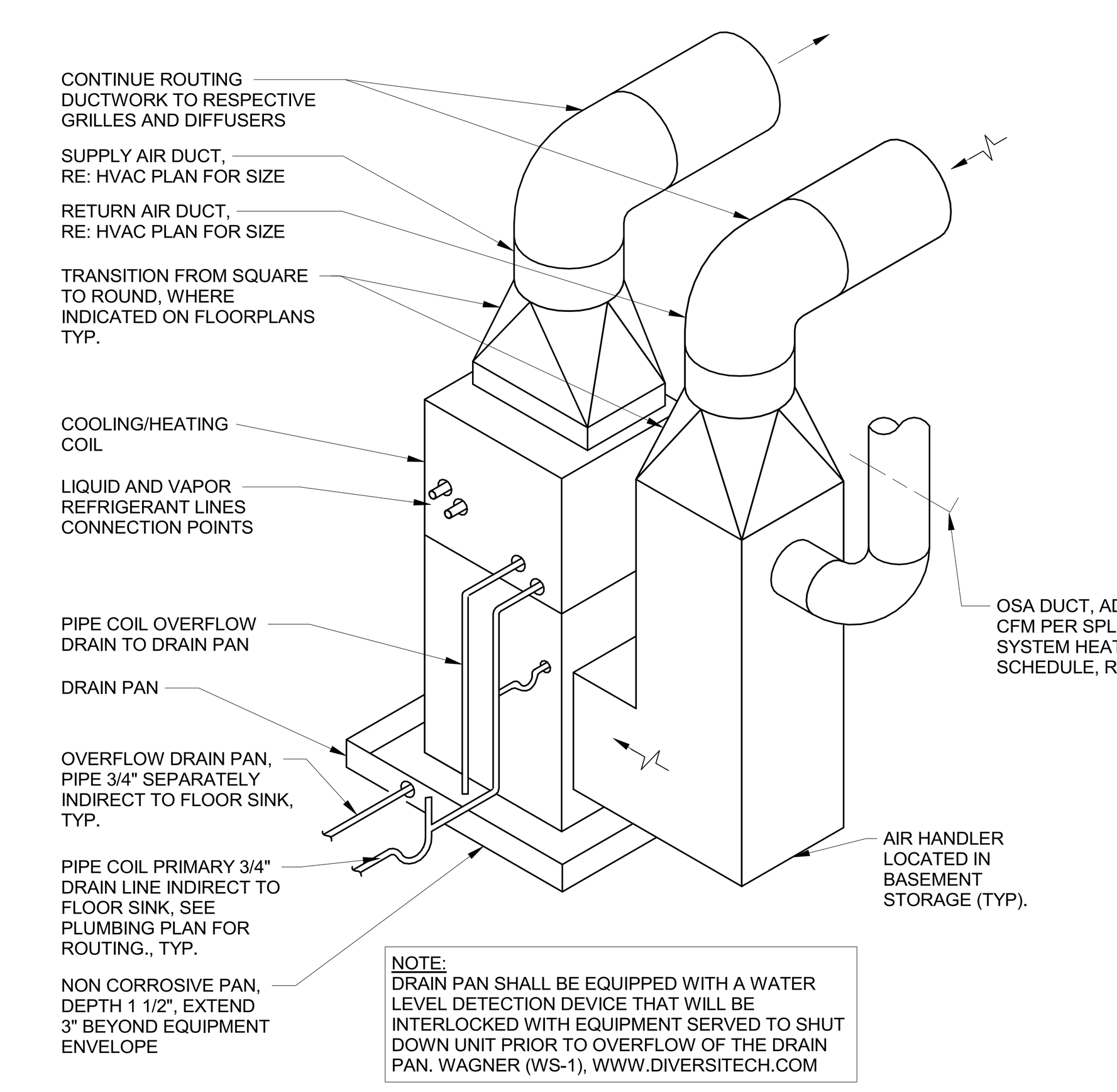

15 VERTICAL FAN COIL MOUNTING
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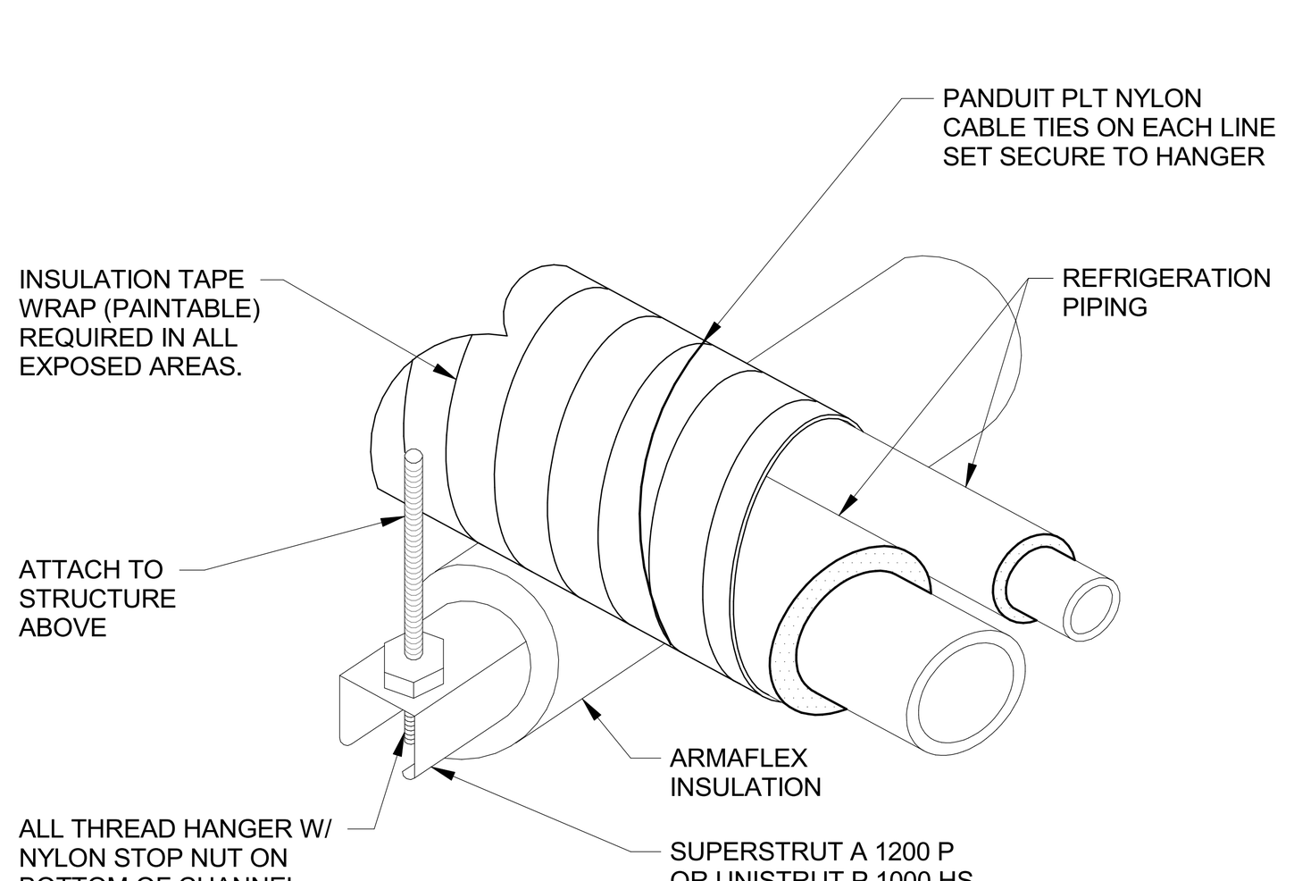
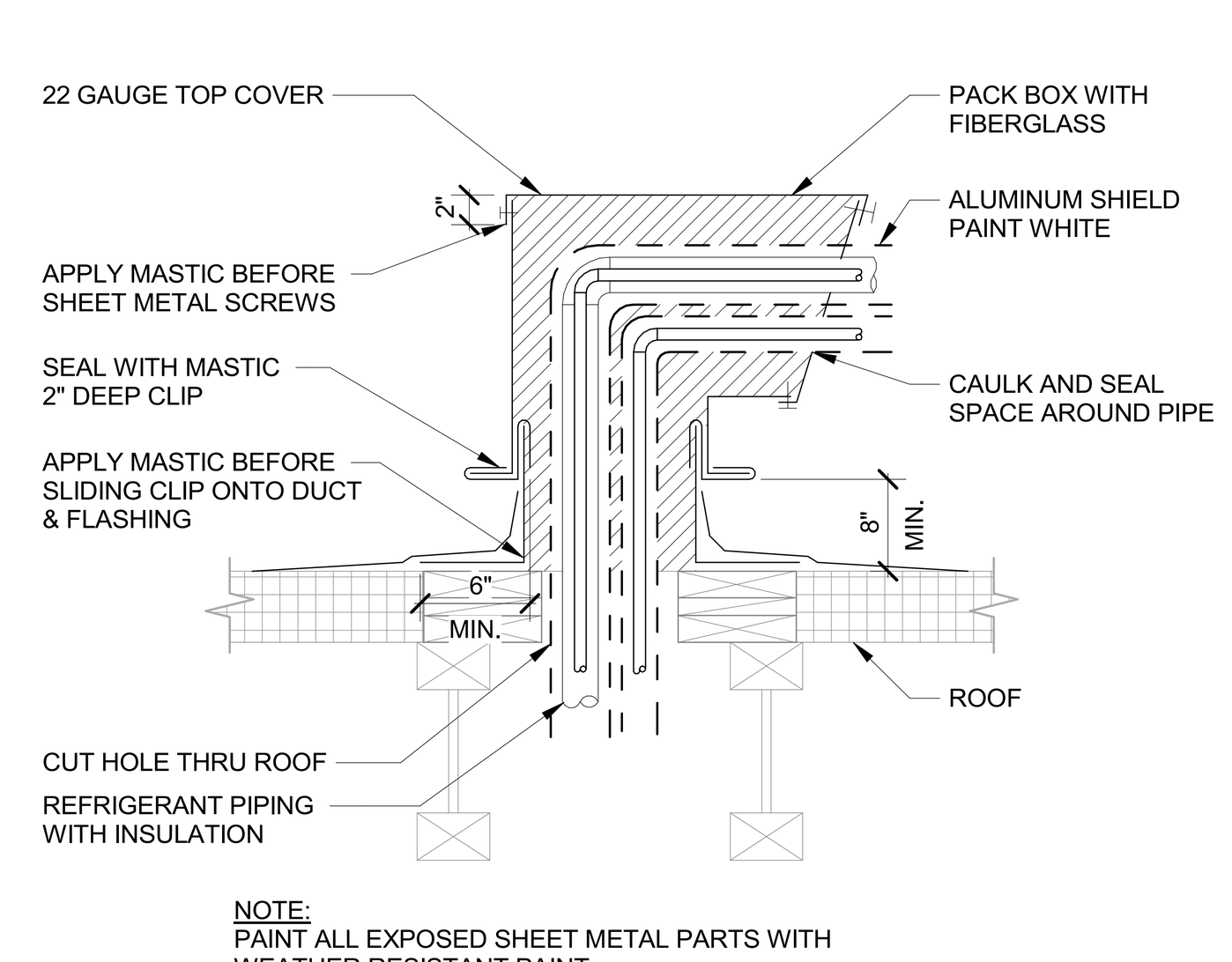
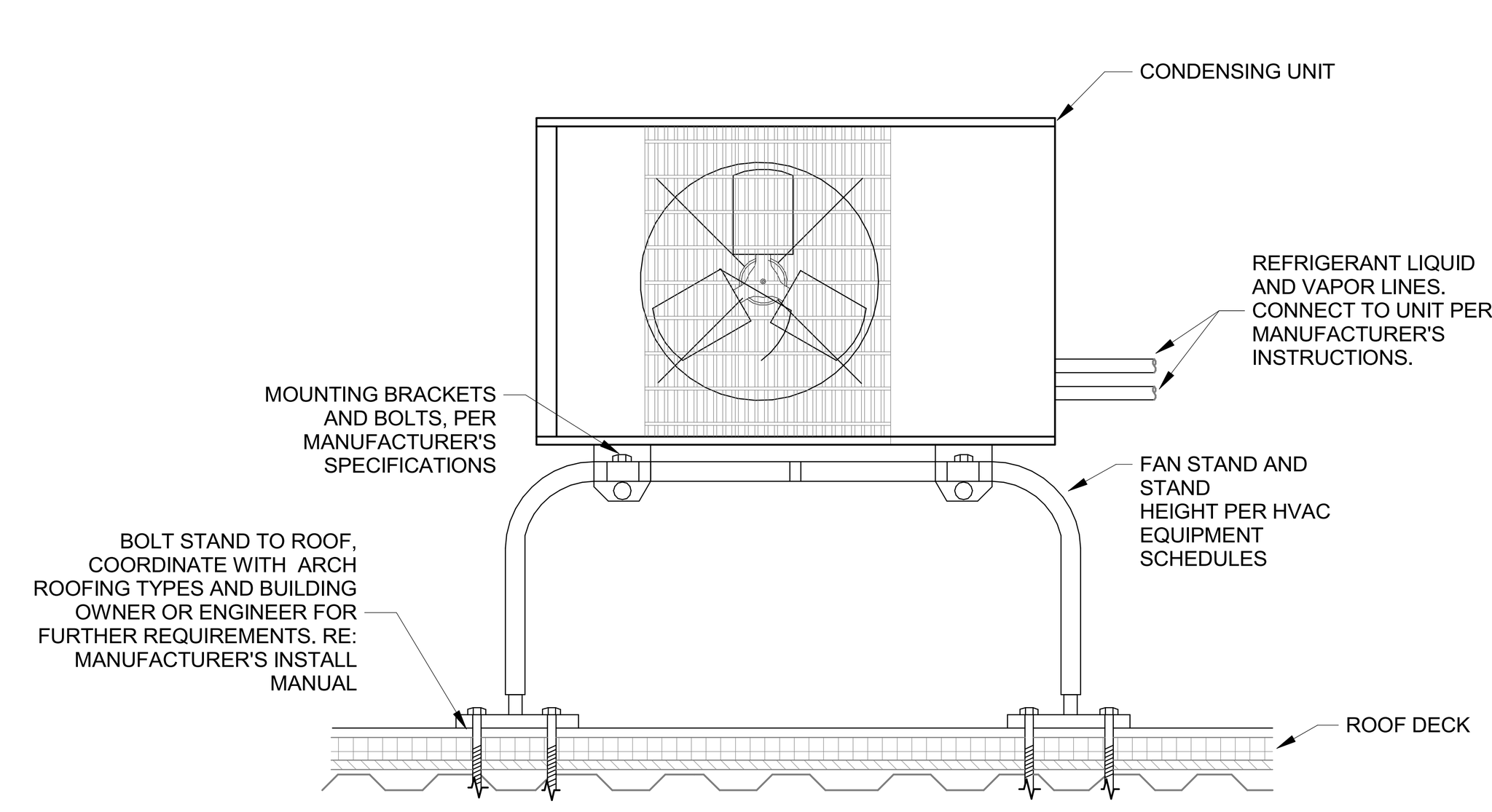


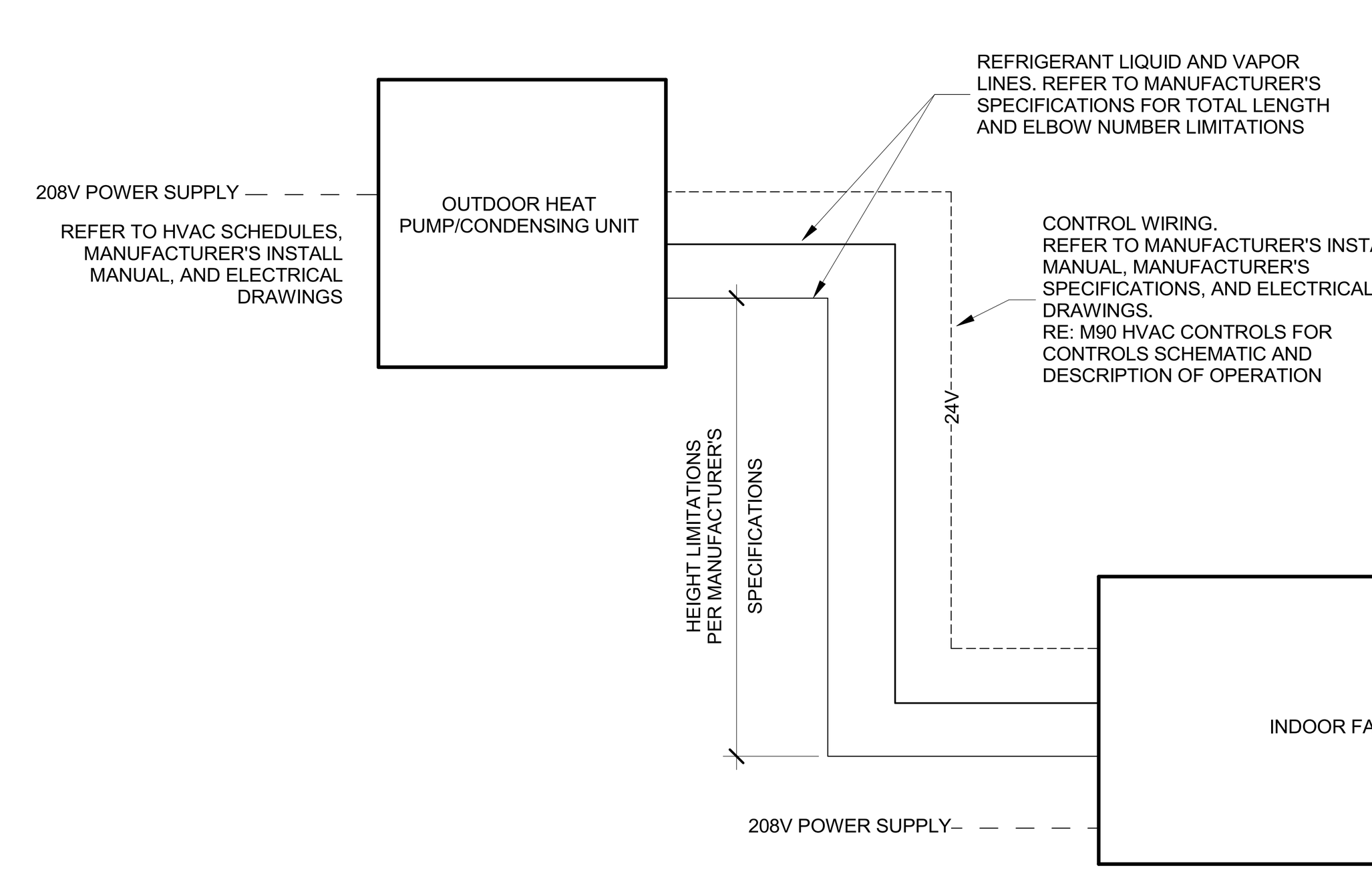
16 REFRIGERANT PIPE MOUNTING AND INSULATION
NTS



17 ROOF JACK FOR PIPES THRU ROOF
NTS



18 CONDENSER/HEAT PUMP UNIT ROOFTOP MOUNTING
NTS



19 SPLIT SYSTEM CONNECTIONS SCHEMATIC
NTS

3/31/2023 11:36:57 AM

PROFESSIONAL ENGINEER LICENSED 19613 STATE OF IDAHO JOSEPH HUFF
Digitally signed by Joseph Huff Date: 2023.03.31 12:53:40-06'00'

ORIGINAL DOCUMENTS ARE HELD AT CSHQA, INC. OFFICE, 200 W BROAD STREET, BOISE, ID 83702

JOSEPH HUFF, P.E.
200 BROAD STREET BOISE, IDAHO PHONE: 208-343-4635 • FAX: 208-343-1858

THERON W. WARD JUDICIAL BUILDING REMODEL & EXPANSION

427 Shoshone St N Twin Falls, ID

CSHQA
200 BROAD STREET BOISE, ID 83702
(208) 343-4635 • FAX (208) 343-1858
http://www.cshqa.com

AGENCY REVIEW SET

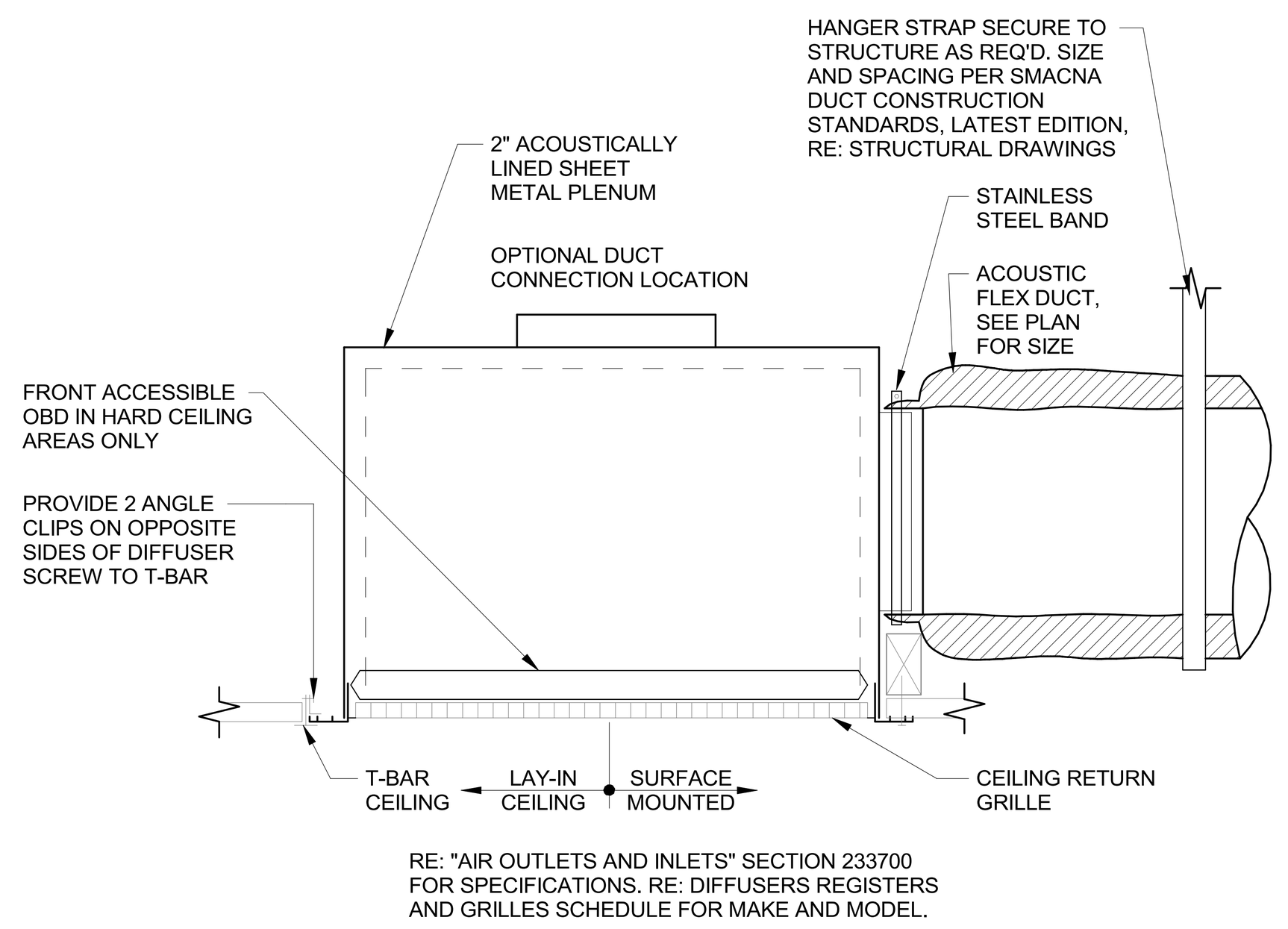
PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

