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HVAC BASIS OF DESIGN

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1.1 MECHANICAL BASIS OF DESIGN

A. SCOPE OF WORK: HVAC DEMO OF EXISTING SYSTEMS. REUSE EXISTING CENTRAL DUAL DUCT SYSTEM (SF-9) TO DELIVER CONDITIONED AIR AND VENTILATION TO THE BUILDING WITH PROVISIONS FOR FUTURE TENANTS. PROVIDE NEW DUAL DUCT BOXES WITH CONTROL FROM NEW BUILDING AUTOMATION SYSTEM. PROVIDE LIFE SAFETY SYSTEMS PER RATIONAL ANALYSIS.

B. THE DESIGN INCLUDES THE FOLLOWING NOTABLE FEATURES, BUT IS NOT LIMITED TO THIS SCOPE. CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL CONTRACT DOCUMENTS AND COORDINATING WITH ALL DISCIPLINES.
1. AIR DISTRIBUTION: SUPPLY AIR IS DUAL DUCT VARIABLE VOLUME TERMINAL UNITS WITH SUPPLY AIR DISTRIBUTED TO EACH UNIQUE THERMAL ZONE VIA LOW PRESSURE DUCTWORK. THE RETURN AIR DUCTWORK IS PLENUM RETURN.
2. AIR HANDLING: EXISTING AIR HANDLING UNITS ON LEVEL 2 SUPPLY AIR TO EACH FLOOR.
3. HEATING: EACH DUAL DUCT BOX IS CONNECTED TO A MEDIUM PRESSURE HOT DECK SUPPLY DUCT.
4. COOLING: EACH DUAL DUCT BOX IS CONNECTED TO A MEDIUM PRESSURE COLD DECK SUPPLY DUCT.
5. CONTROLS: DIRECT DIGITAL BUILDING AUTOMATION SYSTEM (BAS) TO OPERATE ALL SYSTEM FUNCTIONS AND SCHEDULES.
6. FOR CEILING SPACES THAT ARE TO BE ABATED (PER ABATEMENT PLANS), THE FOLLOWING SCOPE OF WORK IS ASSUMED:
   A) LOWER EXISTING DUCTWORK TO FLOOR. MARK DUCTWORK TO BE REMOVED FROM SITE OR CLEANED (ASSUMED TO BE BY ABATEMENT CONTRACTOR).
   B) RE-INSTALL HOT AND COLD DUCT MAINS AND PERIMETER AIR SYSTEM ONCE DUCTWORK HAS BEEN CLEANED AND CEILING ABATED.

C. CODES AND STANDARDS
1. AMERICANS WITH DISABILITIES ACT (ADA)
2. NFPA 90A: STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS.
3. NFPA 90B: STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR-CONDITIONING SYSTEMS.
4. NFPA 101: LIFE SAFETY CODE.
5. ASHRAE 2017 HANDBOOK, FUNDAMENTALS.
6. ASHRAE 2014 HANDBOOK, REFRIGERATION.
7. ASHRAE 2015 HANDBOOK, HVAC APPLICATIONS.
8. ASHRAE 2016 HANDBOOK, HVAC SYSTEMS AND EQUIPMENT.
9. OREGON BUILDING CODES ENFORCED BY THE AUTHORITY HAVING JURISDICTION (AHJ):
   A) 2014 OREGON STRUCTURAL SPECIALTY CODE (OSSC) BASED ON THE 2012 INTERNATIONAL BUILDING CODE (IBC).
   B) 2014 OREGON MECHANICAL SPECIALTY CODE (OMSC) BASED ON THE 2012 INTERNATIONAL MECHANICAL CODE (IMC) AND THE 2012 INTERNATIONAL FUEL GAS CODE (IFGC) WITH STATE AMENDMENTS.
   C) 2017 OREGON PLUMBING SPECIALTY CODE (OPSC) BASED ON THE 2015 UNIFORM PLUMBING CODE (UPC).
   D) 2017 OREGON ELECTRIC SPECIALTY CODE (BASED ON THE 2017 NATIONAL ELECTRIC CODE (NEC) WITH STATE AMENDMENTS.
   E) 2014 OREGON ENERGY EFFICIENCY SPECIALTY CODE (OEESC) BASED ON THE 2014 INTERNATIONAL ENERGY CONSERVATION CODE (IECC).
   F) 2016 PORTLAND FIRE CODE.

C. OUTDOOR DESIGN CONDITIONS
1. LOCATION: PORTLAND, OR
2. SUMMER: 91.4°F DB/67.3°F WB
3. WINTER: 25.2°F
4. ELEVATION: 108 FT.

D. INDOOR DESIGN CONDITIONS
1. ALL CONDITIONED AREAS:
   A) COOLING: 75°F+/-2°F
   B) HEATING: 70°F +/-2°F
2. EXCEPTIONS:
   A) ELEC. ROOMS: 80°F +/-2°F MAXIMUM
   B) DATA/TELECOM ROOMS: COOLING ONLY, 78°F +/- 2°F (MAXIMUM)
   C) ELEVATOR MACHINE ROOMS: COOLING ONLY, 85°F +/- 2°F (MAXIMUM)

E. OREGON VENTILATION CRITERIA.
1. ALL OFFICE AREAS: 17 CFM/PERSON
2. EXCEPTIONS:
   A) CORRIDOR: 0.06 CFM/SQ.FT.
   B) STORAGE: 0.06 CFM/SQ.FT.
3. COMPLY WITH CHAPTER 4 OF OMSC OR ASHRAE 62.1.

F. EXHAUST TO OUTDOORS: (MINIMUM RATES)
1. TOILET ROOMS: 50-70 CFM/FIXTURE
2. JANITOR CLOSET: 100 CFM

G. BUILDING ENVELOPE
1. GLAZING:
   A) EXISTING GLASS/FRAME COMBINATION:
   1) U=0.50
   2) SHADING COEFFICIENT = 0.55
   B) NEW CURTAIN WALL:
   2) U=0.20
   3) SHADING COEFFICIENT = 0.55
2. EXISTING WALL CONSTRUCTION:
   A) CONCRETE, U-VALUE = 0.40

H. INTERNAL HEAT GAINS
1. LIGHTING:
   A) OFFICE: 1.0 W/SQ.FT.
   B) CONFERENCE ROOM: 1.0 W/SQ.FT.
   C) LOBBY: 1.0 W/SQ.FT.
   D) CORRIDOR/STORAGE: 0.6 W/SQ.FT.
   E) RESTROOM: 0.6 W/SQ.FT.
2. RECEPTACLE POWER IN OFFICES AREAS: 1.25 W/SQ.FT.
3. OCCUPANCY CRITERIA IN OREGON:
   A) OFFICE: 250 BTUH SENSIBLE/200 BTUH LATENT
   B) OPEN OFFICE: 1 PERSON/130 SQ.FT.
   C) CONFERENCE ROOM: 1 PERSON/20 SQ.FT.
   D) LOBBY: 1 PERSON/100 SQ.FT.
4. ZONING CRITERIA
   A) OPEN OFFICE SPACES: ONE ZONE (TEMPERATURE SENSOR) PER 1,000 SQUARE FEET OR AS INDICATED ON THE DRAWINGS.
   B) CONFERENCE ROOMS: ONE ZONE (TEMPERATURE SENSOR) PER ROOM
   C) LOBBY: ONE ZONE (TEMPERATURE SENSOR)

I. DUCTWORK DESIGN CRITERIA (MAXIMUM ALLOWABLE AIR PRESSURE DROPS AND AIR VELOCITIES) TO MEET HIGH EFFICIENCY OPERATION WITH MINIMAL ACOUSTICAL NOISE. DUCT STATIC PRESSURE FRICTION LOSS SHALL NOT EXCEED 0.2" PER 100 FEET IN MECHANICAL ROOMS AND SHAFTS. LOW PRESSURE SUPPLY DUCT STATIC PRESSURE FRICTION LOSS BASED ON A MAXIMUM OF 0.08" PER 100 FEET. LOW PRESSURE RETURN AND EXHAUST DUCT STATIC PRESSURE FRICTION LOSS BASED ON A MAXIMUM OF 0.08" PER 100 FEET. MEDIUM PRESSURE DUCTWORK SHALL NOT EXCEED A DUCT STATIC PRESSURE FRICTION LOSS BASED ON A MAXIMUM OF 0.1" PER 100 FEET.
1. IN ADDITION, MAXIMUM SUPPLY, RETURN AND EXHAUST DUCT AIR FLOW VELOCITIES, REGARDLESS OF PRESSURE DROP, SHALL NOT EXCEED THE FOLLOWING CRITERIA:
   A) MAINS ABOVE CEILING: 1750 FPM
   B) MAINS ABOVE OPEN OCCUPIED SPACES: 1450 FPM
   C) BRANCHES ABOVE CEILING: 1400 FPM
   D) BRANCHES ABOVE OPEN OCCUPIED SPACES: 1150 FPM
   E) RUN-OUTS TO DIFFUSERS: 725 FPM

J. ACOUSTICAL
1. THE FOLLOWING NOISE NC/RC CRITERIA LEVELS WILL BE ACHIEVED AND AS DEFINED IN THE ASHRAE HVAC APPLICATIONS HANDBOOK. THESE LEVELS ADDRESS THE MECHANICAL SYSTEMS ONLY. ACTUAL SOUND PERFORMANCE REQUIREMENTS FOR EACH SPACE MUST BE VERIFIED WITH ACOUSTICAL CONSULTANT.
   A) OPEN OFFICES: 40
   B) CONFERENCE ROOMS: 30
   C) CORRIDORS AND LOBBIES: 40

K. SEISMIC
1. ANCHORAGE AND RESTRAINTS MUST BE COORDINATED WITH STRUCTURAL ENGINEER AND AUTHORITY HAVING JURISDICTION.

HVAC LEGEND

GENERAL

SYMBOL	DESCRIPTION
(N)	NEW WORK
(E)	EXISTING WORK TO REMAIN
	EXISTING WORK TO BE REMOVED
(RL)	RELOCATE EXISTING
1 / M-1	POINT OF CONNECTION OR POINT OF DISCONNECTION
HP 1 / P	DETAIL 1, DRAWING M-1
	EQUIPMENT IDENTIFICATION HEAT PUMP UNIT #1
	KEYED NOTE

CONTROLS

SYMBOL	DESCRIPTION
	TEMPERATURE SENSOR
	THERMOSTAT OR THERMOMETER
CO2	CARBON DIOXIDE SENSOR
	HUMIDITY SENSOR OR HUMIDISTAT
	STATIC PRESSURE SENSOR

HYDRONICS

SYMBOL	DESCRIPTION
	BALL VALVE
	BUTTERFLY VALVE
	MOTORIZED BUTTERFLY VALVE
	BALANCING VALVE
	2-WAY CONTROL VALVE
	3-WAY CONTROL VALVE
	PIPE UP
	PIPE DOWN
	TEE UP
	TEE DOWN
	EXPANSION LOOP
12"	PIPE SIZE (DIAMETER IN INCHES)
HWS	HEATING WATER SUPPLY
HWR	HEATING WATER RETURN
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN

DUCTWORK

SYMBOL (DOUBLE LINE)	DESCRIPTION	SYMBOL (SINGLE LINE)
	FLEXIBLE CONNECTION	
	FLEXIBLE DUCT RUNOUT TO DIFFUSER	
24x12	RECTANGULAR DUCT SIZE (WIDTH x DEPTH IN INCHES)	24X12
18⍁	ROUND DUCT SIZE (DIAMETER IN INCHES)	18⍁
24x12⍁	OVAL DUCT SIZE (WIDTH x DEPTH IN INCHES)	24X12⍁
R D	DUCT OFFSET (RISE OR DROP)	R D
VD RVD	VOLUME DAMPER OR REMOTE VOLUME DAMPER	VD RVD
FD SD FSD	FIRE, SMOKE OR FIRE/SMOKE DAMPER	FD SD FSD
	SUPPLY DUCT UP	
	SUPPLY DUCT DOWN	
	EXHAUST DUCT UP	
	EXHAUST DUCT DOWN	
	RETURN DUCT UP	
	RETURN DUCT DOWN	
R W	CONICAL OR 45 DEGREE BOOT LO-LOSS BRANCH FITTING	
	WYE BRANCH FITTING	
	CROSS SECTION OF ROUND DUCT	
	DUCT ELBOW WITH TURNING VANES	
	SMOOTH RADIUS DUCT ELBOW WITHOUT TURNING VANES	
12x6 / W	ACOUSTICAL LINING DUCT DIMENSION IS INSIDE DIMENSION	24x16 / W
	MOTORIZED DAMPER INSIDE DUCT	
TAG NECK SIZE-CFM	RECTANGULAR OR ROUND SUPPLY DIFFUSER OR REGISTER (SEE SCHEDULE). 4-WAY THROW UNLESS INDICATED OTHERWISE. EXAMPLES: SB12X12-400 REFERS TO TAG SB WITH 12"X12" NECK AND 400 CFM OR SB10-250 REFER TO TAG SB WITH 10" ROUND NECK AND 250 CFM.	TAG NECK SIZE-CFM
TAG NECK SIZE-CFM	RECTANGULAR OR ROUND EXHAUST GRILLE OR REGISTER (SEE SCHEDULE)	TAG NECK SIZE-CFM
TAG NECK SIZE-CFM	RECTANGULAR OR ROUND RETURN GRILLE OR REGISTER (SEE SCHEDULE)	TAG NECK SIZE-CFM

ABBREVIATIONS

AC	AIR CONDITIONING	GAL	GALLONS	PH	PHASE (ELECTRICAL)
ACU	AIR CONDITIONING UNIT	GPM	GALLONS PER MINUTE	POC	POINT OF CONNECTION
AD	ACCESS DOOR	HC	HEATING COIL	POD	POINT OF DISCONNECTION
AFF	ABOVE FINISHED FLOOR	HP	HORSEPOWER OR HEAT PUMP	PSI	POUNDS PER SQUARE INCH
AHU	AIR HANDLING UNIT	HVAC	HEATING, VENTILATING & AIR CONDITIONING	QTY	QUANTITY
A	AMPERE			R	RISERS, RELOCATE OR RISE
AP	ACCESS PANEL	HW	HEATING WATER	RA	RETURN AIR
BAS	BUILDING AUTOMATION SYSTEM	HWR	HEATING WATER RETURN	RAD	RETURN AIR DAMPER
BDD	BACKDRAFT DAMPER	HWS	HEATING WATER SUPPLY	RD	REFRIGERANT DISCHARGE
BHP	BRAKE HORSEPOWER	HZ	FREQUENCY (HERTZ)	RH	ROOF DRAIN
BTU	BRITISH THERMAL UNIT	ID	INSIDE DIAMETER	RH	RELATIVE HUMIDITY
BTUH	BTU PER HOUR	IN	INCH(ES)	RPM	REVOLUTIONS PER MINUTE
BV	BALL VALVE OR BALANCING VALVE	KW	KILOWATT	S	SUPPLY OR SLOPE
BYV	BUTTERFLY VALVE	KWH	KILOWATT HOUR	SA	SUPPLY AIR
CAP	CAPACITY	LAT	LEAVING AIR TEMPERATURE	SCFM	CFM, STANDARD CONDITIONS
CFM	CUBIC FEET PER MINUTE	LBS	POUNDS	SD	SMOKE DAMPER
CL	CENTERLINE	LDB	LEAVING DRY BULB	SEN	SENSIBLE
CLG	CEILING	LWB	LEAVING WET BULB	SF	SUPPLY FAN OR SQUARE FEET
CV	CONSTANT VOLUME	LWT	LEAVING WATER TEMPERATURE	SIU	SPLIT INDOOR UNIT
CW	COLD WATER	M	MOTOR	SOU	SPLIT OUTDOOR UNIT
CWR	CONDENSER WATER RETURN	MAX	MAXIMUM	SP	STATIC PRESSURE
CWS	CONDENSER WATER SUPPLY	MBH	THOUSAND BTU PER HOUR	SQ IN	SQUARE INCH
DBT	DRY BULB TEMPERATURE	MCA	MINIMUM CIRCUIT AMPACITY	T	THERMOSTAT OR THERMOMETER
DP	DIFFERENTIAL PRESSURE	MD	MOTORIZED DAMPER	TD	TRANSFER DUCT
DSD	DUCT SMOKE DETECTOR	MIN	MINIMUM	TEMP	TEMPERATURE
(E)	EXISTING	MOCP	MAXIMUM OVER CURRENT PROTECTION	TI	TENANT IMPROVEMENT
(ER)	EXISTING RELOCATED	(N)	NEW	TG	TRANSFER GRILLE
EA	EXHAUST AIR OR EACH	NA	NOT APPLICABLE	TS	TEMPERATURE SENSOR
EAD	EXHAUST AIR DAMPER	NC	NORMALLY CLOSED	TSP	TOTAL STATIC PRESSURE
EAT	ENTERING AIR TEMPERATURE	NG	NATURAL GAS	(TYP)	TYPICAL
EDB	ENTERING DRY BULB TEMPERATURE	NIC	NOT IN CONTRACT	U	HEAT TRANSFER COEFFICIENT
EF	EXHAUST FAN	NO	NORMALLY OPEN	UON	UNLESS OTHERWISE NOTED
EFF	EFFICIENCY	NOM	NOMINAL	VAV	VARIABLE AIR VOLUME
ESP	EXTERNAL STATIC PRESSURE	NPSH	NET POSITIVE SUCTION HEAD	VD	VOLUME DAMPER
EWB	ENTERING WET BULB TEMPERATURE	NTS	NOT TO SCALE	VFD	VARIABLE FREQUENCY DRIVE
EWT	ENTERING WATER TEMPERATURE	OA	OUTSIDE AIR	W	WASTE OR WIDTH OR WATTS
EXH	EXHAUST	OAD	OUTSIDE AIR DAMPER	W/	WITH
EXT	EXTERNAL	OAT	OUTSIDE AIR TEMPERATURE	W/O	WITHOUT
F	FAHRENHEIT OR FILTER	OBD	OPPOSED BLADE DAMPER	WB	WET BULB TEMPERATURE
FC	FLEXIBLE CONNECTION	OC	ON CENTER	WG	WATER GAUGE
FD	FIRE DAMPER	OD	OUTSIDE DIAMETER	WSHP	WATER-SOURCE HEAT PUMP
FPM	FEET PER MINUTE	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED	WT	WEIGHT
FSD	FIRE/SMOKE DAMPER	OFOI	OWNER FURNISHED OWNER INSTALLED	Z	ZONE
FT	FOOT OR FEET			ZD	ZONE DAMPER

THIS DOCUMENT IS FOR THE EXPRESS USE OF STREIMER SHEET METAL SHOP PRODUCTION AND MECHANICAL PERMITTING. PLEASE CONSULT STREIMER SHEET METAL FOR DOCUMENT USE OUTSIDE OF THE INTENDED.

A SEPARATE PERMIT SHALL BE OBTAINED FROM THE FIRE MARSHAL'S OFFICE FOR THE FIRE ALARM SMOKE CONTROL PERMIT. SUBMITTED SMOKE CONTROL DRAWINGS SHALL BE IN ACCORDANCE WITH THE PREVIOUSLY SUBMITTED RATIONAL ANALYSIS AND WILL INCLUDE A COPY WITH THE PERMIT SUBMITTAL PACKAGE.

REVISION TO RATIONAL ANALYSIS FOR SMOKE CONTROL SYSTEM. REF ARCHITECTURAL PERMIT REVISION 2018-208035-REV-05

HVAC DRAWING LIST

SHEET NUMBER	SHEET NAME	PERMIT SET
M000	MECHANICAL LEGEND AND ABBREVIATIONS	X
M002	SCHEDULES	X
MD00	LEVEL B1 - MECHANICAL DEMOLITION	X
MD01	LEVEL 01 - MECHANICAL DEMOLITION	X
MD02	LEVEL 02 - MECHANICAL DEMOLITION	X
MD03	LEVEL 03 - MECHANICAL DEMOLITION	X
MD04	LEVEL 04 - MECHANICAL DEMOLITION	X
MD05	LEVEL 05 - MECHANICAL DEMOLITION	X
MD06	LEVEL 06 - MECHANICAL DEMOLITION	X
M200	LEVEL B1 - HVAC PLAN	X
M201	LEVEL 01 - HVAC PLAN	X
M202	LEVEL 02 - HVAC PLAN	X
M203	LEVEL 03 - HVAC PLAN	X
M204	LEVEL 04 - HVAC PLAN	X
M205	LEVEL 05 - HVAC PLAN	X
M206	LEVEL 06 - HVAC PLAN	X
M207	ROOF - HVAC PLAN	X
M601	SMOKE CONTROL PANEL	X
M901	MECHANICAL DETAILS	X
M902	MECHANICAL DETAILS	X

City of Portland REVIEWED FOR CODE COMPLIANCE MAY 06 2020 Permit Number

Ref. Bldg Permit #18-208035-CO

RECEIVED FEB 10 2020 BDS DOCUMENT SERVICES

REVISIONS			
#	DESCRIPTION	DATE	
1	Permit Revision - REV01	10/1/2020	
2			

NMD

STREIMER

740 N. KNOTT ST.
PORTLAND, OR 97227
(503)288-9393
(503)286-3327 FAX

EXPIRES: 06/30/20
REGISTERED PROFESSIONAL ENGINEER
OREGON
JAMES B. WOODS

MECHANICAL LEGEND AND ABBREVIATIONS
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

Job No. 19-1282

M000

19-127244 - REV-1-MT

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FAN COIL UNIT SCHEDULE

TAG	#	MANUFACTURER	MODEL NUMBER	SUPPLY AIR (CFM)	OSA (CFM)	COOLING COIL			HEATING COIL				FILTER		ELECTRICAL					UNIT SIZE (L"xW"xH")	UNIT WEIGHT	NOTES
						CAP TOTAL (MBH)	WPD (FT WG)	CONN. (IN)	CAP TOTAL (MBH)	FLOW (GPM)	WPD (FT WG)	CONN. (IN)	TYPE	MERV	HP	VOLTS	PH	VFD (Y/N)	EMERG POWER (Y/N)			
FCU	6-1	TITUS	TBH-20	2000	1300	36	3	7/8"	18	3	3	1 1/8"	PLEATED	8	1.0	208	1	No	No	30X50X50	274	1-3, 5, 6

NOTES
1. COORDINATE WITH ELECTRICAL FOR POWER AND DISCONNECT AS REQUIRED.
2. PROVIDE VIBRATION ISOLATION PER SPECIFICATIONS.
3. PROVIDE SMOKE DETECTOR IN SUPPLY AIR FOR AUTOMATIC UNIT SHUTDOWN ABOVE 2000 CFM.
4. PROVIDE ECM (ELECTRONICALLY COMMUTATED) MOTOR) WITH FACTORY MOUNTED POTENTIOMETER FOR SPEED ADJUSTMENT.
5. PROVIDE CONDENSATE PUMP WITH 120 V / 1PH CONNECTION.
6. PROVIDE SECONDARY DRIP PAN WITH MOISTURE DETECTOR FOR FCU SHUTDOWN.

