

HVAC GENERAL NOTES - STATE OF OREGON

- 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.
- MATERIALS, METHODS, AND INSTALLATION SHALL COMPLY WITH THE PROVISIONS OF THE MOST RECENTLY ADOPTED VERSIONS OF -
- THE 2010 OREGON MECHANICAL SPECIALTY CODE (2009 IMC W/ STATE OF OREGON AMENDMENTS)
- THE 2010 STATE OF OREGON STRUCTURAL SPECIALTY CODE (2009 IBC W/ STATE OF OREGON AMENDMENTS)
- THE 2010 STATE OF OREGON ENERGY EFFICIENCY SPECIALTY CODE
- THE 2010 INTERNATIONAL FIRE CODE AND ALL OTHER APPLICABLE LOCAL CODES, AMENDMENTS, AND ORDINANCES.
- DUCT CONSTRUCTION AND HANGING SHALL COMPLY WITH CHAPTER 6 OF THE OREGON MECHANICAL SPECIALTY CODE (IMC) AND WITH CURRENT SMACNA STANDARDS. EARTHQUAKE BRACE ALL DUCTS 2" DIA AND LARGER WHICH ARE SUSPENDED MORE THAN 12" BELOW STRUCTURAL SYSTEM.
- DUCTS SHALL BE INSULATED AS INDICATED ON PLANS, OR AS OTHERWISE REQUIRED BY THE STATE OF OREGON ENERGY CODE
- DUCT WRAP, WHERE INDICATED, SHALL BE 1 1/2" O.B. LB/CU FT FIBERGLASS DUCT INSULATION WITH A FACTORY APPLIED REINFORCED ALUMINUM FOIL VAPOR BARRIER
- SOUND LINING, WHERE INDICATED, SHALL BE 1" LB/CU FT FIBERGLASS DUCT LINING COATED TO PREVENT FIBER EROSION AT VELOCITIES UP TO 4000 FPM.
- FLEXIBLE DUCTS SHALL CONSIST OF A REINFORCED VAPOR BARRIER, 1 1/2" FIBERGLASS INSULATION, AND NON-PERFORATED INTERIOR LINER WITH WIRE HELIX. DUCT SHALL BE A UL 181 LISTED CLASS 1 AIR DUCT. FLEXIBLE DUCTS SHALL ONLY BE USED WHERE SHOWN AND SHALL NOT EXCEED 8' IN LENGTH UNLESS NOTED OTHERWISE.
- PROVIDE EARTHQUAKE RESTRAINT FOR HVAC EQUIPMENT IN ACCORDANCE WITH SECTION 1621 OF THE OR STRUCTURAL SPECIALTY CODE (IBC)
- PROVIDE FIRE DAMPERS AND/OR FIRE/SMOKE DAMPERS WHERE INDICATED ON PLANS AND AS REQUIRED BY SECTION 716 OF THE OREGON STRUCTURAL SPECIALTY CODE. 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
- PIPING PENETRATIONS OF FIRE RATED WALLS OR FLOORS SHALL BE SLEEVED AND FIRE STOPPED WITH LISTED MATERIALS SO AS TO MAINTAIN THE INTEGRITY AND RATING OF THE FLOOR OR WALL.
- 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 806 OF THE OREGON MECHANICAL SPECIALTY CODE (IMC) POWER WIRING AND INTERLOCK WIRING WITH THE BUILDING FIRE ALARM SYSTEM SHALL BE BY THE ELECTRICAL CONTRACTOR.
- 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 SPECS
- HVAC TEMPERATURE SET POINTS, DEAD BANDS, AND SCHEDULES SHALL BE PROGRAMMED TO MEET OREGON ENERGY CODE SECTION 1317.4.2.1 THROUGH 1317.4.3.3.
- ALL WIRING EXPOSED WITHIN A PLENUM SHALL MEET THE REQUIREMENTS OF THE OMSC 602.2.1.1. ALL COMBUSTIBLE ELECTRICAL EQUIPMENT EXPOSED WITHIN A PLENUM SHALL MEET THE REQUIREMENTS OF 602.2.1.4.

