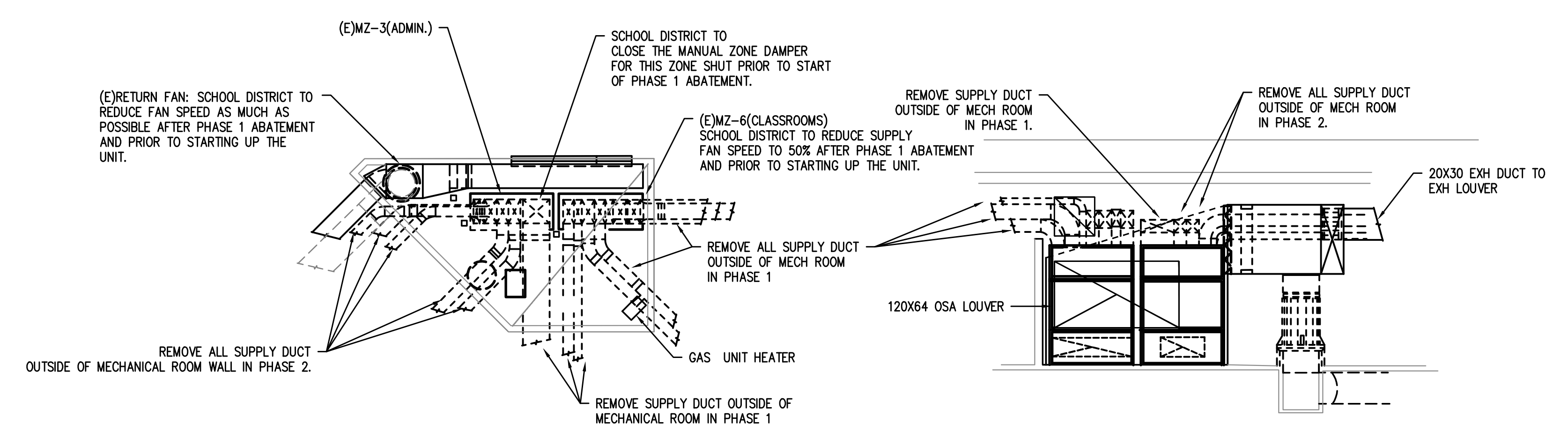


1 MECHANICAL DEMO PLAN - PHASE I
 SCALE: 1/8"=1'-0"



2 MECHANICAL ROOM DEMO DETAIL
 SCALE: 1/8"=1'-0"

ALL DUCTWORK IN MECHANICAL ROOM ARE SHEETMETAL AND ARE ASSUMED ASBESTOS FREE. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR DEMO OF DUCTWORK INSIDE MECHANICAL ROOM.

City Of Bend Approval Stamp:

- KEYED NOTES:**
1. REMOVE LOW RA GRILLE AT CABINET AND CAP OFF DUCT BELOW FLOOR. COORDINATE FLOOR PATCH WITH ARCHITECT.
 2. REMOVE (E) T-STAT AND PATCH WALL. COORDINATE WALL PATCH WITH ARCHITECT.
 3. REMOVE (E)GRILLE/DIFFUSER.
 4. DEMO RELIEF GRILLE AND DUCT UP THRU ROOF. RETAIN RELIEF HEAD ON ROOF FOR REMOVAL BY MECHANICAL CONTRACTOR.
 5. CAP RA DUCT ABOVE CEILING OUTSIDE OF CHASE. ABANDON RA DUCT DOWNSTREAM IN PLACE.

- GENERAL NOTES:**
1. WHERE DUCT CONTINUES TO PHASE 2, CAP DUCTWORK AT THE PHASE 1 BOUNDARY.

| # | Date | Description |
|---|---------|--------------------------|
| 1 | 2/19/18 | DISTRICT REVIEW COMMENTS |

BID SET

PILOT BUTTE MIDDLE SCHOOL - BLDGS E&F
 1501 NE Neff Road,
 Bend OR 97701

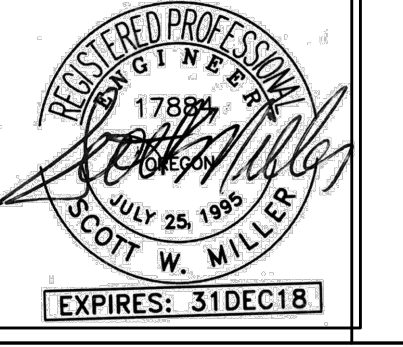
BLRB architects

Drawing Title:
MECHANICAL ASBESTOS ABATEMENT PHASING PLAN - PHASE I

Date: 02.19.2018 Drawn By: TB
 Revised Date: Project No. 17.34B

Stamp Sheet No.

Consulting Engineers
 2007 S.E. Ash St.
 Portland, OR 97214
 PHN: (503) 234-0548
 FAX: (503) 234-0677
 WWW.MPTA-ENG.COM
 CONTACT: TAKAKO BAKER

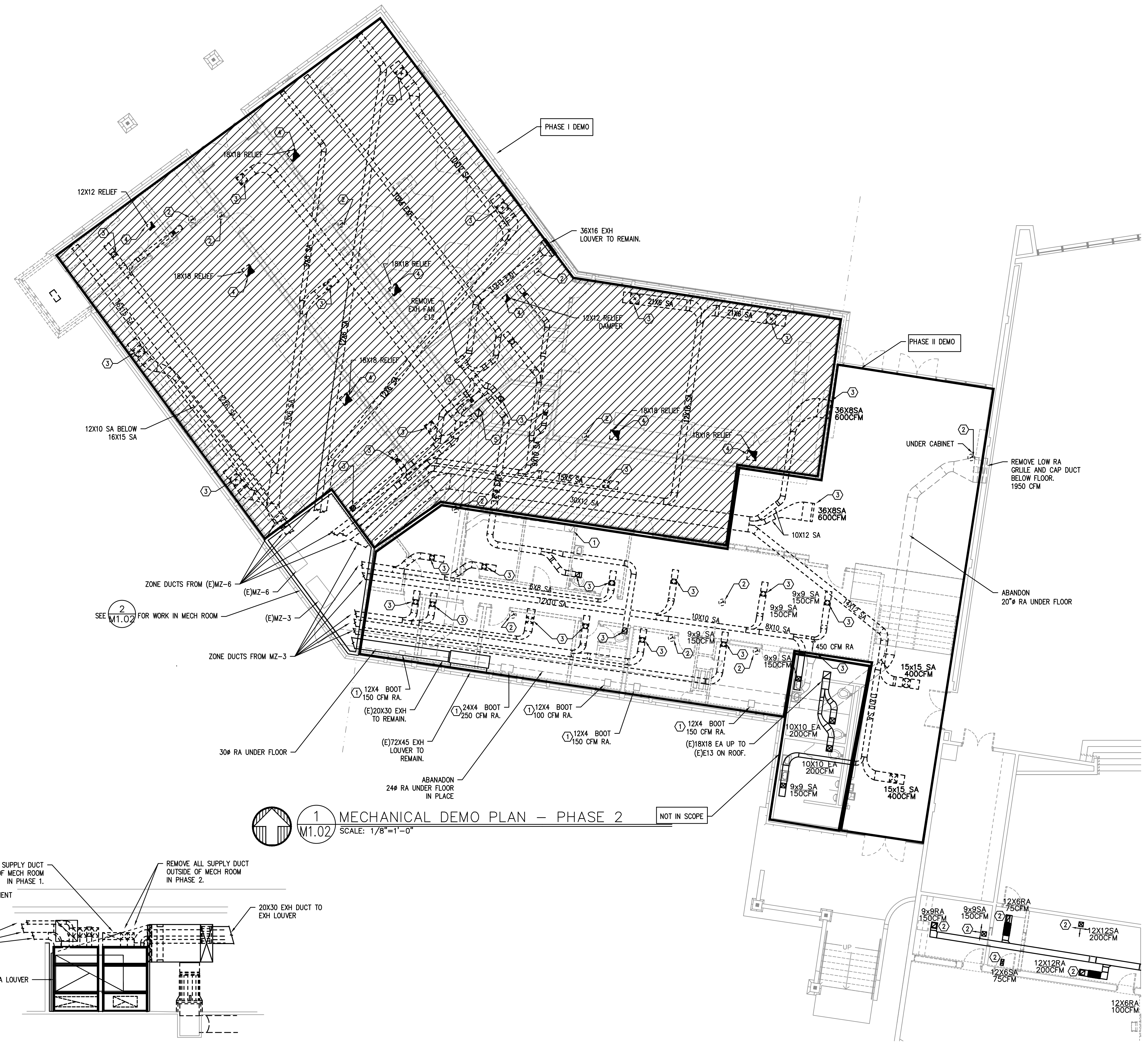


M1.01

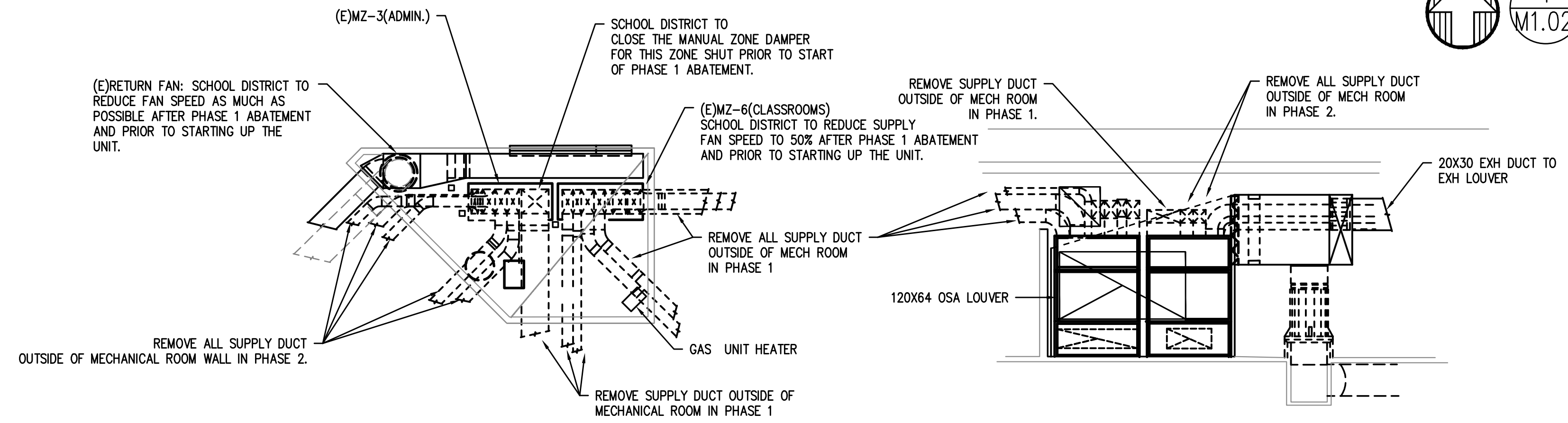
City Of Bend Approval Stamp:

- KEYED NOTES:**
1. REMOVE LOW RA GRILLE AT CABINET AND CAP OFF DUCT BELOW FLOOR. COORDINATE FLOOR PATCH WITH ARCHITECT.
 2. REMOVE (E) T-STAT AND PATCH WALL. COORDINATE WALL PATCH WITH ARCHITECT.
 3. REMOVE (C) GRILLE/DIFFUSER.
 4. DEMO RELIEF GRILLE AND DUCT UP THRU ROOF. RETAIN RELIEF HEAD ON ROOF FOR REMOVAL BY MECHANICAL CONTRACTOR.
 5. CAP RA DUCT ABOVE CEILING OUTSIDE OF CHASE. ABANDON RA DUCT DOWNSTREAM IN PLACE.

- GENERAL NOTES:**
1. WHERE DUCT CONTINUES TO PHASE 2, CAP DUCTWORK AT THE PHASE 1 BOUNDARY.



1 MECHANICAL DEMO PLAN - PHASE 2
 SCALE: 1/8"=1'-0"
 NOT IN SCOPE



ALL DUCTWORK IN MECHANICAL ROOM ARE SHEETMETAL AND ARE ASSUMED ASBESTOS FREE. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR DEMO OF DUCTWORK INSIDE MECHANICAL ROOM.

2 MECHANICAL ROOM DEMO DETAIL
 SCALE: 1/8"=1'-0"

| Revision Schedule | | |
|-------------------|---------|--------------------------|
| # | Date | Description |
| 1 | 2/19/18 | DISTRICT REVIEW COMMENTS |

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PILOT BUTTE MIDDLE SCHOOL - BLDGS E&F
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Drawing Title:
MECHANICAL ASBESTOS ABATEMENT PHASING PLAN - PHASE 2

Date: 02.19.2018 Drawn By: TB

Revised Date: Project No. 17.34B

Stamp Sheet No.

MFA Consulting Engineers
 8007 S.E. Ash St.
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 WWW.MFPA-ENG.COM
 CONTACT: TAKAKO BAKER



M1.02



- SHEET NOTES:**
- REMOVE (E)SNOW MELT HEAT EXCHANGER, HE-1, AND 1\"/>

City Of Bend Approval Stamp:

| # | Date | Description |
|---|---------|--------------------------|
| 1 | 2/19/18 | DISTRICT REVIEW COMMENTS |

BID SET

PILOT BUTTE MIDDLE SCHOOL - BLDGS E&F
 1501 NE Neff Road,
 Bend OR 97701

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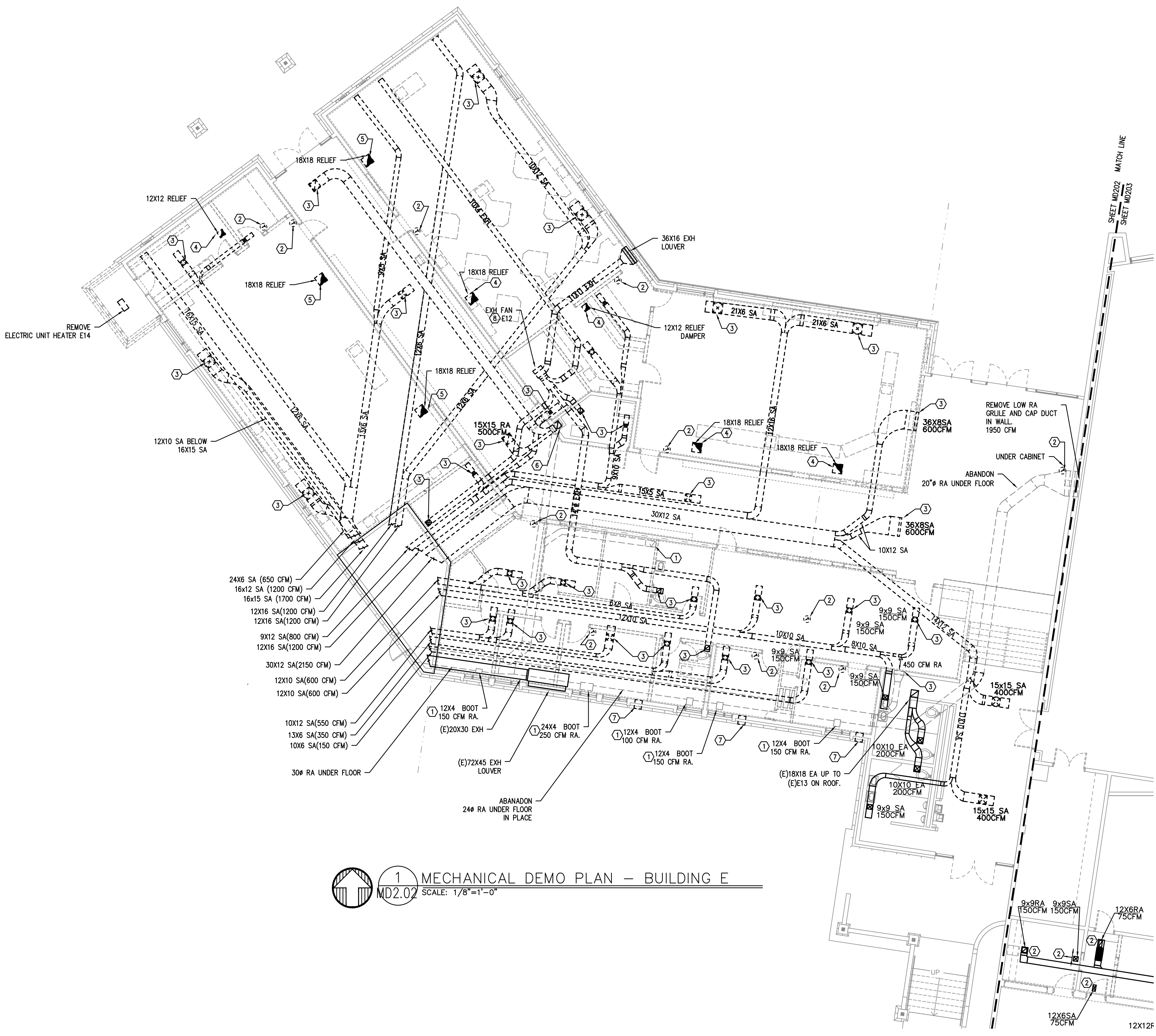
Drawing Title:
MECHANICAL SNOWMELT SYSTEM DEMO PLAN

Date: 02.19.2018 Drawn By: TB
 Revised Date: Project No. 17.34B

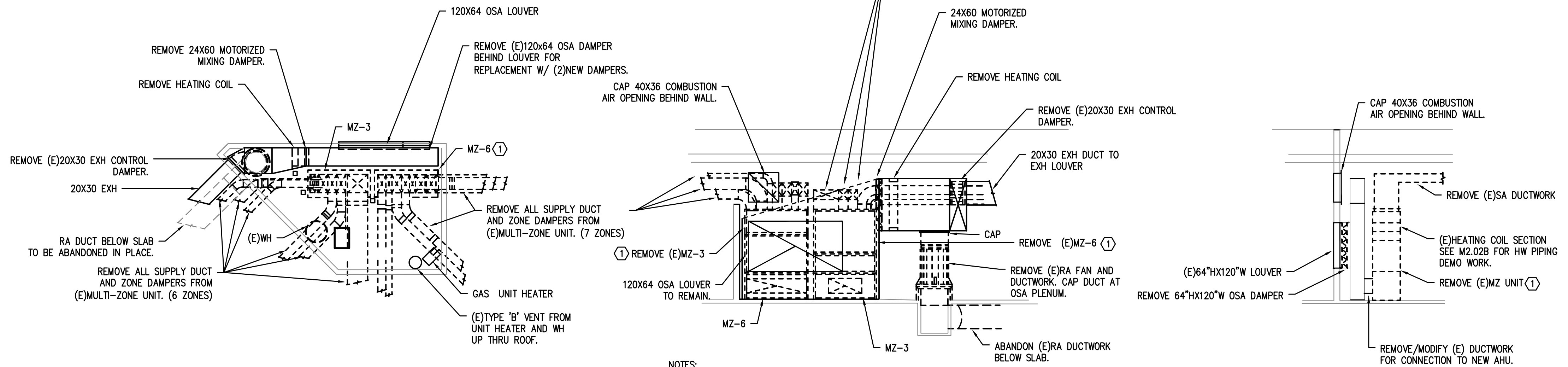
Stamp: Sheet No. **MD2.01**

1 SNOW-MELT SYSTEM DEMO PLAN
 MD2.01 SCALE: 1/8"=1'-0"

MEI A INC.
 Consulting Engineers
 2007 S.E. Ash St.
 Portland, OR 97214
 PH: (503) 234-0548
 FAX: (503) 234-0877
 WWW.MEIA-ENG.COM
 CONTACT: TAKAKO BAKER



1 MECHANICAL DEMO PLAN – BUILDING E
 MD2.02 SCALE: 1/8"=1'-0"



2 MECHANICAL ROOM DEMO DETAIL
 MD2.02 SCALE: 1/8"=1'-0"

- NOTES:
- 1 - REMOVE (E)MULTI-ZONE UNIT IN ITS ENTIRETY, INCLUDING (E)HEATING COIL, MULTI-ZONE DAMPERS, INLET PLENUM, FANS/MOTORS AND CONTROLS. SEE M2.02B FOR HW PIPING DEMO WORK.

- KEYED NOTES:
- REMOVE LOW RA GRILLE AT CABINET AND CAP OFF DUCT BELOW FLOOR. COORDINATE FLOOR PATCH WITH ARCHITECT.
 - REMOVE (C) T-STAT AND PATCH WALL. COORDINATE WALL PATCH WITH ARCHITECT.
 - REMOVE (E)GRILLE/DIFFUSER.
 - REMOVE RELIEF GRILLE AND DUCT UP THRU ROOF. CAP CURS AT ROOF.
 - REMOVE (E)RELIEF GRILLE AND DUCT. RETAIN (E)RELIEF HOOD ON ROOF FOR NEW CONNECTION.
 - CAP OFF RA DUCT ABOVE CEILING OUTSIDE OF CHASE. ABANDON RA DUCT DOWNSTREAM IN PLACE.
 - REMOVE (E)THRU THE WINDOW AC. COORDINATE WALL PATCH WITH ARCH.
 - REMOVE (E)EXH FAN, E-12.

- SHEET NOTES:
- ASBESTOS ABATEMENT CONTRACTOR TO REMOVE ALL DUCTWORK OUTSIDE OF MECHANICAL ROOM..

City Of Bend Approval Stamp:

| Revision Schedule | | |
|-------------------|---------|--------------------------|
| # | Date | Description |
| 1 | 2/19/18 | DISTRICT REVIEW COMMENTS |

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PILOT BUTTE MIDDLE SCHOOL - BLDGS E&F
 1501 NE Neff Road,
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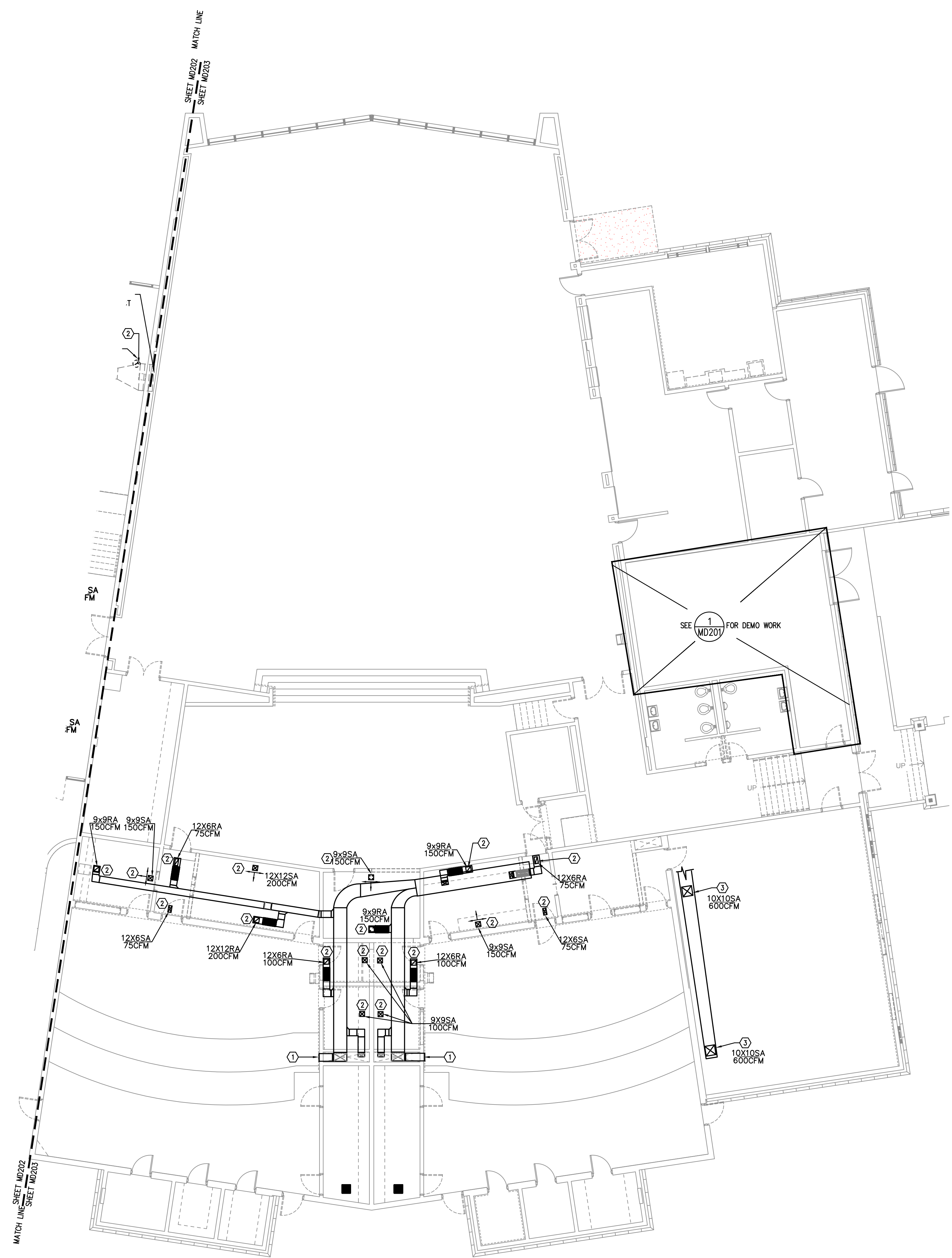
BLRB architects

Drawing Title:
MECHANICAL DEMO PLAN - BUILDING E

Date: 02.19.2018 Drawn By: TB
 Revised Date: Project No. 17.34B

Stamp: [Professional Engineer Seal]
 Sheet No.
MD2.02
 EXPIRES: 31DEC18

MEFA INC. Consulting Engineers
 2007 S.E. Ash St.
 Portland, OR 97214
 PH: (503) 234-0548
 FAX: (503) 234-0677
 WWW.MEFA-ENG.COM
 CONTACT: TAKAKO BAKER



- KEYED NOTES:**
1. REMOVE LOW RA GRILLE AND REINSTALL @ 6" ABOVE NEW FINISHED FLOOR ELEVATION.
 2. REMOVE EXISTING RA GRILLE/SA DIFFUSER FOR INSTALLATION AT NEW RAISED CEILING. MODIFY EXISTING SHEETMETAL BRANCH DUCT TO DIFFUSER/GRILLE AS NECESSARY.
 3. (E)SA DUCTWORK TO BE ENCLOSED IN NEW SOFFIT. (E)DIFFUSER TO BE REMOVED AND RE-INSTALLED AT BOTTOM SURFACE OF NEW SOFFIT.