DIFFUSER AND GRILLE SCHEDULE

TAG	MANUF.	MODEL NUMBER	DESCRIPTION	FACE TYPE	FACE SIZE (INCHES)	COLOR (NOTE #1)	MATERIAL	OBD	NOTES
SA	TITUS	PCS-DF	SQUARE CEILING SUPPLY	PERFORATED	24"X24"	WHITE	STEEL	NO	1-7
SB	TITUS	300RL	RECTANGULAR SIDEWALL SUPPLY	3/4" SPACING, DOUBLE DEFL.	SEE PLANS	WHITE	STEEL	NO	1-6, 8
SC	TITUS	ML-39	LINEAR DIFFUSER WITH PLENUM	SLOT	3X1" SLOT	WHITE	ALUMINUM	NO	1-4, 6-10
RA	TITUS	PDR	SQUARE CEILING RETURN	PERFORATED	24"X24"	WHITE	STEEL	NO	1-7
EA	TITUS	350FL	RECTANGULAR SIDEWALL EXHAUST	3/4" SPACING, 35° DEFL.	SEE PLANS	WHITE	ALUMINUM	NO	1-6, 8
EB	TITUS	PAR	SQUARE CEILING EXHAUST	PERFORATED	24"X24"	WHITE	STEEL	NO	1-6, 8

NOTES:
1. MAXIMUM TOTAL PRESSURE DROP SHALL NOT EXCEED 0.15" WG WITH DUCT TRANSITION.
2. MAXIMUM NC LEVEL SHALL BE 25.
3. ALL VISIBLE SURFACES AND DUCTWORK BEHIND FACE SHALL BE PAINTED FLAT BLACK.
4. COORDINATE WITH ARCHITECTURAL REFLECTED CEILING PLANS FOR BORDER TYPES.
5. NECK SIZE AND CFM SHOWN ARE ON PLANS (EXAMPLE: SB12x12-400 REFERS TO SUPPLY AIR "S" WITH TAG "B" WITH 12x12 NECK AND 400 CFM).
6. PROVIDE RECTANGULAR/SQUARE TO ROUND TRANSITION AS REQUIRED AND SIZED FOR MAXIMUM 0.01" WG TOTAL PRESSURE DROP.
7. ADJUSTABLE HORIZONTAL / VERTICAL DISCHARGE
8. ANY GRILLE/DIFFUSER MOUNTED DIRECTLY ON EXPOSED DUCT SHALL MATCH COLOR OF DUCT (IF PAINTED) OR SHALL HAVE CLEAR ANODIZED FINISH (IF DUCT IS UNPAINTED).
9. PLENUM CONNECTION SIZE, SLOT LENGTH, AND CFM SHOWN ON PLANS (EXAMPLE: SNS-120-2000 REFERS TO TAG "SN" WITH 8" ROUND CONNECTION, 120" CONTINUOUS SLOT LENGTH AND 2000 CFM).
10. PROVIDE MANUFACTURER'S INSULATED PLENUM.

FAN SCHEDULE

A	#	MANUFACTURER	MODEL	LOCATION	AREA SERVED	DISCH	TYPE	DRIVE	AIR FLOW (CFM)	SP (IN WG)	MIN. EFF. (%)	FAN RPM	MTR RPM	ELECTRICAL					UNIT SIZE (L"xD"")	OPER. WT. (LBS)	NOTES
														BHP	HP	VOLTS	PH	VFD (Y/N)	EMERG POWER (Y/N)		
EF	6-1	GREENHECK	SP-B0-VG	WC 612	WC 612	INLINE	CEILING	DIRECT	70	0.3	91	935	0	0.00	(6 W)	115	1	No	No	11X11X8	10	1,8
EF	6-2	GREENHECK	SP-B0-VG	WC 614	WC 614	INLINE	CEILING	DIRECT	70	0.3	91	935	0	0.00	(6 W)	115	1	No	No	11X11X8	10	1,8
SEF	1	GREENHECK	QEID-20-100-A50	LEVEL 3	EXHAUST (FLOORS 2-5)	INLINE	MIXED FLOW	DIRECT	9500	1	37	1744	1770	4.09	5	460	3	Yes	Yes	35X33	370	1,2,3,4,5,6
SSF	1	GREENHECK	QEID-18-80-A20	PENTHOUSE	STAIR 101	INLINE	MIXED FLOW	DIRECT	3000	2	65	1744	1770	1.45	2	460	3	Yes	Yes	26X28.5	235	1,2,3,4,5,6,7
SSF	2	GREENHECK	QEID-18-85-A30	PENTHOUSE	STAIR 102	INLINE	MIXED FLOW	DIRECT	4000	2	61	1699	1770	2.07	3	460	3	Yes	Yes	29X30.5	310	1,2,3,4,5,6
SSF	3	GREENHECK	QEID-27-100-875	PENTHOUSE	ELEVATOR SHAFT	INLINE	MIXED FLOW	DIRECT	14700	1.5	57	1153	1770	6.13	7.5	460	3	Yes	Yes	45X43	865	1,2,3,4,5,6

NOTES
1. COORDINATE WITH ELECTRICAL FOR POWER AND DISCONNECT AS REQUIRED.
2. PROVIDE NON-OVERLOADING MOTOR.
3. PROVIDE VIBRATION ISOLATION AND SEISMIC RESTRAINT PER SPECIFICATIONS.
4. PROVIDE WITH VFD AND SHAFT GROUNDING.
5. PROVIDE UL LISTED FOR SMOKE CONTROL.
6. PROVIDE WITH BOLTED ACCESS DOOR.
7. PROVIDE OSHA INLET GUARD WITH MAXIMUM OF 0.1" WG SP PRESSURE DROP.
8. PROVIDE WITH GRAVITY BACKDRAFT DAMPER

LOUVERED PENTHOUSE SCHEDULE

TAG	#	MANUFACTURER	MODEL NUMBER	LOCATION	SYSTEM SERVED	AIRFLOW (CFM)	PRESSURE DROP (IN WG)	FREE AREA VELOCITY (FPM)	MATERIAL	THROAT SIZE (L"xW")	NOTES
PH	1	GREENHECK	WIH-60X120	ROOF	OSA INTAKE	27000	0.065	550	ALUMINUM	60X120	1-5, 7
PH	2	GREENHECK	WIH-36X36	ROOF	EAST STAIR RELIEF	-	-	-	ALUMINUM	36X36	1-7
PH	3	GREENHECK	WRH-36X36	ROOF	WEST STAIR RELIEF	-	-	-	ALUMINUM	36X36	1-7
PH	4	GREENHECK	WRH-36X36	ROOF	ELEVATOR RELIEF	-	-	-	ALUMINUM	36X36	1-7
PH	5	GREENHECK	WIH-34X34	ROOF	OSA INTAKE (SSF-2)	4000	0.045	498	ALUMINUM	34X34	1-5, 7

NOTES
1. PROVIDE MANUFACTURER ROOF CURB.
2. LOUVER TO HAVE DRAINABLE BLADES / HEADER.
3. MAXIMUM ALLOWABLE WATER PENETRATION SHALL NOT EXCEED 0.01 OZ/SQ.FT.
4. COORDINATE COLOR AND FRAME WITH ARCHITECTURAL DRAWINGS
5. PROVIDE 1/2" BIRDSCREEN
6. PROVIDE BAROMETRIC RELIEF DAMPER (SPRING ADJUSTABLE)
7. PROVIDE MOTORIZED DAMPER (WITH END SWITCH).

NEW DUAL DUCT VAV TU SCHEDULE

TAG	#	MANUFACTURER	MODEL NUMBER	COLD INLET SIZE (IN)	HOT INLET SIZE (IN)	AIRFLOW CFM			BAS ADDRESS	UNIT SIZE (L"xW"xH")	OPER. WT. (LBS)	NOTES
						COOL MAX (CFM)	VENT MIN (CFM)	HEAT MAX (CFM)				
VV	1-1	TITUS	DMDV	12	12	1000	350	350		58X31X15.25	146	1-7
VV	1-2	TITUS	DMDV	12	12	2000	600	600		58X31X15.25	146	1-7
VV	1-3	TITUS	DMDV	12	12	2000	600	600		58X31X15.25	146	1-7
VV	1-4	TITUS	DMDV	12	12	2000	600	600		58X31X15.25	146	1-7
VV	1-5	TITUS	DMDV	12	12	2000	600	600		58X31X15.25	146	1-7
VV	1-6	TITUS	DMDV	12	12	1750	550	550		58X31X15.25	146	1-7
VV	1-7	TITUS	DMDV	12	12	1750	550	550		58X31X15.25	146	1-7
VV	2-1	TITUS	DMDV	10	10	1250	400	400		50X27X12.75	122	1-7
VV	2-2	TITUS	DMDV	10	10	1250	400	400		50X27X12.75	122	1-7
VV	2-3	TITUS	DMDV	10	10	1250	400	400		50X27X12.75	122	1-7
VV	2-4	TITUS	DMDV	10	10	1250	400	400		50X27X12.75	122	1-7
VV	2-5	TITUS	DMDV	10	10	1250	400	400		50X27X12.75	122	1-7
VV	2-6	TITUS	DMDV	14	14	2200	660	660		60X30X18	176	1-7
VV	2-7	TITUS	DMDV	10	10	900	270	270		50X27X12.75	122	1-7
VV	3-1	TITUS	DMDV	12	12	1260	380	1025		58X31X15.25	146	1-7
VV	3-2	TITUS	DMDV	12	12	1260	380	1025		58X31X15.25	146	1-7
VV	3-5	TITUS	DMDV	12	12	1260	380	1025		58X31X15.25	146	1-7
VV	3-8	TITUS	DMDV	12	12	1260	380	1025		58X31X15.25	146	1-7
VV	3-14	TITUS	DMDV	10	10	1250	400	400		50X27X12.75	122	1-7
VV	4-1	TITUS	DMDV	12	12	1260	380	1020		58X31X15.25	146	1-7
VV	4-2	TITUS	DMDV	12	12	1260	380	1020		58X31X15.25	146	1-7
VV	4-3	TITUS	DMDV	12	12	1260	380	1020		58X31X15.25	146	1-7
VV	4-4	TITUS	DMDV	12	12	1260	380	1020		58X31X15.25	146	1-7
VV	4-5	TITUS	DMDV	12	12	1260	380	1020		58X31X15.25	146	1-7
VV	4-6	TITUS	DMDV	12	12	1260	380	1020		58X31X15.25	146	1-7
VV	4-7	TITUS	DMDV	10	10	800	240	240		50X27X12.75	122	1-7
VV	4-8	TITUS	DMDV	12	12	1260	380	1020		58X31X15.25	146	1-7
VV	4-9	TITUS	DMDV	12	12	1260	380	1020		58X31X15.25	146	1-7
VV	5-1	TITUS	DMDV	10	10	800	240	240		50X27X12.75	122	1-7

NOTES:
1. PROVIDE PRESSURE INDEPENDENT TERMINAL UNIT.
2. MAXIMUM NC-30 DISCHARGE AND RADIATED SOUND LEVELS AT 0.5" STATIC PD. NOISE RATING IN ACCORDANCE WITH ARI STANDARD 880.
3. PROVIDE NEMA 1 CONTROLS ENCLOSURE.
4. COORDINATE WITH BUILDING AUTOMATION SYSTEM.
5. PROVIDE UL CLASS II 24VAC TRANSFORMER AS REQUIRED. COORDINATE WITH ELECTRICAL FOR LINE VOLTAGE POWER.
6. TERMINAL CABINET SHALL INCLUDE 3/4" MINIMUM INTERNAL INSULATION LINING. TYPE SHALL BE FIBER-FREE OR FOIL FACED FIBERGLASS.
7. PROVIDE MINIMUM FIVE (5) FOOT LONG SOUND ATTENUATION DISCHARGE PLENUM ATTACHED TO TERMINAL UNIT. INSIDE CLEAR DIMENSION SHALL BE 2" HIGHER THAN TERMINAL HEIGHT AND 4" WIDER THAN TERMINAL WIDTH. INSULATION LINING TYPE SHALL BE MINIMUM 1" THICK OR R-4.2, WHICHEVER IS GREATER, WITH NON-FIBER, ANTI-MICROBIAL COATING. REFER TO DETAILS AND SPECIFICATIONS.

FIRE SMOKE DAMPER SCHEDULE

TAG	MANUFACTURER	MODEL	LOCATION	SYSTEM SERVED	SIZE WIDTH (IN.)	SIZE HEIGHT/DIA. (IN.)	PRESSURE DROP (IN. WG)	BLADE TYPE (AIRFOIL/3V)	EMERG POWER	NOTES
1-1	RUSKIN	FSD60	LEVEL 1	SUPPLY COLD	66	18	0.00	AIRFOIL	Yes	1,2,3,4
1-2	RUSKIN	FSD60	LEVEL 1	SUPPLY HOT	26	14	0.00	AIRFOIL	Yes	1,2,3,4
1-3	RUSKIN	FSD60	LEVEL 1	RETURN	34	40	0.10	AIRFOIL	Yes	1,2,3,4
2-1	RUSKIN	FSD60	LEVEL 2	RETURN	48	12	0.10	AIRFOIL	Yes	1,2,3,4
2-2	RUSKIN	FSD60	LEVEL 2	RETURN	58	24	0.10	AIRFOIL	Yes	1,2,3,4
2-3	RUSKIN	FSD60	LEVEL 2	RETURN	34	40	0.10	AIRFOIL	Yes	1,2,3,4
2-4	RUSKIN	FSD60	LEVEL 2	SUPPLY COLD	30	26	0.10	AIRFOIL	Yes	1,2,3,4
2-5	RUSKIN	FSD60	LEVEL 2	SUPPLY HOT	26	24	0.10	AIRFOIL	Yes	1,2,3,4
2-6	RUSKIN	FSD60	LEVEL 2	RETURN	24	58	0.10	AIRFOIL	Yes	1,2,3,4
2-7	RUSKIN	FSD60	LEVEL 2	SUPPLY HOT	0	12	0.10	AIRFOIL	Yes	1,2,3,4
2-8	RUSKIN	FSD60	LEVEL 2	SUPPLY COLD	0	12	0.10	AIRFOIL	Yes	1,2,3,4
2-9	RUSKIN	FSD60	LEVEL 2	SUPPLY COLD	66	18	0.00	AIRFOIL	Yes	1,2,3,4
2-10	RUSKIN	FSD60	LEVEL 2	SUPPLY HOT	26	14	0.00	AIRFOIL	Yes	1,2,3,4
3-1	RUSKIN	FSD60	LEVEL 3	RETURN	30	20	0.00	AIRFOIL	Yes	1,2,3,4
3.2	RUSKIN	FSD60	LEVEL 3	EXHAUST	36	20	0.00	AIRFOIL	Yes	1,2,3,4
3.3	RUSKIN	FSD60	LEVEL 3	EXHAUST	24	16	0.00	AIRFOIL	Yes	1,2,3,4
3.4	RUSKIN	FSD60	LEVEL 4	EXHAUST	30	30	0.00	AIRFOIL	Yes	1,2,3,4
3.5	RUSKIN	FSD60	LEVEL 5	EXHAUST	24	16	0.00	AIRFOIL	Yes	1,2,3,4
4-1	RUSKIN	FSD60	LEVEL 4	SUPPLY COLD	66	48	0.10	AIRFOIL	Yes	1,2,3,4

NOTES
1. REFER TO SPECIFICATIONS FOR ADDITIONAL DAMPER REQUIREMENTS.
2. DAMPER ACTUATOR TO BE LOCATED OUTSIDE OF AIRSTREAM.
3. DAMPER OPERATION BY ADDRESSIBLE FIRE ALARM SYSTEM, REFER TO DIV. 28.

MOTORIZED DAMPER SCHEDULE

TAG	#	MANUFACTURER	MODEL NUMBER	AREA SERVED	SYSTEM SERVED	PRESSURE DROP (IN WG)	SIZE (W"xH")	CONTROL	LEAKAGE CLASS	NOTES
MD	1.1	RUSKIN	SD-60	SSF-1 & SSF-3 INTAKE	FIRE SYSTEM	0.1	42X40	PARALLEL BLADE AIRFOIL	1A	1,2
MD	1.2	RUSKIN	SD-60	STAIR-101 RELIEF	FIRE SYSTEM	0.1	36X36	PARALLEL BLADE AIRFOIL	1A	1,2
MD	2.1	RUSKIN	SD-60	STAIR-102 PRESSURIZATION	FIRE SYSTEM	0.1	34X34	PARALLEL BLADE AIRFOIL	1A	1,2
MD	2.2	RUSKIN	SD-60	STAIR-102 RELIEF	FIRE SYSTEM	0.1	36X36	PARALLEL BLADE AIRFOIL	1A	1,2
MD	3.1	RUSKIN	SD-60	ELEVATOR RELIEF	FIRE SYSTEM	0.1	36X36	PARALLEL BLADE AIRFOIL	1A	1,2
MD	4.1	RUSKIN	SD-60	EXHAUST (FLOORS 2-5)	FIRE SYSTEM	0.1	40X26	PARALLEL BLADE AIRFOIL	1A	1,2

NOTES
1. REFER TO SPECIFICATIONS FOR DAMPER OPTIONS.
2. PROVIDE END SWITCH FOR PROOF OF DAMPER POSITION.

ELECTRIC UNIT HEATER SCHEDULE

TAG	#	MANUFACTURER	MODEL NUMBER	AREA SERVED	LOCATION	TOTAL WATTS	ELECTRICAL				UNIT SIZE (L"xW"xH")	NOTES
							VOLTS	PH	AMPS	EMERG POWER (Y/N)		
EUH	1	CADET	CSC101TW	WC 614	WC 614	1000	120	1	8.3	No	9x1x12	SEE BELOW
EUH	2	CADET	CSC101TW	WC 612	WC 612	1000	120	1	8.3	No	9x1x12	SEE BELOW

NOTES
1. DISCONNECT PROVIDED BY ELECTRICAL.
2. MOUNT PER MANUFACTURER'S REQUIREMENTS AND MAINTAIN REQUIRED CLEARANCES.
3. UNIT SHALL BE PROVIDED WITH ADJUSTABLE DISCHARGE BLADES OR LOUVERS TO ALLOW DIRECTIONAL CONTROL OF AIRFLOW.
4. PROVIDE WITH UNIT MOUNTED THERMOSTAT.
5. PROVIDE WITH WALL CAN AND GRILLE KIT - MOUNT AT 4.5" AFF.

EXISTING DUAL DUCT VAV TU SCHEDULE

TAG	#	MANUFACTURER	MODEL NUMBER	COLD INLET SIZE (IN)	HOT INLET SIZE (IN)	AIRFLOW CFM		BAS ADDRESS	NOTES
						COOL MAX (CFM)	HEAT MIN (CFM)		
VV	3-3	TITUS	DMDV	12	8	1425	700		1-5
VV	3-4	TITUS	DMDV	10	6	1200	360		1-5
VV	3-6	TITUS	DMDV	12	8	1015	500		1-5
VV	3-7	TITUS	DMDV	8	5	800	240		1-5
VV	3-9	TITUS	DMDV	10	8	990	450		1-5
VV	3-10	TITUS	DMDV	6	4	270	150		1-5
VV	3-11	TITUS	DMDV	10	8	320	420		1-5
VV	3-13	TITUS	DMDV	10	6	14000	650		1-5
VV	3-15	TITUS	DMDV	8	5	900	420		1-5
VV	3-16	TITUS	DMDV	7	5	540	160		1-5
VV	DV-7	TITUS	DMDV	8	4	500	150		1-5
VV	DV-8	TITUS	DMDV	10	6	1130	340		1-5
VV	DV-9	TITUS	DMDV	5	4	260	80		1-5
VV	DV-10	TITUS	DMDV	4	4	130	50		1-5
VV	DV-11	TITUS	DMDV	10	6	1175	350		1-5
VV	DV-12	TITUS	DMDV	10	5	840	250		1-5
VV	DV-13	TITUS	DMDV	10	5	800	240		1-5

NOTES:
1. EXISTING VAV BOX TO REMAIN. CONTRACTOR TO VERIFY BOX SIZE AND AIRFLOW DATA.
2. COORDINATE WITH BUILDING AUTOMATION SYSTEM.
3. ROVIDE UL CLASS II 24VAC TRANSFORMER AS REQUIRED. COORDINATE WITH ELECTRICAL FOR LINE VOLTAGE POWER.
4. TERMINAL CABINET SHALL INCLUDE 3/4" MINIMUM INTERNAL INSULATION LINING. TYPE SHALL BE FIBER-FREE OR FOIL FACED FIBERGLASS.
5. PROVIDE MINIMUM FIVE (5) FOOT LONG SOUND ATTENUATION DISCHARGE PLENUM ATTACHED TO TERMINAL UNIT. INSIDE CLEAR DIMENSION SHALL BE 2" HIGHER THAN TERMINAL HEIGHT AND 4" WIDER THAN TERMINAL WIDTH. INSULATION LINING TYPE SHALL BE MINIMUM 1" THICK OR R-4.2, WHICHEVER IS GREATER, WITH NON-FIBER, ANTI-MICROBIAL COATING. REFER TO DETAILS AND SPECIFICATIONS.

City of Portland
REVIEWED FOR CODE COMPLIANCE
MAY 06 2020
Ref. Bldg Permit #19-228035-CO
Permit Number

REVISIONS

#	DESCRIPTION	DATE
1	Permit Revision	12/5/2020
2	Permit Revision - REV01	1/31/2020

N.M.D

Scale: 12" = 1'-0"

710 N. KNOTT ST.
PORTLAND, OR 97227
(503)288-9393
(503)288-3327 FAX

STREIMER

EXPIRES: 06/30/20
REGISTERED PROFESSIONAL ENGINEER
OREGON
JUNE 30, 2001
JAMES B. WOODS

SCHEDULES
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

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1 LEVEL B1 - FLOOR PLAN - HVAC

SCALE: 1/8" = 1'-0"

SHEET NOTES

A. DUCTWORK SIZE TO MATCH DIFFUSER NECK SIZE UNLESS OTHERWISE NOTED.
B. DUCTWORK SIZE TO MATCH VAV BOX INLET SIZE UNLESS OTHERWISE NOTED.
C. 1" ACOUSTICAL LINER SHALL BE PROVIDED IN SHEET METAL DOWNSTREAM OF ALL VAV BOXES FOR 5'.
D. PROVIDE BALANCE DAMPERS AS REQUIRED TO ALLOW THE SYSTEM TO BE FULLY BALANCED, WHETHER OR NOT DAMPERS ARE SHOWN ON DRAWINGS. THIS INCLUDES, BUT IS NOT LIMITED TO, ALL SUPPLY, ETURN, AND EXHAUST BRANCHES.
E. PROVIDE CABLE OPERATED DAMPERS WITH CONTROLLERS MOUNTED FLUSH IN CEILINGS WHERE DUCTWORK DISTRIBUTION ROUTES ABOVE HARD LID CEILINGS - SEE ARCHITECTURAL.
F. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO GENERAL CONTRACTOR FOR INSTALLATION.
G. FLEX DUCTWORK SHALL BE LIMITED TO 5' LENGTH.
H. SEE DETAILS FOR ADDITIONAL INSTALLATION REQUIREMENTS NOT LISTED ON THIS DRAWING.

