

McKINLEY ES HVAC UPGRADE

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PROJECT DIRECTORY

OWNER

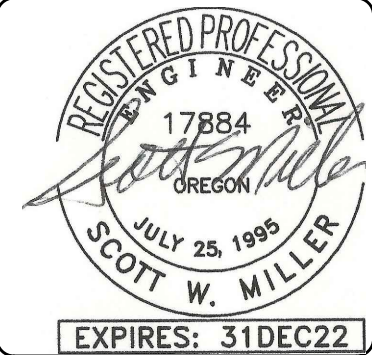
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| | |
|------------|------------|
| Date: | 07/26/2021 |
| Proj No: | 10181 |
| Drawn By: | ME |
| Chkd By: | SW |
| DSGN By: | ME |
| Acad File: | |

BEAVERTON SCHOOL DISTRICT
McKINLEY ES HVAC UPGRADE
1500 NW 185TH AVENUE
BEAVERTON OREGON

COVER SHEET

PERMIT/BID SET
OCTOBER 2021



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SHEET

G001

ELECTRICAL SYMBOLS

SWITCH SYMBOLS

- SWITCH, SINGLE-POLE +48" A.F.F.
SWITCH, DOUBLE-POLE +48" A.F.F.
SWITCH, 3-WAY +48" A.F.F.
SWITCH, 4-WAY +48" A.F.F.
SWITCH, MOMENTARY +48" A.F.F.
SWITCH, DIMMER +48" A.F.F.
SWITCH, SPST, W/PILOT LIGHT +48" A.F.F.
SWITCH, 3-WAY, W/PILOT LIGHT +48" A.F.F.
SWITCH, KEY-OPERATED +48" A.F.F.
SWITCH, TIMED +48" A.F.F.
SWITCH, LOW-VOLTAGE/DIGITAL +48" A.F.F.
SWITCH, OCCUPANCY SENSOR +48" A.F.F.
PHOTOCELL CONTROL
OCCUPANCY SENSOR - CEILING MTD

WIRING SYMBOLS

- PANEL & CIRCUIT NUMBER
HOMERUN TO PANEL
CONDUCTOR SIZE (IF OTHER THAN #12)
PHASE CONDUCTOR
NEUTRAL CONDUCTOR
GROUND CONDUCTOR
CONCEALED CONDUIT
CONDUIT SIZE
CONDUIT (UNDER SLAB OR FLOOR)

POWER SYMBOLS

- RECEPTACLE, SINGLE +18" A.F.F. (U.O.N.)
RECEPTACLE, DUPLEX +18" A.F.F.
RECEPTACLE, QUAD +18" A.F.F.
RECEPTACLE, DUPLEX +6" ABV COUNTER
RECEPTACLE, DUPLEX +18" A.F.F. (ONE OUTLET SWITCHED)
RECEPTACLE, DUPLEX +18" A.F.F. (BOTH OUTLETS SWITCHED)
RECEPTACLE, DUPLEX, PEDESTAL MOUNT
RECEPTACLE, DUPLEX, FLUSH FLOOR MOUNT
RECEPTACLE, SPECIAL (COORDINATE WITH EQUIPMENT SERVED)
PLUGMOLD RACEWAY
LENGTH & OUTLET CENTERS AS INDICATED ON PLAN
POWER POLE
MAGNETIC MOTOR STARTER
MAGNETIC CONTACTOR
RELAY
TIME CLOCK CONTROL
PUSHBUTTON STATION
JUNCTION BOX
JUNCTION BOX, EMERGENCY CIRCUIT
THERMOSTAT
TRANSFORMER
DISCONNECT, NON-FUSED
DISCONNECT, FUSED
ELECTRICAL CONNECTION
ELECTRICAL CONNECTION, SINGLE MOTOR
ELECTRICAL CONNECTION, MULTI-MOTOR
EXISTING RECEPTACLE
ELECTRICAL DISTRIBUTION PANEL, RECESSED
ELECTRICAL DISTRIBUTION PANEL, SURFACE
MISCELLANEOUS PANEL, RECESSED
MISCELLANEOUS PANEL, SURFACE
FLUSH FLOOR BOX (W/ DEVICES AS SHOWN ON PLAN)
ELECTRIC BASEBOARD HEATER (WATTAGE NOTED)

SIGNAL SYMBOLS

- TELEPHONE OUTLET +18" A.F.F.
DATA OUTLET +18" A.F.F.
DATA/TELEPHONE OUTLET +18" A.F.F.
TELEPHONE OUTLET, PEDESTAL MOUNT
CLOCK
SIGNAL BELL
SIGNAL BUZZER
SIGNAL HORN
VISUAL ALARM SIGNAL (COLOR AS INDICATED ON PLAN)
P.A. SPEAKER
P.A. CALL SWITCH
CATV OUTLET (LOCATE AS SHOWN ON PLANS)
CCTV CAMERA
INTRUSION SENSOR

ONE-LINE DIAGRAM SYMBOLS

- ELECTRICAL DISTRIBUTION PANELBOARD (MLO)
ELECTRICAL DISTRIBUTION PANELBOARD (MCB)
SUB-FEED CIRCUIT BREAKER
CIRCUIT BREAKER (TRIP RATING & POLES AS INDICATED ON PLAN)
MAIN SWITCH (RATING & POLES AS INDICATED ON PLAN)
FUSE (RATING & CLASS AS INDICATED ON PLAN)
TRANSFER SWITCH (MANUAL OR AUTOMATIC)
GENERATOR (RATING AS INDICATED ON PLAN)
TRANSFORMER (RATING AS INDICATED ON PLAN)
FUSE (RATING & CLASS AS INDICATED ON PLAN)
GROUND SYSTEM (SIZE AS INDICATED ON PLAN)
WATER PIPE GROUND ELECTRODE
SURGE PROTECTION DEVICE (SPD)
UTILITY METER & METER BASE
UTILITY METER CURRENT TRANSFORMER
FEEDER NO. (SEE FEEDER SCHEDULE)
MOTOR STARTER
'NEMA' SIZE (AS INDICATED ON PLAN)
STARTER TYPE (AS INDICATED ON PLAN)
MOTOR (HORSEPOWER AS INDICATED ON PLAN)
VOLTMETER (SCALE AS INDICATED ON PLANS)
AMMETER (SCALE AS INDICATED ON PLANS)
WATTMETER (SCALE AS INDICATED ON PLANS)
CURRENT TRANSFORMER (RATING AS INDICATED ON PLANS)
POTENTIAL TRANSFORMER (RATING AS INDICATED ON PLANS)
INSTRUMENT SWITCH (TYPE AS INDICATED ON PLANS)

ABBREVIATIONS

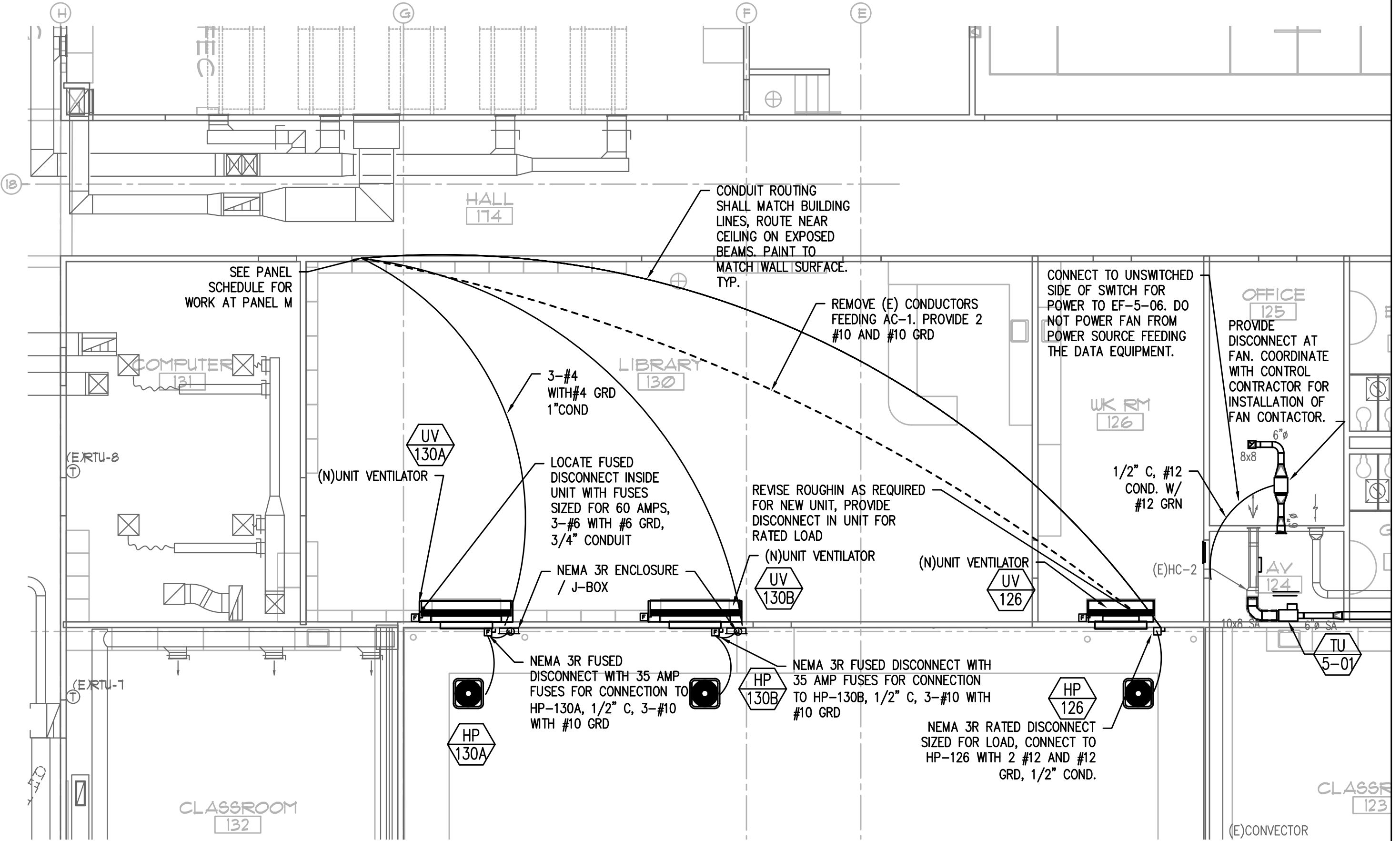
- 'A', 'AE' LIGHT FIXTURE TYPE (SEE FIXTURE LIST)
A.F.F. ABOVE FINISHED FLOOR
A.T.S. TRANSFER SWITCH, AUTOMATIC
C CONDUIT
C.O. CONDUIT ONLY
CATV CABLE TELEVISION
CB CIRCUIT BREAKER
CCTV CLOSED CIRCUIT TELEVISION
C.T. CURRENT TRANSFORMER
(E) EXISTING
E.L. EMERGENCY LIGHT
E.L.C. EXTERIOR LIGHTING CONTROL
FACP FIRE ALARM CONTROL PANEL
G.F.I. GROUND FAULT INTERRUPTER
GND GROUND
H.I.D. HIGH INTENSITY DISCHARGE
HP HORSEPOWER
HTR HEATER
I.G. ISOLATED GROUND
I R INFRARED
JB JUNCTION BOX
MCB MAIN CIRCUIT BREAKER
MCC MOTOR CONTROL CENTER
MLO MAIN LUGS ONLY
M.T.S. TRANSFER SWITCH, MANUAL
(N) NEW
N.I.C. NOT IN CONTRACT
N.L. NIGHT LIGHT
OL OVERLOAD
O.L.C. OFFICE LIGHTING CONTROL
P POLE
P.A. PUBLIC ADDRESS
PH PHASE
PRI PRIMARY
RTU REMOTE TELEMETRY UNIT
SEC SECONDARY
T.R. TAMPER RESISTANT
U.G. UNDERGROUND
U.O.N. UNLESS OTHERWISE NOTED
VFD VARIABLE FREQUENCY DRIVE
W WIRE
W.G. WIRE GUARD
W.P. WEATHER-PROOF
W.R. WEATHER RESISTANT
W.T. WATERTIGHT
X.P. EXPLOSION PROOF

NOTATIONS

- DRAWING NOTE
DETAIL REFERENCE: TOP=DETAIL NO., BOTTOM=SHEET NO.
MECHANICAL EQUIPMENT MARK NO. (SEE EQUIPMENT SCHEDULE)
EQUIPMENT NO. (SEE EQUIPMENT SCHEDULE)
EQUIPMENT NO. (SEE EQUIPMENT SCHEDULE)
FEEDER NO. (SEE FEEDER SCHEDULE)
FIXTURE REFERENCE: TOP=TYPE, BOTTOM=LAMP QTY & WATTS

NOTES:

1. SOME OF THE SYMBOLS AND ABBREVIATIONS ON THIS LIST MAY NOT APPLY TO THIS PROJECT.
2. MOUNTING HEIGHTS INDICATED ARE TO THE CENTER OF THE DEVICE UNLESS OTHERWISE NOTED.
3. MOUNTING HEIGHTS INDICATED SHALL BE USED UNLESS OTHERWISE NOTED ON THE PLANS.

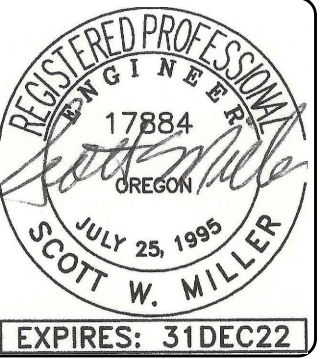
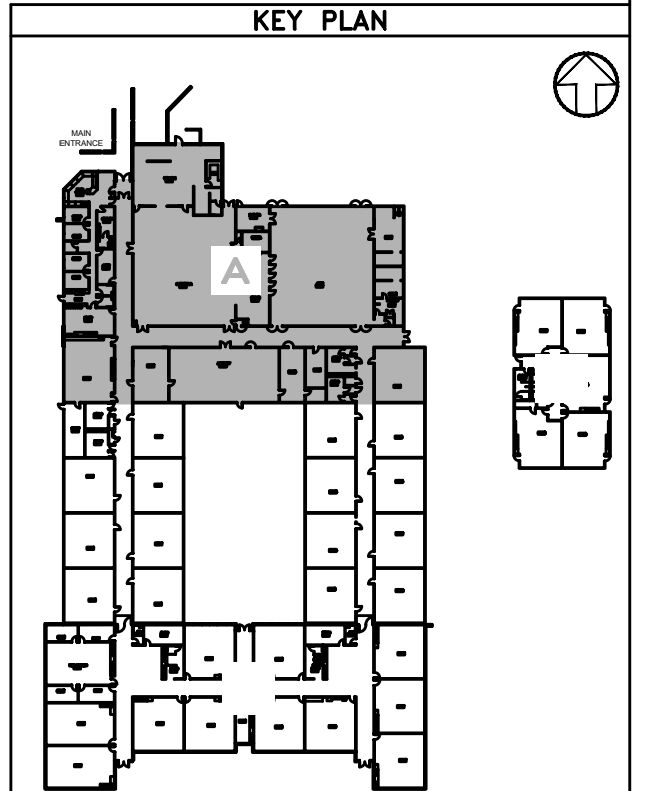


1 PARTIAL ELECTRICAL FLOOR PLAN - NEW
ME101 SCALE: 1/8" = 1'-0"

| Panel M (208/120, 3PH, 4W) Existing Condition | | | | | |
|---|--------------|---------|---------|--------------|---|
| Device | Breaker size | Circuit | Circuit | Breaker size | Device |
| Unknown | 20 | 1 | 11 | 20 | Unknown |
| Unknown | 20 | 2 | 12 | 20 | Unknown |
| Unknown | 20 | 3 | 13 | 20 | Unknown |
| Unknown | 20 | 4 | 14 | 20 | Unknown |
| Unknown | 20 | 5 | 15 | 20 | Unknown |
| Spare (3-pole) | | 6 | 16 | | Spare (3-pole) |
| Spare (3-pole) | 40 | 7 | 17 | 40 | Spare (3-pole) |
| Spare (3-pole) | | 8 | 18 | | Spare (3-pole) |
| UV (AC-2) (2-pole) 49 AMP CONNECTED LOAD | 50 | 9A | 19A | 50 | UV (AC-2) (2-pole) 49 AMP CONNECTED LOAD |
| UV (AC-1) (2-pole) 34.6 CONNECTED LOAD | 40 | 10A | 20A | 40 | UV (AC-1) (2-pole) 34.6 CONNECTED LOAD |
| | | 10B | 20B | | |

| Panel M (208/120, 3PH, 4W) New Condition | | | | | |
|---|--------------|---------|---------|--------------|---|
| Device | Breaker size | Circuit | Circuit | Breaker size | Device |
| Unknown | 20 | 1 | 11 | 20 | Unknown |
| Unknown | 20 | 2 | 12 | 20 | Unknown |
| Unknown | 20 | 3 | 13 | 20 | Unknown |
| Unknown | 20 | 4 | 14 | 20 | Unknown |
| Unknown | 20 | 5 | 15 | 20 | Unknown |
| | | 6 | 16 | | |
| UV-130A / HP-130A (3-POLE) 64.9 MCA LOAD | 70 | 7 | 17 | 70 | UV-130B / HP-130B (3-POLE) 64.9 MCA LOAD |
| | | 8 | 18 | | |
| UV-126 24.6 MCA | 25 | 9A | 19A | 25 | HP-126 14.7 MCA |
| | | 9B | 19B | | |
| Space | | 10A | 20A | | Space |
| Space | | 10B | 20B | | Space |

EXISTING CONNECTED LOAD REMOVED = 168 AMPS
NEW CONNECTED LOAD = 169.3 MCA



Date: 07/26/2021
Proj No: 10181
Drawn By: MG
Chkd By: SW
DSGN By: MG
Acad File:

BEAVERTON SCHOOL DISTRICT
McKINLEY ES HVAC UPGRADE
1500 NW 185TH AVENUE
BEAVERTON, OREGON
PARTIAL ELECTRICAL FLOOR PLAN

PERMIT/BID SET
OCTOBER 2021



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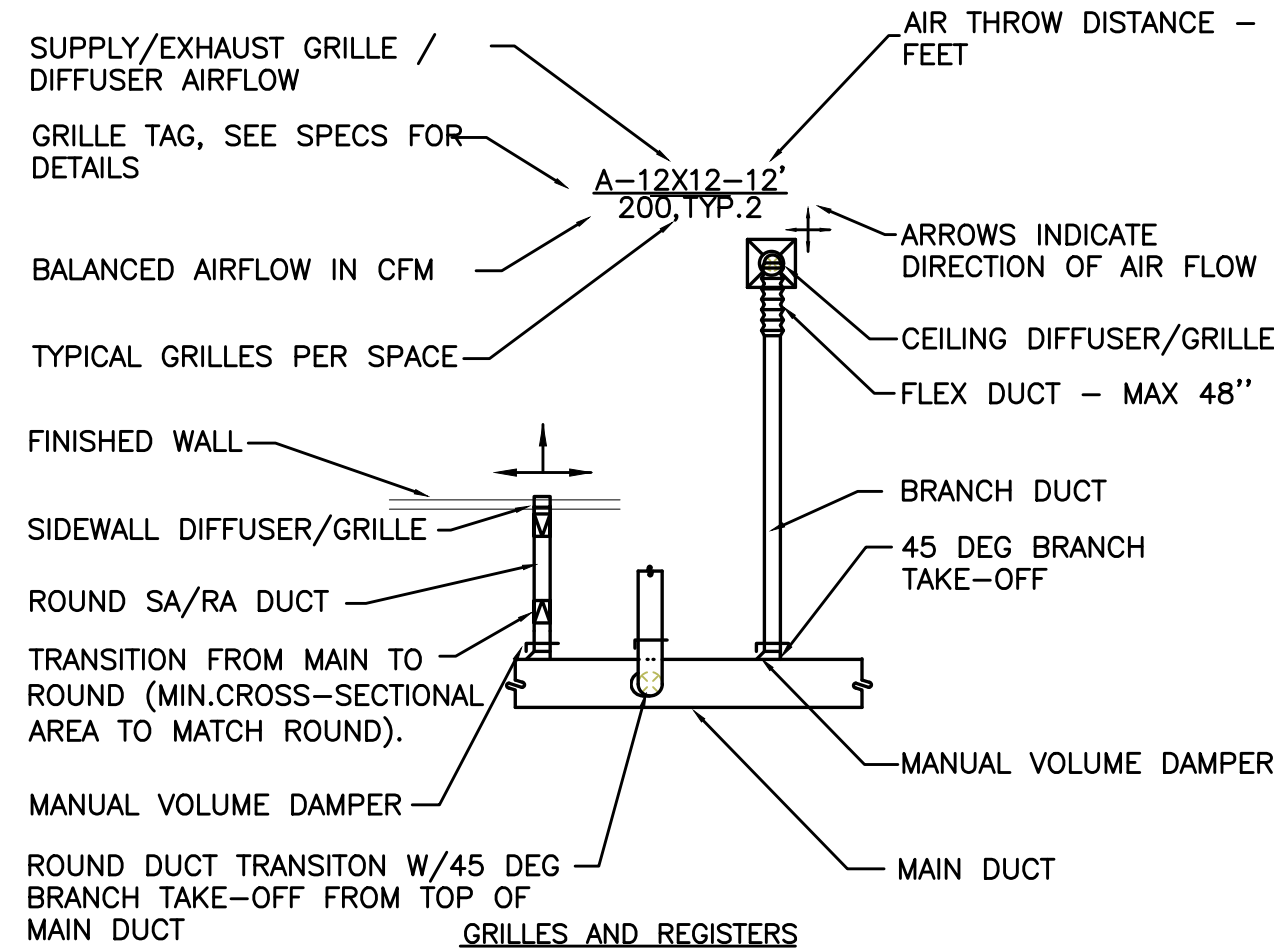
SHEET

ME101

MECHANICAL LEGEND

| | | | |
|--|---------------------------------------|--------|--|
| | SUPPLY AIR DIFFUSER | AFF | 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 OR OUTSIDE AIR DUCT UP & DOWN | CONN. | CONNECTION |
| | VAV TERMINAL UNIT W/ REHEAT COIL | CONT. | CONTINUATION |
| | DEMOLISH | CW | DOMESTIC COLD WATER |
| | EXISTING | 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/SHUT-OFF VALVE SEE SPECS | EWI | ENTERING WATER TEMPERATURE |
| | CHECK VALVE | FF | FINISH FLOOR |
| | BALANCING VALVE | FIXT. | FIXTURE |
| | FLOW CONTROL/LIMITING VALVE | F.O.B. | FLAT ON BOTTOM |
| | THERMOMETER | FPM | FEET PER MINUTE |
| | DIRECTION OF FLOW | FPS | FEET PER SECOND |
| | PUMP | FT. | FEET / FOOT |
| | STRAINER W/DRAIN VALVE | GA. | GAUGE |
| | PRESSURE GAUGE | GEXH | GREASE EXHAUST AIR DUCT |
| | PETE'S PLUG | GPM | GALLONS PER MINUTE |
| | DOUBLE CHECK ASSEMBLY | H | HEIGHT |
| | PRESSURE REDUCING VALVE | HP | HORSEPOWER |
| | UNION | I.D. | INSIDE DIAMETER |
| | 2-WAY CONTROL VALVE | IN. | INCHES |
| | 3-WAY CONTROL VALVE | L | LENGTH |
| | TRIPLE DUTY VALVE | LBS. | POUNDS |
| | CAP | LDB | LEAVING DRY BULB |
| | MOTORIZED DAMPER | LWB | LEAVING WET BULB |
| | BALL/SHUT-OFF VALVE (SEE SPECS) | LWT | LEAVING WATER TEMPERATURE |
| | FIRE DAMPER | MA | MAKE UP AIR |
| | FIRE / SMOKE DAMPER | MAX. | MAXIMUM |
| | SMOKE DAMPER | 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. | RETURN AIR |
| | | 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 |
| | | | (E) EXISTING |
| | | | (D) DEMOLISH |
| | | | NEW WORK |
| | | | (G) NATURAL GAS |
| | | | CD (CD) CONDENSATE DRAIN |
| | | | RF (RF) TWO OR THREE REFRIGERANT LINES |
| | | | HWS (HWS) HEATING WATER SUPPLY |
| | | | HWR (HWR) HEATING WATER RETURN |
| | | | EQUIPMENT MAINTENANCE CLEARANCE AND ACCESS |

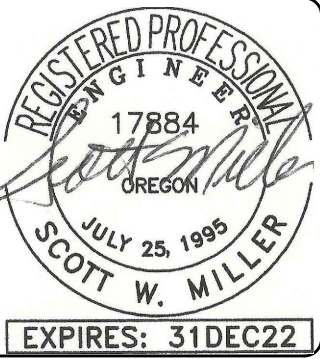
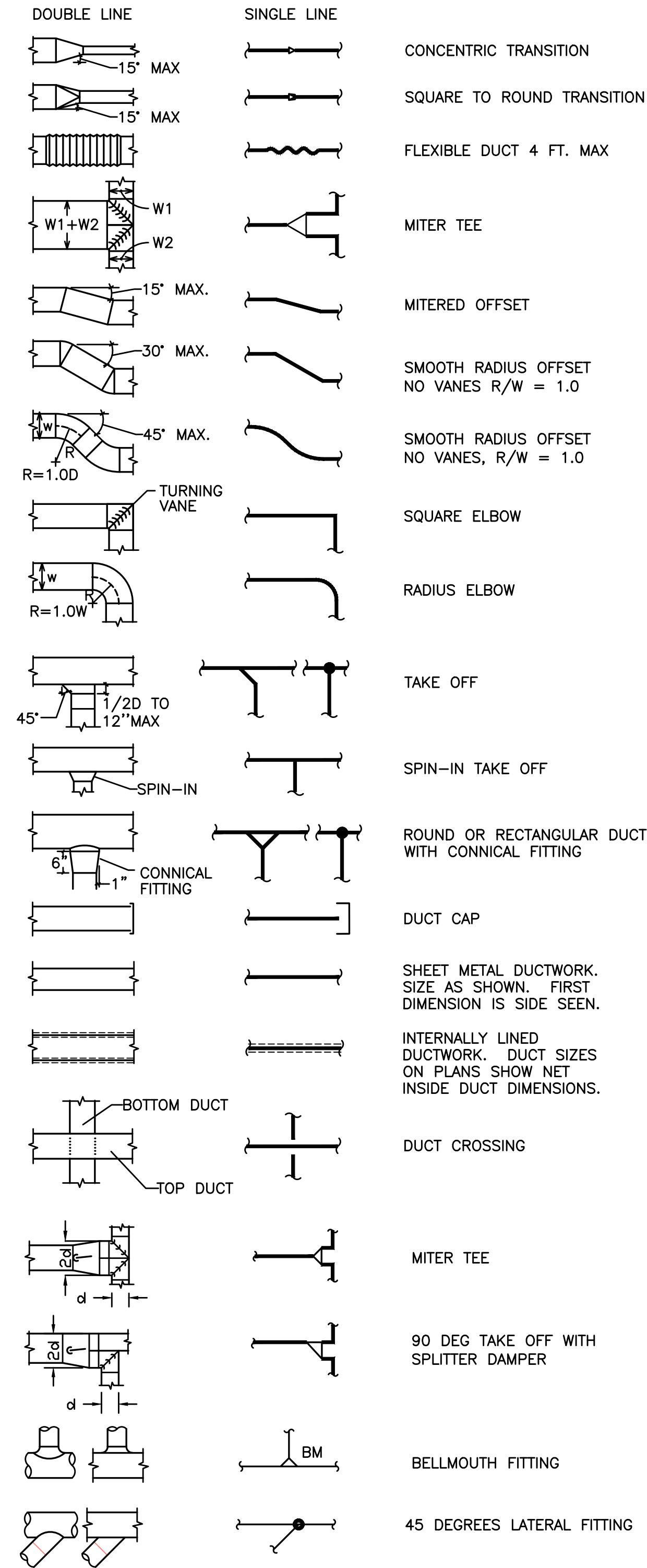
AIR DISTRIBUTION DETAILS



MECHANICAL GENERAL NOTES

- THE DRAWINGS ARE DIAGRAMMATIC. PROVIDE ALL MATERIAL (NEW AND UNDAMAGED) AND LABOR FOR A COMPLETE AND OPERABLE SYSTEM. VERIFY ALL BUILDING MEASUREMENTS DIMENSIONS AND EQUIPMENT LOCATIONS BEFORE PROCEEDING WITH ANY OF THE WORK.
- VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. REPORT DISCREPANCIES BACK TO THE ENGINEER.
- VERIFY INDICATED (E) DUCTWORK/PIPE SIZES PRIOR TO RECONNECTING NEW EQUIPMENT. EQUIPMENT SHALL NOT BE CONNECTED TO EXISTING DUCT/PIPE OF SMALLER DIAMETER THAN NEW DUCT/PIPE. REPORT DISCREPANCIES BACK TO ENGINEER.
- DO NOT FABRICATE EQUIPMENT SUPPORTS/BASES W/O CONFIRMING SPACE EXISTS AND THE BUILDING ATTACHMENT POINTS.
- REFER TO THE MECHANICAL SPECIFICATIONS FOR MATERIALS, EQUIPMENT, AND ADDITIONAL CONSTRUCTION INSTRUCTIONS NOT COVERED BY THESE PLANS.
- ALL INSTALLATIONS SHALL COMPLY WITH APPLICABLE FEDERAL AND STATE CODES INCLUDING, 2019 OREGON STRUCTURAL SPECIALTY CODE (OSSC) INCLUDING APPENDIX N FOR OREGON FIRE CODE REGULATIONS, 2021 OREGON PLUMBING SPECIALTY CODE (OPSC), 2019 OREGON MECHANICAL SPECIALTY CODE (OMSC), 2019 OREGON ENERGY EFFICIENCY SPECIALTY CODE (OEESC), AND NATIONAL FIRE PROTECTION ASSOCIATION (NFPA). WHERE TWO CODES DIFFER THE MORE STRICT OF THE TWO SHALL BE FOLLOWED.
- OBTAIN ALL NECESSARY PERMITS AND INSPECTIONS REQUIRED BY THE GOVERNING AUTHORITIES HAVING JURISDICTION. SUBMIT ALL CERTIFICATES PRIOR TO ACCEPTANCE.
- COORDINATE ALL MECHANICAL, ELECTRICAL AND CONTROL WORK WITH ALL TRADES AND CONTROL CONTRACTOR.
- COORDINATE OTHER TRADES FOR PATCH/REPAIR OF WALLS WHERE EXISTING SENSORS ARE REMOVED OR MODIFIED.
- PATCH & REPAIR WALLS / FLOORS / CEILING WHERE OLD DUCTWORK/PIPES HAVE BEEN REMOVED TO MATCH EXISTING FINISHES.
- COORDINATE WITH OTHER CRAFTS AS REQUIRED TO COMPLETE WORK IN ACCORDANCE WITH CONSTRUCTION SCHEDULE.
- PROVIDE OWNER INSTRUCTION BY QUALIFIED PERSONNEL ON EQUIPMENT AND SYSTEMS AT OWNER'S REQUEST.
- ALL DUCTWORK SHALL BE GALVANIZED STEEL, UNLESS OTHERWISE INDICATED, CONFORMING TO LATEST SMACNA, ASHRAE, OMSC, NFPA, AND UL STANDARDS.
- MANUFACTURERS AND MODEL NUMBERS LISTED IN THE EQUIPMENT SCHEDULES ARE THE BASIS OF DESIGN.
- CUT WALLS FOR PROPER EQUIPMENT, DUCT OR PIPE INSTALLATION. FILL HOLES WHICH ARE CUT OVERSIZED FOR A TIGHT FIT AROUND OBJECTS PASSING THROUGH.
- PROVIDE UL LISTED FIRESTOP SYSTEM TO MAINTAIN THE CODE REQUIRED F AND T RATING OF THE CONSTRUCTION ASSEMBLY AT A DUCT/PIPE PENETRATION THROUGH A RATED BUILDING CONSTRUCTION.
- INSTALL LABELS ON ALL MECHANICAL EQUIPMENT. SEE SPECIFICATIONS FOR CRITERIA.
- CONTROLS AND WIRING SHALL MEET ALL ELECTRICAL REQUIREMENTS OF APPLICABLE ELECTRICAL SPECIFICATIONS AND REQUIREMENTS OF OWNER, BUILDING OFFICIALS AND EQUIPMENT SUPPLIERS OF EQUIPMENT INSTALLED ON PROJECT.
- ELECTRIC MOTORS SHALL HAVE BUILT-IN THERMAL OVERLOAD PROTECTION OR BE PROTECTED EXTERNALLY WITH SEPARATE THERMAL OVERLOAD DEVICES, WITH LOW-VOLTAGE RELEASE OR LOCK OUT AS REQUIRED.
- ALL NEW EQUIPMENT, PIPING, CONDUIT, AND DUCTWORK SHALL BE INSTALLED PER CURRENT SEISMIC CODE REQUIREMENTS.
- PROVIDE LOW LEAK AUTOMATIC DAMPERS ON OUTSIDE AIR, EXHAUST AIR AND RELIEF AIR CONTROL DAMPERS WHERE THESE ARE INDICATED.

AIR DISTRIBUTION DETAILS



Date: 07/28/2021
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Acad File:

BEAVERTON SCHOOL DISTRICT
McKINLEY ES HVAC UPGRADE
1500 NW 185TH AVENUE
BEAVERTON OREGON

PERMIT/BID SET
OCTOBER 2021



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SHEET

MO01

| NEW UNIT VENTILATOR SCHEDULE | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------|--------|------------|-----|--------|--------------|-------|-------|------|-------|------|---------|---|-----------|-------------|---------------|-------|----|--------------|--------|-------|--------------|----------------|-----------|---------------------------------|--------------------|-------------------------------|--------------|
| DESIGN SYMBOL | INSTALLATION | OA MIN | SUPPLY FAN | | | DX COOLING | | | | | | AMB DEG | HEAT PUMP W/ ELECTRIC SUPPLEMENTAL COIL | | | | | | CABINET SIZE | | | BOOK-SHELVES | (E)LOUVER SIZE | | POWER VOLT/PHASE/HZ -MCA[11] | UNIT WEIGHT LBS | REMARKS SEE LISTED NOTES & | DESIGN BASIS |
| | | | SA | ESP | HP ECM | CAPACITY MBH | | EAT F | | LAT F | | | SA | MBH REQ'D | ELECT. COIL | ENT AIR MIXED | LAT F | - | LENGTH | HEIGHT | DEPTH | | LENGTH | HEIGHT | | | | |
| | | | CFM | CFM | IN WG | 3-SPEED | TOTAL | SENS | DB | WB | DB | | WB | F | CFM | MBH | KW | DB | DB | | IN | | IN | [7] IN | | | | |
| UV-126 | VERTICAL | 135 | 750 | 0.1 | 1/3 | 18.5 | 18.5 | 78.4 | 62.1 | 58.9 | 57.5 | 92.8 | 525 | 18.4 | 6.0 | 58 | 90 | | 62 | 30.13 | 21.88 | NO | 54 | 15 | 208/3/60-24.6 | 370 | 1,2,3,4,5,6,7,9,11 | DAIKIN UAV |
| UV-130A | VERTICAL | 210 | 1500 | 0.1 | 1/4 | 36.3 | 36.3 | 77.4 | 61.3 | 55.6 | 55.5 | 92.8 | 750 | 34.2 | 12.0 | 57 | 98 | | 98 | 30.13 | 21.88 | NO | 54 | 15 | 208/3/60-50.8 | 600 | 1,2,3,4,5,6,7,10,11 | DAIKIN UAV |
| UV-130B | VERTICAL | 210 | 1500 | 0.1 | 1/4 | 36.3 | 36.3 | 77.4 | 61.3 | 55.6 | 55.5 | 92.8 | 750 | 34.2 | 12.0 | 57 | 98 | | 98 | 30.13 | 21.88 | NO | 54 | 15 | 208/3/60-50.8 | 600 | 1,2,3,4,5,6,7,10,11 | DAIKIN UAV |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NOTES: | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 PROVIDE WITH SUB-BASE, END PANELS AND ADAPTER BACK. | | | | | | | | | | | | | 9 REPLACED EXISTING UNIT DIMENSIONS: ~60 IN LONG X 15.5 IN DEEP X 28 IN HIGH | | | | | | | | | | | | | | | |
| 2 SITE VERIFY ALL DIMENSIONS. | | | | | | | | | | | | | 10 REPLACED EXISTING UNIT DIMENSIONS: ~70 IN LONG X 21 IN DEEP X 28 IN HIGH | | | | | | | | | | | | | | | |
| 3 COIL CONNECTION SIDE TO BE SITE VERIFIED PRIOR TO SUBMITTAL. | | | | | | | | | | | | | 11 FIELD VERIFY POWER CONNECTIONS AND COORDINATE WITH ELECTRICAL PRIOR TO PURCHASING EQUIPMENT. | | | | | | | | | | | | | | | |
| 4 PROVIDE NEW LOUVER. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 SEE ME10 FOR DISCONNECT SWITCH. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 CONTROL FROM DDC SYSTEM. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 ELECTRIC BACKUP COIL. PROVIDE HEAT PUMP OPERATION FOR 1ST STAGE OF HEATING. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 PROVIDE TXV KIT TO MATCH OUTDOOR HEAT PUMP UNIT PER MANUFACTURER'S REQUIREMENTS. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| AIR DEVICE SCHEDULE - TERMINAL UNIT | | | | | | | | | | | |
|---|--------|----------------|----------------|----------|-------------------------|-------------------|----------------|-----------------|----------------|---------|-----------------|
| TAG | SYSTEM | AIRSIDE DATA | | | | | | MAX NOISE @1"PD | | REMARKS | BASIS OF DESIGN |
| | | MAX FLOW (CFM) | MIN FLOW (CFM) | VENT CFM | AIR PD STD BOX (IN. WG) | MIN INLET SP.(IN) | MIN INLET SIZE | SOUND RAD (NC) | SOUND AIR (NC) | | |
| TU-2-01 | AC-2 | 1,260 | 950 | 470 | 0.05 | 0.50 | 12 | 35 | 35 | 1,2 | TITUS DESV |
| TU-2-02 | AC-2 | 1,260 | 950 | 470 | 0.05 | 0.50 | 12 | 35 | 35 | 1,2 | TITUS DESV |
| TU-2-03 | AC-2 | 1,260 | 950 | 480 | 0.05 | 0.50 | 12 | 35 | 35 | 1,2 | TITUS DESV |
| TU-3-01 | AC-3 | 1,260 | 950 | 470 | 0.05 | 0.50 | 12 | 35 | 35 | 1,2 | TITUS DESV |
| TU-3-02 | AC-3 | 1,260 | 950 | 470 | 0.05 | 0.50 | 12 | 35 | 35 | 1,2 | TITUS DESV |
| TU-3-03 | AC-3 | 1,260 | 950 | 470 | 0.05 | 0.50 | 12 | 35 | 35 | 1,2 | TITUS DESV |
| TU-4-01 | AC-4 | 1,260 | 950 | 470 | 0.05 | 0.50 | 12 | 35 | 35 | 1,2 | TITUS DESV |
| TU-4-02 | AC-4 | 1,260 | 950 | 470 | 0.05 | 0.50 | 12 | 35 | 35 | 1,2 | TITUS DESV |
| TU-4-03 | AC-4 | 1,260 | 950 | 480 | 0.05 | 0.50 | 12 | 35 | 35 | 1,2 | TITUS DESV |
| TU-5-01 | AC-5 | 280 | 210 | 40 | 0.05 | 0.50 | 6 | 35 | 35 | 1,2 | TITUS DESV |
| TU-5-02 | AC-5 | 1,260 | 950 | 470 | 0.05 | 0.50 | 12 | 35 | 35 | 1,2 | TITUS DESV |
| TU-5-03 | AC-5 | 1,260 | 950 | 470 | 0.05 | 0.50 | 12 | 35 | 35 | 1,2 | TITUS DESV |
| TU-5-04 | AC-5 | 1,260 | 950 | 470 | 0.05 | 0.50 | 12 | 35 | 35 | 1,2 | TITUS DESV |
| TU-5-05 | AC-5 | 180 | 140 | 30 | 0.05 | 0.50 | 5 | 35 | 35 | 1,2 | TITUS DESV |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| NOTES: | | | | | | | | | | | |
| 1 AIR BALANCE TO THE INDICATED AIRFLOW. | | | | | | | | | | | |
| 2 PROVIDE NEW VAV CONTROLLER. | | | | | | | | | | | |