REVISED

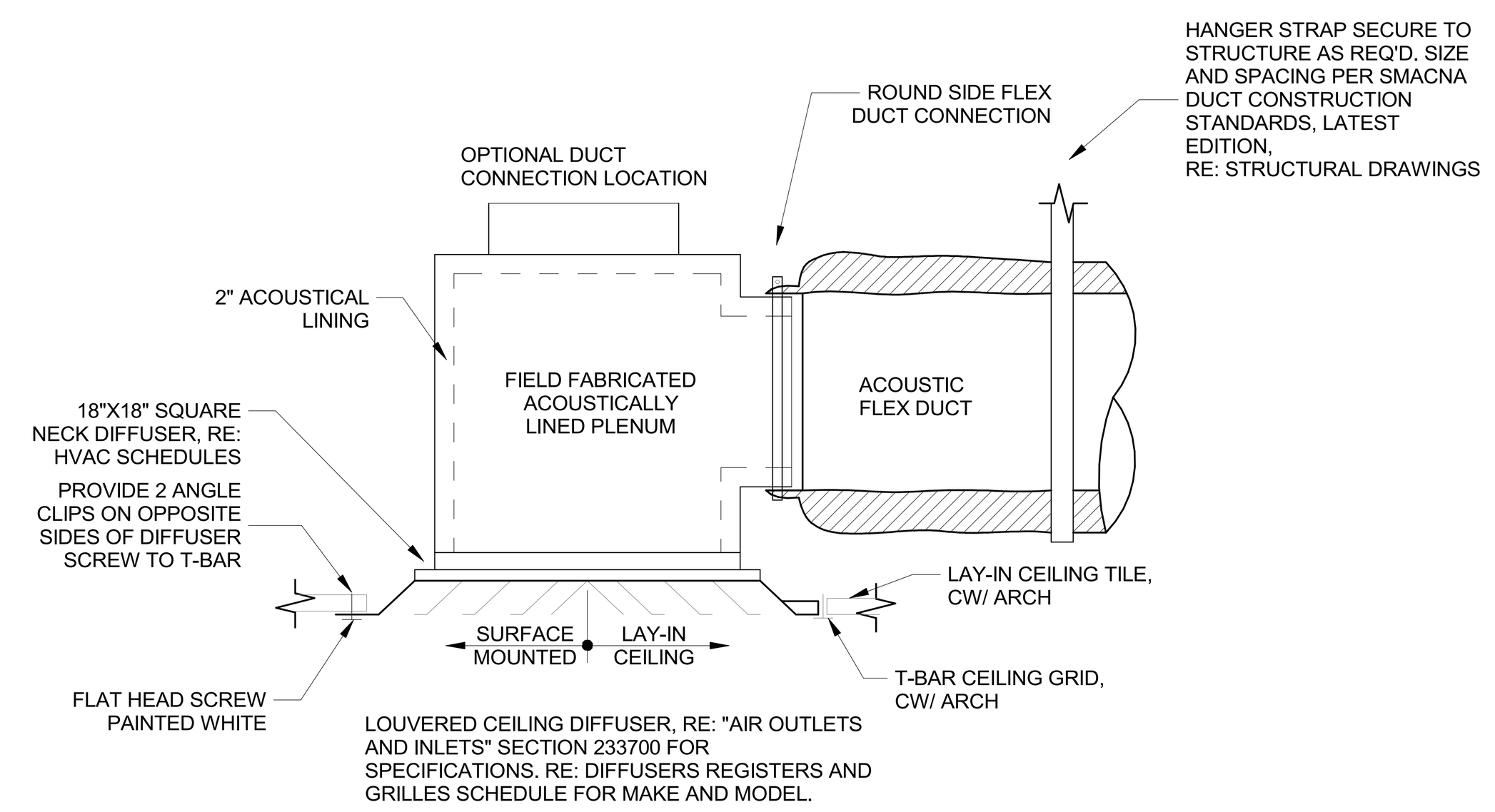
SHEET TITLE
HVAC DETAILS 1

SHEET
M71

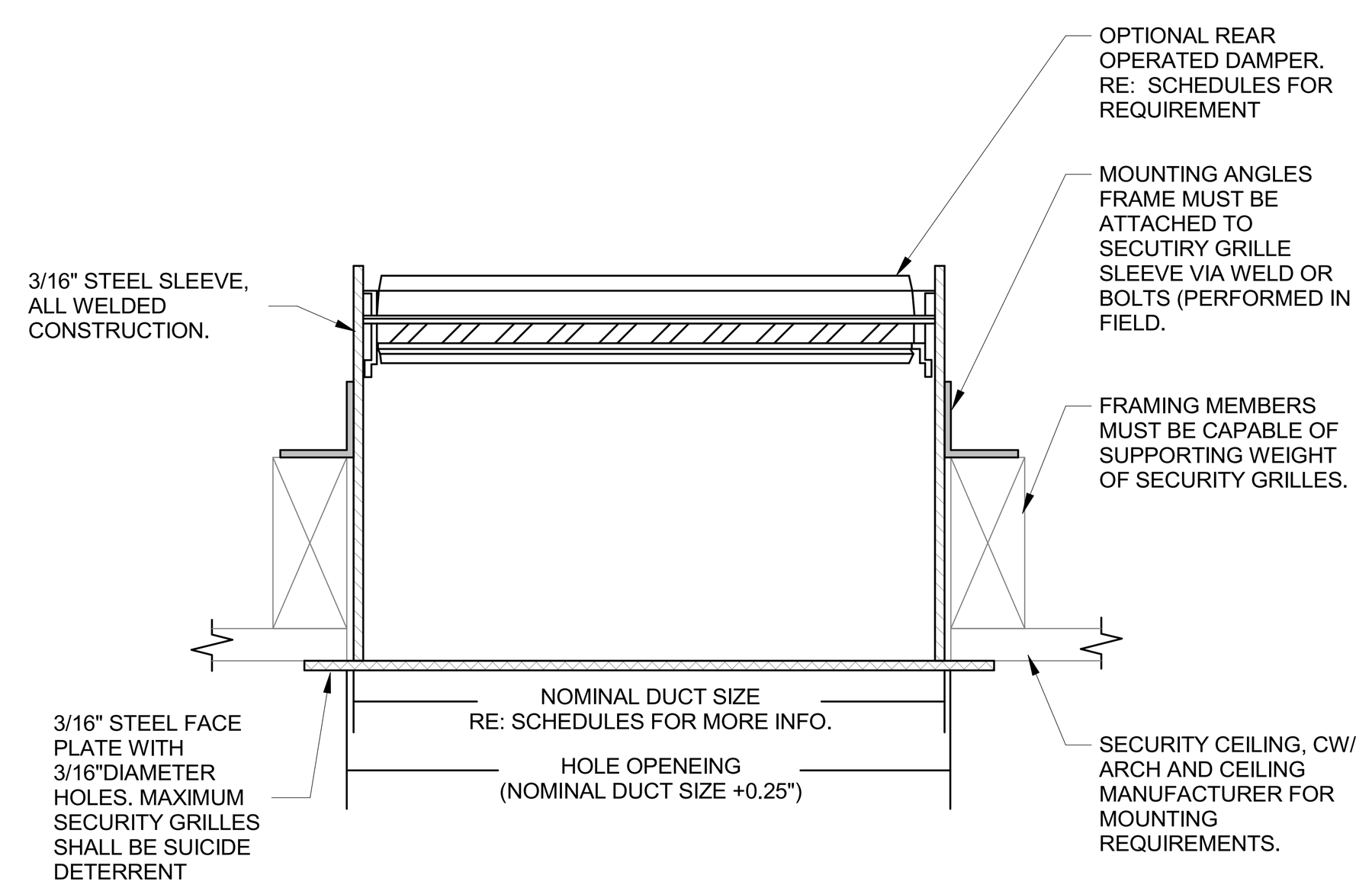
ORIGINAL SHEET SIZE 36" x 48"



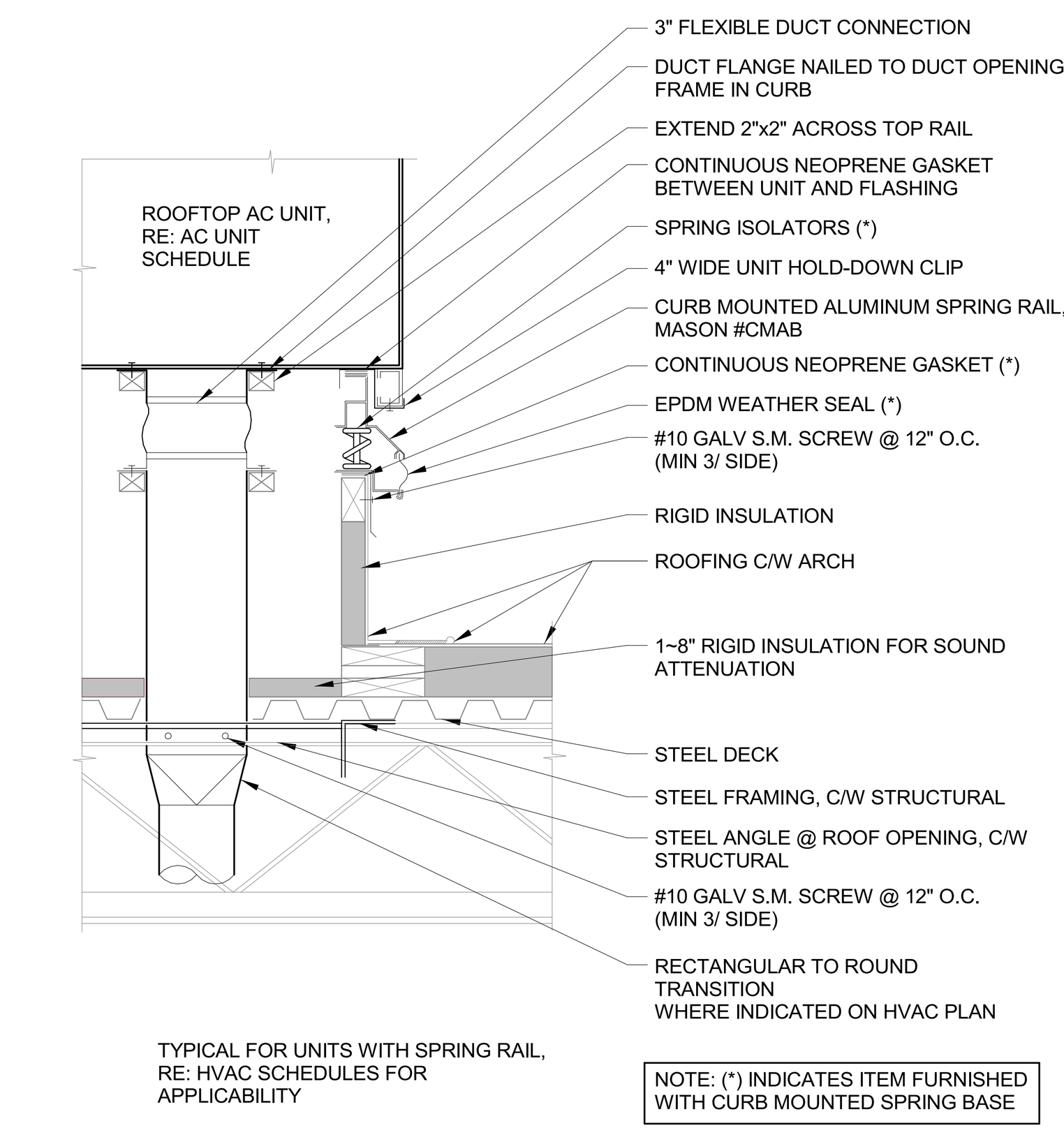
1 CEILING RETURN/EXHAUST CONNECTION WITH ACOUSTIC PLENUM
NTS



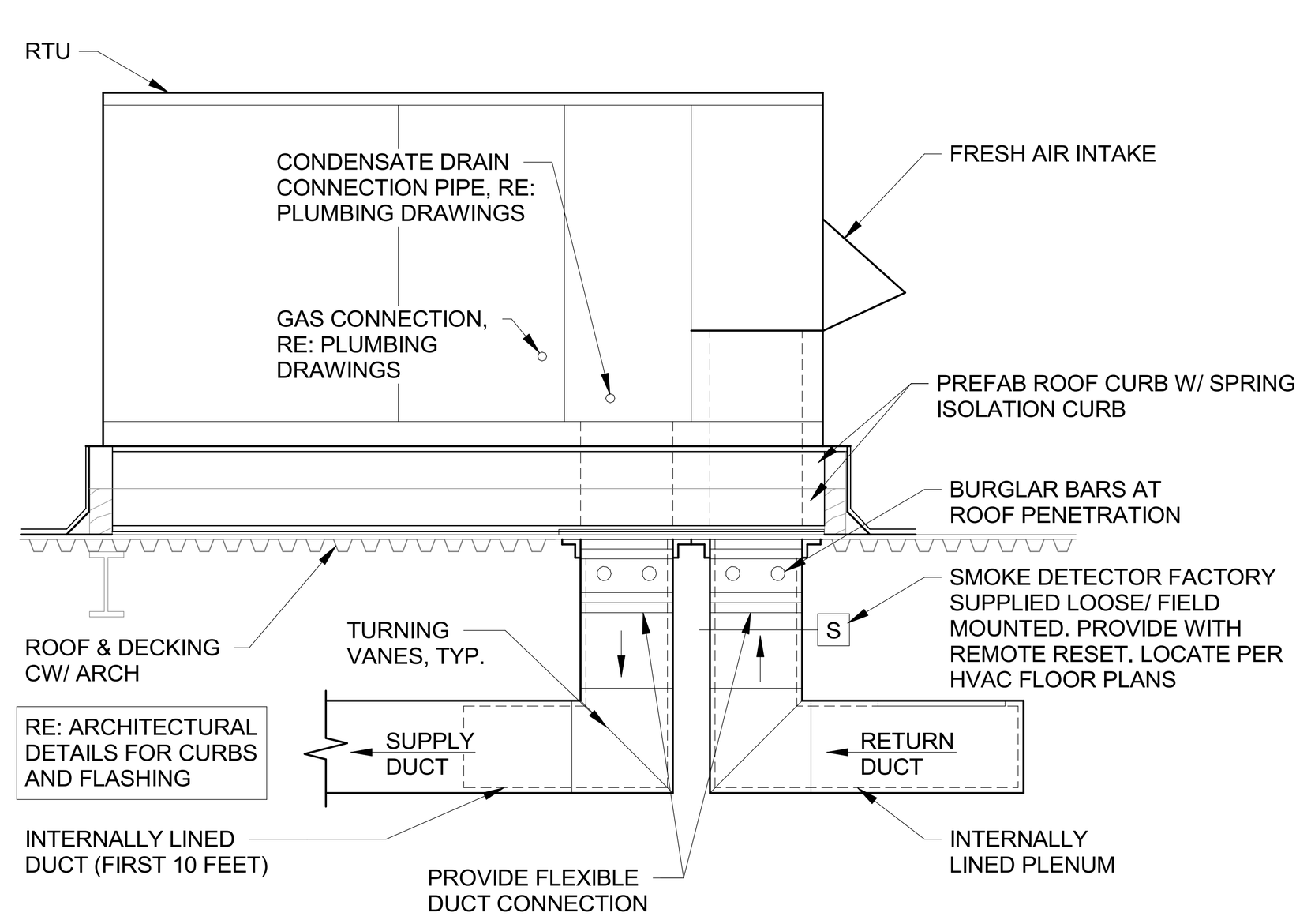
2 SOUND ATTENUATED PLENUM ON CEILING DIFFUSER
NTS



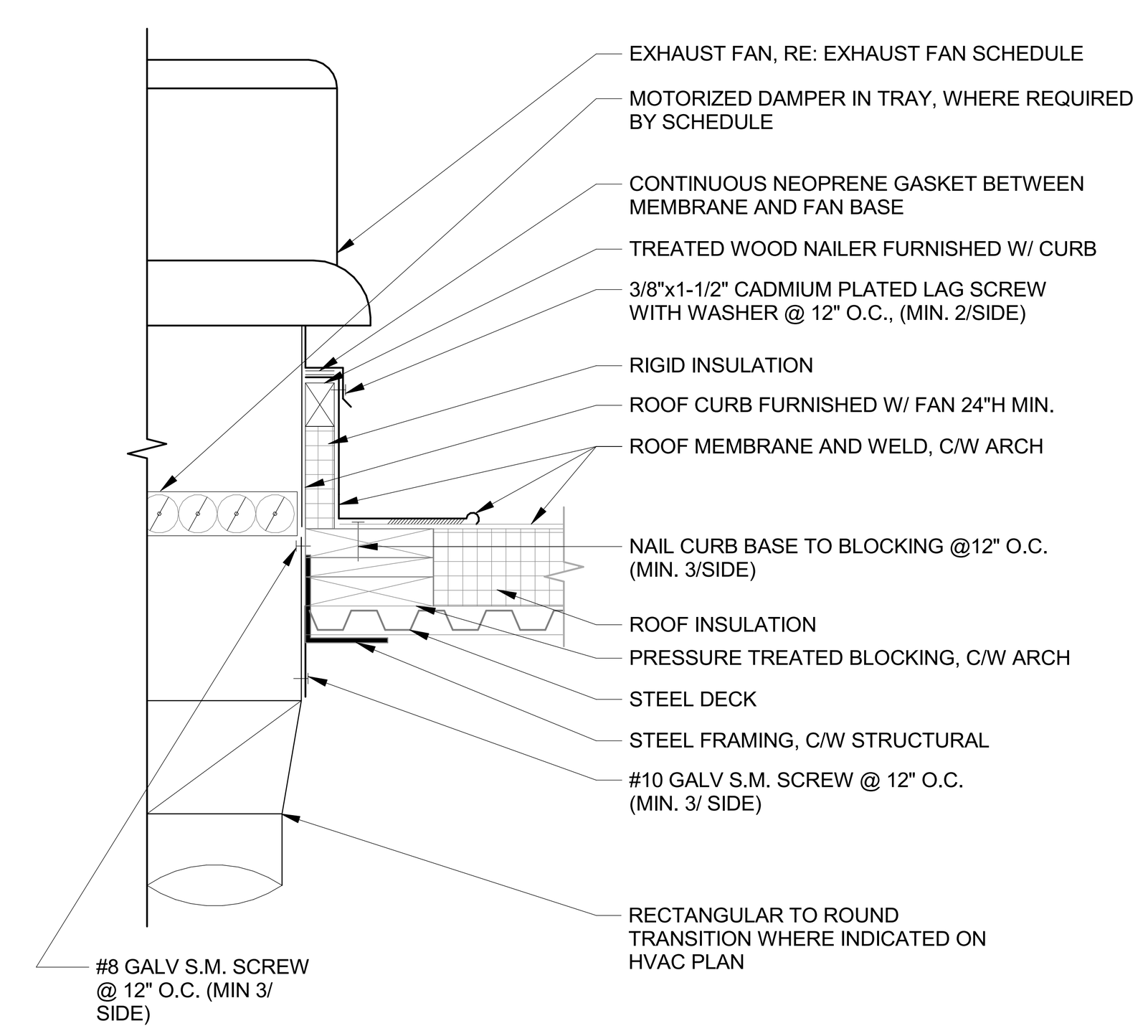
3 SECURITY GRILLE MOUNTING
NTS



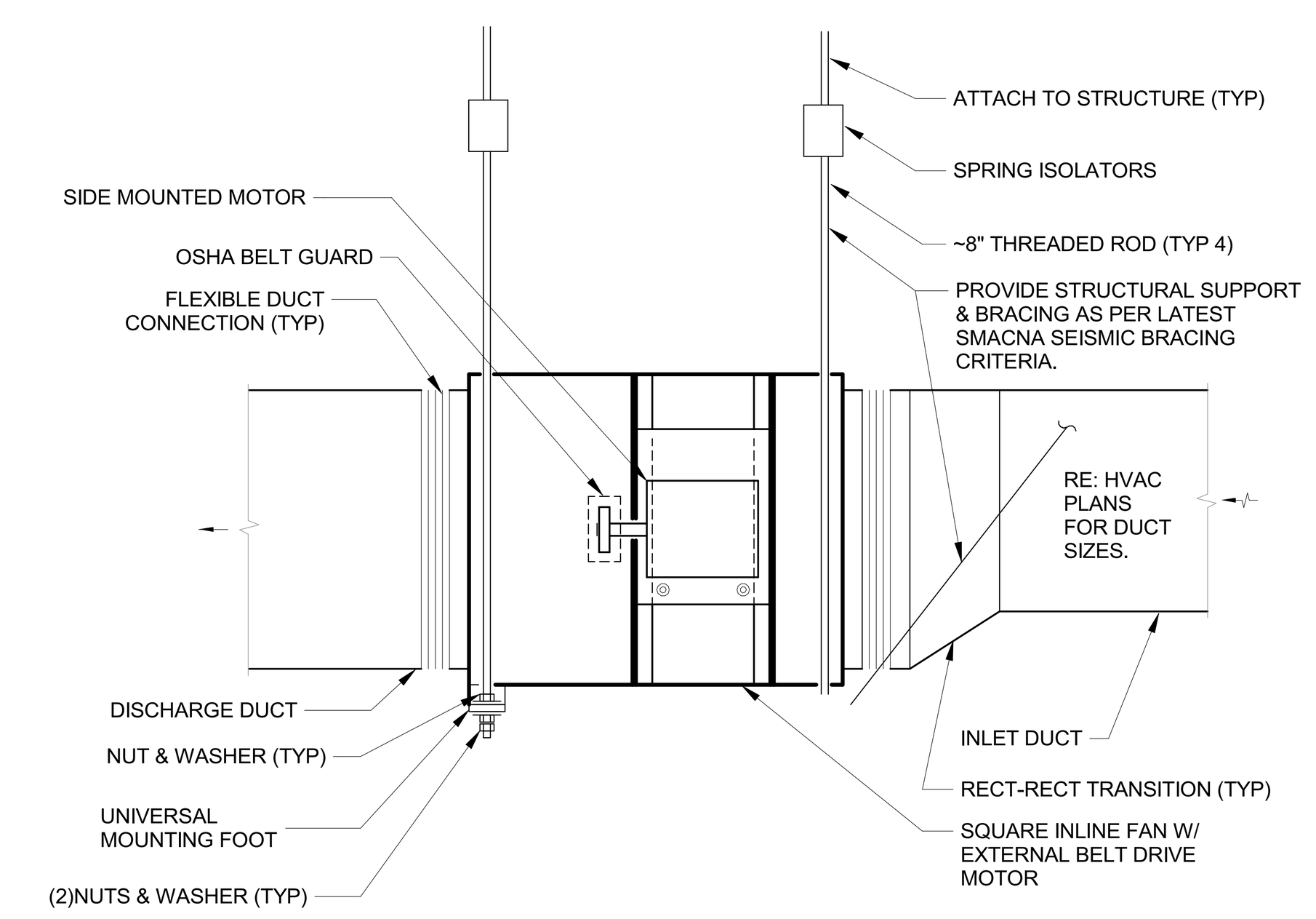
4 AC UNIT WITH SPRING RAIL MOUNTING DETAIL
NTS