KEYED NOTES

1 PROVIDE GRILLE ON BOTH SIDES OF WALL AS INDICATED - MOUNT AT 9' AFF

#	REVISIONS DESCRIPTION	NMD DATE
2	Permit Revision - REV01	1/31/2020
4	Permit Revision - REV03	03/05/2020

Scale 1/8" = 1'-0"

STREIMER
740 N. KNOTT ST.
PORTLAND, OR 97227
(503)288-9393
(503)288-3327 FAX

LEVEL B1 - HVAC PLAN
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

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EXPIRES: 06/30/20
REGISTERED PROFESSIONAL ENGINEER 90987PE
Signature Date: 3/6/2020
JAMES B. WOODS
City of Portland REVIEWED FOR CODE COMPLIANCE MAY 06 2020
Permit Number

Ref: Bldg Permit #18-208035-CO

1/8" = 1'-0"
0 8'-0" 16'-0" 24'-0" 32'-0"

SHEET METAL WORKERS LOCAL 216 PORTLAND, OR

Job No. 19-1289

M200

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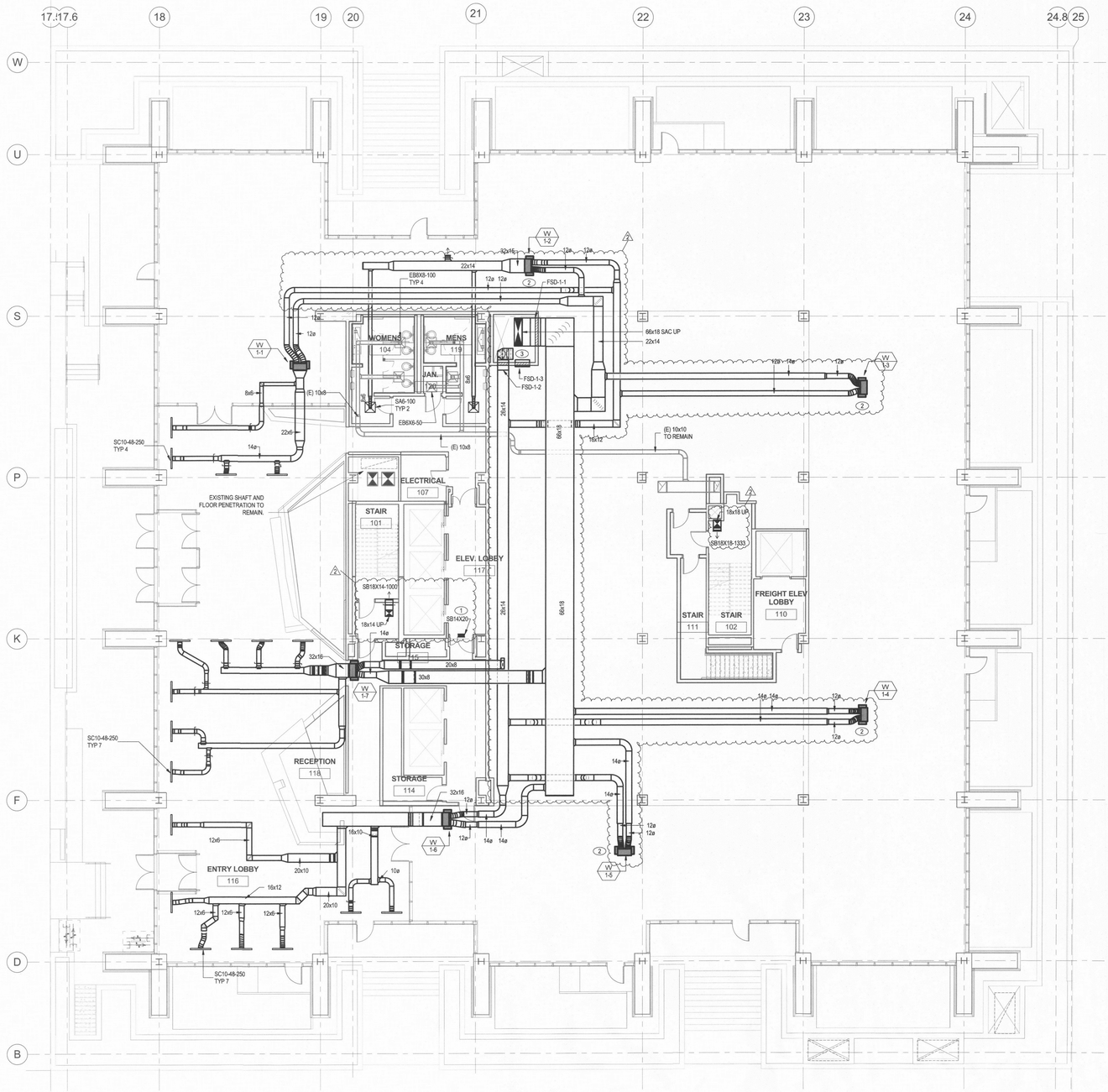

1 LEVEL 01 - FLOOR PLAN - HVAC
SCALE: 1/8" = 1'-0"

SHEET NOTES

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G. FLEX DUCTWORK SHALL BE LIMITED TO 5' LENGTH.
H. SEE DETAILS FOR ADDITIONAL INSTALLATION REQUIREMENTS NOT LISTED ON THIS DRAWING.

KEYED NOTES

1 PROVIDE GRILLE ON BOTH SIDES OF WALL AS INDICATED - MOUNT AT 9' AFF
2 NEW VAV BOX FOR TEMPORARY HEAT
3 DUCT MAIN TO JOG IN CHASE TO LEVEL 2

City of Portland
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MAY 06 2020
Permit Number

City of Portland
Bureau of Development Services
VOID:
Save for Reference Only

Ref: Bldg Permit #18-208035-CO

1/8" = 1'-0"
0 8'-0" 16'-0" 24'-0" 32'-0"

REVISIONS		
#	DESCRIPTION	DATE
2	Permit Revision - REV01	1/31/2020

Scale 1/8" = 1'-0"

STREIMER
740 N. KNOTT ST.
PORTLAND, OR 97227
(503)288-9393
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EXPIRES: 06/30/20
REGISTERED PROFESSIONAL ENGINEER
90987PE
Registered Professional Engineer
JAMES B. WOODS

LEVEL 01 - HVAC PLAN
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

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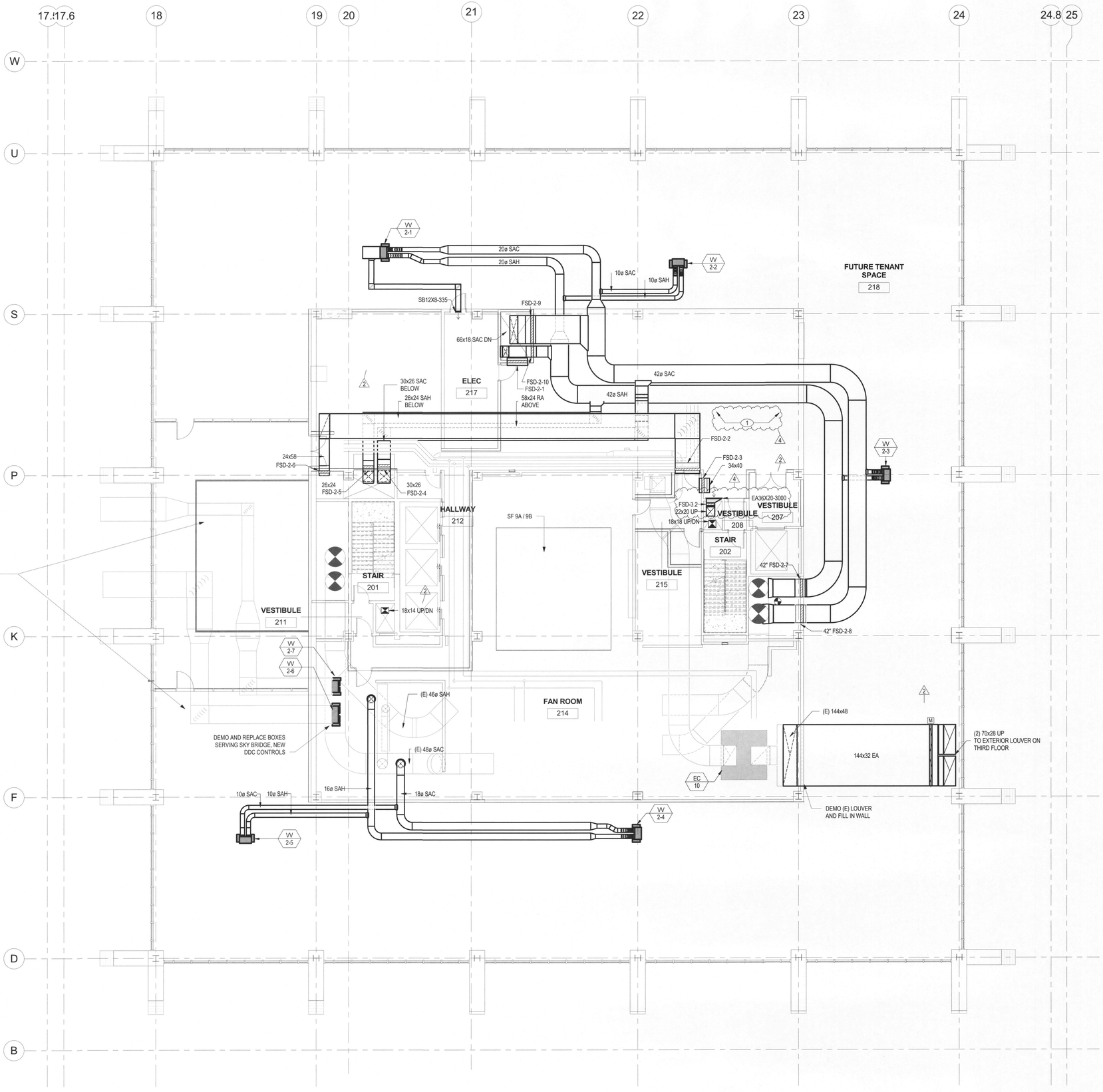

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G. FLEX DUCTWORK SHALL BE LIMITED TO 5' LENGTH.
H. SEE DETAILS FOR ADDITIONAL INSTALLATION REQUIREMENTS NOT LISTED ON THIS DRAWING.

KEYED NOTES (#)

1 PROVIDE TRANSFER AIR SECTIONS AS REQUIRED TO ACHIEVE DESIGN EXHAUST AIRFLOW AS FUTURE TYS ARE BUILT AND PATH OF TRAVEL BACK TO VESTIBULE IS BLOCKED.

1 LEVEL 02 - FLOOR PLAN - HVAC

SCALE: 1/8" = 1'-0"

1/8" = 1'-0"
0 8' - 0" 16' - 0" 24' - 0" 32' - 0"

#	DESCRIPTION	DATE
2	Permit Revision - REV01	1/31/2020
4	Permit Revision - REV03	03/05/2020

REVISIONS

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MAY 06 2020
Permit Number

EXPIRES: 06/30/20
REGISTERED PROFESSIONAL ENGINEER
90987PE
OREGON
JAMES B. WOODS

SHEET METAL WORKERS LOCAL 16 PORTLAND,OR

Ref: Bldg Permit #18-208035-CO

Job No. 19-1289

LEVEL 02 - HVAC PLAN
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

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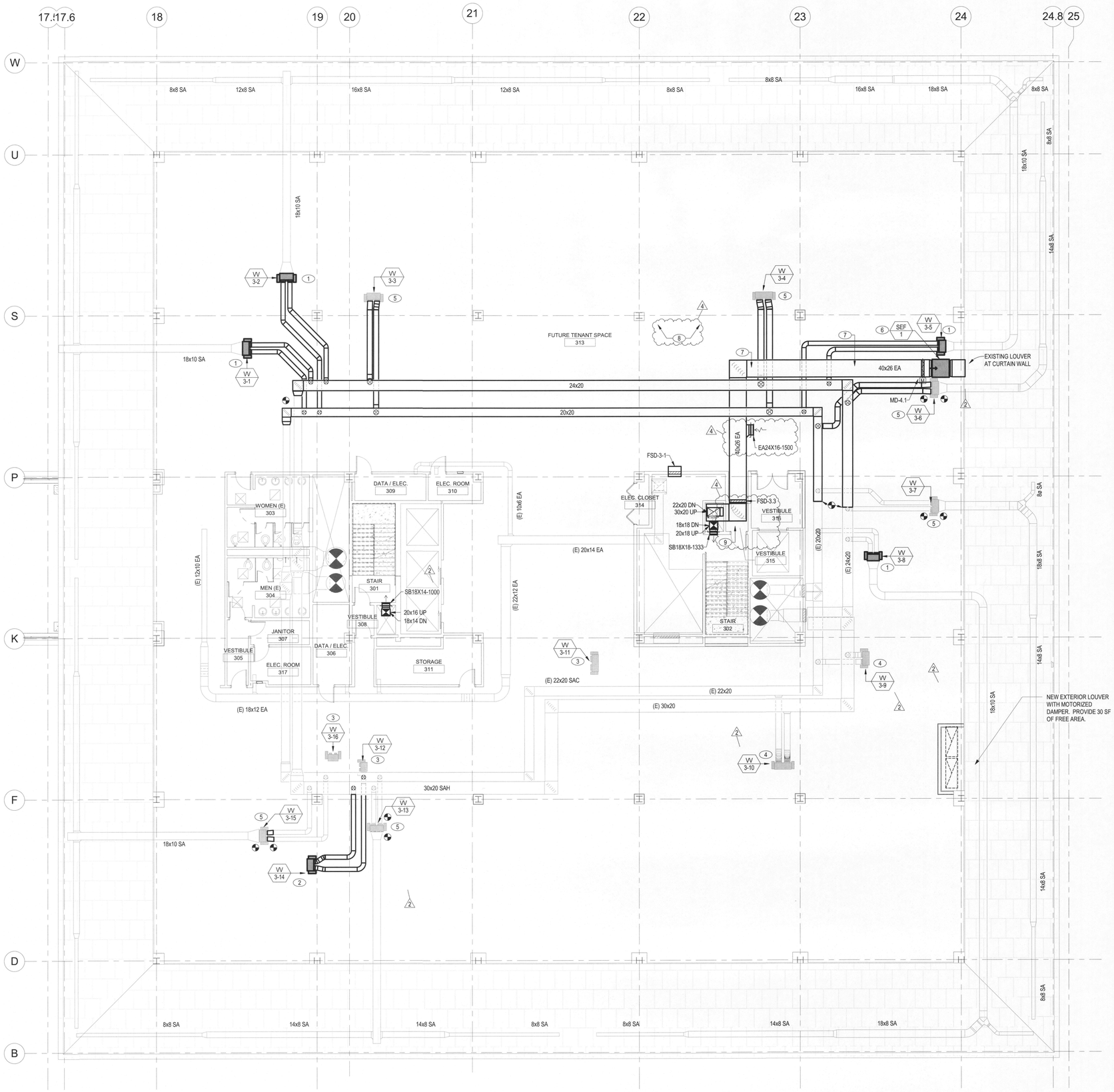

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G. FLEX DUCTWORK SHALL BE LIMITED TO 5' LENGTH.
H. SEE DETAILS FOR ADDITIONAL INSTALLATION REQUIREMENTS NOT LISTED ON THIS DRAWING.

KEYED NOTES (#)

1 DEMO AND REPLACE VAV BOX SERVING PERIMETER SYSTEM. PERIMETER DUCTWORK TO REMAIN.
2 NEW VAV BOX FOR TEMPORARY HEAT
3 EXISTING VAV BOX TO REMAIN FOR FUTURE USE.
4 EXISTING VAV BOX AND LOW PRESSURE DUCTWORK TO REMAIN FOR TEMPORARY HEAT.
5 RELOCATED VAV BOX
6 PROVIDE NEW EXHAUST FAN AS SCHEDULED AND LOCATE WITHIN A RATED ENCLOSURE. REFER TO ARCHITECTURAL FOR ADDITIONAL INFORMATION.
7 FIRE WRAP DUCT OUTSIDE OF SHAFT THROUGH VESTIBULE
8 PROVIDE TRANSFER AIR SECTIONS AS REQUIRED TO ACHIEVE DESIGN EXHAUST AIRFLOW AS FUTURE TIS ARE BUILT AND PATH OF TRAVEL BACK TO VESTIBULE IS BLOCKED.
9 VESTIBULE CEILING TO BE 2-HR TO EXTEND RATING THROUGH SHAFT. REFER TO ARCHITECTURAL.

1 LEVEL 03 - FLOOR PLAN - HVAC

SCALE: 1/8" = 1'-0"

1/8" = 1'-0"
0 8' - 0" 16' - 0" 24' - 0" 32' - 0"

Ref: Bldg Permit #18-208035-CO

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City of Portland REVIEWED FOR CODE COMPLIANCE MAY 06 2020 Permit Number

REGISTERED PROFESSIONAL ENGINEER 90987PE OREGON James B. Woods EXPIRES: JUNE 30, 2020 JAMES B. WOODS

EXPIRES: 06/30/20

SHEET METAL WORKERS LOCAL #16 PORTLAND,OR

REVISIONS		
#	DESCRIPTION	DATE
2	Permit Revision - REV.01	03/31/2020
4	Permit Revision - REV.03	03/05/2020

NMD

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M203

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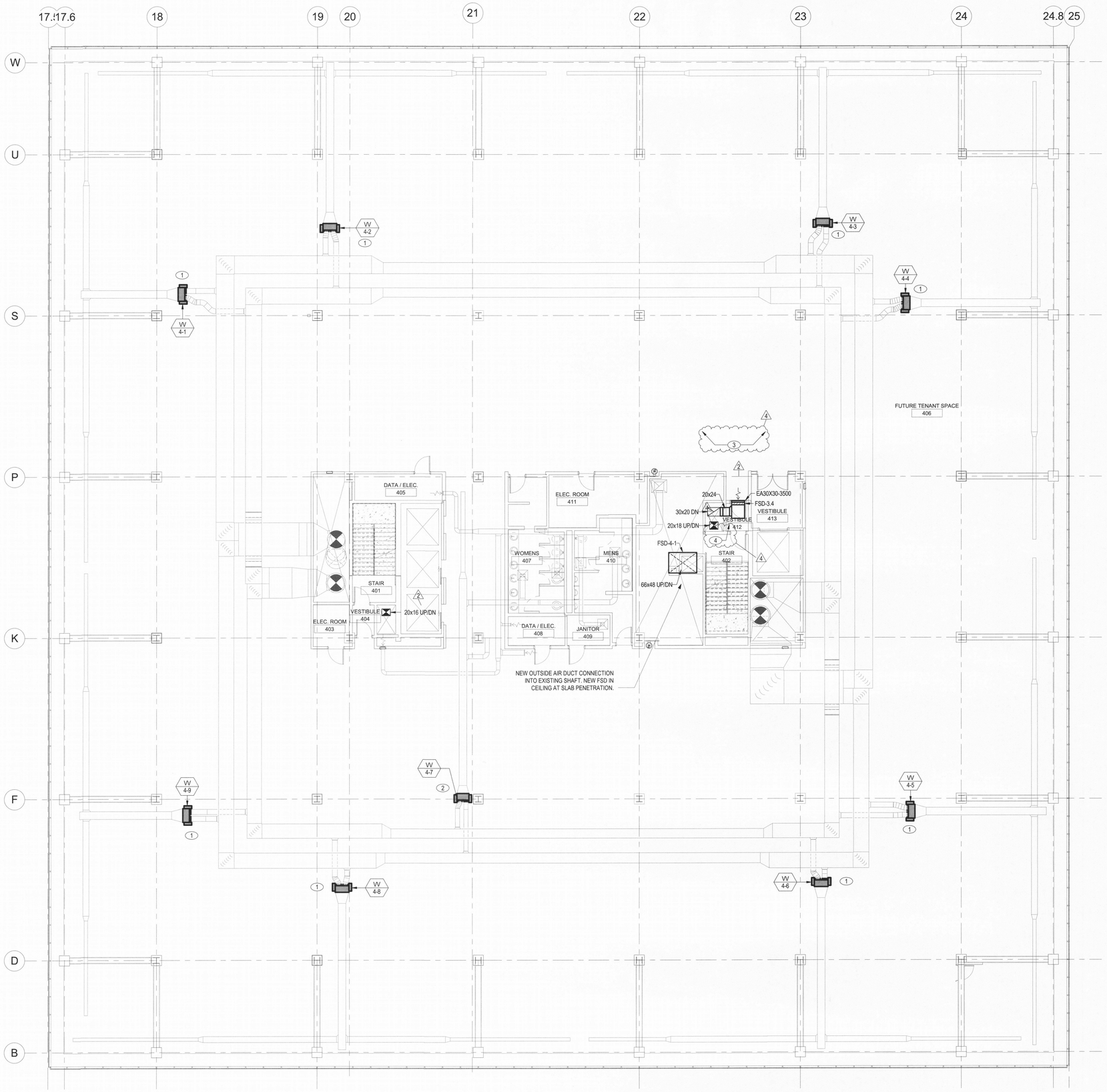

SHEET NOTES

A. DUCTWORK SIZE TO MATCH DIFFUSER NECK SIZE UNLESS OTHERWISE NOTED.
B. DUCTWORK SIZE TO MATCH VAV BOX INLET SIZE UNLESS OTHERWISE NOTED.
C. 1" ACOUSTICAL LINER SHALL BE PROVIDED IN SHEET METAL DOWNSTREAM OF ALL VAV BOXES FOR 5'.
D. PROVIDE BALANCE DAMPERS AS REQUIRED TO ALLOW THE SYSTEM TO BE FULLY BALANCED, WHETHER OR NOT DAMPERS ARE SHOWN ON DRAWINGS. THIS INCLUDES, BUT IS NOT LIMITED TO, ALL SUPPLY, RETURN, AND EXHAUST BRANCHES.
E. PROVIDE CABLE OPERATED DAMPERS WITH CONTROLLERS MOUNTED FLUSH IN CEILINGS WHERE DUCTWORK DISTRIBUTION ROUTES ABOVE HARD LID CEILINGS - SEE ARCHITECTURAL.
F. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO GENERAL CONTRACTOR FOR INSTALLATION.
G. FLEX DUCTWORK SHALL BE LIMITED TO 5' LENGTH.
H. SEE DETAILS FOR ADDITIONAL INSTALLATION REQUIREMENTS NOT LISTED ON THIS DRAWING.

KEYED NOTES (#)

1 DEMO AND REPLACE VAV BOX SERVING PERIMETER SYSTEM. PERIMETER DUCTWORK TO REMAIN.
2 DEMO AND REPLACE VAV BOX SERVING CORE. EXISTING DUCTWORK TO REMAIN.
3 PROVIDE TRANSFER AIR SECTIONS AS REQUIRED TO ACHIEVE DESIGN EXHAUST AIRFLOW AS FUTURE TI'S ARE BUILT AND PATH OF TRAVEL BACK TO VESTIBULE IS BLOCKED.
4 VESTIBULE CEILING TO BE 2-HR TO EXTEND RATING THROUGH SHAFT. REFER TO ARCHITECTURAL.

