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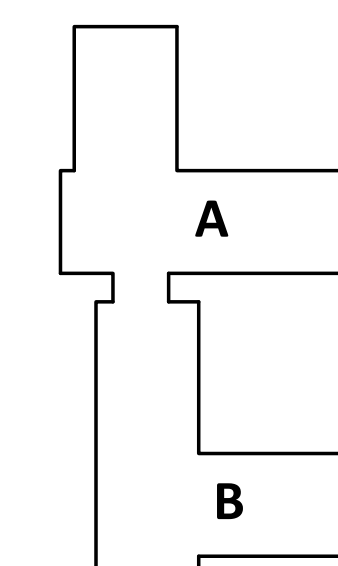


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STAMP 3-15-22



REVISION NO. DATE



KEY PLAN - (INTS)



HOME FORWARD
5000 NE 42ND
PORTLAND, OR 97218
ISSUANCE PERMIT SET
PROJECT NUMBER 2003
DATE MARCH 18, 2022
SCALE As indicated
DRAWING TITLE MECHANICAL COVER SHEET

SHEET NUMBER

M0.01

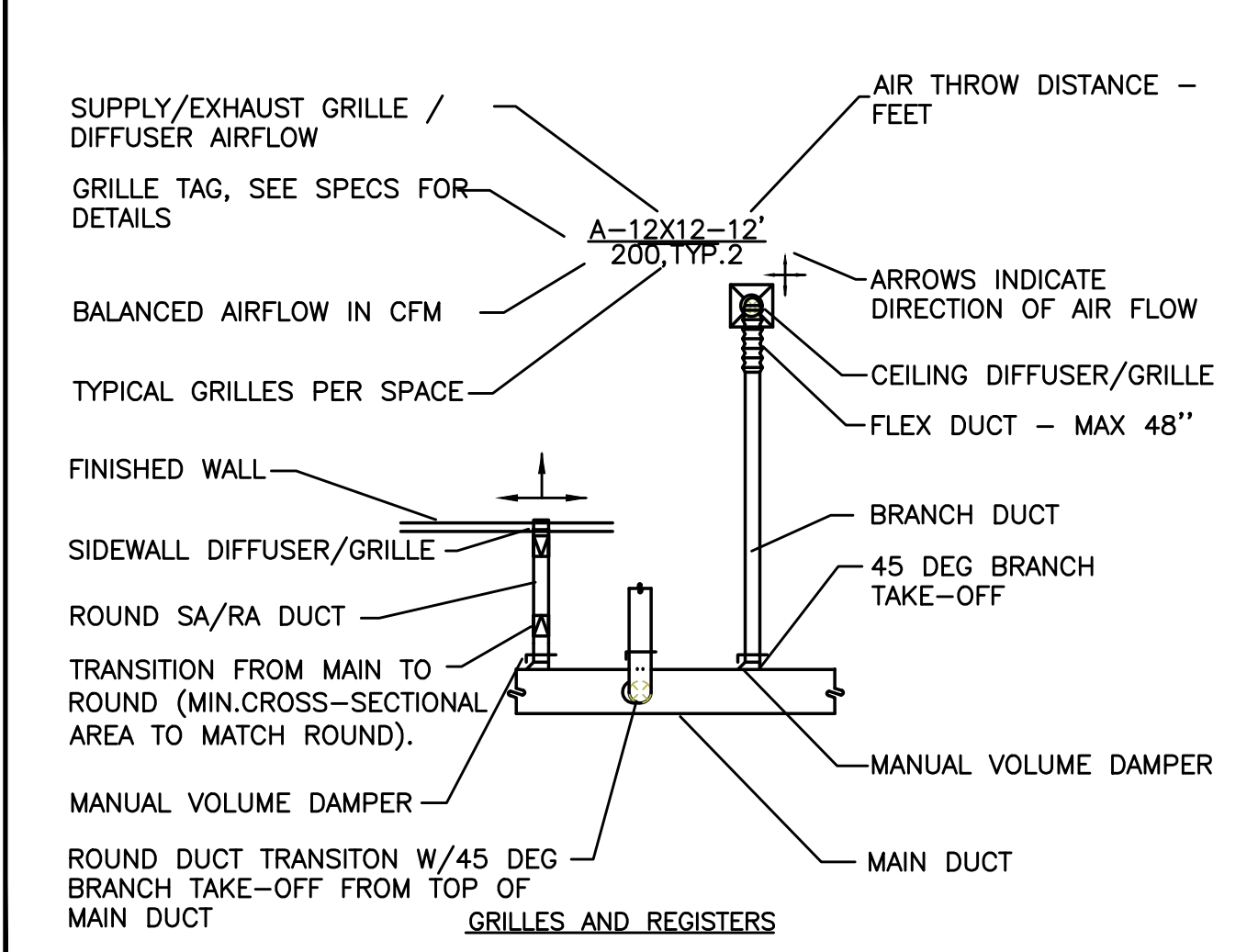
MECHANICAL LEGEND

Table with two columns: Symbol and Description. Includes items like SUPPLY AIR DIFFUSER, RETURN AIR DIFFUSER, EXHAUST AIR DIFFUSER, DIRECTIONAL AIR FLOW, MANUAL VOLUME DAMPER, etc.

