MONROE MIDDLE SCHOOL SCHOOL NEW RTU INSTALLATIONS

PROJECT LOCATION

MONOE MIDDLE SCHOOL
2800 BAILEY LANE
EUGENE, OR 97401

SHEET INDEX

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF INSTALLING NEW ROOF MOUNTED PACKAGED HEAT PUMP UNITS FOR TWO EXISTING CLASSROOMS IN AREA "C" OF THE CAMPUS.

WORK WILL INCLUDE DEMOLITION OF SUSPENDED UNIT HEATERS IN CLASSROOMS C-1 & C-6 ALONG WITH REMOVAL OF ASSOCIATED ELECTRICAL SERVICE, HOT WATER PIPING, AND CONTROLS. ADDITIONAL WORK INCLUDES INFILL OF AN EXISTING OPENING IN THE NORTHEAST CORNER OF C-6 WITH CMU CONSTRUCTION TO MATCH EXISTING.

PATCH AND REPAIR OF EXISTING ROOF MEMBRANE REQUIRED AS A RESULT OF NEW UNIT PLACEMENT AND ROOF OPENINGS FOR DUCTWORK IS TO BE PROVIDED BY THE OWNER.

DIRECT DIGITAL CONTROLS (DDC) INSTALLATION AND PROGRAMMING FOR THE NEW ROOFTOP HVAC EQUIPMENT IS TO BE PROVIDED BY THE OWNER.

APPLICABLE CODES

2011 OREGON ELECTRICAL SPECIALTY CODE
2011 OREGON PLUMBING SPECIALTY CODE
2010 OREGON MECHANICAL SPECIALTY CODE
2010 OREGON ENERGY EFFICIENCY SPECIALTY CODE
2010 OREGON STRUCTURAL SPECIALTY CODE

PROJECT TEAM

OWNER/ARCHITECT/PROJECT MANAGER/ELECTRICIAN

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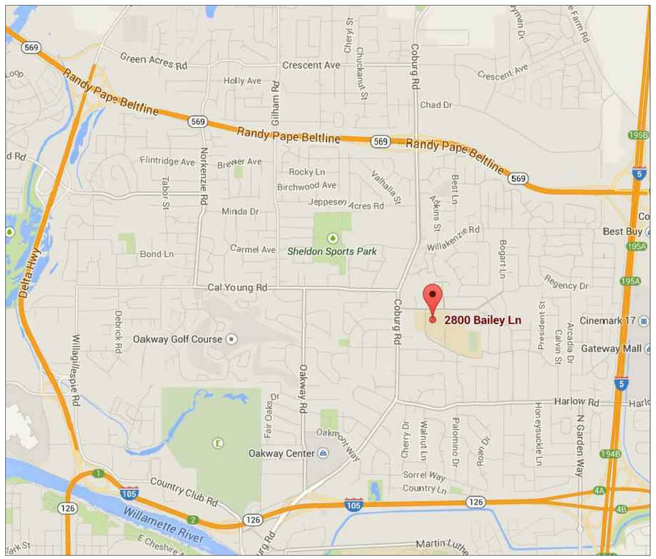
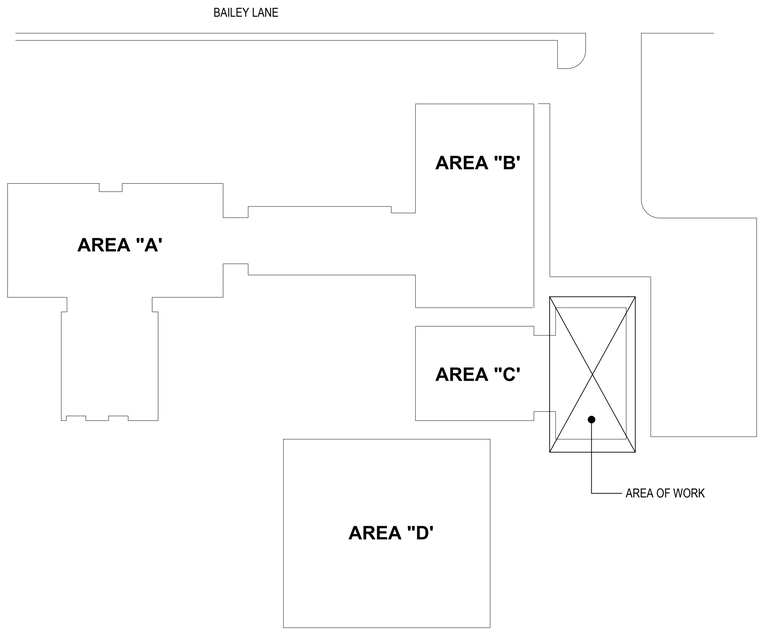


14 VICINITY MAP
NTS



16 SITE PLAN
NTS

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4J MONROE MIDDLE SCHOOL
NEW RTU INSTALLATIONS

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REGISTERED PROFESSIONAL ENGINEER
#81286PE
OREGON
MARCH 10, 2006
BRIAN E. JACOBY
EXP. DATE: 6/30/2015

PROJECT NO:	14-003
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CHECKED BY:	GJ
REVISED:	-

COVER SHEET

C001

SHEET 1 OF 7

GENERAL SYMBOLS

@	AT
Ø	DIAMETER
,,	INCHES
&	AND
X°	X DEGREES (ANGLE)
1	KEYED NOTE DESIGNATION
10 / M301	DETAIL OR DETAIL REFERENCE
10 / M301	ELEVATION
6 / M301	SECTION TAKEN AT

HVAC SPECIALTIES

	DUCT LINER
SD1 8/8 200	SUPPLY DIFFUSER - TYPE, NECK SIZE AND CFM
RG1 8/8 200	RETURN GRILL - TYPE, NECK SIZE AND CFM
EG1 8/8 200	EXHAUST GRILL - TYPE, NECK SIZE AND CFM
S	CARBON DIOXIDE SENSOR
T	THERMOSTAT OR TEMPERATURE SENSOR
BI	DDC BINARY INPUT
BO	DDC BINARY OUTPUT
AI	DDC ANALOG INPUT
AO	DDC ANALOG OUTPUT

DUCTWORK

DOUBLE LINE	SINGLE LINE	
		WYE BRANCH
ROUND / RECT		CONICAL TAP
		HEEL TAP (RECT)
W / R=W	R=1.5xW	RADIUS ELBOW
		EXHAUST AIR UP
		EXHAUST AIR DOWN
		RETURN AIR UP
		RETURN AIR DOWN
		SUPPLY OR OSA UP
		SUPPLY OR OSA DOWN
		MITER ELBOW

DOUBLE LINE	SINGLE LINE	
W1 / W2 / W1+W2		MITER TEE
W1 / W2 / W1+W2		MITER ELBOW BRANCH
WxA / Wx(A+B) / WxB		MITER ELBOW BRANCH
		OFFSET
R	R	OFFSET UP (RISE)
D	D	OFFSET DOWN (DROP)
15 DEG. MAX		TRANSITION
		RECTANGULAR TO ROUND TRANSITION
12/8	10/6	RECTANGULAR DUCT WITH SIZE IN INCHES
8Ø	8Ø	ROUND DUCT WITH SIZE IN INCHES