1 **LEVEL 04 - FLOOR PLAN - HVAC**
SCALE: 1/8" = 1'-0"

1/8" = 1'-0"
0 8' - 0" 16' - 0" 24' - 0" 32' - 0"

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EXPIRES: 06/30/20
REGISTERED PROFESSIONAL ENGINEER 90987PE OREGON JAMES B. WOODS
City of Portland Bureau of Development Services
REVIEWED FOR CODE COMPLIANCE
MAY
Permit Number

Ref: Bldg Permit #18-208035-CO

REVISIONS

#	DESCRIPTION	DATE
2	Permit Revision - REV01	1/31/2020
4	Permit Revision - REV03	03/05/2020

NMD

Scale 1/8" = 1'-0"

740 N. KNOTT ST.
PORTLAND, OR 97227
(503)288-9393
(503)288-3327 FAX

STREIMER

LEVEL 04 - HVAC PLAN
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

SHEET METAL WORKERS LOCAL UNION NO. 16 PORTLAND, OR

Job No. 19-1289

M204

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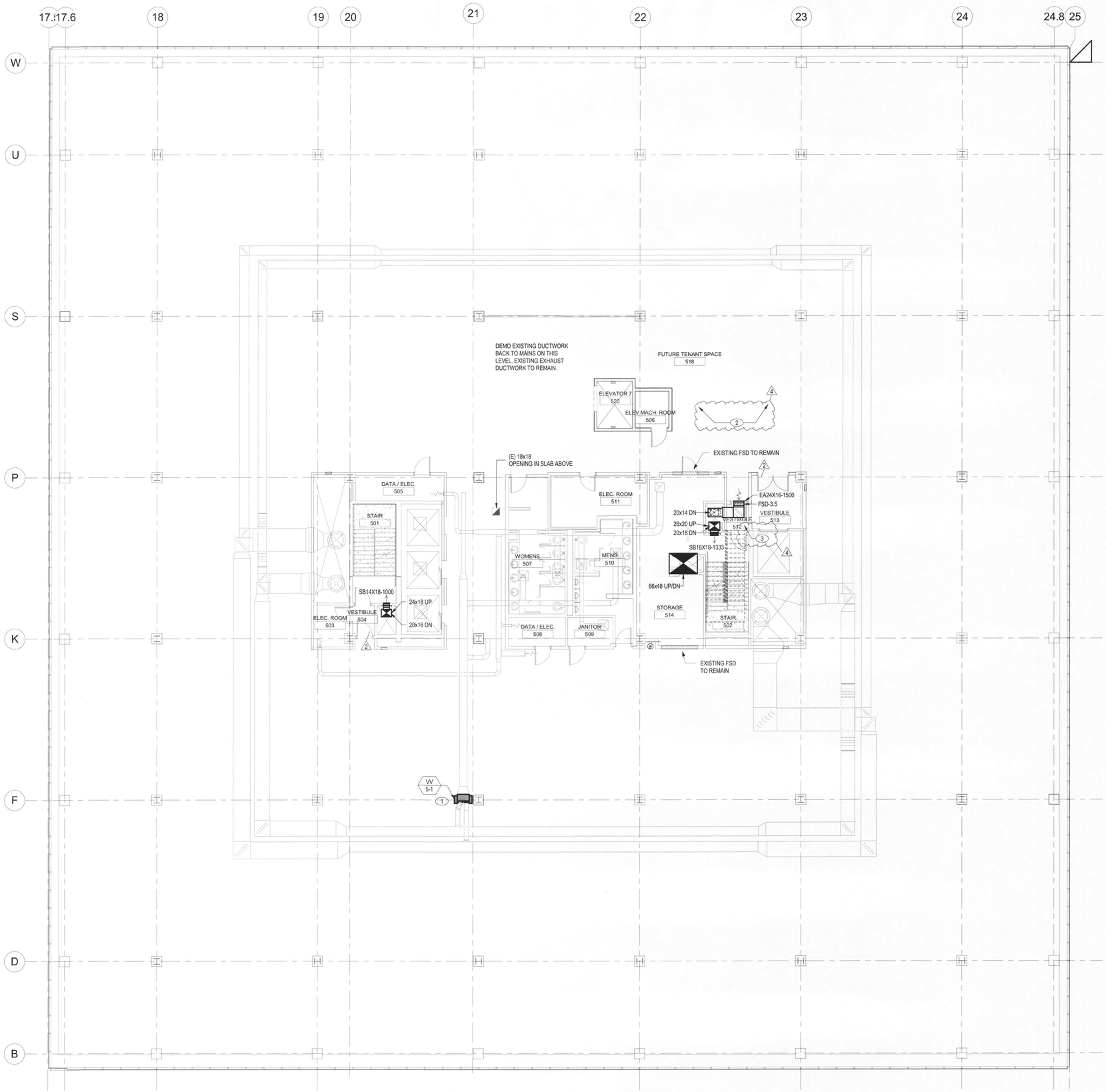

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1 LEVEL 05 - FLOOR PLAN - HVAC

SCALE: 1/8" = 1'-0"

1/8" = 1'-0"
0 8' - 0" 16' - 0" 24' - 0" 32' - 0"

REVISIONS		
#	DESCRIPTION	DATE
2	Permit Revision - REV01	03/05/2020
4	Permit Revision - REV03	

NMD

Scale 1/8" = 1'-0"

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LEVEL 05 - HVAC PLAN
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

SHEET METAL WORKERS LOCAL #16 PORTLAND,OR

Job No. 19-1289

M205

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EXPIRES: 06/30/20
REGISTERED PROFESSIONAL ENGINEER
90987PE
OREGON
JAMES B. WOODS
JUNE 30, 2019

City of Portland
REVIEWED FOR CODE COMPLIANCE
MAY 06 2020
Permit Number

Ref: Bldg Permit #18-208035-CO

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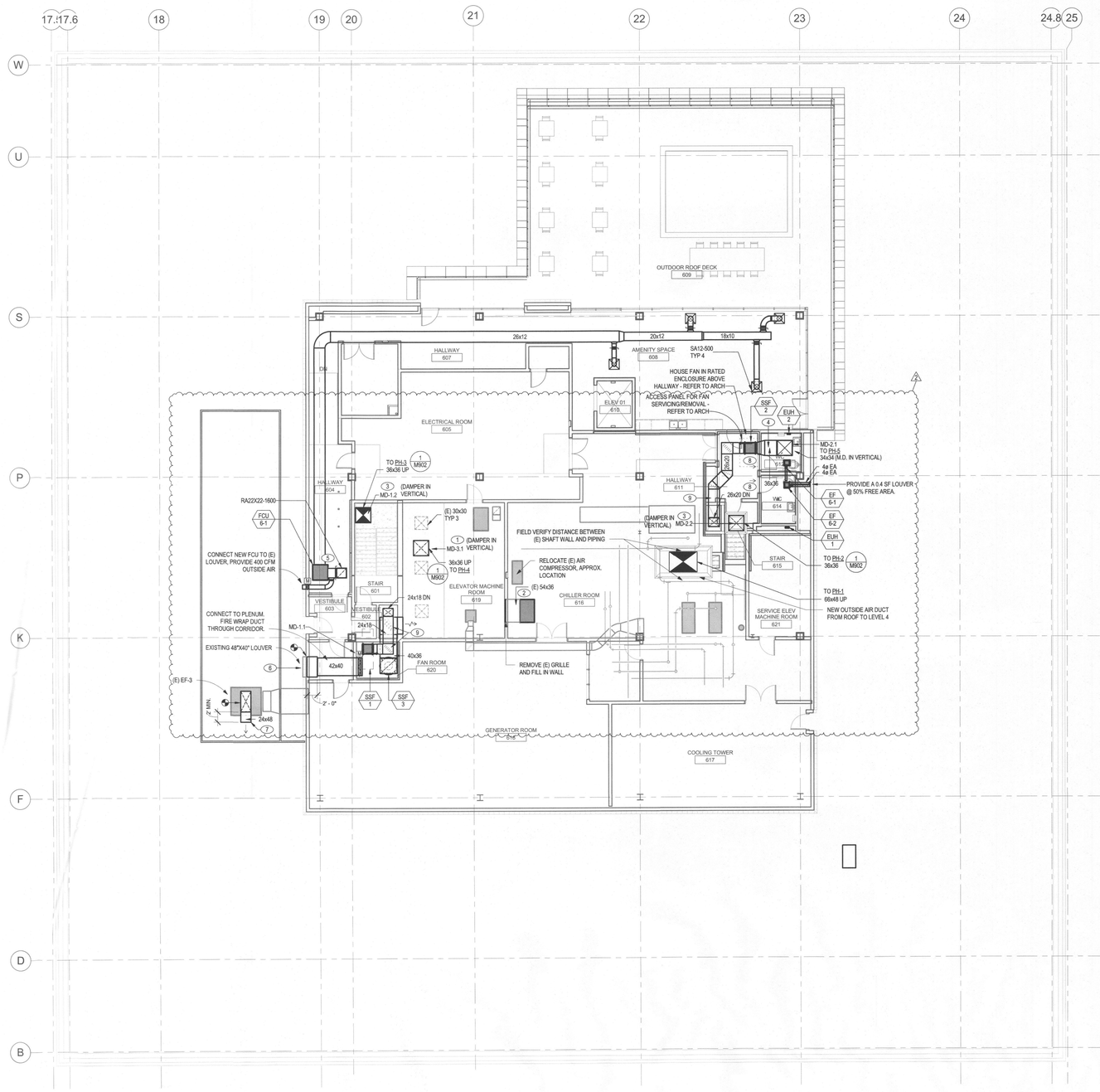

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KEYED NOTES

1. ELEVATOR PRESSURIZATION RELIEF. SEE DETAIL 1, M9.02.
2. EXISTING ELEVATOR PRESSURIZATION SYSTEM TO BE ABANDONED IN PLACE.
3. STAIR PRESSURIZATION RELIEF. SEE DETAIL 1, M9.02.
4. FIRE WRAP DUCT FROM PH-5 TO RATED ROOM AT FAN SSF-2 INLET.
5. CONNECT NEW FAN COIL UNIT TO (E) CHILLED AND HEATING WATER CONNECTION.
6. INCREASE EXISTING 48X40 LOUVER TO ACHIEVE 50 SF LOUVER @ 50% FREE AREA. PROVIDE 24" DEEP PLENUM, CHAMPFERED DUCT TRANSITION TO PLENUM.
7. PROVIDE NEW GOOSENECK EXHAUST ELBOW TO DIVERT AIRFLOW. PROVIDE WITH MINIMUM 2' IN HORIZONTAL AS INDICATED.
8. PROVIDE 3/4" UNDERCUT AT DOOR.
9. PROVIDE DUCT PRESSURE SENSOR DOWNSTREAM OF EXHAUST FANS

1 **LEVEL 06 - FLOOR PLAN - HVAC**
SCALE: 1/8" = 1'-0"

1/8" = 1'-0"
0 8' - 0" 16' - 0" 24' - 0" 32' - 0"

Ref: Bldg Permit #18-208035-CO

City of Portland
REVIEWED FOR CODE COMPLIANCE
MAY 06 2020
Permit Number

#	DESCRIPTION	DATE
2	Permit Revision - REV01	12/1/2020

Author

Scale 1/8" = 1'-0"

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EXPIRES: 06/30/20

LEVEL 06 - HVAC PLAN
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
330 SW JEFFERSON ST
PORTLAND, OR 97201

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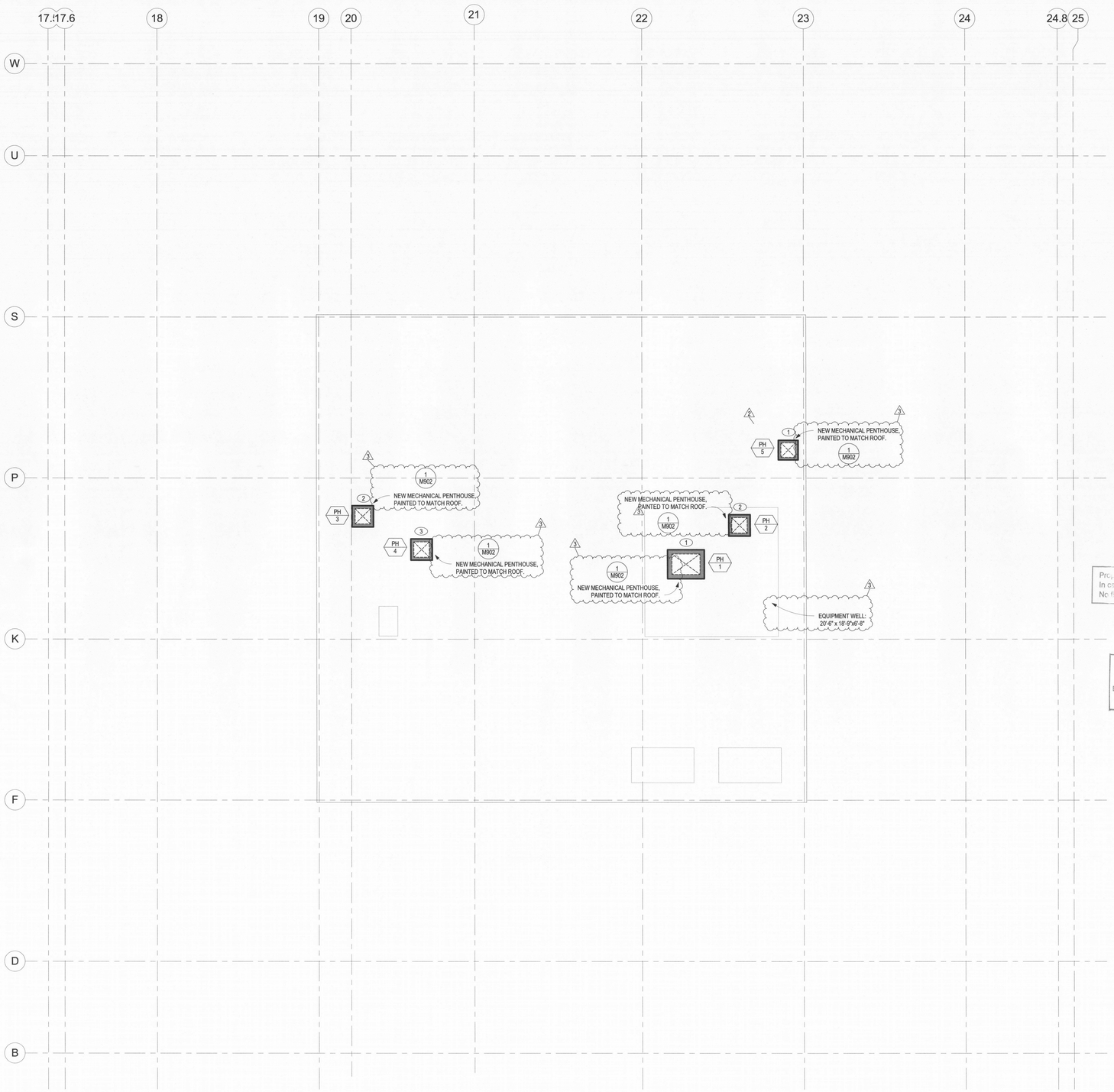
M206



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G. FLEX DUCTWORK SHALL BE LIMITED TO 5' LENGTH.
H. SEE DETALS FOR ADDITIONAL INSTALLATION REQUIREMENTS NOT LISTED ON THIS DRAWING.

KEYED NOTES

1 OUTDOOR AIR INTAKE PENTHOUSE LOUVER, SEE DETAIL 1, M9.02.
2 STAIR RELIEF PENTHOUSE, SEE DETAIL 1/M9.02.
3 ELEVATOR RELIEF PENTHOUSE, SEE DETAIL 1/M9.02.

INSTALLATION SHALL ADHERE TO THE FOLLOWING:
- NO FIELD CHANGES
- ZONING COMPLIANCE PAGE- CASE FILE LU 18-119030 DZ"

Proposal and design as approved In case file # LU 18-119030 DZ. No field changes allowed.

City of Portland Bureau of Development Services By: Date 2/27/2020 Approved by Planning and Zoning Review

Ref: Bldg Permit #18-208035-CO

1/8" = 1'-0"
0 8' - 0" 16' - 0" 24' - 0" 32' - 0"

1 PENTHOUSE ROOF - FLOOR PLAN - HVAC

SCALE: 1/8" = 1'-0"

#	DESCRIPTION	DATE
2	Permit Revision - REV01	12/12/2020
3	Permit Revision - REV02	02/25/2020

NMD

Scale 1/8" = 1'-0"

740 N. KNOTT ST.
PORTLAND, OR 97227
(503)288-9393
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STREIMER

ROOF - HVAC PLAN
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

SHEET METAL WORKERS LOCAL UNION NO. 16 PORTLAND, OR

Job No. 19-1289

M207

City of Portland REVIEWED FOR CODE COMPLIANCE MAY 06 2020 Permit No.:

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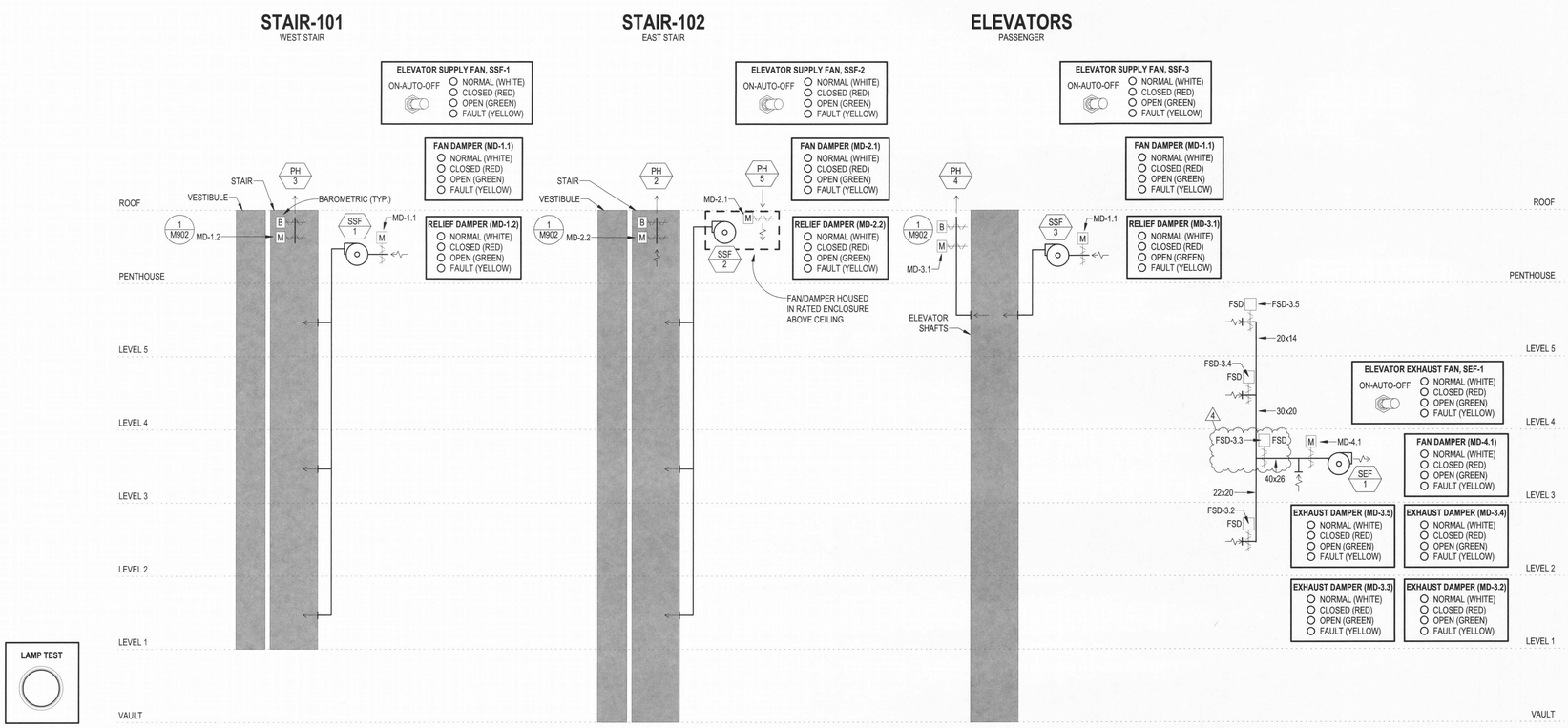
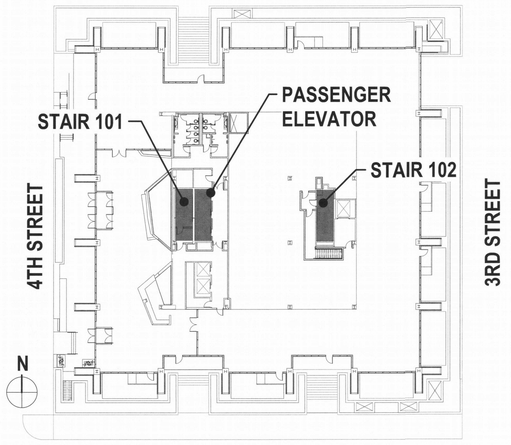


1 SMOKE CONTROL PANEL - EXCHANGE BLOCK

SCALE: NONE



2 SMOKE CONTROL KEY PLAN - EXCHANGE BLOCK

SCALE: 1" = 30'-0"

SHARED OSA INTAKE DAMPER

EQUIPMENT	ADDRESS	DESCRIPTION	NORMAL OPERATION	FIRE EVENT	MONITORED	CONTROLLED	EMERGENCY POWER	FAIL SAFE POSITION
SUPPLY FAN	SSF-1	STAIR PRESSURIZATION FAN	OFF	ON	YES	YES	YES	N/A
MOTORIZED DAMPER	MD-1.1	FAN DAMPER	CLOSED	OPEN	YES	NO	YES	OPEN
MOTORIZED DAMPER	MD-1.2	RELIEF HOOD DAMPER	CLOSED	OPEN	YES	NO	YES	OPEN
SUPPLY FAN	SSF-2	STAIR PRESSURIZATION FAN	OFF	ON	YES	YES	YES	N/A
MOTORIZED DAMPER	MD-2.1	FAN DAMPER	CLOSED	OPEN	YES	NO	YES	OPEN
MOTORIZED DAMPER	MD-2.2	RELIEF HOOD DAMPER	CLOSED	OPEN	YES	NO	YES	OPEN
SUPPLY FAN	SSF-3	ELEVATOR PRESSURIZATION FAN	OFF	ON	YES	YES	YES	N/A
MOTORIZED DAMPER	MD-1.1	FAN DAMPER	CLOSED	OPEN	YES	NO	YES	OPEN
MOTORIZED DAMPER	MD-3.1	RELIEF HOOD DAMPER	CLOSED	OPEN	YES	NO	YES	OPEN
EXHAUST FAN	SEF-1	ELEVATOR PRESSURIZATION FAN	OFF	ON	YES	YES	YES	N/A
MOTORIZED DAMPER	FSD-3.2	EXHAUST DAMPER	CLOSED	OPEN	YES	NO	YES	OPEN
MOTORIZED DAMPER	FSD-3.3	EXHAUST DAMPER	CLOSED	OPEN	YES	NO	YES	OPEN
MOTORIZED DAMPER	FSD-3.4	EXHAUST DAMPER	CLOSED	OPEN	YES	NO	YES	OPEN
MOTORIZED DAMPER	FSD-3.5	EXHAUST DAMPER	CLOSED	OPEN	YES	NO	YES	OPEN
MOTORIZED DAMPER	MD-4.1	FAN DAMPER	CLOSED	OPEN	YES	NO	YES	OPEN

4 SMOKE CONTROL MATRIX - EXCHANGE BLOCK

SCALE: NONE

SHEET NOTES

A. THE INFORMATION ON THIS SHEET SHOWS THE INTENT OF THE MECHANICAL SMOKE CONTROL SYSTEM AND WILL BE INTEGRATED INTO THE DELEGATED FIRE ALARM SYSTEM DESIGN BY THE SUCCESSFUL CONTRACTOR.