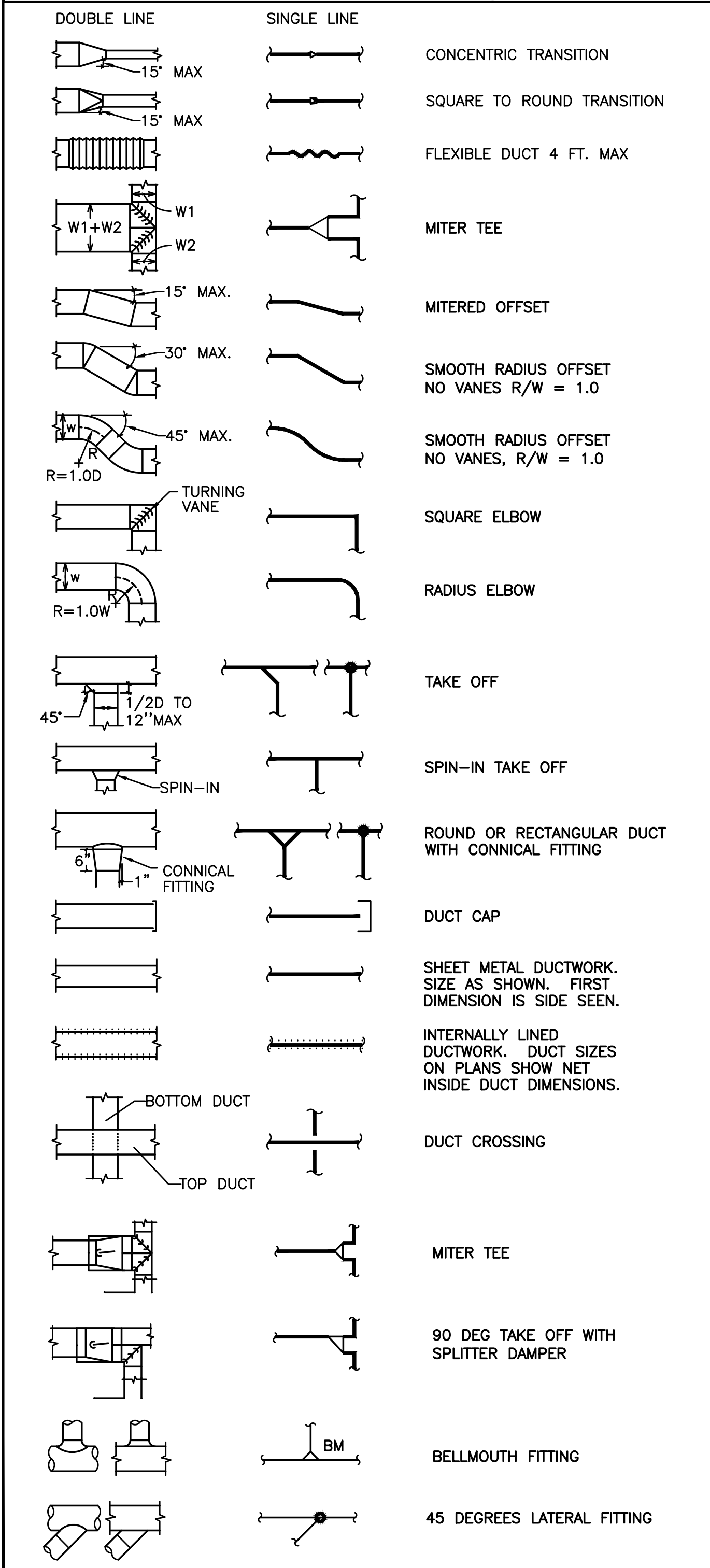
MECHANICAL GENERAL NOTES

- 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.

AIR DISTRIBUTION DETAILS



AIR DISTRIBUTION DETAILS



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. ERV'S (SAMPLE SELECTION).
6. DWELLING UNIT EXHAUST FANS (ERV'S) (SAMPLE SELECTION).
7. LIGHTING CONTROL SYSTEMS
8. OCCUPANCY SENSORS
9. EMERGENCY POWER SYSTEMS (GENERATOR)
10. THERMOSTAT OPERATIONS AND SET POINTS

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 ductwork 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 Grandweid 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.