ABBREVIATIONS

AC	AIR CONDITIONING
ACH	AIR CHANGES PER HOUR
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AMP	AMPERE
AP	ACCESS PANEL
ARCH	ARCHITECTURAL
ASSY	ASSEMBLY
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
CAP	CAPACITY
CB	CIRCUIT BREAKER
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
CONT	CONTINUATION
DB	DRY BULB, OR DECIBEL
DDC	DIRECT DIGITAL CONTROL
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DWG	DRAWING
(E)	EXISTING
EA	EACH, OR EXHAUST AIR
EAD	EXHAUST AIR DAMPER
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	EXHAUST GRILLE
ELEV	ELEVATION
ENT	ENTERING
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
EXT	EXTERIOR
F	FAHRENHEIT
FLA	FULL LOAD AMPS
FLR	FLOOR
FPM	FEET PER MINUTE
FT	FEET
GA	GAUGE
GALV	GALVANIZED
HP	HORSEPOWER, OR HEAT PUMP
HZ	HERTZ
ID	INSIDE DIAMETER
IN	INCHES
KW	KILOWATTS
KWH	KILOWATT HOURS
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LRA	LOCKED ROTOR AMPS
MAX	MAXIMUM
MBH	THOUSAND BTUH
MCA	MINIMUM CIRCUIT AMPACITY
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MTD	MOUNTED
(N)	NEW
NC	NORMALLY CLOSED
NO	NORMALLY OPEN, OR NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OSA	OUTSIDE AIR
PD	PRESSURE DROP
PH	PHASE
RA	RETURN AIR
RAD	RETURN AIR DAMPER
REQD	REQUIRED
RF	RETURN FAN
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SAD	SUPPLY AIR DAMPER
SCH	SCHEDULE
SF	SQUARE FEET
SHT	SHEET
SP	STATIC PRESSURE
SQ	SQUARE
STD	STANDARD
TEMP	TEMPERATURE, OR TEMPORARY
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
W/	WITH
WB	WET BULB
WC	WATER COLUMN
WG	WATER GAGE

PACKAGED ROOFTOP HEAT PUMP UNITS

TAG	AREA SERVED	MANUFACTURER	MODEL	TOTAL COOLING CAPACITY (KBTUH)	EFF.	HEATING CAPACITY (KBTUH)	EFF.	REFRIG. TYPE	SUPPLY AIR				SUPPLY FAN MOTOR DATA			POWER EXHAUST FAN MOTOR DATA		ELECTRICAL DATA (3)					OPER. WT. (LBS.)	REMARKS
									AIR FLOW (CFM)	MIN OSA (CFM) (1)	ESP (IN. W.C.)	TSP (2) (IN. WC)	HP	BHP	SPEED	HP	SPEED	VOLTS	PH	ELECTRIC HEAT (KW)	MCA	MOP		
RTU-1	ART CLASSROOM C-1	TRANE	WSC072	73.30	13.0 IEER	71.16	3.5 COP	R410A	2400	765	0.6	1.3	1	1.08	1018	2	1750	208	3	29.40	123.8	125	1425	W/ CANFAB 100% ECONOMIZER, MODULATING POWER EXHAUST FAN, SPRING ISOLATION CURB.
RTU-2	COMPUTER CLASSROOM C-6	TRANE	WSC060	57.13	13.0 SEER	59.12	8.0 HSPF	R410A	1800	675	0.6	1.3	1	0.82	1022	2	1750	208	3	40.8	88.8	90	1365	W/ CANFAB 100% ECONOMIZER, MODULATING POWER EXHAUST FAN, SPRING ISOLATION CURB.
(1)	AT MAXIMUM OCCUPANT LOAD, REFER TO ASHRAE 62.1 VENTILATION CALCS																							
(2)	INCLUDING 0.4" DIRTY FILTER ALLOWANCE																							
(3)	SINGLE POINT POWER CONNECTION																							

GENERAL NOTES - MECHANICAL

1. COORDINATE VOLTAGE AND PHASE REQUIREMENTS FOR SCHEDULED MECHANICAL EQUIPMENT WITH DIVISION 26. REPORT CONFLICTS TO ENGINEER PRIOR TO SUBMITTAL REVIEW AND PURCHASE OF EQUIPMENT.
2. PROVIDE SHEET METAL FLASHING FOR EXPOSED DUCTWORK PENETRATIONS.
3. PROVIDE AIRTIGHT SEAL AROUND PENETRATIONS INTO AIR PLENUMS.
4. THERMOSTATS AND SENSORS THAT REQUIRE ACCESS BY BUILDING OCCUPANTS SHALL BE MOUNTED AT 4'0" AFF PER ADA.
5. MECHANICAL CONTRACTOR SHALL PROVIDE DUCTWORK OFFSETS AS NEEDED TO MAINTAIN NEC REQUIRED CLEARANCES AROUND ELECTRICAL PANELS.

MECHANICAL EQUIPMENT INSTALLATION NOTES

1. VERIFY LAYOUT, INSTALLATION REQUIREMENTS, AND PHYSICAL DIMENSIONS OF ACTUAL EQUIPMENT PROVIDED TO ENSURE THAT ACCESS CLEARANCES CAN BE MET.

SHEET METAL NOTES

1. COORDINATE DUCTWORK ROUTING WITH WORK OF OTHER TRADES.
2. DUCTWORK SIZES ARE INTERIOR CLEAR DIMENSIONS. FIRST DIMENSION IS SIDE SEEN IN PLAN OR SECTION VIEW.
3. PROVIDE MINIMUM 5-PIECE ELBOWS FOR CHANGES IN DIRECTION OF ROUND DUCTS.
4. PROVIDE A MANUAL VOLUME DAMPER AT EACH SUPPLY, RETURN, AND EXHAUST AIR TERMINAL, LOCATED AS CLOSE TO THE BRANCH TAKEOFF AS POSSIBLE.
5. PROVIDE FLEXIBLE DUCT CONNECTORS AT INLET AND OUTLET OF FANS AND AIR HANDLING UNITS.
6. COORDINATE LOCATIONS OF CEILING MOUNTED AIR TERMINALS WITH EXISTING LIGHT FIXTURES AS INDICATED ON PLANS.
7. LOW-PRESSURE FLEXIBLE DUCT MAY BE PROVIDED AT CEILING DIFFUSERS, MINIMUM 3', MAXIMUM 6'.
8. PROVIDE RECTANGULAR 90° DUCT ELBOWS WITH NON-AIR FOIL TURNING VANES.

INSULATION/LINING NOTES

1. COVER TRANSVERSE EDGES OF EXPOSED DUCT LINING WITH SHEET METAL NOSINGS. SEAL INTERNAL LONGITUDINAL SEAMS WITH ADHESIVE.

ASHRAE 62.1 VENTILATION CALCS

1. HVU-1 (ART CLASSROOM):

   SF + OCCUPANT (ZONE POPULATION) BASIS
   1620 SF x 0.18 CFM / SF + 32 OCCS x 10 CFM / OCC = 612 CFM
   ZONE DISTRIBUTION EFFECTIVENESS: 0.8
   REQUIRED OUTDOOR AIRFLOW: 612 / 0.8 = 765 CFM
   (31.9% OF TOTAL SUPPLY AIR).

