MECHANICAL GENERAL NOTES

A. THE DRAWINGS ARE DIAGRAMMATIC. PROVIDE ALL MATERIAL (NEW AND UNDAMAGED) AND LABOR FOR A COMPLETE AND OPERABLE SYSTEM. VERIFY ALL BUILDING MEASUREMENTS DIMENSIONS AND EQUIPMENT LOCATIONS BEFORE PROCEEDING WITH ANY OF THE WORK.

B. VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. REPORT DISCREPANCIES BACK TO THE ENGINEER.

C. VERIFY INDICATED (E)DUCTWORK/PIPE SIZES PRIOR TO RECONNECTING NEW EQUIPMENT. EQUIPMENT SHALL NOT BE CONNECTED TO EXISTING DUCT/PIPE OF SMALLER DIAMETER THAN NEW DUCT/PIPE. REPORT DISCREPANCIES BACK TO ENGINEER.

D. DO NOT FABRICATE EQUIPMENT SUPPORTS/BASES W/O CONFIRMING SPACE EXISTS AND THE BUILDING ATTACHMENT POINTS.

E. REFER TO THE MECHANICAL SPECIFICATIONS FOR MATERIALS, EQUIPMENT, AND ADDITIONAL CONSTRUCTION INSTRUCTIONS NOT COVERED BY THESE PLANS.

F. ALL INSTALLATIONS SHALL COMPLY WITH APPLICABLE FEDERAL AND STATE CODES INCLUDING, 2019 OREGON STRUCTURAL SPECIALTY CODE (OSSC) INCLUDING APPENDIX N FOR OREGON FIRE CODE REGULATIONS, 2021 OREGON PLUMBING SPECIALTY CODE (OPSC), 2019 OREGON MECHANICAL SPECIALTY CODE (OMSC), 2021 OREGON ENERGY EFFICIENCY SPECIALTY CODE (OEESC)–BASED ON ASHRAE 90.1–2019, AND NATIONAL FIRE PROTECTION ASSOCIATION (NFPA). WHERE TWO CODES DIFFER THE MORE STRICT OF THE TWO SHALL BE FOLLOWED.

G. OBTAIN ALL NECESSARY PERMITS AND INSPECTIONS REQUIRED BY THE GOVERNING AUTHORITIES HAVING JURISDICTION. SUBMIT ALL CERTIFICATES PRIOR TO ACCEPTANCE.

H. COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.

I. COORDINATE OTHER TRADES FOR PATCH/REPAIR OF WALLS WHERE EXISTING SENSORS ARE REMOVED OR MODIFIED.

J. PATCH & REPAIR WALLS / FLOORS / CEILING WHERE OLD DUCTWORK/PIPES HAVE BEEN REMOVED TO MATCH EXISTING FINISHES.

K. COORDINATE WITH OTHER CRAFTS AS REQUIRED TO COMPLETE WORK IN ACCORDANCE WITH CONSTRUCTION SCHEDULE.

L. PROVIDE OWNER INSTRUCTION BY QUALIFIED PERSONNEL ON EQUIPMENT AND SYSTEMS AT OWNER'S REQUEST.

M. ALL DUCTWORK SHALL BE GALVANIZED STEEL, UNLESS OTHERWISE INDICATED, CONFORMING TO LATEST SMACNA, ASHRAE, OMSC, NFPA, AND UL STANDARDS.

N. MANUFACTURERS AND MODEL NUMBERS LISTED IN THE EQUIPMENT SCHEDULES ARE THE BASIS OF DESIGN.

O. CUT WALLS FOR PROPER EQUIPMENT, DUCT OR PIPE INSTALLATION. FILL HOLES WHICH ARE CUT OVERSIZED FOR A TIGHT FIT AROUND OBJECTS PASSING THROUGH.

P. PROVIDE UL LISTED FIRESTOP SYSTEM TO MAINTAIN THE CODE REQUIRED F AND T RATING OF THE CONSTRUCTION ASSEMBLY AT A DUCT/PIPE PENETRATION THROUGH A RATED BUILDING CONSTRUCTION.