City Of Bend Approval Stamp:

| # | Date | Description |
|---|---------|--------------------------|
| 1 | 2/19/18 | DISTRICT REVIEW COMMENTS |

BID SET

PILOT BUTTE MIDDLE SCHOOL - BLDGS E&F

1501 NE Neff Road, Bend OR 97701

BLRB architects

Drawing Title:
MECHANICAL DEMO PLAN - BUILDING F

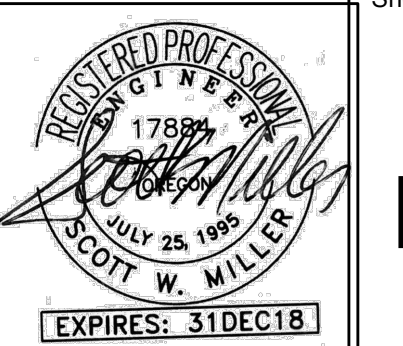
Date: 02.19.2018 Drawn By: TB

Revised Date: Project No. 17.34B

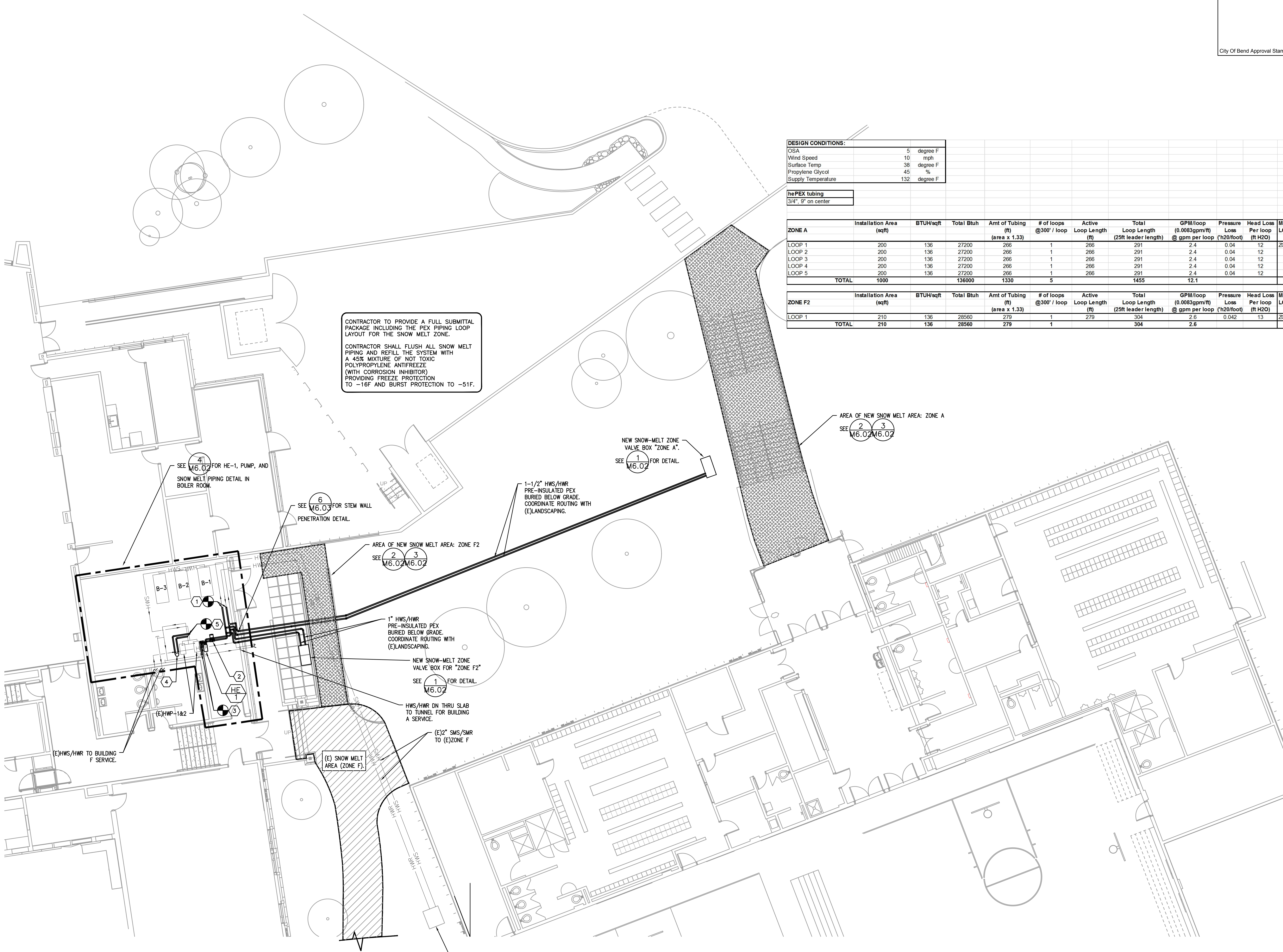
Stamp Sheet No.

1 MECHANICAL DEMO PLAN - BUILDING F
MD2.03 SCALE: 1/8"=1'-0"

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CONTACT: TAKAKO BAKER



MD2.03



CONTRACTOR TO PROVIDE A FULL SUBMITTAL PACKAGE INCLUDING THE PEX PIPING LOOP LAYOUT FOR THE SNOW MELT ZONE.

CONTRACTOR SHALL FLUSH ALL SNOW MELT PIPING AND REFILL THE SYSTEM WITH A 45% MIXTURE OF NOT TOXIC POLYPROPYLENE ANTIFREEZE (WITH CORROSION INHIBITORS) PROVIDING FREEZE PROTECTION TO -16F AND BURST PROTECTION TO -51F.

DESIGN CONDITIONS:

| | | |
|--------------------|-----|----------|
| OSA | 5 | degree F |
| Wind Speed | 10 | mph |
| Surface Temp | 38 | degree F |
| Propylene Glycol | 45 | % |
| Supply Temperature | 132 | degree F |

thePEX tubing
3/4" 9' on center

| ZONE A | Installation Area (sqft) | BTUH/sqft | Total Bluh | Amt of Tubing (ft) (area x 1.33) | # of loops @300' / loop | Active Loop Length (ft) | Total Loop Length (25ft leader length) | GPM/loop (0.0085gpm/ft) @ gpm per loop (ft20/foot) | Pressure Loss (ftH2O) | Head Loss Per loop (ftH2O) | MANIFOLD LOCATION |
|--------------|--------------------------|-----------|---------------|----------------------------------|-------------------------|-------------------------|--|--|-----------------------|----------------------------|-------------------|
| LOOP 1 | 200 | 136 | 27200 | 266 | 1 | 266 | 291 | 2.4 | 0.04 | 12 | ZONE A |
| LOOP 2 | 200 | 136 | 27200 | 266 | 1 | 266 | 291 | 2.4 | 0.04 | 12 | |
| LOOP 3 | 200 | 136 | 27200 | 266 | 1 | 266 | 291 | 2.4 | 0.04 | 12 | |
| LOOP 4 | 200 | 136 | 27200 | 266 | 1 | 266 | 291 | 2.4 | 0.04 | 12 | |
| LOOP 5 | 200 | 136 | 27200 | 266 | 1 | 266 | 291 | 2.4 | 0.04 | 12 | |
| TOTAL | 1000 | | 136000 | 1330 | 5 | | 1455 | 12.1 | | | |

| ZONE F2 | Installation Area (sqft) | BTUH/sqft | Total Bluh | Amt of Tubing (ft) (area x 1.33) | # of loops @300' / loop | Active Loop Length (ft) | Total Loop Length (25ft leader length) | GPM/loop (0.0085gpm/ft) @ gpm per loop (ft20/foot) | Pressure Loss (ftH2O) | Head Loss Per loop (ftH2O) | MANIFOLD LOCATION |
|--------------|--------------------------|-----------|--------------|----------------------------------|-------------------------|-------------------------|--|--|-----------------------|----------------------------|-------------------|
| LOOP 1 | 210 | 136 | 28560 | 279 | 1 | 279 | 304 | 2.6 | 0.042 | 13 | ZONE F2 |
| TOTAL | 210 | | 28560 | 279 | 1 | | 304 | 2.6 | | | |

- KEYED NOTES:**
- CONNECT (N)2-1/2"HWS/HWR (GLYCOL) TO (E)2"HWS/HWR (GLYCOL) MAINS.
 - CONNECT (N)2"HWS/HWR TO (E) MAINS.
 - CONNECT (N)2"HWS/HWR TO (E) MAINS. SEE 6/16/03 FOR DETAIL.
 - RELOCATED CHEM FEEDER FOR (E)BOLLER SYSTEM. SEE 6/16/03 FOR DETAIL.
 - CONNECT (N)3/4"HWS/HWR TO (E) MAINS AND ROUTE TO RELOCATED CHEM FEEDER.

City Of Bend Approval Stamp:

| # | Date | Description |
|---|---------|--------------------------|
| 1 | 2/19/18 | DISTRICT REVIEW COMMENTS |

Revision Schedule

BID SET

PILOT BUTTE MIDDLE SCHOOL - BLDGS E&F

1501 NE Neff Road, Bend OR 97701

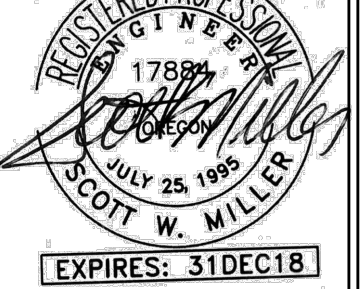
BLRB architects

Drawing Title:
MECHANICAL SNOWMELT SYSTEM

Date: 02.19.2018 Drawn By: TB

Revised Date: Project No. 17.34B

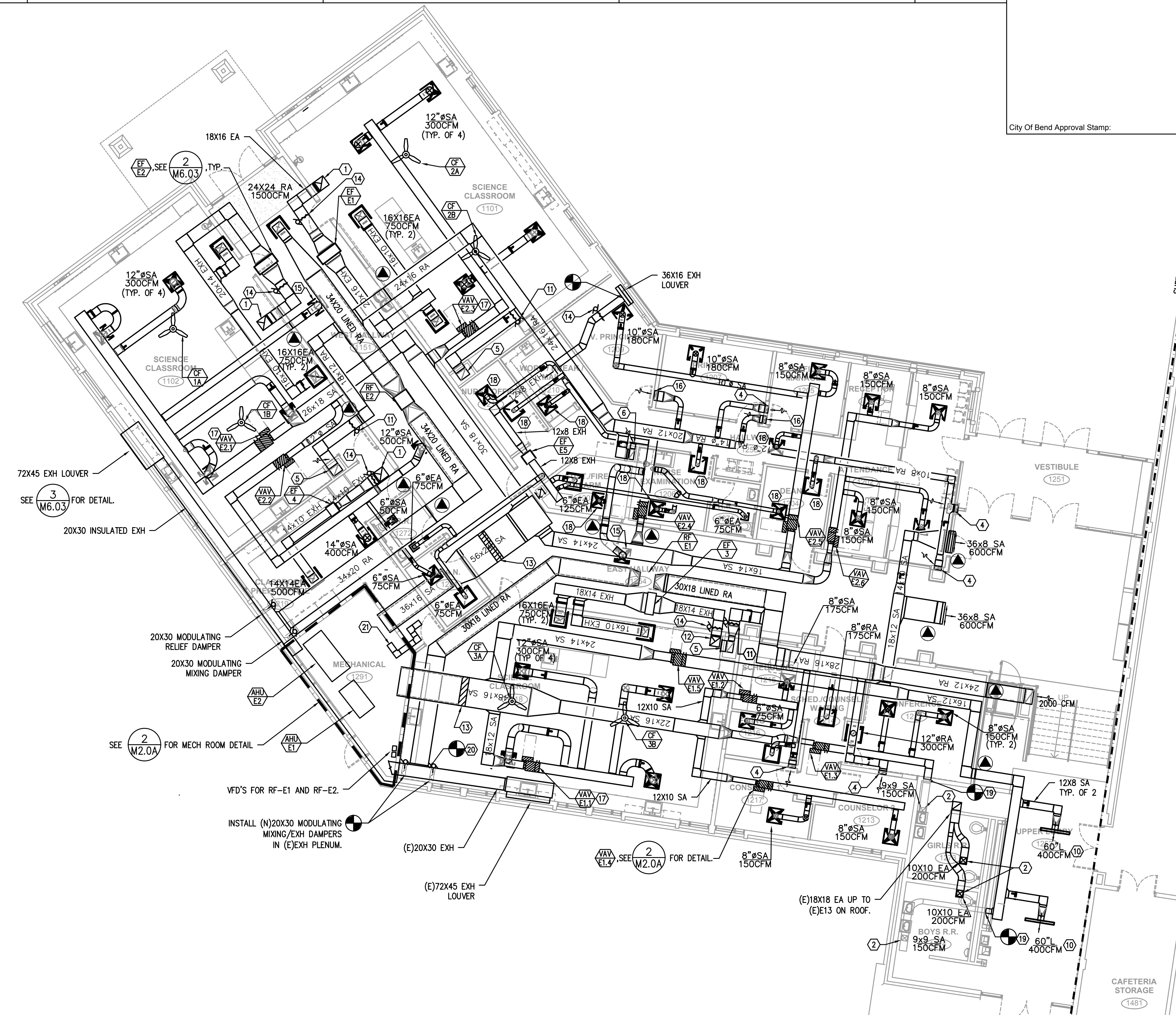
Stamp Sheet No.



M2.01

MECHANICAL SNOW MELT SYSTEM
SCALE: 1/8"=1'-0"

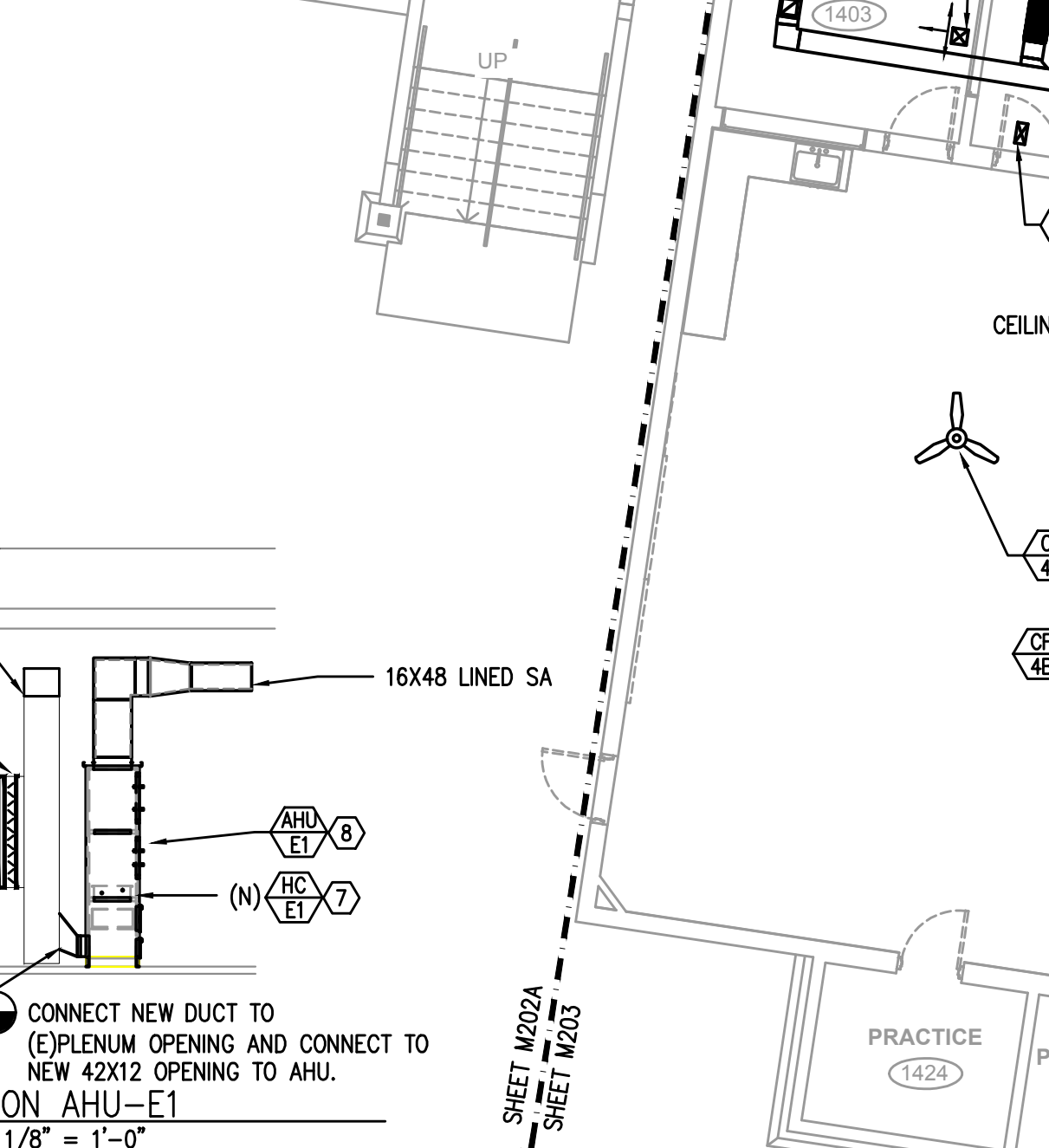
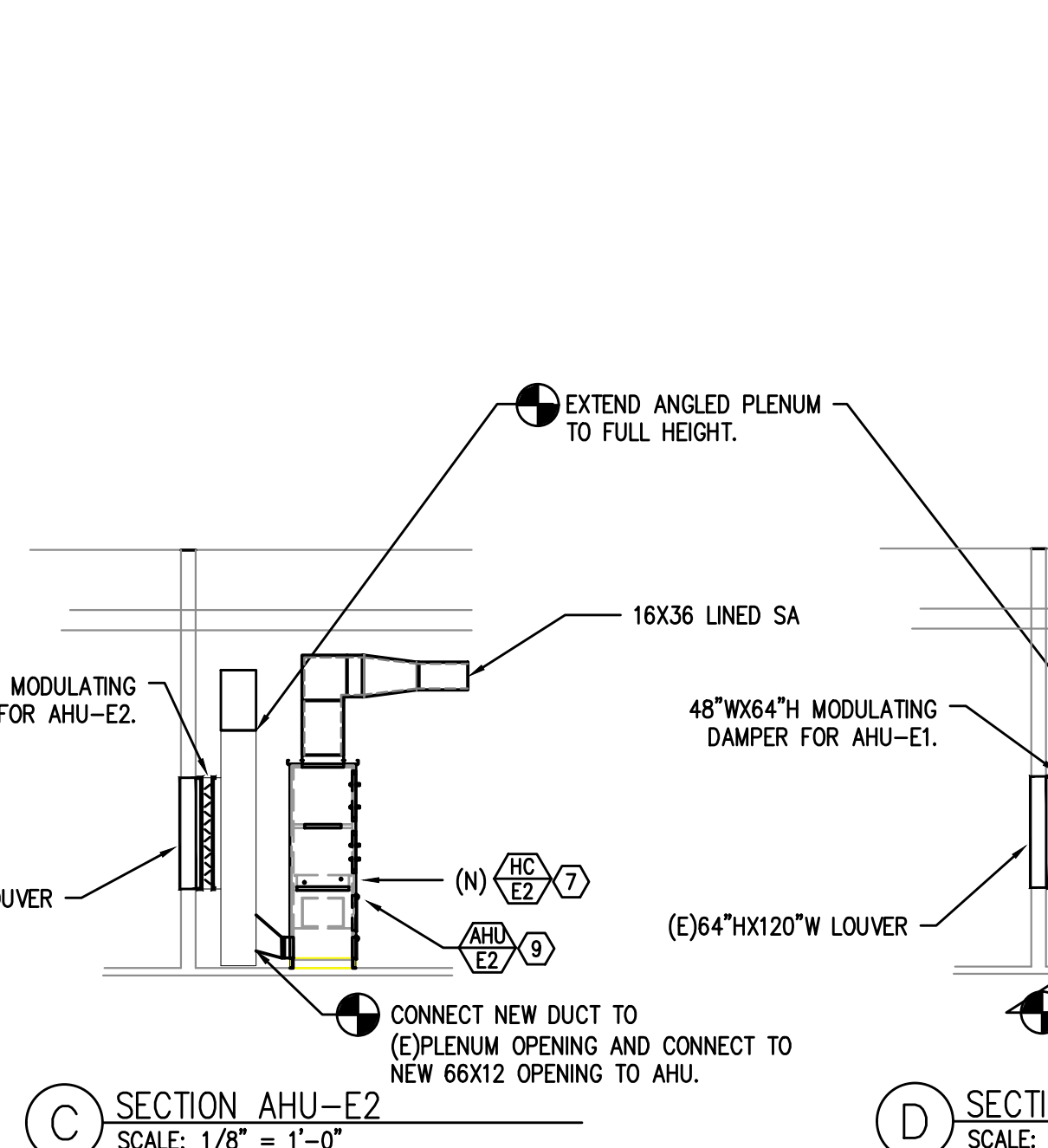
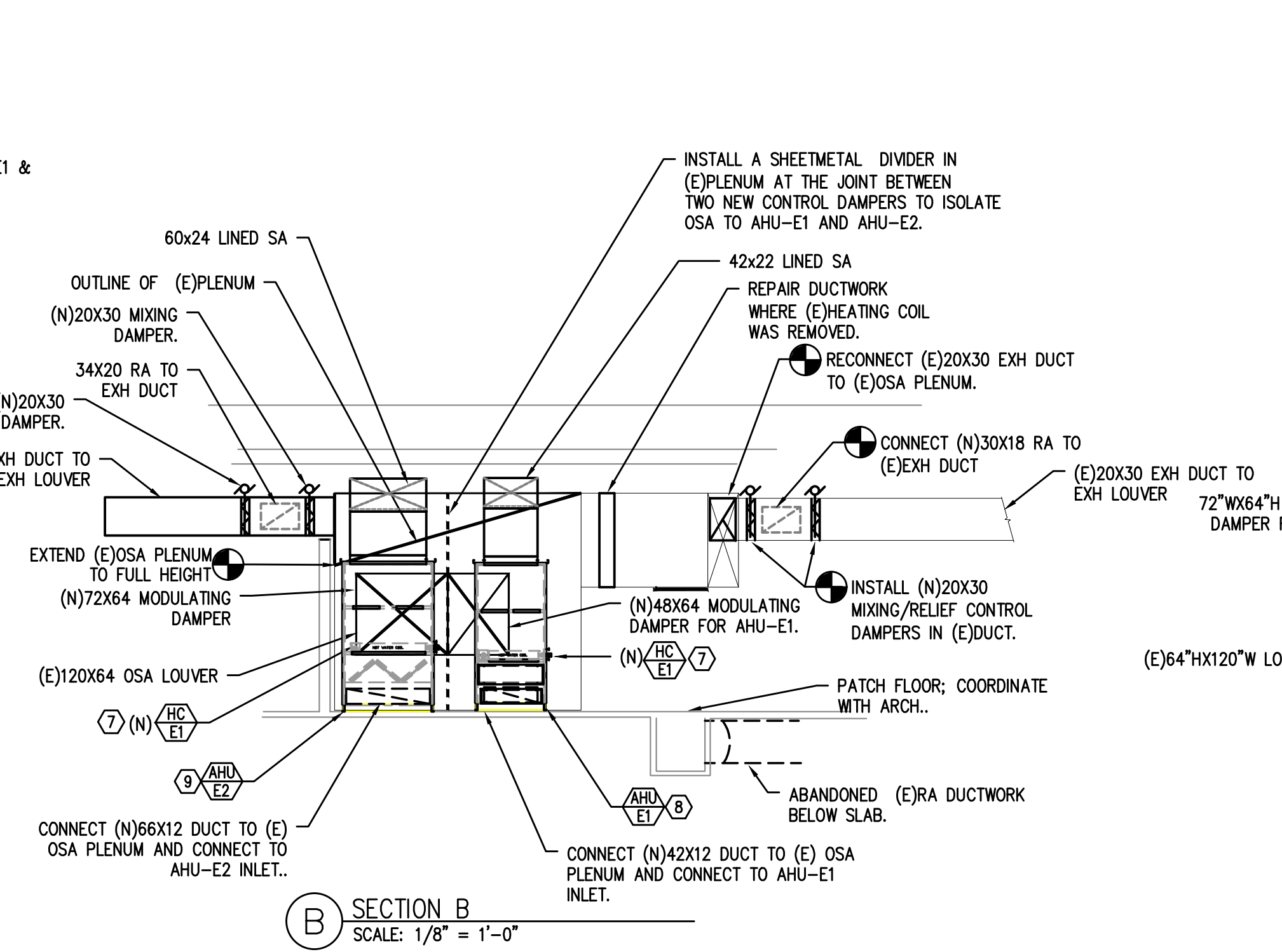
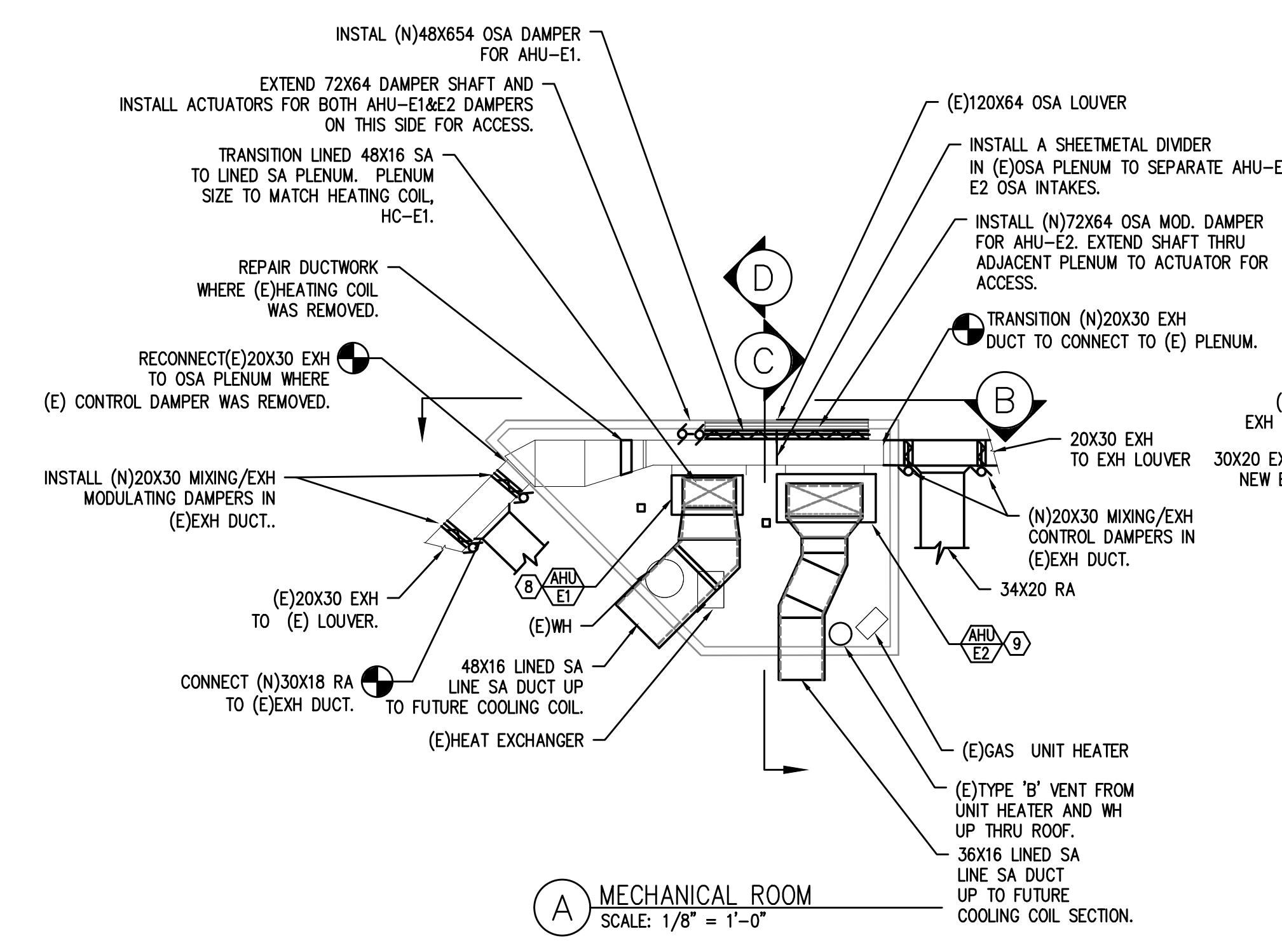
META Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PHN: (503) 234-0548
FAX: (503) 234-0677
WWW.META-ENG.COM
CONTACT: TAKAKO BAKER