FIRE PENETRATION REQUIREMENTS FOR DUCTS:

- 2019 OMSC (OREGON MECHANICAL SPECIALTY CODE) & 2019 OSSC (OREGON STRUCTURAL SPECIALTY CODE)
CODE SECTIONS -SPECIFIC REQUIREMENTS, EXCEPTIONS AND DESIGN APPROACH REQUIREMENTS.
SECTION 607.6 - HORIZONTAL ASSEMBLIES
PENETRATIONS BY DUCTS OF A FLOOR/CEILING OR ROOF/CEILING ASSEMBLY SHALL BE PROTECTED BY A SHAFT ENCLOSURE THAT COMPLIES WITH SECTIONS 713, 717.6.1 THROUGH 717.6.3 (OSSC) (SEE BELOW FOR VERTICAL ASSEMBLIES/SHAFT PENETRATIONS OR VERTICAL FIRE PARTITIONS - THIS WILL APPLY TO ALL DUCTS THAT ARE ROUTED UP IN A RATED SHAFT).
OR
SECTIONS 607.6.1 THROUGH 607.6.3 THROUGH PENETRATIONS OF NOT MORE THAN TWO FLOORS TO BE PROTECTED WITH EITHER LISTED FIRE DAMPER OR A THROUGH PENETRATION PER SECTION 714.5
EXCEPTIONS: DUCTS PERMITTED TO PENETRATE THREE FLOORS OR LESS IF ALL 5 EXCEPTIONS ARE MET UNDER SECTION 607.6.1.
SECTION 607.5.5 SHAFT ENCLOSURES - PENETRATIONS ARE PERMITTED BY DUCTS WITH A LISTED FIRE AND SMOKE DAMPER OR
EXCEPTIONS: (THE FOLLOWING EXCEPTIONS ARE USED IN PART OR IN WHOLE ON THIS PROJECT)
1. FIRE DAMPERS ARE NOT REQUIRED FOR ANY OF THE FOLLOWING
1.1 STEEL EXHAUST SUBDUCTS ARE EXTENDED NOT LESS THAN 22 INCHES ON A SUBDUCT SYSTEM WITH CONTINUOUS FLOW
1.2 PENETRATIONS ARE TESTED IN ACCORDANCE WITH ASTM E119 OR UL263 (SEE ATTACHED CUT SHEETS ON UL PENETRATION DETAILS).
2. GROUP R OCCUPANCIES USING A SUB DUCT SYSTEM AS NOTED ABOVE.
3. SMOKE DAMPERS ARE NOT REQUIRED AT PENETRATIONS OF EXHAUST SHAFTS IN PARKING GARAGES WHEN SHAFTS ARE SEPARATED FROM OTHER SHAFTS BY NOT LESS THAN A 2 HOUR RATING.
4. FIRE OR FIRE SMOKE DAMPERS ARE NOT REQUIRED IN KITCHEN OR CLOTHES DRYER EXHAUST SYSTEMS.
OSSC SECTION 713.8 PENETRATIONS.
PENETRATIONS IN A SHAFT ENCLOSURE SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 714 AS REQUIRED FOR FIRE BARRIERS.
SECTION 714.2 A LISTED PENETRATION FIRESTOP SYSTEM SHALL BE INSTALLED.
SECTION 714.4.1 THROUGH PENETRATIONS
EXCEPTIONS #2
THE MATERIAL USED TO FILL THE ANNULAR SPACE SHALL PREVENT THE PASSAGE OF FLAME AND HOT GASSES SUFFICIENT TO INGITE COTTON WASTE WHEN SUBJECTED TO ASTM E119 OR UL 263.
SECTION 714.4.1.2 THROUGH PENETRATION FIRE STOP SYSTEM
THROUGH PENETRATIONS SHALL BE PROTECTED BY AN APPROVED PENETRATION FIRE STOP SYSTEM INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E814 OR UL1479 (ASSEMBLY TEST) AND SHALL HAVE A F RATING NOT LESS THAN THE REQUIRED FIRE RESISTIVE RATING OF THE WALL PENETRATING.
DUCT CONSTRUCTION AND ROUTING:
• UNLESS PROJECT EXPLICITLY USES A SUB DUCT SYSTEM, SERVED BY ROOF FANS ON A BACK UP POWER SUPPLY, ALL DUCTS ARE ROUTED INDIVIDUALLY TO SIDEWALL OR ROOF TERMINATIONS WITH NO INTER-CONNECTIONS OF DUCT WORK.
• ALL DUCTWORK IS CONSTRUCTED PER OSMC AND PER SMACNA STANDARDS PER THE REQUIRED PRESSURE CLASSES. ALL DUCTWORK WILL BE SEALED TO BE AIR-TIGHT AND WILL NO ALLOW TRANSFER OF SMOKE BETWEEN UNITS OR TO LEAK SMOKE INTO SHAFTS.
BUILDING CONSTRUCTION, FIRE RATED WALLS AND RATED SHAFTS:
• SEE ARCHITECTURAL LIFE SAFETY PLANS FOR RATED WALLS AND SHAFTS
• SEE ARCHITECTURAL WALL SECTION DETAILS AND SHAFT WALL CONSTRUCTION DETAILS FOR REQUIRED FIRE RATINGS AND CONSTRUCTION METHODS.
• PROVIDE A UL LISTED FIRE STOP SYSTEM TO MATCH DUCT CONSTRUCTION AND WALL OR FLOOR CEILING CONSTRUCTION TO ENSURE COMPLIANCE WITH ASTM E119 AND UL 263 STANDARDS - WHICH IS DEMONSTRATED BY THE USE OF UL CONSTRUCTION METHODS COMPLYING WITH ASTM E814 OR UL1479.