Q. INSTALL LABELS ON ALL MECHANICAL EQUIPMENT. SEE SPECIFICATIONS FOR CRITERIA.

R. CONTROLS AND WIRING SHALL MEET ALL ELECTRICAL REQUIREMENTS OF APPLICABLE ELECTRICAL SPECIFICATIONS AND REQUIREMENTS OF OWNER, BUILDING OFFICIALS AND EQUIPMENT SUPPLIERS OF EQUIPMENT INSTALLED ON PROJECT.

S. ELECTRIC MOTORS SHALL HAVE BUILT–IN THERMAL OVERLOAD PROTECTION OR BE PROTECTED EXTERNALLY WITH SEPARATE THERMAL OVERLOAD DEVICES, WITH LOW–VOLTAGE RELEASE OR LOCK OUT AS REQUIRED.

T. ALL NEW EQUIPMENT, PIPING, CONDUIT, AND DUCTWORK SHALL BE INSTALLED PER CURRENT SEISMIC CODE REQUIREMENTS.

U. PROVIDE LOW LEAK AUTOMATIC DAMPERS ON OUTSIDE AIR, EXHAUST AIR AND RELIEF AIR CONTROL DAMPERS WHERE THESE ARE INDICATED.

SYSTEM COMMISSIONING–VERIFICATION AND TESTING REQUIREMENTS:
ASHRAE 90.1–2019 REQUIREMENTS
SECTION 4.2.5 THROUGH 4.2.5.3

THE OWNER OR GC SHALL PROCURE A COMMISSIONING PROVIDER THAT MEETS ONE OF THE FOLLOWING.

THE COMMISSIONING PROVIDER SHALL BE:
a. A THIRD PARTY ENTITY NOT ASSOCIATED WITH THE BUILDING PROJECT
b. AN OWNER'S QUALIFIED EMPLOYEE.
c. AN INDIVIDUAL ASSOCIATED WITH THE DESIGN FIRM, BUT NOT DIRECTLY ASSOCIATED WITH THE DESIGN OR INSTALLATION OF THE BUILDING SYSTEMS.

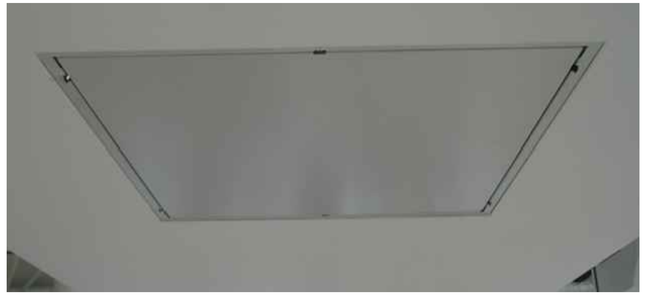
EXCEPTIONS:
1. BUILDING IS LESS THAN 10,000 SQ FT

CONTRACTOR RESPONSIBILITIES
- THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING ALL THE REQUIREMENTS OF ASHRAE 90.1–2019.
- THE GENERAL CONTRACTOR OR OWNER SHALL HIRE AND UTILIZE AN APPROVED CX AGENT
- THE CX AGENT SHALL

1. PREPARE A CX PLAN
2. OVERSEE THE TAB MEASUREMENTS
3. CONDUCT THE PR–FUNCTIONAL & FUNCTIONAL TESTS
4. PREPARE THE PRELIMINARY CX REPORT
5. REVIEW THE TAB REPORT
6. REVIEW THE O&M'S
7. PREPARE THE SYSTEMS MANUALS

- SYSTEMS REQUIRED TO BE COMMISSIONED

1. SERVICE WATER HEATERS
2. MIXING VALVES & RECIRC SYSTEMS
3. ROOFTOP UNIT – HALLWAY VENTILATION
4. SPLIT SYSTEM FAN COILS
5. PTHP'S (SAMPLE SELECTION).
6. DWELLING UNIT EXHAUST FANS (SAMPLE SELECTION).
7. LIGHTING CONTROL SYSTEMS
8. OCCUPANCY SENSORS
9. EMERGENCY POWER SYSTEMS (GENERATOR)
10. THERMOSTAT OPERATIONS AND SET POINTS
11. FIRE PIT 7 BBQ TIMERS AND AUTO–SHUT OFF
12. FIRE PUMP AND DOMESTIC WATER BOOSTER PUMP.