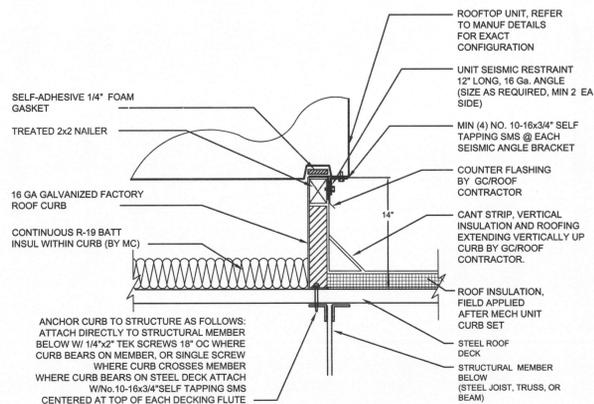
HVAC ABBREVIATIONS

ABBV FULL NAME	ABBV FULL NAME	ABBV FULL NAME
A COMPRESSED AIR LINE	FLA FULL LOAD AMPS	RA RETURN AIR
AC AIR CONDITIONING UNIT	FOB FLAT ON BOTTOM	RE REMOVE
AFF ABOVE FINISHED FLOOR	FOT FLAT ON TOP	REG REGISTER (GRILLE WITH DAMPER)
BDD BACKDRAFT DRAMPER	FPB FAN POWERED BOX	REQD REQUIRED
BOD BOTTOM OF DUCT	FSD 1/2" & 3/4" HOUR COMBINATION FIRE SMOKE DAMPER	RIO ROUGH IN ONLY
BOTT BOTTOM	GALV GALVANIZED	RTU ROOF TOP UNIT
BSB BRANCH SELECTOR BOX	GC GENERAL CONTRACTOR	SA SUPPLY AIR
BTU BRITISH THERMAL UNITS	GPM GALLONS PER MINUTE	SEER SEASONAL ENERGY EFFICIENCY RATIO
BTUH BRITISH THERMAL UNITS PER HOUR	GR GRILLE	SL SOUND LINING
BWG BOTTOM WALL GRILLE	GRD GRILLE/DIFFUSER	SM SHEET METAL
BWR BOTTOM WALL REGISTER	GWB GYPSUM WALL BOARD	STL STATIC PRESSURE
CAP CAPACITY	HG HOT GAS LINE	STL STEEL
CFM CUBIC FEET PER MINUTE	HP HORSE POWER	SSTL STAINLESS STEEL
CHWR CHILLED WATER RETURN	HWR HEATING WATER RETURN	SUC SUCTION LINE
CHWS CHILLED WATER SUPPLY	HWS HEATING WATER SUPPLY	SUSP SUSPENDED
COMB COMBUSTION	ID INSIDE DIMENSION	TDV TRIPLE DUTY VALVE
CONN CONNECTION	LIQ LIQUID INSIDE	TST THERMOSTAT
CP CONTROLS PANEL	MBH ONE THOUSAND BTUH	TV TURN VANES
CWR CONDENSER WATER RETURN	MCA MINIMUM CIRCUIT AMPACITY	TWG TOP WALL GRILLE
CWS CONDENSER WATER SUPPLY	MD MOTORIZED DAMPER	TWR TOP WALL REGISTER
DB DUCT BOARD	MIN MINIMUM	TYP TYPICAL
DIFF DIFFUSER	MOUNT MOUNT	UC UNDER CUT
DMPR DAMPER	MUA MAKE-UP AIR	UH UNIT HEATER
DN DOWN	N NEW	UNO UNLESS NOTED OTHERWISE
E EXISTING	NG NATURAL GAS	VAV VARIABLE AIR VOLUME
EG EGGRATE	NIC NOT IN CONTRACT	VD VOLUME DAMPER
EER ENERGY EFFICIENCY RATIO	NOM NOMINAL	VFD VARIABLE FREQUENCY DRIVE
EF EXHAUST FAN	OA OUTSIDE AIR	VTR VENT TO ROOF
ELEV ELEVATION	OAF OUTSIDE AIR FAN	VRV VARIABLE REFRIGERANT VOLUME
EP ELECTRICAL PANEL	OB OPPOSED BLADE DAMPER	W WRAP
ESP EXTERNAL STATIC PRESSURE	OD OUTSIDE DIMENSION	W VOLTAGE PHASE & DUCT DIAMETER
EXH EXHAUST	POC POINT OF CONNECTION	
EXTR EXTRACTOR	R RELOCATE	
FD FIRE DAMPER		

