Development Services

From Concept to Construction

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APPEAL SUMMARY

Status: Decision Rendered - Held over from ID 23971 (8/26/20) for additional information

Appeal ID: 24414	**Project Address:** 15045 NE Mason St
Hearing Date: 11/25/20	**Appellant Name:** Joel Joiner
Case No.: M-001	**Appellant Phone:** 5038061421
Appeal Type: Mechanical	**Plans Examiner/Inspector:** Thomas Ng
Project Type: commercial	**Stories:** 1 **Occupancy:** F **Construction Type:** B
Building/Business Name: Avalign- Thortex	**Fire Sprinklers:** Yes - Ceiling
Appeal Involves: Reconsideration of appeal	**LUR or Permit Application No.:**
Plan Submitted Option: pdf [File 1] [File 2]	**Proposed use:** Industrial- Shop

APPEAL INFORMATION SHEET

Appeal item 1

Code Section	EM103.3.1
Requires	When an unconditioned/semi conditioned space is converted to conditioned space, shall be brought to energy code compliance. As if building was new
Code Modification or Alternate Requested	The intent of this appeal is to save energy consumed by a manufacturing facility by forgoing the addition of code- minimum insulation to exterior walls
Proposed Design	Add AC to mfg. facility with un-insulated walls and replace lighting with LED. the proposal is to leave the walls un0insulated because an annual energy analysis shows that due to the large heat load generated by equipment in the facility, leaving the walls un-insulated is more energy efficient than insulating them per code. attached images show existing walls and extreme difficulty it would take to insulate.
Reason for alternative	To offset the energy use of non-insulated wall, we are proposing that: exceeds the intent of energy code. increased safety and comfort of employees.

APPEAL DECISION

Omission of exterior wall insulation: Granted as proposed for this tenant, use and the equipment installations identified in the Energy Analysis.

The Administrative Appeal Board finds that the information submitted by the appellant demonstrates that the approved modifications or alternate methods are consistent with the intent of the code; do not lessen health, safety, accessibility, life, fire safety or structural requirements; and that special conditions unique to this project make strict application of those code sections impractical.

Pursuant to City Code Chapter 27.02, you may appeal this decision to the Mechanical Code Board of Appeal within 90 calendar days of the date this decision is published. For information on the appeals process and costs, including forms, appeal fee, payment methods and fee waivers, go to www.portlandoregon.gov/bds/appealsinfo, call (503) 823-7300 or come in to the Development Services Center.

MECHANICAL LEGEND AND SYMBOLS

SA		SUPPLY AIR DUCT
RA		RETURN AIR DUCT
RA		EXHAUST AIR DUCT
OSA		OUTSIDE AIR DUCT
CD		CEILING DIFFUSER, 2 WAY
CD		CEILING DIFFUSER, 4 WAY
CR		CELING RETURN AIR GRILLE
CE		CELING EXHAUST AIR GRILLE
SWS		SIDE WALL SUPPLY REGISTER
SWR		SIDE WALL RETURN GRILLE
CD	CD	CONDENSATE DRAIN
	T	ROOM THERMOSTAT
	CU 1	EQUIPMENT IDENTIFICATION

SINGLE LINE	DOUBLE LINE	DESCRIPTION
		VOLUME DAMPER
FD	FD	FIRE DAMPER
FSD	FSD	FIRE/SMOKE DAMPER
SD	SD	SMOKE DAMPER
MD	MD	MOTORIZED DAMPER
		MITERED ELBOW WITH TURNING VANES
		RADIUSED ELBOW
		RECTANGULAR MAIN W/ ROUND BRANCH
		RECTANGULAR MAIN WITH RECTANGULAR BRANCH
		CONCENTRIC SQUARE TO ROUND
		ECCENTRIC TRANSITION, RECTANGULAR OR ROUND
		NON-SYMMETRICAL WYE
		SYMMETRICAL WYE
		RECTANGULAR DUCT RISER
		ROUND DUCT RISER
		RECTANGULAR DUCT DROP
		ROUND DUCT DROP
		RECTANGULAR OFFSET LESS THAN 15°
		RECTANGULAR OFFSET MORE THAN 15°
		ROUND WYE
EX	EX	EXTRACTOR
		BELLMOUTH
		ROUND DUCT WITH ROUND BRANCH
		CONCENTRIC TRANSITION, RECTANGULAR OR ROUND
		LINED DUCT (SIZES SHOWN ARE NET INSIDE)
		FLEXIBLE CONNECTION

HVAC GENERAL NOTES:

1. DUCTS SHALL BE SUPPORTED WITH APPROVED HANGERS AT INTERVALS NOT EXCEEDING 10 FEET OR BY OTHER APPROVED DUCT SUPPORT SYSTEMS DESIGNED IN ACCORDANCE WITH THE BUILDING CODE. FLEXIBLE AND OTHER FACTORY-MADE DUCTS SHALL BE SUPPORTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. THIS CONTRACTOR SHALL PAY FOR ALL PERMITS AND FEES.
3. CONTROL LOW VOLTAGE WIRING BY MECHANICAL CONTRACTOR AND CONDUIT BY ELECTRICAL CONTRACTOR. WIRING, CABLE, AND RACEWAYS SHALL BE LISTED AND LABELED AS PLENUM-RATED AND SHALL BE INSTALLED IN ACCORDANCE WITH THE ELECTRICAL CODE, 2013 CMC. NEW CONDUITS SHALL BE INSTALLED IN THE NEW SHAFTS.
4. CONDENSATE DRAIN PIPING AND FINAL CONNECTION TO UNIT BY MECHANICAL CONTRACTOR.
5. DUCT PENETRATION, CUTTING AND PATCHING BY GENERAL CONTRACTOR, UNLESS OTHERWISE NOTED ON PLAN.
6. 7-DAY PROGRAMABLE THERMOSTAT SHALL BE 24 VOLT, COOLING WITH MATCHING SUBBASE AND TAMPER PROOF COVER.
7. PROVIDE FILTER FOR AIR CONDITIONING AND/OR AIR SIDE UNITS AS REQUIRED PER ASHRAE AND CODE.
8. THIS CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR FOR SIZE AND LOCATION OF DUCTWORK WALL OPENINGS AND WITH ELECTRICAL CONTRACTOR FOR ELECTRICAL REQUIREMENTS OF ALL MECHANICAL EQUIPMENT AND ARCHITECTURAL DRAWINGS FOR AIR DISTRIBUTION LOCATION.
9. THE CONTRACTOR SHALL SUBMIT BID BASED ON THE DRAWINGS AND ALTERNATE FOR COST SAVING. THESE DRAWINGS ARE FOR BIDDING PURPOSES.
10. COORDINATE THE LOCATION OF ALL CEILING DIFFUSERS, REGISTERS AND GRILLES WITH THE ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL LIGHTING LAYOUT AND ARCHITECTURAL ROOM ELEVATIONS.
11. DUCTS SHALL BE SUPPORTED WITH 1" WIDE 16-GAUGE HANGER STRAPS AND SHALL BE SPACED AT NO MORE THAN 7'-0" ON CENTERS AND SHALL BE SECURED TO STRUCTURAL MEMBER. EXPOSED DUCTWORK ON ROOF SHALL BE SUPPORTED BY GALVANIZED STEEL ANGLE & SHALL BE PER LOCAL CODE.
12. ROUND AND RECTANGULAR DUCTWORK ARE INTERCHANGEABLE IF CROSS SECTION AREAS ARE EQUIVALENT. CONTRACTOR IS TO VERIFY THE EXACT CEILING SPACE AND INTERCHANGE THE DUCT SIZE TO FIT THE CEILING SPACE WITHOUT ADDITIONAL FEE CHARGE.
13. INSTALL VOLUME CONTROL DAMPERS AT EACH SUPPLY DIFFUSER TO AFFORD COMPLETE CONTROL OF THE AIR FLOW IN THE VARIOUS DUCT SYSTEMS.
14. COORDINATE ENTIRE INSTALLATION OF THE H.V.A.C. SYSTEM WITH THE WORK OF ALL OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALATION. PROVIDE ALL FITTINGS, OFFSETS, AND TRANSITIONS AS REQUIRED FOR A COMPLETE WORKABLE INSTALLATION.
15. PROVIDE BACK-DRAFT DAMPERS FOR ALL EXHAUST AIR DUCTS UNLESS OTHERWISE NOTED PER CODE.
16. CONTRACTOR SHALL SUBMIT A COMPLETE BALANCE REPORT FOR APPROVAL. THE REPORT SHALL INCLUDE THE FOLLOWING:
    A) AIR QUANTITIES AT EACH REGISTER.
    B) STATIC PRESSURE READINGS AT INLET AND DISCHARGE OF EACH AIR HANDLING SYSTEM AND AT INLET OF EACH EXHAUST AIR SYSTEM.
    C) COOLING AND HEATING SUPPLY AND RETURN AIR TEMPERATURES AT EACH AIR CONDITIONING UNIT.
17. ALL LINED DUCT DIMENSIONS ARE NET CLEAR DIMENSION AFTER LINING HAS BEEN INSTALLED.
18. ANY MATERIAL, ARTICLE OR PIECE OF EQUIPMENT OTHER THAN THAT INDICATED SHALL NOT BE USED UNLESS APPROVED IN WRITING BY THE ENGINEER AND ANY CHANGES IN MECHANICAL, ELECTRICAL AND/OR OTHER SYSTEMS REQUIRED DUE TO SUCH SUBSTITUTION SHALL BE THE RESPONSIBILITY OF THE HVAC CONTRACTOR; AND AT NO ADDITIONAL COST TO THE OWNER.
19. EXHAUST TERMINATION SHALL BE MINIMUM 10'-0" AWAY OR 3'-0" ABOVE FROM ANY FRESH AIR INTAKE, OPENABLE WINDOWS, DOORS.
20. THE CONTRACTOR SHALL FURNISH AND INSTALL ACCESS DOORS AND/OR ACCESS PANELS AT LOCATIONS AS NECESSARY TO SERVICE FIRE DAMPERS AND PROVIDE MAINTENANCE FOR EQUIPMENT. ALL ACCESS DOORS AND PANEL LOCATIONS SHALL BE VERIFIED WITH THE ARCHITECT PRIOR TO INSTALLATION.
21. ACCURATE AS-BUILT DRAWINGS SHALL BE MADE DURING CONSTRUCTION AND SUBMITTED FOR APPROVAL UPON COMPLETION OF INSTALLATION. SHALL BE CREATED BY THE INSTALLING CONTRACTOR DURING COSTRCUTION.
22. THE CONTRACTOR SHALL VISIT SITE PRIOR TO BIDDING TO VERIFY LOCATIONS AND SIZES OF ALL EXISTING EQUIPMENT AND INFORM THE ARCHITECT OF ANY DISCREPANCIES.
23. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR, EQUIPMENT, TRANSPORTATION AND SERVICES NECESSARY FOR COMPLETION OF THE WORK. ALL MATERIALS AND WORK SHALL COMPLY WITH APPLICABLE CODES AND GOVERNING REGULATIONS AND MEET THE APPROVAL OF THE LOCAL JURISDICTION.
24. TAKE ALL PRECAUTIONS NECESSARY TO PROTECT THE MATERIALS BEFORE, DURING AND AFTER INSTALLATION. IN THE EVENT OF DAMAGE, IMMEDIATELY REPAIR ALL DAMAGED AND DEFECTIVE WORK TO THE APPROVAL OF THE ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.
25. THESE DRAWINGS ARE DIAGRAMMATIC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH ALL OTHER TRADES. THIS INCLUDES COORDINATING THE LOCATION AND SIZE OF ALL OPENINGS, LOCATIONS OF EQUIPMENT PADS AND CHANGES OF ELEVATIONS OF DUCTWORK, PIPING AND OTHER EQUIPMENT.
26. PROVIDE ALL FRESH AIR INTAKES AND EXHAUST OUTLETS WITH HOOD, 1/2" GALVANIZED MESH SCREENS AND OUTSIDE AIR BACKDRAFT DAMPERS.
27. DUCTWORK SHALL BE INSULATED OR LINED AS NOTED ON DRAWINGS. ALL DUCTWORK EXPOSED ON ROOF SHALL BE INTERNALLY LINED UNLESS OTHERWISE INDICATED OR SPECIFIED. ALL DUCT SIZES ARE SHEET METAL SIZES. ALL DUCT JOINTS SHALL BE SEALED PER SPECIFICATIONS.
28. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL FITTINGS, TRANSITIONS, DAMPERS, VALVES AND OTHER DEVICES REQUIRED FOR A COMPLETE WORKABLE INSTALLATION.