   SF ONLY BASIS (UNOCCUPIED)
   1620 SF X 0.18 CFM / SF = 292 CFM
   ZONE DISTRIBUTION EFFECTIVENESS: 0.8
   REQUIRED OUTDOOR AIRFLOW: 292 / 0.8 = 365 CFM
   (15.2% OF TOTAL SUPPLY AIR).

   SF + (1) OCCUPANT BASIS (MIN. OCCUPIED)
   1620 SF X 0.18 CFM / SF + 1 OCC. x 10 CFM/OCC = 302 CFM
   ZONE DISTRIBUTION EFFECTIVENESS: 0.8
   REQUIRED OUTDOOR AIRFLOW: 302 / 0.8 = 378 CFM
   (15.7% OF TOTAL SUPPLY AIR).

2. HVU-2 (COMPUTER CLASSROOM):

   SF + OCCUPANT (ZONE POULATION) BASIS
   1620 SF x 0.12 CFM / SF + 48 OCCS x 10 CFM / OCC = 674 CFM
   ZONE DISTRIBUTION EFFECTIVENESS: 0.8
   REQUIRED OUTDOOR AIRFLOW: 674 / 0.8 = 843 CFM
   (46.8% OF TOTAL SUPPLY AIR).

   SF ONLY BASIS (UNOCCUPIED)
   1620 SF x 0.12 CFM / SF = 195 CFM
   ZONE DISTRIBUTION EFFECTIVENESS: 0.8
   REQUIRED OUTDOOR AIRFLOW: 195 / 0.8 = 244 CFM
   (13.5% OF TOTAL SUPPLY AIR).

   SF + (1) OCCUPANT BASIS (MIN. OCCUPIED)
   1620 SF x 0.12 CFM / SF + 1 OCC. x 10 CFM/OCC = 205 CFM
   ZONE DISTRIBUTION EFFECTIVENESS: 0.8
   REQUIRED OUTDOOR AIRFLOW: 205 / 0.8 = 256 CFM
   (14.2% OF TOTAL SUPPLY AIR).

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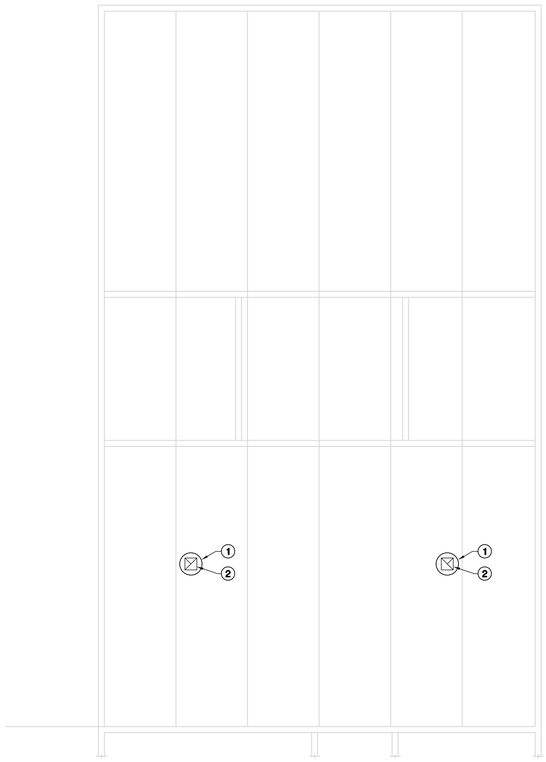
MECHANICAL NOTES, SYMBOLS & ABBREVIATIONS

M001

SHEET 2 OF 7

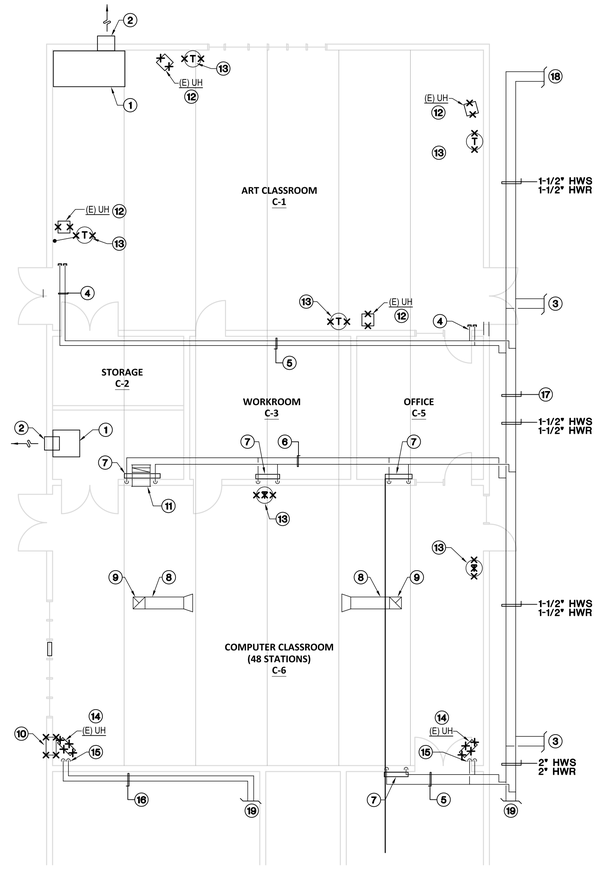


1 AREA "C" PARTIAL ROOF & FRAMING PLAN

1/8 INCH = 1 FOOT

KEYED SHEET NOTES

1. EXHAUST FAN & CURB TO REMAIN (NOT USED).
2. EXHAUST DUCT THRU ROOF TO REMAIN.



1 AREA "C" PARTIAL FLOOR PLAN - DEMOLITION

1/8 INCH = 1 FOOT

KEYED SHEET NOTES

1. CANOPY HOOD TO REMAIN.
2. WALL MOUNTED EXHAUST FAN W/ WALL MOUNTED ON-OFF SWITCH TO REMAIN.
3. HWS & HWR PIPING TO SUSPENDED UNIT HEATER ABOVE CEILING.
4. ABANDONED HOT WATER PIPING ABOVE SUSPENDED CEILING TO REMAIN.
5. ABANDONED HOT WATER PIPING ABOVE GYP. BOARD CEILING TO REMAIN.
6. HWS & HWR PIPING ABOVE GYP. BOARD CEILING TO REMAIN.
7. WALL MOUNTED CONVECTOR TO REMAIN.
8. EXHAUST DUCT SUSPENDED BELOW ROOF DECK TO REMAIN.
9. EXHAUST DUCT THRU ROOF TO ROOF MOUNTED EXHAUST FAN TO REMAIN.
10. WALL OPENING WITH AUTO DAMPER. DAMPER TO BE REMOVED AND OPENING TO BE INFILLED WITH CMU CONSTRUCTION TO MATCH EXISTING.
11. WALL MOUNTED GRILLE & TRANSFER DUCT THRU WALL W/ FIRE DAMPER TO REMAIN.
12. SUSPENDED ELECTRIC UNIT HEATER TO BE REMOVED.
13. WALL MOUNTED LINE VOLTAGE THERMOSTAT TO BE REMOVED.
14. SUSPENDED HOT WATER UNIT HEATER TO BE REMOVED.
15. HWS & HWR PIPING TO BE CAPPED AT SHUT-OFF VALVES.
16. HWS & HWR PIPING ALONG WALL TO BE ABANDONED IN PLACE.
17. HWS & HWR BUILDING DISTRIBUTION PIPING ABOVE SUSPENDED CEILING TO REMAIN.
18. HWS & HWR PIPING TO AREA "D".
19. HWS & HWR PIPING TO BOILER ROOM.