- KEYED NOTES:**
- 18X18 EXHAUST UP THRU (E)RELIEF HEAD ON ROOF.
 - BALANCE (E)GRILLE TO AIRFLOW SHOWN.
 - 16x4 RA IN WALL TO LOW RA GRILLE.
 - 12x4 RA IN WALL TO 12x6 LOW RA GRILLE @ 6" A.F.F. BALANCE GRILLE TO 150 CFM.
 - 18x12 RA IN CHASE TO 18x48 LOW RA GRILLE, 1200 CFM. INSTALL @ 6" A.F.F.
 - 16x8 RA DN IN CHASE TO 10x20 LOW RA GRILLE @ 8" A.F.F. BALANCE TO 500CFM.
 - SEE SHEET M2.02B FOR HW PIPING DETAIL IN MECHANICAL ROOM.
 - SEE 8/M6.03 FOR DETAIL.
 - SEE 8/M6.03 FOR DETAIL.
 - LINEAR SLOT DIFFUSER (4)" SLOT WITH 10" INLET. PRICE SDB SERIES OR APPROVED EQUAL.
 - 2-POSITION CONTROL DAMPER TO CLOSE UPON ACTIVATION OF EXHAUST FAN IN RESPECTIVE SCIENCE CLASSROOM.
 - 18X18 EXH DUCT UP THRU ROOF TO NEW RELIEF HEAD ON ROOF. SEE 9/M6.02 FOR DETAIL.
 - PROVIDE SLEEVE FOR FUTURE COOLING COIL. PROVIDE MINIMUM 30" OF STRAIGHT DUCT RUN PRIOR TO THE COIL.
 - 2-POSITION CONTROL DAMPER TO OPERATE WITH ASSOCIATED EXH FAN. INSULATE DUCTWORK DOWNSTREAM OF THE DAMPER TO OUTSIDE.
 - 12" SA 500CFM
 - 12x4 RA DN IN WALL TO 12x6 LOW RA GRILLE @ 6" A.F. BALANCE GRILLE TO 180 CFM.
 - VAV DAMPER TO OPEN TO 100% COOLING AIRFLOW UPON ACTIVATION OF RESPECTIVE EXHAUST FAN IN SCIENCE CLASSROOM.
 - 6" SA 100CFM

- GENERAL NOTES:**
- WHERE THE PENETRATION AT THE CORRIDOR WALL IS A THROUGH-PENETRATION, INSTALL MINIMUM OF 25 GA SHEETMETAL AND PROTECT OPENINGS PER UL1479, SEE DETAIL ON SHEET M6.03.
 - SEE M2.02B FOR T-STAT, CO2 SENSORS, AND LOCATION OF WALL SWITCHES FOR EXHAUST FANS AND CEILING FANS.

1 MECHANICAL FLOOR PLAN - BUILDING E
M2.02A SCALE: 1/8" = 1'-0"



2 MECHANICAL ROOM DETAIL
M2.02A SCALE: 1/8" = 1'-0"

| # | Date | Description |
|---|---------|--------------------------|
| 1 | 2/19/18 | DISTRICT REVIEW COMMENTS |

BID SET

PILOT BUTTE MIDDLE SCHOOL - BLDGS E&F
1501 NE Neff Road,
Bend OR 97701

BLRB architects

Drawing Title:
MECHANICAL FLOOR PLAN - BUILDING E

Date: 02.19.2018 Drawn By: TB
Revised Date: Project No. 17.34B

Stamp: M2.02A
EXPIRES: 31DEC18

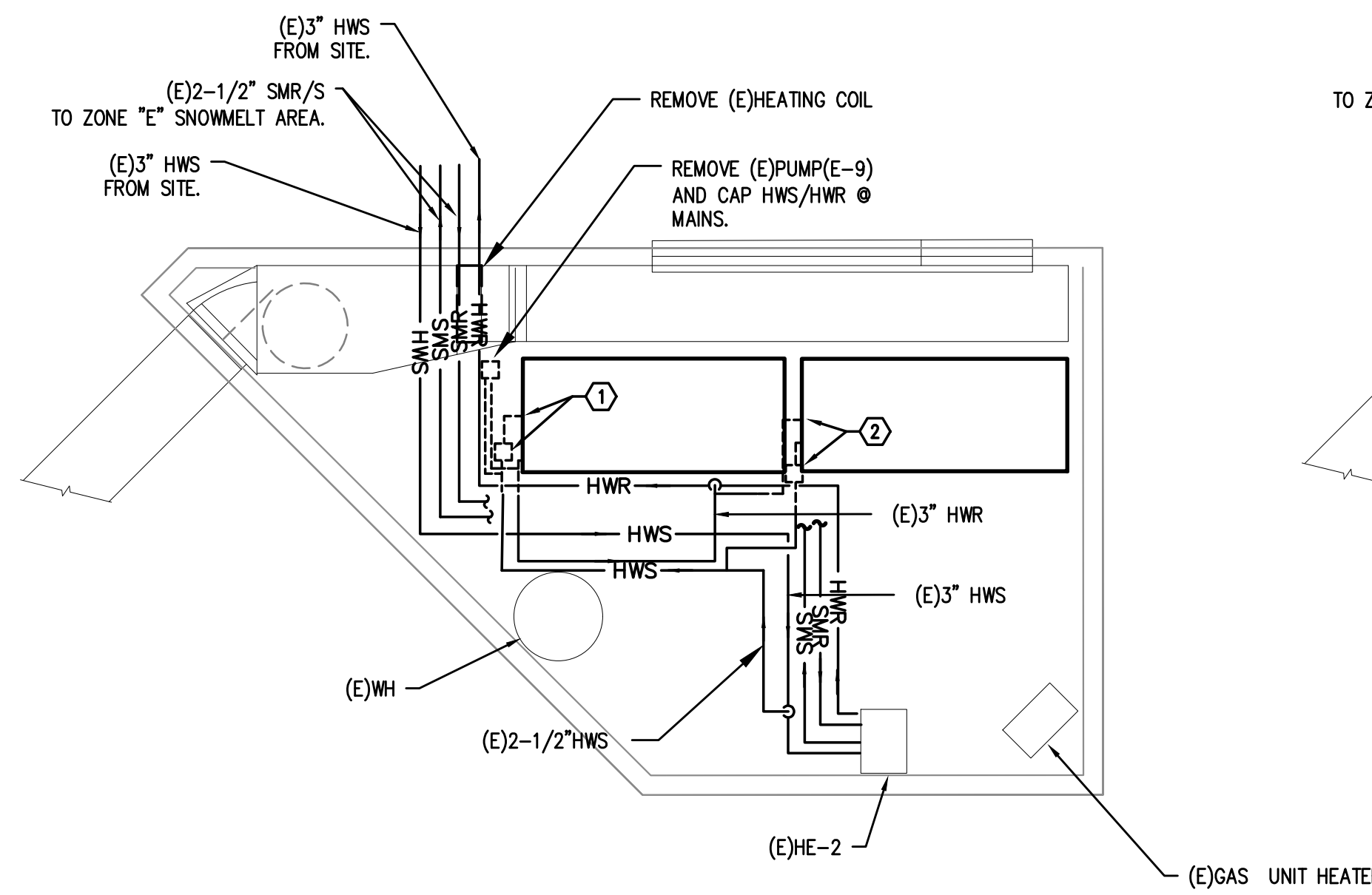
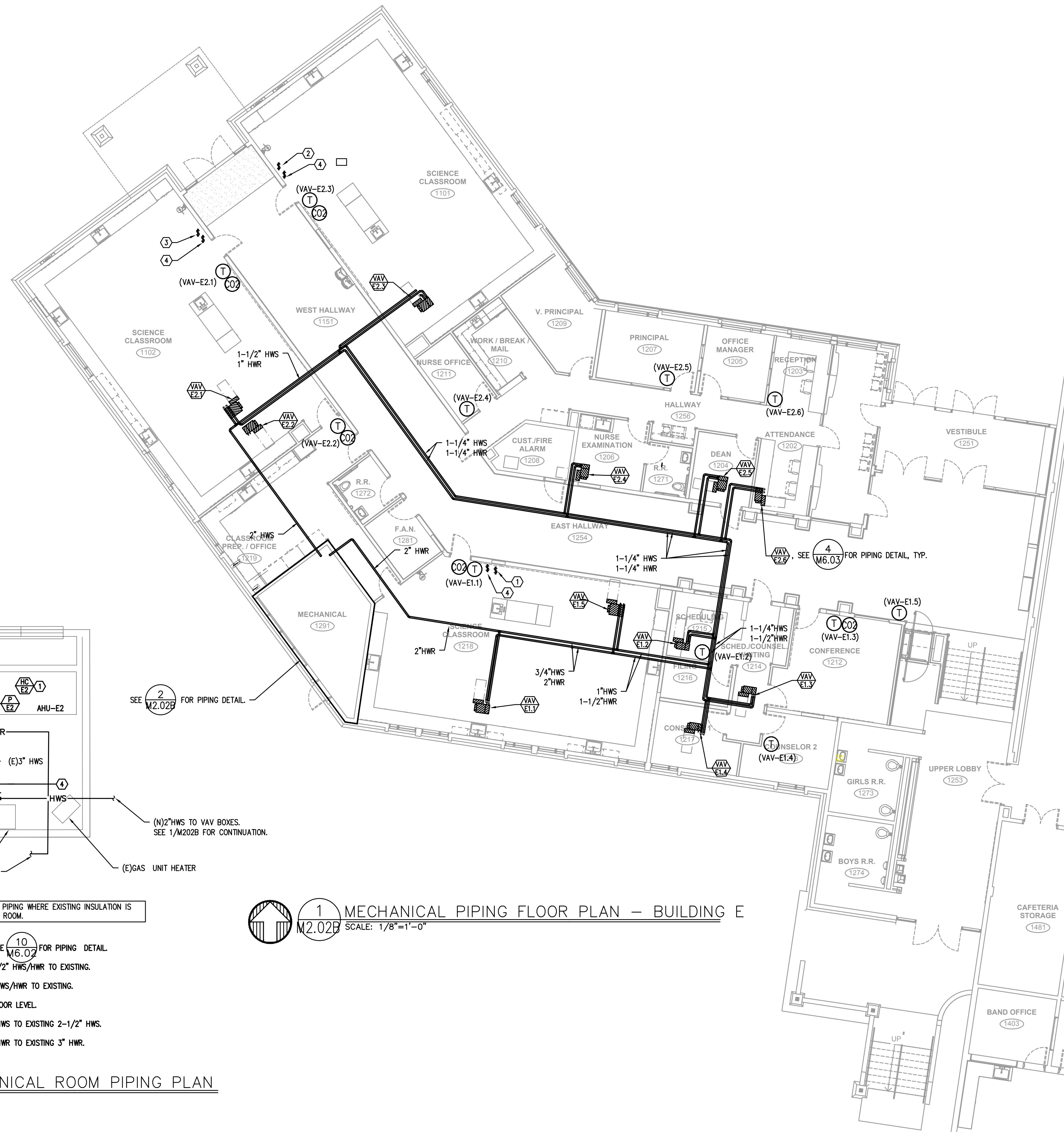
Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PH: (503) 234-0648
FAX: (503) 234-0677
WWW.BLRB-ENG.COM
CONTACT: TAKAKO BAKER

- KEYED NOTES:**
- ON/OFF SWITCH FOR EF-3. SEE ELECTRICAL.
 - ON/OFF SWITCH FOR EF-1. SEE ELECTRICAL.
 - ON/OFF SWITCH FOR EF-2. SEE ELECTRICAL.
 - CEILING FAN CONTROLLER, SEE ELECT.

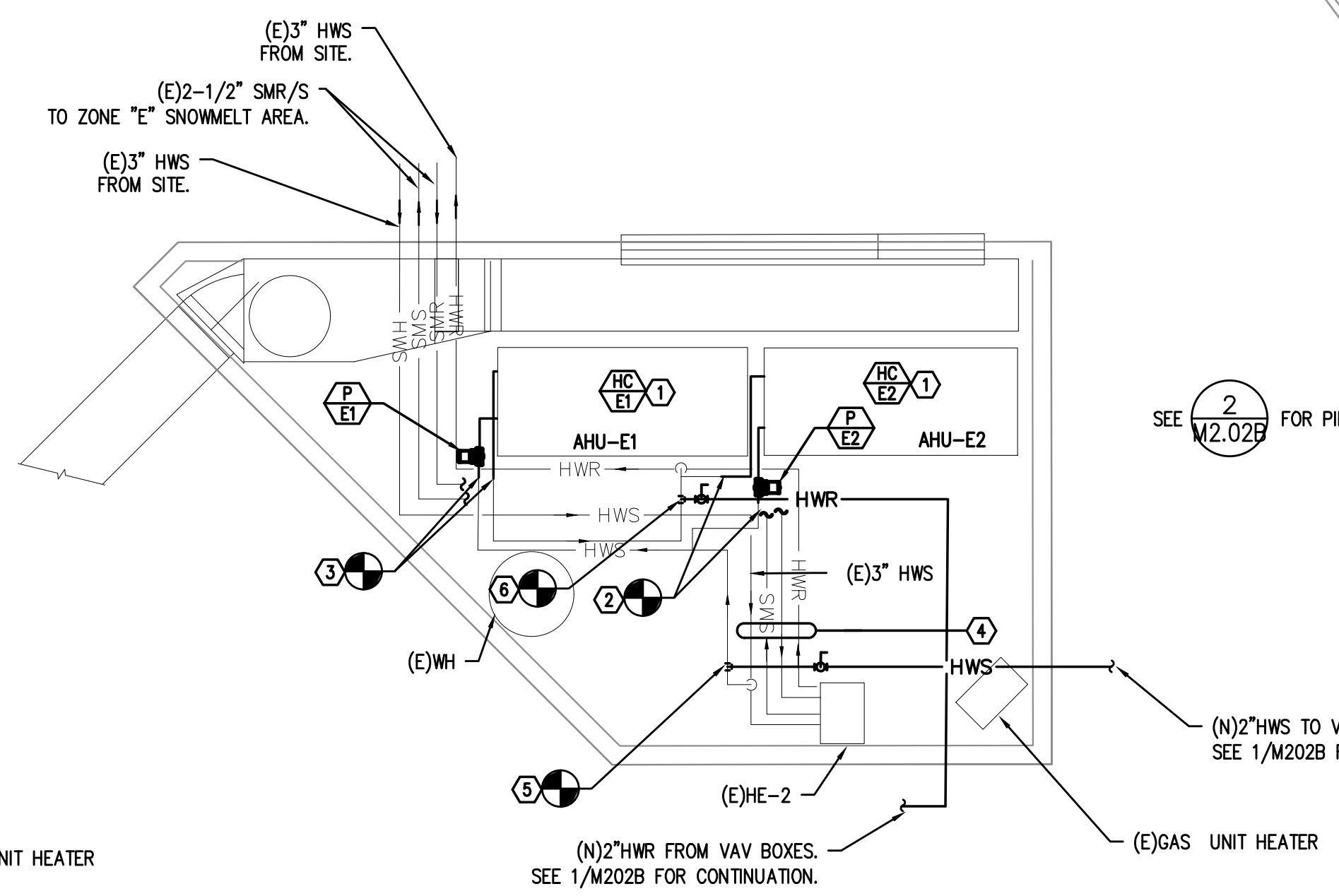
City Of Bend Approval Stamp:

A
B
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D
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F
G
H
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K

1 2 3 4 5 6



- DEMO NOTES:**
- REMOVE (E)HEATING COIL(E-4), PUMP (E-5), CONTROL VALVE, ETC.
 - REMOVE (E)HEATING COIL(E-7), PUMP (E-8), CONTROL VALVE, ETC.



PROVIDE OR REPAIR INSULATION ON EXISTING PIPING WHERE EXISTING INSULATION IS DAMAGED OR IN MISSING IN THE MECHANICAL ROOM.