A. SUMMARY
   1. SMOKE CONTROL SYSTEM FOR THIS PROJECT INCLUDES: PRESSURIZATION OF THREE VERTICAL PASSAGEWAYS: STAIR 101 (WEST), STAIR 102 (EAST), AND ELEVATOR HOISTWAY AND A (4) FLOOR EXHAUST SYSTEM (FLOORS 2-5). THIS WILL ADDITIONALLY INCLUDE SHUTDOWN OPERATION OF ALL NORMAL BUILDING HVAC EQUIPMENT.
   2. COORDINATE THE BUILDING SMOKE CONTROL EQUIPMENT WITH DIVISION 28.
   3. ALL EQUIPMENT NECESSARY FOR SUCCESSFUL OPERATION OF THE SMOKE CONTROL SYSTEM SHALL BE POWERED FROM AN EMERGENCY POWER SOURCE.
   4. PROVIDE COMMISSIONING AND SPECIAL INSPECTION OF SYSTEM.

B. FIRE ALARM SYSTEM INTEGRATION
   1. THE UL 864 LISTED FIRE ALARM SYSTEM SHALL HAVE DIRECT CONTROL AND SHALL MONITOR SMOKE CONTROL EQUIPMENT INDEPENDENT OF THE DIV. 23 BUILDING AUTOMATION SYSTEM. DIV. 23 AND DIV. 28 CONTRACTORS SHALL COORDINATE TO ENSURE COMPLIANCE. AUXILIARY CONTACTS SHALL BE PROVIDED AS NECESSARY. THE FIRE ALARM SYSTEM SHALL HAVE CONTROL PRIORITY OVER THE DIV. 23 BUILDING AUTOMATION SYSTEM.
   2. THE FIRE FIGHTERS SMOKE CONTROL PANEL SHALL HAVE MANUAL OVERRIDE CONTROL OF SMOKE CONTROL EQUIPMENT AND SHALL HAVE THE FINAL AUTHORITY.

C. PRESSURIZATION FANS (SSF-1, SSF-2, SSF-3) AND EXHAUST FAN (SEF-1)
   1. RUN CONDITIONS:
      A. THE FAN SHALL ACTIVATE UPON SIGNAL FROM THE FIRE PROTECTION SYSTEM
   2. ALARMS SHALL BE PROVIDED AS FOLLOWS:
      A. FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
      B. DAMPER FAILER: COMMANDED ON, BUT THE STATUS IS CLOSED.
   3. PILOT LIGHT INDICATION:
      A. WHITE: NORMAL OPERATION, FAN IS OFF
      B. RED: FAN IS OFF
      C. GREEN: FAN IS ON
      D. YELLOW: FAN IS IN FAULT

D. MOTORIZED DAMPERS (MD-1.2 & 1.2, MD-2.1 & 2.2, MD-3.1 & 3.2, MD-4.1, FSD-3.2 & 3.3 & 3.4 & 3.5)
   1. RUN CONDITIONS:
      A. THE MOTORIZED DAMPER SHALL OPEN UPON SIGNAL FROM THE FIRE PROTECTION SYSTEM
   2. ALARMS SHALL BE PROVIDED AS FOLLOWS:
      A. DAMPER FAILURE: COMMANDED OPEN BUT THE STATUS IS CLOSED OR NOT OPEN
   3. PILOT LIGHT INDICATION:
      A. WHITE: NORMAL OPERATION, DAMPER CLOSED
      B. RED: DAMPER CLOSED
      C. GREEN: DAMPER OPEN
      D. YELLOW: DAMPER IS IN FAULT

3 SMOKE CONTROL SEQUENCE - EXCHANGE BLOCK

SCALE: NONE

RECEIVED
MAR 13 2020
BDS
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EXPIRES: 06/30/20
REGISTERED PROFESSIONAL ENGINEER
90987PE
Development by
JAMES B. WOODS

City of Portland
REVIEWED FOR CODE COMPLIANCE
MAY 06 2020
Permit Number

Ref: Bldg Permit
#18-208035-CO

Author

REVISIONS

#	DESCRIPTION	DATE
2	Permit Revision - REV01	10/1/2020
4	Permit Revision - REV03	03/05/2020

Scale: As indicated

740 N. KNOTT ST.
PORTLAND, OR 97227
(503)288-9393
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STREIMER

SMOKE CONTROL PANEL
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

SHEET METAL WORKERS LOCAL UNION NO. 16 PORTLAND, OR

Job No. 19-1289

M601

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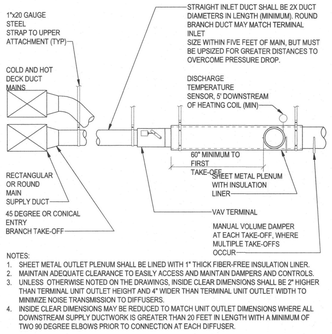
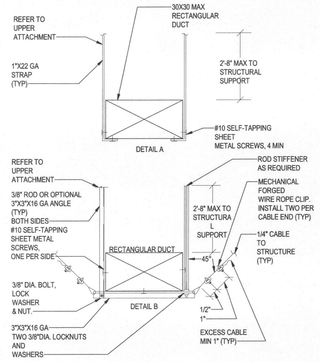
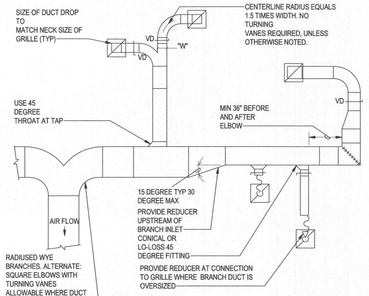


NOTES:
1. SHEET METAL OUTLET PLENUM SHALL BE LINED WITH 1" THICK FIBER-FREE INSULATION LINER.
2. MAINTAIN ADEQUATE CLEARANCE TO EASILY ACCESS AND MAINTAIN DAMPERS AND CONTROLS.
3. UNLESS OTHERWISE NOTED ON THE DRAWINGS, INSIDE CLEAR DIMENSIONS SHALL BE 2" HIGHER THAN TERMINAL UNIT OUTLET HEIGHT AND 4" WIDER THAN TERMINAL UNIT OUTLET WIDTH TO MINIMIZE NOISE TRANSMISSION TO DIFFUSERS.
4. INSIDE CLEAR DIMENSIONS MAY BE REDUCED TO MATCH UNIT OUTLET DIMENSIONS WHERE ALL DOWNSTREAM SUPPLY DUCTWORK IS GREATER THAN 20 FEET IN LENGTH WITH A MINIMUM OF TWO 90 DEGREE ELBOWS PRIOR TO CONNECTION AT EACH DIFFUSER.

6 DUAL DUCT VAV TERMINAL
SCALE: NONE

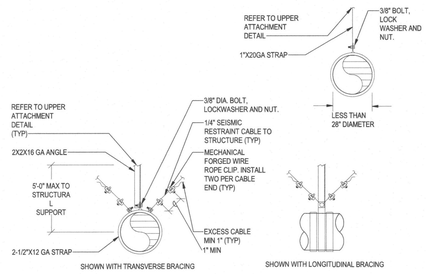


NOTES:
1. MAXIMUM SPACING OF HANGERS SHALL BE 5'-0".
2. IF A FLEXIBLE CONNECTION IS INSTALLED BETWEEN THE MECHANICAL EQUIPMENT AND THE DUCT, THEN THIS DETAIL MAY BE USED. OTHERWISE, USE DETAIL B BELOW.
3. SEISMIC RESTRAINT CABLES MAY BE OMITTED WHERE:
   A. THERE IS A FLEXIBLE CONNECTION BETWEEN THE MECHANICAL EQUIPMENT AND
   B. RECTANGULAR DUCT IS LESS THAN 6 SQUARE FEET IN AREA OR
   C. DUCT OF ANY SIZE IS SUPPORTED WITHIN 12" OF STRUCTURE AS MEASURED FROM THE TOP OF DUCT TO THE BOTTOM OF STRUCTURE.
4. WHERE SEISMIC RESTRAINTS ARE REQUIRED,
   A. PROVIDE TRANSVERSE BRACING AT 30 FT AND
   B. LONGITUDINAL BRACING AT 60 FT.
5. VERTICAL HANGERS, DIAGONAL AND HORIZONTAL BRACES TO BE SIZED IN ACCORDANCE WITH SMACNA SEISMIC RESTRAINT MANUAL TABLE 5-1 AND 5-2.
6. REFER TO STRUCTURAL DETAILS FOR ADDITIONAL INFORMATION NOT SHOWN HERE.
7. INSTALL ROD STIFFENER AS REQUIRED. REFER TO STRUCTURAL DESIGN FOR ADDITIONAL ATTACHMENT REQUIREMENTS. REFER TO HILTI ICC#ESR-1917 PRE-APPROVAL. DUCT HANGERS AND SUPPORTS SHALL COMPLY WITH PRE-APPROVED B-LINE "SEISMIC RESTRAINT SYSTEM".



NOTES:
1. PROVIDE DUCT LINER AND/OR EXTERNAL DUCT INSULATION AS NOTED ON PLANS OR IN SPECIFICATIONS.
2. PROVIDE HANGERS AND SEISMIC BRACING PER SMACNA AND BUILDING CODE.
3. LOCATE MANUAL BALANCING DAMPERS IMMEDIATELY DOWNSTREAM OF EACH DUCT TAP.
4. MAINTAIN MINIMUM 36" CLEARANCE BETWEEN LEADING OR TRAILING ELBOW JOINT AND DUCT TAP FITTINGS.
5. TURNING VANES REQUIRED ON RECTANGULAR DUCT SYSTEM ELBOWS. SINGLE THICKNESS VANES UP TO 25" HEIGHT AND DOUBLE THICKNESS VANES IN DUCTS GREATER THAN 25" HEIGHT. RADIUSED ELBOWS MAY BE USED AS AN ALTERNATE.
6. NO TURNING VANES REQUIRED ON DUCT SIZES LESS THAN 180 SQ. IN. IF DUCT VELOCITY IS LESS THAN 1500 FPM.

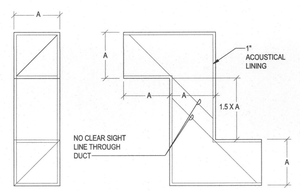
2 RETURN EXHAUST DUCT FITTINGS
SCALE: NONE



NOTES:
1. HANGERS SHALL BE INSTALLED AT EVERY CHANGE OF DIRECTION AND NO MORE THAN 10'-0" APART.
2. PROVIDE A FLEXIBLE CONNECTION BETWEEN MECHANICAL EQUIPMENT AND DUCT.
3. STRAP MAY BE REDUCED TO 1"X22 GA FOR DUCT 24" DIA. AND LESS IN DIAMETER.
4. SEISMIC RESTRAINT CABLES MAY BE OMITTED WHERE DUCT IS SUPPORTED WITHIN 12" OF STRUCTURE AS MEASURED FROM THE TOP OF DUCT TO THE BOTTOM OF STRUCTURE.
5. WHERE SEISMIC CABLE RESTRAINTS ARE REQUIRED,
   A. PROVIDE SEISMIC CABLE TRANSVERSE BRACING AT 30 FT AND
   B. SEISMIC CABLE LONGITUDINAL BRACING AT 60 FT.
   C. SEISMIC CABLE RESTRAINTS ARE NOT REQUIRED AT EVERY HANGER LOCATION.
6. VERTICAL HANGERS, DIAGONAL AND HORIZONTAL BRACES TO BE SIZED IN ACCORDANCE WITH SMACNA SEISMIC RESTRAINT MANUAL.
7. COORDINATE WITH STRUCTURAL ENGINEER FOR UPPER ATTACHMENTS.

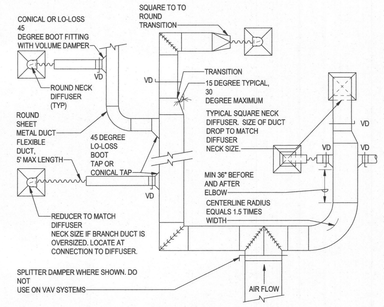
5 ROUND DUCT SUPPORT
SCALE: NONE

4 RECTANGULAR DUCT SUPPORT
SCALE: NONE



NOTES:
1. TRANSFER DUCT SHALL BE SHEET METAL CONSTRUCTION.
2. SIZE TRANSFER DUCT FOR MAXIMUM 500 FPM VELOCITY:
   A = 14", 500 CFM
   A = 20", 1125 CFM
   A = 26", 2000 CFM

3 TRANSFER DUCT
SCALE: NONE



NOTES:
1. PROVIDE DUCT LINER AND/OR EXTERNAL DUCT INSULATION AS NOTED ON PLANS OR IN SPECIFICATIONS.
2. PROVIDE HANGERS AND SEISMIC BRACING PER SMACNA AND BUILDING CODE REQUIREMENTS.
3. LOCATE MANUAL BALANCING DAMPERS IMMEDIATELY DOWNSTREAM OF EACH DUCT TAP.
4. CUSHION HEADS OR BULLHEAD TEES ARE NOT ALLOWED.
5. MAINTAIN MINIMUM 36" CLEARANCE BETWEEN LEADING OR TRAILING ELBOW JOINT AND DUCT TAP FITTINGS.
6. RADIUSED ELBOWS OR TURNING VANES REQUIRED ON RECTANGULAR DUCT SYSTEM ELBOWS. SINGLE THICKNESS VANES UP TO 25" HEIGHT AND DOUBLE THICKNESS VANES IN DUCTS GREATER THAN 25" HEIGHT.

1 SUPPLY DUCT FITTINGS
SCALE: NONE

NMD
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DESCRIPTION
#
Scale: NONE
740 N. KNOTT ST.
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(503)288-9393
(503)288-3327 FAX
STREIMER

EXPIRES: 06/30/20
REGISTERED PROFESSIONAL ENGINEER
OREGON
JANUARY 10, 1978
James B. Woods
JAMES B. WOODS

MECHANICAL DETAILS
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
330 SW JEFFERSON ST
PORTLAND, OR 97201

City of Portland
REVIEWED FOR CODE COMPLIANCE
MAY 06 2020
Ref: Bldg Permit #18-208035-CO
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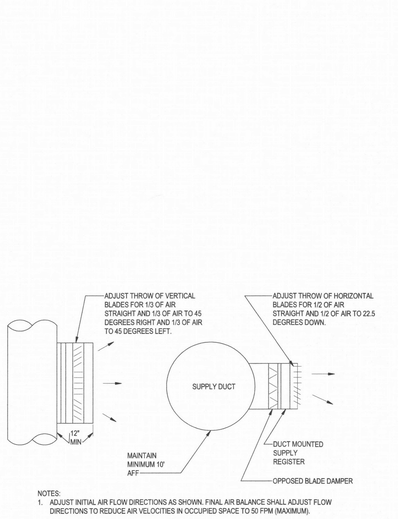
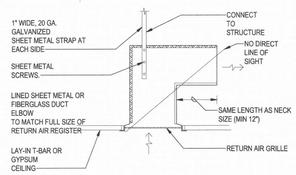


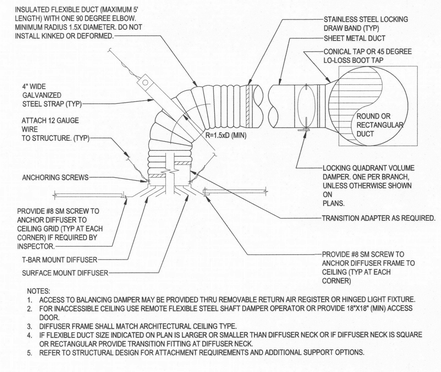
NOTES:
1. ADJUST INITIAL AIR FLOW DIRECTIONS AS SHOWN. FINAL AIR BALANCE SHALL ADJUST FLOW DIRECTIONS TO REDUCE AIR VELOCITIES IN OCCUPIED SPACE TO 50 FPM (MAXIMUM).

6 EXPOSED DUCT SUPPLY REGISTER
SCALE: NONE



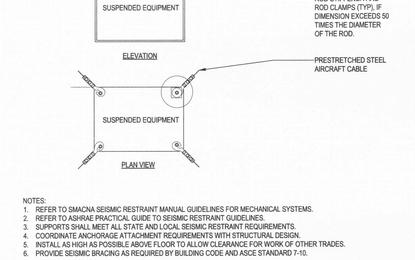
NOTES:
1. REFER TO PLANS FOR SIZES AND CONTINUATION.

5 RETURN PLENUM BOOT - LINED
SCALE: NONE



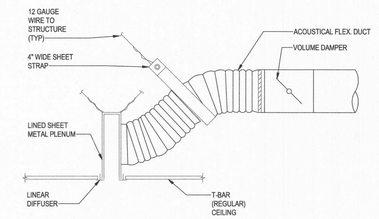
NOTES:
1. ACCESS TO BALANCING DAMPER MAY BE PROVIDED THRU REMOVABLE RETURN AIR REGISTER OR HINGED LIGHT FIXTURE.
2. FOR INACCESSIBLE CEILING USE REMOTE FLEXIBLE STEEL SHAFT DAMPER OPERATOR OR PROVIDE 18"X18" (MIN) ACCESS DOOR.
3. DIFFUSER FRAME SHALL MATCH ARCHITECTURAL CEILING TYPE.
4. IF FLEXIBLE DUCT SIZE INDICATED ON PLAN IS LARGER OR SMALLER THAN DIFFUSER NECK OR IF DIFFUSER NECK IS SQUARE OR RECTANGULAR PROVIDE TRANSITION FITTING AT DIFFUSER NECK.
5. REFER TO STRUCTURAL DESIGN FOR ATTACHMENT REQUIREMENTS AND ADDITIONAL SUPPORT OPTIONS.

4 CEILING DIFFUSER MOUNTING-FLEXIBLE
SCALE: NONE



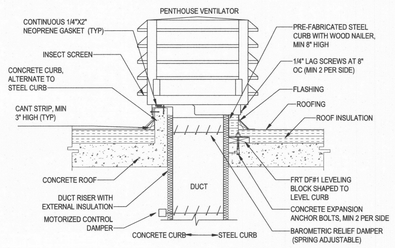
NOTES:
1. REFER TO SMACNA SEISMIC RESTRAINT MANUAL GUIDELINES FOR MECHANICAL SYSTEMS.
2. REFER TO ASHRAE PRACTICAL GUIDE TO SEISMIC RESTRAINT GUIDELINES.
3. SUPPORTS SHALL MEET ALL STATE AND LOCAL SEISMIC RESTRAINT REQUIREMENTS.
4. COORDINATE ANCHORAGE ATTACHMENT REQUIREMENTS WITH STRUCTURAL DESIGN.
5. INSTALL AS HIGH AS POSSIBLE ABOVE FLOOR TO ALLOW CLEARANCE FOR WORK OF OTHER TRADES.
6. PROVIDE SEISMIC BRACING AS REQUIRED BY BUILDING CODE AND ASCE STANDARD 7-10.

3 SUSPENDED EQUIPMENT MOUNTING
SCALE: NONE



NOTES:
1. REFER TO PLANS FOR SIZES AND CONTINUATION.

2 LINEAR DIFFUSER
SCALE: NONE



NOTES:
1. FOR STAIRWELL RELIEF VENTS PROVIDE BAROMETRIC DAMPER WITH ADJUSTABLE COUNTERWEIGHTS TO BE SET BY TEST AND BALANCE AGENCY. SET TO MAINTAIN 2500 CFM (MINIMUM) BASED ON MAINTAING 0.05" SP (MINIMUM) AT ALL STAIRWELL DOORS.
2. COORDINATE ROOF OPENING, BLOCKING, CURBING, CANT STRIPS & FLASHING WITH ROOFING INSTALLER. ROOF PENETRATIONS SHALL NOT VOID ROOF WARRANTY.
3. MAINTAIN 15' CLEARANCE BETWEEN OUTSIDE AIR INTAKE AND EXHAUST/RELIEF, PLUMBING VENT OPENINGS. MAINTAIN MINIMUM 25' CLEARANCE AT CRITICAL AREAS AND HEALTHCARE SPACES.
4. PROVIDE PACKING AND SEALING MATERIALS AS REQUIRED BY ROOF RATING.
5. ALL SIZING, LOCATION, AND ANCHORING SHALL BE COORDINATED WITH STRUCTURAL DESIGN.
6. COORDINATE WITH STRUCTURAL ENGINEER FOR ATTACHMENT AND FRAMING REQUIREMENTS.

1 PENTHOUSE VENTILATOR-CONCRETE ROOF
SCALE: NONE

NMD

#	DESCRIPTION	DATE
	REVISIONS	

Scale: NONE

740 N. KNOTT ST.
PORTLAND, OR 97227
(503)288-9393
(503)288-3327 FAX

STREIMER

EXPIRES: 06/30/20

MECHANICAL DETAILS
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

City of Portland
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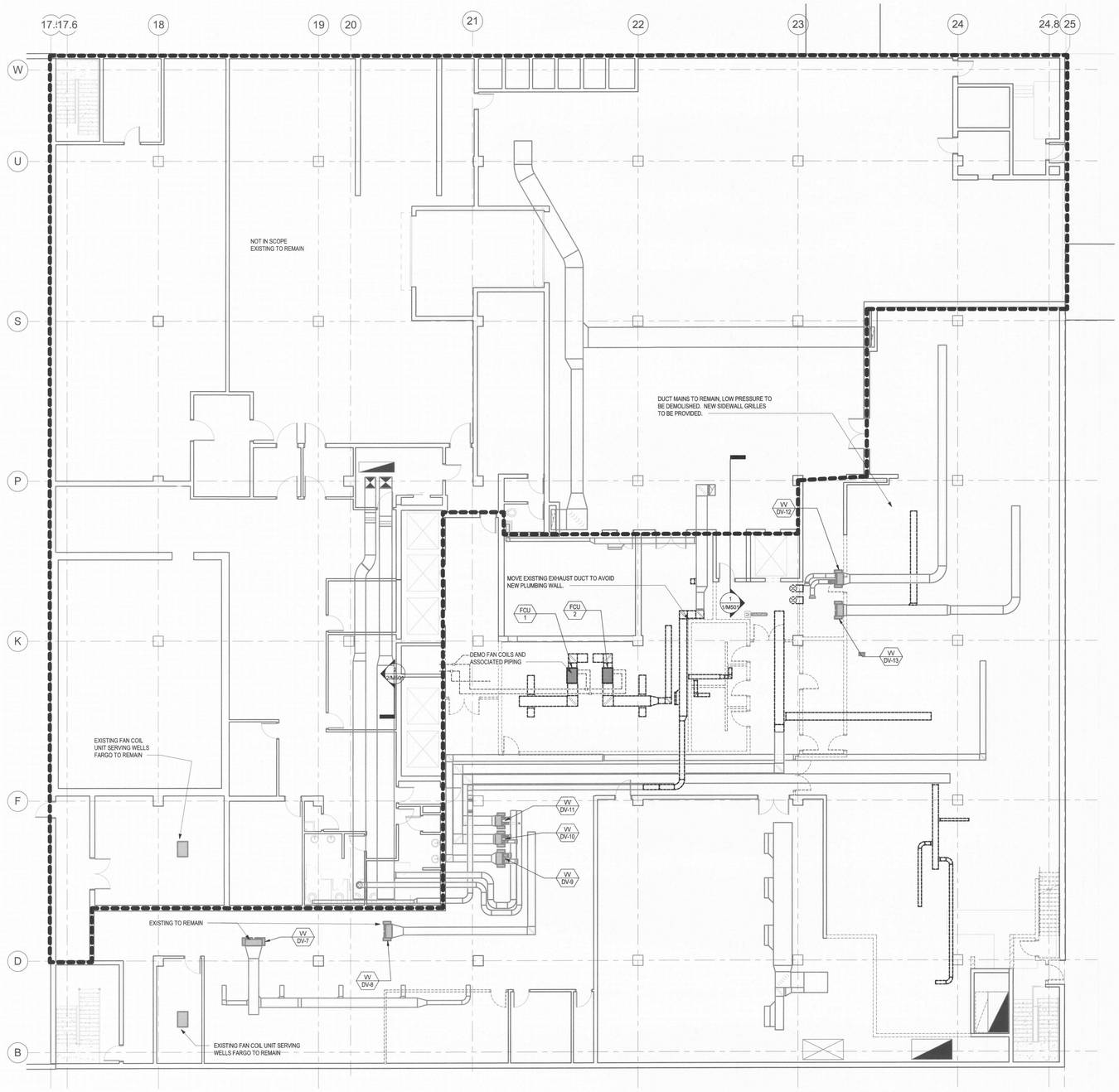

SHEET NOTES

A. DEMOLITION SCOPE OF EQUIPMENT, DUCTWORK, PIPING, ETC. IN EXISTING BUILDING IS DEVELOPED THROUGH REFERENCE OF EXISTING AS-BUILT DOCUMENTATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK.