| EXHAUST FANS SCHEDULE | | | | | | | | | | | | | | | | | | | |
|--|-------------|---------|------------|------------|---------------|------------|-------|-----|------|---------------|---------------------|--------------------|----------|----------------|----------------|------------------------|-------------------------------------|------------------|-------------------------------------|
| DESIGN DESIGN SYMBOL | FAN TYPE | SERVES | MIN CFM | MAX CFM | ESP INCHES | FAN RPM | MOTOR | | | | | | MOUNTING | INLET SONES | DAMPER TYPE | OPER. WEIGHT LBS | INTER- LOCK / CONTROL WITH | REMARKS NOTES | DESIGN BASIS MODEL# GREENHECK |
| | | | | | | | BHP | HP | RPM | DRIVE TYPE | SPEED CONTROLLER | VOLTS/PHASE /HZ | | | | | | | |
| EF-5-06 | INLINE | AV ROOM | 100 | 100 | 0.20 | 1725 | .02 | 1/6 | 1725 | VG | YES | 115/1/60 | HANGING | 4.4 | BACKDRAFT | 30 | TSTAT | 1,2,3,4 | SQ-60 |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| NOTES: | | | | | | | | | | | | | | | | | | | |
| 1 PROVIDE FLEX CONNECTORS AT FAN DUCT CONNECTION(S). 2 PROVIDE DIAL ON MOTOR FOR BALANCING. 3 DISCONNECT SWITCH BY ELECTRICAL. 4 PROVIDE HANGING ISOLATORS. | | | | | | | | | | | | | | | | | | | |
| UPDATED: 10/6/2021 15:05 | | | | | | | | | | | | | | | | | | | |

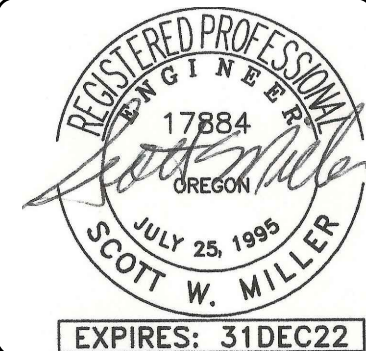


| OUTSIDE AIR MECHANICAL CODE ANALYSIS | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|-----------------|---------|--------------------------|-----------------------|-------------------------------|-------------------|--------------------------------|-----------------|---------------------------------|-------------|----------------------------|------------------------------|--------------------------|--------------------------------|--------------------------------|-------------------------------|--------------------------------------|--------------------------------------|-------------------------------------|---------------------------|--|---|-------------------------------------|---|---|------------------------------|------------------------------|
| UNIT | ROOM | REMARKS | MECH CODE CLASSIFICATION | SPACE AREA (FT²) - Az | OCCUPANCY MAXPEOPLE / 1000FT² | PLUMBING FIXTURES | OA CFM / PERSON (FIXTURE) - Rp | OA CFM/FT² - Ra | EA REQUIRED CFM / FIXTURE OR SF | CODE PEOPLE | DESIGN PEOPLE (FIXTURE) Pz | OCCUPANT OSA CFM VBzp =Rp*Pz | AREA OSA CFM Vbza =Ra*Az | MECH CODE REQUIRED EXHAUST CFM | PROVIDED 100% EX-HAUST CFM (2) | REQUIRED OA CFM Vbz =Sum(Vbz) | MECH CODE REQ'D OA CFM Voz =(Vbz)/Ez | MAXIMUM PROVIDED ROOM SUPPLY AIR CFM | MINIMUM PROVIDED SUPPLY AIR CFM Vpz | ZONE EFFECT. FACTOR Ez(3) | MAXIMUM OUTDOOR AIR FRACTION Zp =Voz/Vpz | SYSTEM VENTILATION EFFICIENCY AT MAX Zp - Ev (4)100%DIRECT OA=1 | OCCUPANT DIVERSITY - D =Ps/(sum Pz) | UNCORRECTED OA INTAKE - Vou = DxSum(Rp x Pz)+Sum(Ra x Az) | MIN CODE OUTDOOR AIR CFM - Vot = Vou / Ev | OUTDOOR AIR INTAKE CFM - Vot | PROVIDED MINIMUM OSA CFM (1) |
| TU-2-01 | 133 - CLASSROOM | | CLASSROOM-8 | 911 | 25 | | 10 | 0.12 | 0 | 17 | 17 | 170 | 109 | 0 | 0 | 279 | 349 | 1260 | 950 | 0.8 | 37% | | | | - | 470 | |
| TU-2-02 | 134 - CLASSROOM | | CLASSROOM-8 | 914 | 25 | | 10 | 0.12 | 0 | 17 | 17 | 170 | 110 | 0 | 0 | 280 | 350 | 1260 | 950 | 0.8 | 37% | | | | - | 470 | |
| TU-2-03 | 135 - CLASSROOM | | CLASSROOM-8 | 914 | 25 | | 10 | 0.12 | 0 | 17 | 17 | 170 | 110 | 0 | 0 | 280 | 350 | 1260 | 950 | 0.8 | 37% | | | | - | 480 | |
| AC-2 | TOTALS | | | 2739 | | | | | | 51 | 51 | 510 | 329 | 0 | 0 | 839 | 1049 | 3780 | 2835 | 0.8 | 37% | 0.75 | 0.9 | 985 | 1313 | 1313 | 1,350 |
| TU-3-01 | 120 - CLASSROOM | | CLASSROOM-8 | 913 | 25 | | 10 | 0.12 | 0 | 17 | 17 | 170 | 109.6 | 0 | 0 | 279.6 | 350 | 1260 | 950 | 0.8 | 37% | | | | - | 467 | |
| TU-3-02 | 121 - CLASSROOM | | CLASSROOM-8 | 913 | 25 | | 10 | 0.12 | 0 | 17 | 17 | 170 | 109.6 | 0 | 0 | 279.6 | 350 | 1260 | 950 | 0.8 | 37% | | | | - | 467 | |
| TU-3-03 | 122 - CLASSROOM | | CLASSROOM-8 | 914 | 25 | | 10 | 0.12 | 0 | 17 | 17 | 170 | 110 | 0 | 0 | 280 | 350 | 1260 | 950 | 0.8 | 37% | | | | - | 467 | |
| AC-3 | TOTALS | | | 2740 | | | | | | 51 | 51 | 510 | 329.2 | 0 | 0 | 839.2 | 1050 | 3780 | 2835 | 0.8 | 37% | 0.75 | 0.9 | 985 | 1313 | 1313 | 1,350 |
| TU-4-01 | 103 - CLASSROOM | | CLASSROOM-8 | 913 | 25 | | 10 | 0.12 | 0 | 17 | 17 | 170 | 109.6 | 0 | 0 | 279.6 | 350 | 1260 | 950 | 0.8 | 37% | | | | - | 467 | |
| TU-4-02 | 104 - CLASSROOM | | CLASSROOM-8 | 913 | 25 | | 10 | 0.12 | 0 | 17 | 17 | 170 | 109.6 | 0 | 0 | 279.6 | 350 | 1260 | 950 | 0.8 | 37% | | | | - | 467 | |
| TU-4-03 | 105 - CLASSROOM | | CLASSROOM-8 | 921 | 25 | | 10 | 0.12 | 0 | 17 | 17 | 170 | 120 | 0 | 0 | 290 | 363 | 1260 | 980 | 0.8 | 37% | | | | - | 484 | |
| AC-4 | TOTALS | | | 2747 | | | | | | 51 | 51 | 510 | 339.2 | 0 | 0 | 849.2 | 1063 | 3780 | 2835 | 0.8 | 37% | 0.75 | 0.9 | 998 | 1331 | 1331 | 1350 |
| TU-5-01 | 125 - OFFICE | | OFFICE | 271 | 5 | | 5 | 0.06 | 0 | 1 | 1 | 5 | 16.3 | 0 | 0 | 21.3 | 27 | 280 | 210 | 0.8 | 13% | | | | - | 36 | |
| TU-5-02 | 101 - CLASSROOM | | CLASSROOM-8 | 913 | 25 | | 10 | 0.12 | 0 | 17 | 17 | 170 | 109.6 | 0 | 0 | 279.6 | 350 | 1260 | 950 | 0.8 | 37% | | | | - | 467 | |
| TU-5-03 | 102 - CLASSROOM | | CLASSROOM-8 | 913 | 25 | | 10 | 0.12 | 0 | 17 | 17 | 170 | 110 | 0 | 0 | 280 | 350 | 1280 | 950 | 0.8 | 37% | | | | - | 467 | |
| TU-5-04 | 123 - CLASSROOM | | CLASSROOM-8 | 914 | 25 | | 10 | 0.12 | 0 | 17 | 17 | 170 | 110 | 0 | 0 | 280 | 350 | 1260 | 950 | 0.8 | 37% | | | | - | 467 | |
| | 126 - RR | (2)(4) | TOILET | 147 | 20 | 4 | 0 | 0 | 50 | 0 | | 0 | 0 | 200 | 200 | 0 | 0 | 0 | 0 | 0.8 | | | | | - | | |
| | 128 - RR | (2)(4) | TOILET | 182 | 20 | 8 | 0 | 0 | 50 | 0 | | 0 | 0 | 400 | 400 | 0 | 0 | 0 | 0 | 0.8 | | | | | - | | |
| TU-5-05 | 191 - JAN | | UTILITY | 22 | - | | 0 | 0 | 0.25 | 0 | 0 | 0 | 0 | 10 | 50 | 0 | 0 | 0 | 0 | 0.8 | | | | | - | | |
| | 190 - STORAGE | | WAREHOUSE | 181 | 2 | | 10 | 0.06 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 20 | 25 | 180 | 140 | 0.8 | 18% | | | | - | 33 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | - | | |
| AC-5 | TOTALS | | | 3543 | | | | | | 52 | 64 | 515 | 365.9 | 610 | 650 | 880.9 | 1102 | 4240 | 3275 | 0.8 | 37% | 0.75 | 1 | 1101 | 1468 | 1468 | 1500 |
| | 127 - WORK | | CLASSROOM-8 | 457 | 25 | | 10 | 0.12 | 0 | 5 | 5 | 50 | 54.8 | 0 | 0 | 104.8 | 131 | 750 | 560 | 0.8 | 23% | | | | - | 175 | |
| UV-127 | TOTALS | | | 457 | | | | | | 5 | 5 | 50 | 54.8 | 0 | 0 | 104.8 | 131 | 750 | 562.5 | 0.8 | 23% | 0.9 | 0.8 | 119 | 132 | 132 | 135 |
| | 130 - LIBRARY | | LIBRARY | 2001 | 10 | | 5 | 0.12 | 0 | 20 | 20 | 100 | 240.1 | 0 | 0 | 340.1 | 425 | 3000 | 1500 | 0.8 | 28% | | | | - | | |
| UV-130 | TOTALS | | | 2001 | | | | | | 20 | 20 | 100 | 240.1 | 0 | 0 | 340.1 | 425 | 3000 | 1500 | 0.8 | 28% | 0.85 | 1 | 340 | 400 | 400 | 420 |

NOTES:

- (1) OUTDOOR AIR SUPPLIED DIRECTLY THROUGH THE UNIT.
- (2) ADDITIONAL EXHAUST AIR WILL BE PROVIDE BY TRANSFER ROOM AIR NOT OSA.
- (3) CEILING SUPPLY OF COOL AIR

(4) SPACE MUST BE NEGATIVE TO THE SURROUNDING SPACES.

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BEAVERTON SCHOOL DISTRICT
McKINLEY ES HVAC UPGRADE
1500 NW 185TH AVENUE
BEAVERTON
OREGON

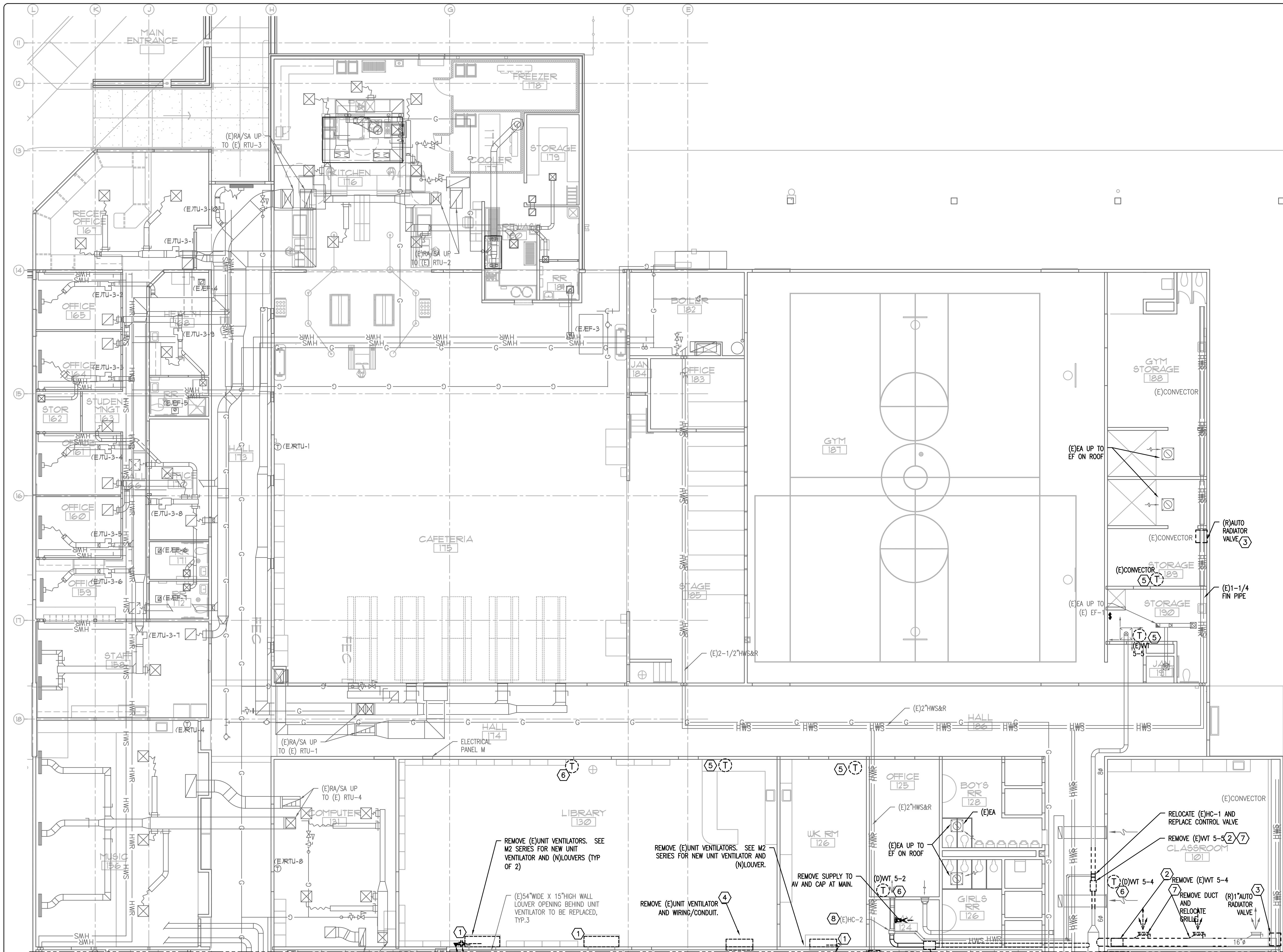
MECHANICAL SCHEDULES

PERMIT/BID SET
OCTOBER 2021

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Portland, OR 97214
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SHEET

M003

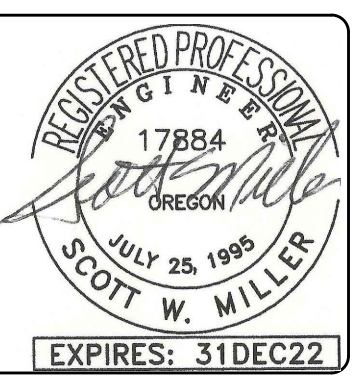


GENERAL DEMO NOTES

- A. OWNER SHALL TAG ANY DEVICES PRIOR TO CONSTRUCTION OR PROVIDE A LIST OF (E) DEVICES THEY WISH THE CONTRACTOR TO SALVAGE & RETURN IN WORKING ORDER TO THEM.