- NOTES:**
- HEATING COIL, SEE 10 (16.02) FOR PIPING DETAIL.
 - CONNECT (N)1-1/2\"/>

1 MECHANICAL PIPING FLOOR PLAN - BUILDING E
SCALE: 1/8"=1'-0"

2 ENLARGED MECHANICAL ROOM PIPING DEMO PLAN
SCALE: 1/8"=1'-0"

3 ENLARGED MECHANICAL ROOM PIPING PLAN
SCALE: 1/4"=1'-0"

| # | Date | Description |
|---|---------|--------------------------|
| 1 | 2/19/18 | DISTRICT REVIEW COMMENTS |

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PILOT BUTTE MIDDLE SCHOOL - BLDGS E&F
1501 NE Neff Road,
Bend OR 97701

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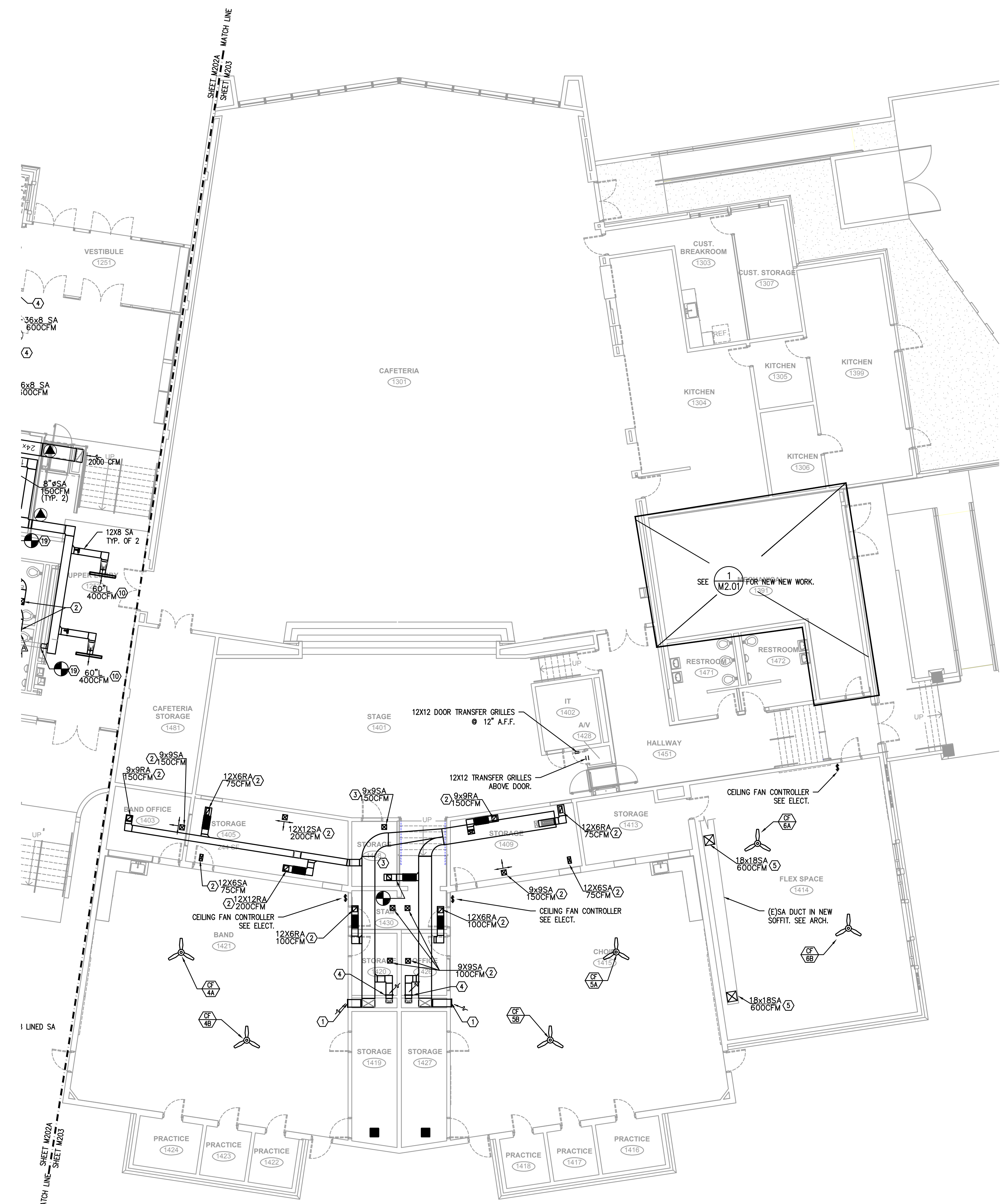
Drawing Title:
MECHANICAL PIPING PLAN - BUILDING E

Date: 02.19.2018 Drawn By: TB
Revised Date: Project No. 17.34B

Stamp:

Sheet No. **M2.02B**

META INC. Consulting Engineers
2007 S.E. Ash St.
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PH: (503) 234-0548
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WWW.META-ENG.COM
CONTACT: TAKAKO BAKER



City Of Bend Approval Stamp:

- KEYED NOTES:**
1. REMOVE & RE-INSTALL (E)12X48 LOW RA GRILLE @ 6" ABOVE NEW FLOOR ELEVATION. REBALANCE GRILLE TO 2400 CFM.
 2. RE-INSTALL (E)SA/RA GRILLES AT NEW CEILING HEIGHT AND BALANCE TO AIRFLOW SHOWN.
 3. EXTEND (E)SHEETMETAL DUCT TO NEW DIFFUSER LOCATION AND BALANCE TO AIRFLOW SHOWN.
 4. REMOVE & RE-INSTALL (E)12X6 LOW RA GRILLE @ 6" ABOVE NEW FLOOR ELEVATION. REBALANCE RA GRILLE TO 100 CFM.
 5. RE-INSTALL (E)SUPPLY DIFFUSER AT BOTTOM SURFACE OF NEW SOFFIT. BALANCE SA GRILLE TO AIRFLOW SHOWN.

| # | Date | Description |
|---|---------|--------------------------|
| 1 | 2/19/18 | DISTRICT REVIEW COMMENTS |

Revision Schedule

BID SET

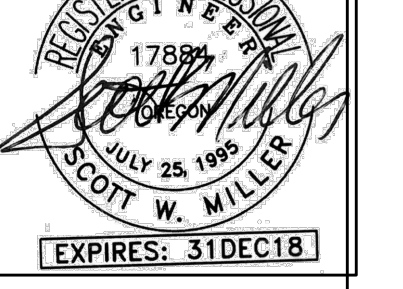
PILOT BUTTE MIDDLE SCHOOL - BLDGS E&F
1501 NE Neff Road,
Bend OR 97701

BLRB architects

Drawing Title:
MECHANICAL FLOOR PLAN - BUILDG F

| | | | |
|----------------|------------|---------------|--------|
| Date : | 02.19.2018 | Drawn By : | TB |
| Revised Date : | | Project No. : | 17.348 |
| Stamp | | Sheet No. | |

M E I A
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2007 S.E. Ash St.
Portland, OR 97214
PHN: (503) 234-0548
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WWW.MEIA-ENG.COM
CONTACT: TAKAKO BAKER

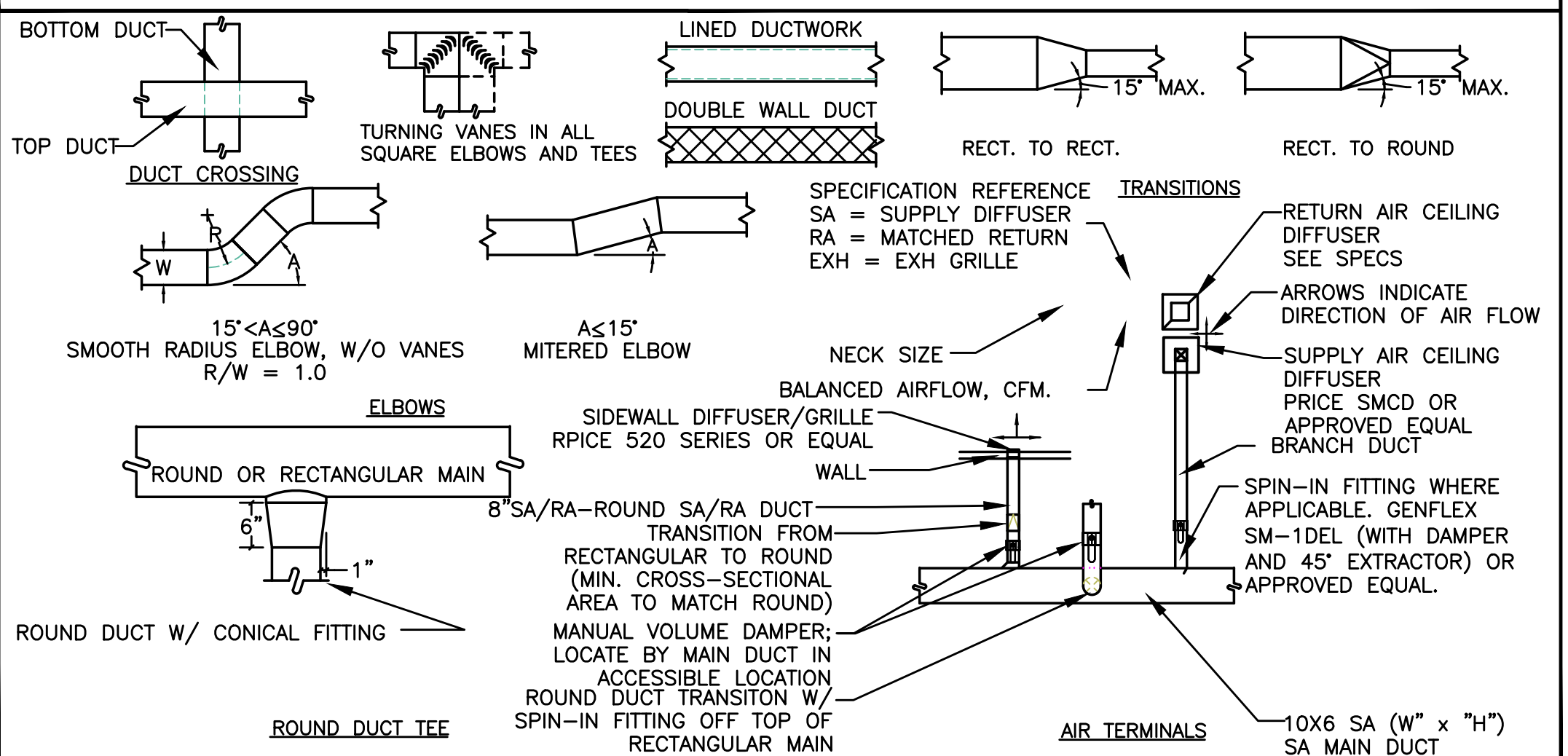


M2.03

MECHANICAL LEGEND

| | | | |
|--|----------------------------------|----------------|-------------------------------------|
| | SUPPLY AIR DIFFUSER | AFB | ABOVE FINISH FLOOR |
| | RETURN AIR DIFFUSER | AHU | AIR HANDLING UNIT |
| | EXHAUST AIR DIFFUSER | B.D. | BOTTOM OF DUCT |
| | DIRECTIONAL AIR FLOW | BHP | BRAKE HORSEPOWER |
| | MANUAL VOLUME DAMPER | BOG | BOTTOM OF GRILLE |
| | SUPPLY AIR DUCT UP & DOWN | BTU | BRITISH THERMAL UNITS |
| | RETURN AIR DUCT UP & DOWN | CFM | CUBIC FEET PER MINUTE |
| | EXHAUST AIR DUCT UP & DOWN | CONN. | CONNECTION |
| | VAV TERMINAL UNIT W/ REHEAT COIL | CONT. | CONTINUATION |
| | DUCT SMOKE SENSOR | CW | DOMESTIC COLD WATER |
| | DIFFERENTIAL PRESSURE SENSOR | DB | DRY BULB |
| | CONNECT TO EXISTING | DIA. | DIAMETER |
| | THERMOSTAT | DIST. | DISTRIBUTION |
| | TEMPERATURE SENSOR | EXH | EXHAUST AIR |
| | NOTE | EDB | ENTERING DRY BULB TEMPERATURE |
| | EQUIPMENT DESIGNATOR | EWB | ENTERING WET BULB TEMPERATURE |
| | GATE VALVE | EWT | ENTERING WATER TEMPERATURE |
| | CHECK VALVE | FF | FINISH FLOOR |
| | BALANCING VALVE | FIXT. | FIXTURE |
| | THERMOMETER | F.O.B. | FLAT ON BOTTOM |
| | DIRECTION OF FLOW | FBM | FEET PER MINUTE |
| | PUMP | FPS | FEET PER SECOND |
| | PRESSURE GAUGE | FT. | FEET / FOOT |
| | PETE'S PLUG | GA. | GAUGE |
| | DOUBLE CHECK ASSEMBLY | GEHX | GREASE EXHAUST AIR DUCT |
| | PRESSURE REDUCING VALVE | GPM | GALLONS PER MINUTE |
| | UNION | H | HEIGHT |
| | 2-WAY CONTROL VALVE | H.P. | HORSEPOWER |
| | 3-WAY CONTROL VALVE | I.D. | INSIDE DIAMETER |
| | CAP | IN. | INCHES |
| | BALL SHUT OFF VALVE | L. | LENGTH |
| | FIRE DAMPER | LBS. | POUNDS |
| | FIRE / SMOKE DAMPER | LDB | LEAVING DRY BULB |
| | SMOKE DAMPER | LWB | LEAVING WET BULB |
| | | LWT | LEAVING WATER TEMPERATURE |
| | | MA | MAKE UP AIR |
| | | MAX. | MAXIMUM |
| | | MBH | THOUSANDS OF BTUS PER HOUR |
| | | MD | MOTORIZED DAMPER |
| | | MIN. | MINIMUM |
| | | MVD | MANUAL VOLUME DAMPER |
| | | NC | NOISE CRITERIA |
| | | N.C. | NORMALLY CLOSED |
| | | N.I.M. | NOT IN MECHANICAL |
| | | NO. | NUMBER |
| | | N.O. | NORMALLY OPEN |
| | | O.A. | OUTSIDE AIR |
| | | P. | PERSON |
| | | PSI | POUNDS PER SQUARE INCH |
| | | P/T | PRESSURE / TEMPERATURE |
| | | R.A. | RECTANGULAR |
| | | RECT. | RECTANGULAR |
| | | REQ'D | REQUIRED |
| | | S.A. | SUPPLY AIR |
| | | S.P. | STATIC PRESSURE |
| | | SQ. | SQUARE |
| | | TEMP. | TEMPERATURE |
| | | TYP. | TYPICAL |
| | | VAV | VARIABLE AIR VOLUME |
| | | W | WIDTH |
| | | WB | WET BULB |
| | | WPD | WATER PRESSURE DROP |
| | | Ø | DIAMETER |
| | | T/A SERIES 794 | PILOT TUBE |
| | | | BALANCING VALVE, T/A STAD SERIES |
| | | HWS | (HWS) HEATING WATER SUPPLY |
| | | (HWR) | (HWR) HEATING WATER RETURN |
| | | (HWRR) | (HWRR) HEATING WATER REVERSE RETURN |
| | | CHS | (CHS) CHILLED WATER SUPPLY |
| | | CHR | (CHR) CHILLED WATER RETURN |
| | | PC | PUMPED CONDENSATE |
| | | S | (HPS) HIGH PRESSURE STEAM |
| | | V4 | (HT) HEAT TRACED DOMESTIC HOT WATER |
| | | SMR | (SMR) SNOWMELT RETURN |
| | | SMS | (SMS) SNOWMELT SUPPLY |

AIR DISTRIBUTION DETAILS



CEILING FANS

| MARK NUMBER | CF 1A | CF 1B | CF 2A | CF 2B | CF 3A | CF 3B | CF 4A | CF 4B | CF 5A | CF 5B | CF 6A | CF 6B |
|-----------------------------------|--|--------------|--------------|--------------|--------------|--------------|-------|-------|-------|-------|-------|-------|
| ROOM | SCIENCE 1102 | SCIENCE 1101 | SCIENCE 1218 | BAND 1421 | CHOIR 1415 | FLIX 1414 | | | | | | |
| MOUNTING | CEILING HUNG | CEILING HUNG | CEILING HUNG | CEILING HUNG | CEILING HUNG | CEILING HUNG | | | | | | |
| BLADE DIAMETER/FAN HEIGHT | 52"/16.4" | 52"/16.4" | 52"/16.4" | 52"/16.4" | 52"/16.4" | 52"/16.4" | | | | | | |
| CONTROLLED BY: | HAUKU L-SERIES HARD WIRED WALL CONTROL (1 CONTROLLER PER ROOM) | | | | | | | | | | | |
| MOUNTING HEIGHT (FROM CEILING) | | | | | | | | | | | | |
| DESIGN WEIGHT (LBS) | 11 LBS | 11 LBS | 11 LBS | 11 LBS | 11 LBS | 11 LBS | | | | | | |
| DESIGNED MODEL: BIG ASS FAN/HAUKU | L-SERIES | L-SERIES | L-SERIES | L-SERIES | L-SERIES | L-SERIES | | | | | | |

EXHAUST FANS

| MARK NUMBER | EF E1 | EF E2 | EF E3 | EF E4 | EF E5 |
|------------------------------------|--------------|--------------|--------------|--------------|-------------|
| DESIGNED ELEVATION, FT | 3500 FT | | | | |
| TYPE | CABINET | CABINET | CABINET | CABINET | CABINET |
| SYSTEM | SCIENCE 1101 | SCIENCE 1102 | SCIENCE 1218 | SCIENCE PREP | R.R. |
| CFM | 1400 | 1400 | 1400 | 500 | 350 |
| TOTAL SP. (IN H2O) | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| DRIVE | DD | DD | DD | DD | DD |
| VFD | NO | NO | NO | NO | NO |
| FAN RPM | 1590 | 1590 | 1590 | 883 | 807 |
| MOTOR HP | 738 W | 738 W | 738 W | 160 W | 106 WATTS |
| CONTROLLED BY | SWITCH | SWITCH | SWITCH | DDC, NOTE 5 | DDC, NOTE 5 |
| INTERLOCK WITH | | | | | |
| WHEEL TYPE | FC | FC | FC | FC | F.C. |
| BACK DRAFT DAMPER/MOTORIZED DAMPER | -/YES | -/YES | -/YES | -/YES | -/YES |
| ISOLATION | RIS | RIS | RIS | RIS | RIS |
| DESIGN WEIGHT (LBS) | 60 | 60 | 60 | 35 | 35 |
| MAX. SONES | 4.0 | 4.0 | 4.0 | 7.7 | 1 |
| NOTES: | 1,2,3,4 | 1,2,3,4 | 1,2,3,4 | 1,3,4 | 1,3,4 |
| BASIS OF DESIGN: GREENHECK | CSP-A1550 | CSP-A1550 | CSP-A1550 | CSP-A700 | CSP-A700 |
| ELECTRICAL (V/PH) | 120/1 | 120/1 | 120/1 | 120/1 | 120/1 |

1. PROVIDE WITH SPEED CONTROL NEAR FAN FOR BALANCING
2. 60 MIN TIMER SWITCH. SEE ELECTRICAL.
3. PROVIDE MOTORIZED DAMPER IN THE DISCHARGE DUCT.
4. PROVIDE UNIT WITH FACTORY DISCONNECT.
5. WITH FULL LOAD RATED CONTACTOR.

WATER TO WATER HEAT EXCHANGER

| MARK NUMBER | HE 1 |
|-------------------------|-------------------|
| DESIGNED ALTITUDE, FT | 3,500 |
| TYPE | PLATE & FRAME |
| SYSTEM | SNOW MELT |
| CAPACITY, MBH | 535 |
| DIMENSION | 4.9"X13.2"X16.5"D |
| GPM | 46 |
| ENT. WATER (° F.) | 140 |
| LVG. WATER (° F.) | 114 |
| MAX PRESS DROP, FT. H2O | 6 FT |
| % PROPYLENE GLYCOL | 45% |
| GPM | 28 |
| ENT. WATER (° F.) | 180 |
| LVG. WATER (° F.) | 140 |
| MAX PRESS DROP, FT. H2O | 2 |
| OPERATING WEIGHT, LBS | 25 |
| BASIS OF DESIGN: PHE | GBS400H-70 |

1. SNOW MELT SYSTEM SHALL BE TREATED TO 40% PROPYLENE GLYCOL.
2. SPACE FOR NEW HEAT EXCHANGER AND PIPING IS LIMITED. IF UNIT WITH DIFFERENT DIMENSIONS IS PROVIDED, CONTRACTOR TO VERIFY EQUIPMENT FIT WITH EXISTING SITE CONDITIONS.

RETURN FANS

| MARK NUMBER | RF E1 | RF E2 |
|------------------------------------|------------------------------------|------------------------------------|
| DESIGNED ELEVATION, FT | 3500 FT | |
| TYPE | IN-LINE | IN-LINE |
| SYSTEM | AHU-E1 | AHU-E2 |
| CFM | 3995 | 5410 |
| TOTAL SP. (IN H2O) | 0.75 | 0.75 |
| DRIVE | DD | DD |
| VFD | YES | YES |
| FAN RPM | 951 | 1095 |
| MOTOR HP | 5 | 5 |
| CONTROLLED BY | DDC | DDC |
| INTERLOCK WITH | AHU-E1 | AHU-E2 |
| BACK DRAFT DAMPER/MOTORIZED DAMPER | -/- | -/- |
| ISOLATION | EXTERNAL SPRING | EXTERNAL SPRING |
| DESIGN WEIGHT (LBS) | 370 | 370 |
| MAX. SONES | SEE ACOUSTICAL REQ'T ON THIS SHEET | SEE ACOUSTICAL REQ'T ON THIS SHEET |
| DISCHARGE/CONFIGURATION | INLINE | INLINE |
| SMOKE DETECTOR | YES | YES |
| BASIS OF DESIGN: GREENHECK | QEID-20-90-A50 | QEID-20-90-A50 |
| ELECTRICAL (V/PH) | 480/3 | 480/3 |

PUMPS

| MARK NUMBER | (E) SMP T * | (P) E1 | (P) E2 |
|--------------------------|-----------------------|--------------------------|---------------------|
| DESIGNED ALTITUDE, FT | 3500 FT | 3500 FT | 3500 FT |
| ARRANGEMENT | EXISTING PUMP IN-LINE | CENTRIFUGAL IN-LINE | CENTRIFUGAL IN-LINE |
| STARTER TYPE | (E) | COMBO STARTER/DISCONNECT | |
| FLOW RATE (GPM) | 46 | 6 | 12 |
| HEAD (FT) | 65 | 20 | 20 |
| MOTOR HP | 2 | 1/6 | 1/6 |
| RPM | 1750 | 3250 | 3250 |
| CONTROLLED BY | DDC | | |
| FLUID | 45% PROPYLENE GLYCOL | | |
| SUCTION PIPE SIZE | (E) | 1-1/2 | 1-1/2 |
| DISCHARGE PIPE SIZE | (E) | 1/1-2 | 1-1/2 |
| BASE DESIGN MODEL, TACO: | KV1509 | | IL0013 |
| ELECTRICAL (V/PH) | (E)480/3 | 120/1 | 120/1 |

* EXISTING PUMP. REPLACE (E)IMPELLERS WITH NEW 7.8" IMPELLERS AND BALANCE TO NEW FLOW.