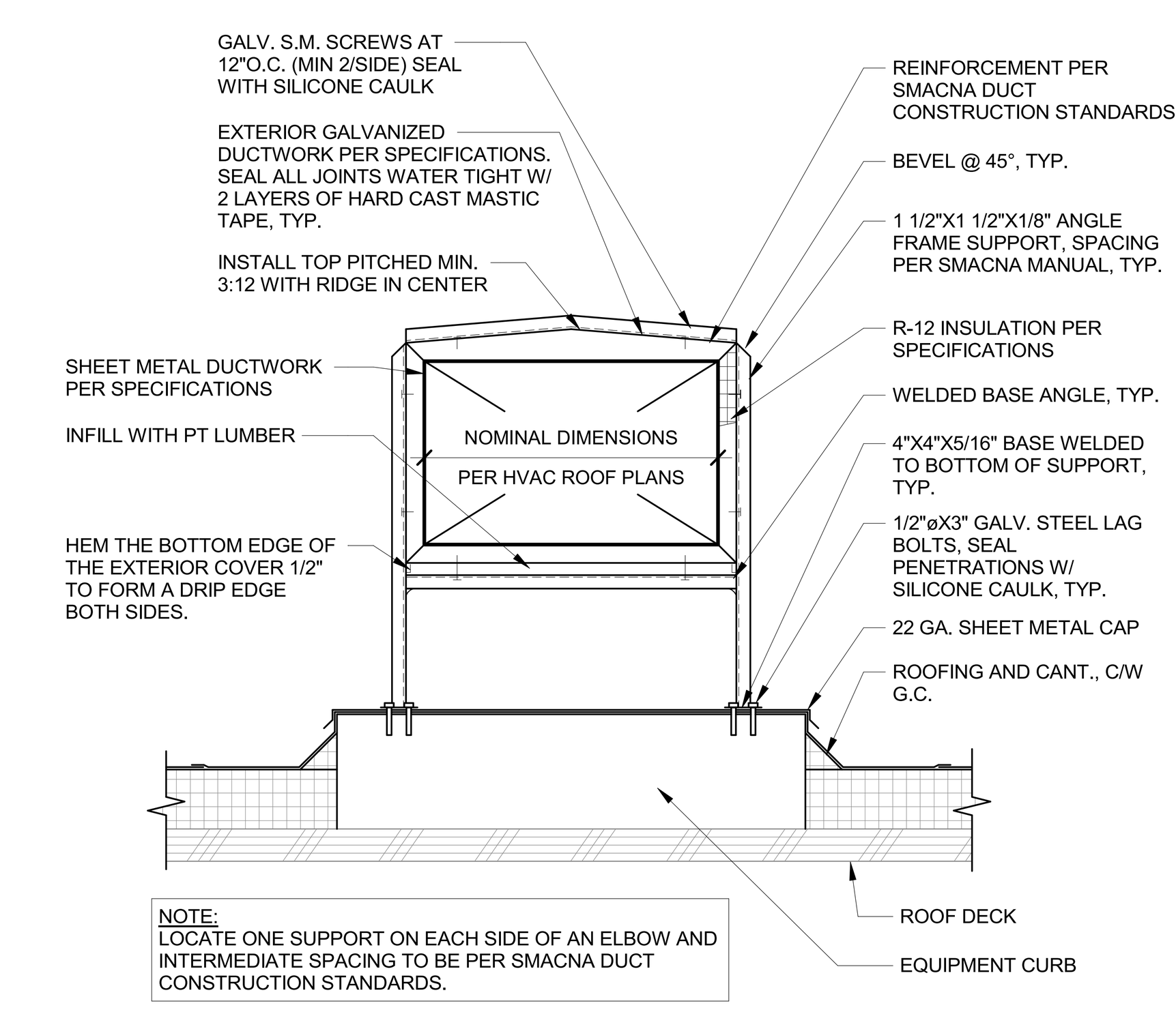
5 ROOF MOUNTED RTU
NTS



6 EXHAUST FAN MOUNTING
NTS



7 SQUARE INLINE TRANSFER FAN HANGING DETAIL
NTS



8 PITCHED EXTERIOR DUCTWORK ON ROOF DETAIL
NTS

3/31/2023 11:36:56 AM

PROFESSIONAL ENGINEER LICENSED 19613 STATE OF IDAHO JOSEPH HUFF

Digitally signed by Joseph Huff
Date: 2023.03.31 12:53:40-06'00'

ORIGINAL DOCUMENTS ARE HELD AT CSHQA, INC. OFFICE, 200 W BROAD STREET, BOISE, ID 83702

JOSEPH HUFF, P.E.N, P.E.P.E ARCHITECT
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BOISE, IDAHO
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THERON W. WARD JUDICIAL BUILDING REMODEL & EXPANSION

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CSHQA
200 BROAD STREET
BOISE, ID 83702
(208) 343-4635 • FAX (208) 343-1858
http://www.cshqa.com

AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

REVISED

SHEET TITLE

HVAC DETAILS 2

SHEET

M72

ORIGINAL SHEET SIZE 36" x 48"

SINGLE PACKAGED AIR CONDITIONER GAS/ELECTRIC SCHEDULE (ROOFTOP)

MARK	BASIS OF DESIGN				LOCATION	AREA AND/OR BLDG SERVED	TOTAL SUPPLY AIR FLOW	MIN. OUTSIDE AIR FLOW	EXT STATIC PRESSURE CAPACITY	NOMINAL TONS	COOLING CAPACITY					HEATING CAPACITY (SCHEDULED VALUES HAVE BEEN DERATED FOR ALTITUDE, 3734 FT)					FILTERS		ELECTRICAL DATA															DAMPER TYPE	REMARKS
	MANUFACTURER	MODEL NUMBER	BASE OPERATING WEIGHT	ACCESSORY WEIGHT							MIN TOTAL	MIN SENS	MIN SEER (EER)	EAT Db	EAT Wb	OSA DESIGN TEMP	GAS MIN. INPUT	MIN. NET OUTPUT	EAT Db	LAT Db	MIN EFF.	TYPE	SIZE (THICKESS) IN	INDOOR FAN		COMPRESSOR		OUTDOOR FAN		POWER EXHAUST					UNIT POWER CONNECTION						
			LBS	LBS			CFM	CFM	IN		MBH	MBH		°F	°F	°F	MBH	MBH	°F	°F	%			FLA	CONTROL	QTY	RLA	QTY	FLA	HP	PHASE	VOLT	MCA	MOCP	MCA	MOCP	PHASE	VOLT		
RTU-1	CARRIER	48GCEM05	642	279	EXISTING ROOF	FIRST FLOOR	1600	480	1.6	4	44.08	40.81	16.1	83	63	99	92.4	73.9	48.1	97.2	80	MERV 14	4	2.6	CONSTANT	1	6.4	1	0.8	1/2	3	460	1.9	10	13	15	3	460	MOTORIZED	1-13
RTU-2	CARRIER	48GCEM05	642	279	EXISTING ROOF	FIRST FLOOR	1600	480	1.6	4	44.08	40.81	16.1	83	63	99	92.4	73.9	48.1	97.2	80	MERV 14	4	2.6	CONSTANT	1	6.4	1	0.8	1/2	3	460	1.9	10	13	15	3	460	MOTORIZED	1-12
RTU-3	CARRIER	48GCEM05	642	279	EXISTING ROOF	FIRST FLOOR	1600	480	1.6	4	44.08	40.81	16.1	83	63	99	92.4	73.9	48.1	97.2	80	MERV 14	4	2.6	CONSTANT	1	6.4	1	0.8	1/2	3	460	1.9	10	13	15	3	460	MOTORIZED	1-12
RTU-4	CARRIER	48GCEM05	642	279	EXISTING ROOF	FIRST FLOOR	1600	480	1.6	4	44.08	40.81	16.1	83	63	99	92.4	73.9	48.1	97.2	80	MERV 14	4	2.6	CONSTANT	1	6.4	1	0.8	1/2	3	460	1.9	10	13	15	3	460	MOTORIZED	1-12
RTU-5	CARRIER	48GCEM05	642	279	EXISTING ROOF	FIRST FLOOR	1600	480	1.6	4	44.08	40.81	16.1	83	63	99	92.4	73.9	48.1	97.2	80	MERV 14	4	2.6	CONSTANT	1	6.4	1	0.8	1/2	3	460	1.9	10	13	15	3	460	MOTORIZED	1-12
RTU-6	CARRIER	48GCEM05	642	279	EXISTING ROOF	FIRST FLOOR	1600	480	1.6	4	44.08	40.81	16.1	83	63	99	92.4	73.9	48.1	97.2	80	MERV 14	4	2.6	CONSTANT	1	6.4	1	0.8	1/2	3	460	1.9	10	13	15	3	460	MOTORIZED	1-12
RTU-7	CARRIER	48LCE007	1346	309	EXISTING ROOF	FIRST FLOOR	2400	720	1.6	6	66.86	63.98	(13)	83	63	99	105	86.5	48.1	86.4	82	MERV 14	4	3.8	CONSTANT	2	5.1/6	2	1.8	1	3	460	3.5	10	20	25	3	460	MOTORIZED	1-12
RTU-8	CARRIER	48LCE007	1346	309	NEW ROOF	SECOND FLOOR	2400	720	1.6	6	66.86	63.98	(13)	83	63	99	105	86.5	48.1	86.4	82	MERV 14	4	3.8	CONSTANT	2	5.1/6	2	1.8	1	3	460	3.5	10	20	25	3	460	MOTORIZED	1-12
RTU-9	CARRIER	48GCEM05	642	279	NEW ROOF	SECOND FLOOR	1600	480	1.6	4	44.08	40.81	16.1	83	63	99	92.4	73.9	48.1	97.2	80	MERV 14	4	2.6	CONSTANT	1	6.4	1	0.8	1/2	3	460	1.9	10	13	15	3	460	MOTORIZED	1-13
RTU-10	CARRIER	48GCEM05	642	279	NEW ROOF	SECOND FLOOR	1600	480	1.6	4	44.08	40.81	16.1	83	63	99	92.4	73.9	48.1	97.2	80	MERV 14	4	2.6	CONSTANT	1	6.4	1	0.8	1/2	3	460	1.9	10	13	15	3	460	MOTORIZED	1-13
RTU-11	CARRIER	48GCEM04	592	279	NEW ROOF	FIRST FLOOR	1200	360	1.6	3	30.61	27.76	16.1	83	63	99	92.4	73.9	48.1	113.5	80	MERV 14	4	1.7	CONSTANT	1	5.7	1	0.8	-	-	-	-	-	10	15	3	460	MOTORIZED	1-12
RTU-12	CARRIER	48GCEM06	829	279	NEW ROOF	SECOND FLOOR	2000	600	1.6	5	56.99	50.4	16.1	83	63	99	92.4	73.9	48.1	87.3	80	MERV 14	4	3.1	CONSTANT	1	7.6	1	0.8	1/2	3	460	1.9	10	14	20	3	460	MOTORIZED	1-13
RTU-13	CARRIER	48GCEM06	829	279	NEW ROOF	FIRST FLOOR	2000	600	1.6	5	56.99	50.4	16.1	83	63	99	92.4	73.9	48.1	87.3	80	MERV 14	4	3.1	CONSTANT	1	7.6	1	0.8	1/2	3	460	1.9	10	14	20	3	460	MOTORIZED	1-13
RTU-14	CARRIER	48GCEM06	829	279	NEW ROOF	FIRST FLOOR	2000	600	1.6	5	56.99	50.4	16.1	83	63	99	92.4	73.9	48.1	87.3	80	MERV 14	4	3.1	CONSTANT	1	7.6	1	0.8	1/2	3	460	1.9	10	14	20	3	460	MOTORIZED	1-13
RTU-15	CARRIER	48LCE007	1346	309	NEW ROOF	SECOND FLOOR	2400	720	1.6	6	66.86	63.98	(13)	83	63	99	105	86.5	48.1	86.4	82	MERV 14	4	3.8	CONSTANT	2	5.1/6	2	1.8	1	3	460	3.5	10	20	25	3	460	MOTORIZED	1-13
RTU-16	CARRIER	48GCEM05	642	279	NEW ROOF	SECOND FLOOR	1600	480	1.6	4	44.08	40.81	16.1	83	63	99	92.4	73.9	48.1	97.2	80	MERV 14	4	2.6	CONSTANT	1	6.4	1	0.8	1/2	3	460	1.9	10	13	15	3	460	MOTORIZED	1-13
RTU-17	CARRIER	48LCE009	1198	309	NEW ROOF	SECOND FLOOR	3400	1020	1.6	8.5	93.88	89.84	(13.5)	83	63	99	151.2	122.6	48.1	86.4	81	MERV 14	4	6.4	CONSTANT	2	6/7.7	3	1.8	1	3	460	3.5	10	28	30	3	460	MOTORIZED	1-12
RTU-18	CARRIER	48GCEM06	829	279	NEW ROOF	SECOND FLOOR	2000	600	1.6	5	56.99	50.4	16.1	83	63	99	92.4	73.9	48.1	87.3	80	MERV 14	4	3.1	CONSTANT	1	7.6	1	0.8	1/2	3	460	1.9	10	14	20	3	460	MOTORIZED	1-13
RTU-19	CARRIER	48GCEM06	829	279	NEW ROOF	FIRST FLOOR	2000	600	1.6	5	56.99	50.4	16.1	83	63	99	92.4	73.9	48.1	87.3	80	MERV 14	4	3.1	CONSTANT	1	7.6	1	0.8	1/2	3	460	1.9	10	14	20	3	460	MOTORIZED	1-13
RTU-20	CARRIER	48GCEM06	829	279	NEW ROOF	SECOND FLOOR	2000	600	1.6	5	56.99	50.4	16.1	83	63	99	92.4	73.9	48.1	87.3	80	MERV 14	4	3.1	CONSTANT	1	7.6	1	0.8	1/2	3	460	1.9	10	14	20	3	460	MOTORIZED	1-12
RTU-21	CARRIER	48LCE007	1346	309	NEW ROOF	FIRST FLOOR	2400	720	1.6	6	66.86	63.98	(13)	83	63	99	105	86.5	48.1	86.4	82	MERV 14	4	3.8	CONSTANT	2	5.1/6	2	1.8	1	3	460	3.5	10	20	25	3	460	MOTORIZED	1-12
RTU-22	CARRIER	48LCE009	1198	309	NEW ROOF	FIRST FLOOR	3400	1020	1.6	8.5	93.88	89.84	(13.5)	83	63	99	151.2	122.6	48.1	86.4	81	MERV 14	4	6.4	CONSTANT	2	6/7.7	3	1.8	1	3	460	3.5	10	28	30	3	460	MOTORIZED	1-12
RTU-23	CARRIER	48LCE008	1998	309	NEW ROOF	SECOND FLOOR	3000	900	1.6	7.5	81.97	78.1	(12.8)	83	63	99	151.2	122.6	48.1	91.5	81	MERV 14	4	6.4	CONSTANT	2	6/6.2	3	1.8	1	3	460	3.5	10	26	30	3	460	MOTORIZED	1-12

REMARKS:

1. FULLY MODULATING 100% DRY BULB ECONOMIZER, WITH MINIMUM POSITION SETTING.
2. SMOKE DETECTOR FACTORY SUPPLIED LOOSE, TO BE FIELD INSTALLED AND WIRED PER LOCAL CODE REQUIREMENTS. PROVIDE WITH REMOTE RESET.
3. FURNISH WITH FULLY MODULATING POWER EXHAUST WITH 100% RELIEF CAPABILITY. POWER EXHAUST SHALL BE CAPABLE OF TRACKING THE ECONOMIZER.
4. PREFABRICATED SPRING ISOLATION ROOF CURB, 24" HIGH, SLOPED TO MATCH ROOF. REFER TO ARCHITECTURAL DRAWINGS FOR ROOF SLOPE.
5. GFCI 115V CONVENIENCE RECEPTACLE, FURNISHED AND FIELD WIRED BY ELECTRICAL CONTRACTOR.
6. FACTORY INSTALLED NON-FUSED WEATHERPROOF DISCONNECT SWITCH.
7. FURNISH WITH HINGED PANELS AT CONTROLS, COMPRESSOR, EVAPORATOR FAN, AND FILTER SECTIONS.
8. BURGLAR BARS IN SUPPLY AIR OUTLET AND RETURN INLET.
9. CONDENSER HAIL GUARDS.
10. FURNISH WITH LOW AMBIENT CONTROLS.
11. FURNISH WITH 7-DAY PROGRAMMABLE ELECTRONIC THERMOSTAT. CONTROLS SHALL HAVE 5 DEGREE DEADBAND, AUTO SETBACK,AND MANUAL OVERRIDE. THERMOSTAT SHALL BE BACNET COMPATIBLE AND SHALL CONNECT TO I-VU BUILDING CONTROLS.
12. ADD ALTERNATE: FURNISH WITH FIELD-INSTALLED UV LIGHT KIT.
13. FURNISH AND INSTALL HONEYWELL C7233 WALL MOUNT CO2 SENSOR. DCV PER IECC 2018 SECTION C403.7.1

DEDICATED OUTDOOR AIR UNIT (DOAS) SCHEDULE

MARK	BASIS OF DESIGN			SERVICE	EER	FAN SECTION					COOLING SECTION				HEATING SECTION (SCHEDULED VALUES HAVE BEEN DERATED FOR ALTITUDE, XXXX FT.)				FILTERS	ELECTRICAL						REMARKS
	MANUFACTURER	MODEL	OPERATING WEIGHT			SUPPLY	OSA	TSP	RPM	HP	EAT DB	EAT WB	LAT DB	LAT WB	TYPE (GAS/ELEC)	STAGES	INPUT	OUTPUT	QUANTITY & SIZE	VOLTS/ PHASE	(NO.) CONDENSER FAN	INDOOR FAN	FLA	MCA	MOCP	
			LBS			CFM	CFM	IN WC			°F	°F	°F	°F			MBH	MBH			(#) FLA	FLA				
DOAS-1	DAIKIN	DPS007A	2450	JUDGES' CHAMBERS/ BASEMENT VENTILATION	12.1	2,400	2,400	2	2,374	4	95	67	54	54	GAS	5	200.0	160.0	(2) 2" MERV-8 & 4" MERV-14	460/3	(2) 1.8	4.5	15.6	17.0	20.0	1-9
DOAS-2	DAIKIN	DPS003A	1500	JUDGES' CHAMBERS	13.2	1,000	1,000	1.90	2,264	4	95	67	55	54	GAS	5	120	96.0	(2) 2" MERV-8 & 4" MERV-14	460/3	(1) 0.4	4.1	8.0	9	15	1-9

REMARKS:

1. FURNISH WITH ADJUSTABLE DRIVES.
2. FURNISH WITH WEATHER PROOF FUSED DISCONNECT SWITCH AND 115V GFCI RECEPTICAL.
3. FURNISH WITH DISCHARGE AIR TEMPERATURE AND HUMIDITY SENSOR.
4. FURNISH WITH LEAVING COIL, ENTERING FAN, AND OUTSIDE AIR TEMPERATURE SENSORS.
5. FURNISH WITH DIRTY FILTER SWITCH.
6. PREFABRICATED SPRING ISOLATION ROOF CURB. 24" HIGH, SLOPED TO MATCH ROOF. REFER TO ARCHITECTURAL DRAWINGS FOR ROOF SLOPE
7. FURNISH INTAKE HOOD WITH CLEANABLE METAL MESH FILTERS.
8. FURNISH WITH MICROTECH III DDC CONTROLLER WITH BACNET COMMUNICATION MODULE. UNIT CONTROL SHALL INTEGRATE INTO I-VU BUILDING CONTROLS.
9. FURNISH WITH PHASE VOLTAGE MONITOR.