GRILLE REGISTER & DIFFUSER SCHEDULE

SYMBOL	DEVICE TYPE AND SERVICE	MANUFACTURER & MODEL NUMBER	BORDER TYPE	SIZE	NOTES
[Symbol]	SUPPLY - MODULAR CORE LAY-IN CEILING DIFFUSER	TITUS MCD	TYPE-3 (LAY-IN)	AS NOTED	24/24 W/ NECK DIA. AS INDICATED. ORDER TITUS SQ TO RND TRANS OR DIFFUSER CAN
[Symbol]	RETURN - EGGRATE LAY-IN CEILING GRILLE	TITUS 50F	TYPE-8 (CORE ONLY)	24 x 12	PROVIDE BORDER TYPE-3 FOR APPLICATIONS REQUIRING SEISMIC RESTRAINT
[Symbol]	RETURN - EGGRATE LAY-IN CEILING GRILLE	TITUS 50F	TYPE-8 (CORE ONLY)	24 x 24	PROVIDE BORDER TYPE-3 FOR APPLICATIONS REQUIRING SEISMIC RESTRAINT
[Symbol]	SUPPLY - MODULAR CORE SURFACE MOUNT DIFFUSER	TITUS MCD	TYPE-6 (BEVELED)	AS NOTED	24/24 W/ NECK DIA. AS INDICATED. ORDER TITUS SQ TO RND TRANS OR DIFFUSER CAN
[Symbol]	SUPPLY - SURFACE MOUNT GRILLE	TITUS 300-RL	TYPE-1 (SURFACE MOUNT)	AS NOTED	
[Symbol]	SUPPLY SLOT DIFFUSER W/ 1 SLOTS 'XXX' END FAB	TITUS ML-39	TYPE-2A (1-1/8" FLANGE W/ CONCEALED MOUNT)	AS NOTED	LENGTH & NUMBER OF SLOTS AS INDICATED ORDER W/ MPH-39 LINED PLENUM
[Symbol]	RETURN - SURFACE MOUNT RETURN GRILLE	TITUS 350 RL	TYPE-1 (SURFACE MOUNT)	AS NOTED	
[Symbol]	RETURN - PERFORATED FACE RETURN GRILLE	TITUS PAR	TYPE-3 (LAY-IN)	AS NOTED	
[Symbol]	RETURN - EGGRATE LAY-IN CEILING GRILLE	TITUS 50F	TYPE-3 (W/FRAME)	24 x 24	SEISMIC RESTRAINT REQUIRED TO CEILING GRID
[Symbol]	RETURN - EGGRATE LAY-IN CEILING GRILLE	TITUS 50F	TYPE-3 (W/FRAME)	24 x 12	SEISMIC RESTRAINT REQUIRED TO CEILING GRID
[Symbol]	EXHAUST - (STEEL) SURFACE MOUNT EXHAUST GRILLE	TITUS 350 RL	TYPE-1 (SURFACE MOUNT)	AS NOTED	
[Symbol]	EXHAUST SURFACE MOUNT EXHAUST GRILLE	TITUS 50F	TYPE-3 (SURFACE MOUNT)	AS NOTED	
[Symbol]	EXHAUST - EGGRATE LAY-IN CEILING GRILLE	TITUS 50F	TYPE-3 (W/FRAME)	24 x 24	SEISMIC RESTRAINT REQUIRED TO CEILING GRID