AIR HANDLING UNIT

| MARK NUMBER | AHU E1 | AHU E2 |
|-----------------------------|------------------------------------|------------------------------------|
| DESIGNED ELEVATION, FT | 3500 FT | |
| TYPE | VERTICAL AHU | VERTICAL AHU |
| ISOLATION | ADMIN | CLASSROOM |
| CFM | 4350 CFM | 6185 CFM |
| OSA (MIN) | 790 CFM | 1705 CFM |
| OSA (MIN/MIN) | 80 CFM | 180 CFM |
| EXT SP. (IN H2O) | 2.25" | 2.50" |
| TOTAL SP. (IN H2O) | 3.25" | 3.36" |
| FAN/WHEEL TYPE (QTY) | PLENUM/B.I. (2) | PLENUM/B.I. (2) |
| DRIVE | D.D. | D.D. |
| FAN RPM | 1800 | 1960 |
| MOTOR HP** | (2)2.7 KW | (2)2.7 KW |
| CONTROLLED BY | DDC | DDC |
| ECONOMIZER | YES* | YES* |
| MAX. SONES | SEE ACOUSTICAL REQ'T ON THIS SHEET | SEE ACOUSTICAL REQ'T ON THIS SHEET |
| HEATING COIL | | |
| HEATING CFM | 2775 | 4545 |
| ENTERING AIR TEMP (° F.) | 32.6 | 25.8 |
| LEAVING AIR TEMP (° F.) | 61.6 | 61.3 |
| ENTERING WATER TEMP. (° F.) | 140 | 140 |
| LEAVING WATER TEMP. (° F.) | 110 | 110 |
| TOTAL CAPACITY (MBH) | 84.6 | 174.4 |
| FLOW RATE (GPM) | 5.73 | 11.7 |
| MIXING VALVE TYPE | 3-WAY | 3-WAY |
| CONNECTION SIZE, INCH | 3/4" | 1" |
| MIN ROWS/FPI | 1/12 | 1/12 |
| MAX. FLUID PD, FT. W.C. | 4.4 | 2.7 |
| UNIT WEIGHT | 1920 # | 2765 # |
| UNIT DIMENSIONS (LXWXH) | 31"x56"x118" | 38"x72"x120" |
| ELECTRICAL (V/PH) | 480/3 | 480/3 |

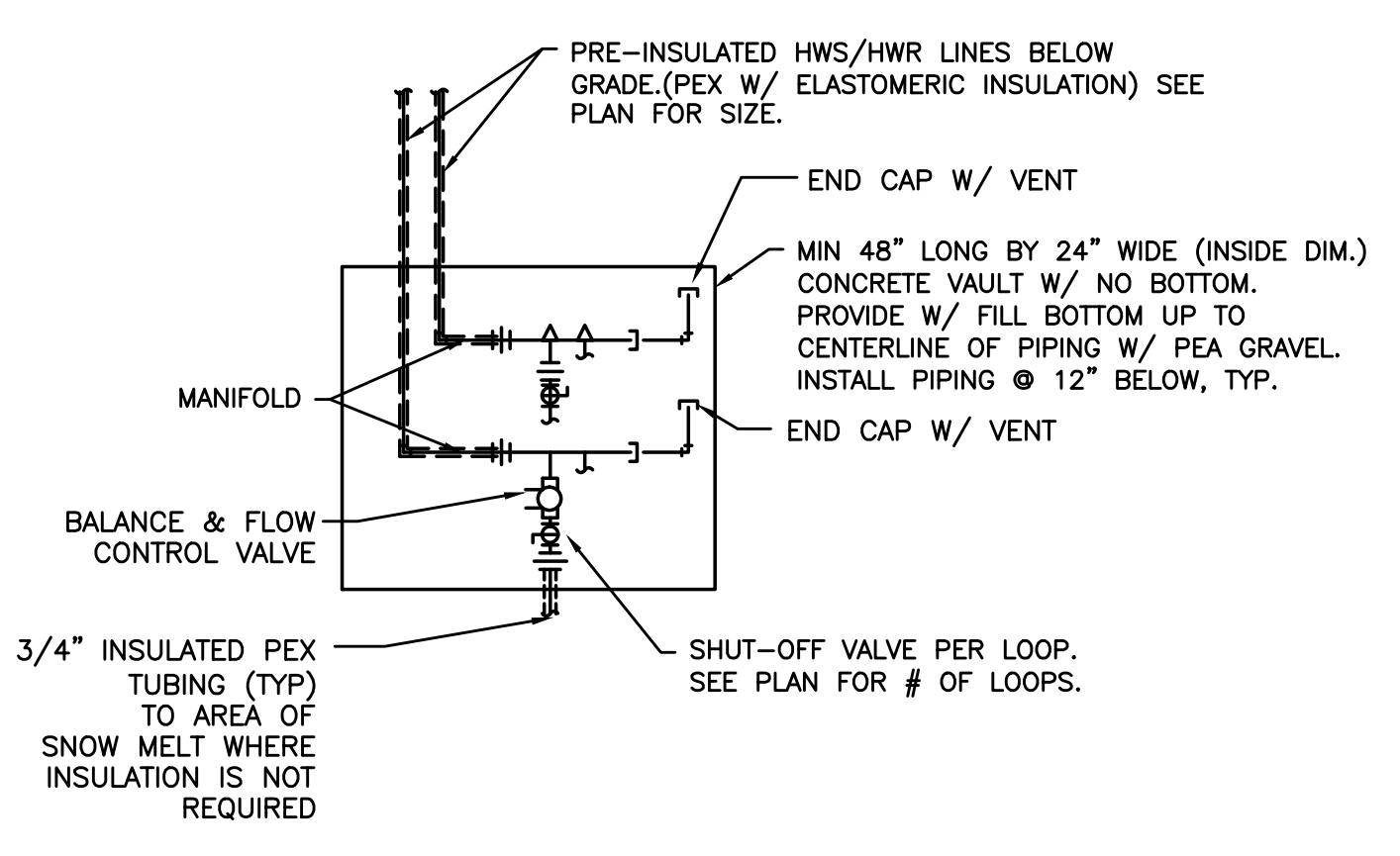
VENTILATION AIR SCHEDULE - AHU-E1

| ROOM NUMBER AND NAME | AREA (SQ. FT.) | OCCUPANT LOAD (#/1000 SQ. FT.) | NUMBER OF OCCUPANTS | OUTSIDE AIR REQUIREMENT (CFM/F) | OUTSIDE AIR REQUIRED (CFM) | OUTSIDE AIR REQUIRED (CFM) | ZONE OSA (CFM) | SUPPLY AIR (CFM) | PRIMARY FRACTION | RETURN AIR (CFM) | EXHAUST AIR (CFM) | Zone Ventilation Efficiency | Corrected CFM | AIR SYSTEMS |
|--|----------------|--------------------------------|---------------------|---------------------------------|----------------------------|----------------------------|----------------|------------------|------------------|------------------|-------------------|-----------------------------|---------------|-------------|
| | Az | | Pz | Rp | Ra | Vbz | Ez | Voz | Vpz | Zp | | Evz | | |
| SCIENCE CLASSROOM 1218 | 1100 | 35 | 39 | 10 | 0.12 | 536 | 1.0 | 536 | 1200 | 0.45 | 1200 | 0.89 | 599.42 | VAV E1.1 |
| SCHEDULING 1215 | 102 | 5 | 1 | 5 | 0.06 | 11 | 1.0 | 11 | 175 | 0.06 | 175 | 0.128 | 12.29 | VAV E1.2 |
| FLING 1216 | 81 | 5 | 1 | 5 | 0.06 | 9 | 1.0 | 9 | 75 | 0.12 | 75 | 0.122 | 9.57 | VAV E1.3 |
| CONFERENCE 1212 | 292 | 50 | 13 | 5 | 0.06 | 80 | 1.0 | 80 | 300 | 0.27 | 300 | 0.107 | 88.51 | VAV E1.3 |
| GIRLS RR 1273 | 140 | 0 | 0 | 0 | 0 | 0 | 1.0 | 0 | 150 | 0.00 | 0 | 200 | 0.00 | VAV E1.3 |
| COUNSELOR 1217 | 110 | 5 | 1 | 5 | 0.06 | 12 | 1.0 | 12 | 150 | 0.08 | 150 | 0.126 | 12.82 | VAV E1.4 |
| COUNSELOR 1213 | 123 | 5 | 1 | 5 | 0.06 | 12 | 1.0 | 12 | 150 | 0.08 | 150 | 0.126 | 13.68 | VAV E1.4 |
| LOBBY | 1095 | 0 | 0 | 0 | 0.06 | 66 | 1.0 | 66 | 2000 | 0.03 | 2000 | 0.131 | 72.58 | VAV E1.5 |
| TOTAL | 2983 | | 56 | | | 711.58 | | 711.58 | 4200 | | 4050 | 0.91 | 786 | |
| | | | | | | Voz | | Vps | | | Ev | | | |
| CORRECTED TOTAL OUTDOOR AIR FLOW RATE | | | | | | | | | 786 | | | | 0.19 | |

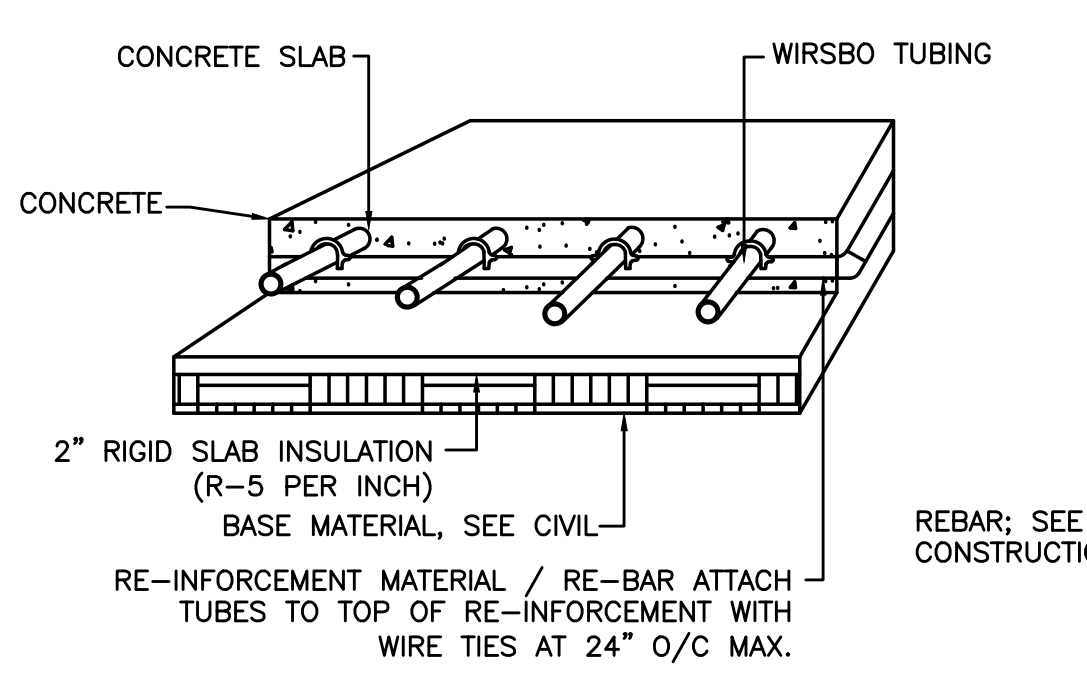
VENTILATION AIR SCHEDULE - AHU-E2

| ROOM NUMBER AND NAME | AREA (SQ. FT.) | OCCUPANT LOAD (#/1000 SQ. FT.) | NUMBER OF OCCUPANTS | OUTSIDE AIR REQUIREMENT (CFM/F) | OUTSIDE AIR REQUIRED (CFM) | OUTSIDE AIR REQUIRED (CFM) | ZONE OSA (CFM) | SUPPLY AIR (CFM) | PRIMARY FRACTION | RETURN AIR (CFM) | EXHAUST AIR (CFM) | Zone Ventilation Efficiency | Corrected CFM | AIR SYSTEMS | |
|--------------------------|----------------|--------------------------------|---------------------|---------------------------------|----------------------------|----------------------------|----------------|------------------|------------------|------------------|-------------------|-----------------------------|---------------|-------------|----------|
| | Az | | Pz | Rp | Ra | Vbz | Ez | Voz | Vpz | Zp | | Evz | | | |
| SCIENCE CLASSROOM 1102 | 1131 | 35 | 40 | 10 | 0.12 | 536 | 1.0 | 536 | 1200 | 0.45 | 1200 | 0.89 | 599.42 | VAV E2.1 | |
| W. HALLWAY 1151 | 500 | 0 | 0 | 0 | 0.06 | 30 | 1.0 | 30 | 500 | 0.06 | 500 | 0.128 | 33.57 | VAV E2.1 | |
| SCIENCE PREP/OFFICE 1219 | 365 | 25 | 10 | 10 | 0.18 | 166 | 1.0 | 166 | 400 | 0.41 | 0 | 500 | 0.93 | 185.40 | VAV E2.2 |
| W. HALLWAY 1151 | 500 | 0 | 0 | 0 | 0.06 | 30 | 1.0 | 30 | | | | | | | |

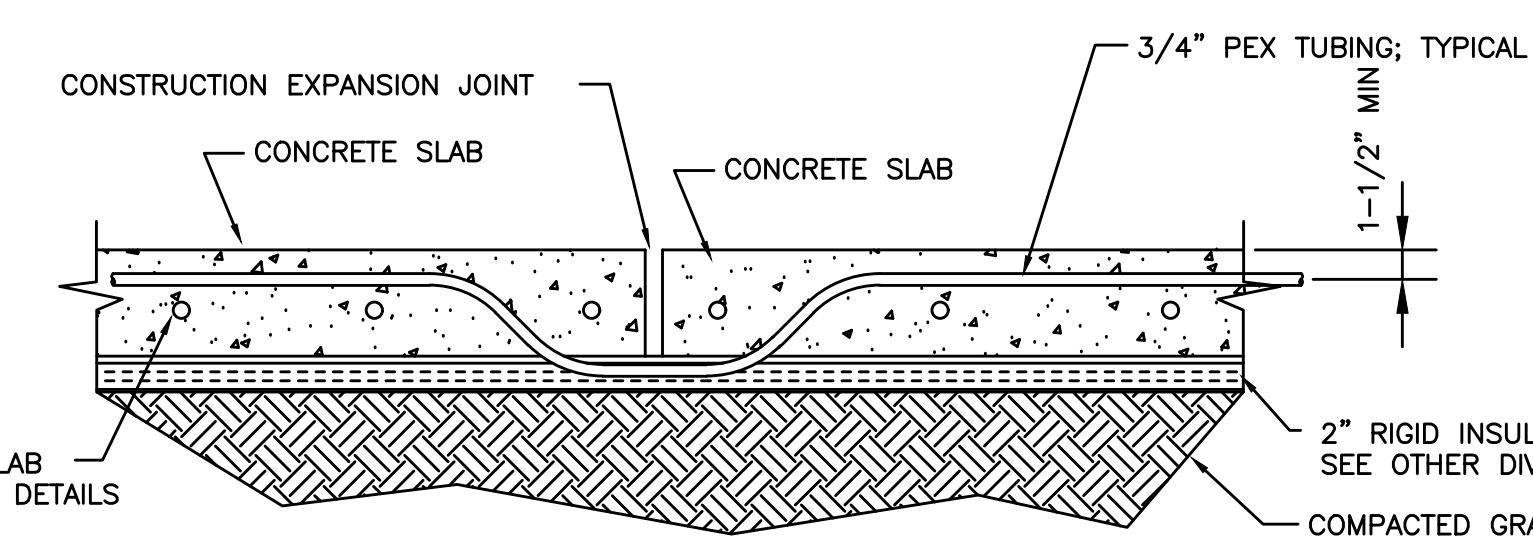
City Of Bend Approval Stamp:



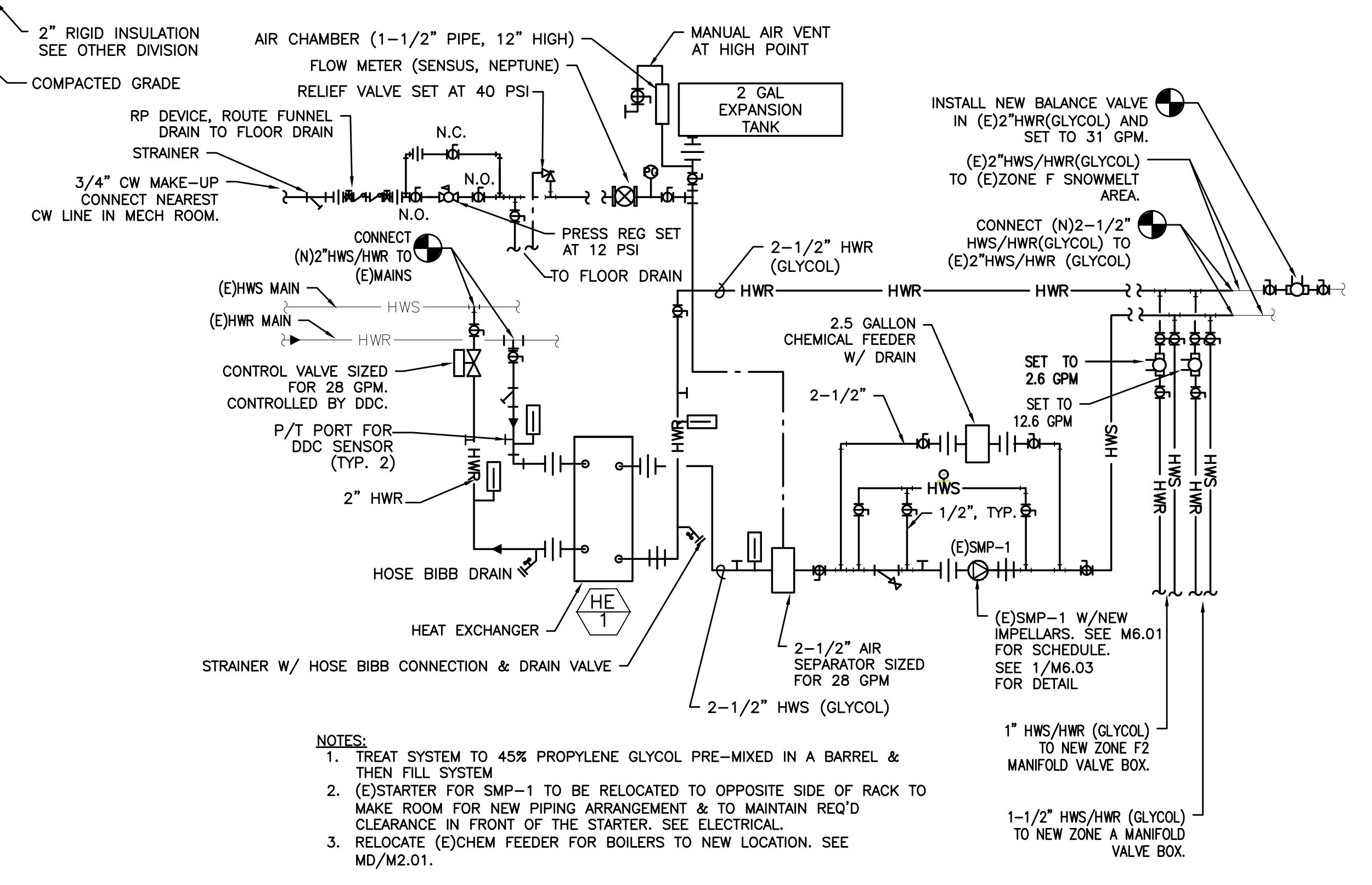
1 SNOW MELT MANIFOLD
SCALE: DETAIL



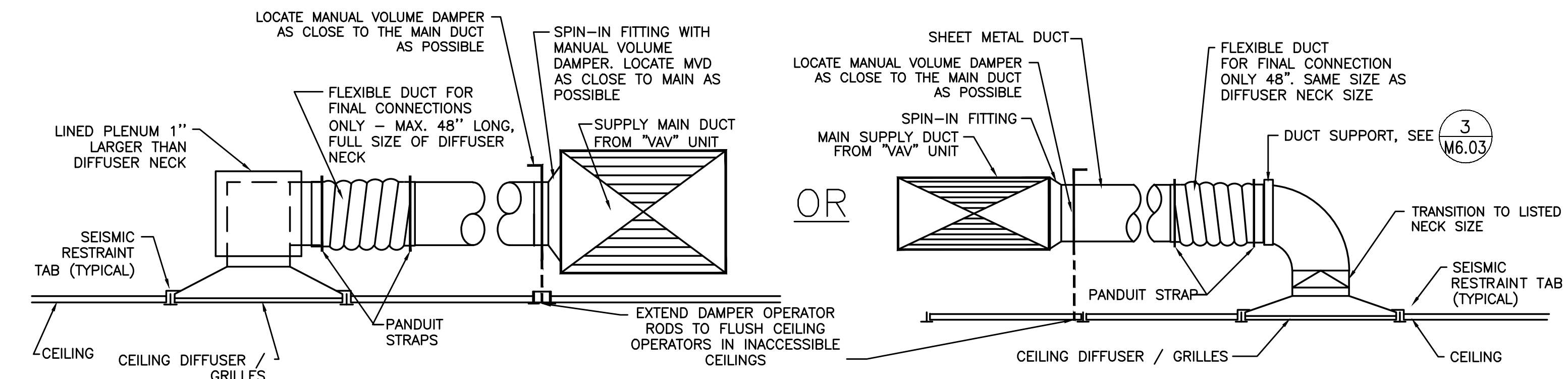
2 SNOW MELT UNDERSLAB PIPING DETAIL
SCALE: DETAIL



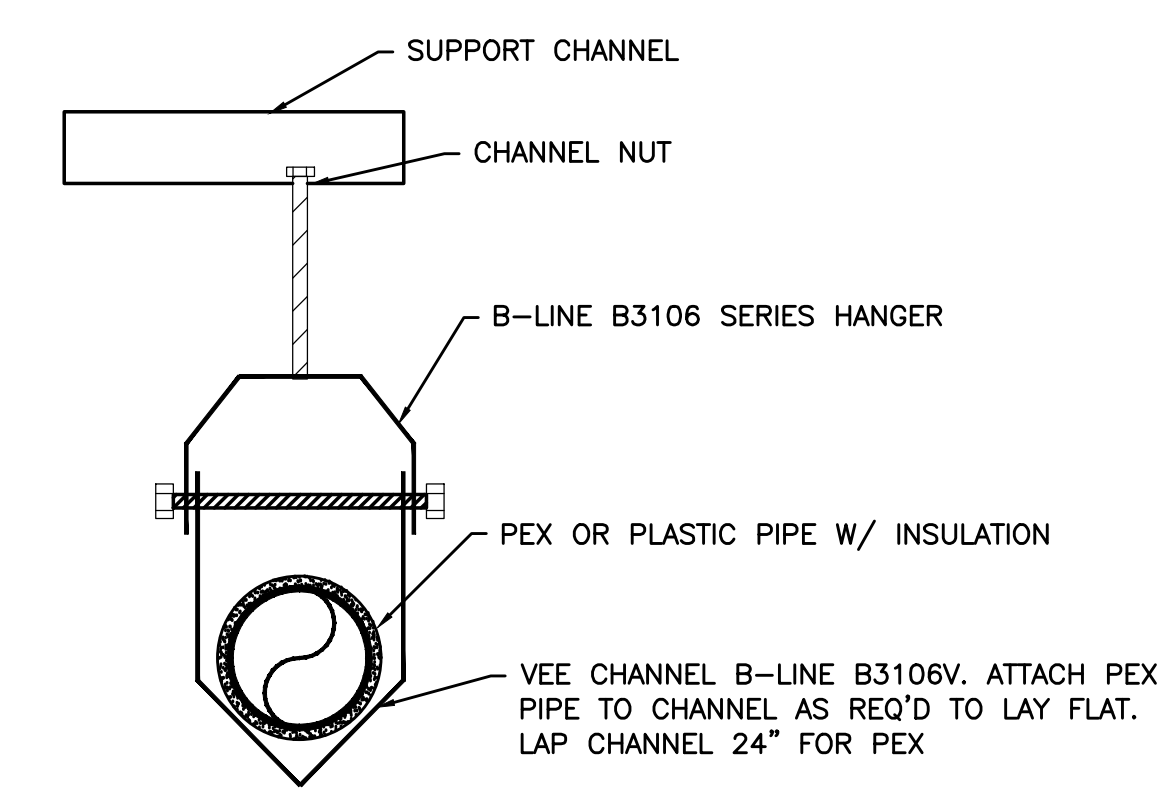
3 SNOW MELT @ EXPANSION JOINT
SCALE: DETAIL



