VALVES & GAUGES LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
		AUTOMATIC TWO-WAY VALVE
		AUTOMATIC THREE-WAY VALVE
		BALL CHECK OR DRIP VALVE
	BV	BALL VALVE
	BALV	BALANCING / FLOW CONTROL VALVE
BTU		BTU METER
	BFV	BUTTERFLY VALVE
FLOW		FLOW METER
	CV	SWING CHECK VALVE
	CV	SPRING CHECK VALVE
	RV	RELIEF VALVE
	TPV	PRESSURE -TEMPERATURE RELIEF VALVE
	PRV	PRESSURE REDUCING VALVE
	PV	PLUG VALVE
	OS&Y	OUTSIDE SCREW AND YOKE VALVE
	GC	GAS COCK
	GV	GATE VALVE
	GLV	GLOBE VALVE
		HOSE END DRAIN VALVE
		THERMOMETER
		PRESSURE GAUGE WITH GAUGE COCK
		FLOW MEASURING DEVICE

PLUMBING PIPING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
CW	CW	COLD WATER
HW	HW	HOT WATER PIPING
HWR	HWR	HOT WATER RETURN
NP	NP	NON-POTABLE WATER
TW	TW	TEMPERED WATER
SD	SD	STORM DRAIN BELOW GRADE
W	W	SANITARY WASTE ABOVE GRADE
W	W	SANITARY WASTE BELOW GRADE
SD	SD	STORM DRAIN GRADE
OSD	OSD	OVERFLOW STORM DRAIN
TR	TP	TRAP PRIMER
AV	AV	ACID VENT PIPING
V	V	VENT PIPING
AW	AW	ACID WASTE
GW	GW	GREASE WASTE
CA	CA	COMPRESSED AIR
D	D	DRAIN
CD	CD	CONDENSATE DRAIN
IND	IND	INDIRECT DRAIN
PD	PD	PUMPED DISCHARGE ABOVE GRADE
PD	PD	PUMPED DISCHARGE BELOW GRADE
		DEMOLITION

PLUMBING SYMBOL LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	FCO	FLOOR CLEAN OUT
	FD	FLOOR DRAIN
	FS	FLOOR SINK
		FLOW ARROW, DIRECTION OF FLOW
	HB	HOSE BIBB
		HOSE END DRAIN VALVE
	RD	ROOF DRAIN
RPBP	RPBP	REDUCED PRESSURE BACKFLOW PREVENTOR
VB	VB	VACUUM BREAKER
VTR	VTR	VENT THRU ROOF
	WCO	WALL CLEAN OUT
	WH	WALL HYDRANT
WHA		WATER HAMMER ARRESTOR

City Of Portland

REVIEWED FOR CODE COMPLIANCE

Date: 06/23/22

Permit #: 22-124075-REV-01-FA

FITTING ABBREVIATIONS

ABBV	FULL NAME	ABBV	FULL NAME	ABBV	FULL NAME
A	COMPRESSED AIR LINE	CWS	CONDENSER WATER SUPPLY	HWR	HEATING WATER RETURN
AV	AIR VENT	DV	DRAIN VALVE	HWS	HEATING WATER SUPPLY
BOI	BOTTOM OF INSULATION	E-C	END TO CENTER	LWT	LEAVING WATER TEMPERATURE
BOP	BOTTOM OF PIPE	E-F	END TO FACE	NC	NORMALLY CLOSED
C-C	CENTER TO CENTER	EWT	ENTERING WATER TEMPERATURE	NO	NORMALLY OPEN
C-E	CENTER TO END	F-C	FACE TO CENTER	TDV	TRIPLE DUTY VALVE
C-F	CENTER TO FACE	F-E	FACE TO END	TOP	TOP OF PIPE
CHWR	CHILLED WATER RETURN	F-F	FACE TO FACE	WOG	WATER, OIL, GAS (PSI)
CHWS	CHILLED WATER SUPPLY	FOB	FLAT ON BOTTOM		
CWR	CONDENSER WATER RETURN	FOT	FLAT ON TOP		

GENERAL SYMBOL LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
		SECTION TAG
		DETAIL TAG
#		NOTE BY SYMBOL
#		DEMOLITION NOTE BY SYMBOL
#		REVISION DELTA
	POC	POINT OF CONNECTION
#		EQUIPMENT TAG
		DEMOLITION
		RELOCATE

CONTROLS / ALARM LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
C	CO2	CARBON DIOXIDE SENSOR
H	H'STAT	HYDROMETER / HUMIDITY SENSOR
T	T'STAT	THERMOSTAT / TEMP SENSOR
T W	T'STAT	THERMOSTAT WIRELESS
T P	T'STAT	THERMOSTAT PENDANT MOUNT
C CO	CO	CARBON MONOXIDE SENSOR
S		WALL SWITCH / SPEED CONTROL
CP		WALL MOUNTED CONTROL PANEL
SD		DUCT MOUNTED SMOKE DETECTOR
SP		DUCT MOUNTED STATIC PRESSURE SENSOR
1½ 3	FSD	1½ & 3 HOUR COMBINATION FIRE SMOKE DAMPER

MECHANICAL PIPING SYMBOL LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
AAV	AAV	AUTOMATIC AIR VENT
		BREAK IN LINE - SHOWN FOR CLARITY
CHWS	CHWS	CHILLED WATER SUPPLY
CHWR	CHWR	CHILLED WATER RETURN
CNDS	CNDS	CONDENSATE DRAIN
CWS	CWS	CONDENSER WATER SUPPLY
CWR	CWR	CONDENSER WATER RETURN
		CONCENTRIC REDUCER
DCV	DCV	DOUBLE CHECK VALVE
		ECCENTRIC REDUCER
	ST	F&T STEAM TRAP
		FLEXIBLE JOINT
		FLEXIBLE PIPE CONNECTOR
		FLOW ARROW, DIRECTION OF FLOW
NG	NG	GAS PIPING LOW PRESSURE
HWS	HWS	HEATING WATER SUPPLY
HWR	HWR	HEATING WATER RETURN
HPS	HPS	HIGH PRESSURE STEAM (> 15 PSI)
HPC	HPC	HIGH PRESSURE STEAM CONDENSATE
LPG	LPG	LIQUID PROPANE GAS
LPS	LPS	LOW PRESSURE STEAM (< 15 PSI)
LPC	LPC	LOW PRESSURE STEAM CONDENSATE
MAV	MAV	MANUAL AIR VENT
		PIPE ANCHOR
		PIPE CAP
		PIPE GUIDE
		PIPE TAKE OFF - UP
		PIPE TAKE OFF - DOWN
	UN	PIPE UNION
P	PS	PRESSURE SWITCH OR PRESSURE SENSOR
PT		PRESSURE/TEMPERATURE TEST PLUG
		PUMP
RPBP	RPBP	REDUCED PRESSURE BACKFLOW PREVENTOR
SLOPE		SLOPE PIPE DOWN IN DIRECTION OF ARROW
	STN	STRAINER
		STRAINER W/ BLOWDOWN VALVE
		TEE UP
		TEE DOWN
VB	VB	VACUUM BREAKER
		VERTICAL PIPE DROP OR RISER
		WALL TYPE INDICATOR ASSEMBLY
F		WATER FLOW DETECTOR
		WATER HAMMER ARRESTOR
		90 DEGREE ELBOW UP
		90 DEGREE ELBOW DOWN

DEFERRED SUBMITTAL - SEISMIC ANALYSIS

THE FOLLOWING ITEMS ARE PROPOSED TO BE COMPLETED, DOCUMENTED, AND SUBMITTED FOR REVIEW TO CODE AUTHORITIES AS A DEFERRED SUBMITTALS:

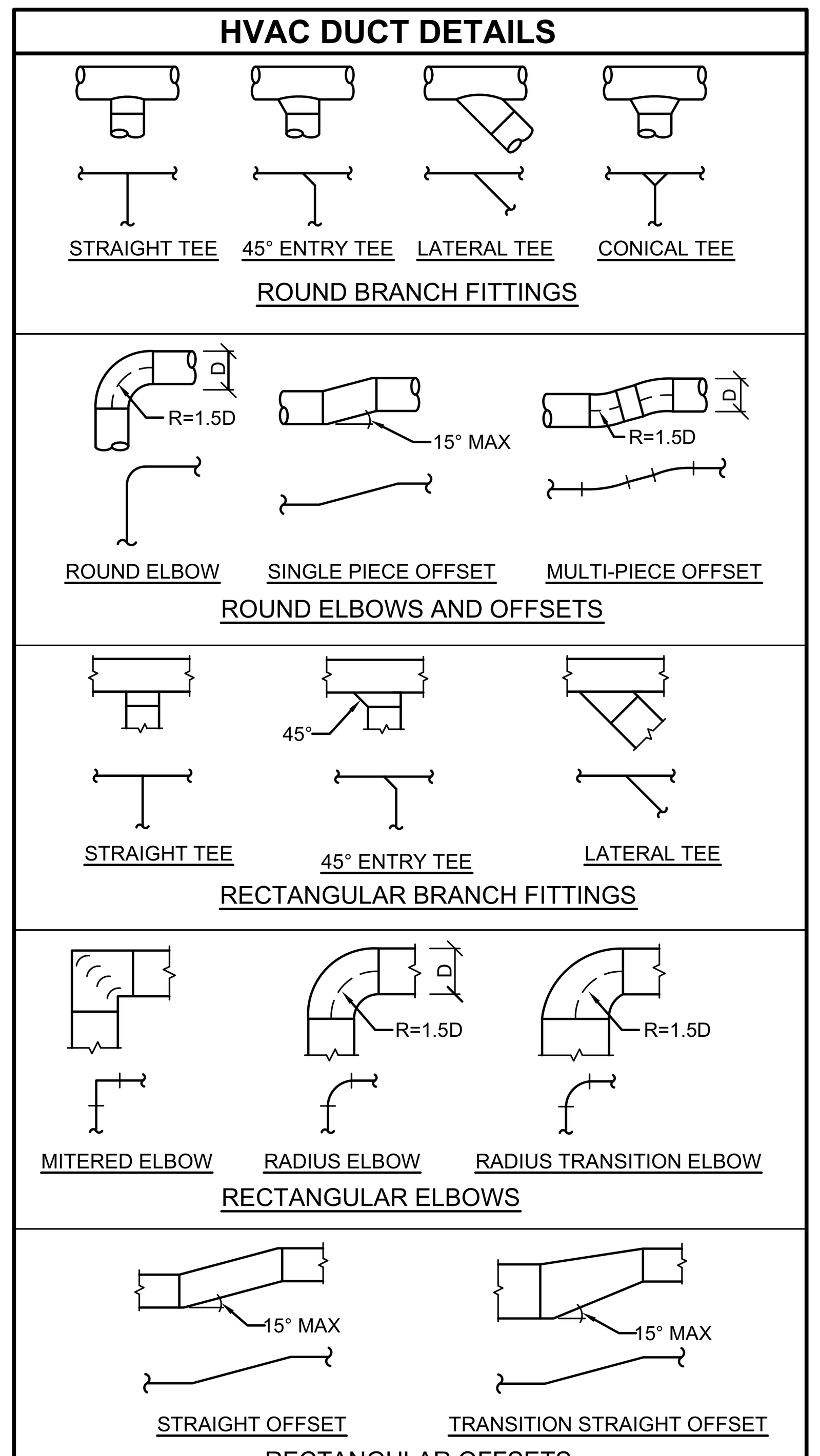
1. STRUCTURAL ANALYSIS AND CONSTRUCTION DETAILING FOR HVAC COMPONENT SUPPORT/ANCHORAGE AND SEISMIC RESTRAINT

   MINIMUM MECHANICAL ITEMS SUBJECT TO SEISMIC ANALYSIS/DETAILING TO INCLUDE THE FOLLOWING:
   - ALL GRADE OR ROOF MOUNTED EQUIPMENT >400 LBS
   - ALL SUSPENDED COMPONENTS OR EQUIPMENT >75 LBS
   - ALL SUSPENDED DUCT W/ > 6 SF CROSS SECTION
   - TYPE-1 GREASE EXHAUST DUCTWORK SYSTEMS

HVAC DUCT LEGEND

DUCT UP	DUCT DOWN	DESCRIPTION
		RECTANGULAR SUPPLY
		ROUND SUPPLY
		RECTANGULAR RETURN
		ROUND RETURN
		RECTANGULAR EXHAUST
		ROUND EXHAUST
		RECTANGULAR OUTSIDE AIR
		ROUND OUTSIDE AIR
2-LINE	**1-LINE**	**DESCRIPTION**
12/10 W	12/10 W	RECTANGULAR DUCT INSULATION WRAP
12ØW	12ØW	ROUND DUCT INSULATION WRAP
12/10 SLSM	12/10 SLSM	RECTANGULAR DUCT SOUND LINED WRAP
12/10 K-27	12/10 K-27	RECTANGULAR DUCT K-27 SOUND INSULATED
12Ø K-27	12Ø K-27	ROUND DUCT K-27 SOUND INSULATED
12Ø		FLEX DUCTWORK

HVAC DUCT DETAILS



PROJECT THERMAL DESIGN CONDITIONS

PROJECT LOCATION	PORTLAND, OREGON			
ASHRAE WEATHER STATION REFERENCE	PORTLAND, OREGON (WMO #726980)			
ASHRAE 2021 FUNDAMENTALS WEATHER DATA BASIS	COOLING 0.4%		HEATING 99.6%	
SPACE	SUMMER		WINTER	
	TEMPERATURE	HUMIDITY	TEMPERATURE	HUMIDITY
OUTDOOR	91.7° F. DB / 67.4° F. MCWB	62.9° F. DP / 85.9 HR / 74.8° F. MCDB	25.9° F. DB	9.6° F. DP / 9.0 HR / 29.8° F. MCDB
INDOOR	74.0° F. DB ± 2° F. DB	50% RH MAXIMUM	69.0° F. DB ± 2° F. DB	NO MINIMUM CONTROL