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MECHANICAL PARTIAL PLANS - DEMOLITION

M100

SHEET 3 OF 7

CONTROL NARRATIVE

ART CLASSROOM C-1

GENERAL

ART CLASSROOM C-1 SHALL BE SERVED BY ONE SINGLE-ZONE, ROOF MOUNTED PACKAGED HEAT PUMP HEATING, COOLING, AND VENTILATING UNIT . THIS UNIT (RTU-1) WILL HAVE 100% OUTSIDE AIR INTAKE WITH DAMPER, MIXED AIR AND RELIEF AIR DAMPERS AND A POWER EXHAUST FAN SECTION. DAMPER CONTROLS WILL PROVIDE A MINIMUM VENTILATION SETTING FOR OCCUPIED PERIOD BASED ON CODE REQUIRED SQ. FT. MINIMUM, AS WELL AS DAMPER CONTROLS FOR SQ. FT PLUS ONE OCCUPANT UP TO MAXIMUM CALCULATED OCCUPANT LOAD THROUGH DEMAND CONTROL VENTILATION CARBON DIOXIDE SENSOR MOUNTED IN THE SPACE. ADDITIONALLY, 100% OUTSIDE AIR CAPABILITY WILL BE PROVIDED PER DESCRIBED SEQUENCES. DDC SHALL PROVIDE START/STOP SCHEDULING OF UNIT, OPTIMUM START CONTROLS (PID LOOP)TO VARY UNIT START-UP TIMES TO MEET SPACE SETPOINT AT SCHEDULED TIME OF OCCUPANCT, AND OCCUPIED/UNOCCUPIED TEMPERATURE SETPOINTS.

HEATING

DDC SHALL COMMAND HEATING TO MAINTAIN CURRENT SPACE TEMPERATURE SETPOINT. ON CALL FOR HEAT, THE UNIT HEAT PUMP FUNCTION WILL BE ENABLED. IN OCCUPIED PERIOD, FAN SHALL RUM CONTINUOUSLY WHILE COMPRESSOR CYCLES INTERMITTENTLY TO SATISFY THE LOAD AND MAINTAIN SPACE SETPOINT (72 DEG. F. - ADJUSTABLE). ON A CONTINUING DROP IN SPACE TEMPERATURE, THE AUXILIARY ELECTRIC HEAT SECTION WILL BE ENABLED AS A SECOND STAGE OF HEAT TO MAINTAIN SPACE SETPOINT, OR AS BACKUP HEAT SOURCE UPON FAILURE OF COMPRESSOR TO RUN.

THE UNIT ECONOMIZER WITH VARIABLE FREQUENCY DRIVE POWER EXHAUST FAN WILL BE ENABLED AND BALANCED TO RELIEVE THE MINIMUM SCHEDULED OUTSIDE AIR QUANTITY PROVIDED TO THE SPACE, INCLUDING OSA BASED ON SQ. FT. ONLY (0 OCCUPANTS - 365 CFM), SQ. FT. PLUS ONE OCCUPANT (380 CFM), AND SQ. FT. PLUS MAXIMUM OCCUPANTS (765 CFM) BASED ON CARBON DIOXIDE CONCENTRATIONS IN THE SPACE (NOMINALLY 300 PPM ABOVE OUTSIDE AIR CONCENTRATION - ADJUSTABLE). IN UNOCCUPIED PERIOD, UNIT SUPPLY AND RELIEF FANS SHALL BE OFF WITH OUTSIDE AIR DAMPER CLOSED. WHEN SPACE TEMPERATURE FALLS BELOW SPACE NIGHT SET-BACK SETTING (55 DEG. F - ADJUSTABLE.), THE UNIT SUPPLY FAN AND HEAT PUMP HEATING FUNCTION SHALL BE ENABLED TO MAINTAIN THE NIGHT SET-BACK TEMPERATURE SETTING. IN UNOCCUPED MODE, THE UNIT OUTSIDE AIR DAMPER IS CLOSED, AND THE RETURN AIR DAMPER IS FULLY OPEN TO ALLOW 100% RECIRCULATION TO THE SPACE.

COOLING

DDC SHALL COMMAND COOLING TO MAINTAIN CURRENT SPACE TEMEPATURE SETPOINT. IN OCCUPIED PERIOD, ON A CALL FOR COOLING, THE FIRST STAGE OF OPERATION SHALL BE FAN ONLY, WITH ECONOMIZER DAMPER OPERATION TO PROVIDE 60 DEG. F. SUPPLY AIR. UNIT POWER RELIEF / EXHAUST FAN WILL MAINTAIN SPACE PRESSURE SLIGHTLY POSITIVE (~ 0.05" W.C. - ADJUSTABLE). IF SPACE TEMPERATURE SETPOINT CANNOT BE MET AT 100% OUTSIDE AIR, UNIT HEAT PUMP COOLING FUNCTION WILL BE ENABLED. SUPPLY FAN WILL RUN CONTINUOUSLY, WHILE COMPRESSOR CYCLES INTERMITTENTLY TO SATISFY SPACE TEMERATURE SETPOINT.

THE UNIT ECONOMIZER DAMPERS MODULATE TO PROVIDE VENTILATION AIR TO MAINTAIN C02 CONCENTRATION IN SPACE AT APPROXIMATELY 300 PPM ABOVE OUTSIDE AMBIENT LEVEL. THE UNIT ECONOMIZER WITH VARIABLE SPEED POWER EXHAUST FAN MODULATES TO MAINTAIN DESIGN VENTILATION TO THE SPACE, INCLUDING OSA BASED ON SQ. FT. PLUS MAXIMUM OCCUPANTS (765 CFM), SQ. FT. PLUS ONE OCCUPANT (380 CFM), AND SQ. FT. ONLY (0 OCCUPANTS - 365 CFM) SCHEDULED TO SPACE DURING OCCUPIED PERIOD. IN UNOCCUPIED PERIOD, THE FAN SHALL CYCLE OFF WITH THE COMPRESSOR AND DAMPERS SHALL BE CLOSED. FOR NIGHT FLUSH OPERATION, WHEN SPACE TEMPRATURE IS ABOVE 80 DEG. F. (ADJUSTABLE) AND OUTSIDE AIR IS 78 DEG. F. OR BELOW, THE UNIT SUPPLY FAN AND POWER EXHAUST FAN ARE ENABLED, OSA AND RELIEF AIR DAMPERS ARE OPENED, AND FANS RUN TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 75 DEG. F. (ADJUSTABLE). NIGHT FLUSH IS DISABLED WHEN SPACE TEMPERATURE OF 75 DEG. F. (ADJUSTABLE) IS REACHED OR WITHIN TWO HOURS OF OCCUPIED PERIOD.