GENERAL SPECIFICATIONS:

1. EVERY DUCT AND PLENUM WHICH IS A PORTION OF THE COMFORT HEATING AND/OR COOLING SYSTEM SHALL COMPLY WITH THE REQUIREMENTS OF THE OREGON MECHANICAL CODE AND/OR ASHRAE. THIS CONSTRUCTION INSULATION AND SUPPORT OF EVERY DUCT AND PLENUM SHALL COMPLY WITH LOCAL CODE.
2. CONCEALED SPACES, CIRCULATION AIR

   NO COMBUSTIBLE MATERIAL (SUCH AS EXPOSED COMMUNICATION CABLES, INSULATED WIRES, PLASTIC TUBING OR PIPING, PIPE INSULATION, CONDENSATE PAN INSULATION, WOOD, PVC, ABS AND OTHER PLASTICS) TO BE IN CONCEALED SPACES USED TO CONVEY CIRCULATING AIR SUPPLY. WHEN COMBUSTIBLE MATERIAL IS TO BE LOCATED IN THE ABOVE SPACES, IT SHALL BE APPROVED FOR SUCH INSULATION.
3. INSULATION OF DUCTS

   EVERY CONDITIONED AIR SUPPLY AND PLENUM SHALL BE INSULATED WITH NO LESS THAN THE AMOUNT OF INSULATION INDICATED BELOW (EXCEPT FOR DUCTS AND PLENUMS DIRECTLY EXPOSED TO THE CONDITIONED SPACES.) ONLY APPROVED MATERIALS SHALL BE USED WITHIN DUCTS OR PLENUMS FOR INSULATING, SOUND DEADENING OR OTHER PURPOSES.

DUCT LOCATION	INSULATION TYPE COOLING ONLY	INSULATION TYPE HEATING ONLY
ROOF OR EXPOSED TO OSA	C & W	A & W
ATTICS BETWEEN AND UNDER FLOOR CRAWL SPACES AND BASEMENTS	A	A

   INSULATION TYPES

   A 1", 0.60 LB/CU. FT. MINERAL FIBER BLANKET
   1/2 INC., 1.5 LB/CU. FT. MINERAL FIBER BLANKET (DUCT LINER)
   1/2 INC., 3 LB/CU. FT. MINERAL FIBER BOARD
   MATERIAL WITH A CONDUCTANCE OF 0.48 OR LESS

   C 3", 0.60 LB/CU. FT. MINERAL FIBER BLANKET
   1-1/2", 1.5 LB/CU. FT. MINERAL FIBER BLANKET (DUCT LINER)
   1-1/2", 3 LB/CU. FT. MINERAL FIBER BOARD
   MATERIAL WITH A CONDUCTANCE OF 0.16 OR LESS

   W WEATHERPROOF BARRIER

   WHERE DUCTS ARE USED FOR BOTH HEATING AND COOLING, THE MINIMUM INSULATION TO BE AS REQUIRED FOR THE MOST RESTRICTIVE CONDITION.

   INSULATION MAY BE OMITTED ON THAT PORTION OF A DUCT WHICH IS LOCATED WITHIN A WALL OR A FLOOR-CEILING SPACE WHERE BOTH SIDES AND THIS SPACE ARE EXPOSED TO CONDITIONED AIR AND WHERE THIS SPACE IS NOT VENTILATED OR OTHERWISE EXPOSED TO UNCONDITIONED AIR.
4. SEALING

   TRANSVERSE SUPPLY DUCTS, TAPED OR SEALED WITH MASTIC EXCEPT FOR DUCTS EXPOSED TO CONDITIONED SPACE, WHERE DUCT STATIC PRESSURE EXCEEDS 3/4" WATER, LONGITUDINAL JOINTS, TAPED OR SEALED WITH MASTIC.
5. INSPECTION

   INSPECTION TO BE MADE AND DUCTWORK APPROVED BEFORE COVERING WITH INSULATION.
6. TEMPERATURE CONTROLS

   EACH HVAC SYSTEM SHALL BE PROVIDED WITH AT LEAST ONE AUTOMATIC TEMPERATURE CONTROL DEVICE FOR THE REGULATION OF TEMPERATURE THESE AUTOMATIC TEMPERATURE CONTROL DEVICES SHALL BE CAPABLE OF BEING SET TO MAINTAIN SPACE TEMPERATURE SET POINTS FROM 55 DEGREES F TO 85 DEGREES F, SHALL BE CAPABLE OF OPERATING THE SYSTEM HEATING AND/OR COOLING IN SEQUENCE.

   EXCEPT AS ALLOWED, THESE CONTROLS SHALL BE ADJUSTABLE TO PROVIDE A DEAD BAND OF 5 DEGREES F BETWEEN FULL HEATING AND FULL COOLING. CONTROLS SHALL HAVE THE CAPABILITY OF TERMINATING ALL HEATING AT A TEMPERATURE NO MORE THAN 70 DEGREES F AND OF TERMINATING ALL COOLING AT A TEMPERATURE NOT LESS THAN 78 DEGREES F.
7. AN AUTOMATIC TIME SWITCH CONTROL DEVICE WITH AN ACCESSIBLE FOUR (4) HOUR MANUAL OVERRIDE SHALL BE PROVIDED.
8. A MAINTENANCE LABEL SHALL BE AFFIXED TO MECHANICAL EQUIPMENT AND A MAINTENANCE MANUAL SHALL BE PROVIDED TO THE OWNER PER STANDARDS.
9. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL. ALL DUCTWORK SHALL BE CONSTRUCTED TO 2" PRESSURE STANDARDS AS DEFINED BY THE SMACNA "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE". CONSTRUCTION OF FITTINGS, ELBOWS AND JOINTS SHALL BE IN ACCORDANCE WITH CURRENT SMACNA, ASHRAE AND LOCAL SEISMIC STANDARDS.
10. DUCT MATERIALS:
    A. GALVANIZED STEEL DUCTS: ASTM A525 AND ASTM A527 GALVANIZED STEEL SHEET, LOCK-FORMING QUALITY, HAVING ZINC COATING OF IN CONFORMANCE WITH ASTM A90.
    B. STEEL DUCTS: ASTM A366.
    C. ALUMINUM DUCTS: ASTM B209; ALUMINUM SHEET, ALLOY 3003-H14. ALUMINUM CONNECTORS AND BAR STOCK: ALLOY 6061- T6 OR OF EQUIVALENT STRENGTH.
11. WEIGHT OF METAL DUCT:
    A. RECTANGULAR DUCTS

	GAUGE
UP TO 12 INCHES	26
13 INCHES TO 30 INCHES	24
31 INCHES TO 60 INCHES	22
61 INCHES TO 90 INCHES	20
91 INCHES & OVER	18

    B. ROUND DUCT

SPIRAL PIPE GAUGE	FITTING	GUAGE
3 TO 14 INCHES	26	24
15 TO 26 INCHES	24	22
27 TO 36 INCHES	22	20
37 TO 50 INCHES	20	20

ROOF TOP UNIT SCHEDULE

MARK	MANUF. & MODEL NO.	INDOOR FAN CFM	INDOOR FAN ESP IN WG.	INDOOR FAN MTR. HP	MIN. OSA (CFM)	COOLING BTUH TOTAL	EER	HEATING (MBH) GAS INPUT	HEATING (MBH) GAS OUTPUT	AFUE %	WEIGHT LBS.	POWER UTILIZATION VOLT/PH	FLA	MCA	MOCP	NOTES
AC 1	TRANE YCH600B	20,000	2.0	20	2,000	540,000	10.4	400	320	80.0%	6,000	480/3/60	24.7	–	–	1,2,3,4,5
AC 2	TRANE YCH600B	20,000	2.0	20	2,000	540,000	10.4	400	320	80.0%	6,000	480/3/60	24.7	–	–	1,2,3,4,5