EXHAUST FANS

MARK NUMBER	EF 1	EF 2	EF 3	EF 4	EF 5	EF 6
TYPE	CEILING CABINET	CEILING CABINET	CEILING CABINET	CEILING CABINET	CEILING CABINET	CEILING CABINET
SYSTEM	ELECTRICAL	TRASH	BATHROOM/ SHOWER	BIKE	JANITOR	FIRE & WATER
CFM	100	200	30/80	200	100	200
TOTAL SP. (IN H20)	0.125	0.125	0.20	0.125	0.125	0.125
RPM	1250	740	1062/1146	740	1250	740
TIP SPEED (FPM)	–	–	NA	––	–	–
MOTOR WATTS OR HP	100 W	127 W	5/11.7 W	127 W	100 W	127 W
CONTROLLED BY	T–STAT	CONTINUOUS	**	CONTINUOUS	LIGHTS	CONTINUOUS
INTERLOCK WITH	NONE	NONE	MOTION SENSOR	NONE	NONE	NONE
FAN SPEED CONTROLLER	NO	NO	YES	YES	NO	NO
WHEEL TYPE	FC	BI	BI	BI	FC	BI
BACK DRAFT DAMPER	GRAVITY	GRAVITY	YES	GRAVITY	GRAVITY	GRAVITY
ISOLATION	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER
DESIGN WEIGHT (LBS)	25	25	25	25	25	25
MAX. SONES	1.5	1.7	0.3/0.6	1.7	1.5	1.7
MAX AMPS – *	1.3	1.8	0.27	1.8	1.3	1.8
POWER (VOLTS/PHASE/HZ) – *	120/60/1	120/60/1	120/1/60	120/60/1	120/60/1	120/60/1
BASIS OF DESIGN:	BROAN L100	BROAN L200	PANASONIC * FV–05–11VKSL2	BROAN L200	BROAN L100	BROAN L200

* FAN TO RUN AT LOW SPEED CONTINUOUSLY, AND INCREASE TO HIGH SPEED UPON ACTIVATION OF THE MOTION SENSOR.

** FAN TO INCLUDE LIGHTS, MOTION SENSOR AND MULTI–SPEED CONTROL W/ TIME DELAY. COORDINATE LIGHT OPTION W/ ARCHITECT.

*** ELECTRICAL DATA LISTED FOR REFERENCE ONLY, COORDINATE WITH ELECTRICAL DEIGN BUILD CONTRACTOR FOR VOLTAGE AND PHASE REQUIREMENTS

3.2 DUCTWORK INSULATION

A. Ductwork: Insulate the following:

1. All supply and return ductwork in systems routed in unconditioned spaces or exposed to the outside conditions.
2. All outside air intake ducts.
3. All ductwork required to be insulated by code.
4. The last 5' of duct work connected to a louver or exhaust termination.

B. Insulation Thickness: Select board and blanket insulation of thickness required to provide the following installed R-value.

1. All heating or cooling system supply and return ducts located on the exterior of the insulated building envelope, including ventilated attics, and all outside air intake ducts, R-8.
2. All heating and cooling system supply and return ducts located in unconditioned spaces within the building insulation envelope, R-5.
3. All heating and cooling system supply ducts located in conditioned spaces and where exposed in unfinished spaces or concealed from view in finished spaces, R-3.3. Exposed ductwork in finished spaces shall not be externally insulated.
4. Ducts located within or below concrete slabs on grade, R-4.

C. Fittings: Install with wire, straps, and duct adhesive as required. To prevent sagging on all rectangular or square ducts over 24" wide, install Gramweld or equal welding pins on the bottom. Maximum spacing 18" on center in both directions.

D. Installation: Applied with butt joints, all seams sealed with vapor seal mastic or taped with 2" wide vapor-proof, pressure-sensitive tape. Seal all penetrations with vapor barrier adhesive.

E. Internally Lined Ductwork: Where internally lined ductwork is indicated on the Drawings and/or specified, no exterior insulation is required. Select duct lining to provide the required R-value. Carefully lap the ends of the exterior insulation a minimum of 6" past the interior insulation unless otherwise shown. Seal the end of vapor barrier jacket to the duct with mastic where the vapor barrier is required.

E.1. Line Supply and Return ducts for 10' on intake and discharge of fan.