COMPUTER CLASSROOM C-6

GENERAL

COMPUTER CLASSROOM C-6 SHALL BE SERVED BY ONE SINGLE-ZONE, ROOF MOUNTED PACKAGED HEAT PUMP HEATING, COOLING, AND VENTILATING UNIT . THIS UNIT (RTU-2) WILL HAVE 100% OUTSIDE AIR INTAKE WITH DAMPER, MIXED AIR AND RELIEF AIR DAMPERS AND A POWER EXHAUST FAN SECTION. DAMPER CONTROLS WILL PROVIDE A MINIMUM VENTILATION SETTING FOR OCCUPIED PERIOD BASED ON CODE REQUIRED SQ. FT. MINIMUM, AS WELL AS DAMPER CONTROLS FOR SQ. FT PLUS ONE OCCUPANT UP TO MAXIMUM CALCULATED OCCUPANT LOAD THROUGH DEMAND CONTROL VENTILATION CARBON DIOXIDE SENSOR MOUNTED IN THE SPACE. ADDITIONALLY, 100% OUTSIDE AIR CAPABILITY WILL BE PROVIDED PER DESCRIBED SEQUENCES. DDC SHALL PROVIDE START/STOP SCHEDULING OF UNIT, OPTIMUM START CONTROLS (PID LOOP)TO VARY UNIT START-UP TIMES TO MEET SPACE SETPOINT AT SCHEDULED TIME OF OCCUPANCT, AND OCCUPIED/UNOCCUPIED TEMPERATURE SETPOINTS.

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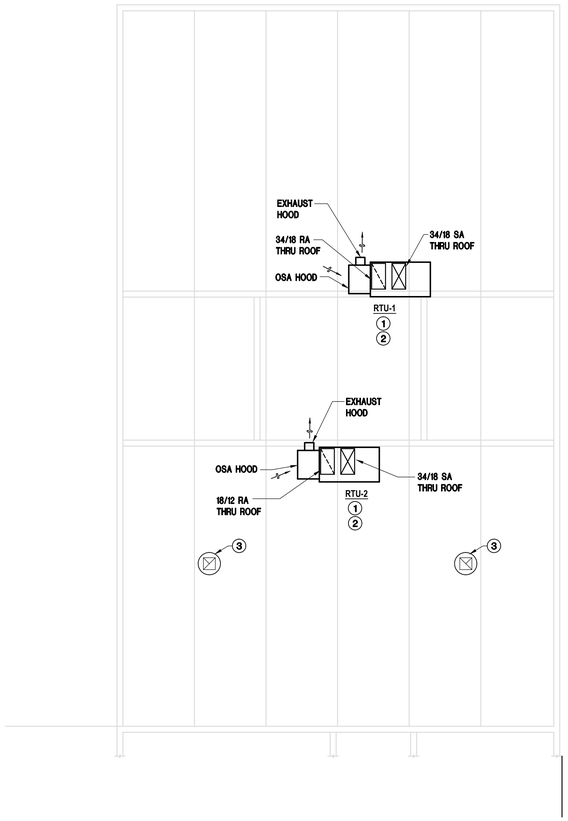
THE UNIT ECONOMIZER WITH VARIABLE FREQUENCY DRIVE POWER EXHAUST FAN WILL BE ENABLED AND BALANCED TO RELIEVE THE MINIMUM SCHEDULED OUTSIDE AIR QUANTITY PROVIDED TO THE SPACE, INCLUDING OSA BASED ON SQ. FT. ONLY (0 OCCUPANTS - 250 CFM), SQ. FT. PLUS ONE OCCUPANT (260 CFM), AND SQ. FT. PLUS MAXIMUM OCCUPANTS (850 CFM) BASED ON CARBON DIOXIDE CONCENTRATIONS IN THE SPACE (NOMINALLY 300 PPM ABOVE OUTSIDE AIR CONCENTRATION - ADJUSTABLE). IN UNOCCUPIED PERIOD, UNIT SUPPLY AND RELIEF FANS SHALL BE OFF WITH OUTSIDE AIR DAMPER CLOSED. WHEN SPACE TEMPERATURE FALLS BELOW SPACE NIGHT SET-BACK SETTING (55 DEG. F - ADJUSTABLE.), THE UNIT SUPPLY FAN AND HEAT PUMP HEATING FUNCTION SHALL BE ENABLED TO MAINTAIN THE NIGHT SET-BACK TEMPERATURE SETTING. IN UNOCCUPED MODE, THE UNIT OUTSIDE AIR DAMPER IS CLOSED, AND THE RETURN AIR DAMPER IS FULLY OPEN TO ALLOW 100% RECIRCULATION TO THE SPACE.

COOLING

DDC SHALL COMMAND COOLING TO MAINTAIN CURRENT SPACE TEMEPATURE SETPOINT. IN OCCUPIED PERIOD, ON A CALL FOR COOLING, THE FIRST STAGE OF OPERATION SHALL BE FAN ONLY, WITH ECONOMIZER DAMPER OPERATION TO PROVIDE 60 DEG. F. SUPPLY AIR. UNIT POWER RELIEF / EXHAUST FAN WILL MAINTAIN SPACE PRESSURE SLIGHTLY POSITIVE (~ 0.05" W.C. - ADJUSTABLE). IF SPACE TEMPERATURE SETPOINT CANNOT BE MET AT 100% OUTSIDE AIR, UNIT HEAT PUMP COOLING FUNCTION WILL BE ENABLED. SUPPLY FAN WILL RUN CONTINUOUSLY, WHILE COMPRESSOR CYCLES INTERMITTENTLY TO SATISFY SPACE TEMERATURE SETPOINT.