B. COMPONENTS SHOWN LIGHT ARE EXISTING TO REMAIN.

C. FOR CEILING SPACES THAT ARE TO HAVE THE ASBESTOS ABATED PER THE ABATEMENT PLANS, THE FOLLOWING SCOPE OF WORK IS ASSUMED:
   a. LOWER TO FLOOR EXISTING DUCTWORK. MARK DUCTWORK TO BE REMOVED FROM SITE OR CLEANED (ASSUMED TO BE BY ABATEMENT CONTRACTOR).
   b. RE-INSTALL HOT AND COLD DUCT MAINS AND PERIMETER AIR SYSTEM ONCE DUCTWORK HAS BEEN CLEANED AND CEILING HAS BEEN ABATED.

KEYED NOTES

1 LEVEL B1 - FLOOR PLAN - HVAC - DEMOLITION
SCALE: 1/8" = 1'-0"

Ref. Bldg Permit #18-208035-CO

1/8" = 1'-0"
0 8' - 0" 16' - 0" 24' - 0" 32' - 0"

#	DESCRIPTION	DATE
2	Permit Revision - REV01	12/17/2020

KMD

Scale: 1/8" = 1'-0"

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STREIMER

EXPIRES: 06/30/20

LEVEL B1 - MECHANICAL DEMOLITION
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
330 SW JEFFERSON ST
PORTLAND, OR 97201

City of Portland
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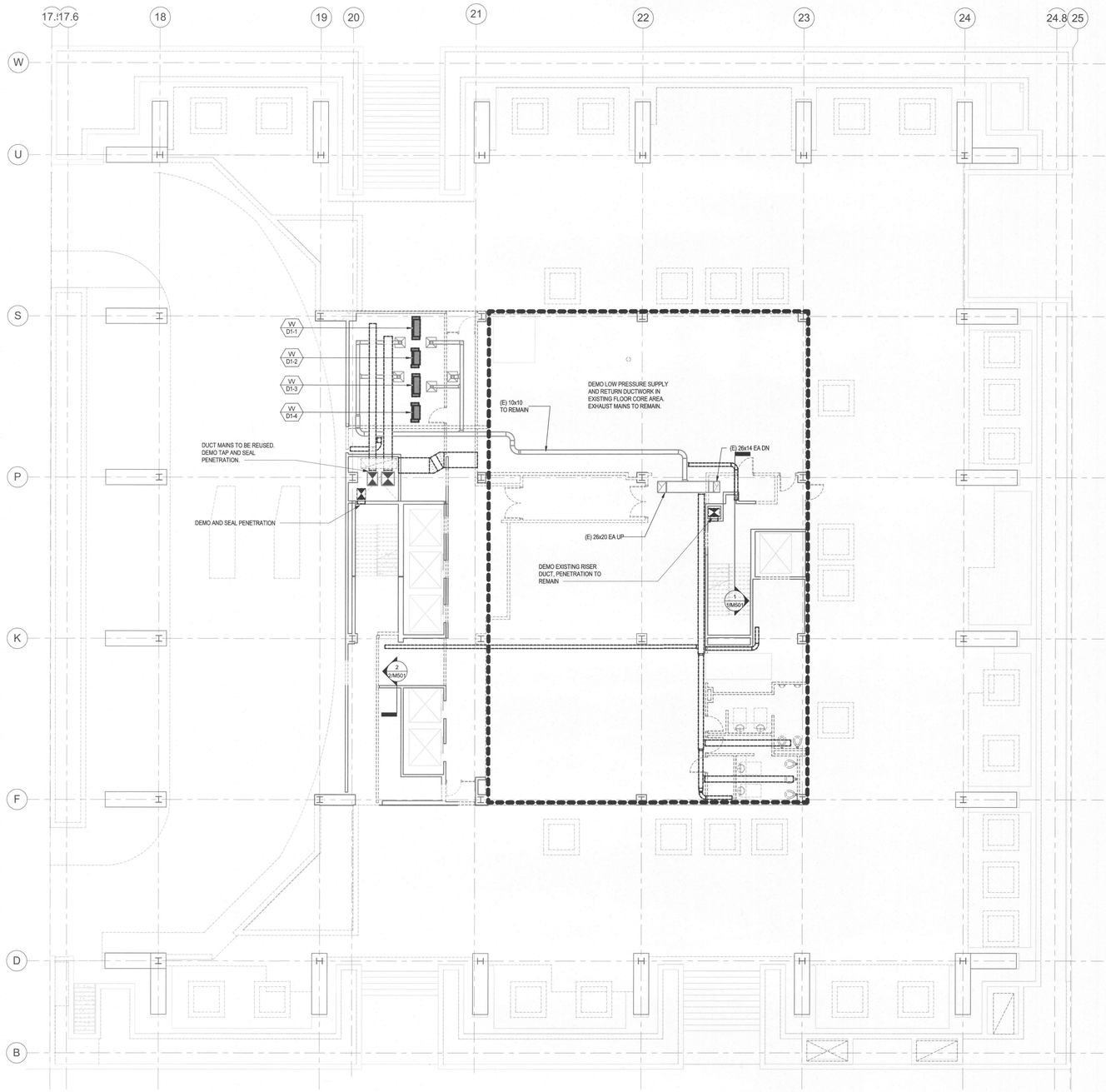

1 **LEVEL 01 - FLOOR PLAN - HVAC - DEMOLITION**
SCALE: 1/8" = 1'-0"

SHEET NOTES

A. DEMOLITION SCOPE OF EQUIPMENT, DUCTWORK, PIPING, ETC. IN EXISTING BUILDING IS DEVELOPED THROUGH REFERENCE OF EXISTING AS-BUILT DOCUMENTATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK.

B. COMPONENTS SHOWN LIGHT ARE EXISTING TO REMAIN.

C. FOR CEILING SPACES THAT ARE TO HAVE THE ASBESTOS ABATED PER THE ABATEMENT PLANS, THE FOLLOWING SCOPE OF WORK IS ASSUMED:
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   b. RE-INSTALL HOT AND COLD DUCT MAINS AND PERIMETER AIR SYSTEM ONCE DUCTWORK HAS BEEN CLEANED AND CEILING HAS BEEN ABATED.

KEYED NOTES

#	REVISIONS DESCRIPTION	NMD DATE
2	Permit Revision - REV01	1/31/2020

Scale 1/8" = 1'-0"

STREIMER
740 N. KNOTT ST.
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EXPIRES: 06/30/20
REGISTERED PROFESSIONAL ENGINEER
80987PE
JAMES B. WOODS

LEVEL 01 - MECHANICAL DEMOLITION
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

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1/8" = 1'-0"
0 8'-0" 16'-0" 24'-0" 32'-0"

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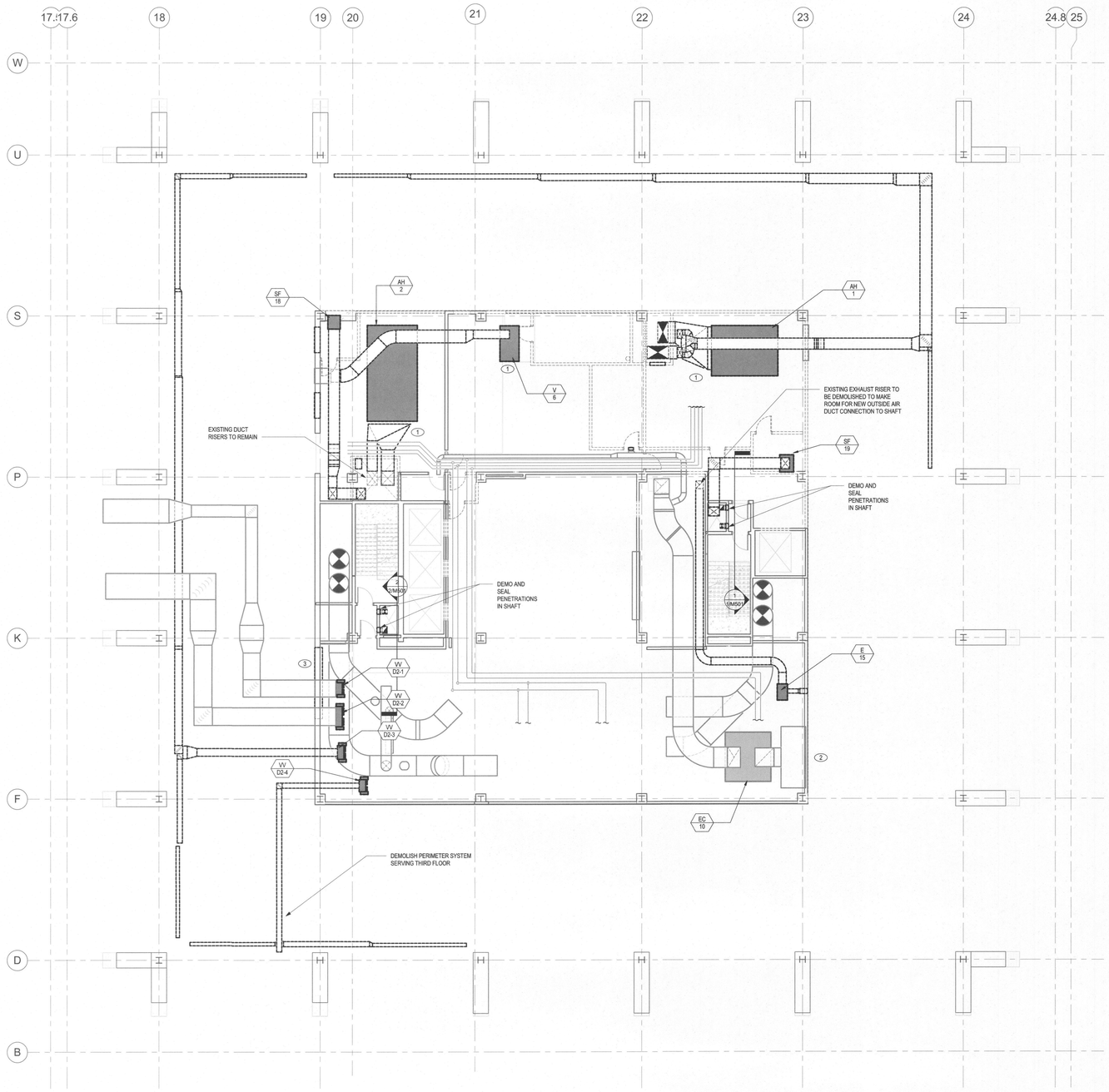

SHEET NOTES

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KEYED NOTES (#)

1 DEMO UNIT AND ASSOCIATED DUCTWORK AND PIPING.
2 DEMO EXISTING LOUVER. DUCT CONNECTION TO REMAIN.
3 DEMO EXISTING LOUVER.

1/8" = 1'-0"
0 8'-0" 16'-0" 24'-0" 32'-0"

1 LEVEL 02 - FLOOR PLAN - HVAC - DEMOLITION
SCALE: 1/8" = 1'-0"

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1	Permit Revision - REV01	10/1/2020
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EXPIRES: 06/30/20
REGISTERED PROFESSIONAL ENGINEER
OREGON
JAMES B. WOODS

LEVEL 02 - MECHANICAL DEMOLITION
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

Job No. 1901289

MD02

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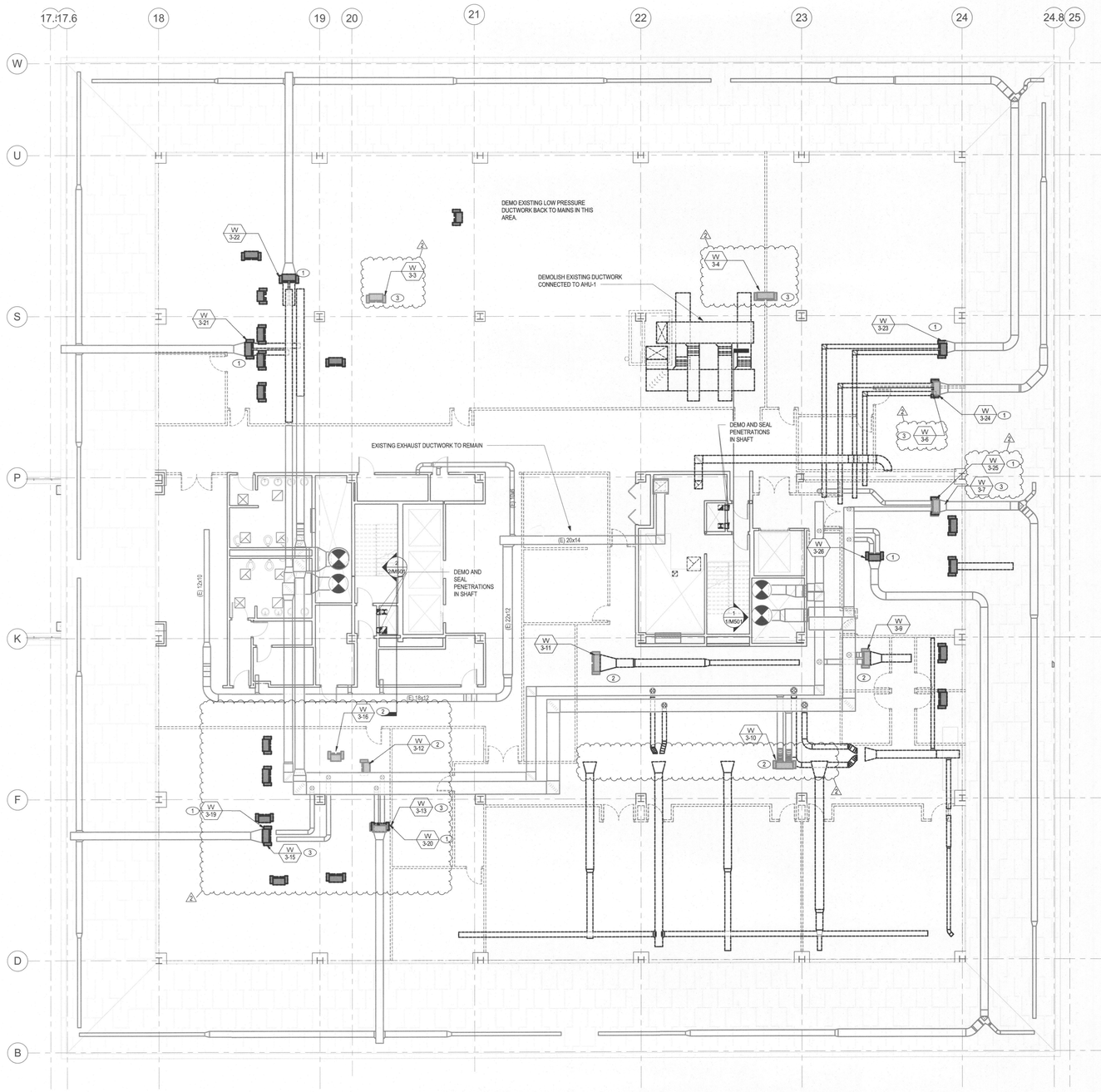

SHEET NOTES

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   b. RE-INSTALL HOT AND COLD DUCT MAINS AND PERIMETER AIR SYSTEM ONCE DUCTWORK HAS BEEN CLEANED AND CEILING HAS BEEN ABATED.

KEYED NOTES

1 DEMO AND REPLACE VAV BOX SERVING PERIMETER SYSTEM. PERIMETER DUCTWORK TO REMAIN.

2 DEMO LOW PRESSURE DUCTWORK. EXISTING VAV/BOX TO REMAIN.

3 RELOCATED VAV BOX. UNIT TAG CORRESPONDS TO NEW UNIT NUMBERING. CONTRACTOR TO FIELD VERIFY EXISTING BOX SIZES AND RELOCATE UNITS AS NEEDED TO SERVE TEMP HEAT AND PERIMETER SPACES.

1 **LEVEL 03 - FLOOR PLAN - HVAC - DEMOLITION**
SCALE: 1/8" = 1'-0"

Ref. Bldg Permit #18-208035-CO

1/8" = 1'-0"
0 8' - 0" 16' - 0" 24' - 0" 32' - 0"

City of Portland
Bureau of Development Services
By [illegible] Date 2/27/2020
Approved by Planning and Zoning Review

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In case file #LU 18-149030 DZ.
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JAMES B. WOODS
JAMES B. WOODS

LEVEL 03 - MECHANICAL DEMOLITION
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
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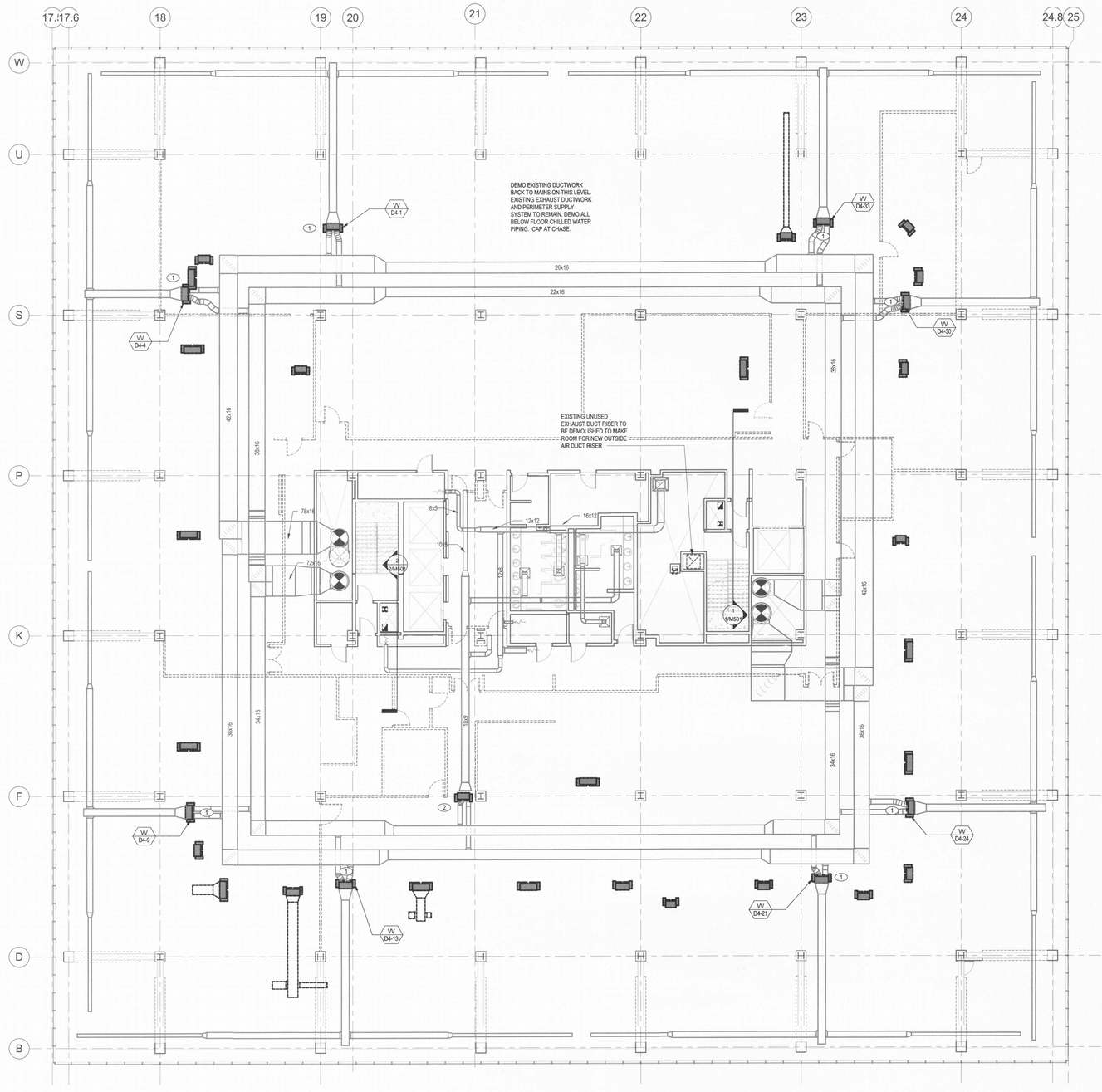

SHEET NOTES

A. DEMOLITION SCOPE OF EQUIPMENT, DUCTWORK, PIPING, ETC. IN EXISTING BUILDING IS DEVELOPED THROUGH REFERENCE OF EXISTING AS-BUILT DOCUMENTATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK.

B. COMPONENTS SHOWN LIGHT ARE EXISTING TO REMAIN.

2 C. FOR CEILING SPACES THAT ARE TO HAVE THE ASBESTOS ABATED PER THE ABATEMENT PLANS, THE FOLLOWING SCOPE OF WORK IS ASSUMED:

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b. RE-INSTALL HOT AND COLD DUCT MAINS AND PERIMETER AIR SYSTEM ONCE DUCTWORK HAS BEEN CLEANED AND CEILING HAS BEEN ABATED.