SPLIT SYSTEM HEAT PUMP SCHEDULE

MARK	BASIS OF DESIGN				FCU LOCATION	CONDENSING UNIT LOCATION	AREA AND/OR BLDG SERVED	SUPPLY AIR FLOW	MIN. OUTSIDE AIR FLOW	EXT STATIC PRESSURE	COOLING CAPACITY						HEATING CAPACITY				AIR FILTER	ELECTRICAL DATA																REMARKS
	MANUFACTURER	FAN COIL MODEL NUMBER	CONDENSING UNIT MODEL NUMBER	INDOOR OPERATING WEIGHT	OUTDOOR OPERATING WEIGHT						NOMINAL CAPACITY	MIN TOTAL CAPACITY	MIN SEER	EAT Db	EAT Wb	OSA DESIGN TEMP	MIN. HEAT CAPACITY	EAT DB	LAT Db	OSA DESIGN TEMP		INDOOR FAN		SUPPLEMENTAL HEAT	INDOOR UNIT + SUPPLEMENTAL HEAT					OUTDOOR UNIT					
				LBS	LBS						TONS	MBH		°F	°F	°F	MBH	°F	°F	°F		MCA	CONTROL	Kw	PHASE	VOLT	MCA	MOCP	CONTROL	PHASE	VOLT	MCA	MOCP	
FC-B01 / HP-B01	MITSUBISHI	PVA-A24AA7	PUZ-HA24NHA1	141	210	BASEMENT	ROOF	BASEMENT	800	271	0.8	2	24	19	75	63	99	26	65	90	0	MERV-13	4.13	THERMOSTAT	3	1	208	31.3	40	INDOOR UNIT	1	208	17	25	1-7
FC-B02 / HP-B02	MITSUBISHI	PVA-A24AA7	PUZ-HA24NHA1	141	210	BASEMENT	ROOF	BASEMENT	800	302	0.8	2	24	19	75	63	99	26	65	90	0	MERV-13	4.13	THERMOSTAT	3	1	208	31.3	40	INDOOR UNIT	1	208	17	25	1-7
FC-B03 / HP-B03	MITSUBISHI	PVA-A36AA7	PUZ-HA36NKA	172	261	BASEMENT	ROOF	BASEMENT	1200	681	0.8	3	33	18.2	75	63	99	38	65	90	0	MERV-13	5.5	THERMOSTAT	3	1	208	31.3	40	INDOOR UNIT	1	208	24	40	1-7
FC-101/HP-101	MITSUBISHI	PVA-A18AA7	PUZ-A18NKA7	113	100	JURY DELIB/CONFERENCE ROOMS/JUDGES' CHAMBERS	ROOF	FIRST FLOOR	600	140	0.8	1.5	18	20.2	75	63	99	19	65	90	0	MERV-13	3	THERMOSTAT	8	1	208	39.1	45	INDOOR UNIT	1	208	11	25	1-7
FC-102/HP-102	MITSUBISHI	PVA-A12AA7	PUZ-A12NKA7	113	93	JUDGES' CHAMBERS	ROOF	FIRST FLOOR	400	65	70	165	12	21.4	75	63	99	14	65	90	0	MERV-13	3	THERMOSTAT	5	1	208	25.6	30	INDOOR UNIT	1	208	11	25	1-7
FC-103/HP-103	MITSUBISHI	PVA-A12AA7	PUZ-A12NKA7	113	93	JUDGES' CHAMBERS	ROOF	FIRST FLOOR	400	70	0.8	1	12	21.4	75	63	99	14	65	90	0	MERV-13	3	THERMOSTAT	5	1	208	25.6	30	INDOOR UNIT	1	208	11	25	1-7
FC-104/HP-104	MITSUBISHI	PVA-A18AA7	PUZ-A18NKA7	113	100	JURY DELIB/CONFERENCE ROOMS/JUDGES' CHAMBERS	ROOF	FIRST FLOOR	600	165	0.8	1.5	18	20.2	75	63	99	19	65	90	0	MERV-13	3	THERMOSTAT	8	1	208	39.1	45	INDOOR UNIT	1	208	11	25	1-7
FC-105/HP-105	MITSUBISHI	PVA-A12AA7	PUZ-A12NKA7	113	93	JUDGES' CHAMBERS	ROOF	FIRST FLOOR	400	65	0.8	1	12	21.4	75	63	99	14	65	90	0	MERV-13	3	THERMOSTAT	5	1	208	25.6	30	INDOOR UNIT	1	208	11	25	1-7
FC-106/HP-106	MITSUBISHI	PVA-A12AA7	PUZ-A12NKA7	113	93	JUDGES' CHAMBERS	ROOF	FIRST FLOOR	400	65	0.8	1	12	21.4	75	63	99	14	65	90	0	MERV-13	3	THERMOSTAT	5	1	208	25.6	30	INDOOR UNIT	1	208	11	25	1-7
FC-107/HP-107	MITSUBISHI	PVA-A12AA7	PUZ-A12NKA7	113	93	JUDGES' CHAMBERS	ROOF	FIRST FLOOR	400	65	0.8	1	12	21.4	75	63	99	14	65	90	0	MERV-13	3	THERMOSTAT	5	1	208	25.6	30	INDOOR UNIT	1	208	11	25	1-7
FC-108/HP-108	MITSUBISHI	PVA-A12AA7	PUZ-A12NKA7	113	93	JUDGES' CHAMBERS	ROOF	FIRST FLOOR	400	65	0.8	1	12	21.4	75	63	99	14	65	90	0	MERV-13	3	THERMOSTAT	5	1	208	25.6	30	INDOOR UNIT	1	208	11	25	1-7
FC-109/HP-109	MITSUBISHI	PVA-A18AA7	PUZ-A18NKA7	113	100	JURY DELIB/CONFERENCE ROOMS/JUDGES' CHAMBERS	ROOF	FIRST FLOOR	600	130	0.8	1.5	18	20.2	75	63	99	19	65	90	0	MERV-13	3	THERMOSTAT	8	1	208	39.1	45	INDOOR UNIT	1	208	11	25	1-7
FC-201/HP-201	MITSUBISHI	PVA-A18AA7	PUZ-A18NKA7	113	100	JURY DELIB/CONFERENCE ROOMS/JUDGES' CHAMBERS	ROOF	SECOND FLOOR	600	120	0.8	1.5	18	20.2	75	63	99	19	65	90	0	MERV-13	3	THERMOSTAT	8	1	208	39.1	45	INDOOR UNIT	1	208	11	25	1-7
FC-202/HP-202	MITSUBISHI	PVA-A12AA7	PUZ-A12NKA7	113	93	JUDGES' CHAMBERS	ROOF	SECOND FLOOR	400	65	0.8	1	12	21.4	75	63	99	14	65	90	0	MERV-13	3	THERMOSTAT	5	1	208	25.6	30	INDOOR UNIT	1	208	11	25	1-7
FC-203/HP-203	MITSUBISHI	PVA-A12AA7	PUZ-A12NKA7	113	93	JUDGES' CHAMBERS	ROOF	SECOND FLOOR	400	95	0.8	1	12	21.4	75	63	99	14	65	90	0	MERV-13	3	THERMOSTAT	5	1	208	25.6	30	INDOOR UNIT	1	208	11	25	1-7
FC-204/HP-204	MITSUBISHI	PVA-A18AA7	PUZ-A18NKA7	113	100	JURY DELIB/CONFERENCE ROOMS/JUDGES' CHAMBERS	ROOF	SECOND FLOOR	600	65	0.8	1.5	18	20.2	75	63	99	19	65	90	0	MERV-13	3	THERMOSTAT	8	1	208	39.1	45	INDOOR UNIT	1	208	11	25	1-7
FC-205/HP-205	MITSUBISHI	PVA-A12AA7	PUZ-A12NKA7	113	93	JUDGES' CHAMBERS	ROOF	SECOND FLOOR	400	65	0.8	1	12	21.4	75	63	99	14	65	90	0	MERV-13	3	THERMOSTAT	5	1	208	25.6	30	INDOOR UNIT	1	208	11	25	1-7
FC-206/HP-206	MITSUBISHI	PVA-A18AA7	PUZ-A18NKA7	113	100	JURY DELIB/CONFERENCE ROOMS/JUDGES' CHAMBERS	ROOF	SECOND FLOOR	600	95	0.8	1.5	18	20.2	75	63	99	19	65	90	0	MERV-13	3	THERMOSTAT	8	1	208	39.1	45	INDOOR UNIT	1	208	11	25	1-7
FC-207/HP-207	MITSUBISHI	PVA-A18AA7	PUZ-A18NKA7	113	100	JURY DELIB/CONFERENCE ROOMS/JUDGES' CHAMBERS	ROOF	SECOND FLOOR	600	150	0.8	1.5	18	20.2	75	63	99	19	65	90	0	MERV-13	3	THERMOSTAT	8	1	208	39.1	45	INDOOR UNIT	1	208	11	25	1-7
FC-208/HP-208	MITSUBISHI	PVA-A18AA7	PUZ-A18NKA7	113	100	JURY DELIB/CONFERENCE ROOMS/JUDGES' CHAMBERS	ROOF	SECOND FLOOR	600	150	0.8	1.5	18	20.2	75	63	99	19	65	90	0	MERV-13	3	THERMOSTAT	8	1	208	39.1	45	INDOOR UNIT	1	208	11	25	1-7

REMARKS:

1. REFRIGERANT LINE SETS SHALL NOT BE PRE-INSULATED AND SHALL BE SIZED AND INSTALLED PER THE MANUFACTURER'S WRITTEN INSTRUCTIONS FOR DEVELOPED LINE LENGTH. ADDITIONAL REFRIGERANT CHARGE AS REQUIRED FOR COMPLETE INSTALLATION.
2. PROVIDE WITH LOW AMBIENT CONTROLS (0°F).
3. FURNISH CONDENSING UNIT WITH BASE PAN HEATER, 12" UNIT STAND WIND BAFFLES DRAIN PAN AND SOCKET.
4. INDOOR UNIT POWER SHALL NOT BE FED FROM CONDENSING UNIT. SEPARATE POWER CONNECTIONS ARE REQUIRED.
5. FURNISH INDOOR UNIT WITH DRAIN PAN WITH LEVEL SENSOR/CONTROL.
6. FURNISH INDOOR UNIT WITH BLUE DIAMOND CONDENSATE PUMP WITH RESERVOIR AND SENSOR.
7. FURNISH UNIT WITH 24-VOLT INTERFACE KIT AND 7-DAY PROGRAMMABLE ELECTRONIC THERMOSTAT. CONTROLS SHALL HAVE 5 DEGREE DEADBAND, AUTO SETBACK,AND MANUAL OVERRIDE. THERMOSTAT SHALL BE BACNET COMPATIBLE AND SHALL CONNECT TO I-VU BUILDING CONTROLS.

ELECTRIC UNIT HEATER SCHEDULE

MARK	QTY	BASIS OF DESIGN			LOCATION	MOUNTING	TYPE	AIR FLOW	INPUT	MIN CAPACITY	POWER			REMARKS
		MANUFACTURER	MODEL NUMBER	OPERATING WEIGHT										
				LBS				CFM	KW	BTUH	AMP	PHASE	VOLT	
EUH-1	2	REZNOR	EGW	20	M101 WATER ENTRANCE/PLUMBING ROOM, 10.107 FIRE RISER	CEILING	ELECTRIC	300	2.25	7677	10.82	1	208	1,2
EUH-2	1	REZNOR	EHA	24	1.01 VESTIBULE	WALL	ELECTRIC	160	4	13660	19.23	1	208	1,2

REMARKS:

1. FURNISH WITH FACTORY MOUNTED INTERNAL THERMOSTAT.
2. COORDINATE FINISH AND FINAL MOUNTING LOCATION WITH ARCH PRIOR TO START OF WORK.

WALL LOUVER SCHEDULE

MARK	QTY	BASIS OF DESIGN		LOCATION	SYSTEM AND/OR SERVICE	TYPE	APPLICATION	WIDTH	HEIGHT	FRAME DEPTH	FREE AREA	AIR FLOW	MAX VELOCITY	APD	DAMPER TYPE	REMARKS
		MANUFACTURER	MODEL NUMBER					IN	IN	IN	FT²	CFM	FPM	IN		
LVR-1	10	GREENHECK	ESD-202	EXTERIOR WALL	TOILET EXHAUST	DRAINABLE	EXHAUST	8	8	2	0.1	80	1026	0.15	GRAVITY	1

REMARKS

1. STATIONARY EXTRUDED ALUMINUM LOUVER PROVIDED WITH DRAIN GUTTERS, EXTENDED SILL, 1/4" GALV. BIRD SCREEN AND ANGLES FOR MOUNTING IN BRICK VENEER EXTERIOR WALL.

4/12/2023 5:04:55 PM

PROFESSIONAL ENGINEER
13613
STATE OF IDAHO
JOSEPH HUFF
Digitally signed by Joseph Huff
Date: 2023.04.19 11:22:56-06'00'

ORIGINAL DOCUMENTS ARE HELD AT CSHQA, INC. OFFICE, 200 W BROAD STREET, BOISE, ID 83702

JOSEPH HUFF, P.E.
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THERON W. WARD JUDICIAL BUILDING
REMODEL & EXPANSION
427 Shoshone St N Twin Falls, ID

CSHQA

AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

REVISED

SHEET TITLE
HVAC SCHEDULES 1

SHEET
M81

ORIGINAL SHEET SIZE 36" x 48"

PIPING INSULATION SCHEDULE

System Or Service	Avg. Pipe Temp (°F)	Insulation Type	Pipe Location			Jacket (e)			Insulation Thickness			
			Indoor	Outdoor	Below Grade	All Svc.	Metal	Fabric	Pipe Sizes (in.)			
									0.5-2	2.5-4	5-8	10-30
Refrigerant	45	Flexible Cellular	X						0.5	1"	-	-
				X(a)			X		0.75	1"	-	-
Refrigerant Liquid	120	Flexible Cellular	X						0.5	1"	-	-
				X(a)			X		0.75	1"	-	-
Refrigerant Hot Gas	135	Flexible Cellular	X						0.5	1"	-	-
				X(a)			X		0.75	1"	-	-
Condensate Drains for Air-Conditioning Equipment	60	Mineral Fiber	X						0.5	-	-	-
		OR										
		Flexible Cellular	X	X(a)					0.5	-	-	-

a = Jacket required on outdoor piping.
b = Polyvinyl chloride (PVC) jacket required.
c = For use with direct-buried piping (not with conduit-type systems).
d = Insulate where the piping is accessible (e.g., up to 8 feet above the finished floor).
e= Protective jackets consisting of 0.016 inches 316 stainless steel shall be used for exposed (exterior) insulation systems and where exposed in interior mechanical equipment rooms, or other high traffic areas (up to 10 feet above finished floor). As an alternative, PVC jacket and fitting covers may be used in these interior spaces.
f = Ratio of pipe insulation wall thickness to nominal pipe diameter is greater than or equal to 1:1.
g = Ratio of pipe insulation wall thickness to nominal pipe diameter is greater than or equal to 2:1.

INSULATION SPECIFICATION:

Flexible Cellular: ASTM C 534, 5 pcf density, k = 0.27 Btu-in/h-ft2 at 75 °F
Cellular Glass: ASTM C 552, 8.5 pcf density, k = 0.35 Btu-in/h-ft2 at 75 °F
Calcium Silicate: ASTM C 533, 13 pcf density, k = 0.38 Btu-in/h-ft2 at 100 °F
Mineral Fiber: ASTM C 547, 4 pcf density, k = 0.23 Btu-in/h-ft2 at 75 °F

DUCT INSULATION SCHEDULE

PLENUM OR DUCTWORK TYPE	INSULATION TYPE	LOCATION		INSULATION		JACKET
		INDOOR	OUTDOOR	DENSITY (PCF)	THICKNESS (INCHES)	
Rectangular Supply, Outside Air Ductwork, and Return Ductwork in Mechanical Rooms, All Exposed Areas and Duct Shafts	Rigid Mineral Fiber Board	X		3	1.5	All-Service
			X	6	2	+
Rectangular Supply, Outside Air Ductwork, and Return Duct-work in Concealed Areas	Rigid Mineral Fiber Board	X		3	1.5	All-Service
			X	6	2	+
	OR					
	Mineral Fiber Wrap	X		0.75	2.25	All-Service
			X	0.75	2.25	+
Outside Air Intake, Relief and Exhaust Plenums	Rigid Mineral Fiber Board	X		6	2	All-Service +
			X	6	2	
Louver Blank-Off Panels	Rigid Mineral Fiber Board	X		6	2	Galvanized Sheet Metal (Two Sides)
Round and Flat-Oval Supply, Outside Air Ductwork, and Return Ductwork in Mechanical Rooms	Mineral Fiber Wrap	X		0.75	2.25	All-Service +
			X	0.75	2.25	
Emergency or Standby Power Generator Air IntakePlenum, Intake Ductwork and Intake Attenuator	Rigid Mineral Fiber Board	X		6	1.5	All-Purpose Jacket with Vapor Barrier
Ductwork Requiring Noise Transmission Control (as indicated on the Drawings)	Rigid Mineral Fiber Board	X		6	2	Noise Barrier Jacket

+ = For rectangular ducts and plenums exposed to weather, pitch ductwork or insulation board minimum 1/4 inch per foot to prevent rainwater from accumulating on top of duct or plenum. Additionally apply a 1/16-inch coat of mastic to the insulation board. Embed one layer of open mesh fiberglass or polyester reinforcing cloth into the mastic, apply 1/8-inch final coat of mastic covering the cloth completely. As an alternate, cover insulation board with corrugated rolled aluminum jacketing installed in strict accordance with manufacturer's recommendations.

++ = Use double-layer application of two 2 inch thick panels to ensure overlapping of all seams and joints to minimize heat loss and hot spots.

INSULATION SPECIFICATION:

Rigid and Semi Rigid Mineral Fiber Board (w/ vapor barrier): ASTM C 612, k = 0.23 Btu-in/h-ft2 at 75°F
Mineral Fiber Wrap (w/ vapor barrier): ASTM C 553, k = 0.27 Btu-in/h-ft2 at 75°F
Calcium Silicate: ASTM C 533, k = 0.38 Btu-in/h-ft2 at 100°F
Ceramic Fiber Blanket: k = 0.27 Btu-in/h-ft2 with a melting point of 3200°F and a 3-hour fire rating for 5-inch thickness when tested in accordance with ASTM E119
Thermal Insulating Wool: k = 0.22 Btu-in/h-ft2 at 100°F
Flexible Cellular: ASTM C 534, k = 0.27 Btu-in/h-ft2 at 75°F

DIFFUSERS, REGISTERS AND GRILLES

MARK	BASIS OF DESIGN		DESCRIPTION	TYPE	MATERIAL	AIR FLOW		MAX APD	MOUNTING	FRAME SIZE	FACE SIZE	NECK SIZE	NC	DAMPER	FINISH	REMARKS
	MANUFACTURER	MODEL NUMBER				MIN CFM	MAX CFM	IN WG		IN x IN	IN x IN	IN				
CD-1	TITUS	TDCA	SUPPLY DIFFUSER	LOUVERED FACE	STEEL	-	98	0.092	CEILING	24 x 24	6 x 6	6 ø	16	NONE	WHITE	1-5, 10
CD-2	TITUS	TDCA	SUPPLY DIFFUSER	LOUVERED FACE	STEEL	98	209	0.104	CEILING	24 x 24	9 x 9	8 ø	20	NONE	WHITE	1-5, 10
CD-3	TITUS	TDCA	SUPPLY DIFFUSER	LOUVERED FACE	STEEL	210	327	0.092	CEILING	24 x 24	12 x 12	10 ø	21	NONE	WHITE	1-5, 10
CD-4	TITUS	TDCA	SUPPLY DIFFUSER	LOUVERED FACE	STEEL	-	98	0.092	SURFACE	12 x 12	6 x 6	6 ø	16	NONE	WHITE	1-5, 10
CD-5	TITUS	TDCA	SUPPLY DIFFUSER	LOUVERED FACE	STEEL	99	209	0.104	SURFACE	12 x 12	9 x 9	8 ø	20	NONE	WHITE	1-5, 10
CD-6	TITUS	SG-TDC	SUPPLY DIFFUSER	LOUVERED FACE	STEEL	-	98	0.092	SURFACE	12 x 12	6 x 6	6 ø	16	NONE	WHITE	1-6
CD-7	TITUS	SG-TDC	SUPPLY DIFFUSER	LOUVERED FACE	STEEL	99	209	0.104	SURFACE	12 x 12	9 x 9	8 ø	20	NONE	WHITE	1-6
CD-8	TITUS	TDCA	SUPPLY DIFFUSER	LOUVERED FACE	STEEL	-	675	0.042	CEILING	24 x 24	18 x 18	18 x 18	12	NONE	WHITE	1-5, 11
SG-1	TITUS	271FL	SUPPLY GRILLE	AEROBLADE	STEEL	-	272	0.045	SURFACE	12 x 8	10 x 6	10 x 6	22	OBD	WHITE	1, 3-4
SG-2	TITUS	271FL	SUPPLY GRILLE	AEROBLADE	STEEL	-	440	0.045	SURFACE	20 x 10	18 x 8	12 x 8	11	OBD	WHITE	1, 4
SG-3	TITUS	SG-SD	MAXIMUM SECURITY SUPPLY GRILLE	PERFORATED	STEEL	-	100	0.086	SECURE CEILING	8 x 8	6 x 6	6 x 6	11	OBD	WHITE	1, 4, 6, 12
SG-4	TITUS	SG-SD	MAXIMUM SECURITY SUPPLY GRILLE	PERFORATED	STEEL	101	200	0.102	SECURE CEILING	10 x 10	8 x 8	8 x 8	17	OBD	WHITE	1, 4, 6, 12
SG-5	TITUS	271FL	SUPPLY GRILLE	LOUVERED FACE	STEEL	123	287	0.052	SURFACE	14 x 8	12 x 6	12 x 6	18	OBD	WHITE	1, 4
SG-6	TITUS	271FL	SUPPLY GRILLE	LOUVERED FACE	STEEL	366	610	0.016	SURFACE	16 x 16	14 x 14	14 x 14	13	OBD	WHITE	1, 4
SG-7	TITUS	S301FL	SUPPLY GRILLE	LOUVERED FACE	STEEL	54	108	0.066	DUCT	14 x 5	12 x 3	12 x 3	15	AIR SCOOP	WHITE	1, 4
SG-8	TITUS	271FL	SUPPLY GRILLE	AEROBLADE	STEEL	-	57	0.016	SURFACE	8 x 8	6 x 6	6 x 6	-	OBD	WHITE	1, 3-4
EG-1	TITUS	50F	EXHAUST GRILLE	EGGCRATE	STEEL	-	259	0.073	SURFACE	10 x 10	8 x 8	8 ø	17	OBD	WHITE	1, 3-4
EG-2	TITUS	50F	EXHAUST GRILLE	EGGCRATE	STEEL	-	222	0.054	SURFACE	10 x 10	8 x 8	6 ø	11	OBD	WHITE	1, 3-4
EG-3	TITUS	50F	EXHAUST GRILLE	EGGCRATE	STEEL	-	177	0.013	LAY-IN	24 x 24	24 x 24	6 ø	-	NONE	WHITE	1, 3-5
EG-4	TITUS	SG-SD	MAXIMUM SECURITY EXHAUST GRILLE	PERFORATED	STEEL	-	100	0.086	SECURE CEILING	8 x 8	6 x 6	6 x 6	11	OBD	WHITE	1, 4, 6, 12
EG-5	TITUS	SG-SD	MAXIMUM SECURITY EXHAUST GRILLE	PERFORATED	STEEL	101	200	0.102	SECURE CEILING	10 x 10	8 x 8	8 x 8	17	OBD	WHITE	1, 4, 6, 12
EG-6	TITUS	350	EXHAUST GRILLE	LOUVERED FACE	STEEL	19	133	0.031	SURFACE	8 x 8	6 x 6	6 x 6	19	NONE	WHITE	1, 4
EG-7	TITUS	350	EXHAUST GRILLE	LOUVERED FACE	STEEL	59	354	0.022	SURFACE	12 x 12	10 x 10	10 x 10	19	OBD	WHITE	1, 4
EG-8	TITUS	300RS	RETURN GRILLE	BLADE	ALUMINUM	-	185	0.077	SURFACE	10 x 10	8 x 8	8 x 8	13	OBD	WHITE	1, 4
RG-1	TITUS	50F	RETURN GRILLE	EGGCRATE	STEEL	-	2625	0.054	LAY-IN	24 x 24	24 x 24	6 ø	20	NONE	WHITE	1, 3-5, 10
RG-2	TITUS	50F	RETURN GRILLE	EGGCRATE	STEEL	-	2625	0.054	LAY-IN	24 x 24	24 x 24	8 ø	20	NONE	WHITE	1, 3-5, 10
RG-3	TITUS	50F	RETURN GRILLE	EGGCRATE	STEEL	-	2625	0.054	LAY-IN	24 x 24	24 x 24	10 ø	20	NONE	WHITE	1, 3-5, 10
RG-4	TITUS	50F	RETURN GRILLE	EGGCRATE	STEEL	-	2625	0.054	LAY-IN	24 x 24	24 x 24	12 ø	20	NONE	WHITE	1, 3-5, 10
RG-5	TITUS	50F	RETURN GRILLE	EGGCRATE	STEEL	-	2625	0.054	LAY-IN	24 x 24	24 x 24	14 ø	20	NONE	WHITE	1, 3-5, 10
RG-6	TITUS	50F	RETURN GRILLE	EGGCRATE	STEEL	-	2625	0.054	LAY-IN	24 x 24	24 x 24	16 ø	20	NONE	WHITE	1, 3-5, 10
RG-7	TITUS	50F	RETURN GRILLE	EGGCRATE	STEEL	-	2625	0.054	LAY-IN	24 x 24	24 x 24	18 ø	20	NONE	WHITE	1, 3-5, 10
RG-8	TITUS	50F	RETURN GRILLE	EGGCRATE	STEEL	-	3052	0.024	SURFACE	48 x 24	48 x 24	18 x 20	-	NONE	WHITE	1, 3-4, 10
RG-9	TITUS	50F	RETURN GRILLE	EGGCRATE	STEEL	-	352	0.024	SURFACE	12 x 12	12 x 12	6 ø	-	NONE	WHITE	1, 3-4, 10
RG-10	TITUS	350	RETURN GRILLE	LOUVERED FACE	STEEL	207	1035	0.051	SURFACE	20 x 20	18 x 8	18 x 18	14	OBD	WHITE	1, 3-4, 10
RG-11	TITUS	350	RETURN GRILLE	LOUVERED FACE	STEEL	257	1285	0.051	SURFACE	22 x 22	20 x 20	20 x 20	16	OBD	WHITE	1, 3-4, 10
RG-12	TITUS	SG-LFF	RETURN GRILLE	LATTICE	STEEL	-	2625	0.054	LAY-IN	24 x 24	24 x 24	8 ø	20	NONE	WHITE	1, 3-6
RG-13	TITUS	SG-LFF	RETURN GRILLE	LATTICE	STEEL	-	2625	0.054	LAY-IN	24 x 24	24 x 24	10 ø	20	NONE	WHITE	1, 3-6
RG-14	TITUS	50F	RETURN GRILLE	EGGCRATE	STEEL	-	2625	0.054	SURFACE	24 x 24	24 x 24	18 ø	20	NONE	WHITE	1, 3-5, 10
RG-15	TITUS	SG-SD	MAXIMUM SECURITY RETURN GRILLE	PERFORATED	STEEL	-	100	0.086	SECURE CEILING	8 x 8	6 x 6	6 x 6	11	OBD	WHITE	1, 4, 6, 12
LD-1	TITUS	TBDI-30	LINEAR SLOT DIFFUSER WITH LINED PLENUM	2 SLOT (3/4")	STEEL	90	170	0.055	SURFACE	48 x 3-1/2	48 x 3-1/2	8" (OVAL)	25	NONE	BLACK/WHITE	1, 4, 7, 9
LD-2	TITUS	TBDI-30	LINEAR SLOT DIFFUSER WITH LINED PLENUM	2 SLOT (3/4")	STEEL	171	230	0.109	SURFACE	48 x 3-1/2	48 x 3-1/2	10" (OVAL)	29	NONE	BLACK/WHITE	1, 4, 7, 9
LD-3	TITUS	TBDI-30	LINEAR SLOT DIFFUSER WITH LINED PLENUM	2 SLOT (1")	STEEL	120	175	0.030	SURFACE	48 x 4	48 x 4	12" (OVAL)	19	NONE	BLACK/WHITE	1, 4, 7-9
TG-1	TITUS	350ZFL	TRANSFER GRILLE	BLADE	ALUMINUM	-	130	0.051	SURFACE	9-3/4" x 7-3/4	8 x 6	8 x 6	-	NONE	WHITE	1, 4
TG-2	TITUS	350ZFL	TRANSFER GRILLE	BLADE	ALUMINUM	105	228	0.032	SURFACE	13-3/4 x 9-3/4	12 x 8	12 x 8	-	NONE	WHITE	1, 4

REMARKS

1. VERIFY CEILING AND WALL CONSTRUCTION ON ARCHITECTURAL DRAWINGS . PROVIDE CORRECT FRAME TYPES.
2. SEE FLOOR PLAN FOR THROW PATTERN.
3. PROVIDE SQUARE TO ROUND ADAPTER WHERE NECESSARY
4. FINISH SHALL BE BAKED ENAMEL. COLOR TO MATCH ADJACENT ARCHITECTURAL FINISHES.
5. PROVIDE 24x24 LAY-IN MODULE FRAME IN LAY-IN CEILING GRIDS.
6. SEE HVAC DETAILS AND MANUFACTURER'S INSTRUCTIONS FOR SECURE CEILING INSTALLATION.
7. SET PATTERN CONTROLLERS TO OPPOSED (LEFT AND RIGHT)
8. FURNISH AND INSTALL YOUNG REGULATOR MODEL 5020CC WITH 270-275 OPERATOR, WHEN DEVICE IS LOCATED IN HARD CEILING. RE: MECHANICAL FLOOR PLANS, ARCHITECTURAL REFLECTED CEILING PLANS.
9. PROVIDE WITH PF-TBD PLASTER FRAME FOR SURFACE MOUNTING WHERE NECESSARY. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
10. BRANCH DUCT SIZE IS EQUAL TO THE INLET SIZE OF THE DIFFUSER OR GRILLE UNLESS OTHERWISE SPECIFIED.
11. FURNISH WITH FIELD-FABRICATED ACOUSTICALLY LINED PLENUM, WITH DIMENSIONS TO MEET DIFFUSER NECK SIZE. INSTALL SOUND-ATTENUATING PLENUM ON TOP OF DIFFUSER. RE: HVAC DETAILS.
12. SECURITY GRILLE SHALL BE ANTI-LIGATURE.