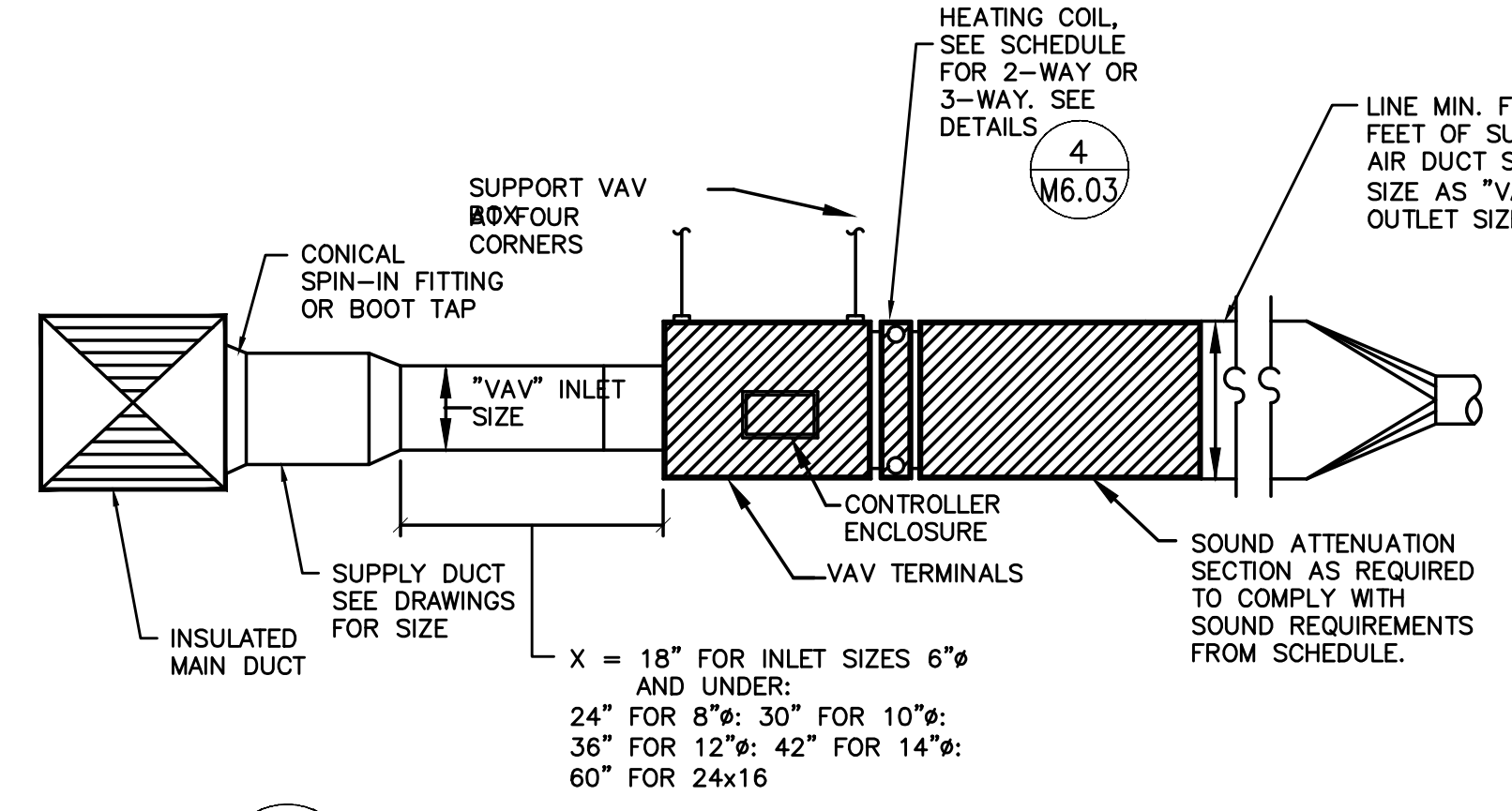
4 HEAT EXCHANGER PIPING DIAGRAM FOR SNOWMELT SYSTEM
SCALE: DETAIL



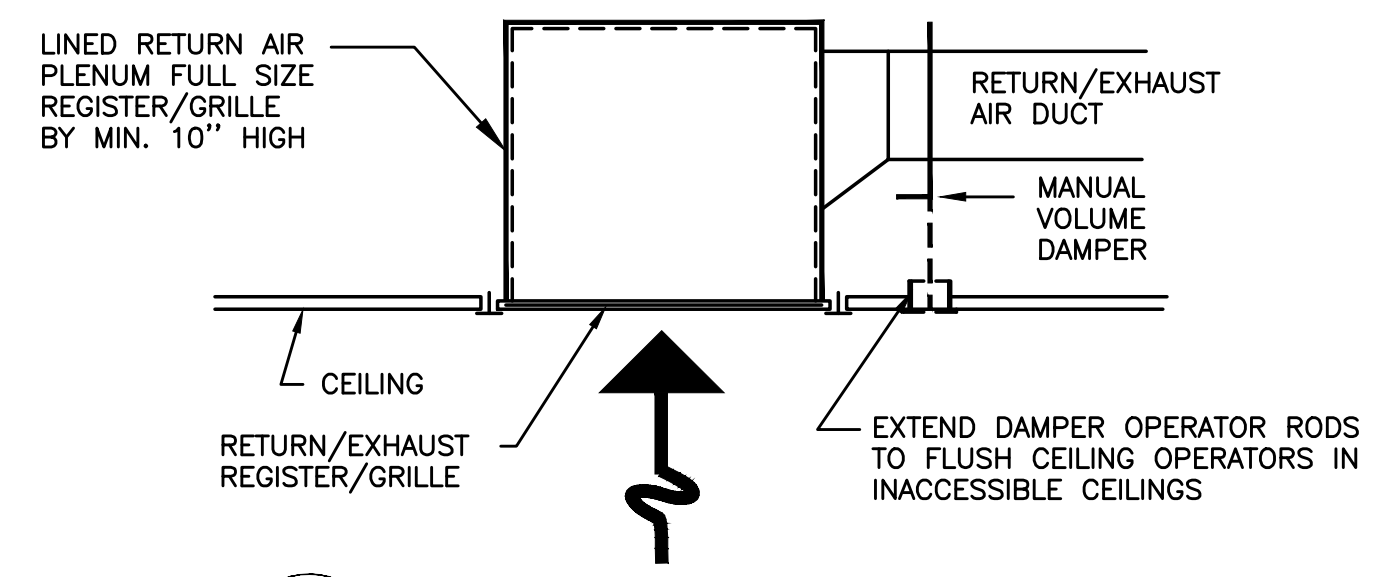
5 SUPPLY AIR DIFFUSER/GRILLE
SCALE: DETAIL



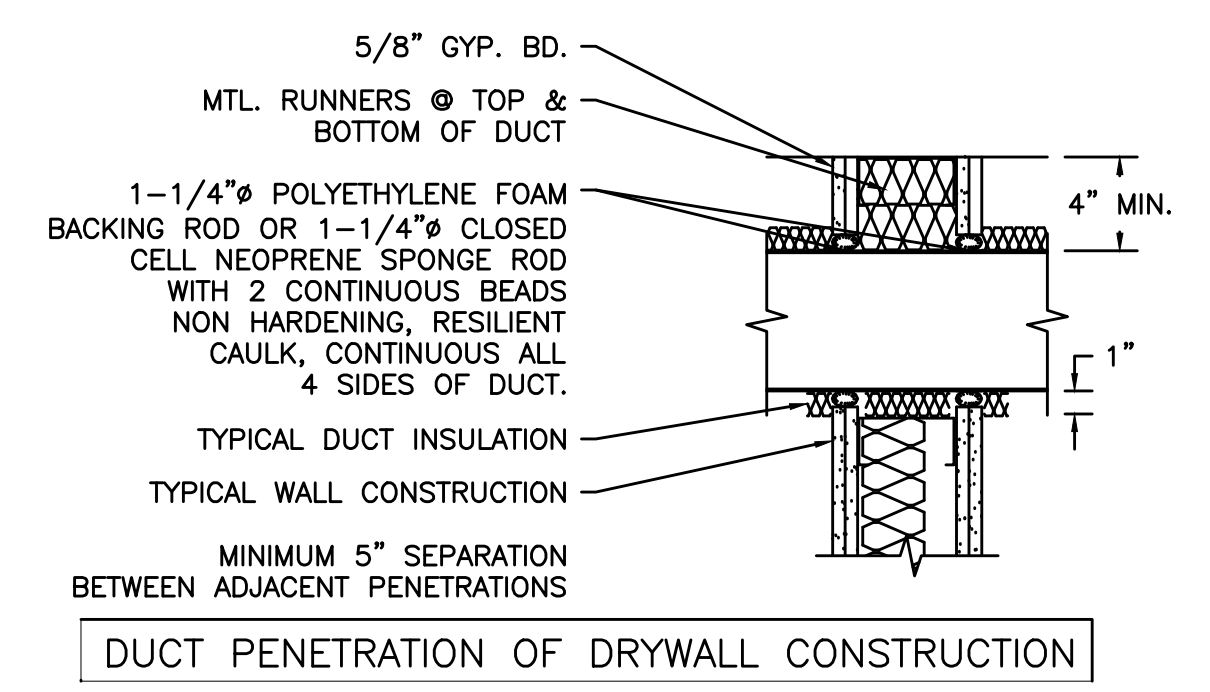
6 PEX SUPPORT DETAIL
SCALE: DETAIL



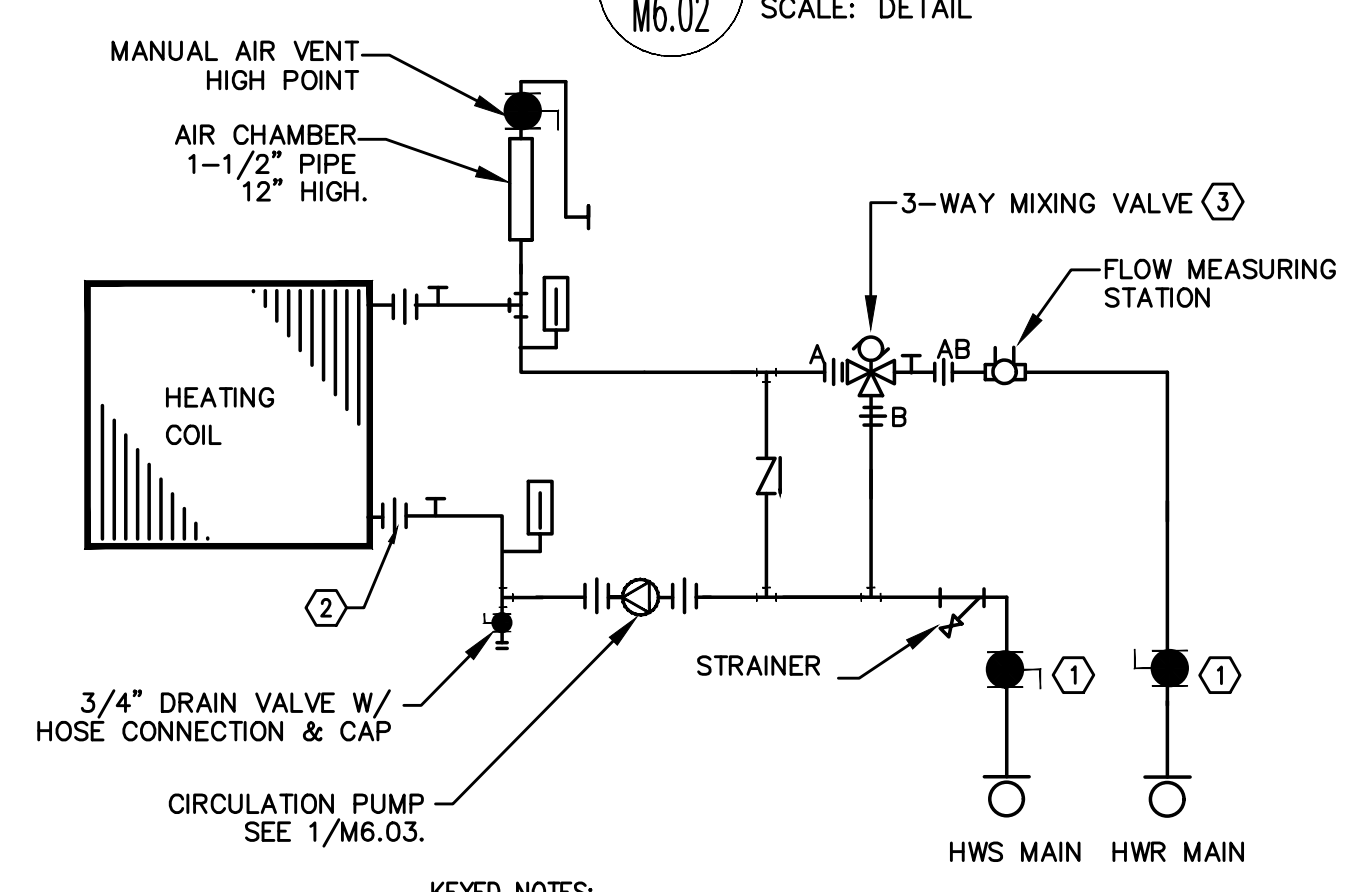
7 TYPICAL VAV BOX DETAIL
SCALE: DETAIL



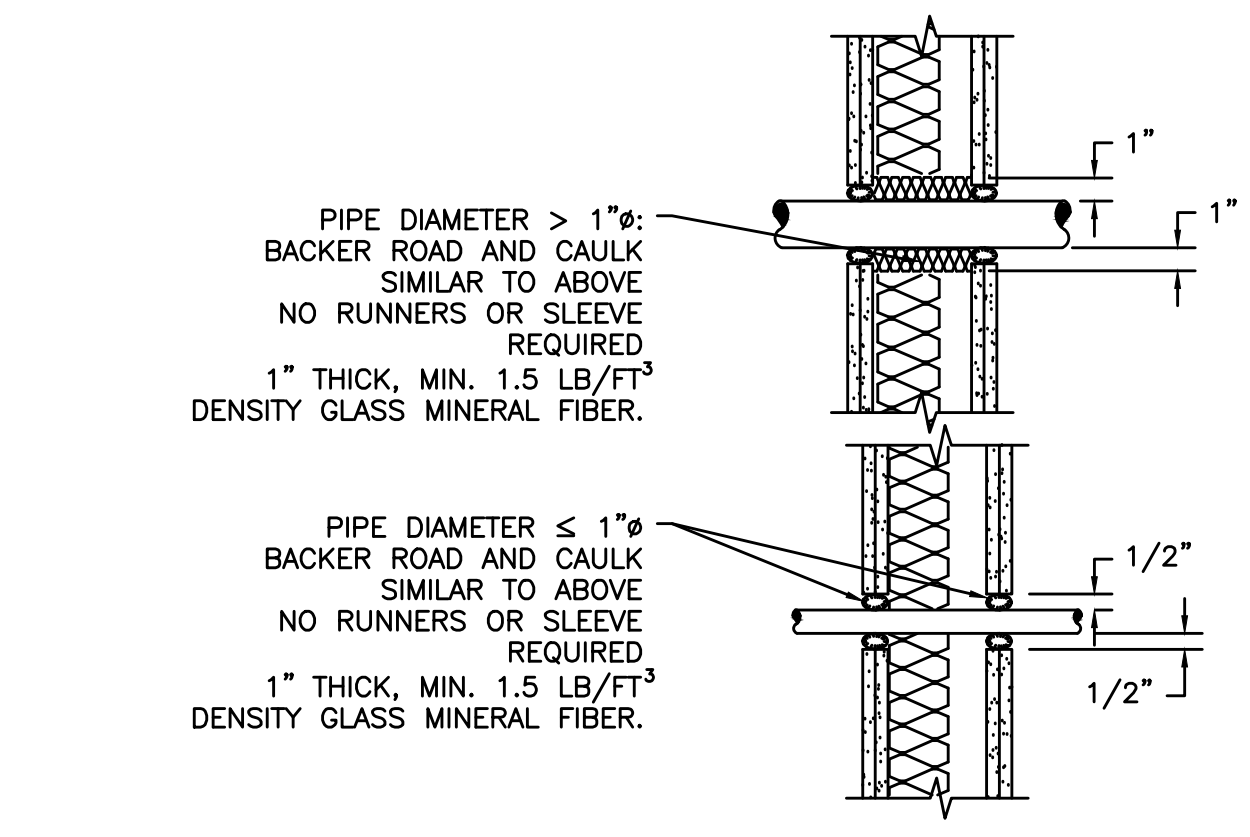
8 RETURN AIR DIFFUSER/GRILLE
SCALE: DETAIL



9 RELIEF HEAD
SCALE: DETAIL



10 PEAHEAT COIL- THREE WAY NON-FREEZE
SCALE: DETAIL



11 ACCOUSTICAL DUCT PENETRATION
SCALE: DETAIL

| # | Date | Description |
|---|---------|--------------------------|
| 1 | 2/19/18 | DISTRICT REVIEW COMMENTS |

Revision Schedule

BID SET

PILOT BUTTE MIDDLE SCHOOL - BLDGS E&F
1501 NE Neff Road,
Bend OR 97701

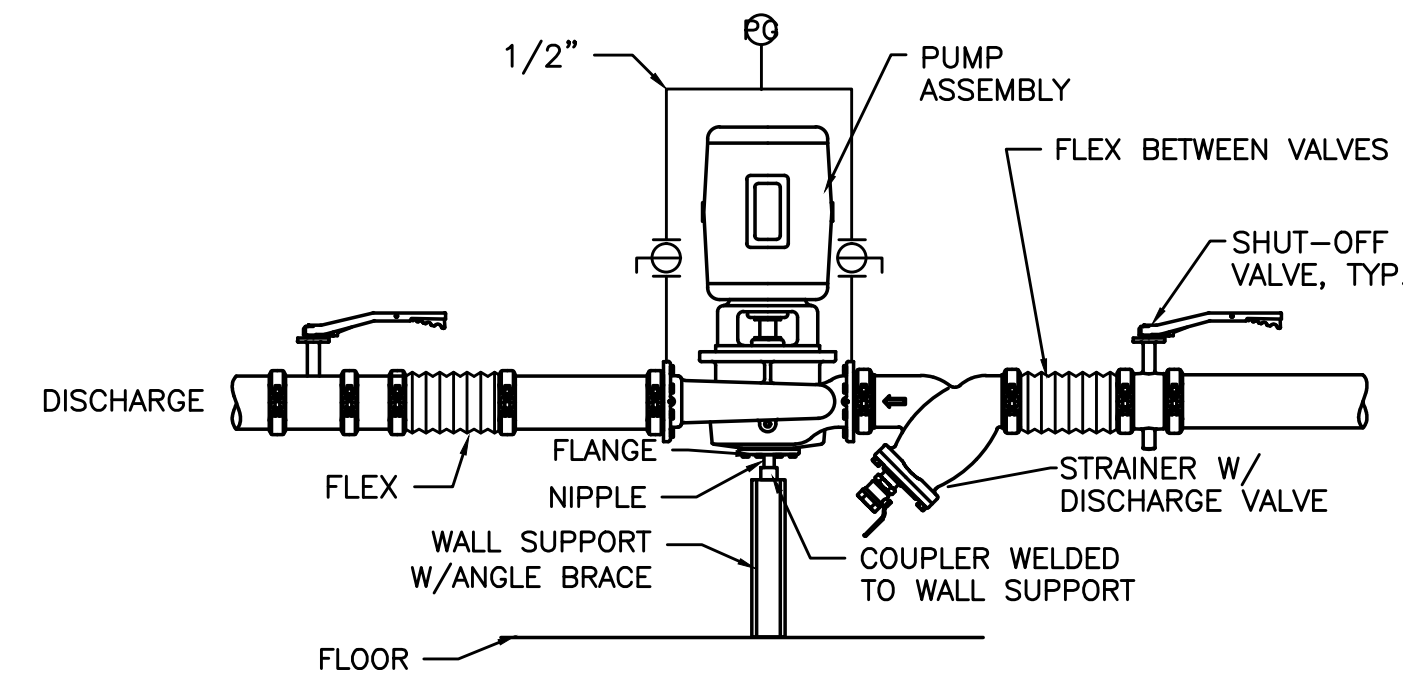
BLRB architects

MECHANICAL DETAILS

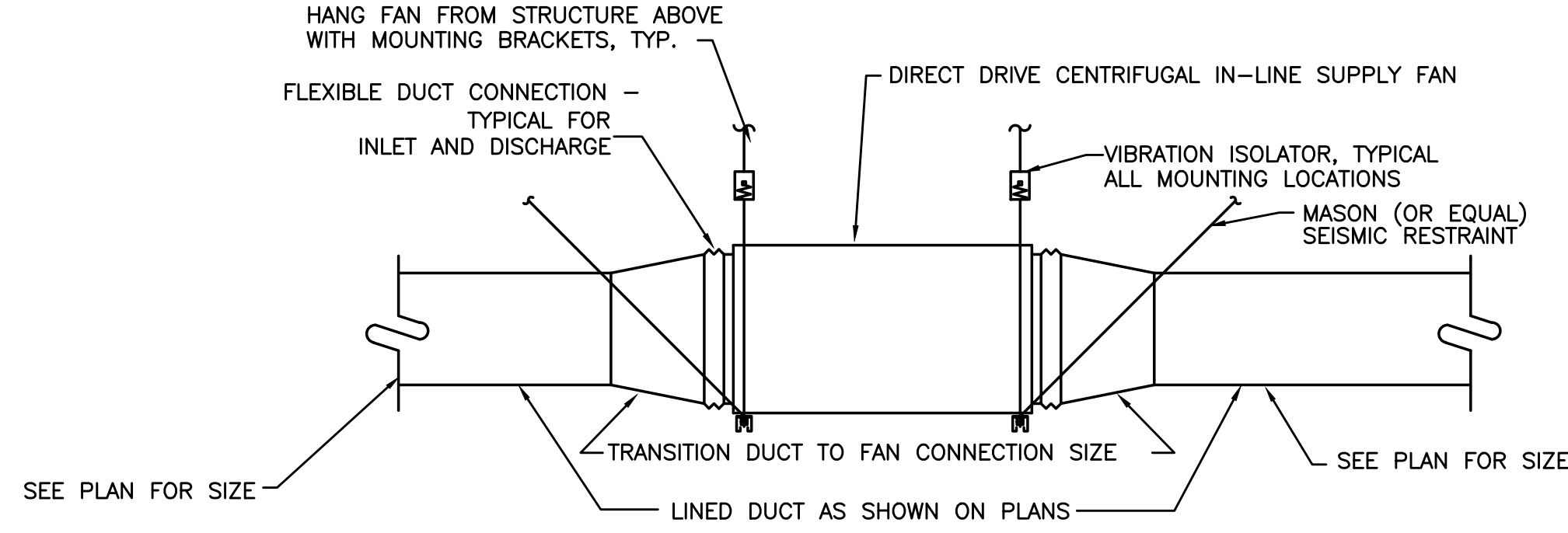
Date: 02.19.2018 Drawn By: TB
Revised Date: Project No. 17.34B

Stamp:

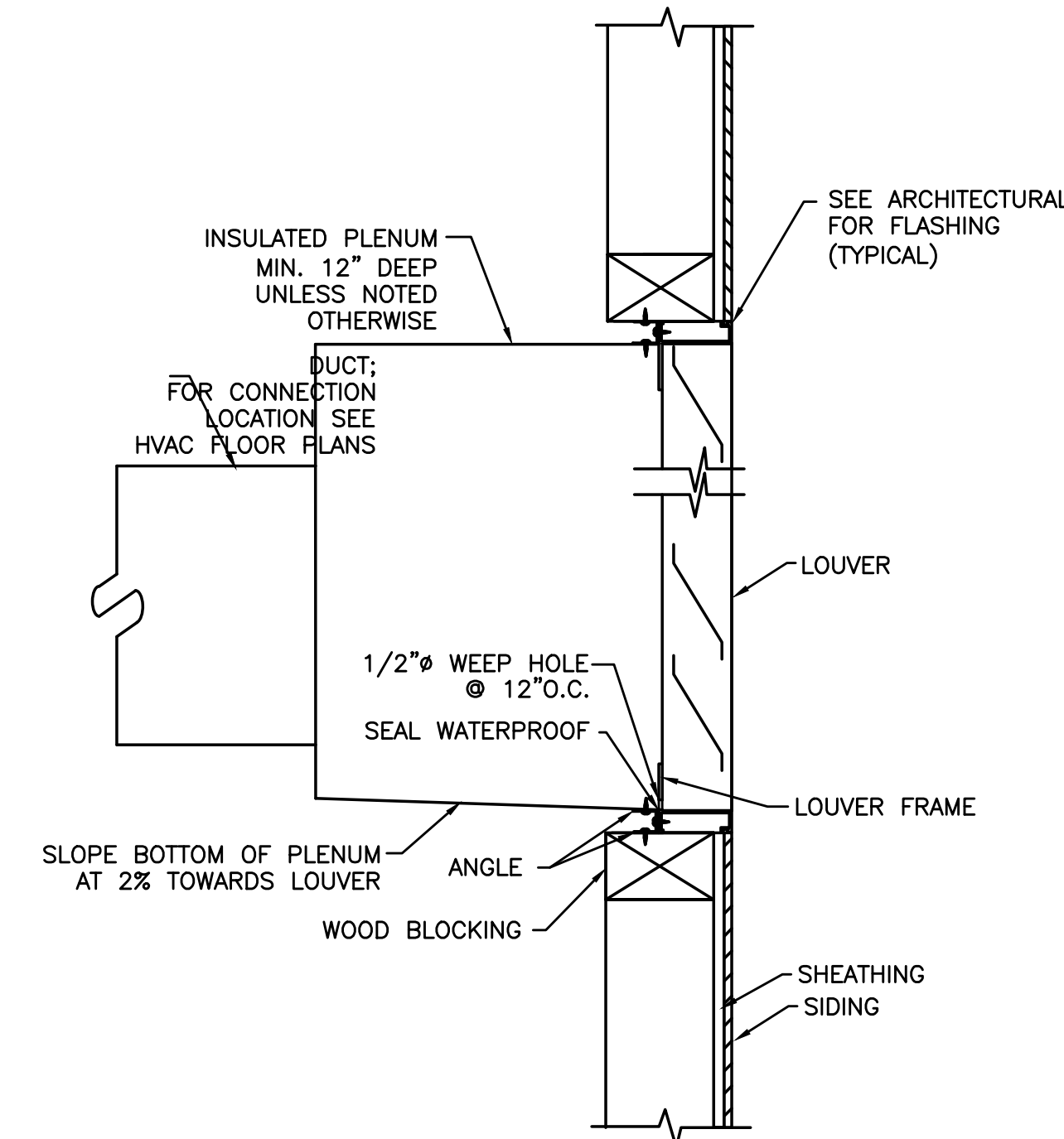
Sheet No. **M6.02**



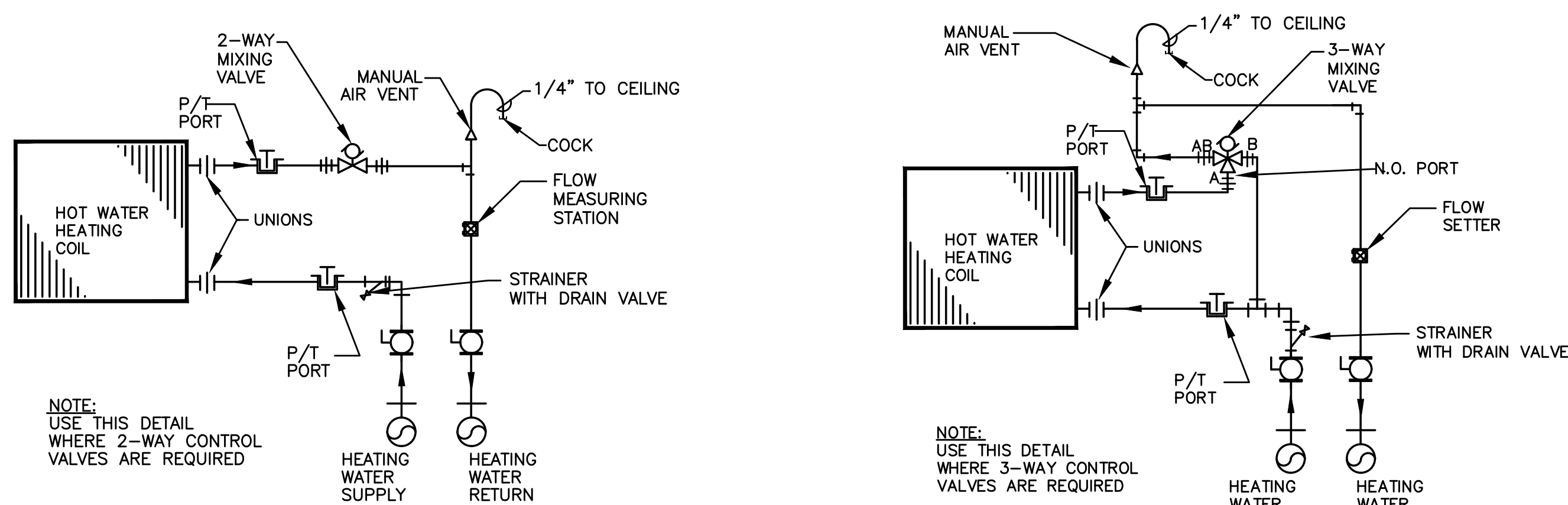
1 IN-LINE PUMP
M6.03 SCALE: DETAIL



2 INLINE EXH FAN/RA FAN
M6.03 SCALE: DETAIL

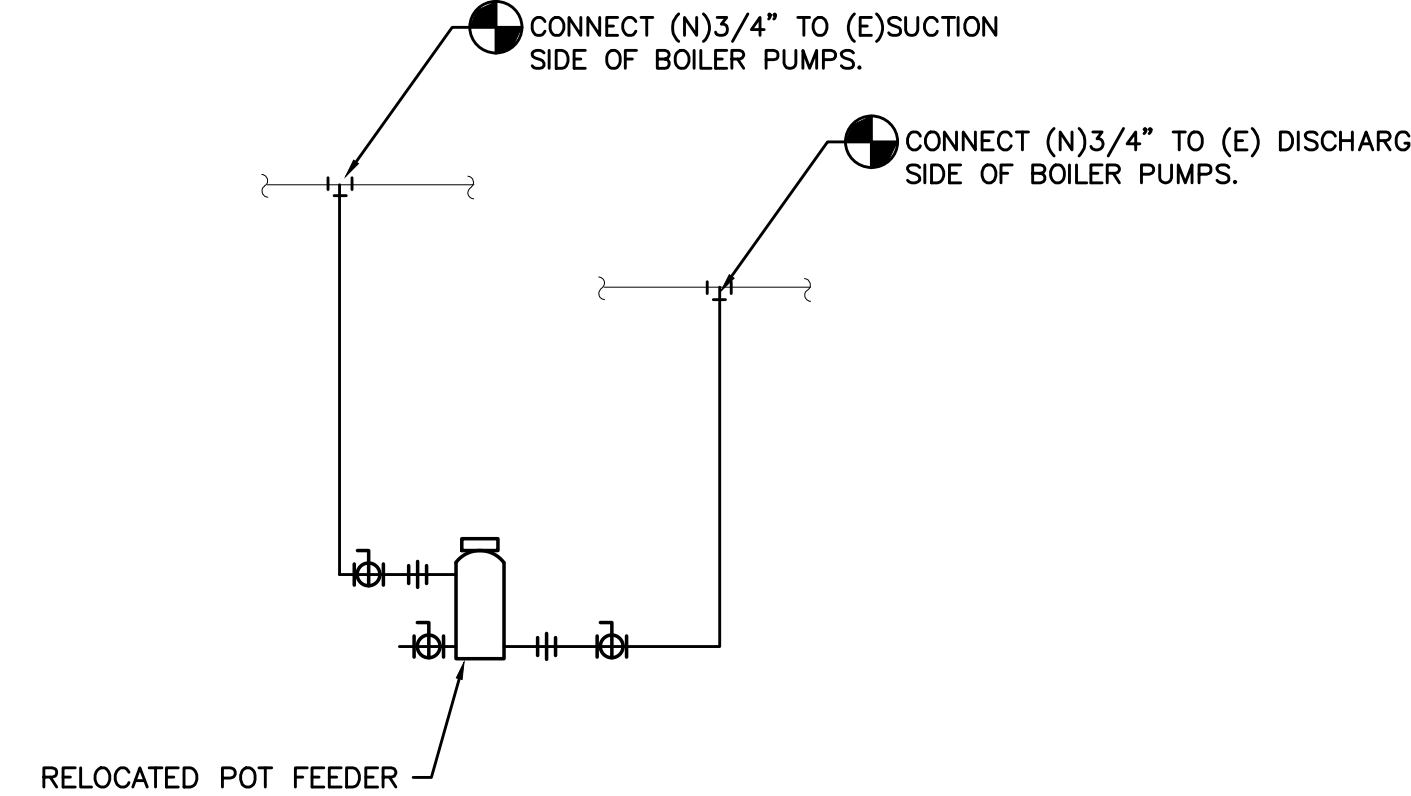


3 RELIEF LOUVER DETAIL
M6.03 NTS

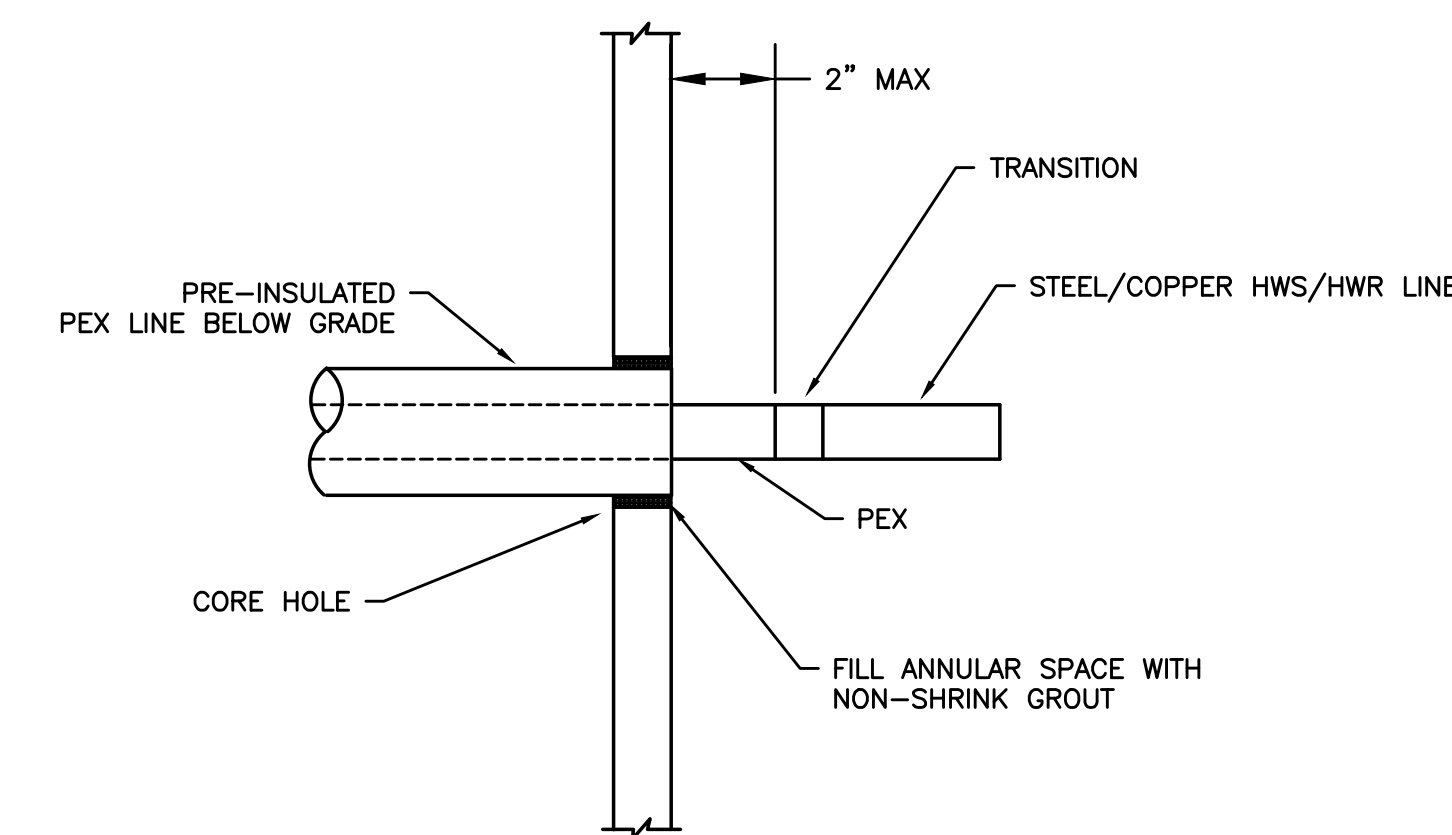


2-WAY CONTROL VALVE

END OF LOOP: 3-WAY MIXING VALVE

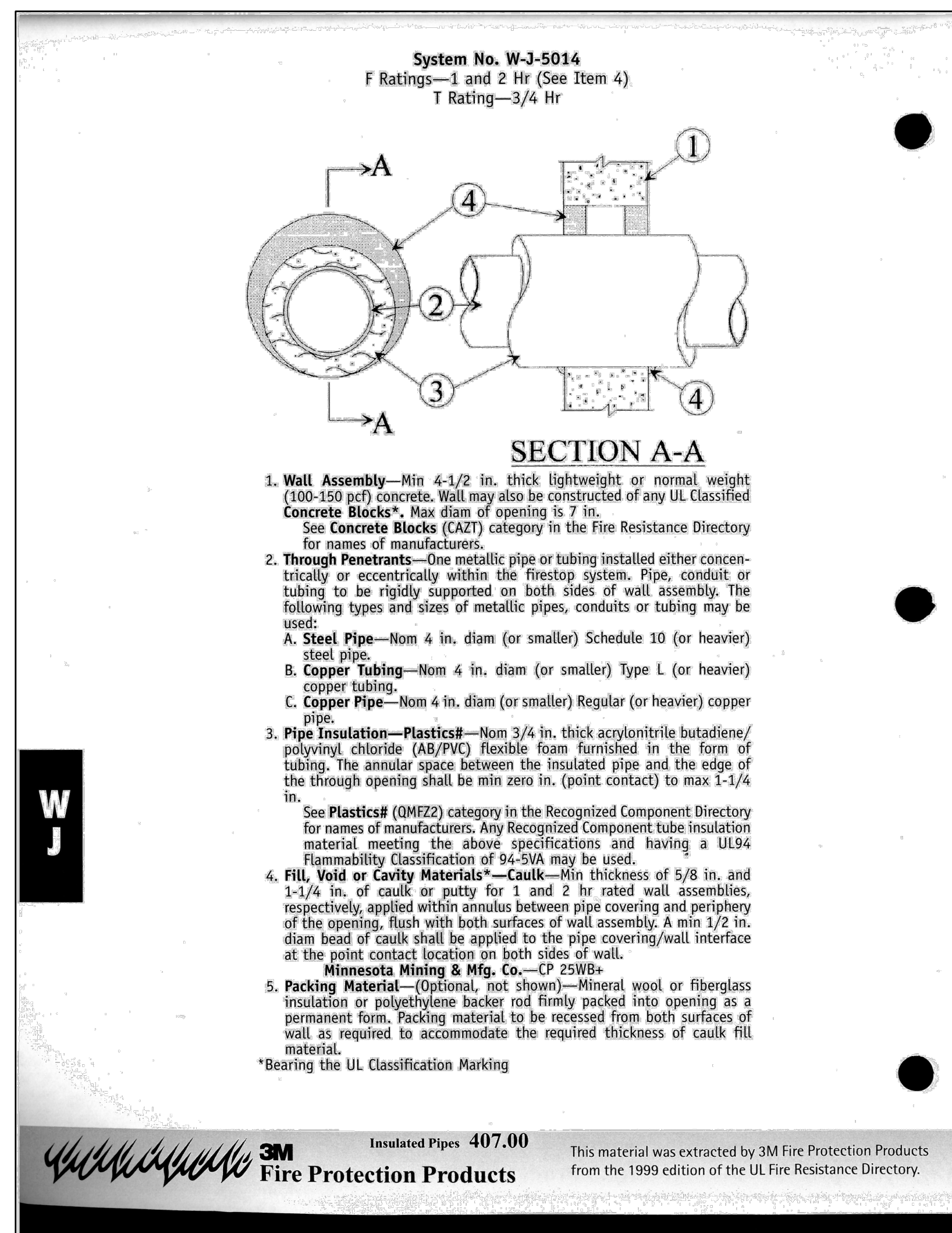


5 CHEMICAL POT FEEDER
M6.03 NTS

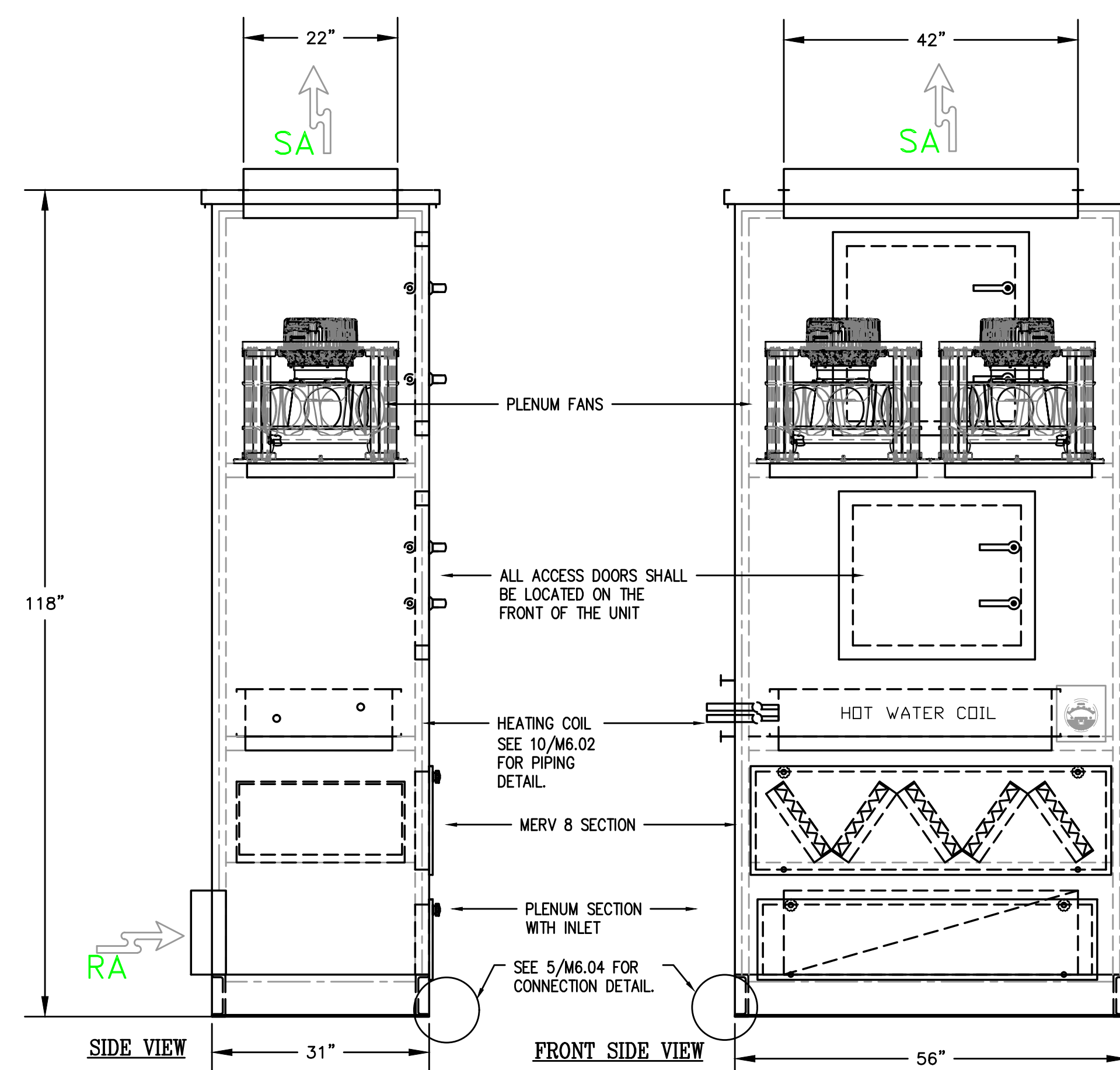


6 PIPE PENETRATION THRU STEM WALL
M6.03 NTS

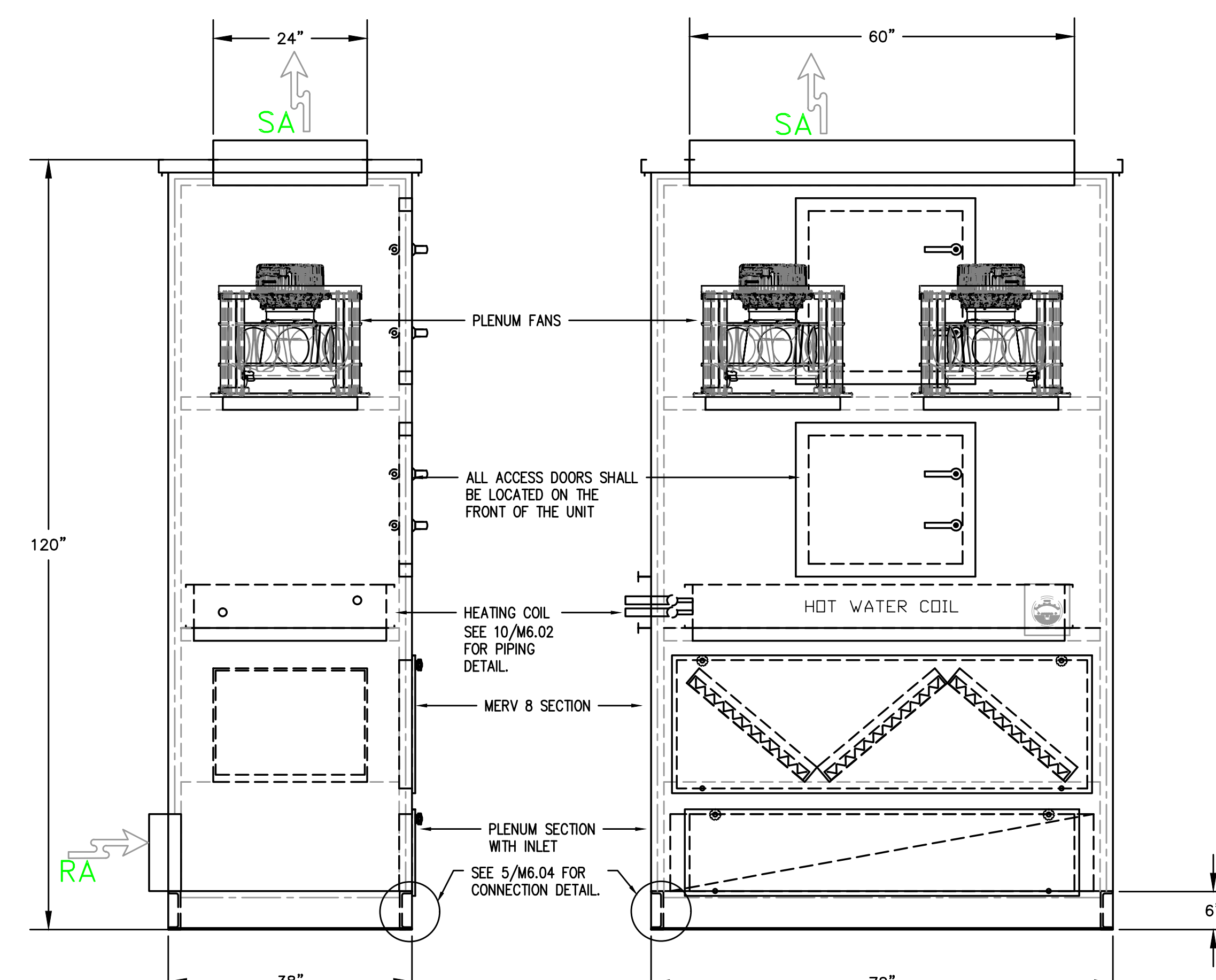
4 REHEATING COIL PIPING DIAGRAM
M6.03 NTS



7 PIPE PENETRATION - RATED WALL
M6.03 SCALE: DETAIL



8 AHU-E1 DETAIL
M6.03 SCALE: DETAIL



9 AHU-E2 DETAIL
M6.03 SCALE: DETAIL

NEW AHU DIMENSIONS CLOSELY MATCH EXISTING PACE UNIT TO BE REPLACED TO ENSURE FIT IN THE EXISTING MECHANICAL ROOM. ACCESS TO FANS, FILTERS AND HEATING COIL SHALL BE LOCATED ON THE FRONT OF THE UNIT FOR PROPER MAINTENANCE CLEARANCE. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS IN THE MECHANICAL ROOM PRIOR TO SUBMITTING AHU.