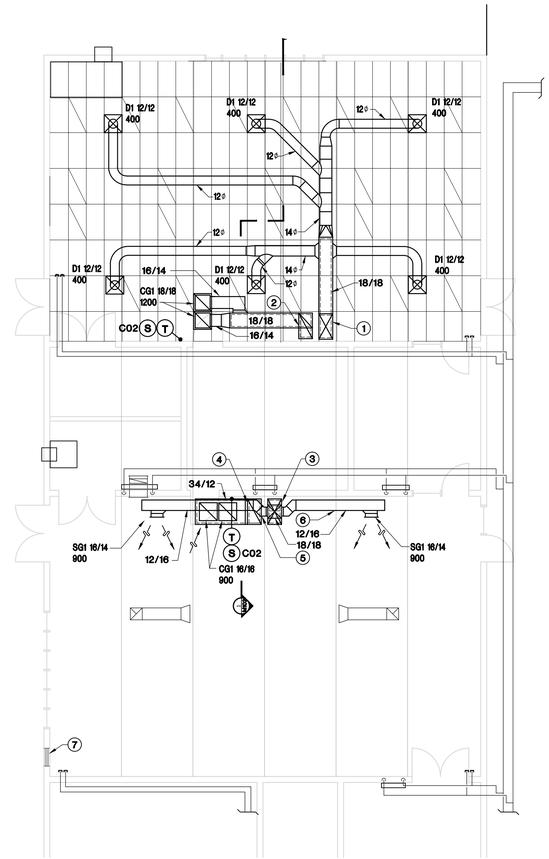
THE UNIT ECONOMIZER DAMPERS MODULATE TO PROVIDE VENTILATION AIR TO MAINTAIN C02 CONCENTRATION IN SPACE AT APPROXIMATELY 300 PPM ABOVE OUTSIDE AMBIENT LEVEL. THE UNIT ECONOMIZER WITH VARIABLE SPEED POWER EXHAUST FAN MODULATES TO MAINTAIN DESIGN VENTILATION TO THE SPACE, INCLUDING OSA BASED ON SQ. FT. PLUS MAXIMUM OCCUPANTS (850 CFM), SQ. FT. PLUS ONE OCCUPANT (260 CFM), AND SQ. FT. ONLY (0 OCCUPANTS - 250 CFM) SCHEDULED TO SPACE DURING OCCUPIED PERIOD. IN UNOCCUPIED PERIOD, THE FAN SHALL CYCLE OFF WITH THE COMPRESSOR AND DAMPERS SHALL BE CLOSED. FOR NIGHT FLUSH OPERATION, WHEN SPACE TEMPRATURE IS ABOVE 80 DEG. F. (ADJUSTABLE) AND OUTSIDE AIR IS 78 DEG. F. OR BELOW, THE UNIT SUPPLY FAN AND POWER EXHAUST FAN ARE ENABLED, OSA AND RELIEF AIR DAMPERS ARE OPENED, AND FANS RUN TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 75 DEG. F. (ADJUSTABLE). NIGHT FLUSH IS DISABLED WHEN SPACE TEMPERATURE OF 75 DEG. F. (ADJUSTABLE) IS REACHED OR WITHIN TWO HOURS OF OCCUPIED PERIOD.



1 AREA "C" PARTIAL ROOF & FRAMING PLAN - NEW WORK
1/8 INCH = 1 FOOT

KEYED SHEET NOTES

1. ROOFTOP HEAT PUMP UNIT MOUNTED ON FACTORY ROOF CURB, REFER TO DETAIL 2, SHEET M102.
2. FOR CONDENSATE DRAIN, REFER TO DETAIL 4, SHEET M102.
3. (E) EXHAUST FAN, NOT IN SCOPE.



2 AREA "C" PARTIAL FLOOR PLAN - NEW WORK
1/8 INCH = 1 FOOT

KEYED SHEET NOTES

1. 34 x18 SA DUCT THRU ROOF TO RTU-1.
2. 34 x18 RA DUCT THRU ROOF TO RTU-1.
3. 34 x18 SA DUCT THRU ROOF TO RTU-2.
4. 34 x18 RA DUCT THRU ROOF TO RTU-2.
5. SA DUCT RUN UNDER (E) BEAM BELOW RA DUCT & (E) PIPING
6. SA DUCT RUN UNDER (E) BEAM & (E) PIPING
7. 24x36 WALL OPENING TO BE IN-FILLED WITH CMU TO MATCH EXISTING - REFER TO STRUCTURAL DRAWINGS.

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NEW RTU INSTALLATIONS

EUGENE SCHOOL DISTRICT 4J
2800 BAILEY LANE
EUGENE, OREGON 97401

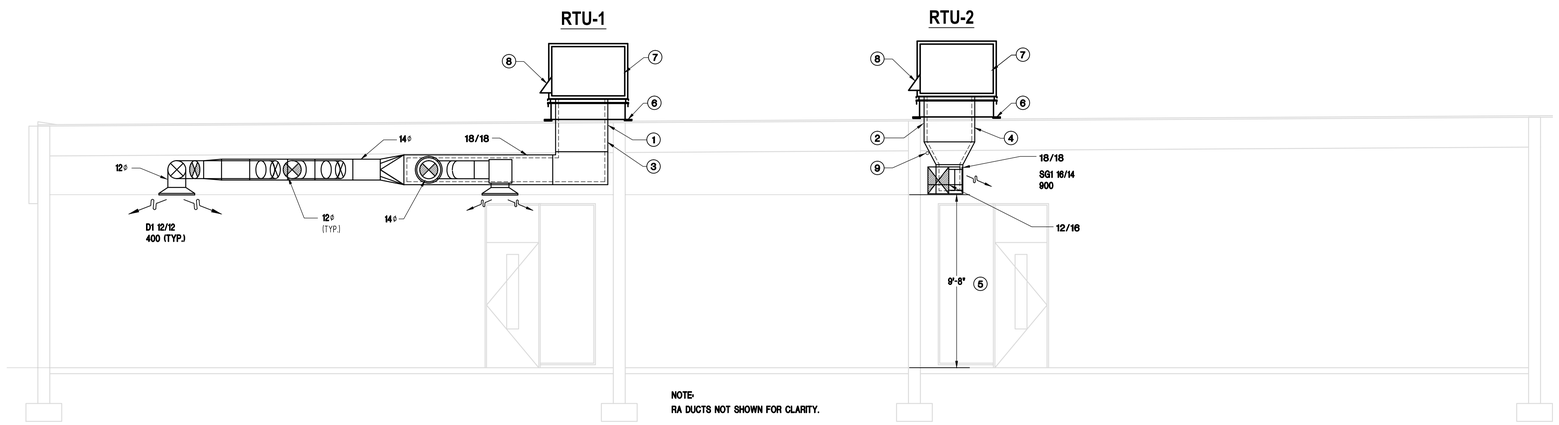
REGISTERED PROFESSIONAL ENGINEER #81286PE OREGON MARCH 10, 2006 BRIAN E. JACOBY
EXP. DATE: 6/30/2015

PROJECT NO:	**14-003**
ISSUE DATE:	**05/14/14**
DRAFT DATE:	**5-14-14**
DRAWN BY:	**BEJ**
CHECKED BY:	**GJ**
REVISED:	**-**

MECHANICAL PARTIAL PLANS - NEW WORK

M101

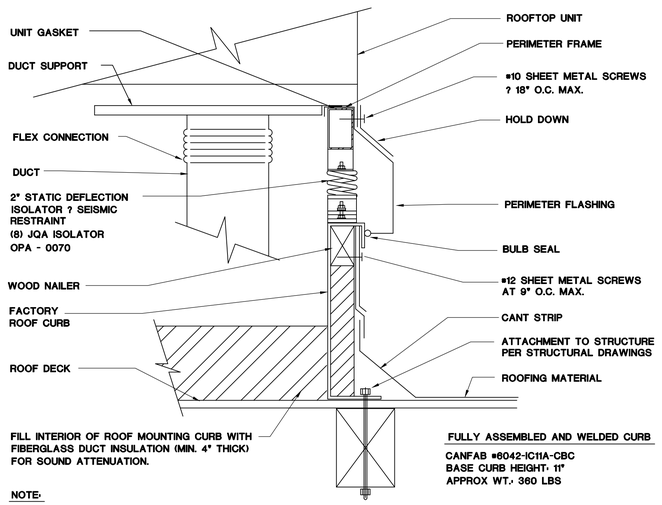
SHEET 4 OF 7



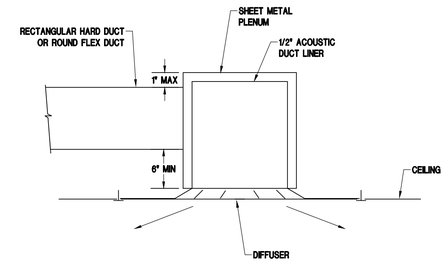
1 AREA "C" PARTIAL SECTION - NEW WORK
1/8 INCH = 1 FOOT