E.2. Line Supply ducts routed in vertical shafts directly below RTUs

INDOOR UNITS – *

MARK NUMBER	FC–X 9 MBH	FC–X 12 MBH	FC–X 18 MBH
SYSTEM	SEE FLOOR PLANS	SEE FLOOR PLANS	xxxx
TYPE	WALL MOUNTED	WALL MOUNTED	WALL MOUNTED
EFFICIENCY	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT
NOMINAL COOLING CAPACITY	9,000 BTUH	12,000 BTUH	15,000 BTUH
HEATING CAPACITY	10,900 BTUH	13,600 BTUH	18,000 BTUH
TOTAL SUPPLY CFM – CLG/HTG	459/459	459/459	813/919
OSA CFM	–	–	–
EXTERNAL SP. ("H20)	0.25	0.25	0.25
VOLTS/PHASE	208/1	208/1	208/1
MCA/MOP	15/10	15/10	30/19
WEIGHT	25	25	35
BASIS OF DESIGN	LG LSN090HSV5	LG LSN120HSV5	LG LAN150HYV3
OUTDOOR UNIT	HP–X 3/4 TON	HP–X 1 TON	HP–X 1.25 TON

OUTDOOR UNITS – SPLIT SYSTEM HEAT PUMP

MARK NUMBER	HP–X 3/4 TON	HP–X 1 TON	HP–X 25 TON
SYSTEM	XXX	XXX	XXX
TYPE	1–PORT HEAT PUMP	1–PORT HEAT PUMP	1–PORT HEAT PUMP
NORMAL COOLING CAPACITY	9000 BTUH	12,000 BTUH	18,000 BTUH
NORMAL HEATING CAPACITY	9,000 BTUH	12,000 BTUH	20,000 BTUH
EFFICIENCY SEER/EER	23.5/14.52	22.7/12.5	25/15
EFFICIENCY HSPF/COP	11.3/––	11.4/––	13.5/
REFRIGERANT	410 A	410 A	410 A
REFRIGERANT CHARGE	X LBS	X LBS	X LBS
MAX OPERATING TEMPS	115/5	115/5	122/–4
MAX PIPING LENGTH	82 FT	82 FT	115 FT
MAX PIPING HEIGHT	49 FT	32 FT	49 FT
VOLTS–PHASE – **	208/230–1 PHASE	208/230–1 PHASE	208/230–1 PHASE
MCA/MOP – **	10/15 AMPS	10/15 AMPS	19/30 AMPS
COMPRESSOR	VARIABLE SPEED	VARIABLE SPEED	VARIABLE SPEED
WEIGHT	85 LBS	80 LBS	135 LBS
BASIS OF DESIGN	LG LSU090HSV5	LG LSU120HSV5	LG LAU150HYV3

FULL SIZE INTEGRAL ACCESS PANEL FOR ERV S–100 UNIT ACCESS DOOR IS ALSO CEILING ACCESS PANEL. UNIT INSTALLED IN A NON–RATED CEILING. ACCESS DOOR CONTAINS FAN CUT–OFF SWITCH (FAN DISCONNECT) TO ALLOW SERVICE OF ERV.

ENERGY RECOVERY VENTILATOR

MARK NUMBER	ERV–1 105 CFM	ERV 2
SYSTEM	SHOWER/STORAGE	CORRIDOR
CFM	65/105 CFM	40 CFM
CORE TYPE	MEDIA MEMBRANE	ENTHALPY PLATE
CONTROL	CONTINUOUS	CONTINUOUS
HEAT	NONE	––
VOLTS–PHASE	120/1	120/1
AMP RATING	0.9	0.15
ESP ("H20)	0.20	0.1
EFFICIENCY @64CFM & 95F	68%	36%
WATTS **	103	154/60
WEIGHT	40 LBS	40 LBS
BASIS OF DESIGN	BROAN * ERVS100S	PANASONIC FV–04VE1

* ELECTRICAL DATA LISTED FOR REFERENCE ONLY, COORDINATE WITH ELECTRICAL DESIGN BUILD CONTRACTOR FOR VOLTAGE AND PHASE REQUIREMENTS

TRUE

8-25-22
REGISTERED PROFESSIONAL ENGINEER
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JULY 11, 2000
MARK R. DENYER
EXPIRES: 31DEC23

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REVISION	DATE	REASON FOR ISSUE

MECHANICAL NOTES & SCHEDULES

PERMIT SET

DATE 08/29/2022

PROJECT NUMBER 203970

SHEET NUMBER M0.02