KEYED NOTES

1. REMOVE EXISTING UNIT VENTILATOR, PIPING AND CONTROL DEVICES. RE-USE EXISTING LOUVERS. FOR INSTALLATION OF NEW UNIT SEE M2 SERIES DRAWINGS.
2. (E) WT UNIT TO BE REPLACED. REMOVE PORTION OF DUCTWORK AS SHOWN. SEE M2 SERIES DRAWINGS FOR REPLACEMENT WORK AND DUCT ROUTING.
3. (E) CONVECTOR TO REMAIN. SERVICE AND CLEAN UNIT. REMOVE CONTROL VALVE, ISOLATION VALVE AND BALANCE VALVE. REMOVE (E) CONTROLS. SEE M2 SERIES DRAWINGS FOR REPLACEMENT.
4. REMOVE EXISTING UNIT VENTILATOR, PIPING WIRING AND CONTROL DEVICES. REMOVE LOUVERS, PROVIDE WALL FRAME AND PATCH AND FINISH WALL TO MATCH EXISTING.
5. EXISTING THERMOSTAT TO BE REPLACED WITH NEW DIGITAL DEVICE. REPAIR WALL AROUND NEW SENSOR. SEE NEW WORK FOR REPLACEMENT AND DETAILS.
6. EXISTING THERMOSTAT (NLL) TO BE REMOVED. PATCH WALL WITH COVER PLATE AS REQUIRED. SEE NEW WORK PLANS FOR REPLACEMENT AND/OR DETAILS.
7. REMOVE DUCTWORK AS SHOWN, SEE M2 SERIES FOR INSTALLATION OF NEW DUCTWORK.
8. EXISTING HEATING COILS TO BE REUSED. CLEAN COIL AND REMOVE (E) CONTROL VALVE AND CONTROL DEVICES. SEE NEW WORK PLANS FOR NEW WORK.



| | |
|------------|------------|
| Date: | 07/26/2021 |
| Proj No: | 10181 |
| Drawn By: | SM |
| Chkd By: | SM |
| DSGN By: | ME |
| Acad File: | |

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McKINLEY ES HVAC UPGRADE
1500 NW 185TH AVENUE
BEAVERTON OREGON

PARTIAL MECHANICAL FLOOR PLAN - DEMO

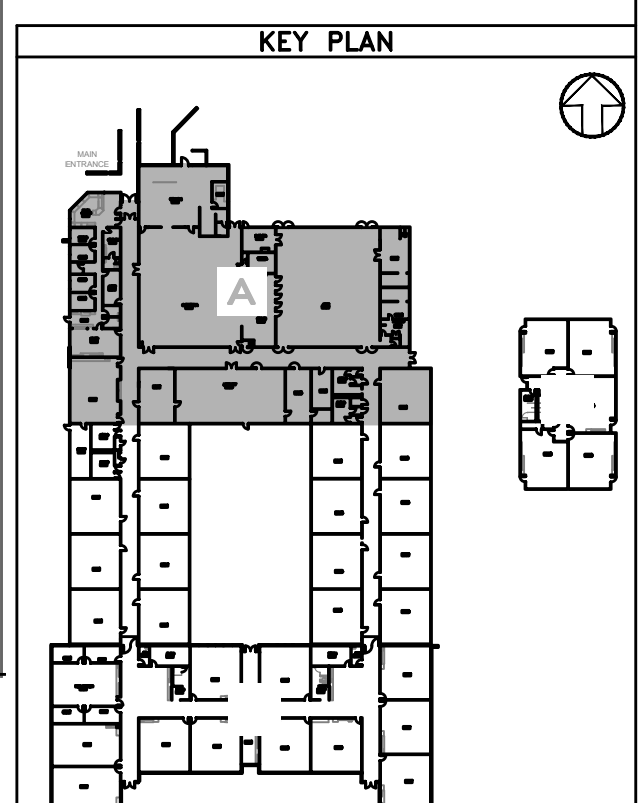
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OCTOBER 2021



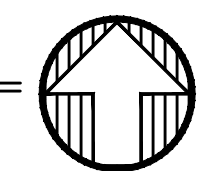
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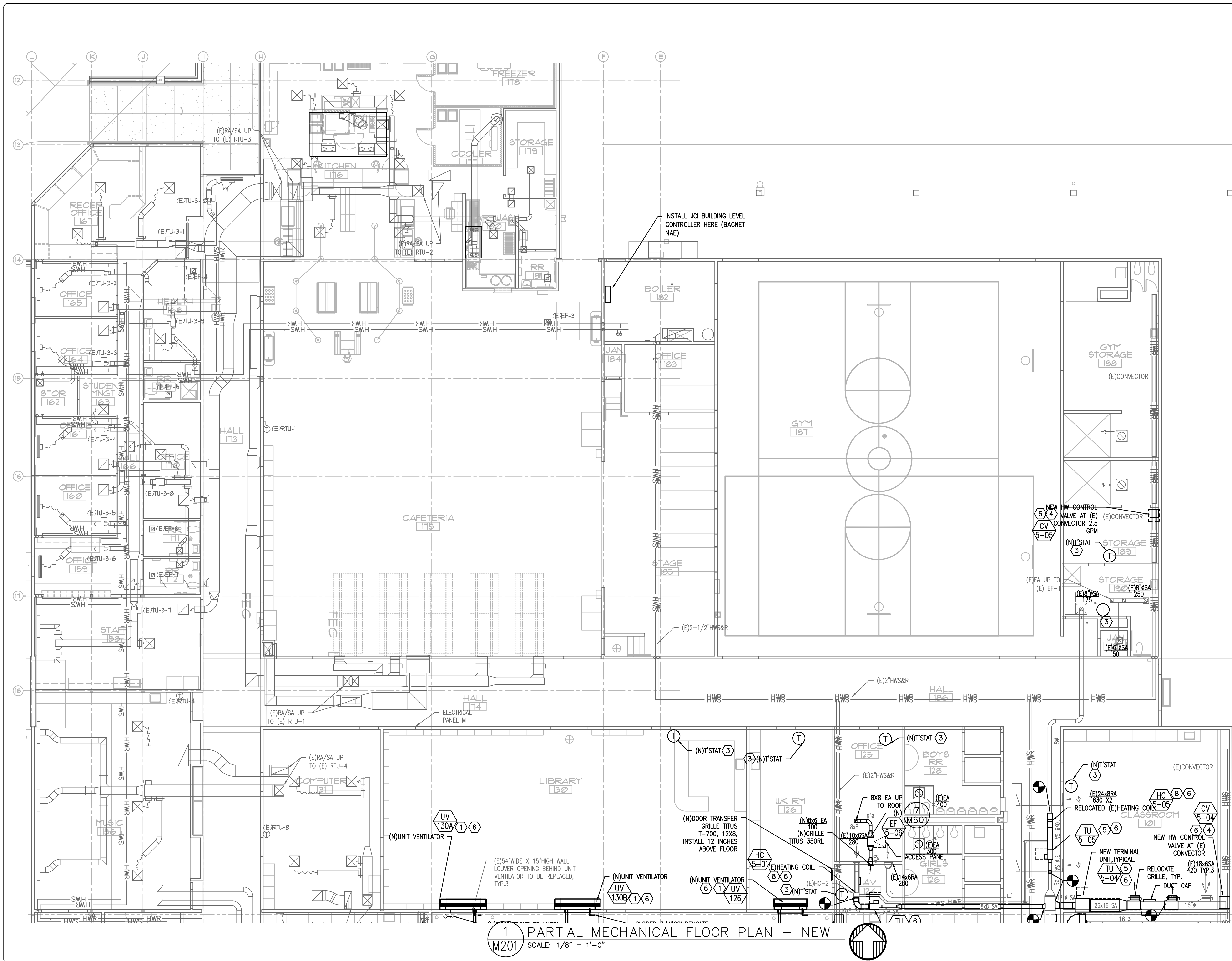
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M101



1 PARTIAL MECHANICAL FLOOR PLAN - DEMO
M101 SCALE: 1/8" = 1'-0"





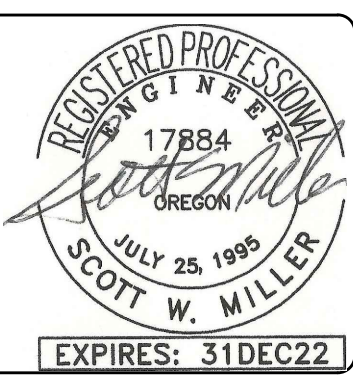
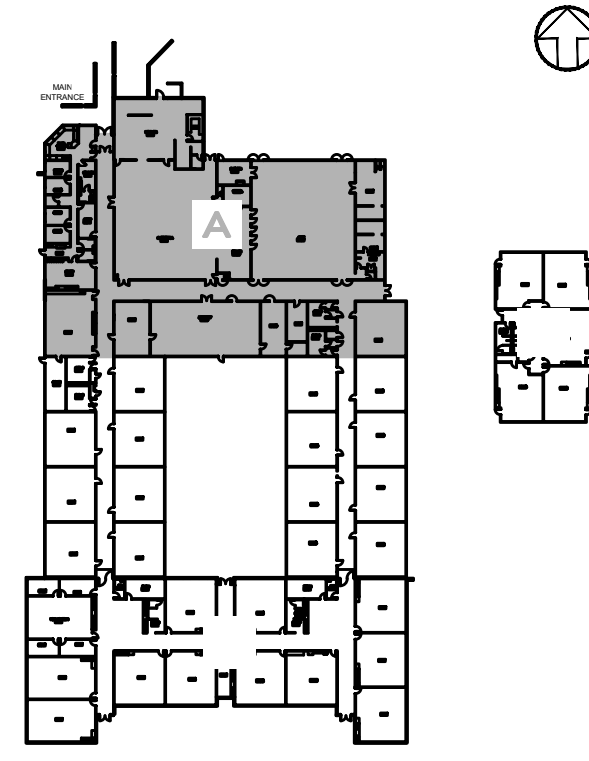
GENERAL NOTES

1. CONTRACTOR SHALL FIELD VERIFY ON SITE ALL CONDITIONS RELATED TO EQUIPMENT REPLACEMENT, NEW INSTALLATION LOCATIONS AND REFURBISH/REMODEL. NOTIFY ENGINEER FOR ANY MAJOR DISCREPANCIES AS FOUND.
2. FOR ALL MECHANICAL UNITS AND SYSTEMS SERVING THE REMODEL AREA, CLEAN AND REFURBISH PER SPECIFICATIONS.
3. CONTRACTOR TO COORDINATE ALL UNIT RE-TAGGING AND EQUIPMENT REPLACEMENTS WITH ELECTRICAL CONTRACTOR FOR REVISION AT EXISTING ELECTRICAL PANELS AND ASSOCIATED DESIGNATIONS.
4. AIR BALANCE SUPPLY, RETURN AND EXHAUST AIR GRILLES TO THE INDICATED AIRFLOW.
5. THE CONTRACTOR SHALL CONFIRM THE ORIGINAL CONTROL VALVES CV/FLOW RATE PRIOR TO SUBMITTALS.

KEYED NOTES

1. NEW UNIT VENTILATOR WITH DX COOLING COIL AND AUX. ELECTRIC HEATING COIL. FOR INSTALLATION SEE DETAIL 3/M601. PROVIDE CONDENSATE DRAIN. PROVIDE REFRIGERANT PIPING TO OUTDOOR HEAT PUMP. SEE DETAIL 3/M501 FOR CONTROL WORK.
2. NEW DIGITAL DEVICE ZONE SENSOR FOR CONTROLS INTEGRATION OF CONVECTOR/FINNED PIPE UNIT. LABEL WITH ASSOCIATED EQUIPMENT INFORMATION.
3. NEW DIGITAL DEVICE ZONE SENSOR TO REPLACE EXISTING SENSOR. LABEL WITH ASSOCIATED EQUIPMENT INFORMATION. PROVIDE A STAINLESS STEEL COVER PLATE OVER HOLE & SECURE WHERE NULL SENSOR IS NO LONGER USED OR WHERE OLD SENSOR IS LARGER THAN NEW SENSOR.
4. (E)CONVECTOR, SEE DETAIL 5/M601 FOR INSTALLATION OF NEW CONTROL VALVE, ISOLATION VALVES AND STRAINER SCREEN CLEANING. THE CONTRACTOR SHALL CONFIRM THE ORIGINAL CONTROL VALVE CV/FLOW RATE PRIOR TO SUBMITTALS. SEE DETAIL 4/M501 FOR CONTROL WORK.
5. NEW TERMINAL UNIT WITHOUT HEATING COIL. MAINTAIN NEC CLEARANCE ON THE UNIT'S POWER CONNECTION. SEE DETAIL 4/M601 FOR INSTALLATION REQUIREMENTS. SEE DETAIL 2/M502 FOR CONTROL WORK.
6. PROVIDE NEW EQUIPMENT TAG AS SHOWN. INTEGRATE EQUIPMENT TO BUILDING CONTROLS. SEE M501 AND M502 SERIES FOR ASSOCIATED CONTROL WORK.
7. NEW HEAT PUMP UNIT ON HOUSEKEEPING PAD. SEE DETAIL 7/M601 FOR INSTALLATION.
8. (E)DUCT HEATING COIL, SEE DETAIL 2/M601 FOR INSTALLATION OF NEW CONTROL VALVE, BALANCE VALVE, ISOLATION VALVES, AND STRAINER. SEE DETAIL 2/M501 FOR CONTROL WORK.
9. (E)FINNED PIPE RADIATOR, THE CONTRACTOR SHALL CONFIRM THE INSTALLED CONTROL VALVE PRIOR TO SUBMITTALS.

KEY PLAN



| | |
|-------------|------------|
| Date: | 07/26/2021 |
| Proj. No: | 10181 |
| Drawn By: | MG |
| Chkd By: | SW |
| DSGN By: | MG |
| Acad. File: | |

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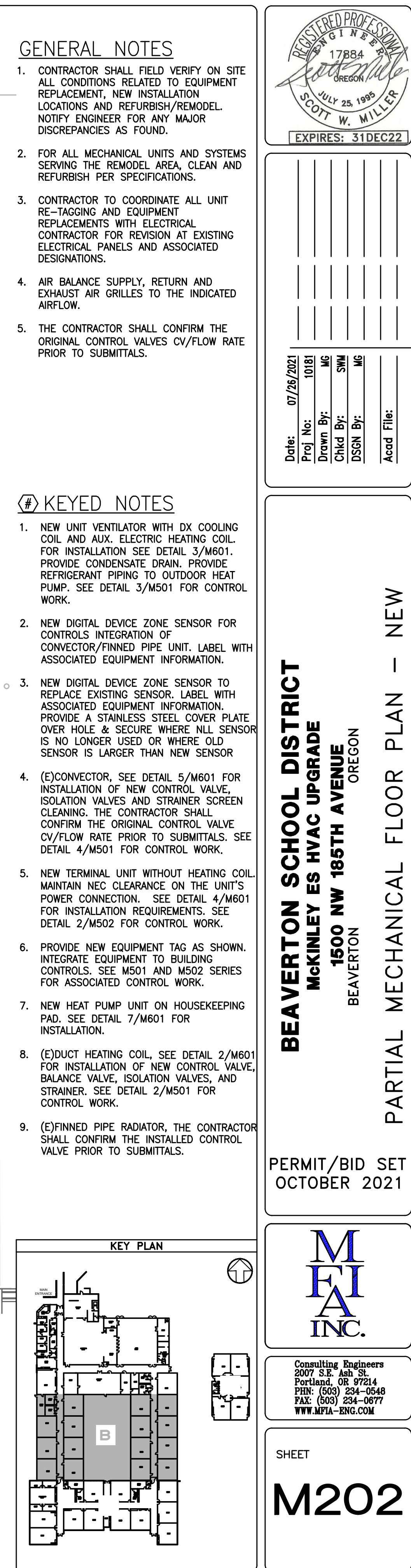
PARTIAL MECHANICAL FLOOR PLAN - NEW

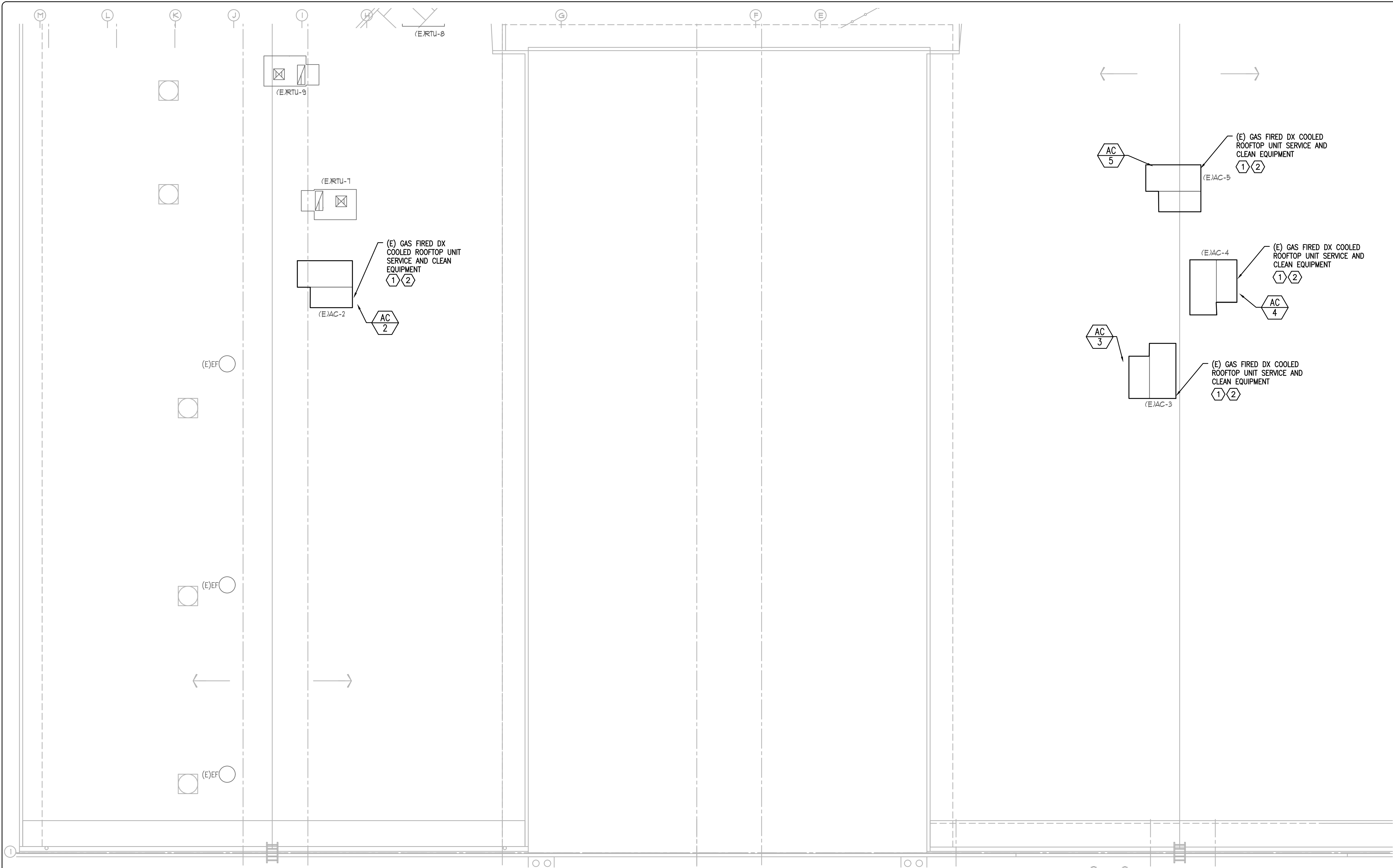
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OCTOBER 2021