COOLING ONLY DUCT FREE SPLIT SYSTEM SCHEDULE

MARK	BASIS OF DESIGN				FC UNIT LOCATION	CU UNIT LOCATION	COOLING/HEATING						OSA DESIGN TEMP °F	ELECTRICAL DATA										REMARKS
	MANUFACTURER	FC UNIT MODEL NUMBER	CU UNIT MODEL NUMBER	FC UNIT OPERATING WEIGHT	CU UNIT OPERATING WEIGHT			SUPPLY AIR FLOW	MIN OUTSIDE AIRFLOW	MIN TOTAL CAPACITY	MIN SEER	EAT			INDOOR FAN				OUTDOOR UNIT FAN						
				LBS	LBS			CFM	CFM	MBH		Db °F	Wb °F		VOLTS/PHASE	FLA	MCA	CONTROL	VOLTS/ PHASE	FLA	COMPRESSOR RLA	MCA	MOCP	CONTROL	
FC-1 / CU-1	MITSUBISHI	PKA-A24KA7	PUY-A24NHA7	46	151	10.104C IDF ROOM	ROOF	775	0	24	21.4	75	63	99	208/1	0.36	1	THERMOSTAT	208/1	0.4	7	19	25	INDOOR UNIT	1-7
FC-2 / CU-2	MITSUBISHI	PKA-A24KA7	PUY-A24NHA7	46	151	10.105 COURT SERVER ROOM	ROOF	775	0	24	21.4	75	63	99	208/1	0.36	1	THERMOSTAT	208/1	0.4	7	19	25	INDOOR UNIT	1-7
FC-3 / CU-3	MITSUBISHI	PKA-A24KA7	PUY-A24NHA7	46	151	10.104A MDF ROOM	ROOF	775	0	24	21.4	75	63	99	208/1	0.36	1	THERMOSTAT	208/1	0.4	7	19	25	INDOOR UNIT	1-7
FC-4 / CU-4	MITSUBISHI	PKA-A24KA7	PUY-A24NHA7	46	151	3.904B IDF ROOM	ROOF	775	0	24	21.4	75	63	99	208/1	0.36	1	THERMOSTAT	208/1	0.4	7	19	25	INDOOR UNIT	1-7

REMARKS

1. REFRIGERANT LINES SHALL BE SIZED AND INSTALLED PER THE MANUFACTURER'S WRITTEN INSTRUCTIONS FOR DEVELOPED LINE LENGTH. ADDITIONAL REFRIGERANT CHARGE AS REQUIRED FOR COMPLETE INSTALLATION.
2. PROVIDE WITH LOW AMBIENT CONTROLS (0°F).
3. FURNISH CONDENSING UNIT WITH BASE PAN HEATER, 12" UNIT STAND W/IND BAFFLES DRAIN PAN AND SOCKET.
4. INDOOR UNIT POWER SHALL BE FED FROM CONDENSING UNIT, RE: ELECTRICAL
5. FURNISH INDOOR UNIT WITH DRAIN PAN WITH LEVEL SENSOR/CONTROL.
6. FURNISH INDOOR UNIT WITH BLUE DIAMOND CONDENSATE PUMP WITH RESERVOIR AND SENSOR.
7. FURNISH UNIT WITH 24-VOLT INTERFACE KIT AND 7-DAY PROGRAMMABLE ELECTRONIC THERMOSTAT. CONTROLS SHALL HAVE 5 DEGREE DEADBAND, AUTO SETBACK,AND MANUAL OVERRIDE. THERMOSTAT SHALL BE BACNET COMPATIBLE AND SHALL CONNECT TO I-VU BUILDING CONTROLS.

FAN SCHEDULE

MARK	QTY	BASIS OF DESIGN		OPERATING WEIGHT	LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	AIR FLOW	TSP	FAN			MOTOR ELECTRICAL						CONTROL SEQUENCE	REMARKS
		MANUFACTURER	MODEL NUMBER							TYPE	DRIVE	FAN MAX RPM	NOMINAL POWER		PHASE	VOLT	SPEED CONTROL	DAMPER TYPE		
				LBS				CFM	IN				BHP	HP (WATTS)						
EF-1	25	GREENHECK	SP-A90-130-VG	12	RESTROOMS	JUDGES' CHAMBERS/STAFF/SINGLE RESTROOMS	TOILET EXHAUST	80	0.64	CENTRIFUGAL	DIRECT	887	-	(12)	1	115	CONSTANT	BACKDRAFT	LIGHTING	5,6
EF-2	1	GREENHECK	G-097-VG	38	ROOF	LARGE RESTROOM	TOILET EXHAUST	150	1	CENTRIFUGAL	DIRECT	1693	0.09	1/4	1	115	CONSTANT	BACKDRAFT	TIMECLOCK	1-5,7
EF-3	1	GREENHECK	G-097-VG	38	ROOF	LARGE RESTROOMS	TOILET EXHAUST	250	0.5	CENTRIFUGAL	DIRECT	1612	0.09	1/4	1	115	CONSTANT	BACKDRAFT	TIMECLOCK	1-5,7
EF-4	3	GREENHECK	G-098-VG	38	ROOF	LARGE RESTROOMS	TOILET EXHAUST	375	1	CENTRIFUGAL	DIRECT	1685	0.14	1/4	1	115	CONSTANT	BACKDRAFT	TIMECLOCK	1-5,7
EF-5	2	GREENHECK	G-099-VG	38	ROOF	LARGE RESTROOMS	TOILET EXHAUST	480	1	CENTRIFUGAL	DIRECT	1640	0.16	1/4	1	115	CONSTANT	BACKDRAFT	TIMECLOCK	1-5,7
EF-6	1	GREENHECK	G-100HP-VG	38	ROOF	LARGE RESTROOMS/JANITORS CLOSET	TOILET/GENERAL EXHAUST	530	0.75	CENTRIFUGAL	DIRECT	1806	0.16	1/2	1	115	CONSTANT	BACKDRAFT	TIMECLOCK	1-5,7
EF-7	1	GREENHECK	G-120-VG	48	ROOF	LARGE RESTROOMS/JANITORS CLOSET/CELLS	TOILET/GENERAL EXHAUST	1400	1	CENTRIFUGAL	DIRECT	1671	0.39	1/2	1	115	CONSTANT	BACKDRAFT	TIMECLOCK	1-5,7
EF-8	1	GREENHECK	SQ-70-VG	30	BASEMENT	ELECTRICAL ROOM	TRANSFER FAN	150	0.25	INLINE	DIRECT	1511	0.02	1/15	1	115	CONSTANT	BACKDRAFT	THERMOSTAT	8

REMARKS:

1. PREFAB ROOF CURB SLOPED TO MATCH ROOF. REFER TO ARCHITECTURAL DRAWINGS.
2. WEATHER PROOF DISCONNECT SWITCH.
3. FURNISH WITH BIRDSCREEN.
4. REFER TO BMS DRAWINGS FOR CONTROL INFORMATION.
5. FURNISH WITH GRAVITY BACK DRAFT DAMPER.
6. INTERLOCK EXHAUST FAN WITH LIGHTING CONTROLS. COORDINATE WITH ELECTRICAL CONTRACTOR.
7. RE: M90 CONTROLS FOR MORE INFORMATION ON CONTROLS.
8. FURNISH WITH LOW-VOLTAGE THERMOSTAT. FAN TO RUN CONTINUOUSLY WHEN THERMOSTAT READS 80 DEG F

3/31/2023 11:42:43 AM

PROFESSIONAL ENGINEER
JOSEPH HUFF
13613
STATE OF IDAHO
Digitally signed by Joseph Huff
Date: 2023.03.31 12:53:40-06'00'

ORIGINAL DOCUMENTS ARE HELD AT CSHQA, INC. OFFICE, 200 W BROAD STREET, BOISE, ID 83702

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CSHQA

AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

REVISED

SHEET TITLE

HVAC SCHEDULES 2

SHEET

M82

ORIGINAL SHEET SIZE 36" × 48"

CODE REQUIRED OUTSIDE AIR VENTILATION RATES (2018 IMC) - BASEMENT

ZONE & AREA	OCCUPANCY CATEGORY	NET AREA SQ. FT.	AREA OUTDOOR AIR RATE CFM/SQ. FT.	CODE REQ'D CFM BASED ON FLOOR AREA	NO. OF PEOPLE	PEOPLE OUTDOOR AIR RATE CFM/PERSON	CODE REQ'D CFM BASED ON PEOPLE	TOTAL OSA CFM REQUIRED BY CODE	ZONE AIR DIST. EFF.	SPACE OUTDOOR AIR CFM	DESIGN OSA CFM PROVIDED	REMARKS
FCU B-1												
C005 SECURE VESTIBULE	CORRIDOR	148	0.06	9	0	0	0	9	0.8	11	17	
C004 SECURE CIRCULATION	CORRIDOR	591	0.06	36	0	0	0	36	0.8	45	68	
1.304 OFF STA	GUARD STATIONS	157	0.06	10	2	5	10	20	0.8	25	34	
1.306 OFFICER TLT	PUBLIC RESTROOMS	75	0	0	0	0	0	0	0.8	0	0	50 CFM EXHAUST AIR
1.302A INDIVIDUAL CELL	CELLS - WITH PLUMBING FIXTURES	96	0.12	12	1	5	5	17	0.8	21	25	100 CFM EXHAUST AIR
1.302B INDIVIDUAL CELL	CELLS - WITH PLUMBING FIXTURES	97	0.12	12	1	5	5	17	0.8	21	25	100 CFM EXHAUST AIR
1.303A GROUP CELL	CELLS - WITH PLUMBING FIXTURES	167	0.12	21	4	5	20	41	0.8	51	51	175 CFM EXHAUST AIR
1.303B GROUP CELL	CELLS - WITH PLUMBING FIXTURES	167	0.12	21	4	5	20	41	0.8	51	51	175 CFM EXHAUST AIR
									TOTAL=	**226**	**271**	BASED ON 34% OSA INTAKE
FCU B-2												
MR103 ELEV MACHINE RM	UNOCCUPIED SPACE	119	0	0	0	0	0	0	0.8	0	0	100 CFM EXHAUST AIR
C003 SECURE VESTIBULE	CORRIDOR	147	0.06	9	0	0	0	9	0.8	11	11	
10.106 COUNTY DEMARC	OFFICE SPACE	160	0.06	10	1	5	5	15	0.8	19	22	
10.102 ELECTRICAL ROOM	UNOCCUPIED SPACE	290	0	0	0	0	0	0	0.8	0	22	
M101 WATER ENTRANCE, PLUMBING ROOM	UNOCCUPIED SPACE	142	0	0	0	0	0	0	0.8	0	0	
C007 STAFF CIRCULATION	CORRIDOR	231	0.06	14	0	0	0	14	0.8	18	22	
C002 STAFF CIRCULATION	CORRIDOR	585	0.06	36	0	0	0	36	0.8	45	45	
ST101 STORAGE	RETAIL: STORAGE	1173	0.12	141	0	10	0	141	0.8	176	180	
									TOTAL=	**93**	**302**	BASED ON 32% OSA INTAKE
FCU B-3												
C001 CIRCULATION	CORRIDOR	218	0.06	14	0	0	0	14	0.8	18	33	
C006 SECURE CIRCULATION	CORRIDOR	417	0.06	26	0	0	0	26	0.8	33	33	
10.206A JC	JANITOR'S CLOSET	359	0	0	0	0	0	0	0.8	0	65	360 CFM EXHAUST AIR
ST101 STORAGE	RETAIL: STORAGE	3567	0.12	429	0	10	0	429	0.8	536	550	
MR101 ELEV MACHINE ROOM	UNOCCUPIED SPACE	126	0	0	0	0	0	0	0.8	0	0	100 CFM EXHAUST AIR
									TOTAL=	**586**	**681**	BASED ON 37.5% OSA INTAKE

CODE REQUIRED OUTSIDE AIR VENTILATION RATES (2018 IMC) - AREA 1A

ZONE & AREA	OCCUPANCY CATEGORY	NET AREA SQ. FT.	AREA OUTDOOR AIR RATE CFM/SQ. FT.	CODE REQ'D CFM BASED ON FLOOR AREA	NO. OF PEOPLE	PEOPLE OUTDOOR AIR RATE CFM/PERSON	CODE REQ'D CFM BASED ON PEOPLE	TOTAL OSA CFM REQUIRED BY CODE	ZONE AIR DIST. EFF.	SPACE OUTDOOR AIR CFM	DESIGN OSA CFM PROVIDED	REMARKS
RTU 1												
4.103 JURY ASSEM/TRAINING	OFFICES - CONFERENCE ROOMS	1251	0.06	76	62	5	310	386	0.8	483	508	
4.107A TLT	PUBLIC RESTROOMS	174	0	0	0	0	0	0	0.8	0	35	
4.107B TLT	PUBLIC RESTROOMS	130	0	0	0	0	0	0	0.8	0	18	
									TOTAL=	**483**	**561**	BASED ON 35% OSA INTAKE
RTU 2												
10.202 LARGE CONFERENCE	OFFICES - CONFERENCE ROOMS	464	0.06	28	25	5	125	153	0.8	191	195	
10.301 RECEIVING	SHIPPING/RECEIVING	238	0.06	15	1	5	5	20	0.8	25	37	
10.305 BUILDING STORAGE	WAREHOUSES	361	0.06	22	0	0	0	22	0.8	28	50	
10.303 JAN BREAK	GENERAL - BREAKROOMS	190	0.06	12	5	5	25	37	0.8	46	50	
C102 STAFF CIRCULATION	CORRIDOR	144	0.06	9	0	0	0	9	0.8	11	19	
10.304 JAN STORAGE	STORAGE ROOM	96	0.12	12	0	5	0	12	0.8	15	25	
10.302 JAN OFFICE	OFFICE SPACES	105	0.06	7	1	0	0	7	0.8	9	24	
									TOTAL=	**81**	**400**	BASED ON 25% OSA INTAKE
RTU 3												
D402 VESTIBULE, C100 CIRCULATION	CORRIDOR	317	0.06	20	0	0	0	20	0.8	25	30	
C101 CIRCULATION	CORRIDOR	140	0.06	9	0	0	0	9	0.8	11	33	
4.104 EQ STOR	OFFICES - OCCUPIABLE STORAGE ROOM	150	0.06	9	1	5	5	14	0.8	18	20	
4.105 KITCHEN	KITCHENS (COOKING)	119	0.12	15	3	7.5	23	38	0.8	48	50	
4.203 FILES	OFFICES - OCCUPIABLE STORAGE ROOM FOR DRY MATERIALS	78	0.06	5	0	2	0	5	0.8	6	15	
4.201 JURY OFFICE	OFFICE SPACES	115	0.06	7	1	5	5	12	0.8	15	25	
5.106 COURT ADMIN	OFFICES SPACES	96	0.06	6	1	5	5	11	0.8	14	30	
D401 CIRCULATION, 4.101 CHECK IN, 4.102A-D CNTR, 4.202 JURY ASST	OFFICE SPACES	653	0.06	40	5	5	25	65	0.8	81	85	
5.907 SM CONF	CONFERENCE ROOMS	159	0.06	10	8	5	40	50	0.8	63	65	
5.903 WORK ROOM	OFFICE SPACES	79	0.06	5	1	5	5	10	0.8	13	15	
5.107 DEP TCA	OFFICE SPACES	110	0.06	7	1	5	5	12	0.8	15	16	
D502 CIRCULATION, 5.902 COFFEE	CORRIDOR	138	0.06	9	1	0	0	9	0.8	11	16	
									TOTAL=	**116**	**400**	BASED ON 25% OSA INTAKE
RTU 4												
10.203 MED CONF	CONFERENCE ROOMS	193	0.06	12	10	5	50	62	0.8	78	78	
10.205 BUILDING BREAK	GENERAL - BREAKROOMS	273	0.06	17	8	5	40	57	0.8	71	75	
1.203A SHERIFF BREAK	GENERAL - BREAKROOMS	228	0.06	14	6	5	30	44	0.8	55	75	
1.203B TLT	PUBLIC RESTROOMS	57	0	0	0	0	0	0	0.8	0	0	
1.107E PUBLIC TLT	PUBLIC RESTROOMS	153	0	0	0	0	0	0	0.8	0	15	
1.107F PUBLIC TLT	PUBLIC RESTROOMS	221	0	0	0	0	0	0	0.8	0	53	
10.104C IDF ROOM	STORAGE ROOM	107	0	0	0	5	0	0	0.8	0	0	UNHEATED, UNOCCUPIED SPACE
10.103C ELEC	STORAGE ROOM	87	0.12	11	0	5	0	11	0.8	14	18	
10.206C JC	JANITOR'S CLOSET	70	0	0	0	0	0	0	0.8	0	0	UNOCCUPIED SPACE - OSA TRANSFERRED FROM SURROUNDING...
5.906 FILE STOR	OFFICES - OCCUPIABLE STORAGE ROOM FOR DRY MATERIALS	130	0.06	8	0	2	0	8	0.8	10	20	
6.203 SUPPLY STOR	OFFICES - OCCUPIABLE STORAGE ROOM FOR DRY MATERIALS	192	0.06	12	0	2	0	12	0.8	15	30	
6.204 EXHIBIT STOR	OFFICES - OCCUPIABLE STORAGE ROOM FOR DRY MATERIALS	123	0.06	8	0	2	0	8	0.8	10	23	
C10A STAFF CIRCULATION	CORRIDOR	586	0.06	36	0	0	0	36	0.8	45	148	TOTAL OSA PROVIDED FROM RTU-4 AND RTU-6
									TOTAL=	**298**	**535**	BASED ON 30% OSA INTAKE
RTU 5												
5.902 COFFEE, 5.113A-B BALIFF, 5.110A-B CT REP, 5.112A-B LEGAL SEC, 5.111A-D INTERP, 5.102 INTERP SVC CNTR, 5.108 ASST, D502 CIRCULATION	OFFICE SPACES	1058	0.06	64	12	5	60	124	0.8	155	180	
5.904 IT WORK	OFFICE SPACE	84	0.06	6	1	5	5	11	0.8	14	19	
5.101 WAIT	MAIN ENTRY LOBBY	166	0.06	10	1	5	5	15	0.8	19	19	
C101-1 CIRCULATION	CORRIDOR	585	0.06	36	0	0	0	36	0.8	45	56	
5.105A QUIET ROOM	OFFICE SPACE	54	0.06	4	1	5	5	9	0.8	11	17	
5.105B QUIET ROOM	OFFICE SPACE	53	0.06	4	1	5	5	9	0.8	11	16	
5.105C QUIET ROOM	OFFICE SPACE	52	0.06	4	1	5	5	9	0.8	11	17	
5.105D QUIET ROOM	OFFICE SPACE	59	0.06	4	1	5	5	9	0.8	11	16	
5.105E QUIET ROOM	OFFICE SPACE	52	0.06	4	1	5	5	9	0.8	11	17	
5.202 ASST	OFFICE SPACE	120	0.06	8	1	5	5	13	0.8	16	19	
5.104 LAW LIBRARY	LIBRARY	284	0.12	35	3	5	15	50	0.8	63	66	
5.201 COURT ASST OFFICER	OFFICE SPACE	155	0.06	10	1	5	5	15	0.8	19	28	
5.202-3 ASST & WAIT	OFFICE SPACE	195	0.06	12	2	5	10	22	0.8	28	66	
1.201 BUILDING CONTROL	OFFICE SPACE	159	0.06	10	1	5	5	15	0.8	19	28	
1.202 SEC OFFICE	OFFICE SPACE	101	0.06	7	1	5	5	12	0.8	15	19	
5.103 TECH/INT	OFFICE SPACE	105	0.06	7	1	5	5	12	0.8	15	17	
									TOTAL=	**463**	**600**	BASED ON 37.5% OSA INTAKE
RTU 6												
D601 CIRCULATION; 6.102A-D CIVIL; 6.904A COPY; 6.110A-D CIVIL; 6.103A-D T/C; 6.107-6.112 CT CLERK; 6.906 COFFEE	OFFICE SPACES	2141	0.06	129	21	5	105	234	0.8	293	339	
C10A STAFF CIRCULATION	CORRIDOR	668	0.06	41	0	0	0	41	0.8	51	148	TOTAL OSA PROVIDED FROM RTU-4 AND RTU-6
6.902A TLT	PUBLIC RESTROOMS	59	0	0	0	0	0	0	0.8	0	0	
6.902B TLT	PUBLIC RESTROOMS	57	0	0	0	0	0	0	0.8	0	0	
6.106 MP/INT	OFFICE SPACES	113	0.06	7	1	5	5	12	0.8	15	19	
6.101B WAIT	MAIN ENTRY LOBBY	454	0.06	28	5	5	25	53	0.8	66	56	OPEN TO OTHER OFFICE SPACES
									TOTAL=	**425**	**562**	BASED ON 25% OSA INTAKE
RTU 7												
MAIN ENTRY ATRIUM: 1.103 SECURITY QUEUING, 1.104A-B SEC STA, 1.102 FLOOR 1 LOBBY, 1.105 STAFF ENTRY/EXIT	OFFICE SPACES - MAIN ENTRY LOBBIES	1721	0.06	104	17	5	85	189	0.8	236	440	
1.101 VESTIBULE	CORRIDOR	515	0.06	31	0	0	0	31	0.8	39	40	
									TOTAL=	**275**	**480**	BASED ON 20% OSA INTAKE
RTU 8												
D603 CIRCULATION	CORRIDOR	115	0.06	7	0	0	0	7	0.8	9	22	
6.903 WORKROOM	OFFICE SPACE	295	0.06	18	2	5	10	28	0.8	35	36	
FLOOR 1 LOBBY	OFFICE SPACES - MAIN ENTRY LOBBIES	1100	0.06	68	11	5	55	123	0.8	154	244	
C201 FLOOR 2 PUBLIC CIRCULATION	MAIN ENTRY LOBBY	1129	0.06	11	11	5	55	66	0.8	83	308	
2.201A39 TLT	PUBLIC RESTROOMS	203	0	0	0	0	0	0	0.8	0	22	
10.209 TLT	PUBLIC RESTROOMS	171	0	0	0	0	0	0	0.8	0	28	
									TOTAL=	**280**	**660**	BASED ON 22% OSA INTAKE