NOTES:
1. PROVIDE INTEGRAL DISCONNECT SWITCH.
2. PROVIDE FACTORY INSTALLED MOTOR STARTERS
3. PROVIDE LOW LEAKAGE VERTICAL ECONOMIZER W/POWER EXHAUST AND CONTROL SYSTEM.
4. PROVIDE AND FIELD INSTALL SMOKE DUCT DETECTOR IN RETURN SIDE.
5. PROVIDE LOW AMBIANT KIT.

DRAWING LIST

DRAWING	TITLE
M1.00	HVAC SCHEDULES AND LEGEND
M1.01	HVAC FIRST FLOOR PLAN
M1.02	HVAC ROOF PLAN
M6.01	HVAC DETAILS

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This Drawing Prepared By Portland Mechanical For Exclusive Use By Portland Mechanical Contractors For The Project: Orchards at Orenco 3, Hillsboro, OR

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REVISION	DATE	REASON FOR ISSUE

SDCI APPROVAL STAMP

REGISTERED PROFESSIONAL ENGINEER
OREGON
July 9, 2002
JOHN G. DUFFY
Expires 12/31/2021

SHCEDULES MECHANICAL

PERMIT SET

DATE 08/14/2020
PROJECT NUMBER -

SHEET NUMBER M1.00

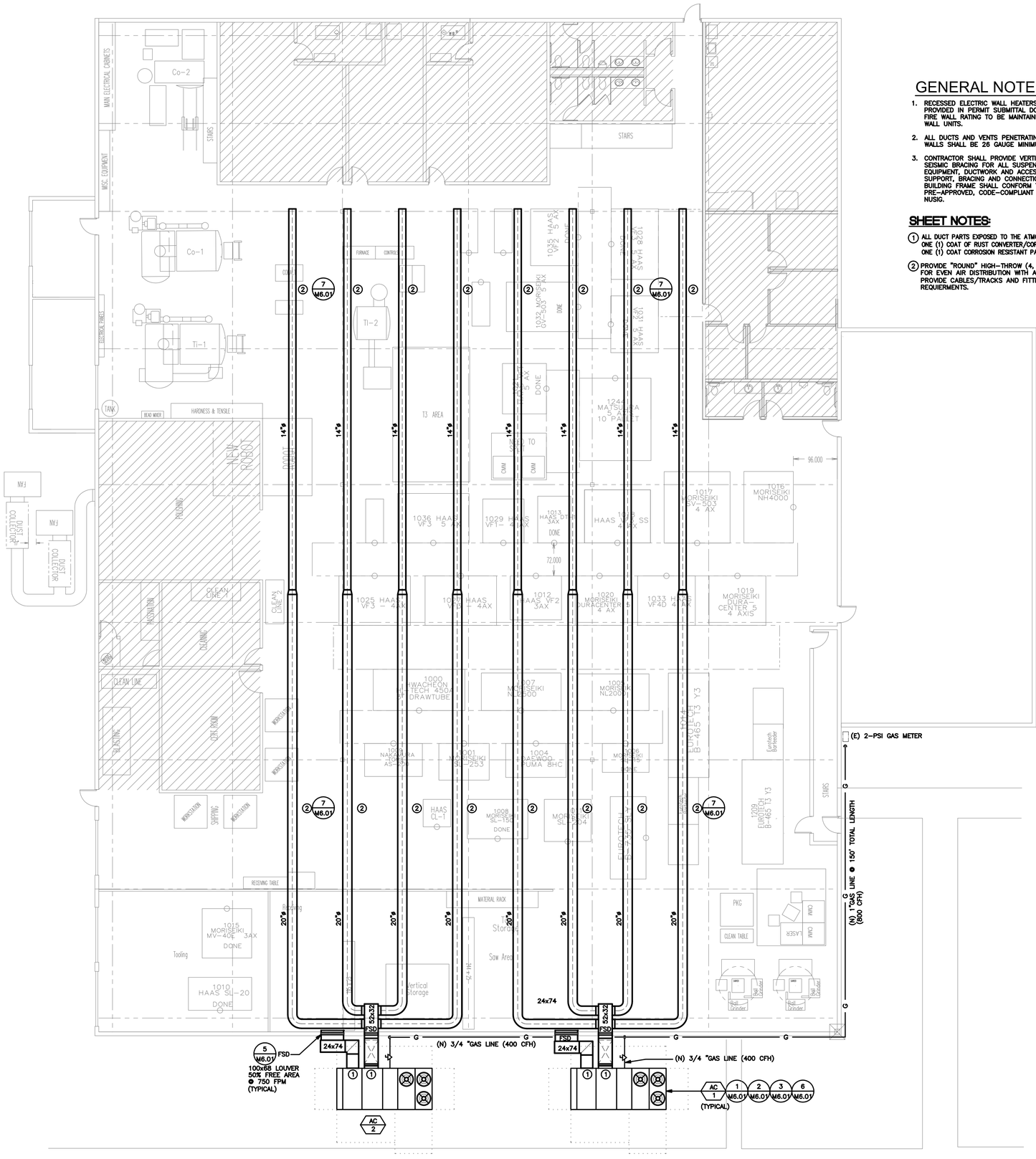
GENERAL NOTES

1. RECESSED ELECTRIC WALL HEATERS SHEETS PROVIDED IN PERMIT SUBMITTAL DOCUMENTS. 1-HR FIRE WALL RATING TO BE MAINTAINED AT RECESSED WALL UNITS.
2. ALL DUCTS AND VENTS PENETRATING EXTERIOR WALLS SHALL BE 26 GAUGE MINIMUM.
3. CONTRACTOR SHALL PROVIDE VERTICAL SUPPORT AND SEISMIC BRACING FOR ALL SUSPENDED MECHANICAL EQUIPMENT, DUCTWORK AND ACCESSORIES. THE SUPPORT, BRACING AND CONNECTIONS TO THE BUILDING FRAME SHALL CONFORM TO A PRE-APPROVED, CODE-COMPLIANT SYSTEM SUCH AS NUSIG.