HVAC GENERAL NOTES - STATE OF OREGON

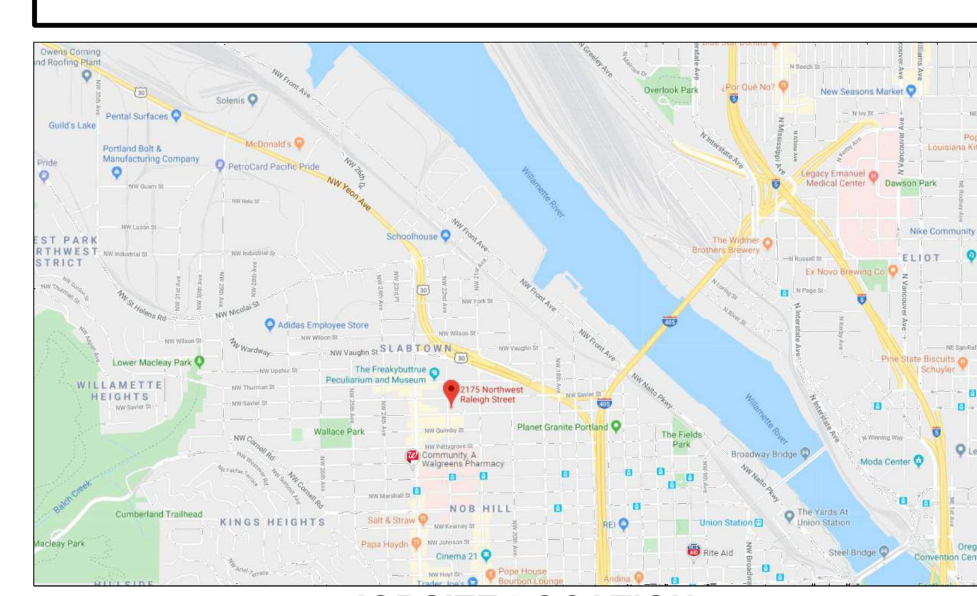
1. THESE PLANS ARE SCHEMATIC AND DO NOT SHOW EXACT ROUTING OR EVERY OFFSET WHICH MAY BE REQUIRED. THE HVAC CONTRACTOR IS TO COORDINATE WITH ALL OTHER TRADES AND IS TO VERIFY ALL CLEARANCES BEFORE COMMENCING WORK.
2. MATERIALS, METHODS, AND INSTALLATION SHALL COMPLY WITH THE PROVISIONS OF THE MOST RECENTLY ADOPTED VERSIONS OF -
   - THE 2019 OREGON MECHANICAL SPECIALTY CODE (2018 IMC W/ STATE OF OREGON AMENDMENTS)
   - THE 2019 STATE OF OREGON STRUCTURAL SPECIALTY CODE (2018 IBC W/ STATE OF OREGON AMENDMENTS)
   - THE 2021 STATE OF OREGON ENERGY EFFICIENCY SPECIALTY CODE (OEESC) (ASHRAE 90.1 - 2019)
   - THE 2019 INTERNATIONAL FIRE CODE AND ALL OTHER APPLICABLE LOCAL CODES, AMENDMENTS, AND ORDINANCES.
3. DUCT CONSTRUCTION AND HANGING SHALL COMPLY WITH CHAPTER 6 OF THE OMSC AND WITH CURRENT SMACNA STANDARDS. EARTHQUAKE BRACE ALL DUCTS 28" DIA AND LARGER WHICH ARE SUSPENDED MORE THAN 12" BELOW STRUCTURAL SYSTEM.
4. DUCTS SHALL BE INSULATED AS INDICATED ON PLANS, OR AS OTHERWISE REQUIRED BY THE OZERCC .
   - DUCT WRAP, WHERE INDICATED, SHALL BE 2-3/16" 0.75 LB/CU FT FIBERGLASS DUCT INSULATION WITH A FACTORY APPLIED REINFORCED ALUMINUM FOIL VAPOR BARRIER.
   - SOUND LINING, WHERE INDICATED, SHALL BE 1" 1.5 LB/CU FT FIBERGLASS DUCT LINING COATED TO PREVENT FIBER EROSION AT VELOCITIES UP TO 4000 FPM.
5. FLEXIBLE DUCT SHALL BE A MANUFACTURED ASSEMBLY INCLUDING: REINFORCED EXTERIOR VAPOR BARRIER, MINIMUM R-6 FIBERGLASS INSULATION, NON-PERFORATED INTERIOR LINER, AND STRUCTURAL WIRE HELIX. ASSEMBLY SHALL BE CERTIFIED AS A UL 181 LISTED, CLASS-1 AIR DUCT. FLEXIBLE DUCT SHALL BE FULLY SUPPORTED, AND SHALL ONLY BE USED WHERE SHOWN. LENGTH OF FLEX DUCT SHALL NOT EXCEED 8' UNLESS NOTED OTHERWISE.
6. PROVIDE EARTHQUAKE RESTRAINT FOR HVAC EQUIPMENT IN ACCORDANCE WITH OSSC CHAPTER 16 AND ASCE 7-16.
7. PROVIDE FIRE DAMPERS AND/OR FIRE/SMOKE DAMPERS WHERE INDICATED ON PLANS AND AS REQUIRED BY SECTION 717 OF THE OSSC. INSTALL FIRE DAMPERS AND FIRE/SMOKE DAMPERS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, THE TERMS OF THEIR LISTINGS, AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING, MECHANICAL, AND FIRE CODES AND ORDINANCES.
8. PIPING PENETRATIONS OF FIRE RATED WALLS OR FLOORS SHALL BE SLEEVED AND FIRE STOPPED WITH LISTED MATERIALS OR ASSEMBLIES AS REQUIRED TO MAINTAIN THE INTEGRITY AND RATING OF THE FLOOR OR WALL.
9. PROVIDE RETURN DUCT SMOKE DETECTOR CONFIGURED TO PROVIDE AUTOMATIC SHUT DOWN OF ALL HEATING, COOLING, OR VENTILATION EQUIPMENT DELIVERING IN EXCESS OF 2000 CFM IN ACCORDANCE WITH SECTION 606 OF THE OMSC. POWER WIRING AND INTERLOCK WIRING WITH THE BUILDING FIRE ALARM SYSTEM SHALL BE BY THE ELECTRICAL CONTRACTOR.
10. HVAC EQUIPMENT, VALVES AND DAMPERS SHALL BE LOCATED IN EASILY ACCESSIBLE LOCATIONS. ACCESS PANELS REQUIRED FOR MECHANICAL EQUIPMENT SHALL BE IDENTIFIED AND LOCATED BY THE MECHANICAL CONTRACTOR FOR ULTIMATE INCLUSION IN ARCHITECTURAL DRAWINGS. ACCESS PANELS SHALL BE PROVIDED AND INSTALLED BY THE WALL-CEILING CONTRACTOR PER SPECIFICATIONS.
11. HVAC TEMPERATURE SET POINTS, DEAD BANDS, AND SCHEDULES SHALL BE PROGRAMMED TO MEET SECTION 6.4.3 OF ASHRAE 90.1 - 2016
12. ALL WIRING EXPOSED WITHIN A PLENUM SHALL MEET THE REQUIREMENTS IN SECTION 602.2.1.1 OF THE OMSC. ALL COMBUSTIBLE ELECTRICAL EQUIPMENT EXPOSED WITHIN A PLENUM SHALL MEET THE REQUIREMENTS IN SECTION 602.2.1.4 OF THE OMSC.

GENERAL ABBREVIATIONS

ABBV	FULL NAME	ABBV	FULL NAME	ABBV	FULL NAME
ADJ	ADJUSTABLE	FPM	FEET PER MINUTE	NOM	NOMINAL
AFF	ABOVE FINISHED FLOOR	FUT	FUTURE	NTS	NOT TO SCALE
AL	ALUMINUM	GAL	GALLONS	OD	OUTSIDE DIMENSION
ALT	ALTERNATE	GALV	GALVANIZED	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
AP	ACCESS PANEL	GC	GENERAL CONTRACTOR	PSI	PRESSURE PER SQUARE INCH
AVG	AVERAGE	GPH	GALLONS PER HOUR	PSIA	PRESSURE PER SQUARE INCH ABSOLUTE
BAS	BUILDING AUTOMATION SYSTEM	GPM	GALLONS PER MINUTE	PSIG	PRESSURE PER SQUARE INCH GAGE
BOTT	BOTTOM	GWB	GYPSUM WALL BOARD	QTY	QUANTITY
BTU	BRITISH THERMAL UNITS	HP	HORSE POWER	R	RELOCATE
BTUH	BRITISH THERMAL UNITS PER HOUR	HR	HOUR	RE	REMOVE
CAP	CAPACITY	HTG	HEATING	REQ'D	REQUIRED
CFH	CUBIC FEET PER HOUR	HZ	HERTZ	RPM	REVOLUTIONS PER MINUTE
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED	ID	INSIDE DIMENSION	SQ	SQUARE
CFM	CUBIC FEET PER MINUTE	IN	INCHES	STL	STEEL
CLG	CEILING	I/O	INPUT / OUTPUT	SSTL	STAINLESS STEEL
CONN	CONNECTION	KW	KILOWATT	SUSP	SUSPENDED
CP	CONTROLS PANEL	LBS	POUNDS	TD	TEMPERATURE DIFFERENTIAL
DIA	DIAMETER	MAX	MAXIMUM	TEMP	TEMPERATURE
DN	DOWN	MCA	MINIMUM CIRCUIT AMPACITY	TYP	TYPICAL
E	EXISTING	MFR	MANUFACTURER	UNO	UNLESS NOTED OTHERWISE
EFF	EFFICIENCY	MISC	MISCELLANEOUS	V	VOLT(S)
ELEV	ELEVATION	MIN	MINIMUM	VEL	VELOCITY
EXST	EXISTING	MT	MOUNT	W	WATT(S)
F	FAHRENHEIT	N	NEW	Ø	VOLTAGE PHASE & DUCT DIAMETER
FLA	FULL LOAD AMPS	NIC	NOT IN CONTRACT		
FLEX	FLEXIBLE				

HVAC ABBREVIATIONS

ABBV	FULL NAME	ABBV	FULL NAME	ABBV	FULL NAME
AC	AIR CONDITIONING UNIT	FD	FIRE DAMPER	RL	REFRIGERANT LIQUID
APD	AIR PRESSURE DROP	FOB	FLAT ON BOTTOM	RTU	ROOF TOP UNIT
BDD	BACKDRAFT DAMPER	FOT	FLAT ON TOP	SA	SUPPLY AIR
BOD	BOTTOM OF DUCT	FPB	FAN POWERED BOX	SAT	SUPPLY AIR TEMPERATURE
BSB	BRANCH SELECTOR BOX	FSD	FIRE SMOKE DAMPER	SEER	SEASONAL ENERGY EFFICIENCY RATIO
BWG	BOTTOM WALL GRILLE	GR	GRILLE	SL	SOUND LINING
BWR	BOTTOM WALL REGISTER	GRD	GRILLE/DIFFUSER	SM	SHEET METAL
COMB	COMBUSTION	HG	HOT GAS LINE	SP	STATIC PRESSURE
CNDS	CONDENSATE	HVAC	HEATING VENTILATION AND AIR CONDITIONING	SUC	SUCTION LINE
COND	CONDENSER	LAT	LEAVING AIR TEMPERATURE	TOD	TOP OF DUCT
CU	CONDENSING UNIT	LIQ	LIQUID INSIDE	TSP	TOTAL STATIC PRESSURE
DB	DUCT BOARD	MD	MOTORIZED DAMPER	TV	TURN VANES
DDC	DIRECT DIGITAL CONTROL	MUA	MAKE-UP AIR	TWG	TOP WALL GRILLE
DIFF	DIFFUSER	NG	NATURAL GAS	TWR	TOP WALL REGISTER
DMPR	DAMPER	OA	OUTSIDE AIR	UC	UNDER CUT
DX	DIRECT EXPANSION	OAF	OUTSIDE AIR FAN	UH	UNIT HEATER
EAT	ENTERING AIR TEMPERATURE	OBD	OPPOSED BLADE DAMPER	VAV	VARIABLE AIR VOLUME
EC	EGGCRATE	PLBG	PLUMBING	VD	VOLUME DAMPER
EER	ENERGY EFFICIENCY RATIO	RA	RETURN AIR	VFD	VARIABLE FREQUENCY DRIVE
EF	EXHAUST FAN	REG	REGISTER (GRILLE WITH DAMPER)	VRV	VARIABLE REFRIGERANT VOLUME
ESP	EXTERNAL STATIC PRESSURE	RH	RELATIVE HUMIDITY	Ø	DUCT DIAMETER
EXH	EXHAUST				



JOBSITE LOCATION

PROJECT SHEET INDEX

ALLIANT SYSTEMS

ALLIANT SYSTEMS, LLC
351 NW 12th AVE
PORTLAND, OR 97209
PHONE: 503/619-4000
FAX: 503/230-9238
WWW.ALLIANT-SYSTEMS.COM
CCB# 153420

REGISTERED PROFESSIONAL ENGINEER 64563PE OREGON 09/25/2000 SEAN C. MURRAY

EXPIRES 12–31–22

2	PROJECT REVISIONS	05/25/22
1	PROJECT REVISIONS	02/28/22
	REVISIONS:	DATE

LELAND JAMES SUITE 120 T.I.