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

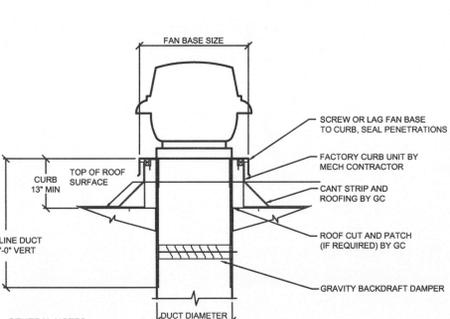
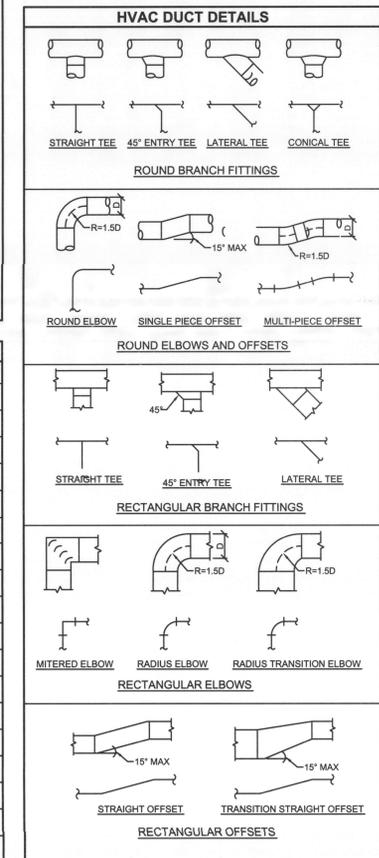


1 M2.1 NO SCALE
PACKAGED ROOFTOP UNIT ROOF CURB DETAIL

HVAC DUCT LEGEND

DUCT UP	DUCT DOWN	DESCRIPTION
[Symbol]	[Symbol]	RECTANGULAR SUPPLY
[Symbol]	[Symbol]	ROUND SUPPLY
[Symbol]	[Symbol]	RECTANGULAR RETURN
[Symbol]	[Symbol]	ROUND RETURN
[Symbol]	[Symbol]	RECTANGULAR EXHAUST
[Symbol]	[Symbol]	ROUND EXHAUST
[Symbol]	[Symbol]	RECTANGULAR OUTSIDE AIR
[Symbol]	[Symbol]	ROUND OUTSIDE AIR

2-LINE	1-LINE	DESCRIPTION
[Symbol]	[Symbol]	RECTANGULAR DUCT INSULATION WRAP
[Symbol]	[Symbol]	ROUND DUCT INSULATION WRAP
[Symbol]	[Symbol]	RECTANGULAR DUCT SOUND LINED WRAP
[Symbol]	[Symbol]	RECTANGULAR DUCT K-27 SOUND INSULATED
[Symbol]	[Symbol]	ROUND DUCT K-27 SOUND INSULATED
[Symbol]	[Symbol]	FLEX DUCTWORK



GENERAL NOTES:
1) CURB ID = ROOF OPENING
2) CURB ID = FAN BASE + 4 1/2"
3) EXACT BOD & CURB SIZE MUST BE CHECKED FROM EQUIPMENT SUBMITTALS. FIELD DETAILER/INSTALLER TO COORDINATE OPENING DIMENSION AND LOCATION

2 M2.1 NO SCALE
ROOF MOUNTED DOWNBLAST EXHAUST FAN

CODE REQUIRED OA VENTILATION

(BASED ON 2010 OREGON MECHANICAL SPECIALTY CODE STANDARDS)

ROOM(S)	FLOOR AREA SQ FT	OCCUPANCY TYPE	OMSC CODE REQUIREMENTS - TABLE 403.3			MIN. EXHAUST (CFM / SF)	ZONE OCCUPANTS	AIR DISTRIBUTION TYPE	ZONE DISTRIBUTION EFFECT, (EA)	CRITICAL SPACE	REMARK
			OCCUPANT LOAD PEOPLE/1000 SF	OA REQUIREMENTS R _o (CFM / PER)	R _z (CFM / SF)						
OPEN OFFICE	1,700	OFFICE SPACE	5	5	0.06		8.5	CS	1	X	1
TOTALS	1,700			5		0	8.5				