SHEET NOTES:

(1) ALL DUCT PARTS EXPOSED TO THE ATMOSPHERE SHALL BE PROTECTED BY ONE (1) COAT OF RUST CONVERTER/CORROSION RESISTANT PRIMER AND ONE (1) COAT CORROSION RESISTANT PAINT.

(2) PROVIDE "ROUND" HIGH-THROW (4, 6 & 8 O'CLOCK) DUCTSOX FOR EVEN AIR DISTRIBUTION WITH ACTIVE ANTIMICROBIAL FABRIC. PROVIDE CABLES/TRACKS AND FITTINGS PER MANUFACTUERS REQUIERMENTS.



1 **LEVEL 1 OVERALL HVAC FLOOR PLAN**
SCALE: 1/8"=1'-0"

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July 9, 2002
Expires 12/31/2021

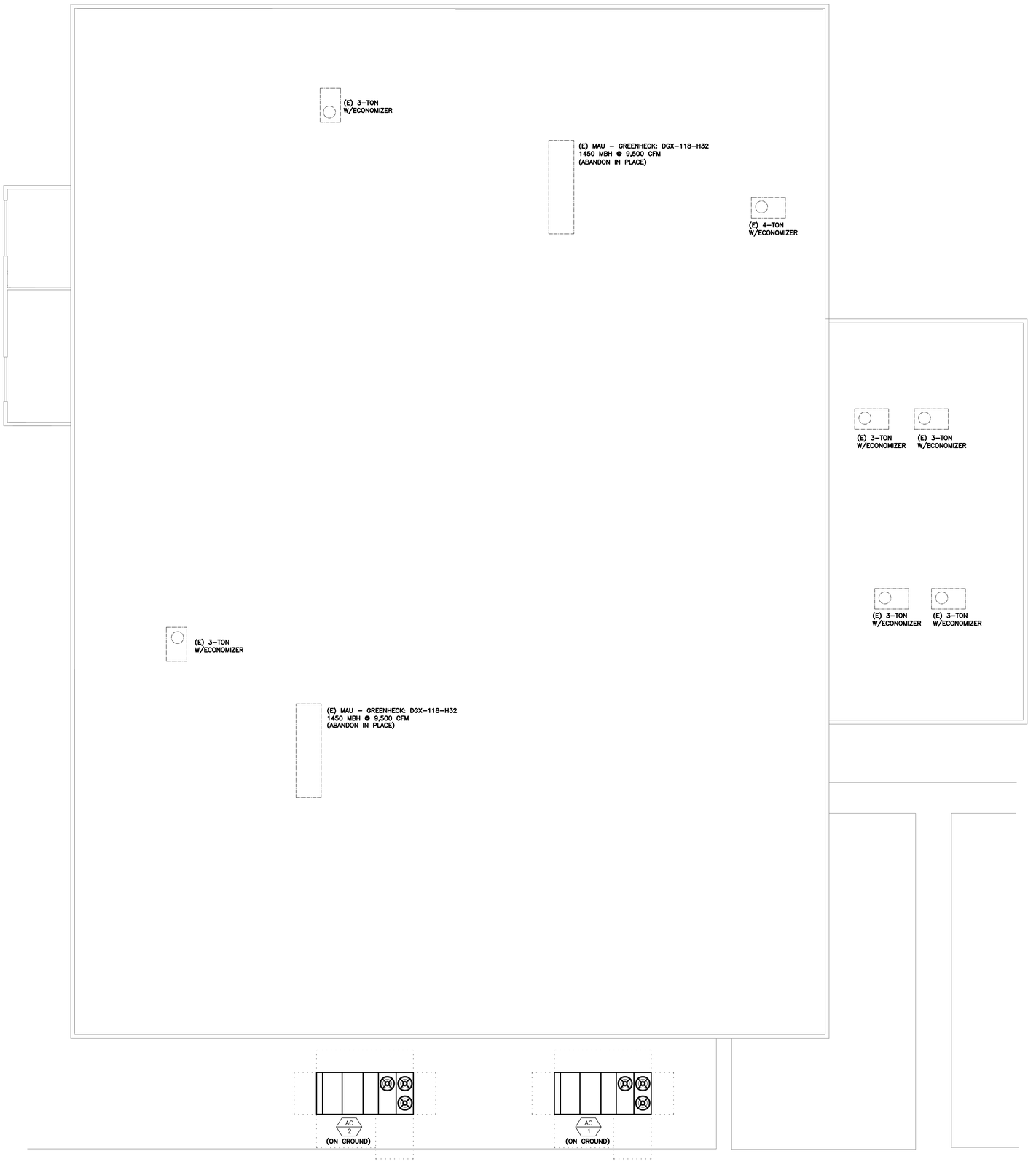
LEVEL 1
OVERALL HVAC
FLOOR PLAN

PERMIT SET

DATE 08/14/2020
PROJECT NUMBER -

SHEET NUMBER M1.01

H:\Departments\Mechanical Division 71\Travis Young\Projects\E\Eagle Landing Mixed-Use (200.)\Plans\HVAC Plans (CURRENT)\M2.02_Level 1.dwg March 04 2020 9:42am By:jenifert



1 **ROOF OVERALL HVAC PLAN**
SCALE: 1/8"=1'-0"

GENERAL NOTES

1. EVERY EFFORT HAS BEEN MADE TO ASCERTAIN EXISTING CONDITIONS. DUCTWORK INDICATED HAS BEEN ROUTED AND SIZED TO MAINTAIN CEILING CONDITIONS AND HEIGHTS INDICATED ON ARCHITECTURAL CEILING PLAN. MAINTAIN EQUIPMENT CLEARANCES.
2. ALL DUCTS AND VENTS PENETRATING EXTERIOR WALLS SHALL BE 26 GAUGE MINIMUM.
3. CONTRACTOR SHALL PROVIDE VERTICAL SUPPORT AND SEISMIC BRACING FOR ALL SUSPENDED MECHANICAL EQUIPMENT, DUCTWORK AND ACCESSORIES. THE SUPPORT, BRACING AND CONNECTIONS TO THE BUILDING FRAME SHALL CONFORM TO A PRE-APPROVED, CODE-COMPLIANT SYSTEM SUCH AS NUSIG.
4. DUCT BRACING AND SUPPORTS SHALL BE NON-COMBUSTIBLE MATERIAL SECURELY ATTACHED TO THE STRUCTURE AND DESIGNED TO CARRY GRAVITY AND SEISMIC LOADS WITHIN THE STRESS LIMITATIONS OF THE BUILDING CODE. BOLTS, SCREWS, RIVETS AND OTHER MECHANICAL FASTENERS SHALL NOT PENETRATE THE DUCT WALLS.