KEYED NOTES

1 DEMO AND REPLACE VAV BOX SERVING PERIMETER SYSTEM. PERIMETER DUCTWORK TO REMAIN.

2 DEMO AND REPLACE VAV BOX SERVING CORE. EXISTING DUCTWORK TO REMAIN.

1 LEVEL 04 - FLOOR PLAN - HVAC - DEMOLITION
SCALE: 1/8" = 1'-0"

Ref. Bldg Permit #18-208035-CO

1/8" = 1'-0"
0 8'-0" 16'-0" 24'-0" 32'-0"

REVISIONS		
#	DESCRIPTION	DATE
2	Permit Revision - REV01	1/31/2020

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Scale 1/8" = 1'-0"

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REGISTERED PROFESSIONAL ENGINEER
OREGON
JAMES B. WOODS
EXPIRES: 06/30/20

LEVEL 04 - MECHANICAL DEMOLITION
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
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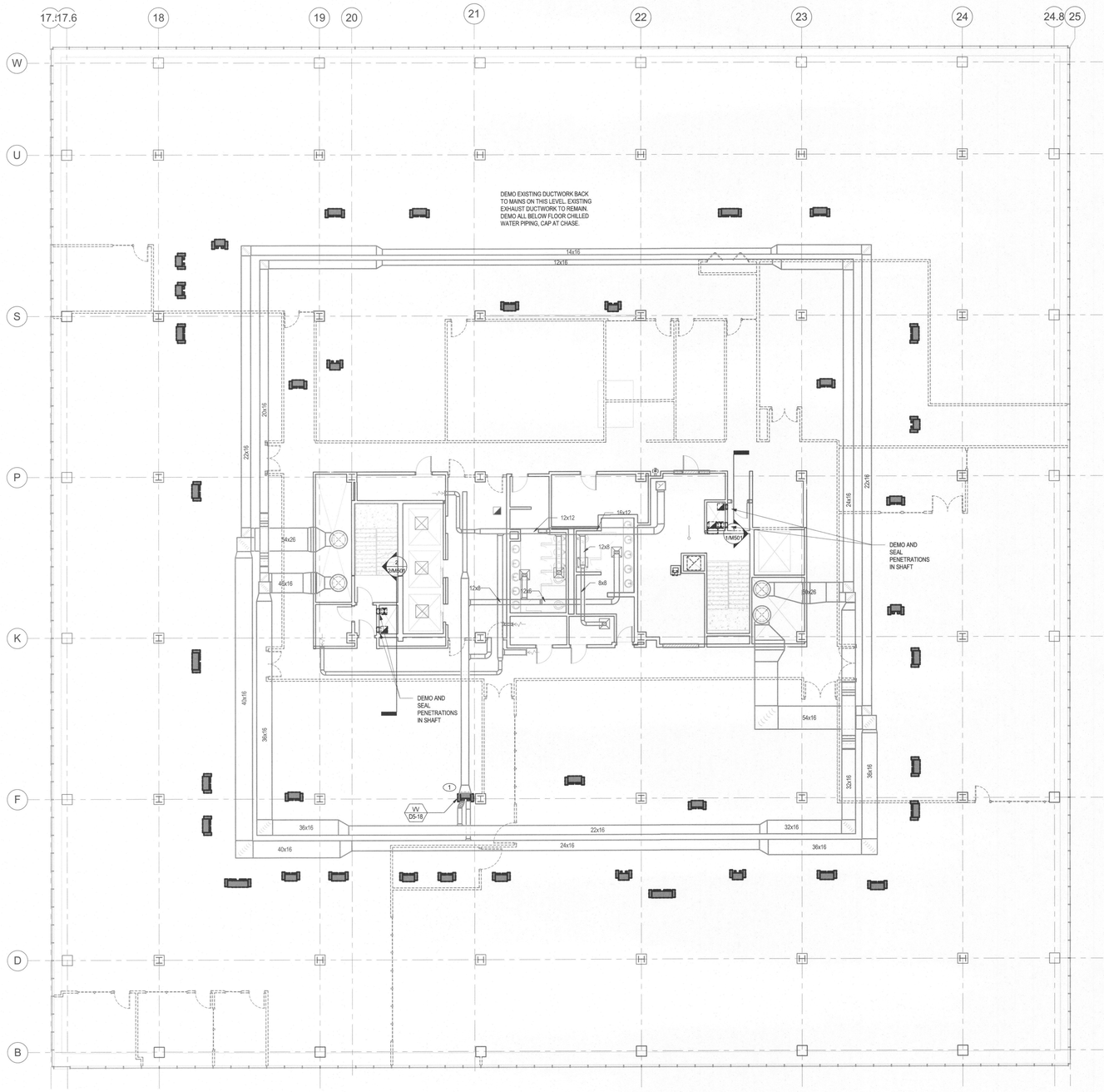

SHEET NOTES

A. DEMOLITION SCOPE OF EQUIPMENT, DUCTWORK, PIPING, ETC. IN EXISTING BUILDING IS DEVELOPED THROUGH REFERENCE OF EXISTING AS-BUILT DOCUMENTATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK.

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KEYED NOTES

1 DEMO AND REPLACE VAV BOX SERVING CORE. EXISTING DUCTWORK TO REMAIN.

Ref: Bldg Permit #18-208035-CO

1/8" = 1'-0"
0 8' - 0" 16' - 0" 24' - 0" 32' - 0"

1 LEVEL 05 - FLOOR PLAN - HVAC - DEMOLITION

SCALE: 1/8" = 1'-0"

#	DESCRIPTION	DATE
2	Permit Revision - REV01	10/1/2020

NMD

Scale 1/8" = 1'-0"

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PORTLAND, OR 97227
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STREIMER

EXPIRES: 06/30/20
REGISTERED PROFESSIONAL ENGINEER
OREGON
JUNE 30, 2015
JAMES B. WOODS

LEVEL 05 - MECHANICAL DEMOLITION
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

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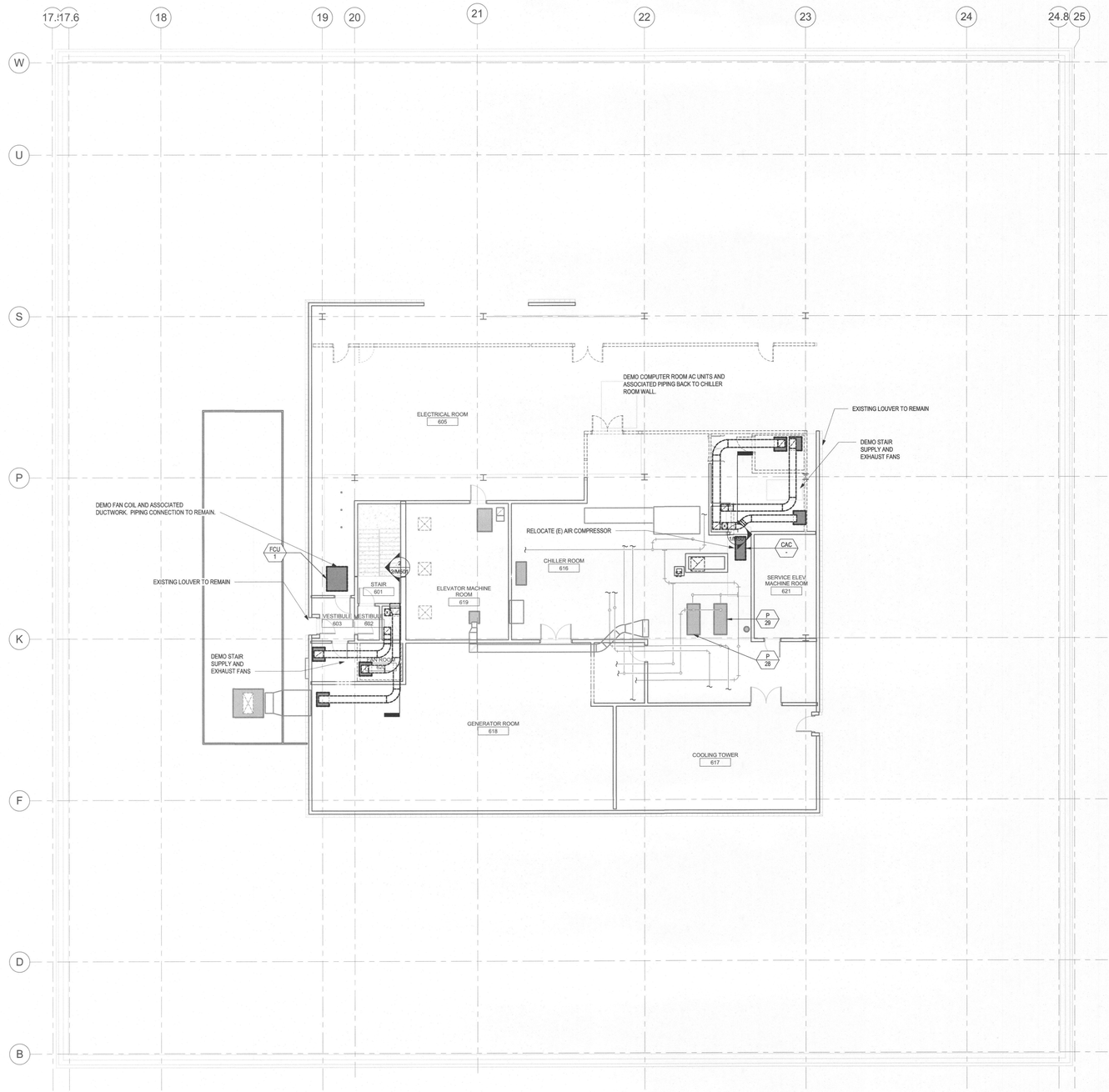

SHEET NOTES

A. DEMOLITION SCOPE OF EQUIPMENT, DUCTWORK, PIPING, ETC. IN EXISTING BUILDING IS DEVELOPED THROUGH REFERENCE OF EXISTING AS-BUILT DOCUMENTATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK.

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KEYED NOTES

1 LEVEL 06 - FLOOR PLAN - HVAC - DEMOLITION
SCALE: 1/8" = 1'-0"

1/8" = 1'-0"
0 8' - 0" 16' - 0" 24' - 0" 32' - 0"

Ref. Bldg Permit #18-208035-CO

City of Portland
Bureau of
Development Services
Date 2/27/2020
Approved by
Planning and Zoning Review

Proposal and design as approved
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Scale: 1/8" = 1'-0"

710 N. KNOTT ST.
PORTLAND, OR 97227
(503)288-9393
(503)288-3327 FAX

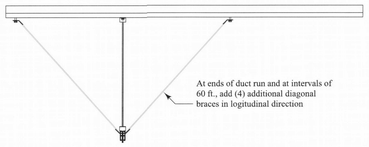
STREIMER

EXPIRES: 06/30/20
REGISTERED PROFESSIONAL ENGINEER
90987PE
OREGON
JAMES B. WOODS

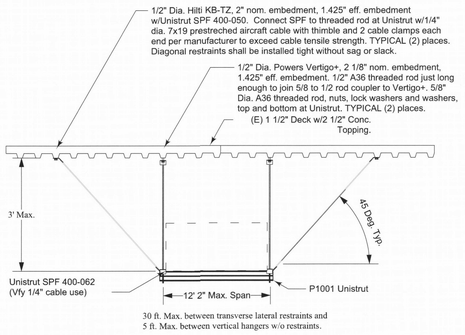
LEVEL 06 - MECHANICAL DEMOLITION
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR 97201

Job No. 19-1289

MD06



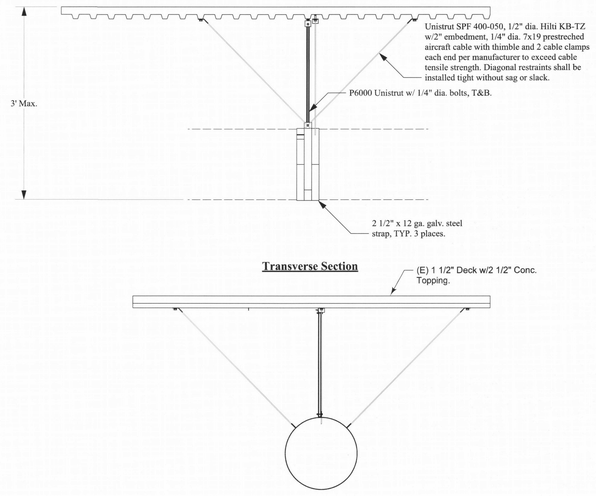
Longitudinal Section



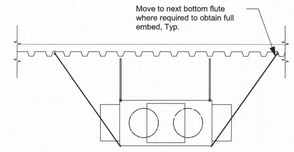
30 ft. Max. between transverse lateral restraints and
5 ft. Max. between vertical hangers w/o restraints.

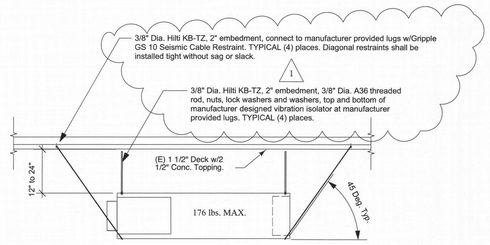
Transverse Section

1 Seismic Bracing for Rectangular Ducts of 6 SF or More
NTS

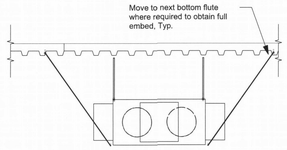


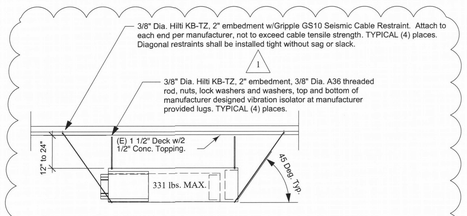
2 HVAC Ducts > 33" Dia.
NTS



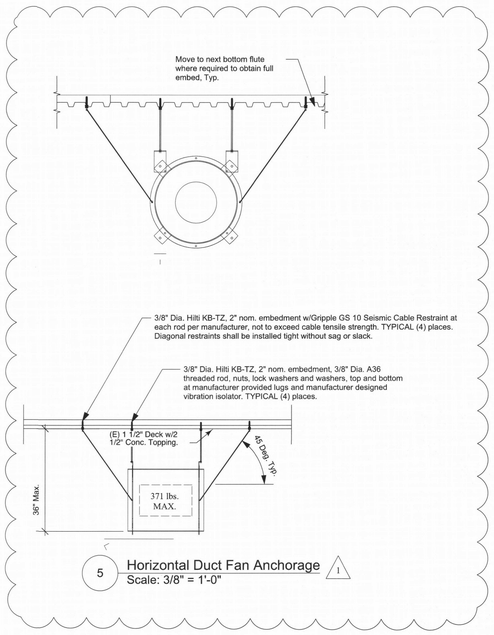


3 Titus VAV Support
Scale: 1/2" = 1'-0"

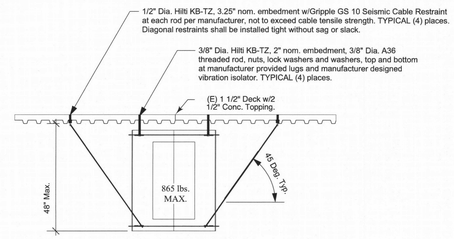




4 FCU 6-1 Fan Coil Unit Anchorage
Scale: 3/8" = 1'-0"



5 Horizontal Duct Fan Anchorage 1
Scale: 3/8" = 1'-0"



6 Vertical Duct Fan Anchorage 1
Scale: 3/8" = 1'-0"

NOTES:
1) Provide dynamic vibration isolators per manufacturer.
2) Periodic Special Inspection shall be provided for post-installed anchors.

Authentic only if valid digital certificate is present. User should verify validity of the digital certificate before relying on contents. Certificate will be invalidated if the contents are altered.

Digitally sealed on a dual CPU, 2.66 GHz 6-Core Intel Xeon Apple Mac Pro running Windows 10, using Nitro Pro 11 and 128-bit AES encryption.

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER 57738 OREGON JULY 19, 1989 WILLIAM J. KIRKHAM
EXPIRATION DATE:
Expires 6/20/21

Digitally signed by William J. Kirkham
DN: cn=William J. Kirkham c=US o=APT Engineers ou=Engineering e=wkirkham@aptengineers.com
Reason: I am the author of this document
Location: Eudora, KS 66025
Date: 2019-12-12 11:51-06:00

City of Portland
REVIEWED FOR CODE COMPLIANCE
MAY 06 2020
Permit Number

Drawn by Author
Scale NONE

REV.	DATE	DESCRIPTION
1	12-12-19	Change fans and anchor systems

740 N. KNOTT ST.
PORTLAND, OR 97227
(503)288-9393
(503)288-3327 FAX

streimer SHEET METAL WORKS, INC.

MECHANICAL DETAILS

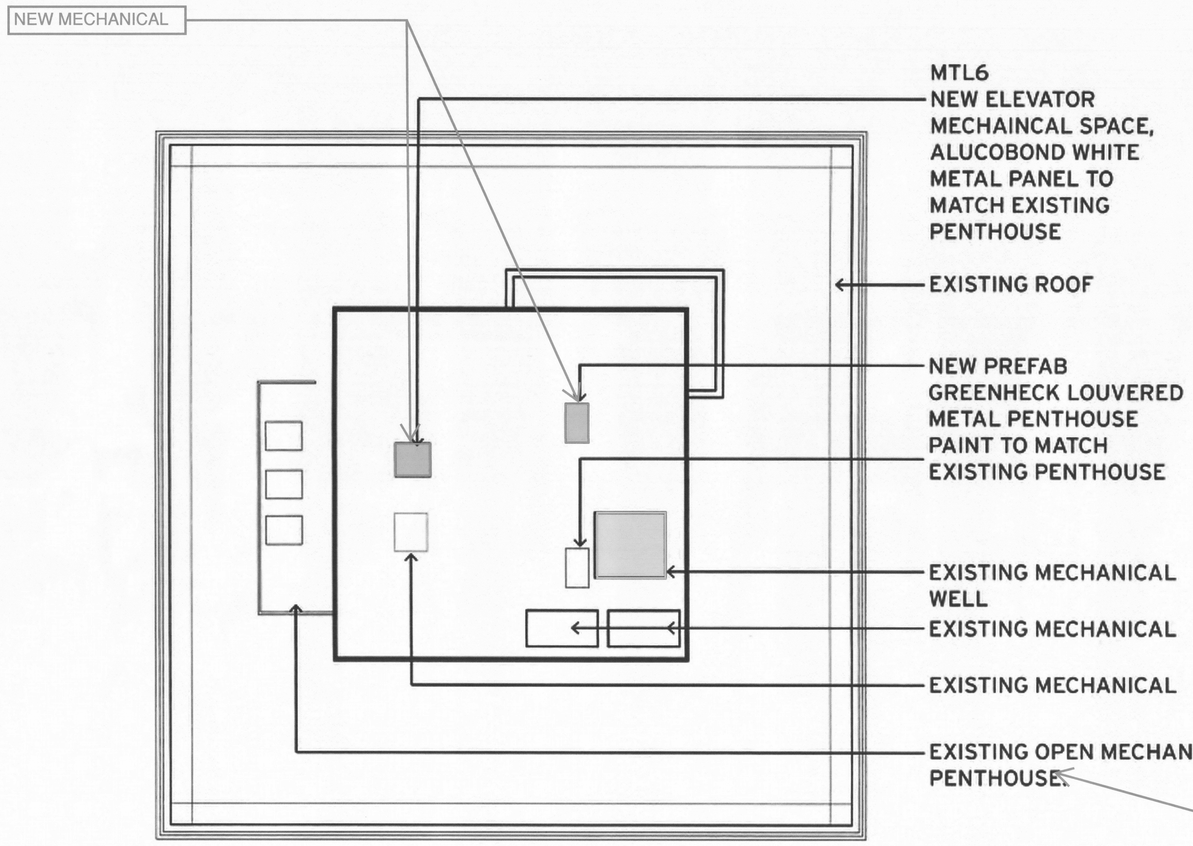
WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK
350 SW JEFFERSON ST
PORTLAND, OR
97201

Job No. 1701030

S001

19-107244-REV-1-MT

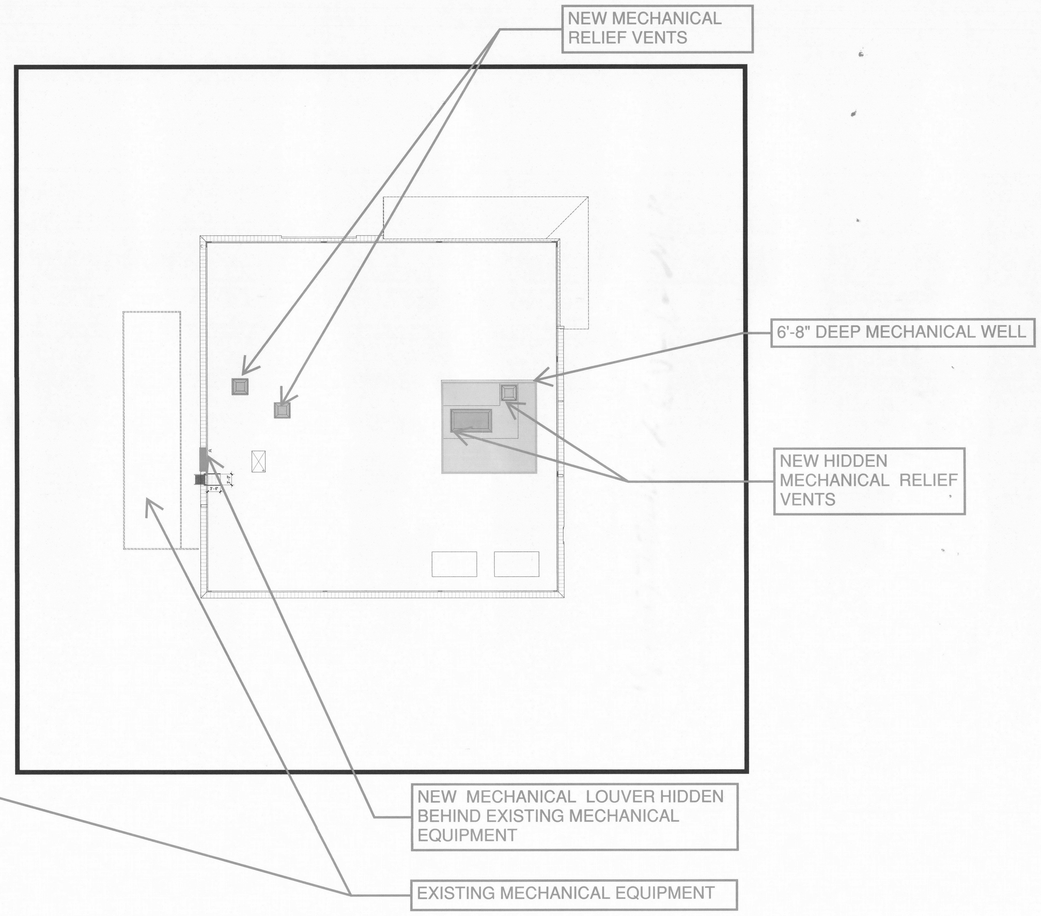
DESIGN REVIEW DOCUMENT



Approved
City of Portland - Bureau of Development Services
Planner _____ Date 5/17/2018
* This approval applies only to the reviews requested and is subject to all conditions of approval. Additional zoning requirements may apply.

0 5 10 15 20
1/32" = 1'-0"

CURRENT CONSTRUCTION DRAWINGS



Proposal and design as approved
In case file #LU 18-119030 DZ
No field changes allowed.