RESULTS OF ASHRAE STANDARD 62.1 2007 ANALYSIS BASED ON DATA ABOVE

VENTILATION SYSTEM EFFICIENCY (Ev)	100%
OUTDOOR AIR INTAKE REQUIRED FOR SYSTEM (Vol)	145 CFM
OUTDOOR AIR PER UNIT FLOOR AREA (Vol/Aa)	0.09 CFM / SF
OUTDOOR AIR PER PERSON SERVED (Vol/Pa)	17.0 CFM / P
OUTDOOR AIR AS A % OF DESIGN PRIMARY SUPPLY AIR	7% OA

- ### REMARKS (OA SOURCE)
- REQUIRED DESIGN MINIMUM OA (7%) PROVIDED FROM RTU-1 W/ ACTUAL MINIMUM OA (25%)/OA CFM INCREASED TO OFFSET CONSTANT EXHAUST
 - AVERAGE ZONE OCCUPANCY REPORTED USING REDUCTION OF UP TO MAXIMUM 50% AS ALLOWED PER OMSC SECTION 403.3
 - AVERAGE ZONE OCCUPANCY REPORTED BASED ON ARCHITECT/OWNER INPUT AND FIXED SEATING ALLOWANCES PER OMSC SECTION 403.3
 - OUTSIDE AIR REQUIREMENT MET BY TRANSFER AIR IN ACCORDANCE WITH SECTION 403.2.2.

PACKAGED HEAT PUMP SCHEDULE

UNIT NO.	AREA SERVED	MFG & MODEL NO.	NOM TONS	HEAT MBH	CFM	ESP	FAN HP	OA CFM	HSPF/ COP	EER/ SEER	ELECTRICAL VOLT/PH	AUX HTR KW	MCA	WT LBS	NOTES
RTU-1	OPEN OFFICE	RUUD - RJNL-A060CL	5.0	110.80	2000	0.3	774.7W	500	3.70	11.5/13	208/230/3	19.2	63	585	1,2,3,4