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REVISION	DATE	REASON FOR ISSUE

SDCI APPROVAL STAMP

REGISTERED PROFESSIONAL ENGINEER
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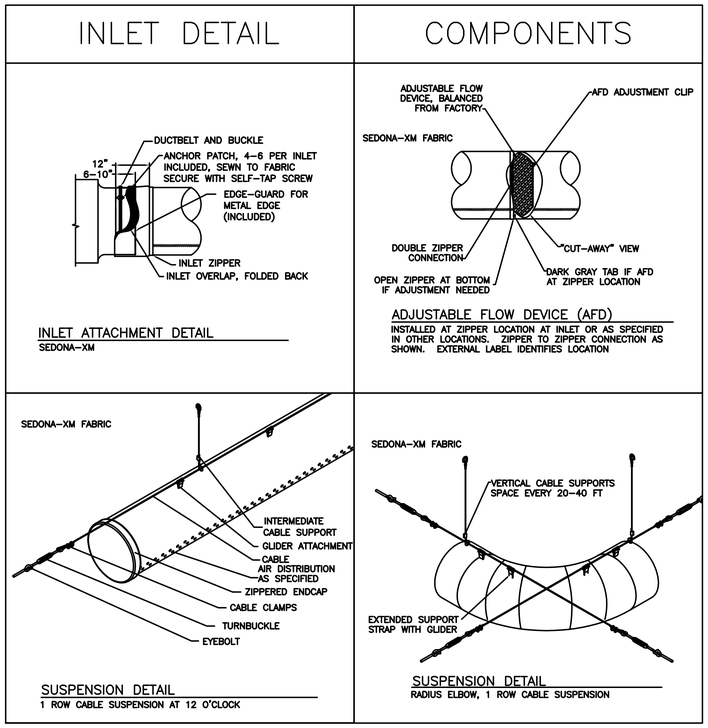
OREGON
JULY, 9, 2005
JOHN G. DUFFY
Expires 12/31/2021

ROOF OVERALL HVAC PLAN

PERMIT SET

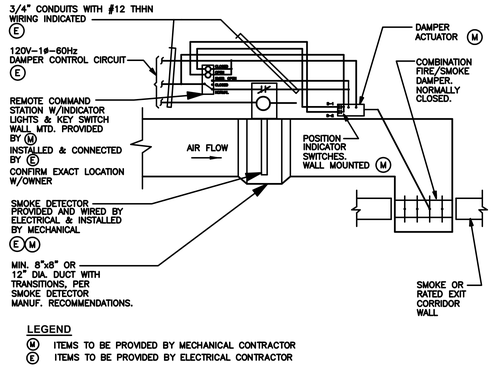
DATE	PROJECT NUMBER
08/14/2020	-

SHEET NUMBER
M1.02



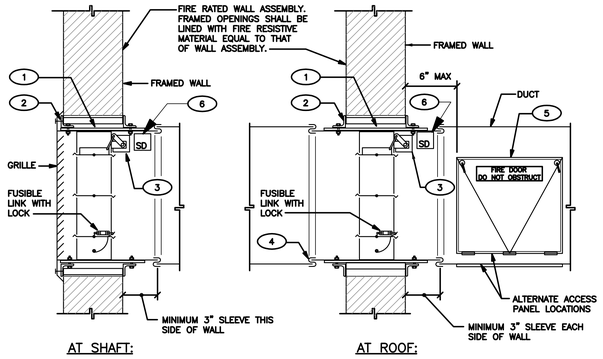
7 DUCTSOX DETAILS

NTS



4 FIRE/SMOKE DAMPER WIRING

NTS

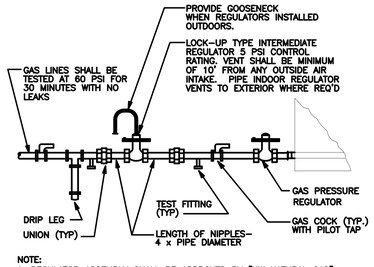


NOTES:

1. ALLOWABLE CLEARANCE ON TOP OF FIRE DAMPER TO TOP OF OPENING SHALL BE 1/4" PER FOOT OF FIRE DAMPER HEIGHT. FIRE DAMPER SHALL REST ON BOTTOM OF WALL OPENING AND SHALL BE CENTERED SIDE TO SIDE IN OPENING WITH CLEARANCE OF 1/4" PER FOOT OF FIRE DAMPER ON EACH SIDE.
2. SLEEVE RETAINING ANGLES FASTENED TO FIRE DAMPER SLEEVE. ANGLES SHALL BE INSTALLED ON ALL FOUR SIDES OF DAMPER AND ON EACH SIDE OF THE WALL. ANGLE GAGE AND FASTENING METHOD AS PERMITTED AS A CONDITION OF DAMPER LISTING. REFER TO MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS. MINIMUM 1" ANGLE OVERLAP ON ALL FOUR SIDES.
3. ACTUATOR MOTOR SHALL BE INTERLOCKED WITH SMOKE DETECTOR. COORDINATE WITH ELECTRICAL INSTALLER FOR POWER AND CONTROL WIRING.
4. DUCT CONNECTION AS PERMITTED AS A CONDITION OF DAMPER LISTING ("S" SLIP CONNECTION SHOWN).
5. ACCESS TO FIRE DAMPER BLADES AND ACTUATOR MOTOR SHALL BE THROUGH DUCT ACCESS PANEL. PANEL SHALL BE HINGED WITH A TIGHT FITTING SEAL. ACCESS SIZE SHALL BE A MINIMUM OF 18" LONG IN DIRECTION OF AIRFLOW BY HEIGHT OR WIDTH OF DUCT (PERPENDICULAR TO AIRFLOW) WITH A 12" MINIMUM. WHERE 12" CONNOT BE ACHIEVED, CONTRACTOR SHALL INSTALL EASILY REMOVABLE AND REPLACABLE TIGHTLY GASKETED DUCT SECTION(S). ACCESS PANEL SHALL BE LABELED WITH THE WORDS, "FIRE DOOR – DO NOT OBSTRUCT" IN LETTERS NO LESS THAN 1" IN HEIGHT. EXTERNAL INSULATION SHALL NOT CONCEAL ACCESS UNLESS A LABEL IS ATTACHED TO THE INSULATION WHICH INDICATES THE EXACT LOCATION OF THE OPENING.
6. INTEGRAL DUCT SMOKE DETECTOR. COORDINATE WITH ELECTRICAL INSTALLER FOR POWER AND CONTROL WIRING.
7. LOCATE 3/4" HIGH WHITE PLASTIC LAMIMATE SIGNS WITH 3/8" HIGH BLACK LETTERING WITH THE INITIALS "FSD" AND UNIQUE NUMBER ON THE CEILING ACCESS DOOR OR T–BAR CEILING GRID IN THE AREA OF THE DAMPER ACCESS PANEL. ATTACH TO CEILING WITH EPOXY ADHESIVE.
8. FIRE/SMOKE DAMPER DETAIL FOR REFERENCE ONLY. FIRE DAMPERS SHALL BE STATE FIRE MARSHAL APPROVED AND COMPLETE INSTALLATION SHALL BE PER MANUFACTURER'S PRINTED INSTRUCTIONS WHICH SHALL BE MADE AVAILABLE TO INSPECTION AUTHORITITES.