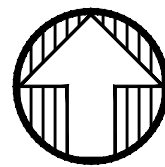
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SHEET
M201





1 PARTIAL MECHANICAL ROOF PLAN — NEW
M212 SCALE: 1/8" = 1'-0"

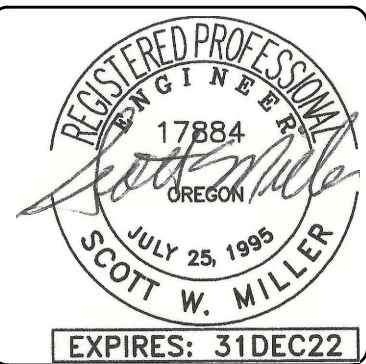
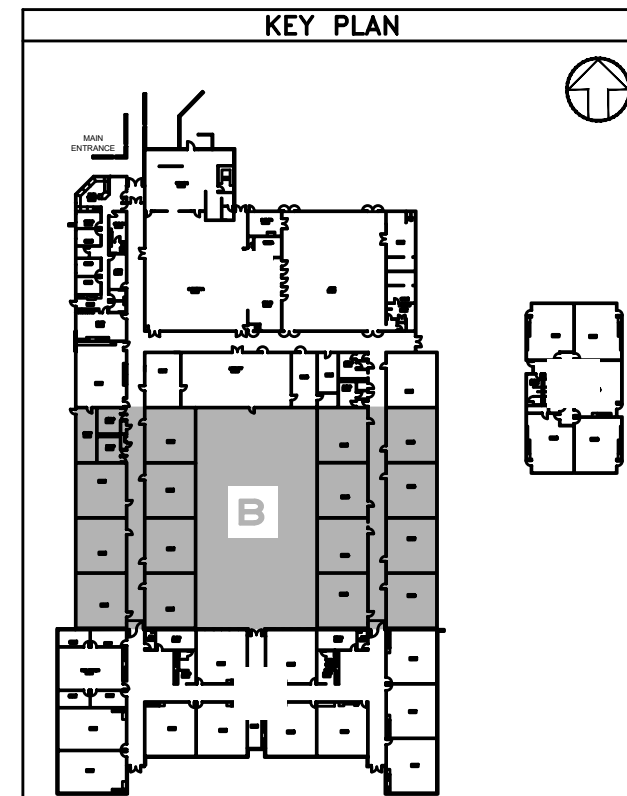


GENERAL NOTES

1. CONTRACTOR SHALL FIELD VERIFY ON SITE ALL CONDITIONS RELATED TO EQUIPMENT REPLACEMENT, NEW INSTALLATION LOCATIONS AND REFURBISH/REMODEL. NOTIFY ENGINEER FOR ANY MAJOR DISCREPANCIES AS FOUND.
2. FOR ALL MECHANICAL UNITS AND SYSTEMS SERVING THE REMODEL AREA. CLEAN AND REFURBISH PER SPECIFICATIONS. ALL RA DUCTWORK SHALL BE CLEANED.
3. CONTRACTOR TO PERFORM PRESSURE TESTING OF (E)HEATING& WATER SYSTEM LINES PRIOR TO PLACING INTO SERVICE SYSTEM PER SPECIFICATIONS.
4. CONTRACTOR TO COORDINATE ALL UNIT RE-TAGGING AND EQUIPMENT REPLACEMENTS WITH ELECTRICAL CONTRACTOR FOR REVISION AT EXISTING ELECTRICAL PANELS AND ASSOCIATED DESIGNATIONS.
5. SEE SPECS. FOR REQUIREMENTS RELATED TO DESIGN OF SEISMIC RESTRAINT AND SUPPORT OF PIPES.

KEYED NOTES

1. EXISTING ROOF-TOP UNIT TO REMAIN. SERVICE PER SPECS, SEE 237000. CLEAN FURNACE, COILS, FAN CABINETS AND FAN WHEELS. REPLACE, BELT AT BELT DRIVE UNITS. RE-BALANCE TO LISTED AIRFLOW. PROVIDE NEW CONTROLS.
2. PROVIDE NEW EQUIPMENT TAG AS SHOWN. SEE 1/M502 FOR ROOF-TOP UNIT CONTROL WORK AS APPLICABLE.
3. SERVICE AND CLEAN (E)FAN PER SPECIFICATIONS. REPLACE MOTOR, SHEAVE AND BELT ON BELT DRIVE UNITS. REPLACE BACKDRAFT DAMPER. REBALANCE TO THE INDICATED AIRFLOWS. FIELD VERIFY MOTOR SIZE AND POWER CONNECTION PRIOR TO SUBMITTAL.
4. PROVIDE NEW TAG AND ADD CONTROLS TO (E)EXHAUST FANS. SEE 1/M501 FOR CONTROL WORK.



| | |
|------------|------------|
| Date: | 07/26/2021 |
| Proj No: | 10181 |
| Drawn By: | ME |
| Chkd By: | SW |
| DSGN By: | ME |
| Acad File: | |

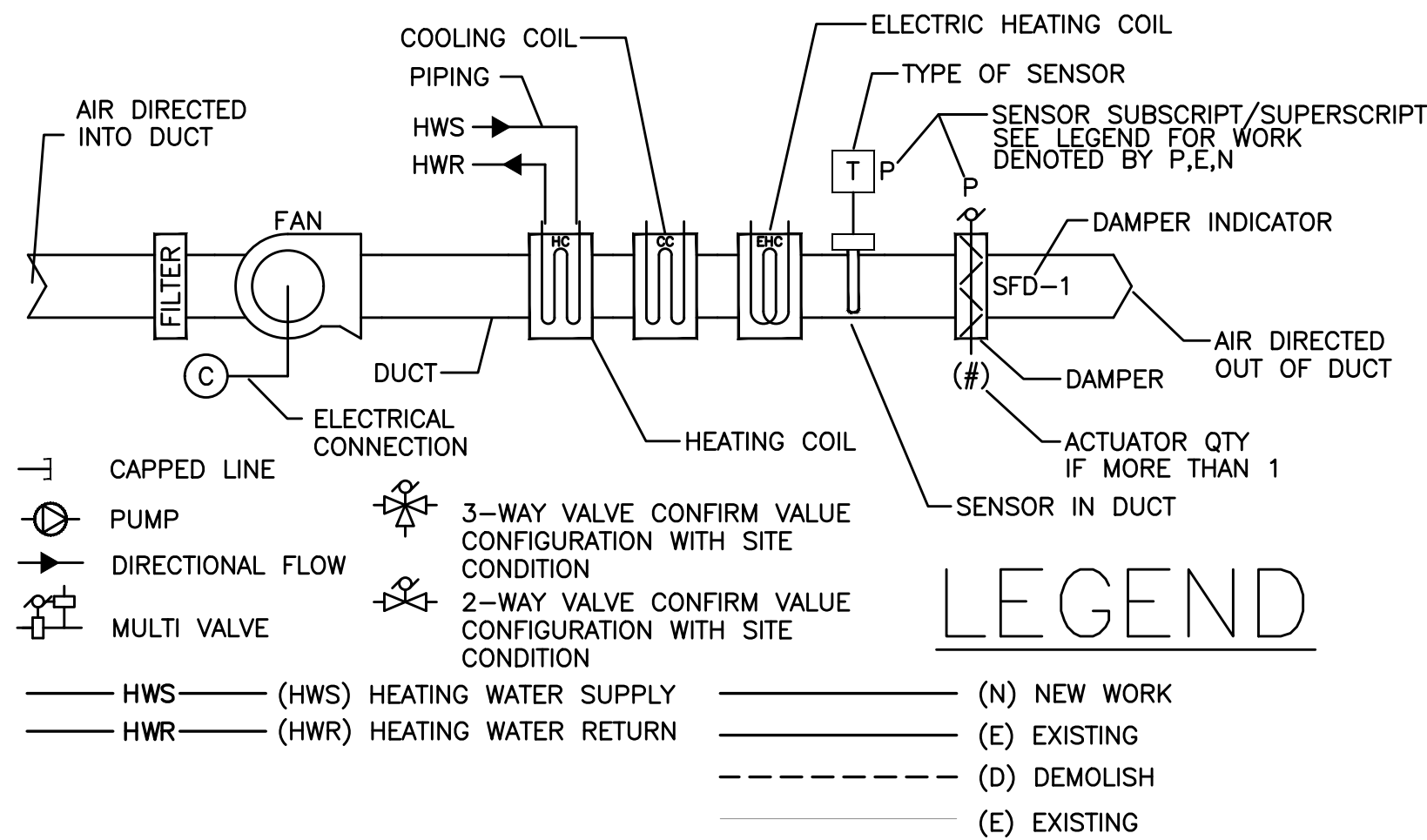
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PARTIAL MECHANICAL ROOF PLAN — NEW

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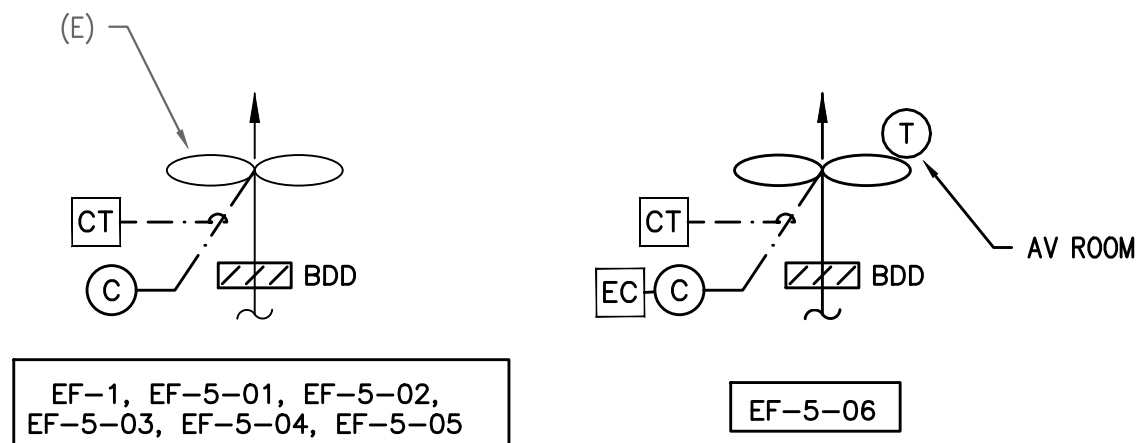


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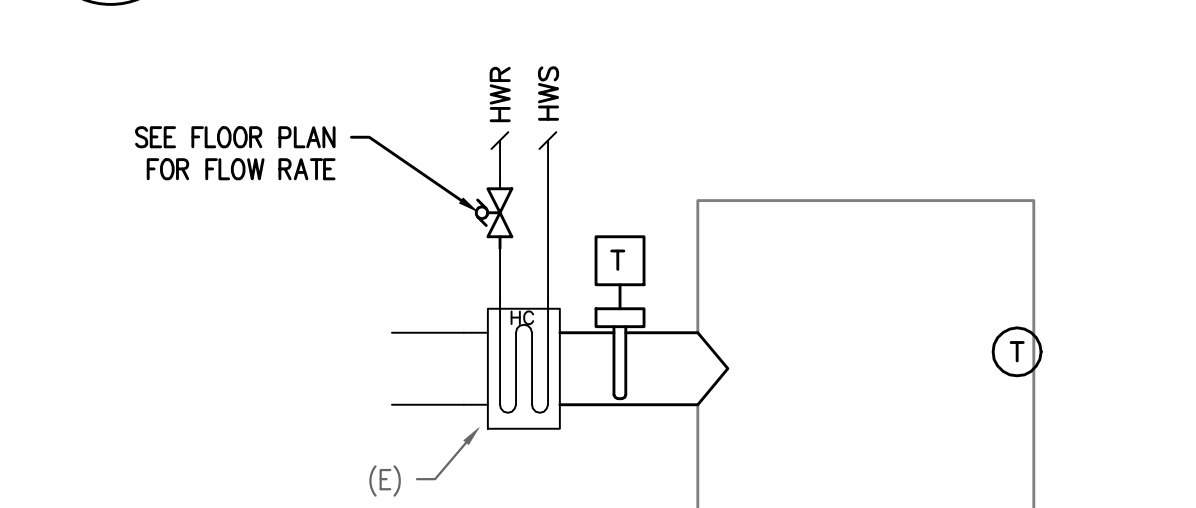


- EQUIPMENT ABBREVIATIONS :**
- | | | |
|---|----------------------------------|----------------------------|
| P - PUMP | SD - SMOKE DAMPER | HWS - HEATING WATER SUPPLY |
| SP - SUMP PUMP | SFD - FIRE SMOKE COMBO DAMPER | HWR - HEATING WATER RETURN |
| BP - BOOSTER PUMP | H - HUMIDIFIER | GPM - GALLONS PER MINUTE |
| HWP - HEATING WATER PUMP | V - VALVE | |
| CHP - CHILLED WATER PUMP | WH - WATER HEATER | |
| CWP - CONDENSING WATER PUMP | BAS - BUILDING AUTOMATION SYSTEM | |
| CSP - COOLING TOWER SUMP PUMP | CW - COLD WATER | |
| HWRP - DOMESTIC HOT WATER RECIRCULATION | MZU - MULTI ZONE UNIT | |
| VFD - VARIABLE FREQUENCY DRIVE | CEU - CABINET EXH. UNIT | |
| CT - CONTACTOR | HVU - HEATING VENTILATION UNIT | |
| CC - CONTROL COMPRESSOR | CFU - CEILING FAN UNIT | |
| CH - CHILLER | REU - ROOF EXH. UNIT | |
| B - BOILER | HC - HEATING COIL | |
| EF - EXHAUST FAN | ST - STEAM | |
| RF - RETURN/RELIEF FAN | CD - CONDENSATE RETURN | |
| AH - AIR HANDLER | HWS - HEATING WATER SUPPLY | |
| VAV - VARIABLE AIR VOLUME DAMPER BOX | HWR - HEATING WATER RETURN | |
| AD - AREA DAMPER | | |
- PIPNG ABBREVIATIONS:**
- AIR FLOW ABBREVIATIONS:**
- OSA - OUTSIDE AIR
RA - RETURN AIR
SA - SUPPLY AIR
EA - EXHAUSTED AIR



NOTES:
• SEE SCHEDULE FOR ASSOCIATED AIR HANDLER AND MEANS OF CONTROL.

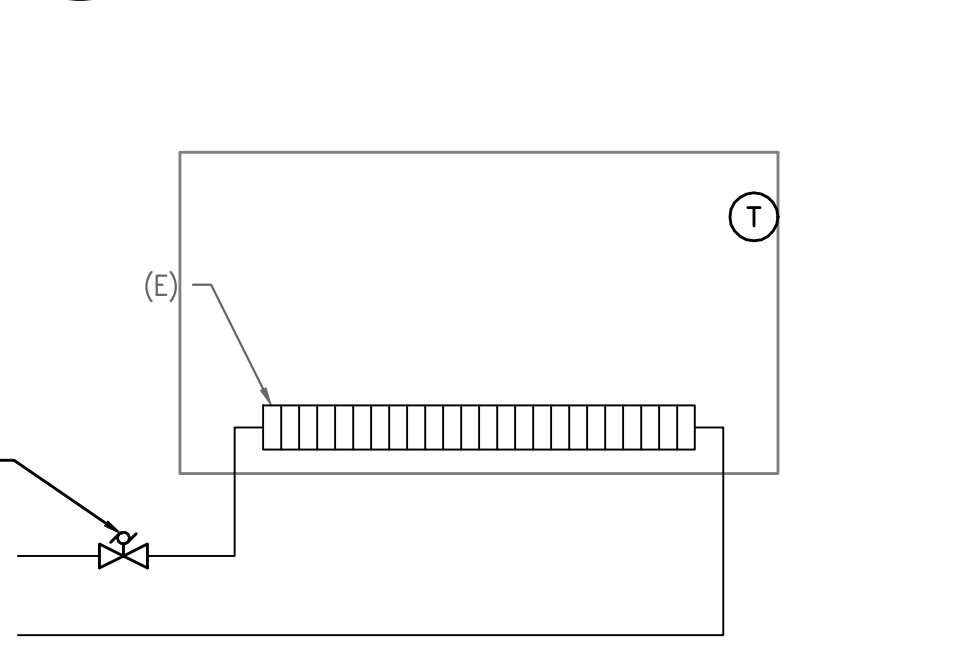
1 EXHAUST FAN CONTROL DIAGRAM



2 DUCT HEATING COIL



3 UNIT VENTILATOR DIAGRAM



4 FINNED PIPE DIAGRAM



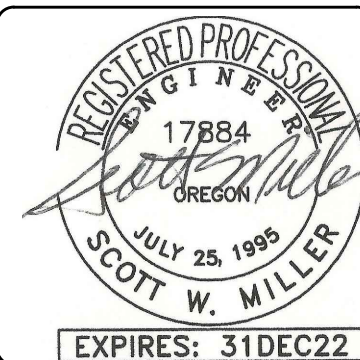
CONTROL SUBSCRIPTS AND SUPERSSCRIPTS:

- (R) - REMOVE (E) DEVICE TO BE REPLACED WITH DIGITAL CONTROL DEVICE.
(E) - ELECTRONIC CONTROL DEVICE MAYBE RE-USED AT CONTRACTOR'S OPTION. OR REPLACE WITH DIGIT CONTROL SYSTEM COMPATIBLE DEVICE, UNLESS NOTED OTHERWISE.
(N) - NEW, IF DEVICE HAS NO SUPER SCRIPT DEVICE IS NEW

PLUMBING ABBREVIATIONS:

- HWS - HEATING WATER SUPPLY
HWR - HEATING WATER RETURN
HW - DOMESTIC HOT WATER
CW - DOMESTIC COLD WATER
GPM - GALLONS PER MINUTE
DB - DOUBLE VALVE OPERATOR

| CONTROL INPUT/OUTPUT SCHEDULE | | | | | | |
|---|------------------|------------------|---------|--------|-----------------|---|
| POINT NAME | HARDWARE POINTS | | ALARM | TREND | SHOW ON GRAPHIC | |
| | INPUT TO CONTROL | OUTPUT TO SYSTEM | | | | |
| | DIGITAL | ANALOG | DIGITAL | ANALOG | | |
| GENERAL CONDITIONS-EXISTING POINTS | | | | | | |
| OUTSIDE AIR TEMP | | X | | | 15 MIN | X |
| FIRE ALARM PANEL | X | | | X | COV | X |
| EXHAUST FAN: GENERAL EXHAUST 1/M501 | | | | | | |
| FAN START/STOP | | X | | | COV | X |
| FAN STATUS PROOF | X | | X | | COV | X |
| ZONE TEMPERATURE (EF-5-06 ONLY) | | X | | | 15 MIN | X |
| DUCT HEATING COIL 2/M501 | | | | | | |
| ZONE TEMPERATURE | | X | | | 15 MIN | X |
| DISCHARGE AIR TEMP | | X | | | 15 MIN | X |
| HEATING VALVE | | | X | | 15 MIN | X |
| SUPPLY AIR HEATING SETPOINT | | | | | +/-1 DEG F | X |
| FINNED PIPE CONVECTOR/RADIATOR 4/M501 | | | | | | |
| ZONE TEMPERATURE | | X | | | 15 MIN | X |
| HEATING VALVE | | | X | | 15 MIN | X |
| UV/CU HEAT PUMP POINTS FROM UNIT PANEL, 3/M501 | | | | | | |
| SPACE TEMP | | X | | | 15 MIN | X |
| SPACE CO2 LEVEL | | X | | X | 15 MIN | X |
| DISCHARGE AIR TEMP | | X | | | 15 MIN | X |
| SUPPLY FAN STATUS | X | | | | COV | X |
| SUPPLY FAN START/STOP | | | X | | COV | X |
| LOW LIMIT AIR TEMP | X | | | X | 15 MIN | X |
| ELECTRIC COIL MODULATION | | | X | | 15 MIN | X |
| MIXED AIR TEMP | | X | | | 15 MIN | X |
| OA&RA DAMPER | | | X | | 15 MIN | X |
| CONDENSING UNIT | | | | | | |
| CONDENSING UNIT STATUS | X | | | X | COV | X |
| CONDENSING UNIT START/STOP | | | X | | COV | X |
| DEFINITIONS | | | | | | |
| AI ANALOG INPUT TO CONTROL | | | | | | |
| DI DIGITAL INPUT TO CONTROL | | | | | | |
| AO ANALOG OUTPUT TO SYSTEM | | | | | | |
| DO DIGITAL OUTPUT TO SYSTEM | | | | | | |
| AV ANALOG VALUE. | | | | | | |
| DVC DIGITAL VALUE. | | | | | | |
| COV CHANGE OF VALUE FOR DIGITAL POINTS. | | | | | | |
| DCV DIFFERENTIAL VALUE CHANGE FOR ANALOG POINTS. | | | | | | |



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| Date: | 07/28/2021 |
| Proj No: | 10181 |
| Drawn By: | ME |
| Chkd By: | SW |
| DSGN By: | ME |
| Acad File: | |

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BEAVERTON, OREGON
MECHANICAL CONTROLS

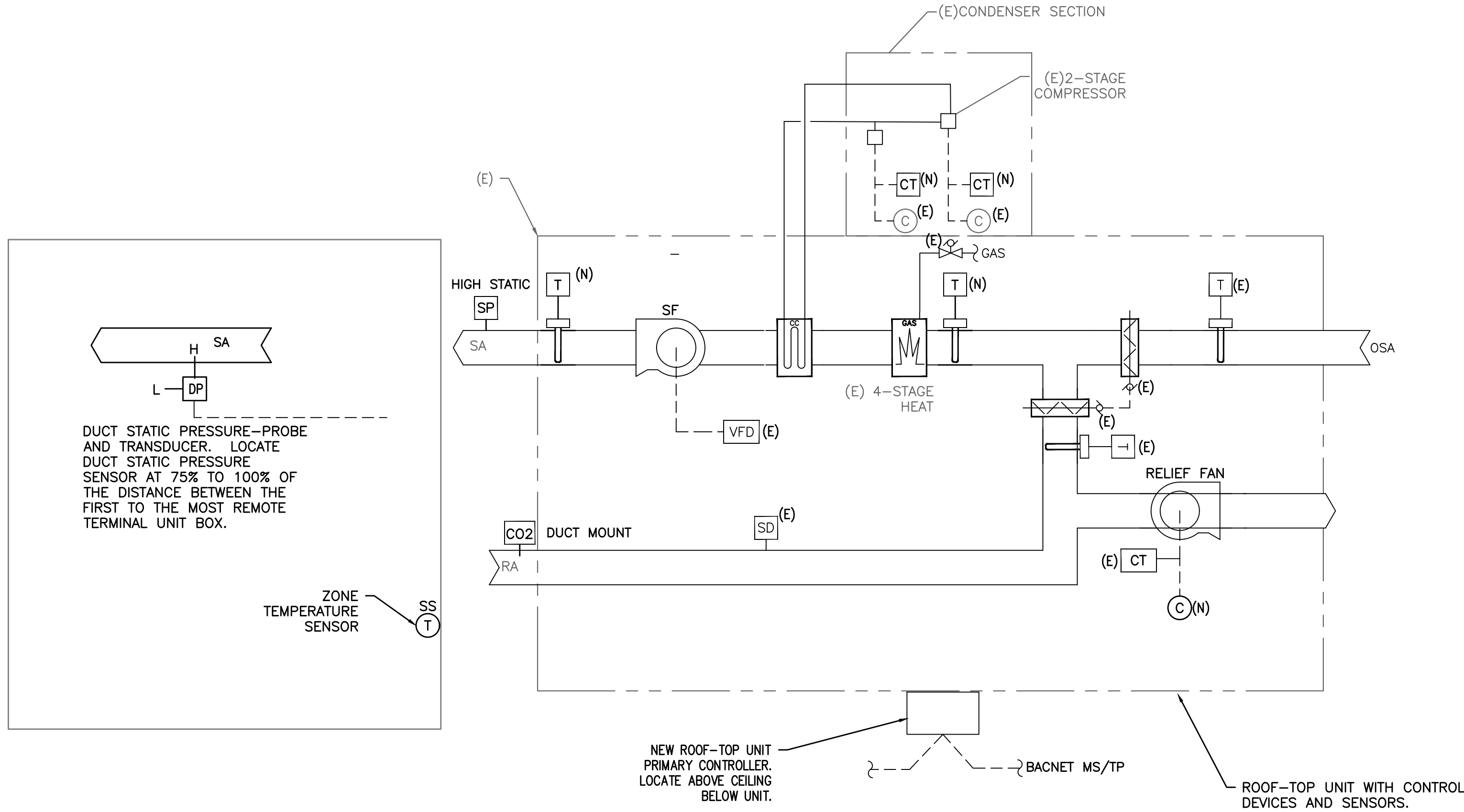
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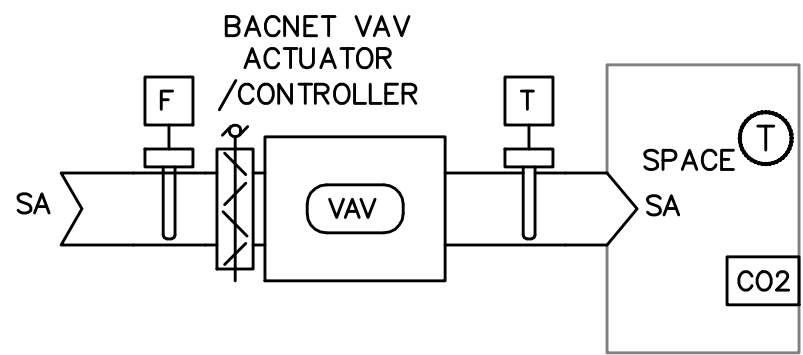
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M501

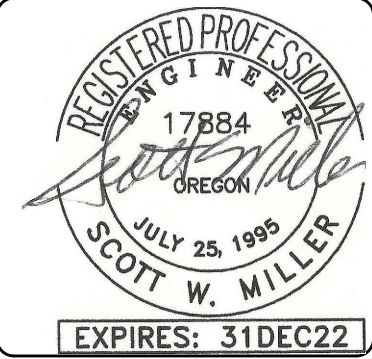


1 EXISTING ROOF TOP UNITS ACUs
M502 SCHEMATIC



2 VAV BOX
M502 SCHEMATIC

| CONTROL INPUT/OUTPUT SCHEDULE | | | | | | | |
|--|------------------|--------|------------------|--------|-------|--------|-----------------|
| POINT NAME | HARDWARE POINTS | | | | ALARM | TREND | SHOW ON GRAPHIC |
| | INPUT TO CONTROL | | OUTPUT TO SYSTEM | | | | |
| | DIGITAL | ANALOG | DIGITAL | ANALOG | | | |
| GENERAL POINT | | | | | | | |
| FIRE ALARM SMOKE RELAY | X | | | | X | COV | |
| ROOF TOP UNITS: TYP: ACU-2,-3,-4,-5; SEE 1/M502 | | | | | | | |
| OUTSIDE AIR TEMP | | X | | | | 15 MIN | X |
| RETURN AIR TEMP | | X | | | | 15 MIN | X |
| MIXED AIR TEMP | | | | | | 15 MIN | X |
| DISCHARGE AIR TEMP | | X | | | | 15 MIN | X |
| HEAT - 4 STAGES | | | X | | | 15 MIN | X |
| OA&RA DAMPER | | | | X | | 15 MIN | X |
| SUPPLY FAN STATUS | X | | | | | COV | X |
| SUPPLY FAN START/STOP | | | X | | | COV | X |
| SUPPLY FAN SPEED | | | | X | | DCV | X |
| RELIEF FAN STATUS | X | | | | | COV | X |
| RELIEF FAN START/STOP | | | X | | | COV | X |
| CONDENSING UNIT COMPRESSOR STATUS; TYP. 2 | X | | | | X | COV | X |
| CONDENSING UNIT COMPRESSOR START/STOP; TYP. 2 | | | X | | | COV | X |
| HIGH DUCT STATIC | X | | | | X | COV | X |
| SUPPLY DUCT DIFFERENTIAL PRESSURE | | X | | | X | DCV | X |
| SPACE TEMPERATURE | | X | | | | 15 MIN | X |
| | | | | | | | |
| VAV TERMINAL UNITS: TYP. 14, SEE 2/M502 | | | | | | | |
| ZONE TEMPERATURE | | X | | | | 15 MIN | X |
| TERMINAL UNIT AIRFLOW | | X | | | | DCV | X |
| DAMPER POSITION | | | | X | | 15 MIN | |
| SPACE CO2 LEVEL | | X | | | X | 15 MIN | |
| DISCHARGE AIR TEMP | | X | | | | 15 MIN | X |
| DEFINITIONS | | | | | | | |
| AI ANALOG INPUT TO CONTROL | | | | | | | |
| DI DIGITAL INPUT TO CONTROL | | | | | | | |
| AO ANALOG OUTPUT TO SYSTEM | | | | | | | |
| DO DIGITAL OUTPUT TO SYSTEM | | | | | | | |
| AV ANALOG VALUE. | | | | | | | |
| DVC DIGITAL VALUE. | | | | | | | |
| COV CHANGE OF VALUE FOR DIGITAL POINTS. | | | | | | | |
| DCV DIFFERENTIAL VALUE CHANGE FOR ANALOG POINTS. | | | | | | | |



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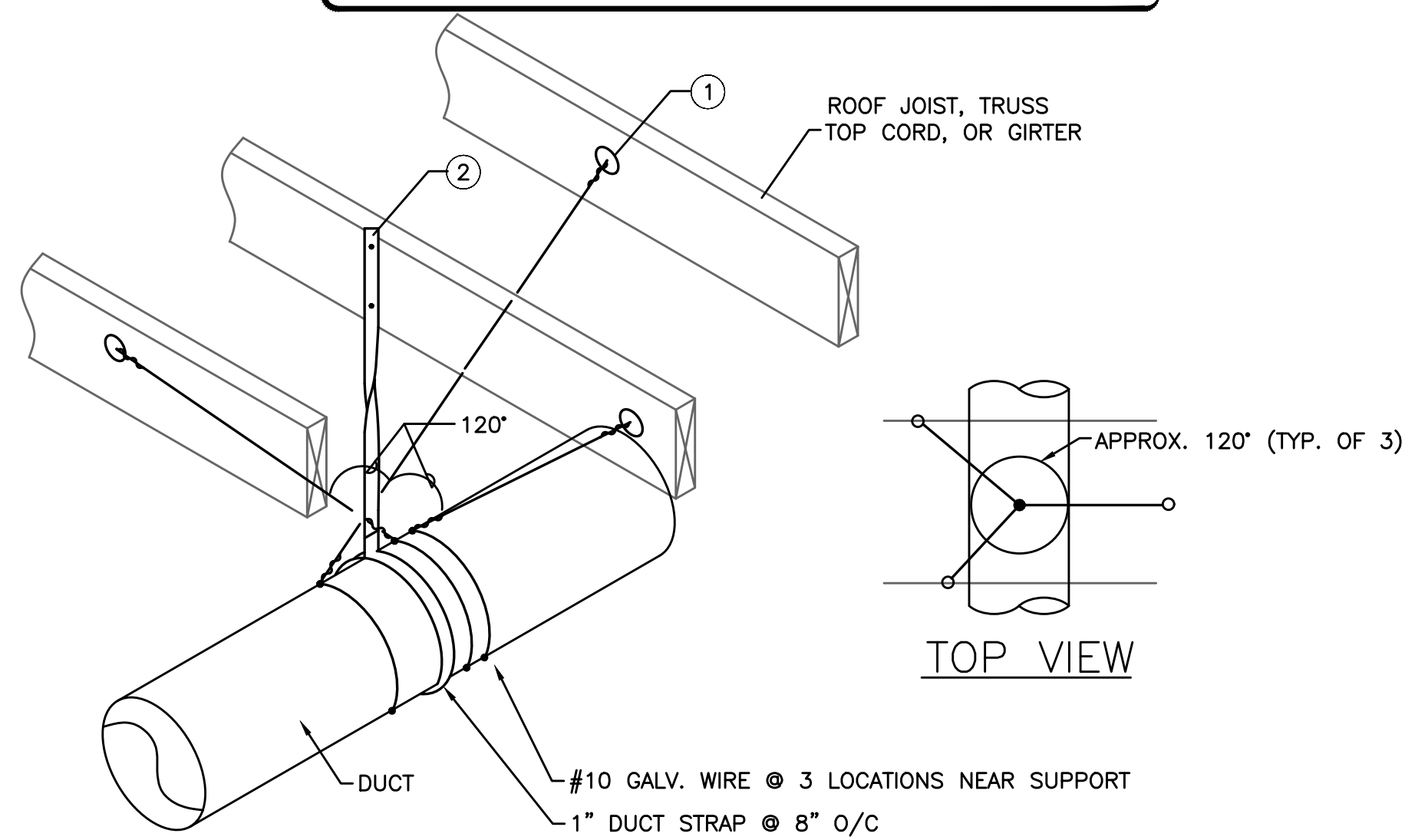
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DETAIL NOTES

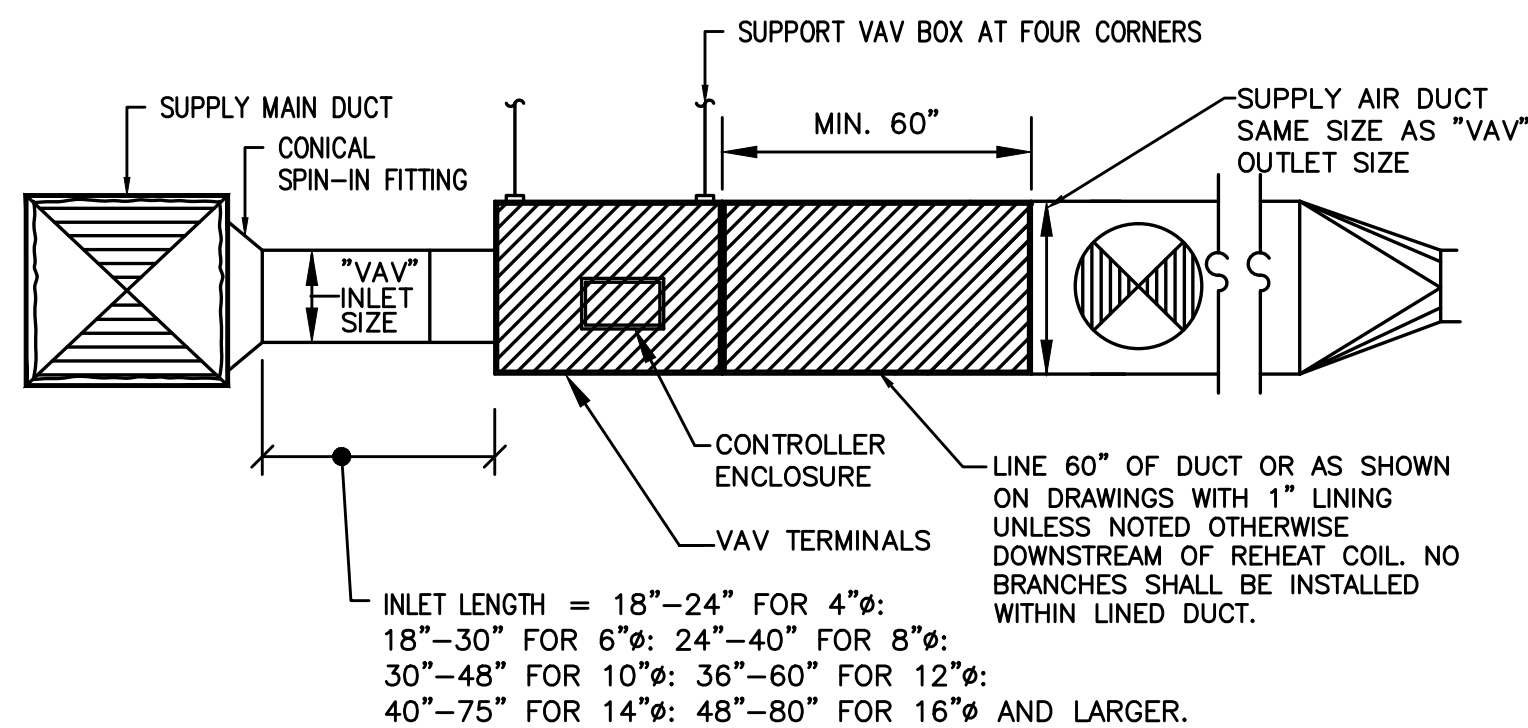
- 1/4" GALV. THREADED EYE BOLT @ CENTER OF WOOD MEMBER (TYP. OF 3). FOR Z-GIRT USE MACHINE THREAD EYE BOLT W/ JAMB NUT & 1/4" WASHER @ EACH SIDE OF GIRT. FOR METAL DECK USE 12 SHEETMETAL SCREWS & 16 GA. MIN STRUT ANGLE CLIP
- ATTACH TO TOP CORD. OF TRUSS ONLY OR WOOD JOIST W/ #12 X 1-5/8 DECK SCREW @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