ACC ALY MFG: CLIMATE MASTER, TRANE, CARRIER

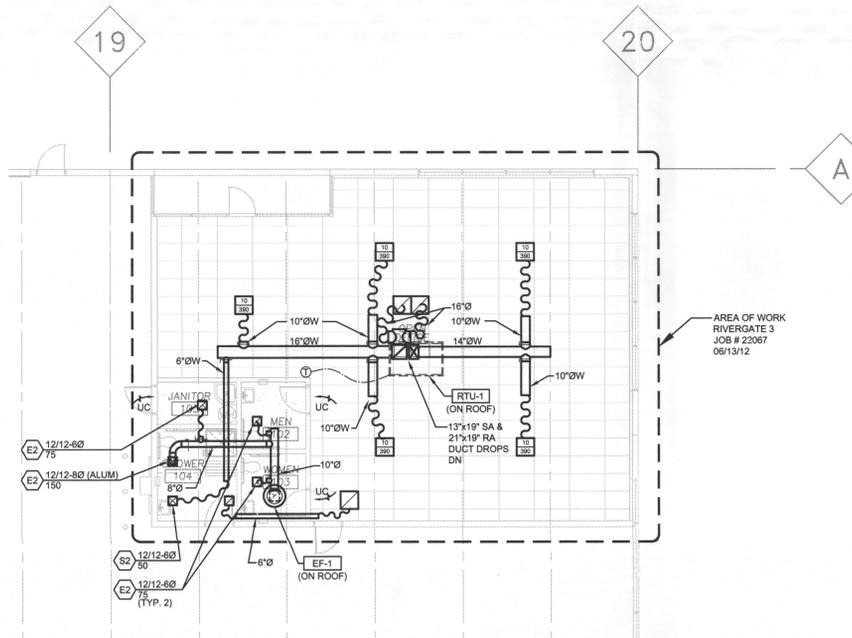
- ### NOTES:
- SINGLE POINT POWER CONNECTION BY ELECTRICAL CONTRACTOR (CONFIRM VOLTAGE PRIOR TO ORDERING UNIT)
 - ECONOMIZER UNIT - FURNISH COMPLETE WITH THE FOLLOWING FACTORY INSTALLED OPTIONS
 - 100% OA ECONOMIZER (DRY-BULB) W/ BAROMETRIC RELIEF
 - POWERED EXHAUST
 - 2", 30% EFFICIENT THROW-AWAY FILTERS AND FILTER FRAME
 - NON-FUSED DISCONNECT SWITCH
 - DOWNFLOW CONFIGURATION
 - STANDARD 12" HIGH MANUFACTURER'S CURB
 - STAND-ALONE CONTROLS - PROVIDE W/ MANUFACTURER'S STANDARD 7-DAY PROGRAMMABLE THERMOSTAT
 - MECHANICAL CONTRACTOR TO FURNISH AND INSTALL RETURN AIR DUCT MOUNTED SMOKE DETECTOR
 - CONTROLS CONTRACTOR TO INTERLOCK WITH UNIT CONTROLS TO SHUT-DOWN UNIT ON ALARM
 - FIRE ALARM CONTRACTOR TO INTERLOCK UNIT SMOKE DETECTOR W/ BUILDING FIRE ALARM SYSTEM AS REQUIRED
 - IF BUILDING DOES NOT HAVE CENTRAL FIRE ALARM SYSTEM, MECHANICAL TO PROVIDE SMOKE DETECTOR W/ AUDIO-VISUAL ALARM INDICATOR
 - ELECTRICAL CONTRACTOR TO PROVIDE POWER TO SMOKE DETECTOR AS REQUIRED

EXHAUST FAN SCHEDULE

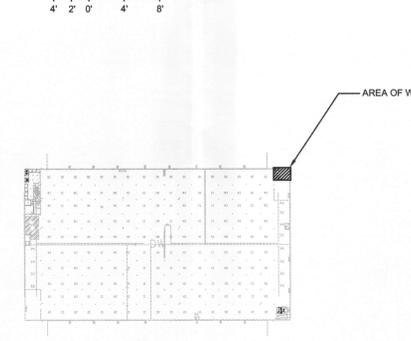
UNIT NO.	AREA SERVED	MFG & MODEL NO.	TYPE	CFM	SP	SONES	WATTS OR HP	VOL/PH	WT LBS	NOTES
EF-1	TOILET ROOM	COOK ACED 100C15DL	DOWN BLAST	375	0.5	10	124	120/1	50	1,2,3

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

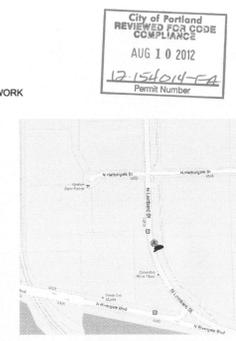
- ### NOTES:
- PROVIDE 13.5" ROOF CURB WITH DAMPER TRAY AND WOOD NAILER (ROOF FAN).
 - PROVIDE GRAVITY BACKDRAFT DAMPER (CABINET FAN OR ROOF FAN).
 - CONTROL FAN BY INTERLOCK WITH BUILDING HVAC EQUIPMENT.