2175 NW RALEIGH ST
PORTLAND, OR

DESIGNER CONTACT:
E. STOYAN
503-619-4000
E.STOYAN@ALLIANT-SYSTEMS.COM

CAD:
J. HAGGARD

PLOT DATE:
06/02/22

MECHANICAL COVER SHEET

PROJECT NUMBER:
C-1213-22257

PERMIT ISSUE
02/18/21

SHEET NUMBER:
M0.00

CAD FILENAME: 22257-HVAC.dwg

GRILLE REGISTER & DIFFUSER SCHEDULE

NOTE: ALL DIFFUSER/GRILLES MAY NOT BE USED ON EVERY PROJECT

SYMBOL	DEVICE TYPE AND SERVICE	MANUFACTURER & MODEL NUMBER	BORDER TYPE	FACE SIZE	FINISH	NOTES
	DEFAULT RETURN - EGGCRATE W/ BOOT LAY-IN CEILING GRILLE	TITUS 50R	NO BORDER	24 x 12	WHITE POWDER COAT UNLESS OTHERWISE NOTED	2
	DEFAULT RETURN - EGGCRATE W/ BOOT LAY-IN CEILING GRILLE	TITUS 50R	NO BORDER	24 x 24	WHITE POWDER COAT UNLESS OTHERWISE NOTED	3
S SIZE / CFM	SUPPLY - ADJUSTABLE MODULAR CORE LAY-IN CEILING DIFFUSER	TITUS MCD	STYLE 3 (LAY-IN)	24 x 24	WHITE POWDER COAT UNLESS OTHERWISE NOTED	1, 4, 5
S2 SIZE / CFM	SUPPLY - (STEEL) SIDEWALL/DUCT MT GRILLE (RECT. TAP)	TITUS 300RL	TYPE-A (SURFACE MOUNT)	AS NOTED	WHITE POWDER COAT UNLESS OTHERWISE NOTED	1, 6
R SIZE / CFM	RETURN - EGGCRATE LAY-IN CEILING GRILLE	TITUS 50R	TYPE-3 (LAY-IN)	24 x 24	WHITE POWDER COAT UNLESS OTHERWISE NOTED	1
2 E SIZE / CFM	EXHAUST - (STEEL) LOUVERED FACE SURFACE MOUNT EXHAUST GRILLE	TITUS 350RL	SURFACE MOUNT: TYPE - 1A RAPID MOUNT FRAME - TYPE 3	AS NOTED	WHITE POWDER COAT UNLESS OTHERWISE NOTED	1, 11, 12
T SIZE / CFM	TRANSFER - LOUVERED FACE SURFACE MOUNT TRANSFER GRILLE	TITUS 350RL	TYPE-1A (SURFACE MOUNT)	AS NOTED	WHITE POWDER COAT UNLESS OTHERWISE NOTED	1, 11

ACCEPTABLE ALTERNATE MANUFACTURERS (SUBJECT TO ENGINEERING APPROVAL) PRICE, KREUGER

NOTES:

1. CONFIRM GRILLE/REGISTER/DIFFUSER MOUNTING STYLE W/ JOB-SPECIFIC CONDITIONS PRIOR TO RELEASING ORDER
2. 24/12 PLENUM RETURN GRILLE - PROVIDE W/ 22/10 x 22/10 DUCT-BOARD BOOT OPEN TO PLENUM
3. 24/24 PLENUM RETURN GRILLE - PROVIDE W/ 22/22 x 22/10 DUCT-BOARD BOOT OPEN TO PLENUM
4. SQUARE SUPPLY DIFFUSER W/ NECK DIAMETER 12" AND SMALLER - PROVIDE 12/12 CORE W/ SQUARE TO ROUND TRANSITION TO NECK DIAMETER INDICATED ON PLANS
5. SQUARE SUPPLY DIFFUSER W/ NECK DIAMETER 14" AND LARGER - SQUARE CORE DIMENSION TO MATCH ROUND NECK DIAMETER, PROVIDE W/ SQUARE TO ROUND TRANSITION TO NECK DIAMETER INDICATED ON PLANS
6. RECTANGULAR SUPPLY GRILLE - UNLESS NOTED OTHERWISE, EXPOSED GRILLE BLADES TO BE HORIZONTAL, PROVIDE W/ OPPOSED BLADE DAMPER
7. ROUND SUPPLY DIFFUSER - PROVIDE W/ 'TYPE-3' ROTATING CORE FOR MANUAL HORIZONTAL TO VERTICAL AIRFLOW ADJUSTMENT
8. FLOOR/SIDEWALL GRILLE - GRILLE BLADE SPACING TO BE 'PENCIL PROOF', PROVIDE W/ 7/16" BARS AT 0° DEFLECTION
9. SUPPLY SLOT DIFFUSER - LENGTH AND QUANTITY OF 1" SLOTS AS INDICATED, PROVIDE W/ MANUF. STANDARD INSULATED SHEETMETAL PLENUM (TITUS MPI OR EQUAL)
10. RETURN SLOT DIFFUSER - LENGTH AND QUANTITY OF 1" SLOTS AS INDICATED, FOR DUCTED RETURN PROVIDE W/ MANUFACTURER'S STANDARD SHEETMETAL PLENUM (TITUS MP OR EQUAL) FOR PLENUM RETURN PROVIDE SHOP-FABRICATED DUCT BOARD BOOT OPEN TO PLENUM
11. RECTANGULAR RETURN OR TRANSFER GRILLE - UNLESS NOTED OTHERWISE, EXPOSED GRILLE BLADES TO BE HORIZONTAL OR PARALLEL TO LONG DIMENSION
12. RAPID MOUNT FRAME - WHERE INDICATED ON DRAWINGS PROVIDE RAPID MOUNT FRAME TO ALLOW GRILLE REMOVAL FOR CEILING AND/OR DAMPER ACCESS
13. RECTANGULAR DOOR TRANSFER GRILLE - UNLESS NOTED OTHERWISE, EXPOSED GRILLE BLADES TO BE HORIZONTAL, PROVIDE W/AUXILIARY FRAME TO PROVIDE FINISHED OPENING AT EACH SIDE OF DOOR
14. RECTANGULAR DOOR FILTERED TRANSFER GRILLE - UNLESS NOTED OTHERWISE, EXPOSED GRILLE BLADES TO BE HORIZONTAL, PROVIDE W/ AUXILIARY FRAME AND 1" MERV-8 REPLACEABLE FILTER AT INTERIOR SIDE OF DOOR
15. CURVED FACE RECTANGULAR GRILLE - PROVIDE W/ AIR-SCOOP DAMPER/EXTRACTOR AND HORIZONTAL EXPOSED BLADES

CODE REQUIRED OUTDOOR AIR FOR VENTILATION

(BASED ON 2019 OREGON MECHANICAL SPECIALTY CODE CHAPTER 4 STANDARDS)

ZONE	SPACE DESCRIPTION	Az NET OCCUPIABLE FLOOR AREA (SF)	OCCUPANCY CATEGORY	DEFAULT OCCUPANT DENSITY (P#/1000 SF)	Rp OCCUPANT OA RATE (CFM/PER)	Ra AREA OA RATE (CFM/PSF)	DEFAULT ZONE POPULATION	Pz ACTUAL ZONE POPULATION (1)	Vbz BREATHING ZONE OA (CFM)	OCCUPANT LOAD PEOPLE/1000 SF	Evz	Voz ZONE OA FLOW (CFM) (2)	ACTUAL OA PROVIDED (CFM)	NOTES
FCU-1.01	NORTH OPEN OFFICE 107	1000	OFFICE SPACES	5	5	0.06	5	5	85	5	0.8	106	106	1
	OPEN CONFERENCE 106	250	CONFERENCE ROOMS	50	5	0.06	12.5	12	75	48	0.8	94	94	1,2
FCU-1.01 SUBTOTALS		1250						17				200	200	
FCU-1.02	OFFICE 103	147	OFFICE SPACES	5	5	0.06	0.735	1	14	7	0.8	17	18	1
	OFFICE 104	149	OFFICE SPACES	5	5	0.06	0.745	1	14	7	0.8	17	18	1
	OFFICE 105	148	OFFICE SPACES	5	5	0.06	0.74	1	14	7	0.8	17	19	1
FCU-1.02 SUBTOTALS		444						3				52	55	
FCU-1.03	CONFERENCE 102	212	CONFERENCE ROOMS	50	5	0.06	10.6	6	43	29	0.8	53	55	1,2
FCU-1.03 SUBTOTALS		212						6				53	55	
FCU-1.04	CONFERENCE 101	398	CONFERENCE ROOMS	50	5	0.06	19.9	10	74	26	0.8	92	95	1,2
FCU-1.04 SUBTOTALS		398						10				92	95	
FCU-1.05	RECEPTION 100	650	RECEPTION AREAS	30	5	0.06	19.5	10	89	16	0.8	111	115	1
FCU-1.05 SUBTOTALS		650						10				111	115	
FCU-1.06	BREAK ROOM 108	480	BREAKROOMS	25	5	0.06	12	12	89	25	0.8	111	115	1
FCU-1.06 SUBTOTALS		480						12				111	115	
FCU-1.07	WEST OPEN OFFICE 107	1040	OFFICE SPACES	5	5	0.06	5.2	6	92	6	0.8	116	120	1
FCU-1.07 SUBTOTALS		1040						6				116	120	
FCU-1.08	INTERIOR OPEN OFFICE 107	2971	OFFICE SPACES	5	5	0.06	14.855	15	253	6	0.8	317	320	1
FCU-1.08 SUBTOTALS		2971						15				317	320	
TENANT SPACE TOTALS		7445						79					1075	

NOTES:

1. REQUIRED DESIGN MINIMUM OA PROVIDED FROM FACILITY COMMON DEDICATED OUTDOOR AIR SYSTEM
2. AVERAGE ZONE OCCUPANCY REPORTED USING REDUCTION OF UP TO MAXIMUM 50% AS ALLOWED PER OMSC SECTION 403.3
3. CONSTANT VOLUME OUTSIDE AIR PROVIDED TO EACH FAN COIL UNIT IN QUANTITY INDICATED.
4. OUTDOOR AIR QUANTITY PROVIDED DURING ALL OCCUPIED TIMES FOR VENTILATION AND EXHAUST AIR MAKEUP

VARIABLE REFRIGERANT VOLUME (VRV) FAN COIL UNIT SCHEDULE

UNIT TAG	AREA SERVED	STATUS	NOMINAL TONNAGE	ASSOCIATED OUTDOOR HEAT PUMP	MITSUBISHI AC MODEL NUMBER	FAN COIL STYLE	SUPPLY CFM	SUPPLY ESP (INCHES WC)	FAN WATTS	OA-VENT CFM	COOLING TOTAL MBH	HEATING MBH	REFRIGERANT	LIQUID/ GAS REFR. PIPE CONNECTION (IN)	ELECTRICAL VOLTAGE	ELECTRICAL MCA	WEIGHT (LBS)	NOTES
FCU-1.01	NORTH OPEN OFFICE 107, OPEN CONFERENCE 106	NEW	4.0	EXISTING	PEFY-P48NMAU-E4	CEILING HUNG DUCTED	1306	0.20	300	200	48	54	410A	3/8, 5/8	208V / 1Ph	4.38	95	1,2,3,4,5,6
FCU-1.02	OFFICE 103, 104, 105	NEW	0.8	EXISTING	PEFY-P08NMAU-E4	CEILING HUNG DUCTED	300	0.20	85	55	8	9	410A	1/4, 1/2	208V / 1Ph	1.75	52	1,2,3,4,5,6
FCU-1.03	CONFERENCE 102	NEW	0.5	EXISTING	PLFY-P06NMAU-E3	CEILING HUNG DUCTED	265	0.20	60	55	6	6.7	410A	1/4, 1/2	208V / 1Ph	1.05	54	1,2,3,4,5,6
FCU-1.04	CONFERENCE 101	NEW	1.5	EXISTING	PEFY-P18NMAU-E4	CEILING HUNG DUCTED	424	0.20	121	95	18	20	410A	1/4, 1/2	208V / 1Ph	2.94	64	1,2,3,4,5,6
FCU-1.05	RECEPTION 100	NEW	1.5	EXISTING	PEFY-P18NMAU-E4	CEILING HUNG DUCTED	512	0.20	121	115	18	20	410A	1/4, 1/2	208V / 1Ph	2.94	64	1,2,3,4,5,6
FCU-1.06	BREAK ROOM 108	NEW	2.5	EXISTING	PEFY-P30NMAU-E4	CEILING HUNG DUCTED	883	0.20	121	115	30	34	410A	3/8, 5/8	208V / 1Ph	2.88	74	1,2,3,4,5,6
FCU-1.07	WEST OPEN OFFICE 107	NEW	4.0	EXISTING	PEFY-P48NMAU-E4	CEILING HUNG DUCTED	1306	0.20	300	120	48	54	410A	3/8, 5/8	208V / 1Ph	4.38	95	1,2,3,4,5,6
FCU-1.08	INTERIOR OPEN OFFICE 107	EXISTING	4.0	EXISTING	PVFY-P48NAMU-E1	CEILING HUNG DUCTED	1400	-	-	320	48	54	410A	3/8, 5/8	208V / 1Ph	5.63	189	4,5,6,11
										1								1

ACCEPTABLE ALTERNATE MANUFACTURER, SUBJECT TO ENGINEER APPROVAL : LG, MITSUBISHI

NOTES:

1. ELECTRICAL CONTRACTOR TO FURNISH THE FOLLOWING ITEMS/SERVICES
   - PRIMARY 208/1Ph POWER CONNECTION AND DISCONNECT SWITCH FOR INDOOR FAN COIL UNIT
   - ADDITIONAL 208/1Ph POWER CONNECTION AND DISCONNECT SWITCH FOR CONDENSATE PUMP AS REQUIRED
2. UNIT FURNISHED WITH INTEGRAL CONDENSATE PUMP (VERTICAL LIFT MAX 27")
3. PROVIDE CEILING HUNG FAN COIL UNITS W/ SEISMICALLY RATED HANGERS AND RESTRAINT CABLES FOR INSTALLATION WITHIN EXISTING STRUCTURE.
4. FURNISH DUCTED UNIT W/ GALV SHEET METAL RA/OA FILTER AND MIXING BOX W/ 2" THICK MERV-13 FILTERS
5. FURNISH EACH UNIT WITH ELECTRONIC PROGRAMMABLE THERMOSTAT.
6. CONSTANT VOLUME OA PROVIDED BY DUCTED CONNECTION FROM DOAS W/ MANUAL BALANCING DAMPER.
7. VARIABLE VOLUME OA PROVIDED BY DUCTED CONNECTION FROM DOAS W/ MODULATING AIR CONTROL VALVE AND CO2 DEMAND CONTROL VENTILATION.
8. PROVIDE FIELD INSTALLED CONDENSATE PUMP FOR UNITS WITHOUT INTEGRAL PUMP. MIN. 5 GPH CAPACITY AT VERTICAL LIFT 10' LIFT (SAUERMANN MODLE SI-30 OR APPROVED EQUAL)
9. SMOKE DETECTOR W/ STAND-ALONE CONTROLS - UNIT REQUIRES RETURN AIR SMOKE DETECTOR TO BE INTERLOCKED DIRECTLY TO UNIT CONTROLS. UNIT TO BE SHUTDOWN, AND LOCAL AUDIO/VISUAL (A/V) ALARM TO BE ACTIVATED THE EVENT OF SMOKE DETECTOR ALARM. INSTALLATION RESPONSIBILITIES:
   - MECHANICAL CONTRACTOR TO FURNISH SMOKE DETECTOR AND A/V ALARM
   - MECHANICAL CONTRACTOR TO INSTALL DUCT DETECTOR
   - CONTROLS CONTRACTOR TO INTERLOCK SMOKE DETECTOR WITH UNIT CONTROLS FOR UNIT SHUTDOWN
   - CONTROLS CONTRACTOR TO INSTALL AND INTERLOCK A/V ALARM W/ SMOKE DETECTOR TO ANNUNCIATE ON ALARM
   - ELECTRICAL CONTRACTOR TO PROVIDE POWER WIRING FOR SMOKE DETECTOR AND A/V ALARM OPERATION
10. SMOKE DETECTOR W/ CENTRAL FIRE ALARM - UNIT REQUIRES RETURN AIR SMOKE DETECTOR TO BE INTERLOCKED WITH BUILDING FIRE ALARM SYSTEM. UNIT TO BE SHUTDOWN, AND FIRE ALARM SYSTEM TO BE NOTIFIED IN THE EVENT OF SMOKE DETECTOR ALARM. INSTALLATION RESPONSIBILITIES:
    - FIRE ALARM CONTRACTOR TO COORDINATE INSTALL REQUIREMENTS AND PROVIDE SMOKE DETECTOR
    - MECHANICAL CONTRACTOR TO INSTALL SMOKE DETECTOR
    - FIRE ALARM CONTRACTOR TO INTEGRATE WITH FIR D WIRES TO UNIT CONTROL PANEL
    - CONTROLS CONTRACTOR TO CONNECT INTERLOCK WIRING FROM FIRE ALARM I OR UNIT SHUTDOWN
    - ELECTRICAL CONTRACTOR TO PROVIDE POWER WIRING FOR SMOKE DETECTOF OPERATION
11. EXISTING UNIT

City Of Portland
REVIEWED FOR CODE COMPLIANCE
Date: 06/23/22
Permit #: VD 22-124075-REV-01-FA

HVAC DAMPER SCHEDULE

DRAWING DESIGNATION	CONFIGURATION	DESCRIPTION	GREENHECK MODEL NUMBER	ACTUATOR	APPLICATION	NOTES
MD	RECTANGULAR	MOTORIZED CONTROL DAMPER	VCD-33	MOTORIZED (BY CONTROL CONTR.)	2-POSITION OA CONTROL	1
	ROUND		VCDR-53	MOTORIZED (BY CONTROL CONTR.)		2
MVD	RECTANGULAR	MANUAL VOLUME CONTROL DAMPER	MBD-10	MANUAL QUADRANT / LOCKING INDEX	MANUAL BALANCING	4
	ROUND		MBDR-50	MANUAL QUADRANT / LOCKING INDEX		5

NOTES:

1. RECTANGULAR OPPOSED BLADE DAMPER: ULTRA-LOW LEAKAGE (CLASS 1A @ 1" WG), STEEL CONSTRUCTION, AIRFOIL BLADES, BLADE SEALS, MOTORIZED OR MANUAL QUADRANT OPERATOR
2. ROUND SINGLE BLADE DAMPER: LOW LEAKAGE, STEEL CONSTRUCTION, SINGLE BLADE, EPDM BLADE SEAL, MOTORIZED OR MANUAL QUADRANT OPERATOR
3. RECTANGULAR GRAVITY BACKDRAFT DAMPER: LOW LEAKAGE, STEEL FRAME / ALUM BLADE CONSTRUCTION, START OPEN AT 0.05" WG PD
4. RECTANGULAR MANUAL BALANCING DAMPER: STEEL CONSTRUCTION, SINGLE BLADE, PROVIDE W/ LOCKING INDEXED QUADRANT OPERATOR
5. ROUND MANUAL BALANCING DAMPER: STEEL CONSTRUCTION, SINGLE BLADE, PROVIDE W/ LOCKING INDEXED QUADRANT OPERATOR
6. RECTANGULAR FIRE DAMPER, 1-1/2 HOUR RATED: STEEL CONSTRUCTION, 165F FUSIBLE LINK, UL555 RATED, CURTAIN STYLE DAMPER, MAX PRESSURE 4" W.C., 4,000 FPM MAX FOR VERTICAL INSTALL UP TO 24"X24" OTHERWISE 2,000 FPM MAX.
7. RECTANGULAR COMBINATION FIRE/SMOKE DAMPER 1-1/2 HOUR RATED: STEEL CONSTRUCTION, UL555 RATED, LEAKAGE CLASS 2, 3V BLADE, MAX PRESSURE 6" W.C., 2,000 FPM MAX
8. RECTANGULAR COMBINATION FIRE/SMOKE DAMPER 1-1/2 HOUR RATED: STEEL CONSTRUCTION, UL555 RATED, LEAKAGE CLASS 1, AIRFOIL BLADE, MAX PRESSURE 8" W.C., 4,000 FPM MAX

EXHAUST FAN SCHEDULE

UNIT TAG	AREA SERVED	MANUFACTURER & MODEL NO.	TYPE	MOUNTING ARRANGEMENT	AIRFLOW (CFM)	TSP (IN WC)	DRIVE	FAN RPM	FAN BHP	MOTOR HP	VOLT/PH	SONES	MOUNTING ISOLATION	SHUTOFF DAMPER	WT (LBS)	NOTES
EF-1.01	IT ROOM	CSP-A1050	CABINET	SUSPENDED INLINE	1000	0.25	DIRECT	1070	-	467W	115/1	1.4	NEOPRENE	BACKDRAFT	61	5,A,D

ACC ALT MFG: COOK, BARRY, BAYLEY, TWIN CITY, ACME, NYB, COOK, JENN, PENN

ACCESSORIES/OPTIONS NOTES:

1. 13.5" ROOF CURB WITH DAMPER TRAY AND WOOD NAILER
2. MOTORIZED DAMPER VOLTAGE TO MATCH FAN VOLTAGE.
3. EXTENDED GREASE LUBE LINES FOR BEARINGS
4. PROVIDE SPARE SET OF FAN BELTS.
5. MOUNT VARIABLE SPEED CONTROLLER TO FAN
6. SEE PLANS FOR VARIABLE SPEED CONTROLLER LOCATION
7. MOTOR WEATHER COVER
8. BELT COVER
9. 120V FAN SPEED CONTROL FOR PSC SINGLE PHASE MOTOR
10. 120V FAN SPEED CONTROL FOR EC SINGLE PHASE MOTOR
11. VFD FOR POLYPHASE MOTOR

CONTROL NOTES:

A. LINE VOLTAGE THERMOSTAT
B. PROVIDE VARIABLE SPEED CONTROL FOR EC MOTOR.
C. VARIABLE SPEED CONTROL FOR POLYPHASE MOTOR, WITH VFD
D. CONTROL FAN START/STOP BY WALL MOUNTED LINE VOLTAGE COOLING THERMOSTAT SET FOR 75 DEG.
E. CONTROL FAN START/STOP BY TIME CLOCK.
F. CONTROL FAN START/STOP BY WALL MOUNTED SWITCH
G. CONTROL FAN START/STOP BY INTERLOCK WITH ADJACENT HVAC EQUIPMENT THERMOSTAT
H. CONTROL FAN START/STOP BY BUILDING AUTOMATION SYSTEM
I. CONTROL FAN START/STOP WITH LIGHT SWITCH INTERLOCKED WITH LIGHT

ALLIANT SYSTEMS

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REGISTERED PROFESSIONAL ENGINEER 64563PE OREGON 06/25/2000 SEAN C. MURRAY

EXPIRES 12-31-22

2 PROJECT REVISIONS 05/25/22
1 PROJECT REVISIONS 02/28/22

REVISIONS: DATE

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CAD:
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PLOT DATE:
06/02/22

MECHANICAL SCHEDULES

PROJECT NUMBER:
C-1213-22257

PERMIT ISSUE
02/18/21

SHEET NUMBER:
M0.01

CAD FILENAME: 22257-HVAC.dwg

DUCTWORK SCHEDULE

NOTE: ALL SYSTEMS AND PIPING MATERIALS MAY NOT BE USED ON EVERY PROJECT

SERVICE / USAGE	LOCATION	MATERIAL	WORKING PRESURE (IN. WC)	SMACNA PRESSURE CLASS (IN. WC)	SMACNA SEAL CLASS	NOTES
OUTDOOR AIR INTAKE	BETWEEN AMBIENT AND AHU	GALVANIZED STEEL (SHEETMETAL)	LOW PRESSURE	1	A	1,2,3
LOW PRESSURE SUPPLY AIR	FROM TERMINAL UNITS TO GRD'S	GALVANIZED STEEL (SHEETMETAL)	LOW PRESSURE	1	A	1,2,3
FLEXIBLE DUCT	FINAL CONNECTION TO GRD'S	PRE-INSULATED FLEXIBLE DUCT ASSEMBLY	LOW PRESSURE	RATED +6", -1"	NA	4
RETURN AIR	FROM GRD'S OR PLENUM TO AHU/RTU	GALVANIZED STEEL (SHEETMETAL)	LOW PRESSURE	1	A	1,2,3
TRANSFER AIR	FROM GRD TO GRD	GALVANIZED STEEL (SHEETMETAL)	LOW PRESSURE	1	A	1,2,3

NOTES:
1. SHEET METAL DUCT AND FITTINGS TO BE FABRICATED AND INSTALLED IN ACCORDANCE W/ CURRENT VERSION OF SMACNA DUCT CONSTRUCTION STANDARDS
2. SEAL ALL LONGITUDINAL AND TRANSVERSE DUCT JOINTS WITH WELDS, GASKETS, MASTICS, TAPES, OR OTHER SMACNA APPROVED SYSTEMS BASED ON DUCT SERVICE
3. EXPOSED DUCTWORK TO HAVE INTERNAL SEALING (EXTERNALLY VISIBLE SEALENT IS NOT ACCEPTABLE)
4. PROVIDE MAXIMUM 8' TOTAL LENGTH FLEX DUCT AT EACH CONNECTION. PROVIDE PRODUCT W/ MIN R-5 INSULATION (ATCO UPC, THERMAFLEX "GKM", OR EQUAL)
5. SEAL JOINTS AT VAPOR EXHAUST DUCT WATERTIGHT W/ SILICONE CAULK. INSTALL W/ MINIMUM 1% SLOPE BACK TO INLET
6. DRYER DUCT SHALL BE FURNISHED AND INSTALLED IN COMPLIANCE W/ OMSC SECTION 504 REQUIRMENTS, INCLUDING THE FOLLOWING:
   - DRYER DUCT SHALL BE METALIC W/ SMOOTH INTERIOR FINISH, MIN. 0.016" THICKNESS, AND MIN. 4" DIAMETER
   - DRYER DUCTS SHALL NOT BE JOINED W/ SCREWS OR FASTENERS THAT PROTRUDE INTO DUCT
   - DRYER DUCTS SHALL BE SUPPORTED AT MINIMUM 4-FOOT INTERVALS AND SECURED IN PLACE

DUCTWORK INSULATION SCHEDULE

NOTE: ALL SYSTEMS AND INSULATION TYPES MAY NOT BE USED ON EACH PROJECT

SERVICE:	DUCT LOCATION/TYPE:	FIBERGLASS INSULATION TYPE:	NOTES:
INSULATED FLEXIBLE SUPPLY DUCT	CONCEALED LOW PRESSURE DUCT	MANUF ASSEMBLY W/ REINFORCED VAPOR BARRIER, MINIMUM R-5 FIBERGLASS INSULATION, NON-PERFORATED INTERIOR LINER W/ STRUCTURAL WIRE HELIX	FLEXIBLE DUCT SHALL BE CERTIFIED AS A UL 181 LISTED, CLASS-1 AIR DUCT.
LOW PRESSURE SUPPLY AIR	CONCEALED LOW PRESSURE DUCT	OPTION 1: ACOUSTIC DUCT LINER (MIN R-5)	CONCEALED DUCT ROUTED WITHIN SHAFT, SOFFIT, OR ENCLOSED CEILING PLENUM
		OPTION 2: INSULATION WRAP (MIN R-5)	
	EXPOSED LOW PRESSURE DUCT	N/A	EXPOSED DUCT WITHIN CONDITIONED SPACE (EG: NO CEILING, DUCT BELOW CEILING , OR DUCT ABOVE OPEN 'CLOUD' CEILING)
SUPPLY AIR ACOUSTIC PLENUM	LOW PRESSURE DUCT DISCHARGE PLENUM FROM AIR TERMINAL UNIT	ACOUSTIC DUCT LINER	INSULATION FOR SOUND REDUCTION ONLY
RETURN AIR	RA GRILLE BOOT	MIN 1" THICK FIBERGLASS DUCT BOARD	INSULATION FOR SOUND REDUCTION ONLY
TRANSFER AIR	GRILLE BOOT	ACOUSTIC DUCT LINER OR DUCT BOARD	INSULATION FOR SOUND REDUCTION ONLY
OUTDOOR AIR INTAKE	EXTERIOR LOUVER OR INTAKE HOOD AT BUILDING ENVELOPE TO EQUIPMENT OA CONNECTION(S)	OPTION 1: INSULATION WRAP (MIN R-8)	
		OPTION 2: ACOUSTIC DUCT LINER (MIN R-8)	