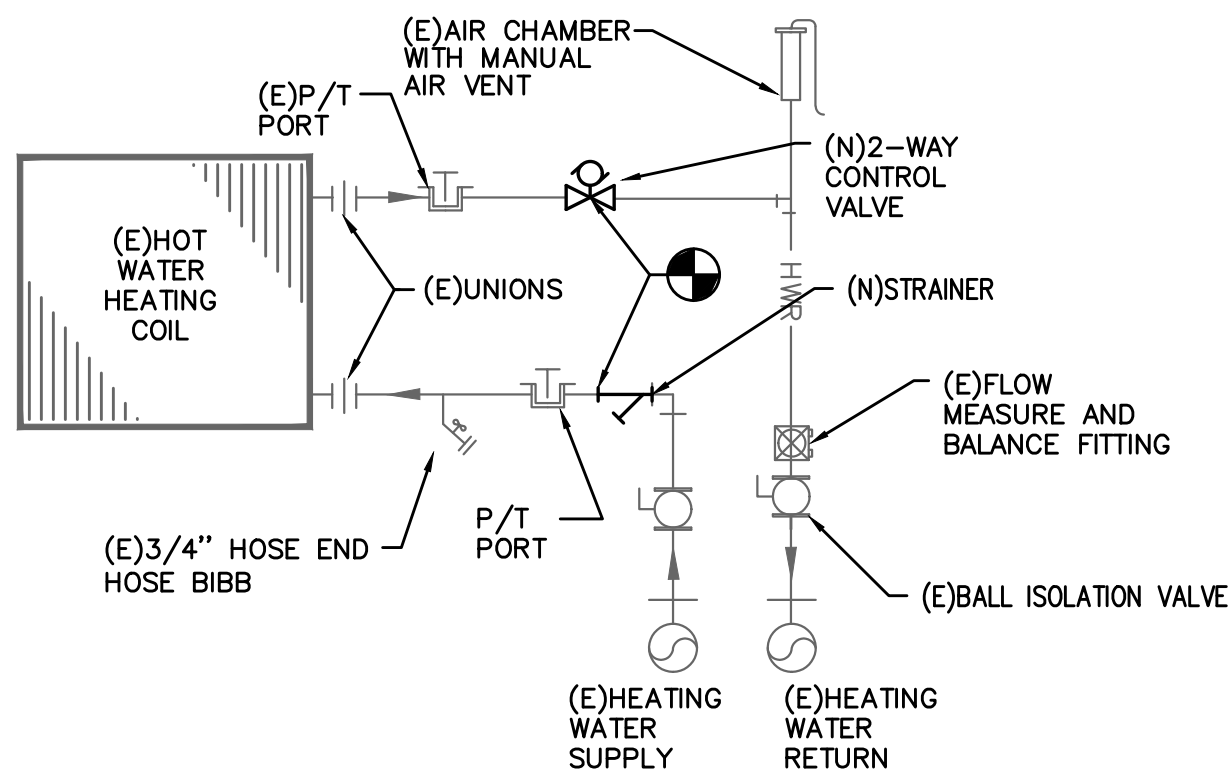
1 DUCT SUPPORT

M601 SCALE: DETAIL



4 TYPICAL VAV BOX DETAIL

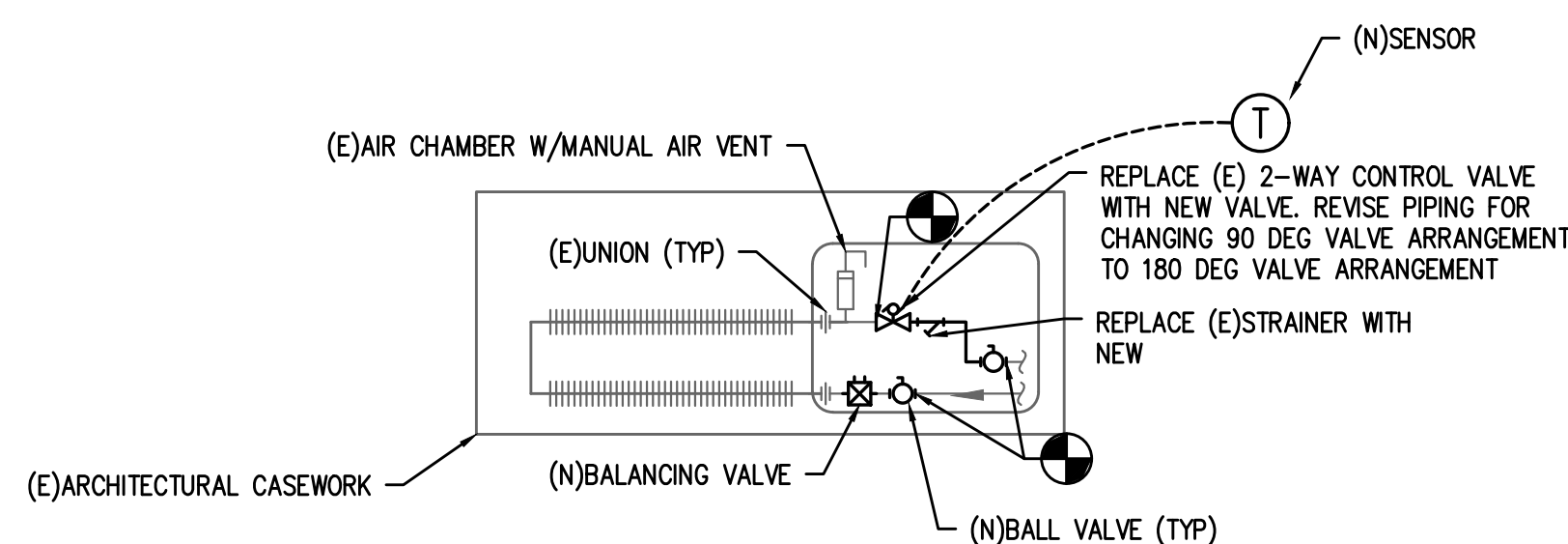
M601 SCALE: DETAIL



2-WAY VALVE

2 (E) DUCT HEATING WATER COIL

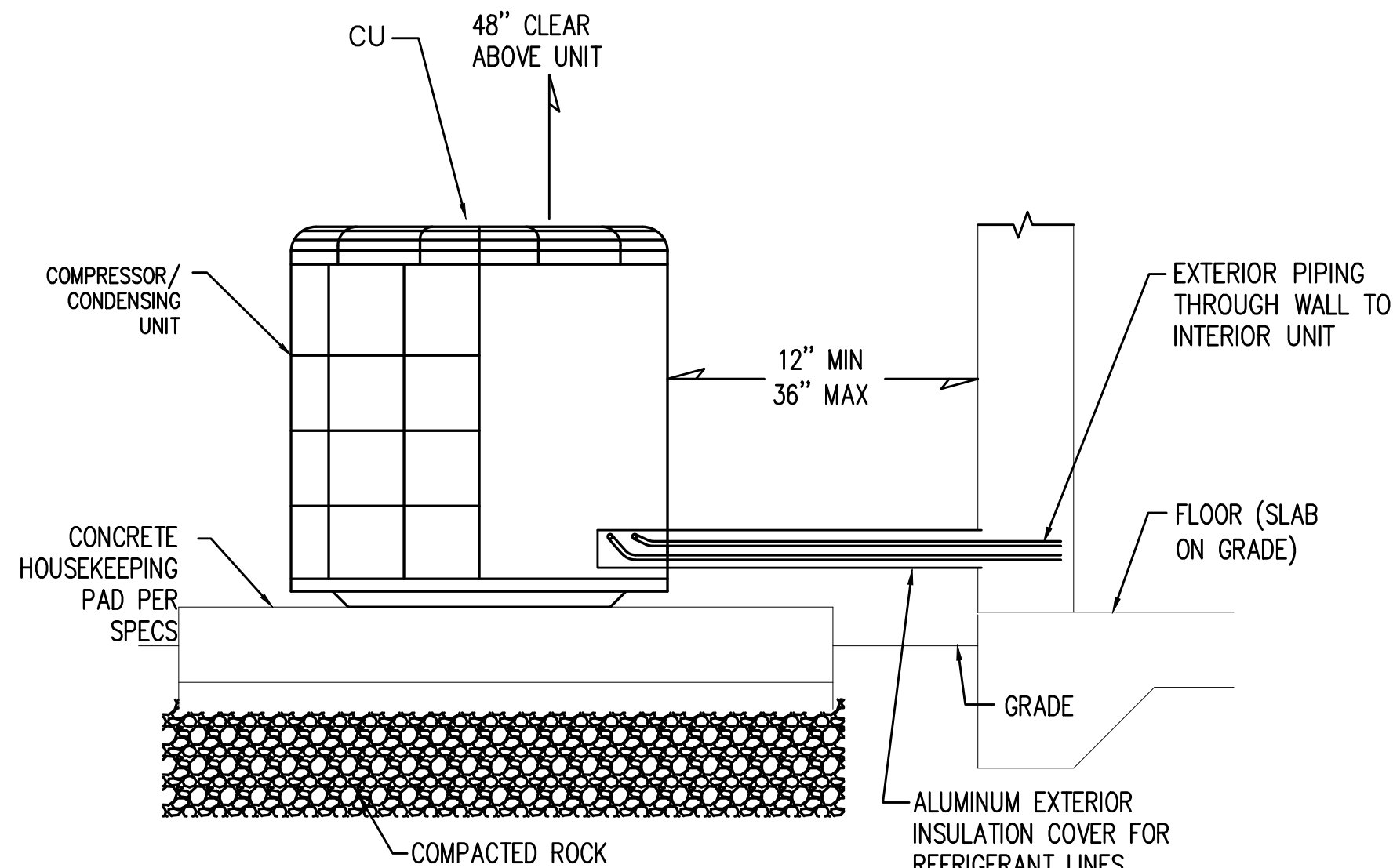
M601 NO SCALE



NOTE: LOCATE VALVES IN EXISTING FIN PIPE HOUSING ENCLOSURE VERIFY EXACT CONDITIONS IN FIELD.

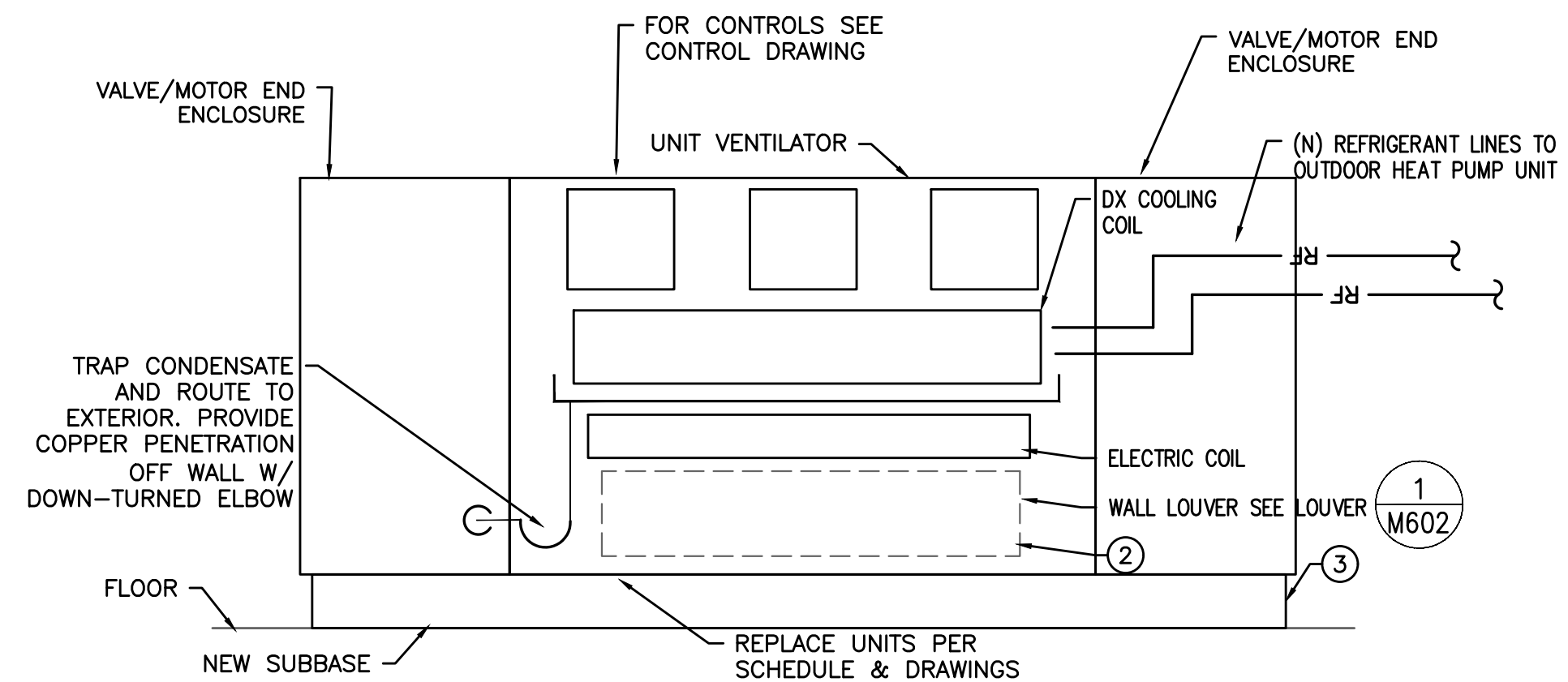
5 CLASS FINNED CONVECTOR PIPING DIAGRAM

M601 SCALE: DETAIL



7 CONDENSING UNIT

M601 DETAIL

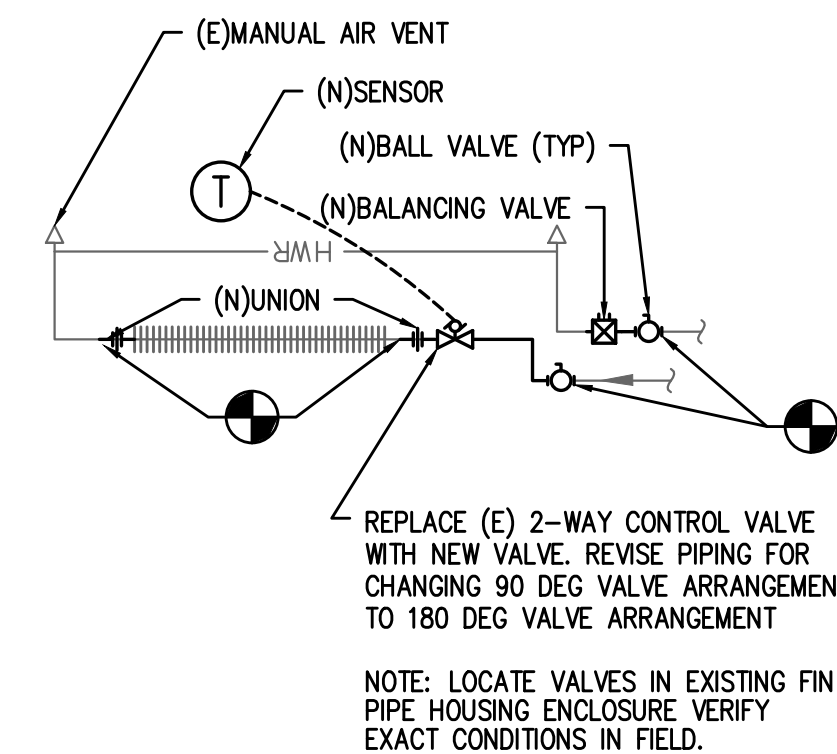


NOTES:

- CONFIRM WHICH SIDE OF THE UNIT THE CONNECTION FOR HEATING WATER IS PRIOR TO ORDERING/SUBMITTAL. NEW UNITS TO MATCH SITE CONNECTION.
- EXISTING LOUVER TO REMAIN. PROVIDE TRANSITION TO NEW, LARGER OPENING FROM BACK OF UV.
- PROVIDE NEW SUB BASE.

3 UNIT VENTILATOR PIPING

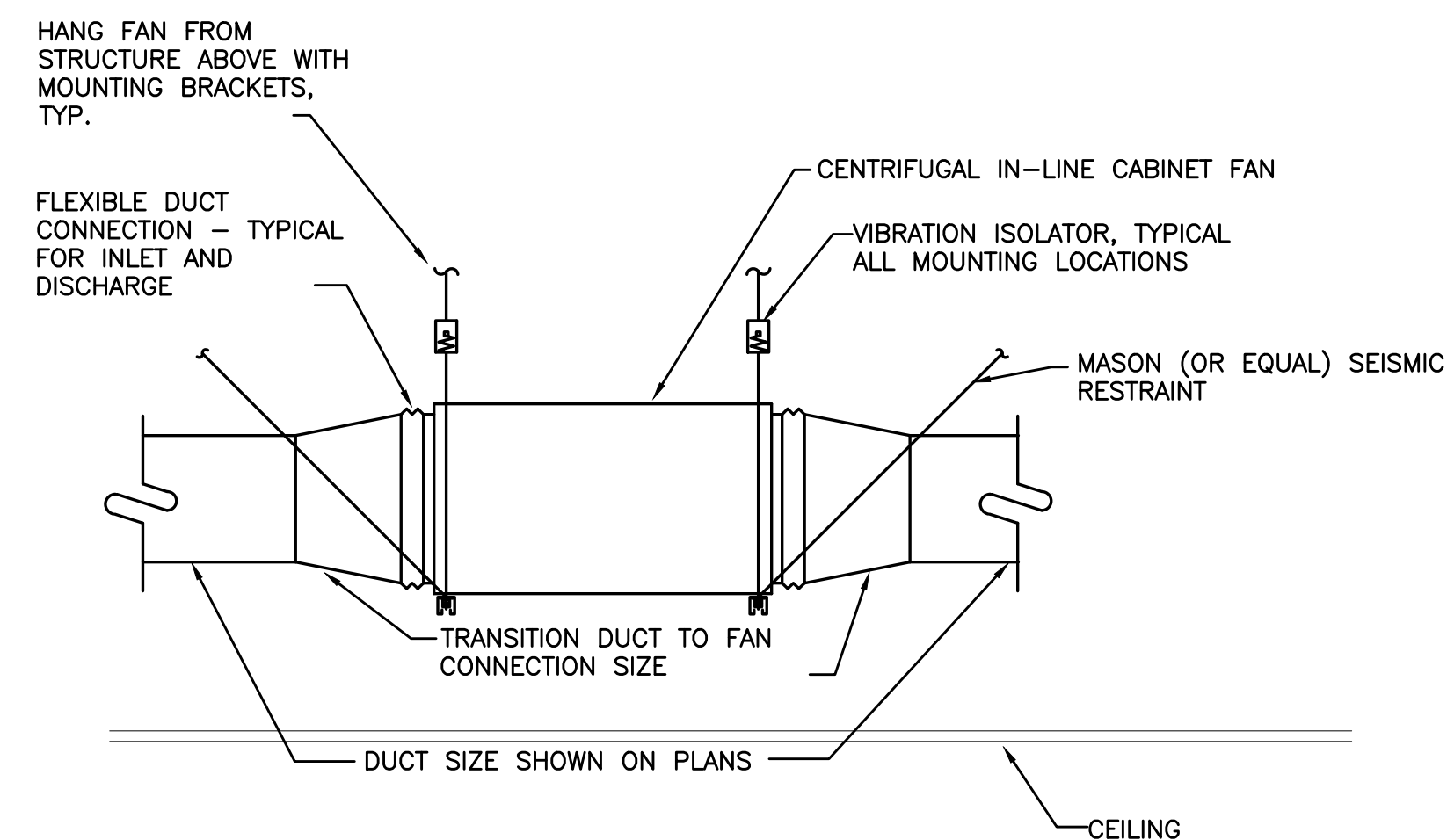
M601 SCALE: DETAIL



NOTE: LOCATE VALVES IN EXISTING FIN PIPE HOUSING ENCLOSURE VERIFY EXACT CONDITIONS IN FIELD.