City of Portland
Bureau of
Development Services
By _____ Date 2/27/2020
Approved by
Planning and Zoning Review

City of Portland
REVIEWED FOR CODE COMPLIANCE
MAY 06 2020
Permit Number

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FEB 25 2020
City of Portland
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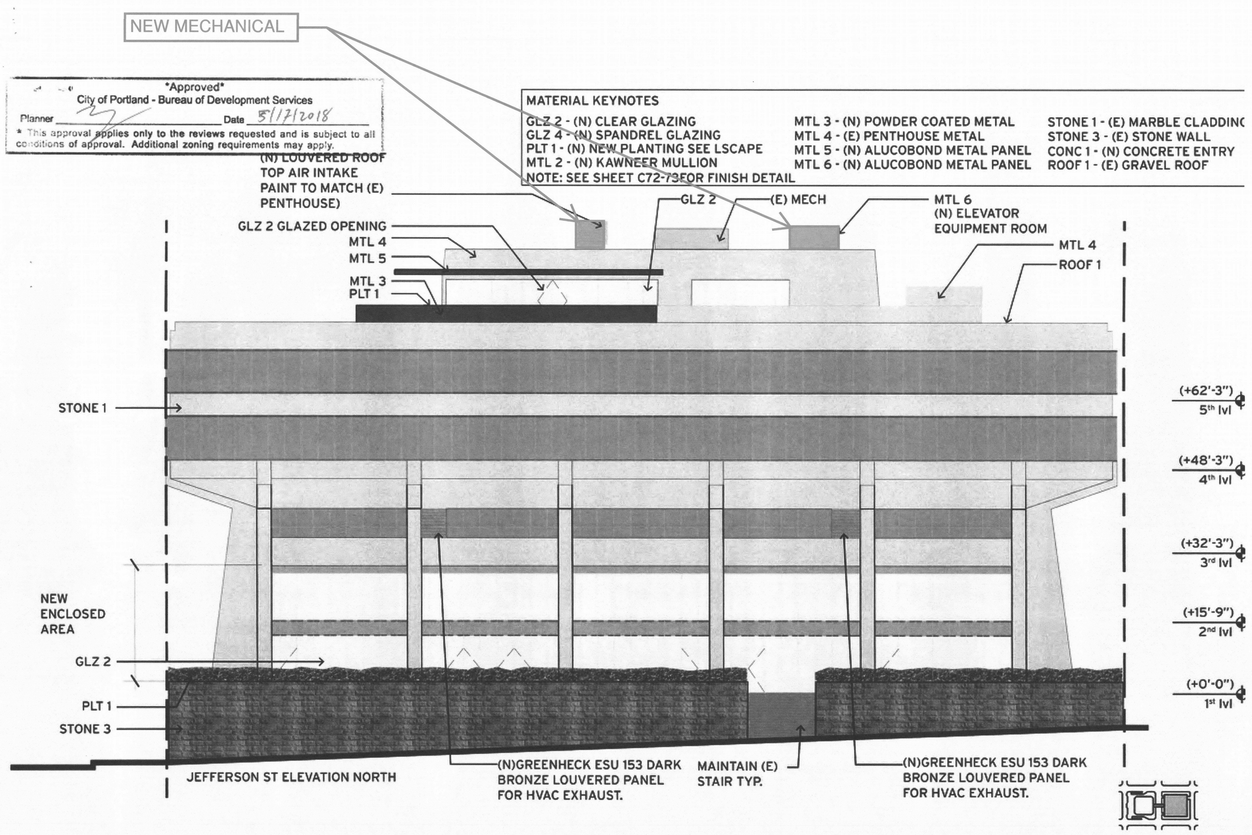
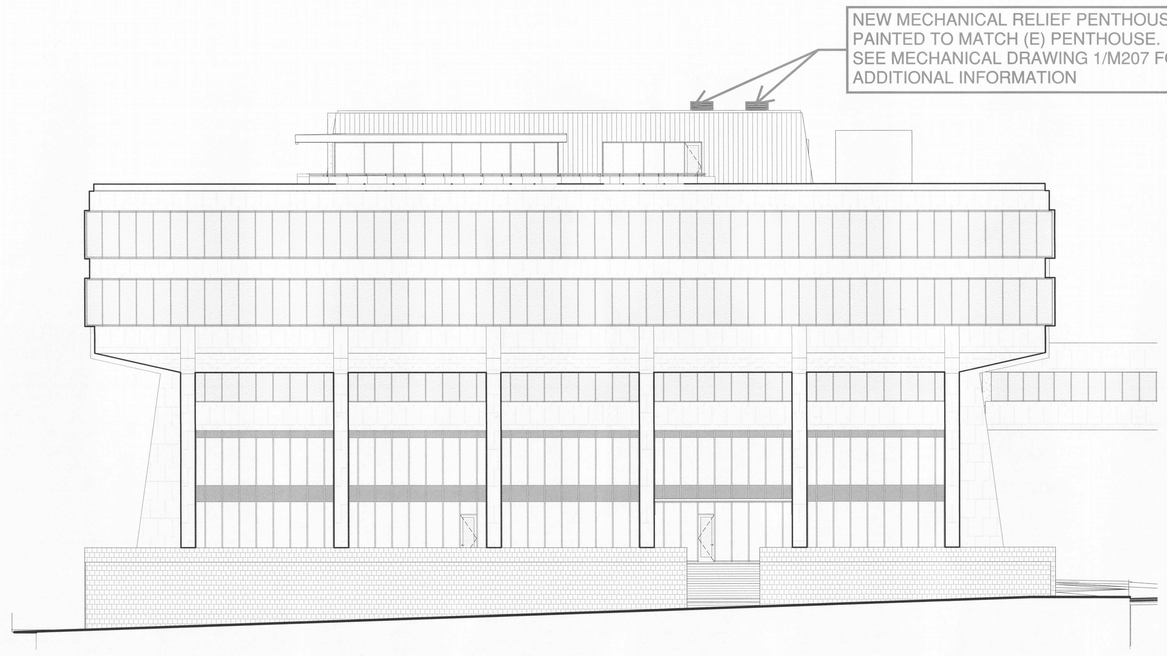
DESIGN REVIEW DOCUMENT
NORTH ELEVATION



CURRENT ARCHITECTURAL CONSTRUCTION DRAWINGS
NORTH ELEVATION



WELLS FARGO EXCHANGE BLOCK
02.21.2020

Proposal and design as approved.
In case file #LU 18-119030 DZ.
No field changes allowed.
for MT work only

City of Portland
Bureau of Development Services
Approved by Planning and Zoning Review
Date 12/7/2020

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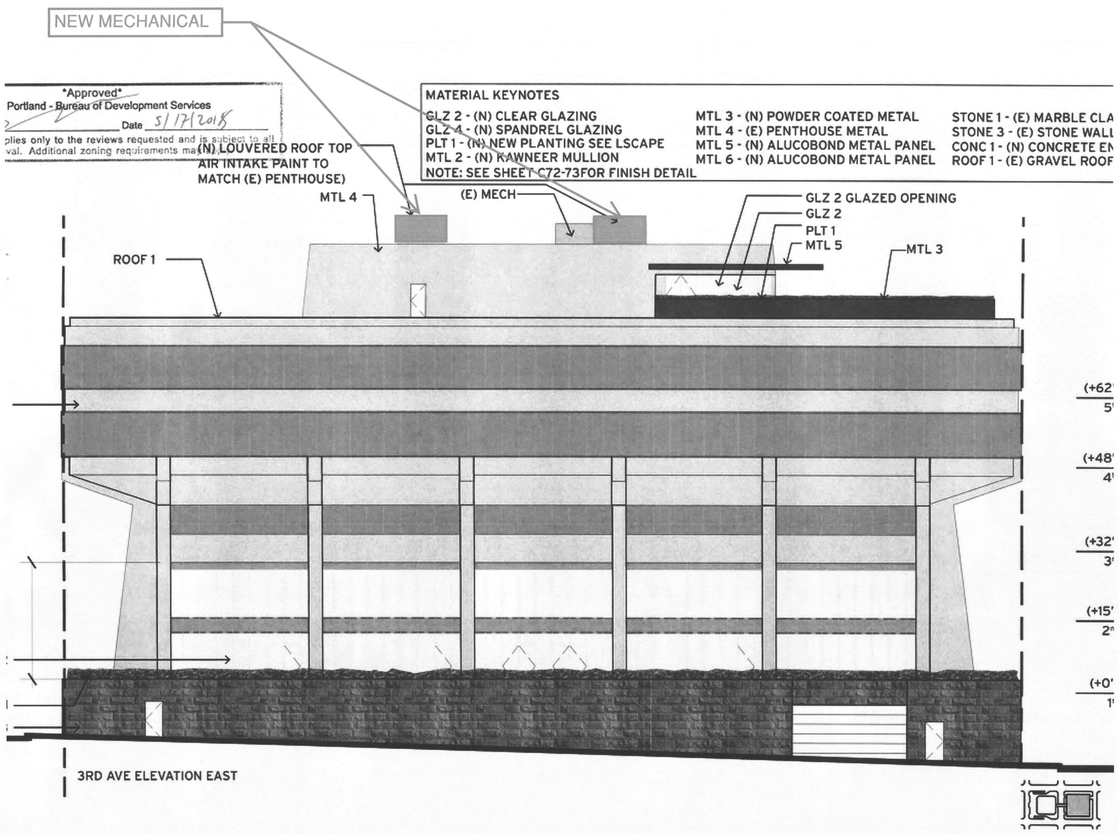
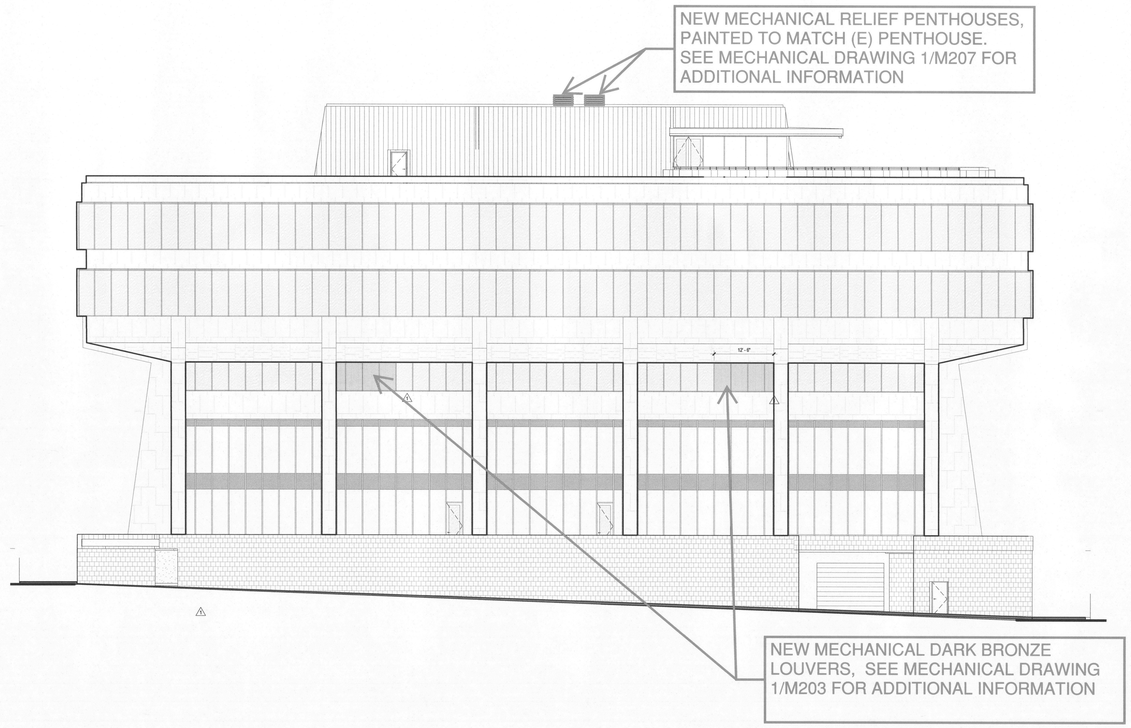
DESIGN REVIEW DOCUMENT
EAST ELEVATION



CURRENT ARCHITECTURAL CONSTRUCTION DRAWINGS
EAST ELEVATION



WELLS FARGO EXCHANGE BLOCK
02.21.2020

Proposal and design as approved
In case file # LU 18-119030 DZ.
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City of Portland
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City of Portland
Bureau of Development Services
Approved by
Planning and Zoning Review
Date 5/7/2020

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DESIGN REVIEW DOCUMENT
WEST ELEVATION

Approved
City of Portland - Bureau of Development Services
Planner _____ Date 5/17/2018
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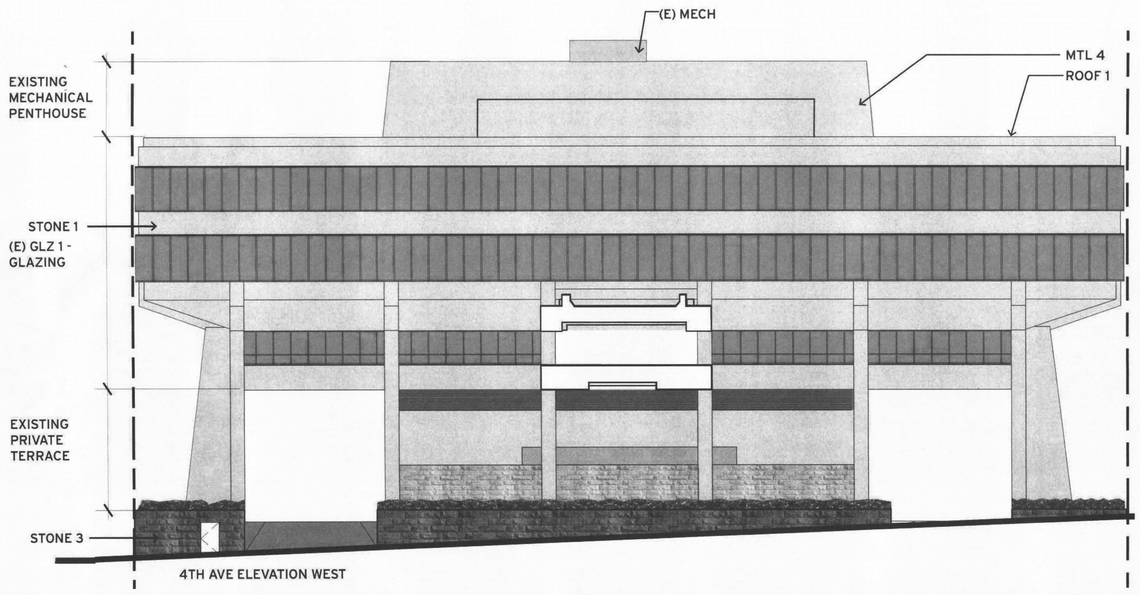
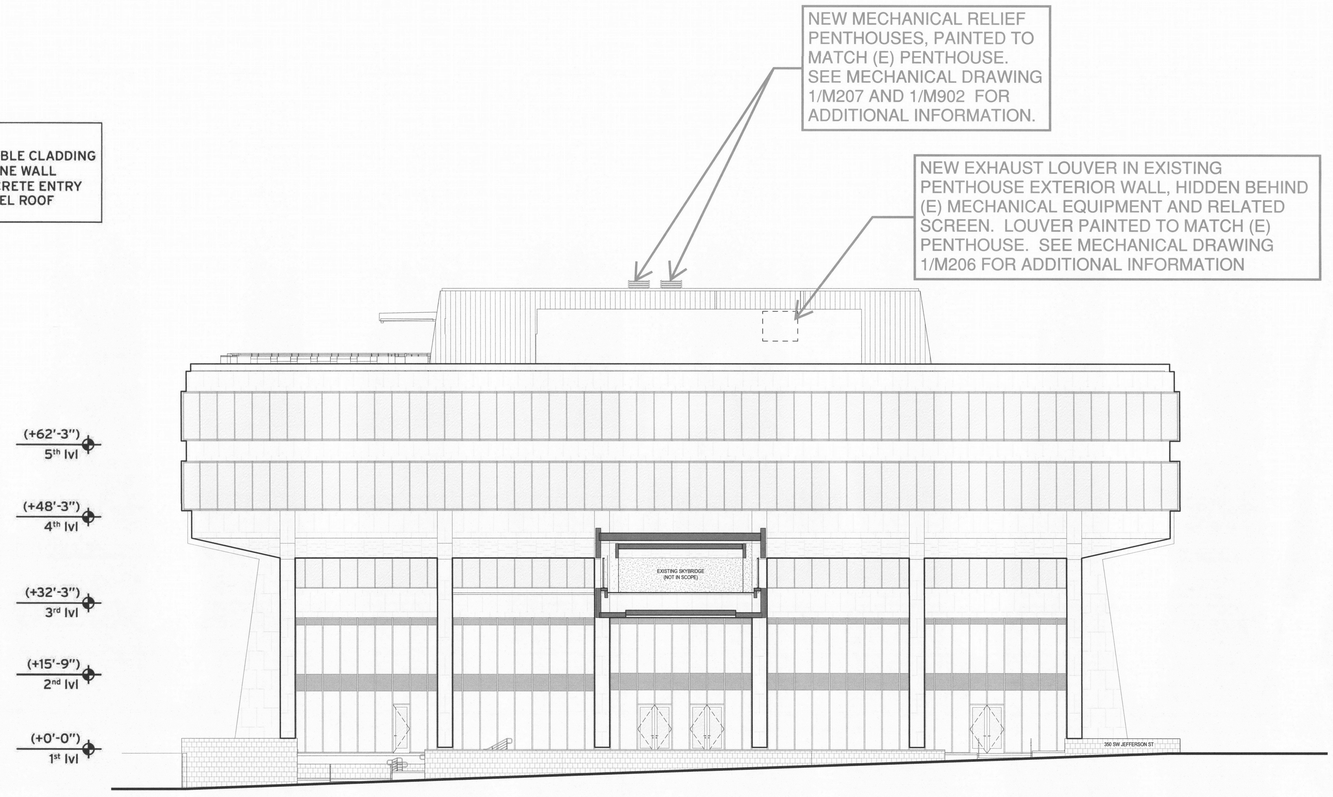
MATERIAL KEYNOTES

GLZ 2 - (N) CLEAR GLAZING	MTL 3 - (N) POWDER COATED METAL	STONE 1 - (E) MARBLE CLADDING
GLZ 4 - (N) SPANDREL GLAZING	MTL 4 - (E) PENTHOUSE METAL	STONE 3 - (E) STONE WALL
PLT 1 - (N) NEW PLANTING SEE LSCAPE	MTL 5 - (N) ALUCOBOND METAL PANEL	CONC 1 - (N) CONCRETE ENTRY
MTL 2 - (N) KAWNEER MULLION	MTL 6 - (N) ALUCOBOND METAL PANEL	ROOF 1 - (E) GRAVEL ROOF

NOTE: SEE SHEET C72-73FOR FINISH DETAIL



CURRENT ARCHITECTURAL CONSTRUCTION DRAWINGS
WEST ELEVATION



WELLS FARGO EXCHANGE BLOCK
02.21.2020

Proposal and design as approved.
In case file #LU 18-119030 DZ
No field changes allowed.
for MT waste only

City of Portland
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Permit Number

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Bureau of Development Services
By _____ Date 5/7/2020
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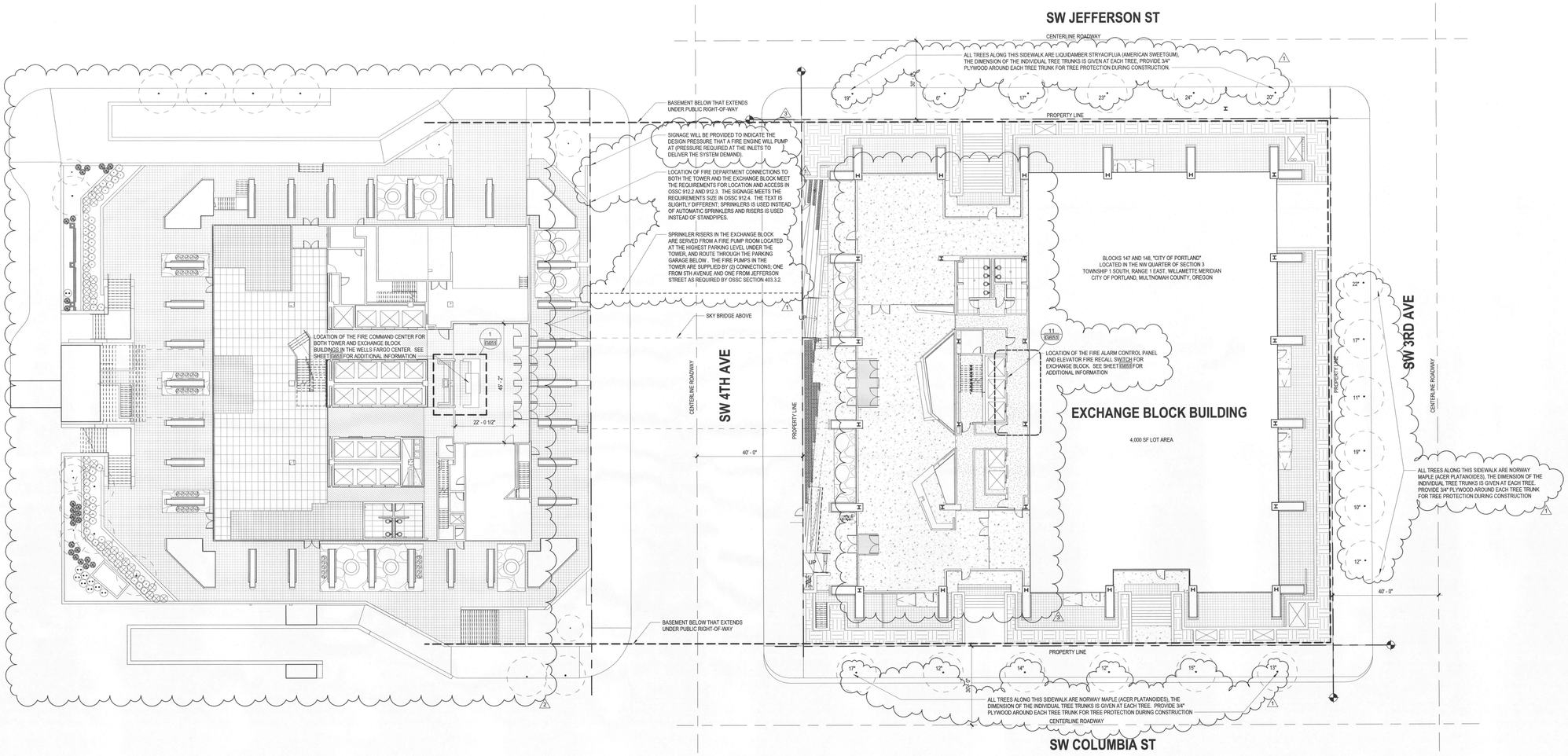

1 CODE COMPLIANCE SITE PLAN
1/16" = 1'-0"

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SERA
ARCHITECTURE
URBAN DESIGN + PLANNING
INTERIOR DESIGN
PORTLAND, OREGON 97209
P: 503.445.7372
F: 503.445.7395
SERADESIGN.COM

REGISTERED ARCHITECT
3680
KURT K. SCHULTZ
PORTLAND, OR
STATE OF OREGON

WELLS FARGO CENTER RENOVATION - EXCHANGE BLOCK

LINCOLN PROPERTY COMPANY
1300 SW JEFFERSON ST
PORTLAND, OR
97201

REVISIONS

1	CHECKSHEET RESPONSE 1	11.30.2018
2	CHECKSHEET RESPONSE 3	12.21.2018
3	CHECKSHEET RESPONSE 4	01.18.2019

CHECKED BY: BVP
ISSUE DATE: 08.13.2018
PROJECT NO: 1701030

CODE COMPLIANCE SITE PLAN
G051
IFC SET

3/1/2019 2:31:33 PM SERA Design and Architecture, Inc.