1 M2.1 1/8"=1'-0"
PARTIAL MECHANICAL FLOOR PLAN



KEY PLAN



City of Portland
REVIEWED FOR CODE COMPLIANCE
AUG 10 2012
12-154014-FA
Permit Number

ALLIANT SYSTEMS, LLC
1600 NW 167th Pl., STE 330
BEAVERTON, OR 97006
PHONE: 503/230-8991
FAX: 503/230-9238
WWW.ALLIANT-SYSTEMS.COM
CCB# 153420

EXPIRES 12-31-12

REVISIONS: DATE

RIVERGATE 3
BUILDING A
SPEC OFFICE

14300 N. LOMBARD ST.
PORTLAND, OR

DEPT	INITIALS	DATE
CAD		
DESIGNER		
P.M.		
ENGINEER		
FIELD		

MECHANICAL
PARTIAL FLOOR
HVAC PLAN

ENGINEER: S. MURRAY
GAC: E. STOYAN

LAST REVIEW: 06/14/12
ISSUE DATE: 06/15/12

DRAWING NUMBER: D-XXXX-22067

PERMIT ISSUE
06/15/12

SHEET NUMBER: M2.1

12-154014-FA

13-1



CITY OF PORTLAND, OREGON - BUREAU OF DEVELOPMENT SERVICES

1900 SW Fourth Avenue, Suite 5000 • Portland, Oregon 97201 • www.portlandonline.com/bds • Fax 503-823-7425



Facility Permit Plan Intake Form

FOR INTAKE, STAFF USE ONLY		Building/Mechanical _____ <i>DAVE</i>
Date Received _____ <i>6/20/12</i>	Electrical _____	
Building Registration # _____	Plumbing _____	
Fixed Bid _____	Fire _____ <i>JEFF</i>	3
Bin # _____ <i>B-1</i>	Planning _____ <i>Kim</i>	2
Building Permit # _____ <i>12-146149-FA</i>	BES _____	
Mechanical # _____ <i>12-154014-FA</i>	PDOT _____	
Plumbing Permit # _____	Structural _____	
Electrical Permit # _____	Other _____	

APPLICANT: Complete all sections below that apply to the project. Please print legibly.

Print Name Eddie Stoyan Sign Name Eddie Stoyan
 Street Address 1600 NW 167th Pl. #330
 City Beaverton State OR Zip Code 97006
 Day Phone 503-619-4066 FAX 503-230-9238 email e.stoyan@Alliant-systems.com

Plans / permits available for pick up at 1900 SW 4th Avenue, 2nd floor between 8:00 am to 5:00 pm

Contact Name for plan/permit pick up Eddie Stoyan
 Day Phone 503-619-4066 email e.stoyan@Alliant-systems.com

Project Building Name / # Rivergate 3 Building A
 Project Address or Location 14300 N. Lombard St.
 Project Name and Description Spec office

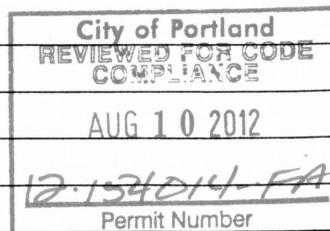
Total Project Value _____ Project Reference #/Billing ID # 12-146149-FA
 Building Contractor _____ CCB # _____
 Mechanical Contractor Alliant Systems CCB # 153420
 Electrical Contractor _____ CCB# _____ License # _____
 Plumbing Contractor _____ CCB# _____ License # _____

Building Permit [Y] [N] Alarms Required
 No. of Stories _____ [Y] [N] Smoke Det. Req'd
 Const. Type _____ [Y] [N] Sprinklers Req'd
 [Y] [N] Struct. Eng / Calcs Submitted

Electrical Permit
 Please provide a completed standard electrical permit application form. You may mail or deliver it to 1900 SW 4th Avenue, Portland, Oregon 97201 or FAX to 503-823-7425.

Mechanical Permit
 Mechanical Valuation 14,040
 Description (1) New Roof top Heat pump w/distribution Duct & controls.