5 FIRE SMOKE DAMPER DETAIL

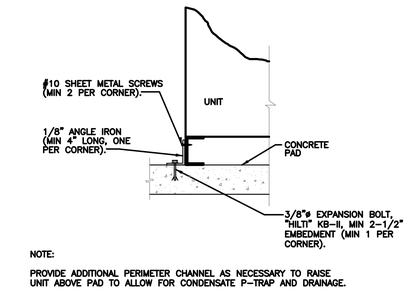
NTS



NOTE:
1. REGULATOR ASSEMBLY SHALL BE APPROVED BY "NW NATURAL GAS".
2. PIPING SHALL BE IN ACCORDANCE WITH "GAS COMPANY" REQUIREMENTS FOR 2 PSI SERVICE.
3. ALL PIPING SHALL BE PAINTED. DO NOT PAINT BRAIDED HOSE.

6 UNIT GAS CONNECTION

NTS

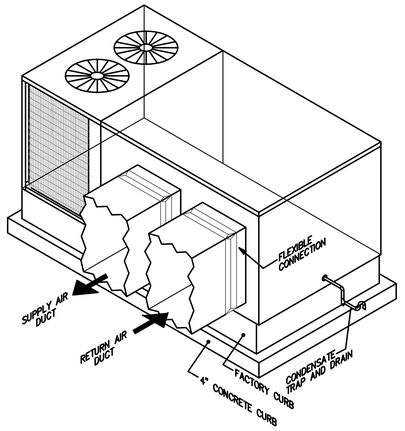


NOTE:

PROVIDE ADDITIONAL PERIMETER CHANNEL AS NECESSARY TO RAISE UNIT ABOVE PAD TO ALLOW FOR CONDENSATE P–TRAP AND DRAINAGE.

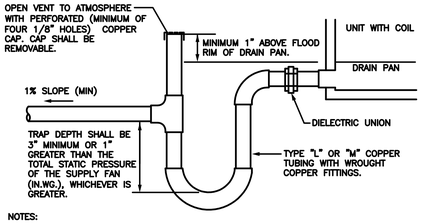
1 INERTIA BASE MOUNT DETAIL

NTS



2 PACKAGED AIR HANDLING (AC) UNIT

NTS



NOTES:

1. CONDENSATE PIPE TERMINATION SHALL BE LOCATED A MINIMUM OF 1" ABOVE THE FLOOD RIM OF AN APPROVED TRAPPED RECEPTOR, LANDSCAPING AREA OR OTHER LOCATION AS APPROVED BY THE AUTHORITY HAVING JURISDICTION.
2. ALL INTERIOR CONDENSATE DRAIN PIPING ABOVE CEILINGS SHALL BE INSULATED.
3. PROVIDE PIPE SUPPORTS AS REQUIRED TO MAINTAIN MINIMUM 1% SLOPE.
4. INSTALL TRAP PARALLEL TO UNIT, IF POSSIBLE.
5. MINIMUM CONDENSATE PIPE SIZES SHALL BE PER THE FOLLOWING TABLE UNLESS LARGER SIZE IS SHOWN ON PLANS OR AS REQUIRED BY AUTHORITY HAVING JURISDICTION AND/OR LOCAL BUILDING CODE REQUIREMENTS.

CAPACITY	SIZE
UP TO 20 TONS	3/4"
21 TO 40 TONS	1"
41 TO 90 TONS	1–1/4"

3 (AC/RTU) COOLING COIL CONDENSATE TRAP

NTS

PORTLAND MECHANICAL CONTRACTORS
PMC
2000 SE HANNA HARVESTER DR
MILWAUKIE, OR 97222
(503) 656-7400
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This Drawing Prepared By Portland Mechanical For Exclusive Use By Portland Mechanical Contractors For The Project: Orchards at Orenco 3, Hillsboro, OR

MEP LLC
CONSULTING
9220 SW BARBUR BLVD. #119-324
PORTLAND, OREGON 97219
PH: (503)718-7699
EMAIL: INFO@MEPCON.COM

AVELIGN-THORTEX
15045 NE MASON ST.
PORTLAND, OR 97230

REVISION	DATE	REASON FOR ISSUE

SDCI APPROVAL STAMP

REGISTERED PROFESSIONAL ENGINEER
51478PE
OREGON
July 9, 2003
JOHN G. DUFFY
Expires 12/31/2021

MECHANICAL DETAILS

PERMIT SET

DATE	PROJECT NUMBER
08/14/2020	-

SHEET NUMBER
M6.01

TYPICAL WALL

TYPICAL WALL 2

Energy Report

15045 NE Mason Street, Portland, Oregon

Prepared By: Marshall Hilton Design LLC

October 21, 2020

Joel Joiner of Portland Mechanical Contractors requested an energy analysis from Marshall Hilton Design for a manufacturing facility located at 15045 NE Mason Street, Portland, Oregon. A previously unconditioned manufacturing space is adding cooling and replacing existing lighting with LED lighting.

Conclusions:

Based on an analysis of annual energy cost, adding insulation to the walls of the facility would be less energy efficient than leaving the walls un-insulated.

		Baseline - Insulated Per code	Proposed - Un-insulated Walls	Savings
Space Cooling	kWh	187,356	164,638	
Misc Equipment	kWh	1,543,416	1,543,416	
Pumps & AUX	kWh	186	186	
Vent Fans	kWh	109,844	105,689	
SubTotal	kWh	1,840,802	1,813,929	
Space Heating	Therm	41	168	
Annual Elec cost subtotal		$ 180,398.60	$ 177,765.04	
Annual Gas Cost subtotal		$ 40.51	$ 166.00	
Subtotal annual energy cost without lighting		**$ 180,439.11**	**$ 177,931.05**	**1.4%**
Lighting	kWh	192,229	128,152	
Lighting annual energy cost		18,838.44	12,558.90	33.3%
Total annual energy cost		$ 199,277.55	$ 190,489.94	4.4%

Electric cost	0.098	$/kwh
Gas cost	0.9881	$/therm

Analysis:

EQuest 3.65 was utilized to perform an annualized energy cost analysis. A baseline model was built with insulation based on Ashrae 90.1 2016. A proposed model was run in comparison without insulation on the exterior walls and with LED lighting. Both models had zero unmet heating and cooling hours.