INSULATION SPECIFICATION: KNAUF, CERTAINTEED, OWENS CORNING, OR APPROVED EQUAL.
1. SUPPLY AIR - FIBERGLASS ACOUSTIC DUCT LINER: 1.5 PCF - MINIMUM R=5.0, GLASS FIBERS SHALL HAVE AIRSTREAM COATING TO PREVENT EROSION.
2. OUTDOOR AIR FIBERGLASS ACOUSTIC DUCT LINER: 1.5 PCF - MINIMUM R=8.0, GLASS FIBERS SHALL HAVE AIRSTREAM COATING TO PREVENT EROSION.
3. SUPPLY AIR FIBERGLASS DUCT WRAP INSULATION: 0.6 PCF - MINIMUM R-5, EXTERIOR FOIL SCRIM REINFORCED VAPOR BARRIER COVERING
4. OUTDOOR AIR FIBERGLASS DUCT WRAP INSULATION: 0.6 PCF - MINIMUM R-8, EXTERIOR FOIL SCRIM REINFORCED VAPOR BARRIER COVERING
5. FIBERGLASS RIGID BOARD INSULATION - 2" THICKNESS, MINIMUM R=8.0, EXTERIOR FOIL SCRIM REINFORCED VAPOR BARRIER COVERING
6. FIBERGLASS DUCT BOARD - 1" THICKNESS, R=4.0, EXTERIOR FOIL SCRIM REINFORCED VAPOR BARRIER COVERING, AIRSTREAM FIBERGLASS COATING
7. ALL INSULATION SHALL BE INSTALLED PER SMACNA GUIDELINES, AND MANUFACTURERS INSTALLATION INSTRUCTIONS
8. DUCTWORK INSULATION SHALL BE INSTALLED AS INDICATED ON DRAWINGS, AND AS REQUIRED PER CODE.

City Of Portland
REVIEWED FOR CODE COMPLIANCE
Date: 06/23/22
Permit #: 22-124075-REV-01-FA

MECHANICAL PIPING SCHEDULE

NOTE: ALL SYSTEMS AND PIPING MATERIALS MAY NOT BE USED ON EVERY PROJECT

SERVICE	LOCATION	SIZE	PIPE	PIPE MATERIAL STANDARD	FITTINGS	JOINTS	WORKING PRESSURE	TEST PRESSURE	NOTES
VRV/VRF REFRIGERATION	ROOFTOP CU TO BS CONTROLLER	1/2" - 2"	ACR SERVICE RATED COPPER TUBING	ASTM B280	WROUGHT COPPER	SILVER BRAZED	450 PSI	550 PSI	
	EXPOSED PIPING BS CONTROLLER TO FAN COIL	1/2" - 2"	ACR SERVICE RATED COPPER TUBING	ASTM B280	WROUGHT COPPER	SILVER BRAZED	450 PSI	550 PSI	
	CONCEALED PIPING BS CONTROLLER TO FAN COIL	1/2" - 2"	ACR SERVICE RATED PREINSULATED COPPER LINESETS	ASTM B280	WROUGHT COPPER	SILVER BRAZED	450 PSI	550 PSI	3
CONDENSATE DRAINAGE	INTERIOR ABOVE GRADE	1/2" - 2"	COPPER TYPE L HARD DRAWN	ASTM B-88	WROUGHT COPPER	WATER SAFE SOLDER BCuP	AMBIENT	5 PSI	
				ASTM B88	PRESS-CONNECT	MECHANICAL PRESS-CONNECT	50 PSIG	100 PSI	1, 2
	EXTERIOR ROOFTOP	1/2" - 2"	SCHEDULE 40 CPVC	ASTM F441 ASTM F441M	SCHEDULE 40 CPVC	SOLVENT WELD	AMBIENT	5 PSI	

NOTES:
1. MECHANICAL PRESS-FIT APPLICATIONS SHALL USE 'APOLLOPRESS' COMPONENTS AND JOINING ACCESSORIES
2. TEST PRESSURE FOR HYDRONIC HEATING/COOLING APPLICATIONS TO BE GREATER OF EITHER MINIMUM 100 PSI, OR 1.5 TIMES WORKING PRESSURE
3. VENDOR PRE-INSULATED AND JACKETED LINE SET, IDENTIFY PROJECT SPECIFIC REQUIREMTN FOR INSULATION, JACKET, AND JOINING METHOD
4. EXPOSED, EXTERIOR, ABOVE-GRADE NATURAL GAS PIPING SHALL BE PAINTED WITH CORRISION RESISTANT PAINT, OR APPROVED PIPING WRAP
5. UNDERGROUND NATURAL GAS PIPING BASED ON TRACPIPE 'PS-II' PIPING AND FITTINGS. SYSTEM INCLUDES: CORRUGATED STAINLESS STEEL FLEXIBLE GAS PIPE ENCASED IN FULLY VENT CAPABLE POLYETHYLENE SLEEVE. FITTINGS ARE BRASS AUTO-FLARE STYLE WITH PLASTIC CONTAINMENT FITTING AND 1/4" NPT VENT PORT. COORDINATE INSTALL IN ACCORDANCE W/ MANUFACTURER'S REQUIREMENTS TO TERMINATE VENT AT SUITABLE LOCATION OUTSIDE OF BUILDING ENVELOPE
7. VENDOR PRE-INSULATED ENGINEERED PIPING SYSTEM WITH CORROSION PROTECTION (AS REQUIRED) AND RATED JACKET FOR BELOW GRADE INSTALLATION
8. MECHANICAL PRESS-CONNECT JOINTS FOR FUEL GAS APPLICATIONS SHALL BE 'MEGA-PRESS', CERTIFIED TO CSA ANSI LC-4, AS MANUFACTURED BY VIEGA ONLY
9. DESIGNER TO VERIFY REQUIREMENTS FOR SACRIFICIAL ANODE BAG(S) OR OTHER SUPPLEMENTAL CATHODIC PROTECTION AT BURIED METALLIC PIPING APPLICATIONS
10. PEX PIPING FOR HYDRONIC APPLICATIONS TO BE MANUFACTURED WITH ENGEL METHOD AND INCLUDE OXYGEN DIFFUSION BARRIER TO LIMIT OXYGEN MIGRATION INTO SYSTEM FLUID

MECHANICAL PIPING INSULATION SCHEDULE (BASED ON 2019 OZERC STANDARDS)

NOTE: ALL SYSTEMS AND INSULATION MATERIALS MAY NOT BE USED ON EVERY PROJECT

SYSTEM	FLUID OPERATING TEMP (°F.)	INSULATION TYPE	INSULATION CONDUCTIVITY (BTU/IN)/(HR-FT2-F)	MEAN RATING TEMP (°F.)	MINIMUM INSULATION THICKNESS (INCHES)					
					< 1"	1" TO < 1-1/2"	1-1/2" TO < 4"	4" TO < 8"	≥ 8"	COMMENT
HVAC CONDENSATE DRAINAGE INSIDE BUILDING	40-60	FIBERGLASS W/ ALL SERVICE JACKET	0.21-0.27	75	0.5	0.5	1	1	1	2, 3, 4, 5, 7
SPLIT SYSTEM (DX) REFRIGERANT SUCTION & HOT GAS PIPING	VARIES	FLEXIBLE ELASTOMERIC INSULATION (ASTM C-534) (ARMAFLEX OR EQUAL)	0.24-0.27	VARIES	0.5 (PIPE LESS THAN 1" DIA)				NA	1, 2, 3, 4, 5, 6, 7

ALL INSULATION THICKNESSES AND INSULATION VALUES SHALL MEET AND / OR EXCEED 2019 OZERC TABLES 6.8.3-1 AND 6.8.3-2

NOTES:
1. INSULATION THICKNESS BASED ENERGY CODE. CONTRACTOR TO CONFIRM COMPATIBLE WITH INSTALLED SPLIT SYSTEM MODEL'S INSTALLATION INSTRUCTIONS.
2. INSULATION TO BE FIELD APPLIED. EXTERIOR INSULATION TO HAVE STANDARD UV RESISTANT WHITE PVC JACKET
3. INSULATION TO CONFORM TO ASTM AND NFPA REQIREMENTS AND BE POLYBROMINATED DIPHENYL ETHER (PBDE) FREE
4. FOR LOCATIONS SUBJECT TO ABRASION OR ABUSE UP TO 7 FT ABOVE FINISHED FLOOR, PROVIDE PROTECTIVE ALUMINUM JACKET IN ADDITION TO EXTERNAL INSULATION.
5. PROVIDE VALVES, FITTINGS, AND EQUIPMENT WITH REMOVABLE INSULATION PAD(S) AS NEEDED FOR INSPECTION AND SERVICE ACCESS.
6. FACTORY INSULATED REFRIGERANT LINESETS WITH THERMAL CHARACTERISTICS MEETING CODE REQUIREMENTS ARE AN ACCEPTABLE ALTERNATE
7. FOR 'WET' AREAS OR APPLICATIONS W/ WASHDOWN REQUIREMENTS (KITCHENS, LABS, POOL MECH ROOMS) PROVIDE SEALED PVC JACKET IN ADDITION TO EXTERNAL INSULATION.
8. COORDINATE UL ASSEMBLIES REQUIRED FOR PIPE PENETRATIONS AT RATED WALLS W/ PROJECT FIRESTOPPING CONTRACTOR DURING CONSTRUCTION DETAILING PHASE

HVAC PIPING/FITTING VALVE SCHEDULE

NOTE: ALL PIPING VALVES AND FITTINGS MAY NOT BE USED ON EVERY PROJECT

SERVICE	TYPE	FUNCTION	PIPE SIZE	PIPE (JOINT)	WOG RATING	MANUF	MODEL NUMBER	NOTES
REFRIGERANT	MANUAL REFRIGERANT ISOLATION VALVE	SHUT OFF	0.5" - 2"	COPPER (SWEAT/BRAZED/PRESS)	NA	MUELLER REFRIGERATION	CYCLEMASTER BALL VALVE	5

1) PROVIDE LEVER HANDLE. VALVE TO BE OPEN THROAT OR FULL PORT WITH NO RESTRICTIONS.
2) MULTI-TURN ANGLE PATTERN GLOBE TYPE WITH VISUAL INDICATORS SIZED FOR SPECIFIC APPLICATION TO MAXIMIZE CONTROLLABILITY. NOT TO BE UTILIZED AS ISOLATION VALVE. QUARTER TURN CIRCUIT SETTER AND PLUG TYPE BALANCING VALVES NOT ALLOWED.
3) PROVIDE HAND WHEEL FASTENED TO VALVE STEM.
4) PROVIDE GEAR OPERATORS FOR VALVES 5" AND LARGER.
5) REFRIGERANT ISOLATION VALVE INCLUDES: FULL PORT BALL CONSTRUCTION TO MATCH LINE SIZE, RUPTURE PROOF STEM, MCM SEAL, SCHRADER VALVE W/ SCREWED BRASS COVER

ACCEPTABLE ALTERNATE MANUFACTURER'S:

SHUT OFF	MILWAUKIE, HAMMOND
CHECK	MILWAUKIE, HAMMOND
THROTTLE	MILWAUKIE, HAMMOND
BALANCE	GRISWOLD, TOREN ANDERSON
STRAINER	KEKLEY, SARCO, MUELLER