KEYED SHEET NOTES

1. 34x18 SA DUCT THRU ROOF TO RTU-1.
2. 34 x18 SA DUCT THRU ROOF TO RTU-2.
3. PROVIDE SUFFICIENT SPACE IN FULL SIZED SA DUCT BELOW ROOF BEFORE ELBOW FOR INSTALLATION OF FUTURE HORIZONTAL HOT WATER COIL (MIN. 12").
4. PROVIDE SUFFICIENT SPACE IN FULL SIZED SA DUCT BELOW ROOF BEFORE TRANSITION FOR INSTALLATION OF FUTURE HORIZONTAL HOT WATER COIL (MIN. 12").
5. MINIMUM BOTTOM OF DUCT ABOVE FINISHED FLOOR.
6. LEVEL MOUNTING SURFACE FOR CURB PERIMENTER, REFER TO STRUCTURAL DRAWINGS.
7. OUTSIDE AIR HOOD
8. EXHAUST HOOD.
9. (E) PIPE - TRANSITION SA DUCT AS REQUIRED TO AVOID CONFLICT.

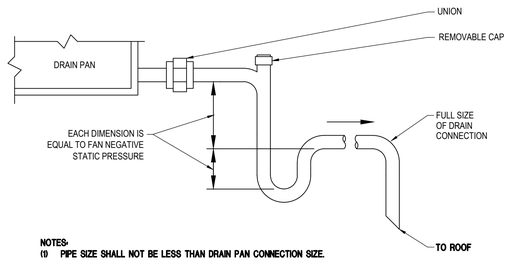


2 ROOFTOP UNIT ISOLATION CURB
NOT TO SCALE



NOTE: DETAIL PERTAINS TO DIFFUSER CONNECTIONS WITH LESS THAN 18 INCHES OF CLEAR CEILING SPACE. WHERE ADEQUATE SPACE IS AVAILABLE CONNECT DIFFUSER DIRECTLY WITH 12 INCHES OF STRAIGHT VERTICAL DUCT IMMEDIATELY PRIOR TO CONNECTION, AND RADIUS ELBOW. ALSO REFER TO SHEET METAL NOTES #7 ON SHEET M001.

3 DUCT CONNECTION TO DIFFUSER
NOT TO SCALE



NOTES:
(1) PIPE SIZE SHALL NOT BE LESS THAN DRAIN PAN CONNECTION SIZE.
(2)

DRAW-THRU UNITS	BLOW-THRU UNITS
A = SP + 1"	A = 1/2"
B = 1/2 SP + 1/2"	B = SP + 1/2"
C = 1-1/2 SP + 1-1/2"	C = SP + 1"

SP TO BE MAXIMUM STATIC PRESSURE (SP) ON DRAIN PAN INCLUDING MAXIMUM FILTER PRESSURE DROP.

4 CONDENSATE TRAP
NOT TO SCALE

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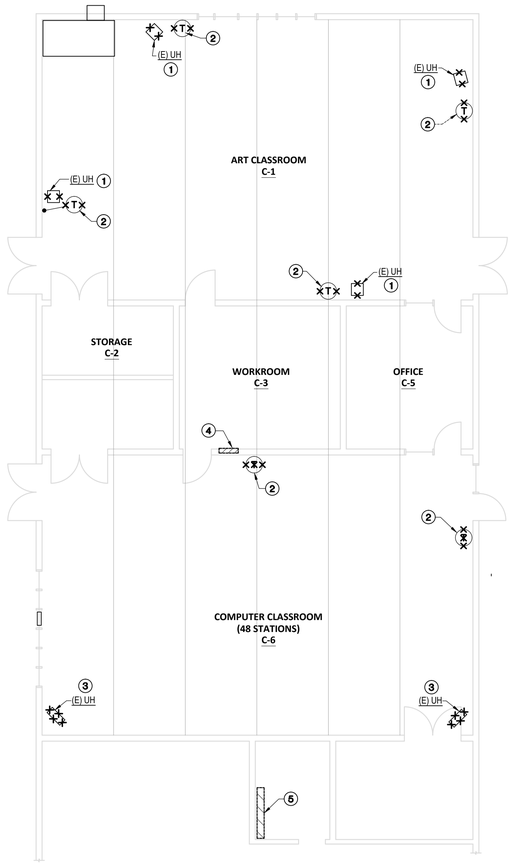
MECHANICAL SECTIONS & DETAILS

M201

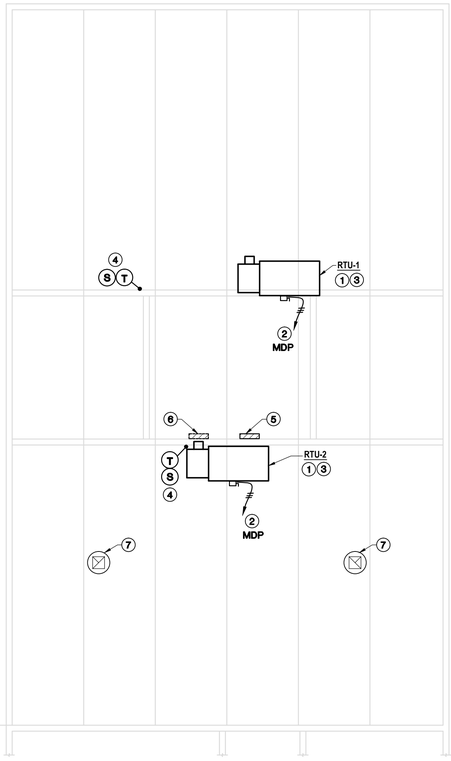
SHEET 5 OF 7



1 AREA "C" PARTIAL FLOOR PLAN - ELECTRICAL DEMOLITION
1/8 INCH = 1 FOOT

KEYED SHEET NOTES (1/E001)

1. SUSPENDED ELECTRIC UNIT HEATER TO BE REMOVED - DISCONNECT AND REMOVE CONDUCTORS BACK TO PANEL.
2. WALL MOUNTED THERMOSTAT TO BE REMOVED - REMOVE CONDUCTORS BACK TO DEVICE.
3. SUSPENDED HOT WATER UNIT HEATER TO BE REMOVED - DISCONNECT AND REMOVE WIRING BACK TO PANEL.
4. APPROXIMATE LOCATION OF (E) PANEL "K". DISCONNECT (E) UNIT HEATERS.
5. APPROXIMATE LOCATION OF MAIN DISTRIBUTION PANEL IN ELECTRICAL ROOM. INSTALL NEW 90/3 AND 125/3 CIRCUIT BREAKERS FOR NEW HEAT PUMP UNITS.