The manufacturing facility has internal thermal loads from the manufacturing equipment sufficient enough, that adding insulation to the facility walls would trap in more heat than adding insulation would keep out due to conduction.

OCTOBER 21, 2020 REVISION

ASHRAE 90.1 2016 Article 4.1.1.5 states that

> *whenever an unconditioned space or semi-heated space in a building is converted to a conditioned space, such conditioned space shall be brought into compliance with all the applicable requirements of this standard that would apply to the building envelope, heating, ventilating, air-conditioning, service water heating, power, lighting and other systems and equipment of the space as if the building was new.*

This report stands performance-based appeal to ASHRAE 90.1 2016 Article 4.1.1.5 utilizing the guidance set forth in ASHRAE 90.1 2016 Appendix G as allowed by ASHRAE 90.1 2016 Article 4.2.1.3

Assumptions:

	Baseline	**Proposed**
Building	25,000 sf 24 ft high No windows Single thermal zone	Same
Envelope	Walls: Concrete + R9.5 Roof: R-30	Walls: Concrete Roof: Same
Occupants	100 people 245 btuh/p sensible 205 btuh/p latent	Same
Equipment	12W/sf	Same
Lighting	1.2W/sf	0.8W/sf
Schedule	16 hours/day, 7days/wk	Same
Setpoints	Cooling occ: 75°F Cooling Unocc: 80°F Heating occ: 70°F Heating Unocc: 65°F	Same
HVAC	DX cooling, EIR: 0.3283 Gas furnace, HIR: 1.24	Same
Outdoor Air	10 CFM/person, 0.06 cfm/sf	Same

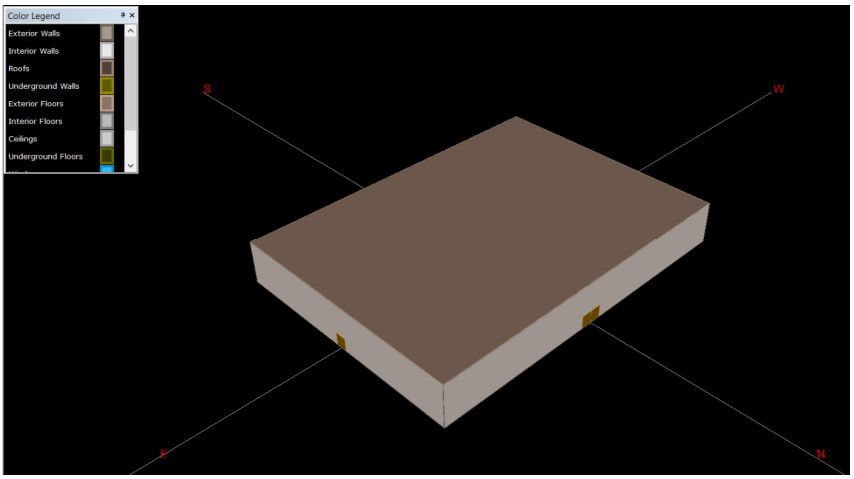

Figure 1: 3D view of model in eQuest

Regards,

_____

Marshall S. Hilton P.E., March, LEED AP BD+C, HBDP
ASHRAE Accredited High Performance Building Professional
Principal
Marshall Hilton Design LLC

REGISTERED PROFESSIONAL ENGINEER
89725PE
OREGON
MARSHALL S. HILTON
EXP: JUNE 30, 2021

OCTOBER 21, 2020 REVISION

Reason for Alternate: (Describe why the alternate is required and how it will provide equivalent health, accessibility, structural capacity, energy conservation, life safety or fire protection to what the code requires)**.**

To offset the energy use of non-insulated wall, this applicant is proposing a design that:

1. Exceeds the intent of the energy code.
2. Increased safety and comfort for employees.

MH Initial here

BASELINE BUILDING UTILITY PERFORMANCE REPORT

REPORT- BEPU Building Utility Performance WEATHER FILE- PORTLAND INTERNAT OR

	LIGHTS	TASK LIGHTS	MISC EQUIP	SPACE HEATING	SPACE COOLING	HEAT REJECT	PUMPS & AUX	VENT FANS	REFRIG DISPLAY	HT PUMP SUPPLEM	DOMEST HOT WTR	EXT USAGE	TOTAL
EM1 ELECTRICITY													
KWH	192229.	0.	1543416.	0.	187356.	0.	186.	109844.	0.	0.	0.	0.	2033030.
FM1 NATURAL-GAS													
THERM	0.	0.	0.	41.	0.	0.	0.	0.	0.	0.	0.	0.	41.

TOTAL ELECTRICITY 2033030. KWH 80.804 KWH /SQFT-YR GROSS-AREA 80.804 KWH /SQFT-YR NET-AREA
TOTAL NATURAL-GAS 41. THERM 0.002 THERM /SQFT-YR GROSS-AREA 0.002 THERM /SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.00
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.00
HOURS ANY ZONE ABOVE COOLING THROTTLING RANGE = 0
HOURS ANY ZONE BELOW HEATING THROTTLING RANGE = 0

NOTE: ENERGY IS APPORTIONED HOURLY TO ALL END-USE CATEGORIES.

PROPOSED BUILDING UTILITY PERFORMANCE REPORT

Thorex DOE-2.2-50a 9/25/2020 15:42:13 BDL RUN 1

REPORT- BEPU Building Utility Performance WEATHER FILE- PORTLAND INTERNAT OR

	LIGHTS	TASK LIGHTS	MISC EQUIP	SPACE HEATING	SPACE COOLING	HEAT REJECT	PUMPS & AUX	VENT FANS	REFRIG DISPLAY	HT PUMP SUPPLEM	DOMEST HOT WTR	EXT USAGE	TOTAL
EM1 ELECTRICITY													
KWH	128152.	0.	1543416.	0.	164638.	0.	186.	105689.	0.	0.	0.	0.	1942080.
FM1 NATURAL-GAS													
THERM	0.	0.	0.	168.	0.	0.	0.	0.	0.	0.	0.	0.	168.

TOTAL ELECTRICITY 1942080. KWH 77.189 KWH /SQFT-YR GROSS-AREA 77.189 KWH /SQFT-YR NET-AREA
TOTAL NATURAL-GAS 168. THERM 0.007 THERM /SQFT-YR GROSS-AREA 0.007 THERM /SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.00
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.00
HOURS ANY ZONE ABOVE COOLING THROTTLING RANGE = 0
HOURS ANY ZONE BELOW HEATING THROTTLING RANGE = 0

NOTE: ENERGY IS APPORTIONED HOURLY TO ALL END-USE CATEGORIES.