PIPING SYSTEMS HANGER SCHEDULE

Nominal Pipe Diameter	Pipe OD	Insulation Thickness	Actual OD Insert/ Insulation	Rigid Hanger Insert	Shield	Pipe Shoe	Clevis or Loop Hanger	Model	Strut Clamp Hanger	Model	Riser Clamp (to pipe)	Model	Rod Size	Minimum pipe spread C-C	Maximum Hanger spread C-C	Hanger insert color
REFRIGERANT LINESETS UP TO 7/8" ACR SOFT COPPER TUBING (HYDROZORB STRUT CLAMPS)																
1/4"	1/4"	1/2"	1 1/4"OD	no	no	N/A	1" IP LOOP	FNW7010EP0100	1 1/4"OD	Hydrazorb TRH-3	1/4" OD	N/A	3/8"	3"	6'	Orange
3/8"	3/8"	1/2"	1 3/8"OD	no	no	N/A	1 1/4" IP LOOP	FNW7010EP0125	1 3/8"OD	Hydrazorb TRH-3	3/8"OD	N/A	3/8"	3"	6'	
1/2"	1/2"	1/2"	1 1/2"OD	no	no	N/A	1 1/4" IP LOOP	FNW7010EP0125	1 1/2"OD	Hydrazorb TRH-3	1/2"OD	N/A	3/8"	3"	6'	
5/8"	5/8"	1/2"	1 5/8"OD	no	no	N/A	1 1/2" IP LOOP	FNW7010EPC0150	1 5/8"OD	Hydrazorb TRH-3	5/8"OD	FNW7023EC0050	3/8"	4"	6'	
3/4"	3/4"	1/2"	1 3/4"OD	no	no	N/A	1 1/2" IP LOOP	FNW7010EPC0150	1 3/4"OD	Hydrazorb TRH-3	3/4"OD	FNW7023EC0050	3/8"	4"	6'	
7/8"	7/8"	1/2"	1 7/8"OD	no	no	N/A	2" IP LOOP	FNW7010EP0200	1 7/8"OD	Hydrazorb TRH-3	7/8"OD	FNW7023EC0075	3/8"	4"	6'	
CONDENSATE DRAIN-TYPE L COPPER INDOOR AND PVC SCH 40 OUTDOOR 3/4" -2"																
3/4"CT	7/8"	1/2"	1 7/8"	no	N/A	N/A	3/4" CT LOOP	FNW7015EC0075	3\4" CT	FNW7870C0075	3\4" CT	FNW7023EC0075	3/8"	3"	6'	Orange
1"CT	1-1/8"	1/2"	2 1/8"	no	N/A	N/A	1 " CTLOOP	FNW7015EC0100	1" CT	FNW7870C0100	1" CT	FNW7023EC0100	3/8"	3"	6'	
1 1/4"CT	1-3/8"	1/2"	2 3/8"	no	N/A	N/A	1 1/4" CT LOOP	FNW7015EC0125	1-1\4" CT	FNW7870C0125	1-1\4" CT	FNW7023EC0125	3/8"	4"	6'	
1 1/2"CT	1-5/8"	1"	3 5/8"	no	N/A	N/A	1 1/2" CT LOOP	FNW7015EC0150	1-1\2" CT	FNW7870C0150	1-1\2" CT	FNW7023EC0150	3/8"	4"	6'	
2"CT	2-1/8"	1"	4 1/8"	no	N/A	N/A	2" CT loop	FNW7008EC0200	2" CT	FNW7870C0200	2" CT	FNW7023EC0200	3/8"	4"	10'	
3/4"PVC	1 1/16"	1/2"	2 1/16"	no	N/A	N/A	3/4" IP LOOP	FNW7010EP0075	3/4"IP	FNW7873Z0075	3/4"IP	FNW7022EP0075	3/8"	4"	4'	
1"PVC	1 5/16"	1/2"	2 5/16"	no	N/A	N/A	1" IP LOOP	FNW7010EP0100	1"IP	FNW7873Z0100	1"IP	FNW7022EP0100	3/8"	4"	4'	
1 1/4"PVC	1 11/16"	1/2"	2 11/16"	no	N/A	N/A	1 1/4" IP LOOP	FNW7010EP0125	1 1/4"IP	FNW7873Z0125	1 1/4"IP	FNW7022EP0125	3/8"	4"	4'	
1 1/2"PVC	1 7/8"	1"	3 7/8"	no	N/A	N/A	1 1/2" IP LOOP	FNW7010EPC0150	1 1/2"IP	FNW7873Z0150	1 1/2"IP	FNW7022EPC0150	3/8"	4"	4'	
2"PVC	2 3/8"	1"	4 3/8"	no	N/A	N/A	2" IP LOOP	FNW7010EP0200	2"IP	FNW7873Z0200	2"IP	FNW7022EP0200	3/8"	4"	4'	

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64563PE
OREGON
09/25/2000
SEAN C. MURRAY
EXPIRES 12-31-22

2	PROJECT REVISIONS	05/25/22
1	PROJECT REVISIONS	02/28/22
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CAD:
J. HAGGARD

PLOT DATE:
06/02/22

MECHANICAL SCHEDULES

PROJECT NUMBER:
C-1213-22257

PERMIT ISSUE
02/18/21

SHEET NUMBER:
M0.02

CAD FILENAME: 22257-HVAC.dwg

PLUMBING FIXTURE SCHEDULE

FIXTURE TAG	DESCRIPTION	WASTE SIZE (DFU)	VENT SIZE (DFU)	COLD WATER SIZE (WSFU)	HOT WATER SIZE (WSFU)	MANUFACTURER	MODEL NUMBER	MATERIAL	COLOR	MOUNTING	FLUSH VALVE OR FAUCET SET	SUPPLY PIPES AND STOPS	P-TRAP	STRAINER	ACCESSORIES/REMARKS
S-1	BREAK ROOM SINK - SINLE BASIN - ADA	1 1/2" (2)	1 1/2" (2)	1/2" (1)	1/2" (.75)	ELKAY	ELUHAD211555	STAINLESS STEEL	-	UNDERMOUNT COUNTER	AMERICAN STANDARD COLONY SOFT 4175.300	McGUIRE 2167CCLK	McGUIRE 8912CBECO	ELKAY LK35	PROVIDE A DISH WASHER CONNECTION, PROVIDE ADA P-TRAP & SUPPLY COVER.
WCO	WALL CLEAN OUT	SIZE ON PLANS	-	-	-	WATTS	CO-460-RD	BRONZE	-	WALL	-	-	-	-	-

PLUMBING VALVE SCHEDULE

SERVICE	SIZE	PIPE	FUNCTION	TYPE	CLASS	MFG	MODEL NO.
DOMESTIC COLD WATER DOMESTIC HOT WATER	1/2 - 3"	COPPER	SHUT OFF	BALL VALVE: 2-PIECE, FULL-PORT, BRONZE CONSTRUCTION	600	APOLLO	77CLF-200
	1/2 - 3"	COPPER	CHECK	SWING CHECK VALVE	200	APOLLO	161S-LF

ACCEPTABLE ALTERNATE MANUFACTURERS: HAMMOND, MILWAUKEE

ELECTRIC WATER HEATER SCHEDULE

UNIT NO.	SERVICE & LOCATION	MANUFACTURER & MODEL NO.	CAPACITY GAL	HEAT IN KW	VOLTAGE V	RECOVERY OF 4 GAL TANK	EWT °F IN	LWT °F OUT	WEIGHT LBS	NOTES
EWH-1	SINK & DISHWASHER / BREAK ROOM	EEMAX MINI TANK EMT4	4	1.4	120V/1PH/12A PLUG IN CONNECTION	24 MIN	50	120	24	1,2

NOTES:
1. ELECTRICAL CONTRACTOR TO PROVIDE POWER WIRING AND DISCONNECT SWITCH
2. PROVIDE A HUB DRAIN UNDER THE SINK FOR T&P RELIEF VALVE DISCHARGE.

PLUMBING PIPING INSULATION SCHEDULE (BASED ON 2019 OZERC STANDARDS)

NOTE: ALL SYSTEMS AND INSULATION MATERIALS MAY NOT BE USED ON EVERY PROJECT

SYSTEM	FLUID OPERATING TEMP (°F.)	INSULATION TYPE	INSULATION CONDUCTIVITY (BTU/IN)/(HR-FT2-F)	MEAN RATING TEMP (°F.)	MINIMUM INSULATION THICKNESS (INCHES) < 1"	1" TO < 1-1/2"	1-1/2" TO < 4"	4" TO < 8"	≥ 8"	COMMENT
DOMESTIC CW	40-60	FIBERGLASS W/ ALL SERVICE JACKET	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0	1, 3, 4., 5
PEX PIPING DOMESTIC CW	40-60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3, 4, 5
DOMESTIC HW AND HWR	105-140	FIBERGLASS W/ ALL SERVICE JACKET	0.22-0.28	100	1.0	1.0	1.5	1.5	1.5	1, 3, 4, 5
PEX PIPING DOMESTIC HW AND HWR	105-140	FIBERGLASS W/ ALL SERVICE JACKET	0.21-0.27	100	1.0	1.0	1.5	NA	NA	1, 4, 5
METAL PIPE THRU FIRE RATED SEPARATION	VARIES	EXTEND INSULATED PIPING THRU UL RATED ASSEMBLY FOR SPECIFIC APPLICATION	VARIES	VARIES	PER FIRE CAULK UL LISTING	PER FIRE CAULK UL LISTING	PER FIRE CAULK UL LISTING	PER FIRE CAULK UL LISTING	PER FIRE CAULK UL LISTING	6
PLASTIC PIPE THRU FIRE RATED SEPARATION	VARIES	EXTEND INSULATED PIPING THRU UL RATED ASSEMBLY FOR SPECIFIC APPLICATION	VARIES	VARIES	PER FIRE STOP UL LISTING	PER FIRE STOP UL LISTING	PER FIRE STOP UL LISTING	PER FIRE STOP UL LISTING	PER FIRE STOP UL LISTING	6

ALL INSULATION THICKNESSES AND INSULATION VALUES SHALL MEET AND / OR EXCEED 2019 OZERC TABLES 6.8.3-1 AND 6.8.3-2

NOTE:
1. INSULATION TO BE FIELD APPLIED. EXTERIOR INSULATION TO HAVE STANDARD UV RESISTANT WHITE PVC JACKET.
2. PROVIDE FACTORY PRE-INSULATED TANKS WITH METAL CASING
3. REFER TO PEX PIPING MANUFACTURER'S REQUIREMENTS FOR PEX TUBING INSULATION WHERE REQUIRED TO ACHIEVE FLAME AND SMOKE SPREAD RATINGS FOR PLENUM APPLICATIONS
4. FOR LOCATIONS SUBJECT TO ABRASION OR ABUSE UP TO 7 FT ABOVE FINISHED FLOOR, PROVIDE PROTECTIVE ALUMINUM JACKET IN ADDITION TO EXTERNAL INSULATION.
5. FOR 'WET' AREAS OR APPLICATIONS W/ WASHDOWN REQUIREMENTS (KITCHENS, LABS, POOL MECH ROOMS) PROVIDE SEALED PVC JACKET IN ADDITION TO EXTERNAL INSULATION.
6. COORDINATE UL ASSEMBLIES REQUIRED FOR PIPE PENETRATIONS AT RATED WALLS W/ PROJECT FIRESTOPPING CONTRACTOR DURING CONSTRUCTION DETAILING PHASE

PLUMBING PIPING SCHEDULE

SERVICE	LOCATION	SIZE	PIPE	PIPE MATERIAL STANDARD	FITTINGS	JOINTS	WORKING PRESSURE	TEST PRESSURE	NOTES
CONDENSATE DRAINAGE	INTERIOR	1/2" - 1"	COPPER TYPE L HARD DRAWN	ASTM B-88	WROUGHT COPPER	WATER SAFE SOLDER BCuP	AMBIENT	5 PSIG	
			COPPER TYPE L HARD DRAWN	ASTM B88	PRESS-CONNECT	MECHANICAL PRESSFIT	70 PSIG	100 PSIG	1
DOMESTIC COLD WATER DOMESTIC HOT WATER	ABOVE GRADE	1/2" -1"	COPPER TYPE L HARD DRAWN	ASTM B88	WROUGHT COPPER	WATER SAFE SOLDER BCuP	70 PSIG	100 PSIG	
		1/2" -1"	COPPER TYPE L HARD DRAWN	ASTM B88	TEE DRILL COPPER, BRASS	WATER SAFE SOLDER BCuP	70 PSIG	100 PSIG	
		1/2" -1"	COPPER TYPE L HARD DRAWN	ASTM B88	PRESS-CONNECT	MECHANICAL PRESSFIT	70 PSIG	100 PSIG	1
		1/2" -1"	PEX-A	ASTM F876 ASTM F877	ENGINEERED POLYMER	UPONOR PRO-PEX	70 PSIG	100 PSIG	2
SANITARY WASTE	ABOVE GRADE	1-1/4" - 6"	CAST IRON NO-HUB	CISPI 301	NO-HUB CAST IRON	STANDARD DUTY NO-HUB COUPLINGS	AMBIENT	5 PSIG or 10' Head Water Column	3
SANITARY VENT	ABOVE GRADE	1-1/4" - 4"	CAST IRON NO-HUB	CISPI 301	NO-HUB CAST IRON	STANDARD DUTY NO-HUB COUPLINGS	AMBIENT	5 PSIG or 10' Head Water Column	3

NOTES:
1. MECHANICAL PRESS-FIT JOINTS FOR PLUMBING APPLICATIONS SHALL BE APOLLO 'APOLLOPRESS' SERIES ONLY
2. PEX-A PLUMBING SYSTEMS TO BE INSTALLED IN CONFORMANCE W/ REQUIREMENTS DETAILED IN MOST CURRENT VERSION OF UPONOR INSTALLATION GUIDE
3. DESIGNER AND/OR INSTALLER TO CONFIRM REQUIREMENTS FOR STANDARD OR HEAVY DUTY NO-HUB COUPLINGS PRIOR TO BEGINNING INSTALLATION

PLUMBING FIXTURE UNIT CALCULATION

FIXTURE DESCRIPTION		QUANTITY	DRAINAGE UNITS EACH	DRAINAGE UNITS TOTAL	COLD WATER UNITS EACH	COLD WATER UNITS TOTAL	HOT WATER UNITS EACH	HOT WATER UNITS TOTAL
BUILDOUT (THIS PERMIT)								
SINK - 1.5 GPM		1	2	2	1.5	1.5	1.125	1.125
DISHWASHER		1	2	2	1.5	-	1.5	1.5
TOTALS	FIXTURES =	2	WASTE DFU =	4	CWSFU	1.5	HWSFU	2.625

PLUMBING IDENTIFICATION AND PIPE LABELING SCHEDULE

SERVICE	SYMBOL	MARKER	MARKER COLOR	TEXT COLOR
DOMESTIC COLD WATER	CW	DOMESTIC COLD WATER	GREEN	WHITE
DOMESTIC HOT WATER	HW	DOMESTIC HOT WATER	GREEN	WHITE
SANITARY WASTE	W	SANITARY SEWER	GREEN	WHITE
SANITARY VENT	V	VENT	GREEN	WHITE

NOTES: 1. INSTALL LABEL ON PIPING MAINS EVERY 30 FT AND AT A _ EQUIPMENT CONNECTIONS
2. WRAP PIPING LABEL END WITH FLOW ARROW TAPE AROU ND PIPE.
3. LABEL PIPING WITHIN 3 FT OF EACH SHUT OFF VALVE, W/ LL/FLOOR PENETRATION, BRANCH TAKE OFF.