PROFESSIONAL ENGINEER LICENSED 19613 STATE OF IDAHO JOSEPH HUFF

Digitally signed by Joseph Huff
Date: 2023.06.19 14:16:20-06'00'

ORIGINAL DOCUMENTS ARE HELD AT CSHQA, INC. OFFICE, 200 W BROAD STREET, BOISE, ID 83702

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AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

REVISED

SHEET TITLE
CODE REQUIRED VENTILATION RATES

SHEET
M83

ORIGINAL SHEET SIZE 36" x 48"

6/19/2023 1:00:16 PM

CODE REQUIRED OUTSIDE AIR VENTILATION RATES (2018 IMC) - AREA 1B

ZONE & AREA	OCCUPANCY CATEGORY	NET AREA SQ. FT.	AREA OUTDOOR AIR RATE CFM/SQ. FT.	CODE REQ'D CFM BASED ON FLOOR AREA	NO. OF PEOPLE	PEOPLE OUTDOOR AIR RATE CFM/PERSON	CODE REQ'D CFM BASED ON PEOPLE	TOTAL OSA CFM REQUIRED BY CODE	ZONE AIR DIST. EFF.	SPACE OUTDOOR AIR CFM	DESIGN OSA CFM PROVIDED	REMARKS
FC 101												
2.602A JURY DELIB	OFFICES - CONFERENCE ROOMS	286	0.06	18	15	5	75	93	0.8	116	120	
2.601A SOUNDLOCK	CORRIDOR	80	0.06	5	0	0	0	5	0.8	6	10	
2.603A2 TLT	PUBLIC RESTROOMS	62	0	0	0	0	0	0	0.8	0	0	
2.603A1 TLT	PUBLIC RESTROOMS	62	0	0	0	0	0	0	0.8	0	0	
									TOTAL=	**123**	**130**	
FC 102												
3.201A MAG JUDGE	OFFICE SPACE	241	0.06	15	7	5	35	50	0.8	63	65	
3.202A TLT	PUBLIC RESTROOMS	63	0	0	0	0	0	0	0.8	0	0	
									TOTAL=	**63**	**65**	
FC 103												
3.201B MAG JUDGE	OFFICE SPACE	241	0.06	15	7	5	35	50	0.8	63	65	
3.202B TLT	PUBLIC RESTROOMS	61	0	0	0	0	0	0	0.8	0	0	
C107 VEST	CORRIDOR	43	0.06	3	0	0	0	3	0.8	4	5	
									TOTAL=	**66**	**70**	
FC 104												
3.902 MEDIUM CONF	OFFICES - CONFERENCE ROOM	411	0.06	25	21	5	105	130	0.8	163	165	
									TOTAL=	**163**	**165**	
FC 105												
3.201C MAG JUDGE	OFFICE SPACE	245	0.06	15	7	5	35	50	0.8	63	65	
3.202C TLT	PUBLIC RESTROOMS	62	0.06	0	0	0	0	0	0.8	0	0	
									TOTAL=	**63**	**65**	
FC 106												
3.201D MAG JUDGE	OFFICE SPACE	246	0.06	15	7	5	35	50	0.8	63	65	
3.202C TLT	PUBLIC RESTROOMS	61	0.06	0	0	0	0	0	0.8	0	0	
									TOTAL=	**63**	**65**	
FC 107												
3.201E MAG JUDGE	OFFICE SPACE	244	0.06	15	7	5	35	50	0.8	63	65	
3.202E TLT	PUBLIC RESTROOMS	62	0.06	0	0	0	0	0	0.8	0	0	
									TOTAL=	**63**	**65**	
FC 108												
3.201F MAG JUDGE	OFFICE SPACE	244	0.06	15	7	5	35	50	0.8	63	65	
3.202F TLT	PUBLIC RESTROOMS	62	0.06	0	0	0	0	0	0.8	0	0	
									TOTAL=	**63**	**65**	
FC 109												
2.602B JURY DELIB	CONFERENCE ROOMS	385	0.06	24	12	5	60	84	0.8	105	105	
2.603B1 TLT	PUBLIC RESTROOMS	61	0	0	0	0	0	0	0.8	0	0	
2.603B2 TLT	PUBLIC RESTROOMS	62	0	0	0	0	0	0	0.8	0	0	
2.601B SOUNDLOCK	CORRIDOR	96	0.06	6	0	0	0	6	0.8	8	10	
									TOTAL=	**113**	**115**	
RTU 11												
6.206 FINANCE WORK	OFFICE SPACE	149	0.06	9	1	5	5	14	0.8	18	21	
6.108 COUNTY CLERK	OFFICE SPACE	175	0.06	11	1	5	5	16	0.8	20	21	
6.104 EXHIBIT ROOM	OCCUPIABLE STORAGE ROOM	119	0.06	8	0	5	0	8	0.8	10	15	
D602 CIRCULATION; 6.114A-M CT CLERK	OFFICE SPACE	1318	0.06	80	7	5	35	115	0.8	144	144	
6.104A-C RECORDS; 6.112A-B RECORDS; 6.113 RECORDS; D602 CIRCULATION	OFFICE SPACE	715	0.06	43	4	5	20	63	0.8	79	90	
6.101A WAIT	OFFICE SPACE	214	0.06	13	2	5	10	23	0.8	29	32	
6.105 RECORDS EXAM	OFFICE SPACE	117	0.06	8	1	5	5	13	0.8	16	20	
2.301A SOUNDLOCK	CORRIDOR	107	0.06	7	0	0	0	7	0.8	9	15	
									TOTAL=	**299**	**358**	BASED ON 30% OSA INTAKE
RTU 13												
2.304A STD CTRM	COURTROOM	1512	0.06	91	106	5	530	621	0.8	776	850	
2.303A1 A/C CONF	CONFERENCE ROOMS	80	0.06	5	4	5	20	25	0.8	31	75	
2.303A2 A/C CONF	CONFERENCE ROOMS	140	0.06	9	7	5	35	44	0.8	55	60	
2.302A SOUNDLOCK	CORRIDOR	54	0.06	4	0	0	0	4	0.8	5	15	
									TOTAL=	**868**	**1000**	BASED ON 50% OSA INTAKE
RTU 14												
2.304B STD CTRM	COURTROOM	1512	0.06	91	106	5	530	621	0.8	776	850	
2.303B1 A/C CONF	CONFERENCE ROOMS	87	0.06	6	4	5	20	26	0.8	33	60	
2.303B2 A/C CONF	CONFERENCE ROOMS	142	0.06	9	7	5	35	44	0.8	55	75	
2.302B SOUNDLOCK	CORRIDOR	55	0.06	4	0	0	0	4	0.8	5	15	
									TOTAL=	**869**	**1000**	BASED ON 50% OSA INTAKE
RTU 19												
2.304C STD CTRM	COURTROOM	1512	0.06	91	106	5	530	621	0.8	776	775	
2.303C1 A/C CONF	CONFERENCE ROOMS	142	0.06	9	8	5	40	49	0.8	61	62.5	
2.303C2 A/C CONF	CONFERENCE ROOMS	143	0.06	9	8	5	40	49	0.8	61	62.5	
2.302C SOUNDLOCK	CORRIDOR	55	0.06	4	0	0	0	4	0.8	5	10	
									TOTAL=	**904**	**910**	BASED ON 50% OSA INTAKE
RTU 20												
C103 CIRCULATION	CORRIDOR	1671	0.06	101	0	0	0	101	0.8	126	138	
C105 CIRCULATION	CORRIDOR	534	0.06	33	0	0	0	33	0.8	41	41	
2.305A AV	OFFICES - OCCUPIABLE STORAGE ROOM FOR DRY MATERIALS	124	0.06	8	0	2	0	8	0.8	10	12	UNOCCUPIED SPACE
3.903 CONF	CONFERENCE ROOMS	194	0.06	12	10	5	50	62	0.8	78	78	
2.902B STF TLT	PUBLIC RESTROOMS	162	0	0	0	0	0	0	0.8	0	30	
3.904A BREAK	GENERAL - BREAKROOMS	185	0.06	12	5	5	25	37	0.8	46	60	
C104 CIRCULATION	CORRIDOR	372	0.06	23	0	0	0	23	0.8	29	45	
10.105 COURT SERVER ROOM	STORAGE ROOM	138	0	0	0	0	0	0	0.8	0	0	UNOCCUPIED SPACE
10.104A MDF RM	STORAGE ROOM	125	0	0	0	0	0	0	0.8	0	0	UNOCCUPIED SPACE
10.103A ELEC	STORAGE ROOM	117	0.06	8	0	2	0	8	0.8	10	10.5	
2.201A43 STF TLT	RESTROOMS	152	0	0	0	0	0	0	0.8	0	30	
2.201A47 STOR	STORAGE ROOM	120	0.06	8	1	5	5	13	0.8	16	0	
3.901A WORKROOM	OFFICE SPACE	197	0.06	12	1	5	5	17	0.8	21	30	
10.107 FIRE RISER	UNOCCUPIED SPACE	104	0	0	0	0	0	0	0.8	0	0	UNOCCUPIED SPACE
2.305B AV	STORAGE ROOM	115	0.06	7	0	2	0	7	0.8	9	12	
									TOTAL=	**378**	**486.5**	BASED ON 30% OSA INTAKE
RTU 21												
2.304D MED CTRM	COURTROOM	1798	0.06	108	126	5	630	738	0.8	923	1000	
2.303D1 A/C CONF	CONFERENCE ROOMS	95	0.06	6	5	5	25	31	0.8	39	75	
2.303D2 A/C CONF	CONFERENCE ROOMS	142	0.06	9	8	5	40	49	0.8	61	100	
2.302D SOUNDLOCK	CORRIDOR	56	0.06	4	0	0	0	4	0.8	5	25	
									TOTAL=	**1028**	**1200**	BASED ON 50% OSA INTAKE
RTU 22												
C106 CIRCULATION, WAIT AREAS	CORRIDOR	2713	0.06	163	0	0	0	163	0.8	204	780	
1.107B TLT	PUBLIC RESTROOMS	207	0	0	0	0	0	0	0.8	0	13	
2.506B1 INT	CORRECTIONAL FACILITIES - CELLS WITHOUT PLUMBING FIXTURES	64	0.12	8	1	5	5	13	0.8	16	17	
2.506B2 INT	CORRECTIONAL FACILITIES - CELLS WITHOUT PLUMBING FIXTURES	60	0.12	8	1	5	5	13	0.8	16	17	
2.502B HLD	CORRECTIONAL FACILITIES - CELLS WITH PLUMBING FIXTURES	84	0.12	11	1	5	5	16	0.8	20	21	
2.503B VESTIBULE	CORRIDOR	163	0.06	10	0	0	0	10	0.8	13	15	
2.501B HLD	CORRECTIONAL FACILITIES - CELLS WITH PLUMBING FIXTURES	80	0.12	10	1	5	5	15	0.8	19	20	
1.107A TLT	PUBLIC RESTROOMS	204	0	0	0	0	0	0	0.8	0	13	
10.209A FAM TLT	PUBLIC RESTROOMS	81	0	0	0	0	0	0	0.8	0	0	
2.506A1 INT	CORRECTIONAL FACILITIES - CELLS WITHOUT PLUMBING FIXTURES	64	0.12	8	1	5	5	13	0.8	16	17	
2.502A HLD	CORRECTIONAL FACILITIES - CELLS WITH PLUMBING FIXTURES	86	0.12	11	1	5	5	16	0.8	20	20	
2.506A2 INT	CORRECTIONAL FACILITIES - CELLS WITHOUT PLUMBING FIXTURES	60	0.12	8	1	5	5	13	0.8	16	17	
2.503A VESTIBULE	CORRIDOR	171	0.06	11	0	0	0	11	0.8	14	15	
2.501A HLD	CORRECTIONAL FACILITIES - CELLS WITHOUT PLUMBING FIXTURES	93	0.12	12	1	5	5	17	0.8	21	21	
10.208 PUB LACT	BREAKROOM	64	0.06	4	2	5	10	14	0.8	18	18	
									TOTAL=	**393**	**1004**	BASED ON 30% OSA INTAKE

CODE REQUIRED OUTSIDE AIR VENTILATION RATES (2018 IMC) - AREA 2B

ZONE & AREA	OCCUPANCY CATEGORY	NET AREA SQ. FT.	AREA OUTDOOR AIR RATE CFM/SQ. FT.	CODE REQ'D CFM BASED ON FLOOR AREA	NO. OF PEOPLE	PEOPLE OUTDOOR AIR RATE CFM/PERSON	CODE REQ'D CFM BASED ON PEOPLE	TOTAL OSA CFM REQUIRED BY CODE	ZONE AIR DIST. EFF.	SPACE OUTDOOR AIR CFM	DESIGN OSA CFM PROVIDED	REMARKS
FC 201												
2.602C JURY DELIB	OFFICES - CONFERENCE ROOMS	283	0.06	17	14	5	71	88	0.8	110	110	
SOUNDLOCK	CORRIDOR	80	0.06	5	0	0	0	5	0.8	6	10	
2.603C1 TLT	PUBLIC RESTROOMS	60	0	0	0	0	0	0	0.8	0	0	
2.603C2 TLT	PUBLIC RESTROOMS	60	0	0	0	0	0	0	0.8	0	0	
									TOTAL=	**116**	**120**	
FC 202												
3.301 VISIT JUDGE	OFFICE SPACE	183	0.06	11	7	5	35	46	0.8	58	60	
3.302 TLT	PUBLIC RESTROOMS	62	0	0	0	0	0	0	0.8	0	0	
									TOTAL=	**58**	**65**	
FC 203												
3.101A DIST JUDGE	OFFICE SPACE	243	0.06	15	7	5	35	50	0.8	63	65	
3.102A TLT	PUBLIC RESTROOMS	61	0.06	0	0	0	0	0	0.8	0	0	
									TOTAL=	**63**	**65**	
FC 203												
3.103A-B LC, CIRCULATION	OFFICE SPACE	231	0.06	14	2	5	10	24	0.8	30	30	
3.101B DIST JUDGE	OFFICE SPACE	242	0.06	15	7	5	35	50	0.8	63	65	
3.102C TLT	PUBLIC RESTROOMS	61	0	0	0	0	0	0	0.8	0	0	
									TOTAL=	**93**	**95**	
FC 204												
3.101B DIST JUDGE	OFFICE SPACE	244	0.06	15	7	5	35	50	0.8	63	65	
3.102B TLT	PUBLIC RESTROOMS	62	0.06	0	0	0	0	0	0.8	0	0	
									TOTAL=	**63**	**65**	
FC 205												
3.101C DIST JUDGE	OFFICE SPACE	244	0.06	15	7	5	35	50	0.8	63	65	
3.102C TLT	PUBLIC RESTROOMS	62	0.06	0	0	0	0	0	0.8	0	0	
									TOTAL=	**63**	**65**	
FC 206												
3.103C LC	OFFICE SPACES	230	0.06	14	2	5	10	24	0.8	30	30	
3.101D DIST JUDGE	OFFICE SPACES	243	0.06	15	7	5	35	50	0.8	63	65	
3.102D TLT	PUBLIC RESTROOMS	61	0.06	0	0	0	0	0	0.8	0	0	
									TOTAL=	**93**	**95**	
FC 207												
2.602D JURY DELIB	CONFERENCE ROOMS	294	0.06	18	18	5	90	108	0.8	135	135	
2.601D SOUNDLOCK	CORRIDOR	96	0.06	6	0	0	0	6	0.8	8	10	
2.603D1 TLT	PUBLIC RESTROOMS	62	0	0	0	0	0	0	0.8	0	0	
2.603D2 TLT	PUBLIC RESTROOMS	62	0	0	0	0	0	0	0.8	0	0	
									TOTAL=	**143**	**150**	
FC 208												
2.602E JURY DELIB	CONFERENCE ROOMS	355	0.06	22	18	5	90	112	0.8	140	140	
2.601E SOUNDLOCK	CORRIDOR	97	0.06	6	0	0	0	6	0.8	8	10	
2.602E1 TLT	PUBLIC RESTROOMS	62	0	0	0	0	0	0	0.8	0	0	
2.602E2 TLT	CORRIDOR	62	0	0	0	0	0	0	0.8	0	10	
									TOTAL=	**148**	**150**	
RTU 9												
2.402A SOUNDLOCK	CORRIDOR	268	0.06	17	0	0	0	17	0.8	21	52.5	
2.404A HEARING RM	COURTROOM	824	0.06	50	58	5	290	340	0.8	425	427.5	
									TOTAL=	**446**	**480**	BASED ON 30% OSA INTAKE
RTU 10												
C203 STAFF CIRCULATION	CORRIDOR	200	0.06	12	0	0	0	12	0.8	15	37.5	
2.404B HEARING RM	COURTROOM	853	0.06	52	60	5	300	352	0.8	440	442.5	
									TOTAL=	**455**	**480**	BASED ON 30% OSA INTAKE
RTU 12												
2.204A STD CRTRM	COURTROOM	1512	0.06	91	106	5	530	621	0.8	776	787.5	
2.203A1 A/C CONF	CONFERENCE ROOMS	93	0.06	6	5	5	25	31	0.8	39	49.5	
2.203A2 A/C CONF	CONFERENCE ROOMS	91	0.06	6	5	5	25	31	0.8	39	49.5	
2.202A SOUNDLOCK	CORRIDOR	56	0.06	4	0	0	0	4	0.8	5	13.5	
									TOTAL=	**859**	**900**	BASED ON 45% OSA INTAKE
RTU 15												
2.204B STD CRTRM	COURTROOM	1798	0.06	108	126	5	630	738	0.8	923	945	
2.203B1 A/C CONF	CONFERENCE ROOMS	87	0.06	6	5	5	25	31	0.8	39	40.5	
2.203B2 A/C CONF	CONFERENCE ROOMS	141	0.06	9	8	5	40	49	0.8	61	72	
2.202B SOUNDLOCK	CORRIDOR	56	0.06	4	0	0	0	4	0.8	5	22.5	
									TOTAL=	**1028**	**1080**	BASED ON 45% OSA INTAKE
RTU 16												
C203 STAFF CIRCULATION	CORRIDOR	1741	0.06	105	0	0	0	105	0.8	131	159	
C202 STAFF CIRCULATION	CORRIDOR	445	0.06	27	0	0	0	27	0.8	34	54	
2.405A AV	OFFICES - OCCUPIABLE STORAGE ROOM FOR DRY MATERIALS	195	0.06	12	0	2	0	12	0.8	15	9	UNOCCUPIED SPACE
2.202B STF TLT	PUBLIC RESTROOMS	118	0.06	8	0	0	0	8	0.8	10	14	
10.207 STF LACT	BREAKROOM	123	0.06	8	2	5	10	18	0.8	23	27	
2025B-206B STOR/AV	STORAGE ROOM	55	0	0	0	0	0	0	0.8	0	0	UNHEATED, UNOCCUPIED SPACE
3.901B WKRM	OFFICE SPACE	100	0.06	6	1	5	5	11	0.8	14	0	
C204 STAFF CIRCULATION	CORRIDOR	194	0.06	12	0	0	0	12	0.8	15	15	
C205 STAFF CIRCULATION	CORRIDOR	168	0.06	11	0	0	0	11	0.8	14	36	
2.205A SOUNDLOCK	CORRIDOR	174	0.06	11	0	0	0	11	0.8	14	15	
3.904 BREAK	BREAKROOM	138	0.06	9	4	5	20	29	0.8	36	35	
10.104B IDF RM	STORAGE ROOM	125	0	0	0	0	0	0	0.8	0	0	UNHEATED, UNOCCUPIED SPACE
10.103B ELEC	OFFICES - OCCUPIABLE STORAGE ROOM FOR DRY MATERIALS	116	0.06	7	0	2	0	7	0.8	9	8	
2.405B AV	OFFICES - OCCUPIABLE STORAGE ROOM FOR DRY MATERIALS	154	0.06	10	0	2	0	10	0.8	13	8	UNOCCUPIED SPACE
2.201A40 STORAGE	OFFICES - OCCUPIABLE STORAGE ROOM FOR DRY MATERIALS	106	0.06	7	0	2	0	7	0.8	9	28	
									TOTAL=	**335**	**408**	BASED ON 27% OSA INTAKE
RTU 17												
C206 PUBLIC CIRCULATION	CORRIDOR	2747	0.06	165	0	0	0	165	0.8	206	511	
1.107D TLT	PUBLIC RESTROOMS	209	0	0	0	0	0	0	0.8	0	25	
2.506D1 INT	CORRECTIONAL FACILITIES - CELLS WITHOUT PLUMBING FIXTURES	65	0.12	8	1	5	5	13	0.8	16	16	
2.506D2 INT	CORRECTIONAL FACILITIES - CELLS WITHOUT PLUMBING FIXTURES	60	0.12	8	1	5	5	13	0.8	16	16	
2.502D HLD	CORRECTIONAL FACILITIES - CELLS WITH PLUMBING FIXTURES	105	0.12	13	1	5	5	18	0.8	23	23	105 CFM EXHAUST AIR
2.503D VESTIBULE	CORRIDOR	160	0.06	10	0	0	0	10	0.8	13	13	
2.501D HLD	CORRECTIONAL FACILITIES - CELLS WITH PLUMBING FIXTURES	109	0.12	14	1	5	5	19	0.8	24	24	110 CFM EXHAUST AIR
10.209B FAM TLT	PUBLIC RESTROOMS	72	0	0	0	0	0	0	0.8	0	0	
1.107C TLT	PUBLIC RESTROOMS	210	0	0	0	0	0	0	0.8	0	25	
2.506C1 INT	CORRECTIONAL FACILITIES - CELLS WITHOUT PLUMBING FIXTURES	64	0.12	8	1	5	5	13	0.8	16	16	
2.506C2 INT	CORRECTIONAL FACILITIES - CELLS WITHOUT PLUMBING FIXTURES	60	0.12	8	1	5	5	13	0.8	16	16	
2.502C HLD	CORRECTIONAL FACILITIES - CELLS WITH PLUMBING FIXTURES	105	0.12	13	1	5	5	18	0.8	23	23	105 CFM EXHAUST AIR
2.503C VESTIBULE	CORRIDOR	159	0.06	10	0	0	0	10	0.8	13	13	
2.501C HLD	CORRECTIONAL FACILITIES - CELLS WITH PLUMBING FIXTURES	116	0.12	14	1	5	5	19	0.8	24	24	115 CFM EXHUAST AIR
10.206 VICTIM/WITNESS WAIT	OFFICE SPACE	152	0.06	10	1	5	5	15	0.8	19	23	
2.403A1 A/C CONF	CONFERENCE ROOMS	73	0.06	5	4	5	20	25	0.8	31	31	
2.403A2 A/C CONF	CONFERENCE ROOMS	73	0.06	5	4	5	20	25	0.8	31	31	
									TOTAL=	**470**	**830**	BASED ON 25% OSA INTAKE
RTU 18												
2.204C STD CRTRM	COURTROOM	1512	0.06	91	106	5	530	621	0.8	776	850	
2.203C1 A/C CONF	CONFERENCE ROOMS	141	0.06	9	8	5	40	49	0.8	61	63	
2.203C2 A/C CONF	CONFERENCE ROOMS	140	0.06	9	7	5	35	44	0.8	55	62	
2.202C SOUNDLOCK	CORRIDOR	56	0.06	4	0	0	0	4	0.8	5	25	
									TOTAL=	**898**	**1000**	BASED ON 50% OSA INTAKE
RTU 23												
2.104 LG CRTRM	COURTROOM	1990	0.06	120	140	5	700	820	0.8	1025	1040	
2.103A A/C CONF	CONFERENCE ROOMS	165	0.06	10	9	5	45	55	0.8	69	80	
2.103B A/C CONF	CONFERENCE ROOMS	93	0.06	6	5	5	25	31	0.8	39	48	
2.102 SOUNDLOCK	CORRIDOR	56	0.06	4	0	0	0	4	0.8	5	20	
									TOTAL=	**1138**	**1188**	BASED ON 40% OSA INTAKE

6/16/2023 1:00:17 PM

PROFESSIONAL ENGINEER
Joseph Huff
13613
STATE OF IDAHO
JOSEPH HUFF

Digitally signed by Joseph Huff
Date: 2023.06.19 14:16:20-06'00'

ORIGINAL DOCUMENTS ARE HELD AT CSHQA, INC. OFFICE, 200 W BROAD STREET, BOISE, ID 83702

JOSEPH HUFF, P.E.
CSHQA, INC.
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REMODEL & EXPANSION

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BOISE, ID 83702
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http://www.cshqa.com

CSHQA

AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

REVISED

SHEET TITLE
CODE REQUIRED VENTILATION RATES

SHEET
M84

ORIGINAL SHEET SIZE
36" x 48"

GENERAL NOTES FOR DIRECT DIGITAL CONTROLS:

UNLESS OTHERWISE INDICATED, ALL BUILDING HVAC EQUIPMENT WILL BE CONTROLLED BY DIRECT DIGITAL CONTROL (DDC). A CENTRAL BUILDING AUTOMATION SYSTEM (BAS) CONTROL PANEL WILL BE LOCATED IN THE BUILDING. THE CENTRAL BUILDING CONTROL PANEL, ALONG WITH ANY EQUIPMENT OR SYSTEM SUB-PANELS WILL COMMUNICATE VIA BACNET/IP OR BACNET/MSTP PROTOCOL. THE BAS NETWORK IS TO BE INSTALLED IN COORDINATION WITH THE CUSTOMER'S IT NETWORK SPECIFICATIONS AND ARCHITECTURE. ALL OWNER-REQUIRED ADDRESSING AND METHODS ARE TO BE FOLLOWED.