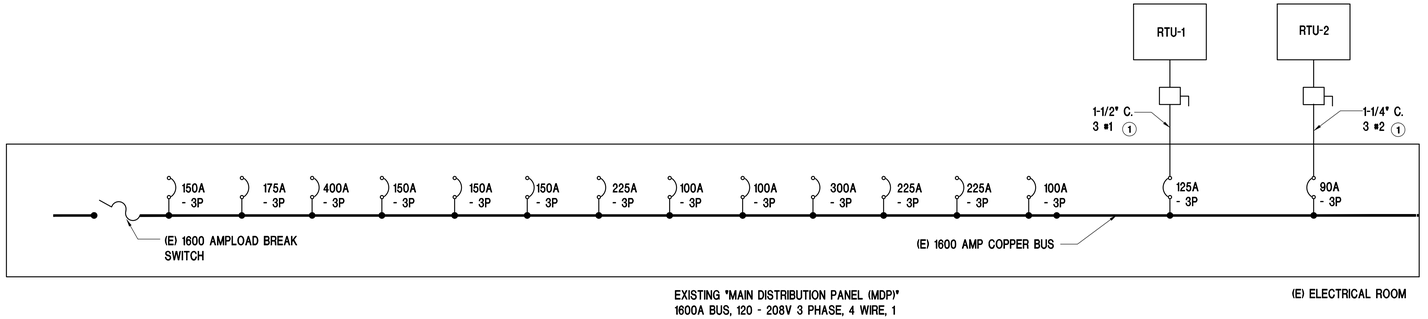
2 AREA "C" PARTIAL ROOF / FLOOR PLAN - ELECTRICAL WORK
1/8 INCH = 1 FOOT

ELECTRICAL SYMBOLS

	DISCONNECT SWITCH
	HOME RUN TO PANEL
	ELECTRICAL DISTRIBUTION PANEL
MDP	MAIN DISTRIBUTION PANEL
1	KEYED NOTE DESIGNATION

KEYED SHEET NOTES (2/E001)

1. NEW RTU - CONNECT AS REQUIRED.
2. ROUTE HOME RUN AT CEILING SPACE BELOW UNIT TO MAIN DISTRIBUTION PANEL - SEE FLOOR PLAN FOR APPROXIMATE LOCATION. REFER TO ONE LINE DIAGRAM FOR BRANCH CIRCUIT SIZE.
3. PROVIDE JUNCTION BOX & 3/4" CONDUIT STUB TO ACCESSIBLE CEILING SPACE FOR CONTROL WIRING BY OWNER.
4. CONTROL DEVICES ON WALL BELOW (BY OWNER). PROVIDE BACKBOX & 3/4" CONDUIT STUB TO ACCESSIBLE CEILING SPACE FOR CONTROL WIRING BY OWNER.
5. DDC PANEL ON WALL BELOW (BY OWNER). PROVIDE 120V. CONNECTION TO SPARE 20/1 CIRCUIT BREAKER IN (E) PANEL "K". INSTALL (2) 3/4" CONDUITS TO CEILING SPACE FOR CONTROL WIRING BY OWNER.
6. (E) PANEL "K".
7. (E) ROOF EXHAUST FAN - NOT IN CONTRACT.



3 PARTIAL ONE LINE DIAGRAM
NO SCALE

1 INSTALL NEW CIRCUIT BREAKERS IN EXISTING SQUARE D DISTRIBUTION PANEL.

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2800 BAILEY LANE
EUGENE, OREGON 97401

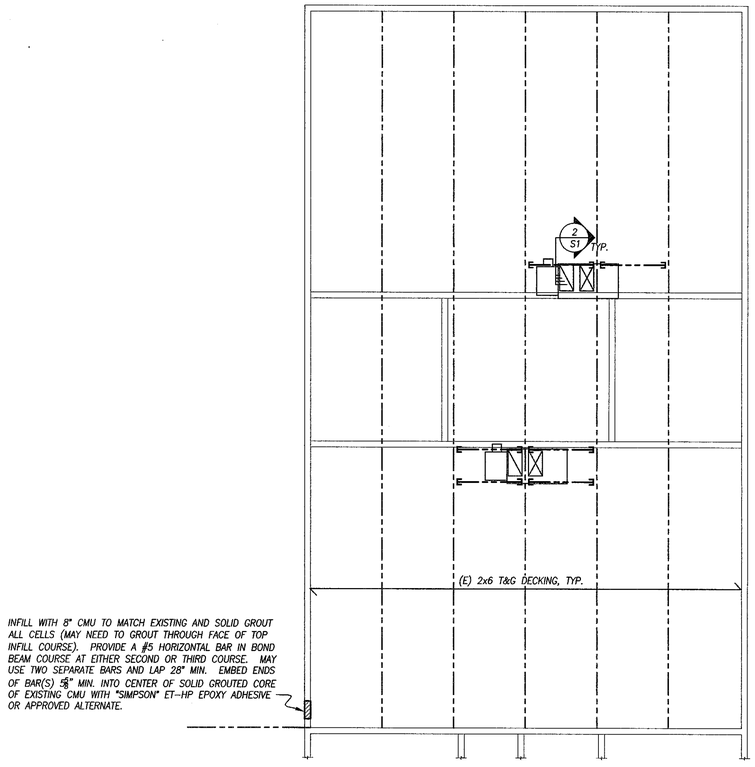
REGISTERED PROFESSIONAL ENGINEER 12898 OREGON SEPT. 21, 1984 JAMES P. KRUMSICK
EXPIRES 6/30/2015

PROJECT NO:	14-003
ISSUE DATE:	05/14/14
DRAFT DATE:	5-14-14
DRAWN BY:	BEJ
CHECKED BY:	JPK
REVISED:	-

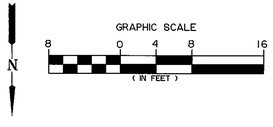
ELECTRICAL SYMBOLS PLANS & DIAGRAMS

E001

SHEET 6 OF 7

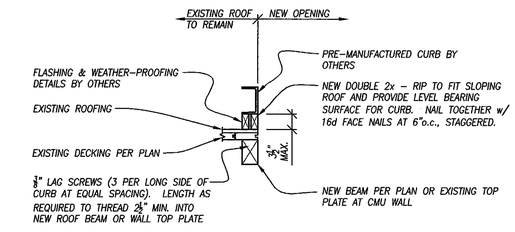


1/S1 **PARTIAL ROOF FRAMING PLAN**
SCALE: 1/8" =1'-0"



LEGEND

- EXISTING WALL BELOW
- EXISTING BEAM 5¼"x17¼" GLB (VERIFY)
- NEW 4x6 #2 DF BELOW
- NEW "SIMPSON" OHU46 HANGER



NOTE:
ATTACHMENT OF HVAC UNIT TO CURB TO BE DESIGNED BY OTHERS.

2/S1 **HVAC CURB SUPPORT**
SCALE: 3" =1'-0"

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STRUCTURAL REGISTERED PROFESSIONAL ENGINEER
#85332PE
OREGON
DEC. 30, 2011
RICARDO HERNANDEZ
Expires: JUNE 30, 2015

PROJECT NO:	14-003
ISSUE DATE:	
DRAWN BY:	JLB
CHECKED BY:	RH

REVISED:

STRUCTURAL PLAN / DETAIL

S1

SHEET OF