EQUIPMENT IDENTIFICATION:
1. BLACK PLASTIC NAME PLATE WITH WHITE ENGRAVED LE TERS.
2. MINIMUM /2" HIGH LETTERS WITH EQUIPMENT TAG DESI NATION.
3. INSTALL TO EQUIPMENT WITH ADHESIVE, RIVETS, CHAIN OR QUICK TIES.

VALVE TAGGING:
1. TAG CONTROL VALVES AND BUILDING MAIN SHUTOFF VALVES.
2. 1-1/2" DIAMETER BRASS VALVE TAG WITH STAMPED LETTERS ON CHAIN.
3. STAMP CONTROL VALVE NUMBER AND/OR PIPING SYSTEM SERVICE SYMBOL.

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PLUMBING PIPING HANGER SCHEDULE

NOTE: ALL SYSTEMS AND DEVICES MAY NOT BE USED ON EACH PROJECT

PIPING AND INSULATION DETAILS: NOMINAL PIPING DIAMETER	PIPING OD (IN)	INSULATION THICKNESS (IN)	ACTUAL OD INSULATION INSERT	RIGID HANGER INSERT	INSULATION SHIELD REQUIRED	HANGER COMPONENT DETAILS: CLEVIS/LOOP HANGER DETAILS: CLEVIS OR LOOP HANGER	MODEL (FERGUSON NORTHWEST)	STRUT CLAMP DETAILS: STRUT CLAMP HANGER SIZE (IN)	MODEL (FERGUSON NORTHWEST)	RISER CLAMP DETAILS: RISER CLAMP HANGER SIZE (IN)	MODEL (FERGUSON NORTHWEST)	HANGER ROD DIAMETER (IN)	HANGER SPACING: MINIMUM PIPE SPACING CENTER-TO-CENTER (IN)	MAXIMUM HANGER SPACING CENTER-TO-CENTER (FT)
NO-HUB CAST-IRON SANITARY WASTE, VENT, AND STORM (2"-3")														
2"	2-3/8"	N/A	N/A	N/A	N/A	2" CLEVIS	FNW7005EP0200	2 3/8	FNW7873Z0200	2"	FNW7022EP0200	3/8"	4"	8' / 2' OC AT JOINT
3"	3-3/8"	N/A	N/A	N/A	N/A	3" CLEVIS	FNW7005EP0300	3 3/8	FNW7873Z0300	3"	FNW7022EP0300	3/8"	5"	8' / 2' OC AT JOINT
PVC SANITARY WASTE, VENT, AND STORM (1 1/2"-3")														
1 1/2"	1 7/8"	N/A	N/A	N/A	N/A	1 1/2" CLEVIS	FNW7005EP0150	1 1/2"NOm	FNW7873Z0150	1 1/2"NOm	FNW7022EP0150	3/8"	4"	4'
2"	2-3/8"	N/A	N/A	N/A	N/A	2" CLEVIS	FNW7005EP0200	2"NOm	FNW7873Z0200	2"NOm	FNW7022EP0200	3/8"	4"	4'
3"	3-3/8"	N/A	N/A	N/A	N/A	3" CLEVIS	FNW7005EP0300	3"NOm	FNW7873Z0300	3"NOm	FNW7022EP0300	3/8"	5"	4'
COPPER TUBING - DOMESTIC COLD WATER (1/2"-3/4")														
1/2"	5/8"	1/2"	1-5/8"	INSULATION	YES	1 1/2" LOOP	FNW7010EP0150	1 5\8"	FNW7872Z0162	1\2" CU	FNW7023EC0050	3/8"	4"	6'
3/4"	7/8"	1/2"	1-7/8"	INSULATION	YES	1 1/2" LOOP	FNW7010EP0150	1 7\8"	FNW7872Z0187	3\4" CU	FNW7023EC0075	3/8"	4"	6'
PEX TUBING - DOMESTIC COLD WATER IN PEX-a SUPPORT CHANNEL (1/2"-3/4")														
1/2"	5/8"	N/A	5/8"	N/A	N/A	1/2" EP LOOP	FNW7010EP0050	5/8"	FNW7873Z0050	1\2" CU	FNW7023EC0050	3/8"	4"	6'
3/4"	7/8"	N/A	7/8"	N/A	N/A	3/4" EP LOOP	FNW7010EP0075	7/8"	FNW7873Z0075	3\4" CU	FNW7023EC0075	3/8"	4"	6'
PEX TUBING- DOMESTIC HOT WATER AND HOT WATER CIRCULATION IN PEX-a SUPPORT CHANNEL (1/2"-3/4")														
1/2"	5/8"	1"	2-5/8"	INSULATION	YES	1/2" EP LOOP	FNW7010EP0050	5/8"	FNW7873Z0050	1\2" CU	FNW7023EC0050	3/8"	4"	6'
3/4"	7/8"	1"	2-7/8"	INSULATION	YES	3/4" EP LOOP	FNW7010EP0075	7/8"	FNW7873Z0075	3\4" CU	FNW7023EC0075	3/8"	4"	6'

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REGISTERED PROFESSIONAL ENGINEER 64563PE OREGON 09/25/2000 SEAN C. MURRAY
EXPIRES 12-31-22

2	PROJECT REVISIONS	05/25/22
1	PROJECT REVISIONS	02/28/22
REVISIONS:		DATE

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CAD:
J. HAGGARD

PLOT DATE:
06/02/22

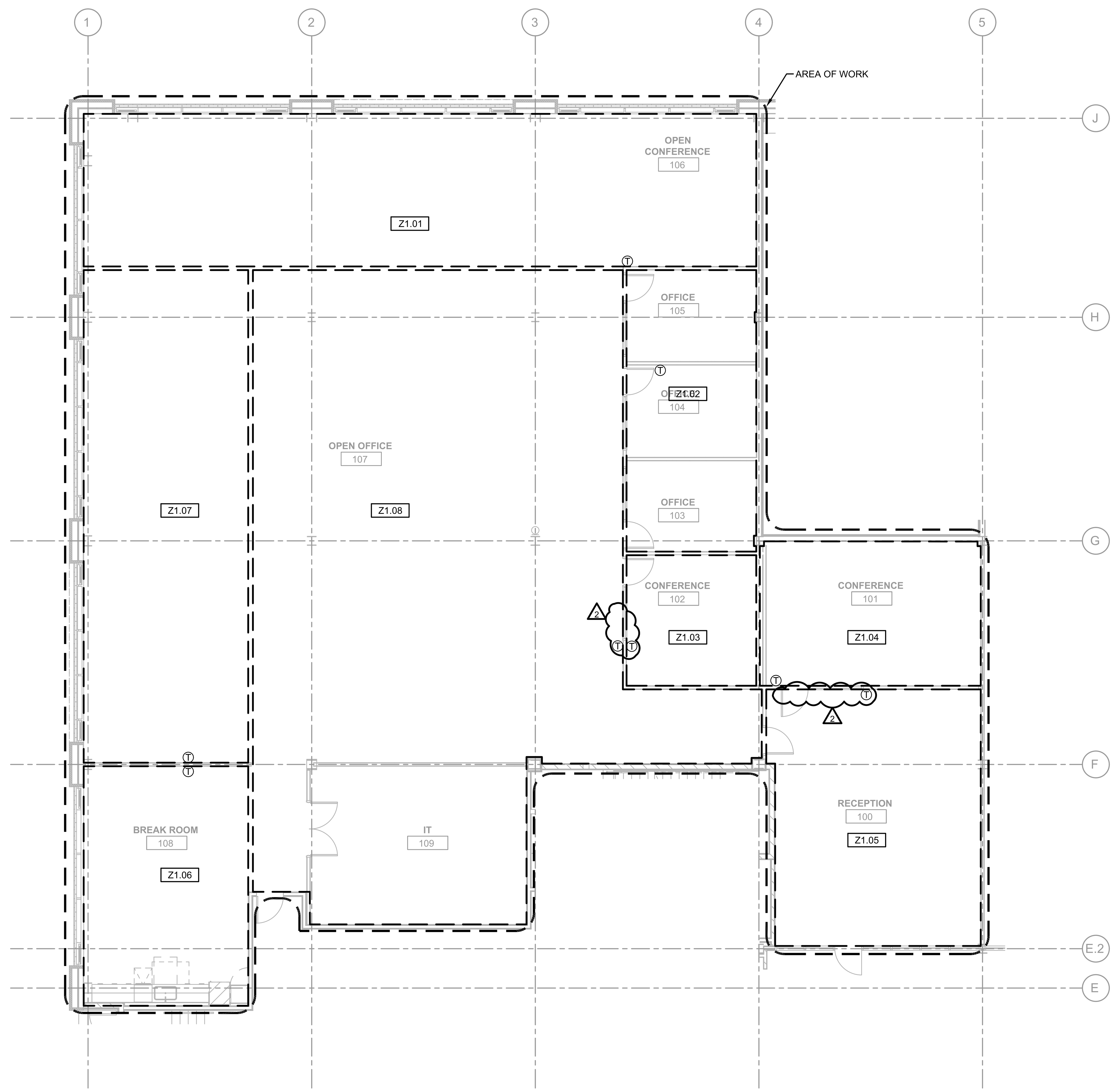
MECHANICAL SCHEDULES

PROJECT NUMBER:
C-1213-22257

PERMIT ISSUE
02/18/21

SHEET NUMBER:
M0.03

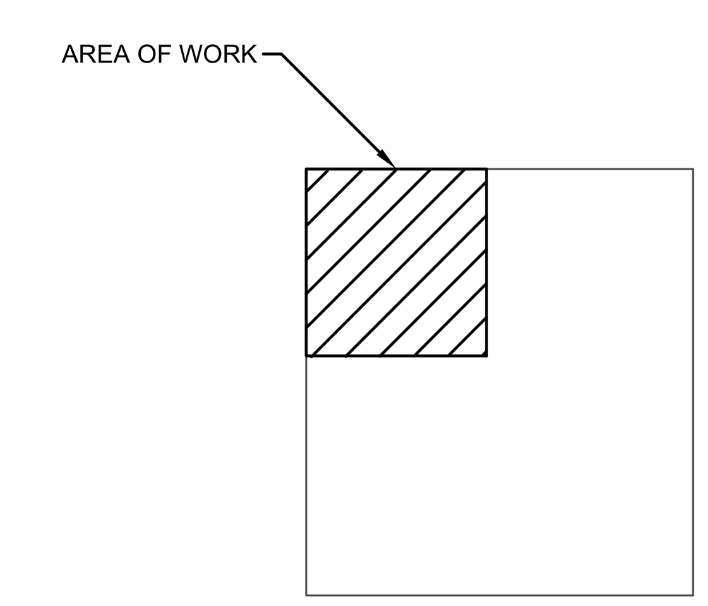
CAD FILENAME: 22257-HVAC.dwg



1 M1.01 MECHANICAL PARTIAL FIRST FLOOR ZONE PLAN

1/8"=1'-0"

4' 2' 0' 4' 8'



KEY PLAN

City Of Portland

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MECHANICAL
PARTIAL FIRST FLOOR
ZONE PLAN

PROJECT NUMBER:
C-1213-22257

PERMIT ISSUE
02/18/21

SHEET NUMBER:
M1.01

CAD FILENAME: 22257-HVAC.dwg

HVAC GENERAL NOTES

A. PROVIDE UPON COMPLETION OF RETROFIT COMPLETE TEST AND BALANCE REPORT FOR ALL TERMINAL UNITS AND SYSTEM OUTLETS IMPACTED BY REVISION.

B. FIELD TECHNICIAN TO VERIFY EXISTING SITE CONDITIONS AND NOTIFY ENGINEER OF ANY CONFLICT OR DIFFERENCES.

C. UNLESS OTHERWISE NOTED, SIZE OF ALL DIFFUSER/GRILLE BRANCH DUCTWORK IS THE SAME AS DIFFUSER/GRILLE NECK SIZE.

D. COORDINATE HVAC EQUIPMENT REQUIRING POWER WITH ELECTRICAL CONTRACTOR.

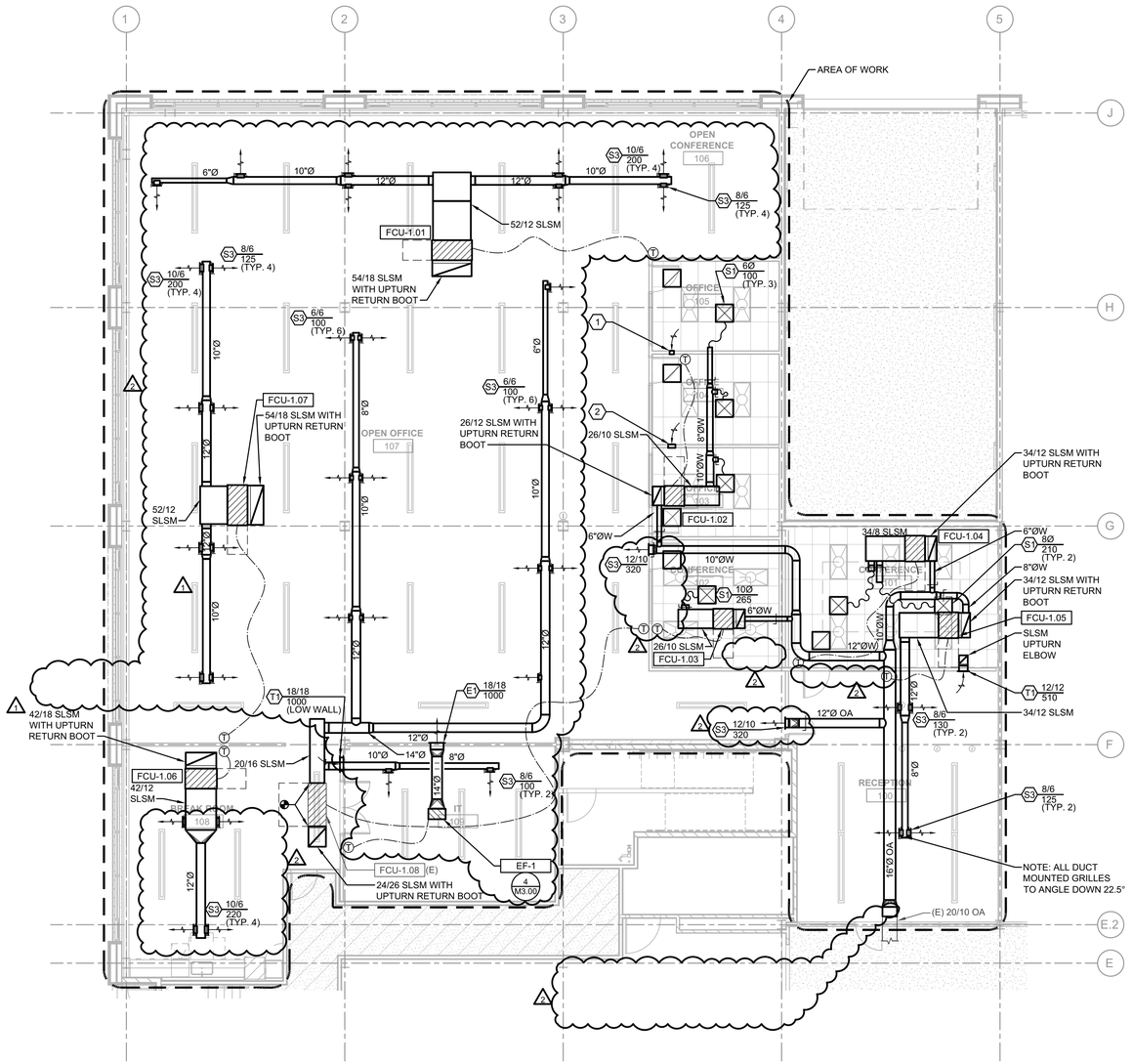
E. COORDINATE ROUGH-IN LOCATIONS OF HVAC EQUIPMENT WITH OTHER TRADES AS REQUIRED.