THE BAS SOFTWARE TO BE THE LATEST VERSION OF CARRIER IVU AND INSTALLED AND COMMISSIONED BY A CERTIFIED CONTROLS CONTRACTOR. THE BAS CONTRACTOR WILL INCLUDE A LOCAL BAS INTERFACE WORKSTATION WITHIN THE NEW BUILDING. THE LOCATION AND INTEGRATION OF THIS WORKSTATION IS TO BE COORDINATED WITH THE OWNER'S REPRESENTATIVE.

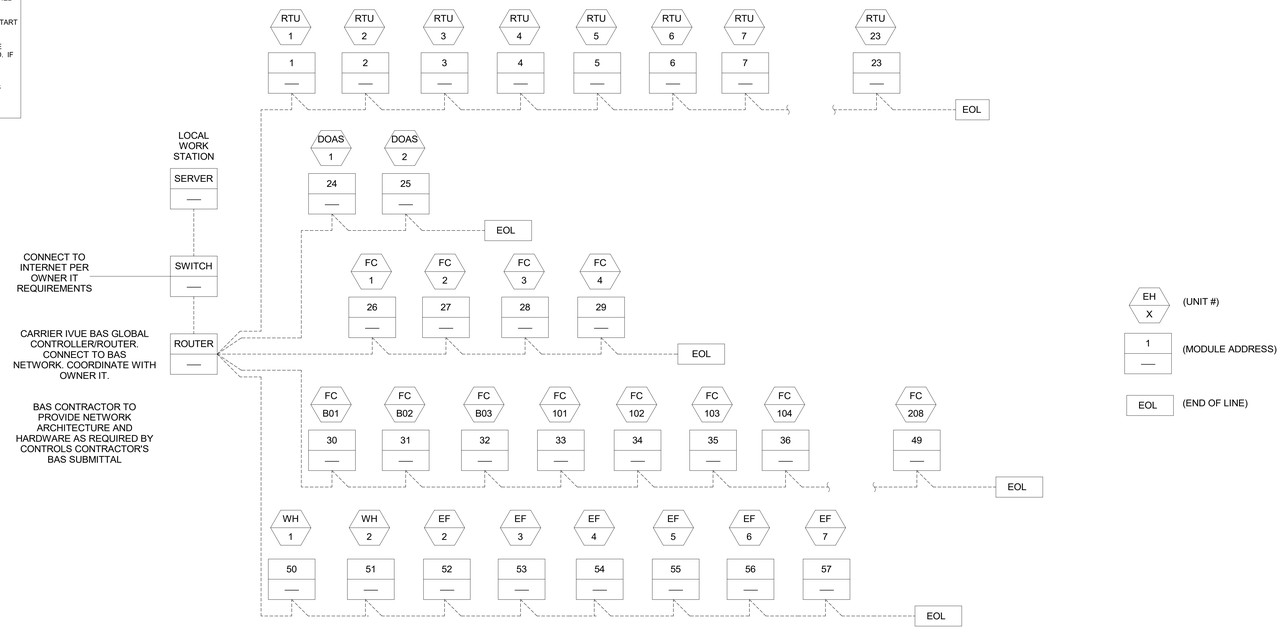
THE BAS SYSTEM WILL INCORPORATE USER DEFINABLE OCCUPIED AND UNOCCUPIED TEMPERATURE SETPOINTS AND PROVIDE AUTOMATIC SWITCHOVER BEMEEN HEATING AND COOLING MODES. THE CONTROLS CONTRACTOR WILL DESIGN, COORDINATE AND INSTALL ALL ASPECTS OF THE CONTROLS SYSTEM. ALL CONTROL POINTS AND DATA REQUIRED FOR COMPLETE OPERATION OF THE HVAC SYSTEM SUCH AS, BUT NOT LIMITED TO, SETPOINTS AND ADJUSTMENTS, SCHEDULES, MONITORING, ALARMS, TRENDING, ETC. WILL BE COMMUNICATED FROM THE HVAC EQUIPMENT AND MADE AVAILABLE AT THE BAS FRONT— END INTERFACE. THE CONTROLS CONTRACTOR IS TO SUBMIT A DETIALED SHOP DRAWING WITH RISER DIAGRAMS SHOWING ALL APPLICABLE CONTROLLERS AND ROUTERS. THE CONTROLS CONTRACTOR WILL COORDINATE WITH ELECTRICAL CONTRACTOR AND PLUMBING CONTRACTOR TO INSTALL THE NECESSARY UTILITY METERS THAT WILL CONNECT TO THE BAS UTILIZING BACNET COMMUNICATION PROTOCOL.

THE BAS CONTRACTOR WILL COORDINATE WITH THE OWNER'S REPRESENTATIVE TO PROVIDE A SCHEDULE (ADJUSTABLE) FOR THE OCCOPIED AND OCCUPIED PERIOODS OF THE BUILDING. SETPOINTS WILL HAVE A SETBACK FOR THE UNOCCUPIED PERIODS AS DETERMINED BY OWNER.

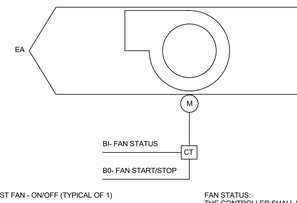
THE BAS SYSTEM WILL INCLUDE AN OPTIMAL START SEQUENCE FOR ALL COOLING AND HEATING EQUIPMENT TO ACHIEVE SETPOINT CONDITIONS AT THE START OF THE OCCUPIED PERIODS.

THE BAS CONTRACTOR WILL PROVIDE AN OVERIDE WALL-MOUNTED PUSH-BUTTON CENTRALLY LOCATED THAT WILL ALLOW LOCAL OVERIDE BY USER. THE ACTIVATION OF THE PUSH-BUTTON WILL ADD 1-HR (ADJUSTABLE) TO THE OCCUPIED SCHEDULE. IF THE BUTTON IS PUSHED DURING THE OCCUPIED PERIOD. IF THE BUTTON IS PUSHED OUTSIDE OF THE OCCUPIED PERIODS, THE BUILDING WILL BE ENABLED TO IT'S OCCUPIED SETOINTS FOR A PERIOD OF 2-HRS (ADJUSTABLE).

A WEATHER STATION IS TO BE INSTALLED ON A NORTH FACING WALL AND CONNECTED DIRECTLY TO THE CENTRAL BAS CONTROLLER. THE INTENT OF THIS SENSOR IS TO LOCK OUT HEATING ON ALL UNIT HEATERS WHEN THE OUTSIDE AIR TEMPERATURE IS GREATER THAN 70°F (ADJ) AND ENABLE UNT HEATER OPERATION WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW 65°F (ADJ)



1 HVAC CONTROLS SCHEMATIC
NTS



1. EXHAUST FAN - ON/OFF (TYPICAL OF 1)

RUN CONDITIONS - CONTINUOUS:
THE FAN SHALL RUN CONTINUOUSLY.

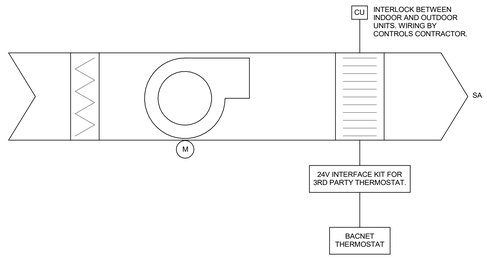
FAN: THE FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

FAN STATUS:
THE CONTROLLER SHALL MONITOR THE FAN STATUS.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ).

	HARDWARE POINTS				SOFTWARE POINTS						
POINTS NAME	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**LOOP**	**SCHED**	**TREND**	**ALARM**	**SHOW ON GRAPHIC**
FAN STATUS			X						X		X
FAN START/STOP				X					X		X
FAN FAILURE										X	
FAN RUNTIME EXCEEDED										X	
TOTALS	0	0	1	1	0	0	0	0	2	2	2
	TOTAL HARDWARE (2)				**TOTAL SOFTWARE (4)**						

2 EXHAUST FAN CONTROLS SCHEMATIC
NTS



DESCRIPTION OF OPERATION:

THE DUCTLESS SPLIT SYSTEM IS TO BE PROVIDED WITH A FACTORY OPTIONAL 3RD PARTY THERMOSTAT MODULE. CONTRACTOR TO PROVIDE A BACNET COMPATIBLE THERMOSTAT TO COMMUNICATE TO THE IVU NETWORK.

THE SPLIT SYSTEM SHOULD BE WIRED PER MANUFACTURER'S INSTALLATION INSTRUCTION. THIS INCLUDES THE INTERLOCK WIRING FOR POWER AND CONTROLS BETWEEN THE INDOOR AND OUTDOOR UNIT, AS WELL AS THE WIRING BETWEEN THE INDOOR UNIT AND THE THERMOSTAT.

THE BACNET THERMOSTAT WILL MONITOR THE ROOM TEMPERATURE AND THE BAS WILL PROVIDE GRAPHIC DISPLAY AND TRENDING. THE THERMOSTAT WILL ALSO HAVE A WRITE-ABLE TEMPERATURE SETPOINT TO ALLOW ADJUSTMENT THROUGH THE BAS. THE THERMOSTAT WILL ALLOW FOR OCCUPANT OVERRIDE FOR A PERIOD OF 2 HOURS. THE BAS WILL ENABLE THE DOAS SERVING THE OCCUPIED ZONE FOR THE OVERRIDE PERIOD.

BAS ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH ZONE TEMP: IF THE ZONE TEMP IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINED AMOUNT (10 DEG. F. ADJUSTABLE)

3 FAN COIL UNIT WITH BAS SENSOR CONTROLS SCHEMATIC
NTS

GENERAL NOTES:

A. ALL WORK SHALL COMPLY WITH THE OWNERS REQUIREMENTS, AND WITH ALL APPLICABLE STATE AND LOCAL CODES, OR AUTHORITY HAVING JURISDICTION.

B. SEE HVAC AND PLUMBING DRAWINGS FOR THERMOSTAT, SENSOR AND EQUIPMENT LOCATIONS.

C. NO WIRELESS COMMUNICATION DEVICES WILL BE ALLOWED.

D. ALL SCHEMATICS ARE DIAGRAMMATIC FOR INTENT ONLY. CONTROLS CONTRACTOR TO PROVIDE SHOP DRAWING WITH CONTROLLERS, WIRING, AND SENSORS TO ACCOMPLISH DESIGN INTENT.

E. CONTROLS CONTRACTOR TO PROVIDE ALL ENCLOSURES, TRANSFORMERS, AND CONDUIT FOR ALL LOW VOLTAGE POWER AND SIGNAL WIRING UNLESS OTHERWISE NOTED. ELECTRICAL CONTRACTOR TO PROVIDE LINE-VOLTAGE AS REQUIRED.

F. CONDUIT DROPS AND BACKER BOXES FOR T-STATS ARE BY ELECTRICAL CONTRACTOR. CONDUITS BETWEEN CU AND FC SPLIT SYSTEMS ARE BY ELECTRICAL CONTRACTOR. RE: ELECTRICAL DRAWINGS. SURFACE MOUNT UTILITIES REQUIRED FOR STC RATED WALLS.

G. WHERE 24V TRANSFORMERS ARE REQUIRED, THE ELECTRICAL CONTRACTOR WILL PROVIDE A JUNCTION BOX AND 120V POWER TO THE BOX. CONTROLS CONTRACTOR WILL PROVIDE AND INSTALL THE TRANSFORMER.

H. COORDINATE INSTALLATION WITH THE WORK OF OTHER TRADES PRIOR TO STARTING. IN THE EVENT THAT CONFLICTS ARE FOUND WITH THE WORK OF OTHER TRADES, BRING ALL SUCH CONFLICTS TO THE ARCHITECT'S ATTENTION FOR RESOLUTION PRIOR TO PROCEEDING WITH THE WORK IN THAT AREA. DEFICIENCIES CAUSED BY A FAILURE TO PERFORM SUCH VERIFICATIONS SHALL BE CORRECTED AT NO ADDITIONAL EXPENSE TO OWNER. IMMEDIATELY NOTIFY ARCHITECT OF CONDITIONS IN CONFLICT WITH THE PLANS.

I. SUBSTITUTIONS OF EQUIPMENT OTHER THAN AS SPECIFIED SHALL BE THE COMPLETE RESPONSIBILITY OF THE HVAC CONTRACTOR. ANY ADDITIONAL ELECTRICAL, STRUCTURAL, MECHANICAL OR ARCHITECTURAL REQUIREMENTS SHALL BE PROVIDED AT NO ADDITIONAL EXPENSE TO OWNER.

J. ALL WIRING, PIPING, AND EQUIPMENT INSTALLED IN PLENUMS SHALL BE PLENUM RATED OR INSTALLED IN CONDUIT.

K. PIPING PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRESTOPPED IN ACCORDANCE WITH 2018 IBC SECTION 714. PIPING PENETRATIONS THROUGH STC RATED CONSTRUCTION SHALL MEET MINIMUM STC REQUIREMENTS. REFER TO ARCHITECTURAL STC RATED ASSEMBLY PENETRATION DETAILS. COORDINATE WITH FIRE RATED ASSEMBLIES AS REQUIRED.

L. PENETRATIONS THROUGH SOUND RATED OR SECURE PARTITIONS ARE TO BE KEPT TO A MINIMUM. ALL PENETRATIONS WILL BE FILLED AND CAULKED FOR SOUND RATING AS REQUIRED.

M. MATERIALS UTILIZED WITHIN RETURN PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25, AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50.

N. ALL WORK SHALL BE COORDINATED BETWEEN THE MECHANICAL, ELECTRICAL AND CONTROLS CONTRACTORS TO ENSURE COMPATIBILITY OF ALL SYSTEMS, EQUIPMENT, SENSORS AND INSTALLATION.

O. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.

CONCEPT DRAWING NOTE:

THESE DRAWINGS ARE TO ASSIST THE CONTROLS SUBCONTRACTOR WITH THE BIDDING AND ESTIMATING PROCESS AND TO ESTABLISH THE EXPECTED DESIGN INTENT. AS PART OF THE PROJECT APPROVAL PROCESS, THE CONTROLS SUBCONTRACTOR IS REQUIRED TO SUBMIT I&C PACKAGE, WHICH SHALL CONTAIN THE ACTUAL INSTALLATION DRAWINGS WITH ALL INTENDED PARTS AND CONNECTIONS PRIOR TO INSTALLATION.

PROFESSIONAL ENGINEER
13613
STATE OF IDAHO
JOSEPH HUFF
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ORIGINAL DOCUMENTS ARE HELD AT CSHQA, INC. OFFICE, 200 W BROAD STREET, BOISE, ID 83702

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AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

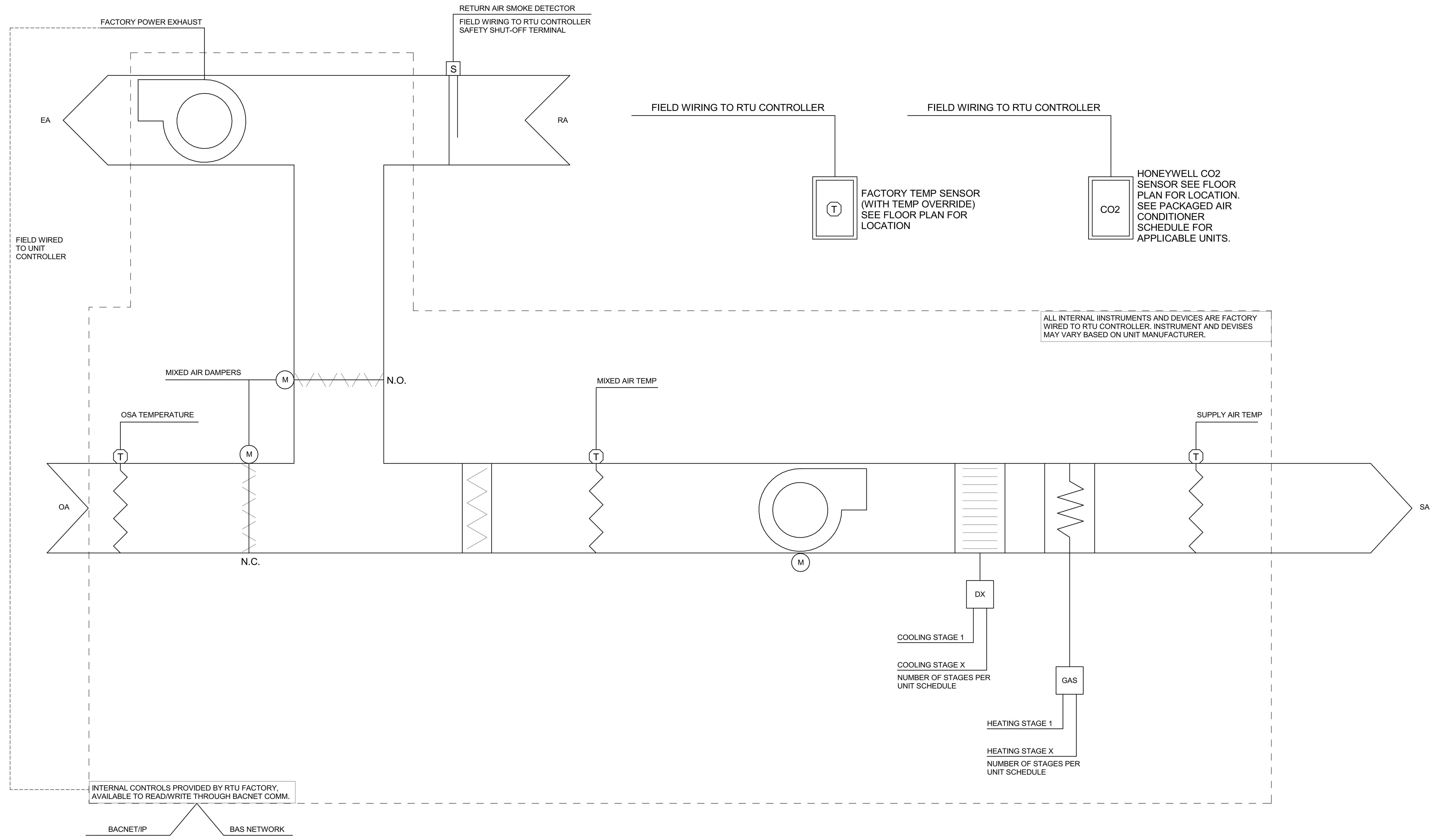
REVISED

SHEET TITLE
HVAC CONTROLS

SHEET
M90

ORIGINAL SHEET SIZE
36" x 48"

3/31/2023 11:37:02 AM



BAS CONTROLS STRATEGY FOR PACKAGED UNITARY EQUIPMENT:

ALL PACKAGE EQUIPMENT CONTROLS ARE TO BE INTERNALLY WIRED AND TERMINATED WITH FACTORY SENSORS, DEVICES AND CONTROLLERS. ALL PROGRAMMING AND TESTING OF THE FACTORY CONTROLS ARE PERFORMED BY FACTORY AND SHALL BE PART OF FACTORY QUALITY CONTROL TESTING.

PACKAGE EQUIPMENT CONTROLS IS TO BE PROGRAMMED TO OPERATE THE EQUIPMENT PER FACTORY-PUBLISHED SEQUENCE OF OPERATION AND EFFICIENCY DATA. ANY DEVIATION FROM FACTORY STANDARD CONTROLS IS TO BE PRE-APPROVED BY FACTORY TO MAINTAIN FULL FACTORY WARRANTY.

THE FACTORY CONTROLLER WILL INCLUDE ALL REQUIRED SAFETY SHUT-OFF SEQUENCES TO PROTECT THE EQUIPMENT COMPONENTS AND EQUIPMENT WARRANTY. OVERRIDING OR MODIFYING FACTORY SAFETY SEQUENCES IS NOT ACCEPTABLE WITHOUT WRITTEN APPROVAL.

ALL PACKAGED FACTORY-CONTROL IS TO BE CAPABLE OF OPERATING STAND-ALONE WITH A STANDARD THERMOSTAT, REGARDLESS OF THE USE OF A BAS OR DDC SYSTEM. DEFAULT SETPOINTS ARE TO BE SET BY OWNER REP IN CASE OF LOSS OF COMMUNICATION.

THE USE OF A BAS OR DDC SYSTEM FOR PACKAGED UNITARY EQUIPMENT IS TO PROVIDE OPERATING SCHEDULES AND SETPOINTS AS WELL AS TO MONITOR INTERNAL POINTS FOR TRENDING OR ALARMING PURPOSES. THE BAS SYSTEM IS NOT TO OVERRIDE ANY INTERNALLY LOCKED POINTS OR MODIFY INTERNAL CONTROL SEQUENCES UNLESS OTHERWISE DIRECTED BY EQUIPMENT OPERATOR AND PRE-APPROVED IN WRITING.

THE BAS CONTRACTOR IS TO PROVIDE ANY EXTERNAL CONTROL DEVICES AND WIRING REQUIRED TO ACHIEVE A FULLY OPERATIONAL SYSTEM WITH THE DESIGN INTENT OF THE POINTS LIST NOTED.