NEW AHU DIMENSIONS CLOSELY MATCH EXISTING PACE UNIT TO BE REPLACED TO ENSURE FIT IN THE EXISTING MECHANICAL ROOM. ACCESS TO FANS, FILTERS AND HEATING COIL SHALL BE LOCATED ON THE FRONT OF THE UNIT FOR PROPER MAINTENANCE CLEARANCE. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS IN THE MECHANICAL ROOM PRIOR TO SUBMITTING AHU.

| # | Date | Description |
|---|---------|--------------------------|
| 1 | 2/19/18 | DISTRICT REVIEW COMMENTS |

Revision Schedule

BID SET

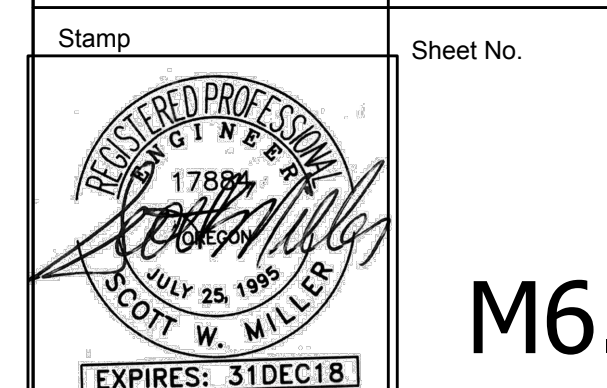
PILOT BUTTE MIDDLE SCHOOL - BLDGS E&F
1501 NE Neff Road,
Bend OR 97701

BLRB architects

Drawing Title:

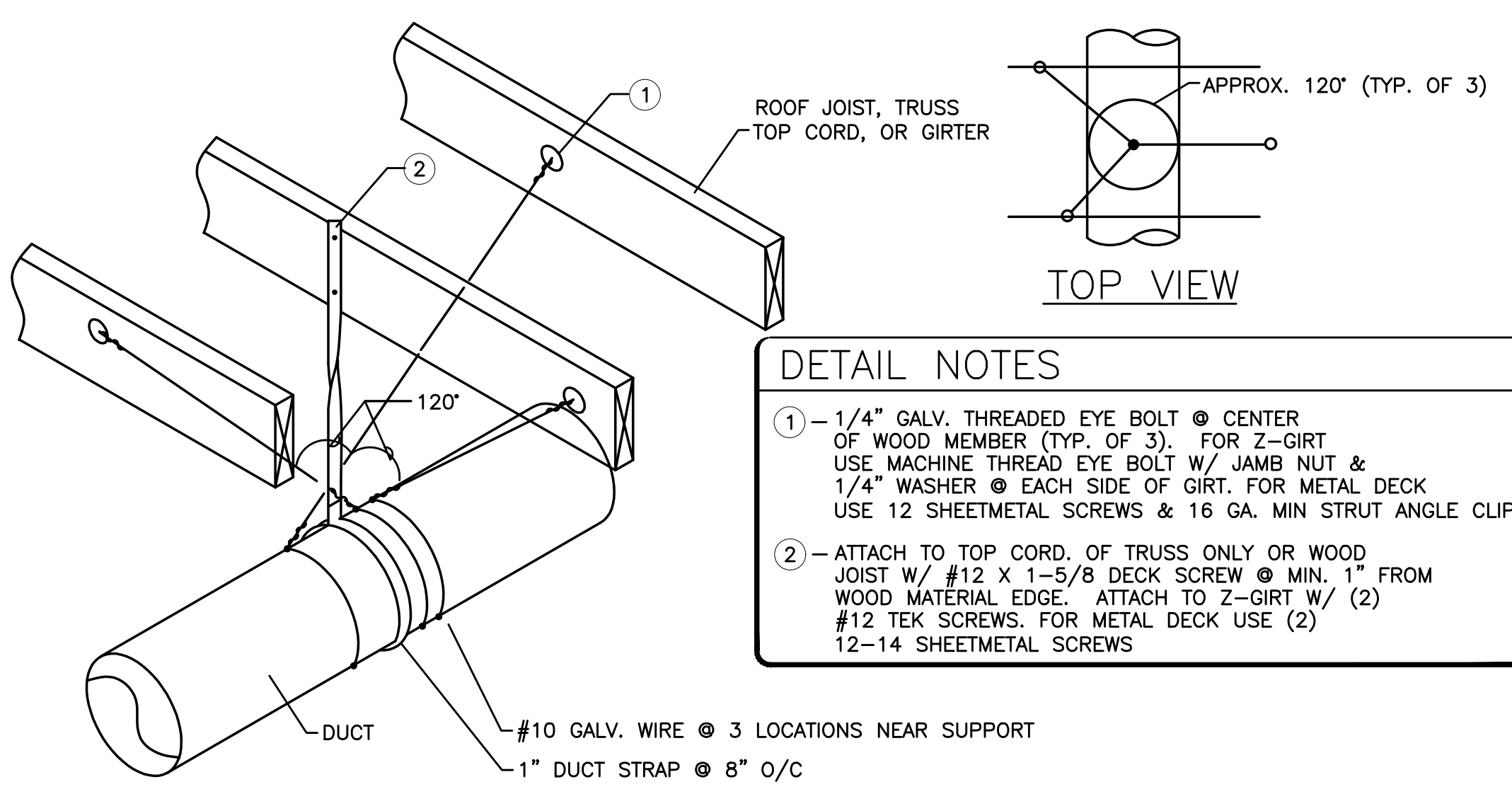
MECHANICAL DETAILS

Date: 02.19.2018 Drawn By: TB
Revised Date: Project No. 17.34B



M6.03

A
B
C
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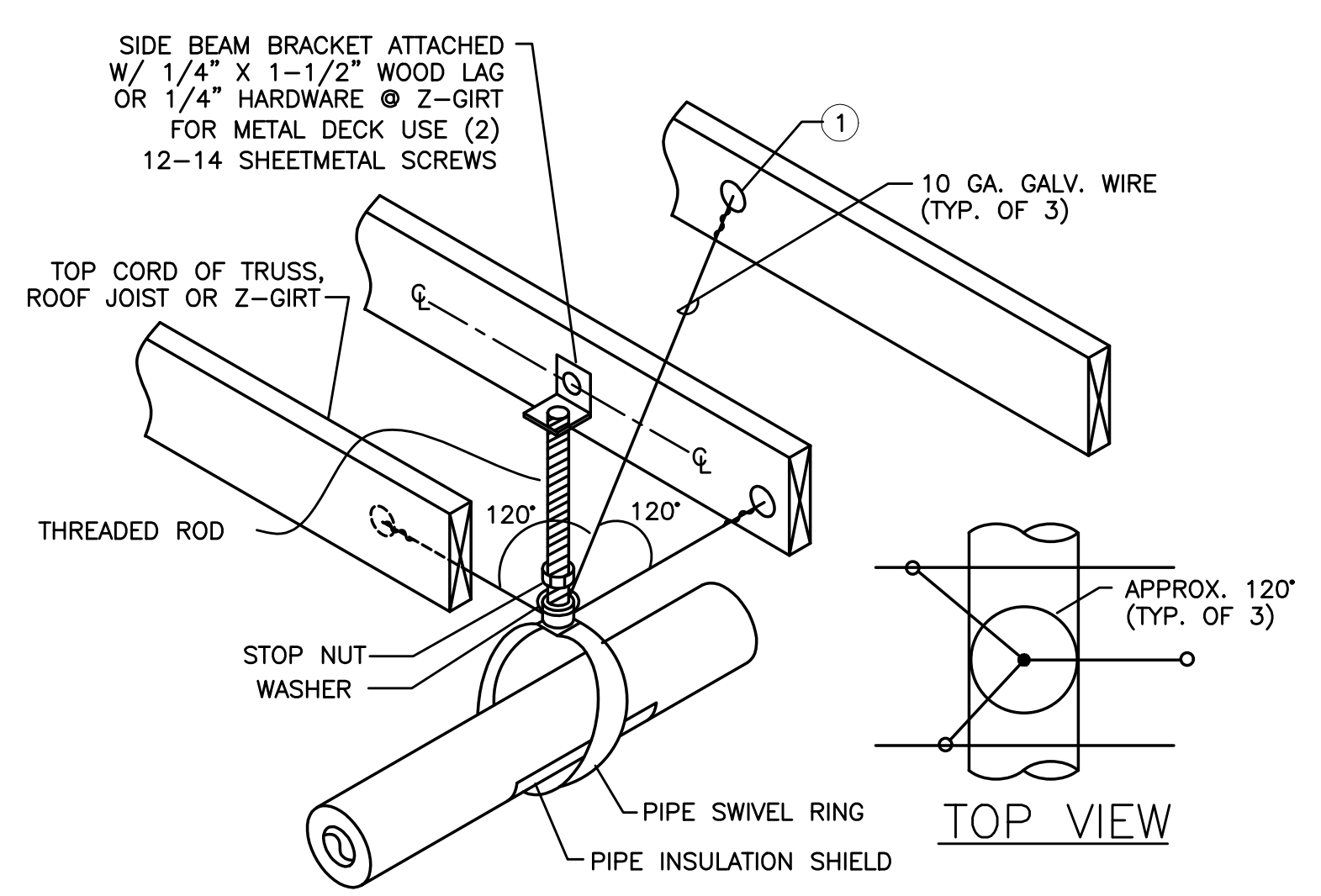


1 DUCT SUPPORT
M6.04 SCALE: DETAIL

DETAIL NOTES

- 1/4" GALV. THREADED EYE BOLT @ CENTER OF WOOD MEMBER (TYP. OF 3). FOR Z-GIRT USE MACHINE THREAD EYE BOLT W/ JAMB NUT & 1/4" WASHER @ EACH SIDE OF GIRT. FOR METAL DECK USE 12 SHEETMETAL SCREWS & 16 GA. MIN STRUT ANGLE CLIP
- ATTACH TO TOP CORD OF TRUSS ONLY OR WOOD JOIST W/ #12 X 1-5/8 DECK SCREW @ MIN. 1" FROM WOOD MATERIAL EDGE. ATTACH TO Z-GIRT W/ (2) #12 TEK SCREWS. FOR METAL DECK USE (2) 12-14 SHEETMETAL SCREWS

FOR SHEETMETAL DUCTS 11" TO 27" IN DIAMETER OR RECTANGULAR DUCTS (STRAP ALONE IS SUFFICIENT FOR DUCTS SMALLER THAN 11" IN DIAMETER)
STRAP INTERVAL MAY BE DECREASED (LESS THAN 96" O/C TO REDUCE THE NEED FOR WIRE TIES AS DETAILED, CONSULT ENGINEER OR SMACNA STANDARDS



2 PIPE SUPPORT
M6.04 SCALE: DETAIL

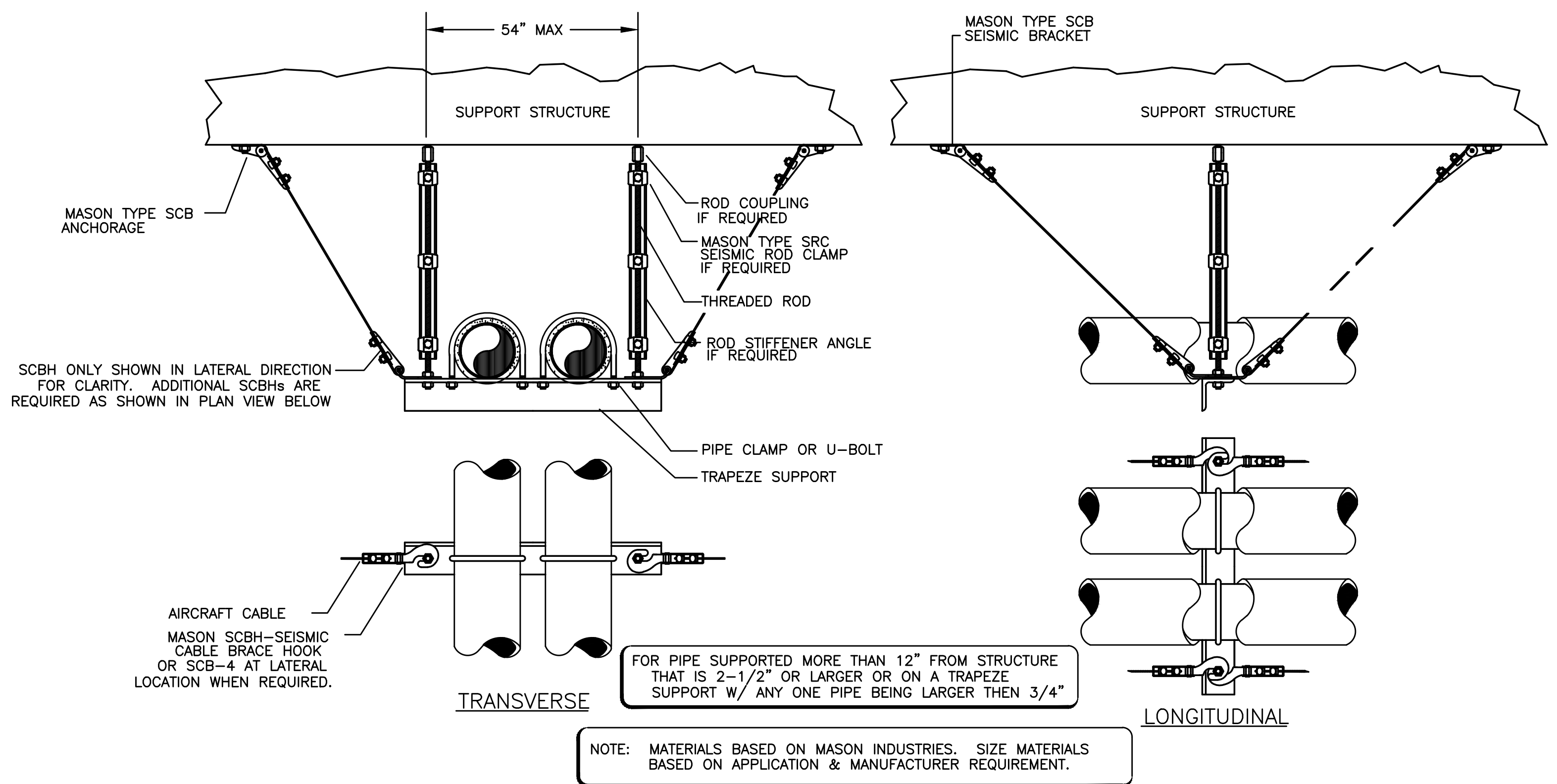
DETAIL NOTES

- 1/4" GALV. THREADED EYE BOLT @ CENTER OF WOOD MEMBER (TYP. OF 3). FOR 2 GIRT USE MACHINE THREAD EYE BOLT W/ JAMB NUT & 1/4" WASHER @ EACH SIDE OF GIRT. USE 12 SHEETMETAL SCREWS & 16 GA. MIN. 16 GA. MIN STRUT ANGLE CLIP

- FOR SINGLE 1-1/2" TO 3" STEEL LINES
- FOR SINGLE 2" COPPER LINES

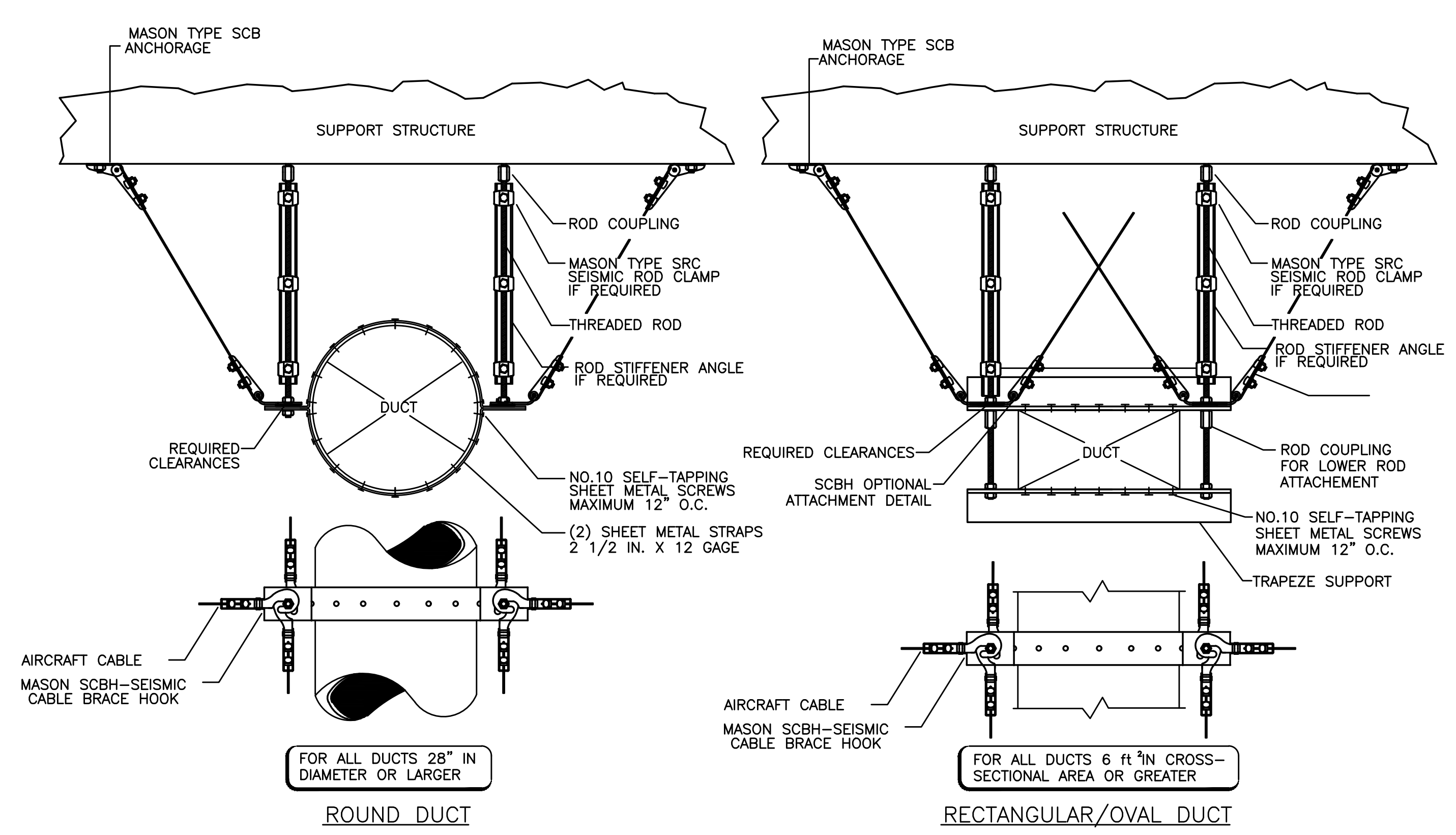
1 DUCT SUPPORT
M6.04 SCALE: DETAIL

2 PIPE SUPPORT
M6.04 SCALE: DETAIL



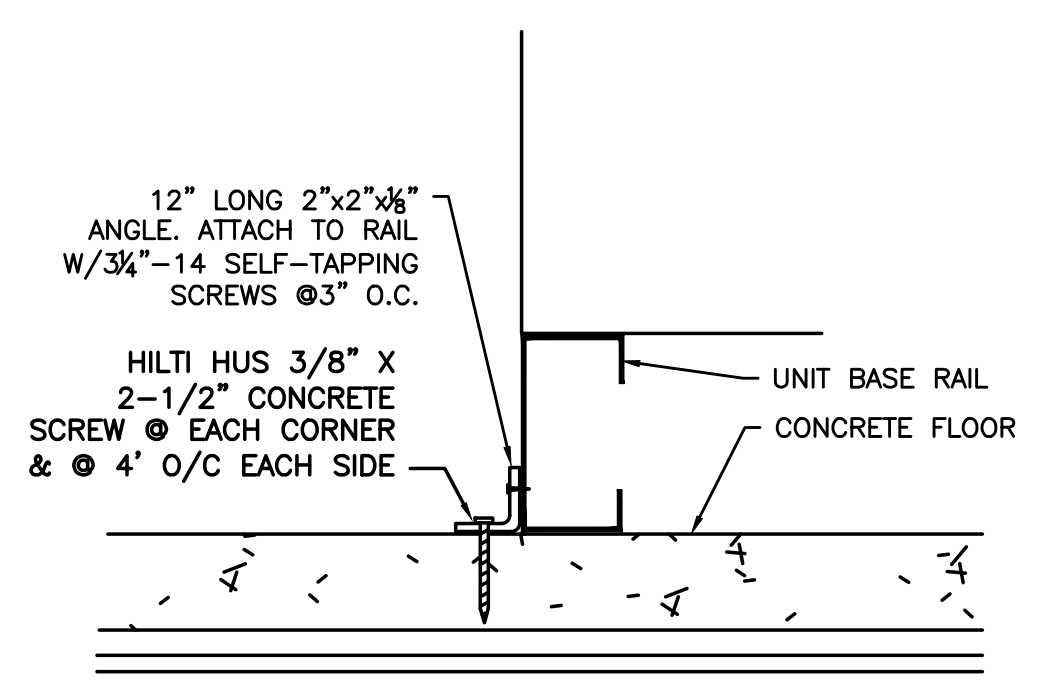
NOTE: MATERIALS BASED ON MASON INDUSTRIES. SIZE MATERIALS BASED ON APPLICATION & MANUFACTURER REQUIREMENT.

3 SEISMIC PIPE SUPPORT
M6.04 SCALE: DETAIL



NOTE: MATERIALS BASED ON MASON INDUSTRIES. SIZE MATERIALS BASED ON APPLICATION & MANUFACTURER REQUIREMENT.

4 SEISMIC DUCT SUPPORT
M6.03 SCALE: DETAIL



5 AHU CONNECTION DETAIL
M6.04 SCALE: DETAIL

City Of Bend Approval Stamp:

| # | Date | Description |
|---|---------|--------------------------|
| 1 | 2/19/18 | DISTRICT REVIEW COMMENTS |

Revision Schedule

BID SET

PILOT BUTTE MIDDLE SCHOOL - BLDGS E&F
1501 NE Neff Road,
Bend OR 97701

BLRB architects

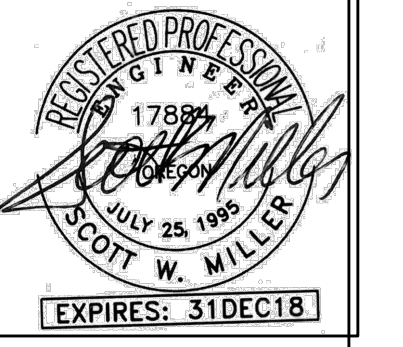
Drawing Title:

MECHANICAL DETAILS

Date: 02.19.2018 Drawn By: TB

Revised Date: Project No. 17.34B

Stamp Sheet No.



M6.04