Plumbing Permit
 Number of Fixtures _____
 Back Flow Devices _____
 Water Service (# of Feet) _____
 Medical Gas _____
 Other _____



B-1

12-146149 FA

12-154014-FA

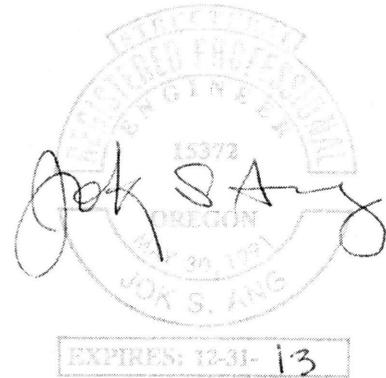
DESIGN CRITERIA and
STRUCTURAL CALCULATIONS
for

Anchorage of One HVAC Rooftop Unit

for
Spec Office Tenant Improvement
Rivergate Corporate Center
Phase III, Building A
14300 N Lombard Street
Portland, OR

Client: Alliant Systems
AE Job #: E1890
Date: August 6, 2012

Code: *State of Oregon Structural Specialty Code, 2010 Edition*



Design Criteria

Occupancy Category: II

Wind: 95 mph V_{3S} Exposure: C $I = 1.0$

Seismic: Site Class: D $S_{DS} = .724g$ $S_{D1} = .398g$
 $I = 1.0$
Design Category: D



GROUP

AEGROUP
CIVIL &
STRUCTURAL
ENGINEERING

1355 Oak Street
Suite #200
Eugene, OR 97401

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fax 541 341 1219

angengineering.com

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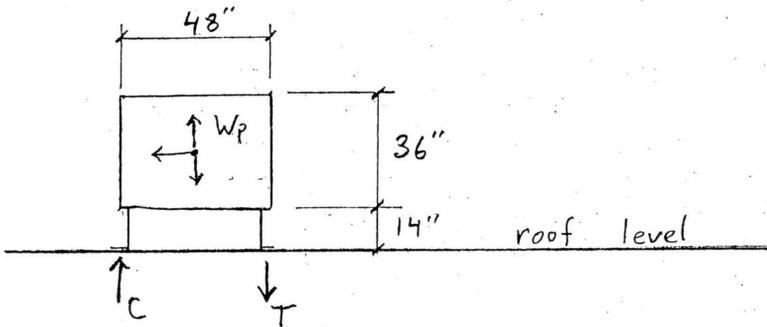
PROJECT: Rivergate 3 Bldg A PAGE NO.: 2
LOCATION: Portland, OR
CALCULATED BY: SNS DATE 8/6/2012 PROJECT NO.: _____

Seismic

$$F_p = \frac{.4 a_p S_{DS} W_p}{R_p / I_p} \left(1 + 2 \frac{z}{h}\right) = .36 W_p = 205 \text{ lb}$$

$$a_p = 2.5 \quad R_p = 6.0 \quad \frac{z}{h} = 1$$

$$F_{p \text{ vertical}} = .2 S_{DS} W_p = .14 W_p = 79 \text{ lb}$$



$$48 T = \left(14 + \frac{36}{2}\right) F_p + \frac{48}{2} F_{p \text{ vert}}$$

$$T = 176 \text{ lbs}$$

Strength
level load



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PROJECT: Rivergate 3 Bldg. A PAGE NO.: 3
LOCATION: Portland, OR
CALCULATED BY: SNS DATE 8/6/2012 PROJECT NO.: _____

Wind

$$F = q_z G C_f A_f = 532 \text{ lbs} \quad (\text{eq. 6-28})$$

← greater than seismic

$$A_f = (6.5)(4) = 26 \text{ ft}^2$$

$$q_z = .00256 K_z K_{zt} K_d V^2 I = 18.5$$

$$K_z = .94 \quad K_{zt} = 1 \quad K_d = .85$$

$$G = .85 \quad C_f = 1.3$$

referring to diagram on previous page

$$\text{uplift tension } T = \frac{\frac{4'}{2} (F)}{4'}$$

$$T = 266 \text{ lbs}$$

service level load

Fasteners

allowable loads:

(3) $\frac{1}{4}$ " \emptyset Lag Screws

$$(3) 173 \text{ lb} = 519 \text{ lb} > T \quad \text{OK}$$

(4) #10 sheet metal screws

$$(4) \frac{262}{3} = 349 \text{ lb} > T \quad \text{OK}$$