BAS SCHEDULE, SETPOINT-CONTROL OR MONITORING OF THE PACKAGE EQUIPMENT IS NOTED BELOW.

RUN CONDITIONS - BAS SCHEDULED:
THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:
OCCUPIED MODE: THE UNIT SHALL MAINTAIN
- A 75°F (ADJ.) COOLING SETPOINT
- A 70°F (ADJ.) HEATING SETPOINT.

UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN
- A 85°F (ADJ.) COOLING SETPOINT.
- A 55°F (ADJ.) HEATING SETPOINT.

BAS ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
- LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

DEMAND LIMITING - ZONE SETPOINT OPTIMIZATION:
TO LOWER POWER CONSUMPTION, THE ZONE SETPOINTS SHALL AUTOMATICALLY RELAX WHEN THE FACILITY POWER CONSUMPTION EXCEEDS DEFINABLE THRESHOLDS. THE AMOUNT OF RELAXATION SHALL BE INDIVIDUALLY CONFIGURABLE FOR EACH ZONE. THE ZONE SETPOINTS SHALL AUTOMATICALLY RETURN TO THEIR PREVIOUS SETTINGS WHEN THE FACILITY POWER CONSUMPTION DROPS BELOW THE THRESHOLDS.

DEMAND CONTROL VENTILATION
DEMAND CONTROL VENTILATION SETPOINTS SHALL BE BE PER 2018 IECC SECTION C403.7.1. REFER TO SINGLE PACKAGED AIR CONDITIONER GAS/ELECTRIC SCHEDULE (ROOFTOP) FOR APPLICABLE UNITS.

ZONE SETPOINT ADJUST:
THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SETPOINTS AT THE ZONE SENSOR.

BAS OPTIMAL START:
THE BAS SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING START-UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF SCHEDULED OCCUPIED PERIOD.

ZONE SCHEDULE OVERRIDE:
THE LOCAL OVERRIDE IS TO BE ACCOMPLISHED WITH THE ZONE THERMOSTAT OR A LOCAL ZONE SCHEDULE OVERRIDE PUSH BUTTON. THE LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR A PERIOD OF 1 HOUR (ADJ.). AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE.

FILTER ALARM:
FILTER ALARM WILL BE BASED ON 1000 HOURS OF RUNTIME (ADJ). GRAPHICAL DISPLAY TO BE INCLUDED IN HMI.

RETURN AIR SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A RETURN AIR SMOKE DETECTOR STATUS.

SUPPLY AIR SMOKE DETECTION (AS REQUIRED BY LOCAL FIRE CODE):
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SUPPLY AIR SMOKE DETECTOR STATUS.

SUPPLY FAN:
THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES. TO PREVENT SHORT CYCLING, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

BAS ALARMS SHALL BE PROVIDED AS FOLLOWS:
- SUPPLY FAN FAILURE: COOL/HEAT MODE COMMANDED ON, BUT THE FAN STATUS IS OFF.
- SUPPLY FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

COOLING/HEATING STAGES:
THE FACTORY CONTROLLER SHALL STAGE THE COOLING/HEATING TO MAINTAIN ITS SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A FACTORY-SET DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A FACTORY-SET MINIMUM RUNTIME. THE FACTORY CONTROLLER SHALL PROVIDE FEEDBACK TO THE BAS AS TO THE STATUS OF COOLING OR HEATING AND MODE AND STATUS OF EACH STAGE.
SEE EQUIPMENT SUBMITTAL FOR THE NUMBER OF HEATING/COOLING STAGES.

BAS ALARMS SHALL BE PROVIDED AS FOLLOWS:
- FILTER CHANGE REQUIRED: FAN RUN-TIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

BAS ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS GREATER THAN 90°F (ADJ.).
- LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

SUPPLY AIR TEMPERATURE:
THE BAS SHALL MONITOR THE SUPPLY AIR TEMPERATURE.

BAS ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).

LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

	HARDWARE POINTS				SOFTWARE POINTS						
POINTS NAME	AI	AO	BI	BO	AV	BV	LOOP	SCHED	TREND	ALARM	SHOW ON GRAPHIC
MIXED AIR TEMP					X				X		X
OUTSIDE AIR TEMP					X				X		X
SUPPLY AIR TEMP					X				X		X
ZONE SETPOINT ADJUST					X						X
ZONE TEMP					X				X		X
MIXED AIR DAMPERS					X				X		X
SUPPLY FAN VFD SPEED					X				X		X
FREEZESTAT						X			X	X	X
SAFETY SHUT-OFF SMOKE DETECTOR						X			X	X	X
SUPPLY FAN STATUS						X			X		X
FILTER STATUS						X					X
SCHEDULE OVERRIDE (OPTIONAL)						X			X		X
COOLING STAGE 1						X			X		X
COOLING STAGE X (SEE SUBMITTAL FOR NUMBER OF STAGES)						X			X		X
HEATING STAGE 1						X			X		X
HEATING STAGE X (SEE SUBMITTAL FOR NUMBER OF STAGES)						X			X		X
COOLING SETPOINT					X	X			X		X
HEATING SETPOINT					X	X			X		X
SCHEDULE								X			
FILTER CHANGE REQUIRED										X	X
HIGH MIXED AIR TEMP										X	
HIGH ZONE TEMP										X	
LOW ZONE TEMP										X	
SUPPLY FAN FAILURE										X	
SUPPLY FAN RUNTIME EXCEEDED.										X	
TOTALS	0	0	0	0	9	11	0	1	16	8	19

TOTAL HARDWARE (0) TOTAL SOFTWARE (45)

1 CONSTANT VOLUME RTU WITH GAS HEAT AND DX COOLING CONTROLS SCHEMATIC
NTS

GENERAL NOTES:

A. ALL WORK SHALL COMPLY WITH THE OWNERS REQUIREMENTS, AND WITH ALL APPLICABLE STATE AND LOCAL CODES, OR AUTHORITY HAVING JURISDICTION.

B. SEE HVAC AND PLUMBING DRAWINGS FOR THERMOSTAT, SENSOR AND EQUIPMENT LOCATIONS.

C. NO WIRELESS COMMUNICATION DEVICES WILL BE ALLOWED.

D. ALL SCHEMATICS ARE DIAGRAMMATIC FOR INTENT ONLY. CONTROLS CONTRACTOR TO PROVIDE SHOP DRAWING WITH CONTROLLERS, WIRING, AND SENSORS TO ACCOMPLISH DESIGN INTENT.

E. CONTROLS CONTRACTOR TO PROVIDE ALL ENCLOSURES, TRANSFORMERS, AND CONDUIT FOR ALL LOW VOLTAGE POWER AND SIGNAL WIRING UNLESS OTHERWISE NOTED. ELECTRICAL CONTRACTOR TO PROVIDE LINE-VOLTAGE AS REQUIRED.

F. CONDUIT DROPS AND BACKER BOXES FOR T-STATS ARE BY ELECTRICAL CONTRACTOR. CONDUITS BETWEEN CU AND FC SPLIT SYSTEMS ARE BY ELECTRICAL CONTRACTOR. RE: ELECTRICAL DRAWINGS. SURFACE MOUNT UTILITIES REQUIRED FOR STC RATED WALLS.

G. WHERE 24V TRANSFORMERS ARE REQUIRED, THE ELECTRICAL CONTRACTOR WILL PROVIDE A JUNCTION BOX AND 120V POWER TO THE BOX. CONTROLS CONTRACTOR WILL PROVIDE AND INSTALL THE TRANSFORMER.

H. COORDINATE INSTALLATION WITH THE WORK OF OTHER TRADES PRIOR TO STARTING. IN THE EVENT THAT CONFLICTS ARE FOUND WITH THE WORK OF OTHER TRADES, BRING ALL SUCH CONFLICTS TO THE ARCHITECT'S ATTENTION FOR RESOLUTION PRIOR TO PROCEEDING WITH THE WORK IN THAT AREA. DEFICIENCIES CAUSED BY A FAILURE TO PERFORM SUCH VERIFICATIONS SHALL BE CORRECTED AT NO ADDITIONAL EXPENSE TO OWNER. IMMEDIATELY NOTIFY ARCHITECT OF CONDITIONS IN CONFLICT WITH THE PLANS.

I. SUBSTITUTIONS OF EQUIPMENT OTHER THAN AS SPECIFIED SHALL BE THE COMPLETE RESPONSIBILITY OF THE HVAC CONTRACTOR. ANY ADDITIONAL ELECTRICAL, STRUCTURAL, MECHANICAL OR ARCHITECTURAL REQUIREMENTS SHALL BE PROVIDED AT NO ADDITIONAL EXPENSE TO OWNER.

J. ALL WIRING, PIPING, AND EQUIPMENT INSTALLED IN PLENUMS SHALL BE PLENUM RATED OR INSTALLED IN CONDUIT.

K. PIPING PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRESTOPPED IN ACCORDANCE WITH 2018 IBC SECTION 714. PIPING PENETRATIONS THROUGH STC RATED CONSTRUCTION SHALL MEET MINIMUM STC REQUIREMENTS. REFER TO ARCHITECTURAL STC RATED ASSEMBLY PENETRATION DETAILS. COORDINATE WITH FIRE RATED ASSEMBLIES AS REQUIRED.

L. PENETRATIONS THROUGH SOUND RATED OR SECURE PARTITIONS ARE TO BE KEPT TO A MINIMUM. ALL PENETRATIONS WILL BE FILLED AND CAULKED FOR SOUND RATING AS REQUIRED.

M. MATERIALS UTILIZED WITHIN RETURN PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25, AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50.

N. ALL WORK SHALL BE COORDINATED BETWEEN THE MECHANICAL, ELECTRICAL AND CONTROLS CONTRACTORS TO ENSURE COMPATIBILITY OF ALL SYSTEMS, EQUIPMENT, SENSORS AND INSTALLATION.

O. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.

CONCEPT DRAWING NOTE:

THESE DRAWINGS ARE TO ASSIST THE CONTROLS SUBCONTRACTOR WITH THE BIDDING AND ESTIMATING PROCESS AND TO ESTABLISH THE EXPECTED DESIGN INTENT. AS PART OF THE PROJECT APPROVAL PROCESS, THE CONTROLS SUBCONTRACTOR IS REQUIRED TO SUBMIT I&C PACKAGE, WHICH SHALL CONTAIN THE ACTUAL INSTALLATION DRAWINGS WITH ALL INTENDED PARTS AND CONNECTIONS PRIOR TO INSTALLATION.

PROFESSIONAL ENGINEER LICENSED 19613 STATE OF IDAHO JOSEPH HUFF
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Date: 2023.03.31 12:53:40-06'00'

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AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

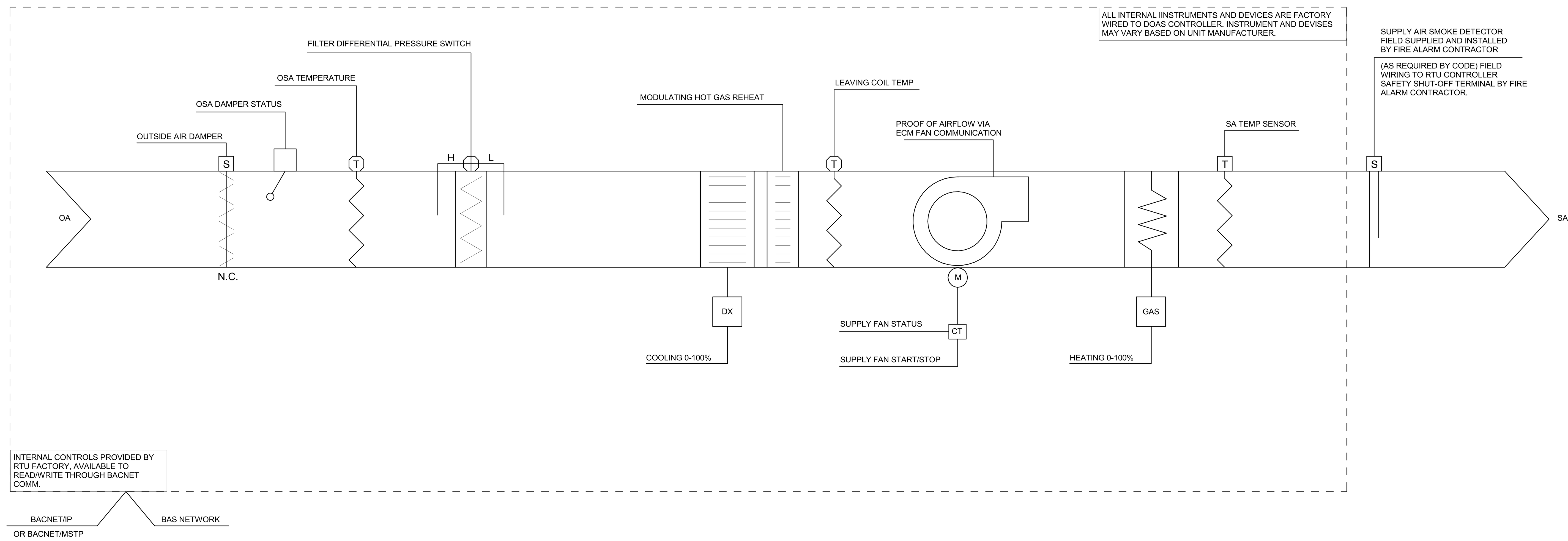
REVISED

SHEET TITLE
HVAC CONTROLS

SHEET
M91

ORIGINAL SHEET SIZE
36" x 48"

3/31/2023 11:37:02 AM



BAS CONTROLS STRATEGY FOR PACKAGED DEDICATED OUTSIDE AIR UNIT:

ALL PACKAGE EQUIPMENT CONTROLS ARE TO BE INTERNALLY WIRED AND TERMINATED WITH FACTORY SENSORS, DEVICES AND CONTROLLERS. ALL PROGRAMMING AND TESTING OF THE FACTORY CONTROLS ARE PERFORMED BY FACTORY AND SHALL BE PART OF FACTORY QUALITY CONTROL TESTING.

THE FACTORY CONTROLLER WILL INCLUDE ALL REQUIRED SAFETY SHUT-OFF SEQUENCES TO PROTECT THE EQUIPMENT COMPONENTS AND EQUIPMENT WARRANTY. OVERRIDING OR MODIFYING FACTORY SAFETY SEQUENCES IS NOT ACCEPTABLE WITHOUT WRITTEN APPROVAL.

THE DOAS WILL ACCEPT AN OVERRIDE VALUE FOR THE DISCHARGE TEMP SETPOINT. THE DOAS WILL OPERATE AS A CONSTANT VOLUME SYSTEM WITH THE SAME SCHEDULE AS THE FAN COILS IT SERVES. THE DOAS SHALL MAINTAIN A DISCHARGE AIR TEMPERATURE AS NOTED BELOW.

ALL PACKAGED FACTORY-CONTROL IS TO BE CAPABLE OF OPERATING STAND-ALONE, REGARDLESS OF THE USE OF A BAS OR DDC SYSTEM. DEFAULT SETPOINTS ARE TO BE SET BY OWNER REP IN CASE OF LOSS OF COMMUNICATION.

THE USE OF A BAS OR DDC SYSTEM FOR PACKAGED DOAS EQUIPMENT IS TO PROVIDE OPERATING SCHEDULES AND SETPOINTS AS WELL AS TO MONITOR INTERNAL POINTS FOR TRENDING OR ALARMING PURPOSES. THE BAS SYSTEM IS NOT TO OVERRIDE ANY INTERNALLY LOCKED POINTS OR MODIFY INTERNAL CONTROL SEQUENCES UNLESS OTHERWISE DIRECTED BY EQUIPMENT OPERATOR AND PRE-APPROVED IN WRITING.

THE BAS CONTRACTOR IS TO PROVIDE ANY EXTERNAL CONTROL DEVICES AND WIRING REQUIRED TO ACHIEVE A FULLY OPERATIONAL SYSTEM WITH THE POINTS LIST NOTED BELOW.

BAS SCHEDULE, SETPOINT-CONTROL OR MONITORING OF THE PACKAGE EQUIPMENT IS NOTED BELOW.

RUN CONDITIONS - BAS SCHEDULED:
THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE TO MATCH FAN COIL SCHEDULES IN THE FOLLOWING MODES:
OCCUPIED MODE: THE UNIT SHALL MAINTAIN

- A 60°F (ADJ.) SUMMER SETPOINT
- A 65°F (ADJ.) WINTER SETPOINT.

UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL BE OFF.

BAS ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH DISCHARGE TEMP: IF THE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
- LOW DISCHARGE TEMP: IF THE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
- GENERAL OR SPECIFIC DOAS ALARMS ARE AVAILABLE BY DOAS BACNET CONTROLLER.

SUPPLY AIR SMOKE DETECTION (AS REQUIRED BY CODE):
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SUPPLY AIR SMOKE DETECTOR STATUS.

INTERNAL COOLING/HEATING STAGES:
THE FACTORY CONTROLLER SHALL STAGE THE COOLING/HEATING TO MAINTAIN ITS SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A FACTORY-SET DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A FACTORY-SET MINIMUM RUNTIME.

BAS ALARMS SHALL BE PROVIDED AS FOLLOWS:

- FILTER CHANGE REQUIRED: WHEN FINAL FILTER DIFFERENTIAL PRESSURE SWITCH IS ACTIVATED. DEFAULT 1.0" WC.
- FILTER SWITCH ALARM IS ACTIVE.

SUPPLY AIR TEMPERATURE:
THE BAS SHALL MONITOR THE SUPPLY AIR TEMPERATURE.

	HARDWARE POINTS				SOFTWARE POINTS						
POINTS NAME	AI	AO	BI	BO	AV	BV	LOOP	SCHED	TREND	ALARM	SHOW ON GRAPHIC
OUTSIDE AIR TEMP					X				X		X
DISCHARGE AIR TEMP					X				X		X
FILTER DIFFERENTIAL PRESSURE SWITCH						X					X
COOLING MODE						X			X		X
HEATING MODE						X			X		X
SUMMER SETPOINT					X	X			X		X
WINTER SETPOINT					X	X			X		X
SCHEDULE/ENABLE								X			
AIRFLOW OVERRIDE					X						X
FILTER CHANGE REQUIRED										X	X
HIGH DISCHARGE AIR TEMP					X					X	
LOW DISCHARGE AIR TEMP					X					X	
TOTALS	0	0	0	0	7	5	0	1	6	3	10

TOTAL HARDWARE (0) TOTAL SOFTWARE (25)

1 CONSTANT VOLUME DOAS WITH GAS HEAT AND DX COOLING CONTROLS SCHEMATIC
NTS

GENERAL NOTES:

A. ALL WORK SHALL COMPLY WITH THE OWNERS REQUIREMENTS, AND WITH ALL APPLICABLE STATE AND LOCAL CODES, OR AUTHORITY HAVING JURISDICTION.

B. SEE HVAC AND PLUMBING DRAWINGS FOR THERMOSTAT, SENSOR AND EQUIPMENT LOCATIONS.

C. NO WIRELESS COMMUNICATION DEVICES WILL BE ALLOWED.

D. ALL SCHEMATICS ARE DIAGRAMMATIC FOR INTENT ONLY. CONTROLS CONTRACTOR TO PROVIDE SHOP DRAWING WITH CONTROLLERS, WIRING, AND SENSORS TO ACCOMPLISH DESIGN INTENT.

E. CONTROLS CONTRACTOR TO PROVIDE ALL ENCLOSURES, TRANSFORMERS, AND CONDUIT FOR ALL LOW VOLTAGE POWER AND SIGNAL WIRING UNLESS OTHERWISE NOTED. ELECTRICAL CONTRACTOR TO PROVIDE LINE-VOLTAGE AS REQUIRED.

F. CONDUIT DROPS AND BACKER BOXES FOR T-STATS ARE BY ELECTRICAL CONTRACTOR. CONDUITS BETWEEN CU AND FC SPLIT SYSTEMS ARE BY ELECTRICAL CONTRACTOR. RE: ELECTRICAL DRAWINGS. SURFACE MOUNT UTILITIES REQUIRED FOR STC RATED WALLS.

G. WHERE 24V TRANSFORMERS ARE REQUIRED, THE ELECTRICAL CONTRACTOR WILL PROVIDE A JUNCTION BOX AND 120V POWER TO THE BOX. CONTROLS CONTRACTOR WILL PROVIDE AND INSTALL THE TRANSFORMER.

H. COORDINATE INSTALLATION WITH THE WORK OF OTHER TRADES PRIOR TO STARTING. IN THE EVENT THAT CONFLICTS ARE FOUND WITH THE WORK OF OTHER TRADES, BRING ALL SUCH CONFLICTS TO THE ARCHITECT'S ATTENTION FOR RESOLUTION PRIOR TO PROCEEDING WITH THE WORK IN THAT AREA. DEFICIENCIES CAUSED BY A FAILURE TO PERFORM SUCH VERIFICATIONS SHALL BE CORRECTED AT NO ADDITIONAL EXPENSE TO OWNER. IMMEDIATELY NOTIFY ARCHITECT OF CONDITIONS IN CONFLICT WITH THE PLANS.

I. SUBSTITUTIONS OF EQUIPMENT OTHER THAN AS SPECIFIED SHALL BE THE COMPLETE RESPONSIBILITY OF THE HVAC CONTRACTOR. ANY ADDITIONAL ELECTRICAL, STRUCTURAL, MECHANICAL OR ARCHITECTURAL REQUIREMENTS SHALL BE PROVIDED AT NO ADDITIONAL EXPENSE TO OWNER.

J. ALL WIRING, PIPING, AND EQUIPMENT INSTALLED IN PLENUMS SHALL BE PLENUM RATED OR INSTALLED IN CONDUIT.

K. PIPING PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRESTOPPED IN ACCORDANCE WITH 2018 IBC SECTION 714. PIPING PENETRATIONS THROUGH STC RATED CONSTRUCTION SHALL MEET MINIMUM STC REQUIREMENTS. REFER TO ARCHITECTURAL STC RATED ASSEMBLY PENETRATION DETAILS. COORDINATE WITH FIRE RATED ASSEMBLIES AS REQUIRED.

L. PENETRATIONS THROUGH SOUND RATED OR SECURE PARTITIONS ARE TO BE KEPT TO A MINIMUM. ALL PENETRATIONS WILL BE FILLED AND CAULKED FOR SOUND RATING AS REQUIRED.

M. MATERIALS UTILIZED WITHIN RETURN PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25, AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50.

N. ALL WORK SHALL BE COORDINATED BETWEEN THE MECHANICAL, ELECTRICAL AND CONTROLS CONTRACTORS TO ENSURE COMPATIBILITY OF ALL SYSTEMS, EQUIPMENT, SENSORS AND INSTALLATION.

O. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.

CONCEPT DRAWING NOTE:

THESE DRAWINGS ARE TO ASSIST THE CONTROLS SUBCONTRACTOR WITH THE BIDDING AND ESTIMATING PROCESS AND TO ESTABLISH THE EXPECTED DESIGN INTENT. AS PART OF THE PROJECT APPROVAL PROCESS, THE CONTROLS SUBCONTRACTOR IS REQUIRED TO SUBMIT I&C PACKAGE, WHICH SHALL CONTAIN THE ACTUAL INSTALLATION DRAWINGS WITH ALL INTENDED PARTS AND CONNECTIONS PRIOR TO INSTALLATION.

PROFESSIONAL ENGINEER LICENSED 19613 STATE OF IDAHO JOSEPH HUFF
Digitally signed by Joseph Huff
Date: 2023.03.31 12:53:40-06'00'

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AGENCY REVIEW SET

PROJECT	DATE
21403.000	03-31-23
DRAWN	CHECKED
JF	JH

REVISED

SHEET TITLE
HVAC CONTROLS

SHEET
M92

ORIGINAL SHEET SIZE 36" x 48"

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