F. ALL FLEX DUCT TO BE ROUTED WITHIN 18" VERTICAL ZONE ABOVE CEILING GRID OR FRAMING.

HVAC NOTES BY SYMBOL

(1) 6/6 OPENING ABOVE CEILING FOR RETURN AIR TRANSFER.

(2) 10/8 OPENING ABOVE CEILING FOR RETURN AIR TRANSFER.



1 M2.01 MECHANICAL PARTIAL FIRST FLOOR HVAC PLAN

1/8"=1'-0"

4' 2' 0' 4' 8'

AREA OF WORK

KEY PLAN

City Of Portland

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REGISTERED PROFESSIONAL ENGINEER 64563PE OREGON 06/25/2000 SEAN C. MURRAY

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△1 PROJECT REVISIONS 05/25/22
△1 PROJECT REVISIONS 02/28/22

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MECHANICAL
PARTIAL FIRST FLOOR
HVAC PLAN

PROJECT NUMBER: C-1213-22257

PERMIT ISSUE
02/18/21

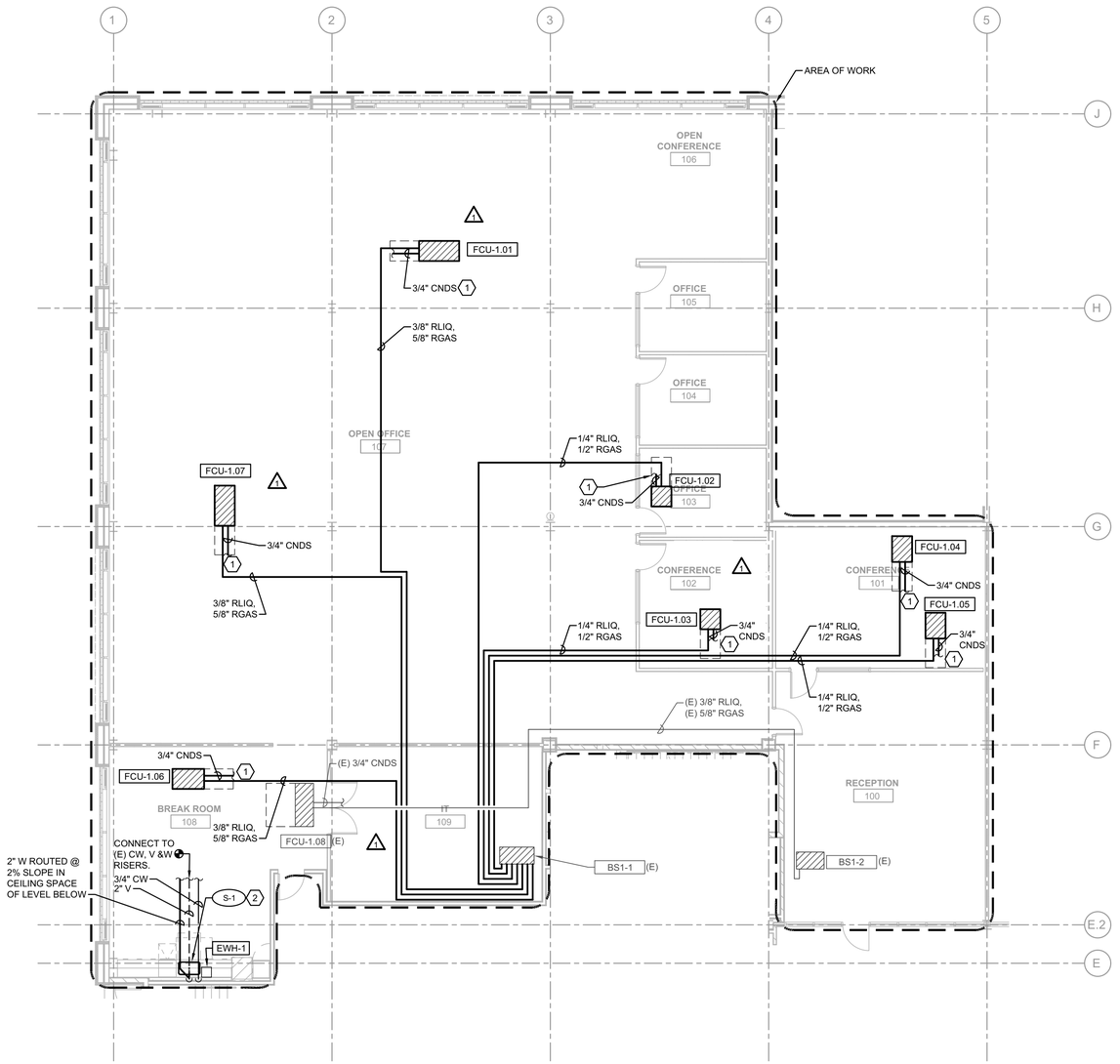
SHEET NUMBER: **M2.01**

CAD FILENAME: 22257-HVAC.dwg

PIPING NOTES BY SYMBOL

1. EXTEND AND CONNECT NEW CONDENSATE DRAIN PIPE TO NEAREST CONDENSATE DRAIN MAIN. CONNECT BRANCH CONDENSATE DRAIN TO MAIN AT TOP 180 DEGREES OF PIPE.

2. SINK (SINGLE BASIN, COUNTER MOUNTED) - ½" HW, ½" CW, 1-½" V DN, (2) 2" S/W UP TO SINGLE BASIN COUNTER MOUNTED SINK. PROVIDE DISHWASHER CONNECTION. PROVIDE A 2" HUB DRAIN UNDER THE SINK P-TRAP TO RECEIVE T&P RELIEF DISCHARGE FROM UNDER COUNTER WATER HEATER.



1 MP2.01 MECHANICAL PARTIAL FIRST FLOOR PIPING PLAN
1/8"=1'-0"

4' 2' 0' 4' 8'

AREA OF WORK

KEY PLAN

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EXPIRES 12-31-22

REVISIONS:	DATE
2 PROJECT REVISIONS	05/25/22
1 PROJECT REVISIONS	02/28/22

LELAND JAMES SUITE 120
T.I.

2175 NW RALEIGH ST
PORTLAND, OR

DESIGNER CONTACT:
E. STOYAN
503-619-4000
E.STOYAN@ALLIANT-SYSTEMS.COM

CAD:
J. HAGGARD

PLOT DATE:
06/02/22

MECHANICAL
PARTIAL FIRST FLOOR
PIPING PLAN

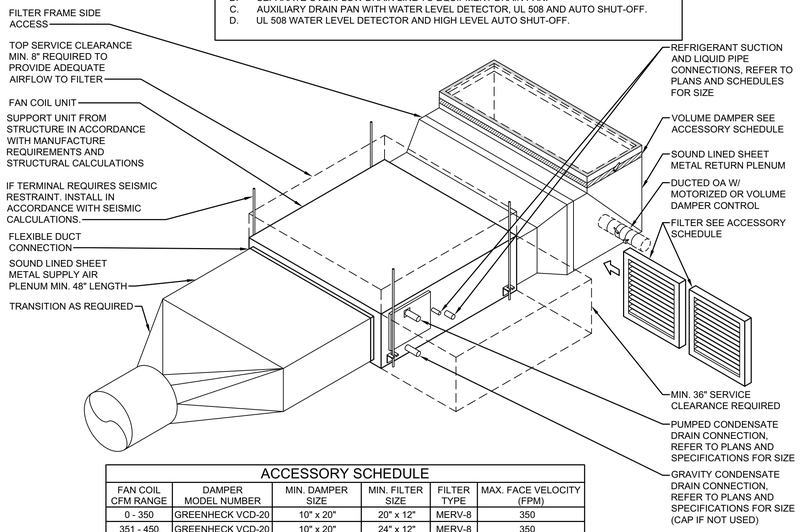
PROJECT NUMBER:
C-1213-22257

PERMIT ISSUE
02/18/21

SHEET NUMBER:
MP2.01

CAD FILENAME: 22257-HVAC.dwg

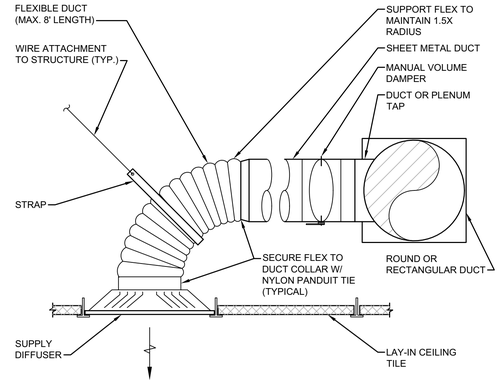
NOTES:
1. PROVIDE MOTORIZED, MODULATING CONTROL DAMPER AT UNIT OA CONNECTION INTERLOCKED W/ CO2 SENSOR FOR DEMAND CONTROL VENTILATION OPERATION
2. AUXILIARY AND SECONDARY DRAIN SYSTEMS: PROVIDE ONE OF THE FOLLOWING:
A. AUXILIARY DRAIN PAN WITH CONSPICUOUS POINT OF DISPOSAL.
B. SEPARATE OVERFLOW DRAIN LINE TO EQUIPMENT DRAIN PAN.
C. AUXILIARY DRAIN PAN WITH WATER LEVEL DETECTOR, UL 508 AND AUTO SHUT-OFF.
D. UL 508 WATER LEVEL DETECTOR AND HIGH LEVEL AUTO SHUT-OFF.



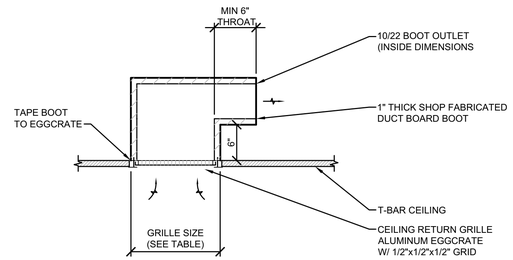
ACCESSORY SCHEDULE

FAN COIL CFM RANGE	DAMPER MODEL NUMBER	MIN. DAMPER SIZE	MIN. FILTER SIZE	FILTER TYPE	MAX. FACE VELOCITY (FPM)
0 - 350	GREENHECK VCD-20	10" x 20"	20" x 12"	MERV-8	350
351 - 450	GREENHECK VCD-20	10" x 20"	24" x 12"	MERV-8	350
451 - 700	GREENHECK VCD-20	10" x 20"	36" x 12"	MERV-8	350
701 - 1600	GREENHECK VCD-20	20" x 20"	48" x 18"	MERV-8	350
1601 - 2500	GREENHECK VCD-20	20" x 30" - 20" x 40"	48" x 24"	MERV-8	350

1 / M3.00 SUSPENDED - HORIZONTAL FAN COIL UNIT W/ DUCTED OSA
NO SCALE



2 / M3.00 LAY-IN SUPPLY DIFFUSER INSTALLATION (ROUND NECK)
NO SCALE



SIZING CRITERIA		
FACE SIZE	DIFFUSER NECK	AIRFLOW RANGE
22/10	22/10	0-600 CFM
22/22	22/22	0-1500 CFM

3 / M3.00 ACOUSTIC RETURN AIR GRILLE BOOT
NO SCALE

4 / M3.00 INLINE EXHAUST FAN WALL GRILLE W/ PLENUM DISCHARGE
NO SCALE

City Of Portland

REVIEWED FOR CODE COMPLIANCE

Date: 06/23/22

Permit #: 22-124075-REV-01-FA

ALLIANT SYSTEMS

ALLIANT SYSTEMS, LLC
351 NW 12th AVE
PORTLAND, OR 97209
PHONE: 503/619-4000
FAX: 503/230-9238
WWW.ALLIANT-SYSTEMS.COM
CCB# 153420

REGISTERED PROFESSIONAL ENGINEER 64563PE OREGON 06/25/2000 SEAN C. MURRAY

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MECHANICAL DETAILS

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