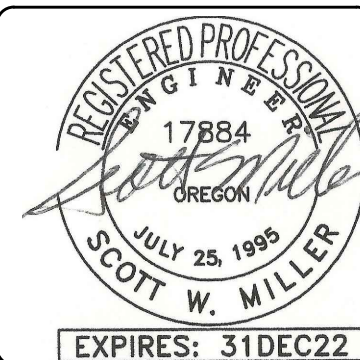
6 FINNED PIPE RADIATOR PIPING DIAGRAM

M601 SCALE: DETAIL



7 IN-LINE CABINET FAN

M601 SCALE: DETAIL



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 Chkd By: SW
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 Acad File:

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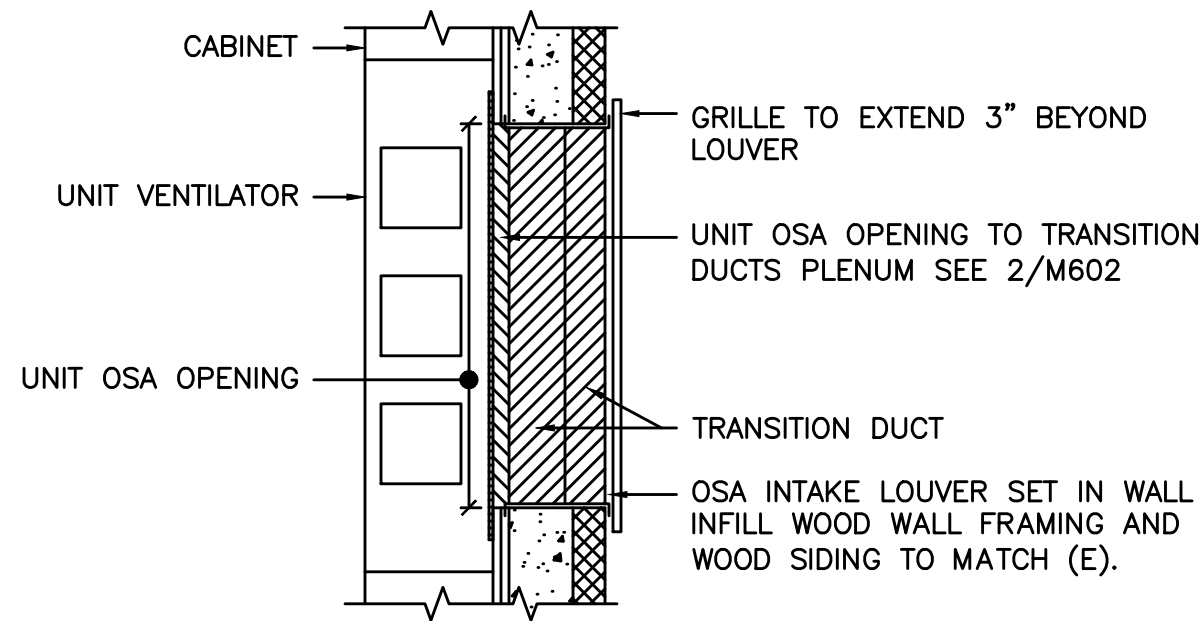
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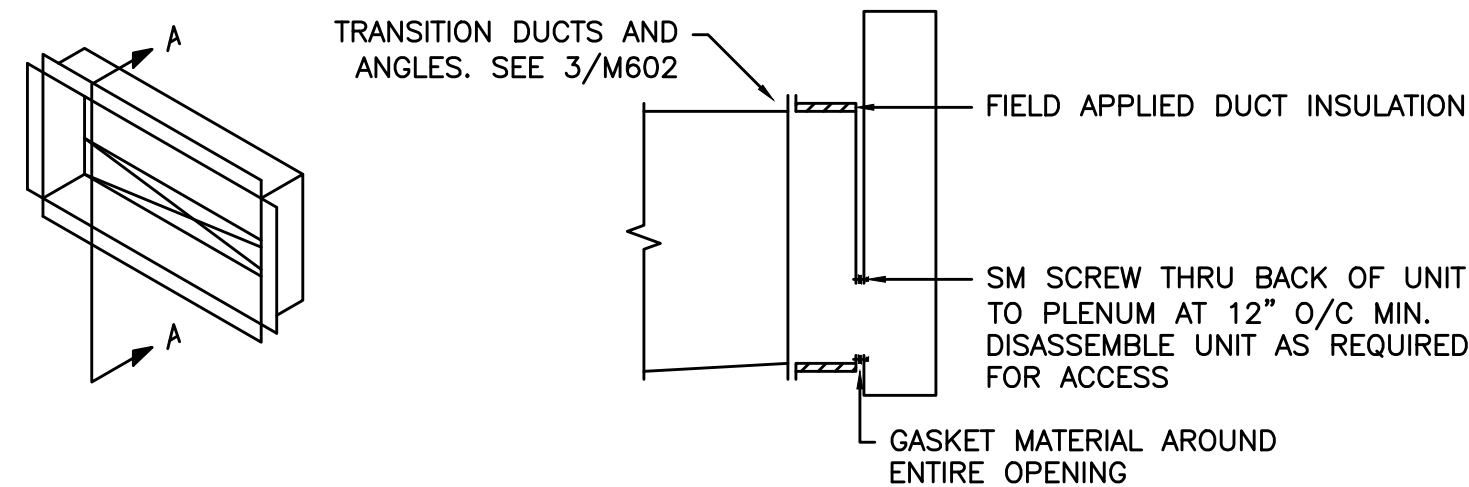
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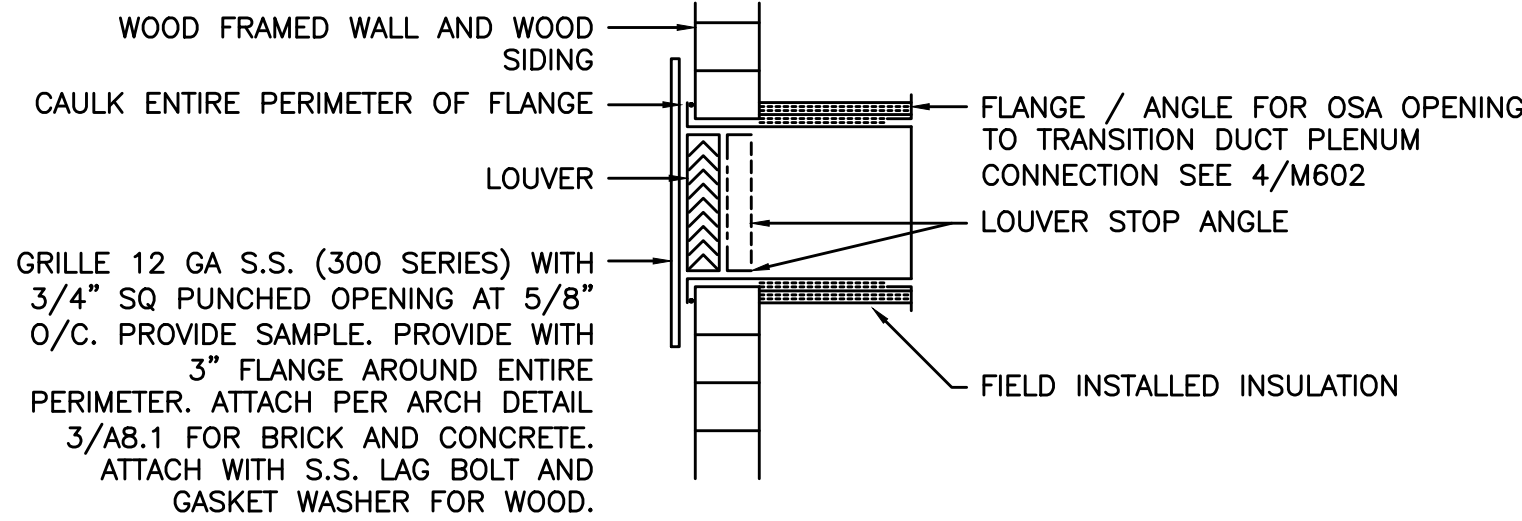
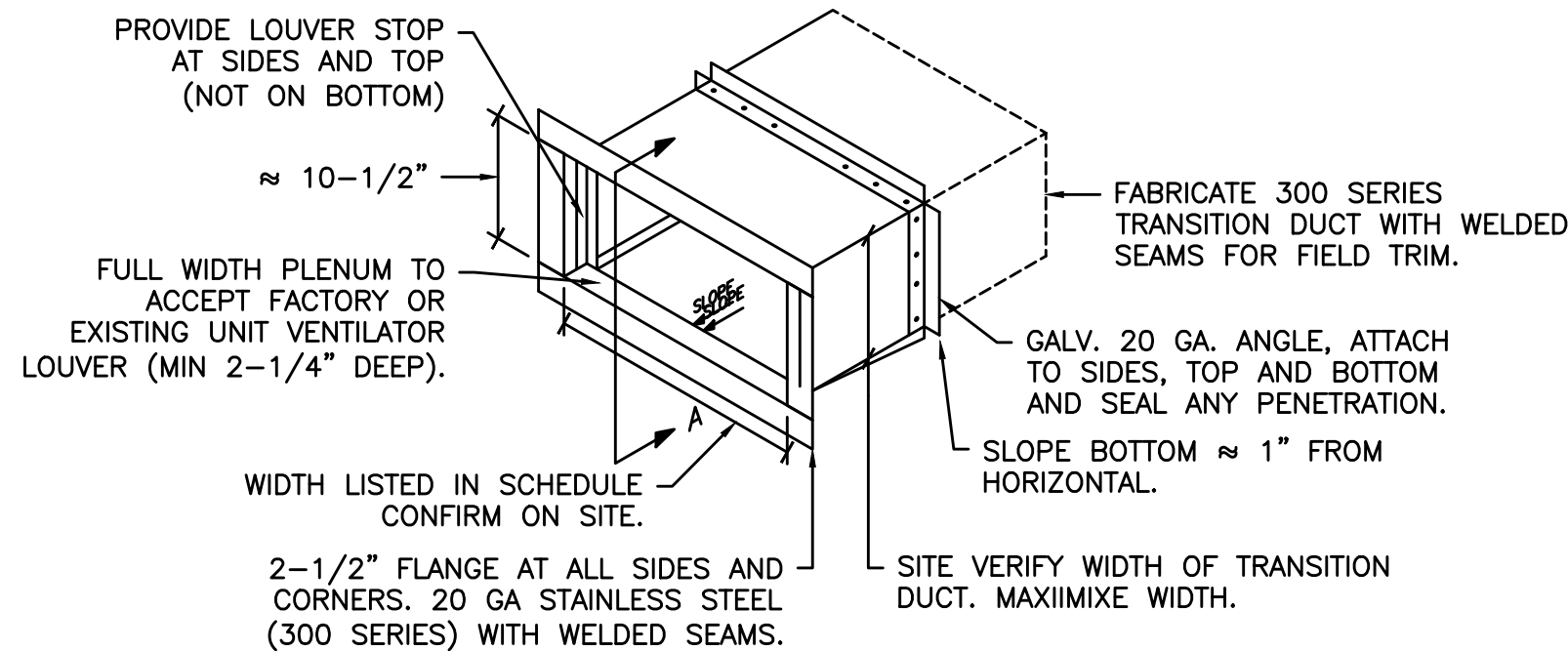


1 UNIT VENTILATOR INSTALLATION
M602 SCALE: DETAIL



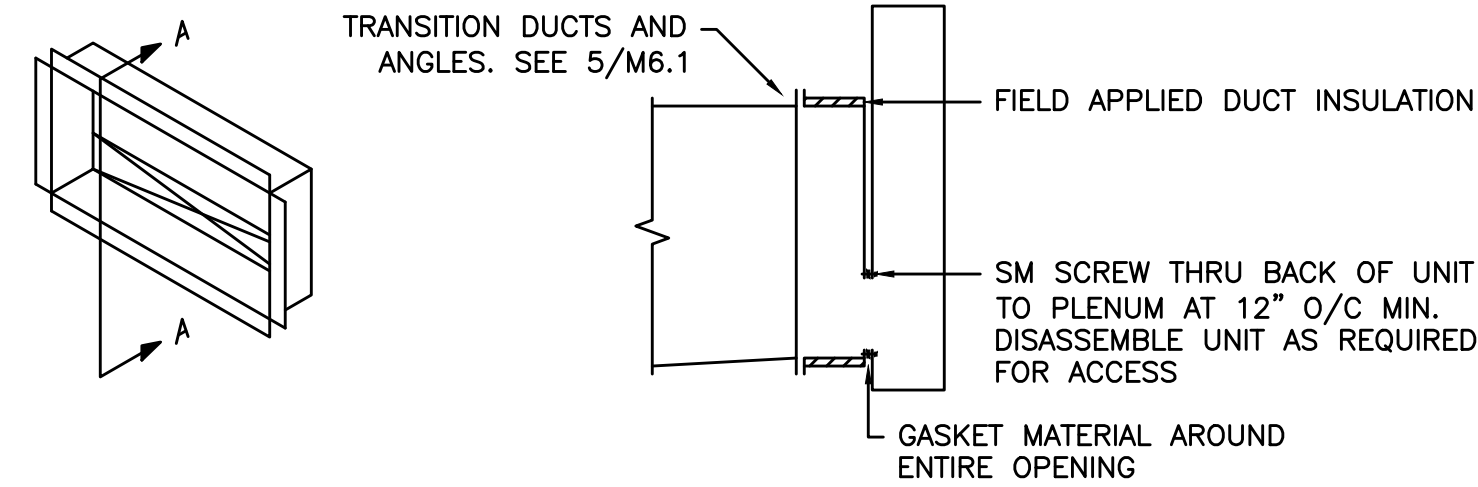
2/M602 SECTION: A - A
MATERIAL: 20 GA GALVANIZED WITH SEALED SEAMS

2 OSA OPENING TO TRANSITION DUCTS PLENUM
M602 SCALE: DETAIL



3/M602 SECTION: A - A

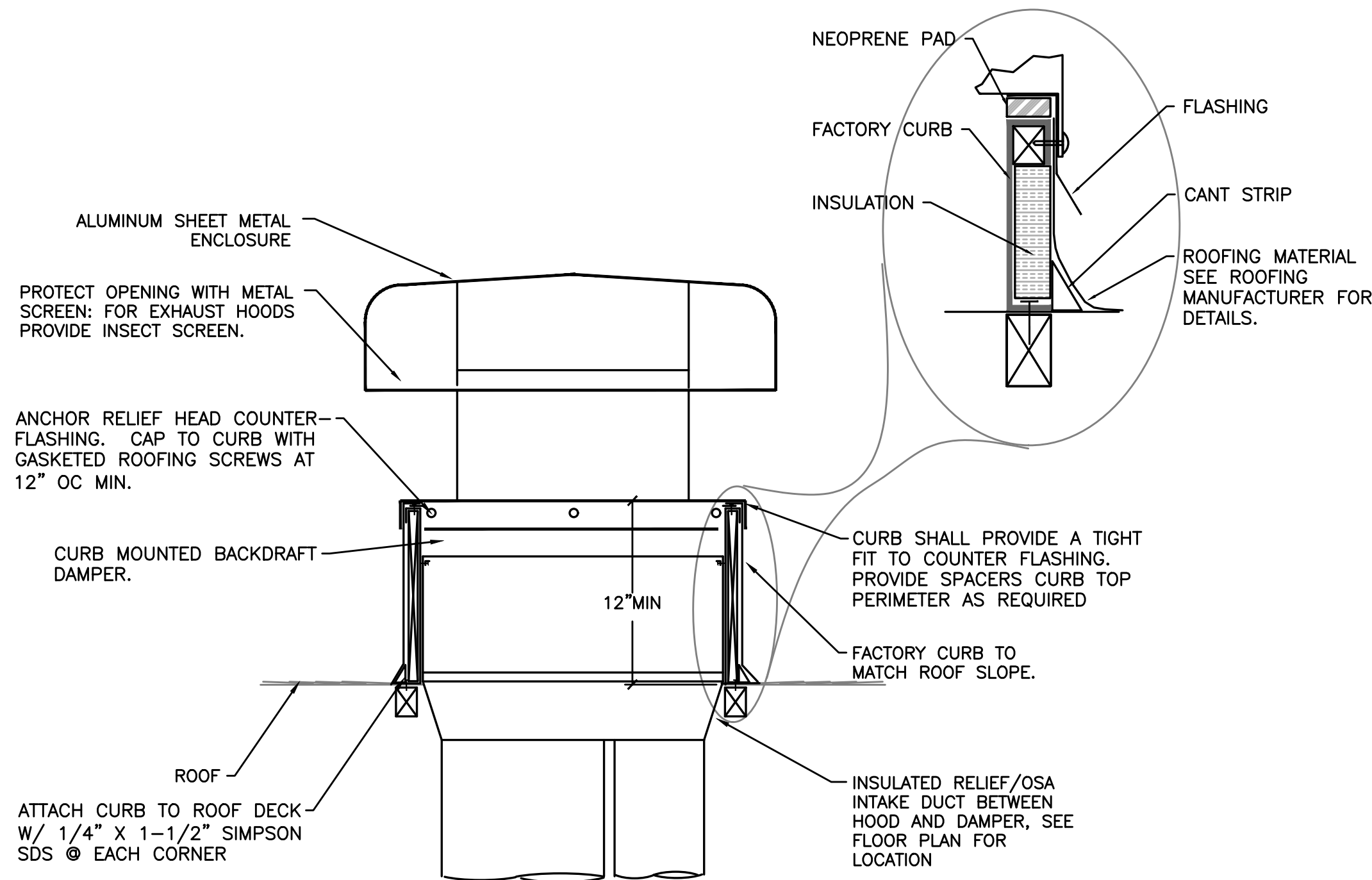
3 TRANSITION DUCT
M602 SCALE: DETAIL



4/M602 SECTION: A - A

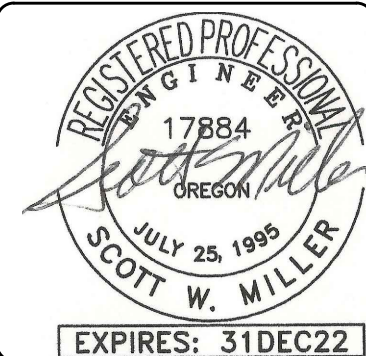
MATERIAL: 20 GA GALVANIZED WITH SEALED SEAMS

4 OSA OPENING TO TRANSITION DUCTS PLENUM
M602 SCALE: DETAIL



NOTE:
COORDINATE ALL ROOFING AND FLASHING WITH ROOFING MANUFACTURER TO MAINTAIN ROOF WARRANTY.

5 NEW RELIEF HOOD DETAIL
M602 SCALE: DETAIL



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