

# Mechanical Plans Requirements

## **MECHANICAL PLANS ARE REQUIRED FOR ANY OF THE FOLLOWING CONDITIONS:**

- Multifamily projects over 4 dwelling units
- All commercial kitchen type I hoods
- All rooftop or floor mounted units over 400 pounds (Structural details and calculations are required)
- All new commercial buildings
- Tenant improvements over 1,000 square feet

## **REQUIRED INFORMATION:**

*Plans that do not contain the following minimum information will not be accepted for plan check. Plans shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show that it will conform to the provisions of the adopted Codes and ordinances including the International Mechanical and Fuel Gas Codes with WA State Amendments.*

Two (2) copies of construction drawings (18" x 24", 24" x 36", or 30" x 42") and (2) copies of the site plan must be submitted for review. Plans shall be drawn in indelible ink. Plan sheets that are cut and pasted, taped, or that have been altered by pen, pencil, etc... will not be accepted for plan check. Washington State law requires that any registered professional who prepares or supervises the preparation of drawings and construction documents stamp and sign such documents.

*Plans must note the construction type of the building and show all fire-rated construction.*

## **Equipment Schedules Provide manufacturer's product data sheets**

1. Provide complete equipment schedules for cooling and heating equipment on drawings. Specify the quantity, manufacturer, model, number, capacities (input and output), SEER/EER, efficiency, cfm and operating weight of all equipment. Specify OSA capacities. Include economizers on equipment schedules.
2. Fan schedule should specify manufacturer, model number, cfm, static pressure, HP/ BHP, and flow control types (VAV, constant volume, or variable speed).
3. A brief description of equipment operations and controls, show location and size of combustion air sources for fuel burning appliances.

## **Structural**

1. Provide framing plans and calculations, for vertical and lateral loads, stamped by a Washington State registered professional engineer for units weighing more than 400 pounds.
2. Roof curb designs must be provided for all roof mounted mechanical equipment. If factory curbs will be used, provide details. Specify the type, amount, and location of fasteners.
3. All floor supported mechanical equipment and fixed appliances must be anchored to the structure to resist displacement vertically and on both horizontal axis due to seismic motion. Specify anchorage for floor supported equipment on plans.

4. Suspended mechanical equipment and appliances shall have rigid vertical hangers and be braced in both horizontal directions. Connections by pipes or ducts that are or contain non-rigid elements are not of inherent sufficient strength, or which are not adequately anchored will not be acceptable as equipment or appliance anchors. Detail anchorage for suspended equipment on drawings.

### **Make-Up Air**

1. Ventilation air supply shall be sufficient to provide make-up air for exhaust systems when required by the IMC or IFGC. Make-up air systems shall be electrically interlocked with their associated exhaust systems. IMC 508.1
2. Ducts in ventilation supply air systems shall be sized as required by the equipment manufacturer's approved installation instructions or approved good engineering practice. IMC Sec. 403.3
3. Provide calculations showing compliance with the ventilation requirements of the 2003 Washington State Ventilation and Indoor Air Quality Code (51-13 WAC). The mechanical ventilation system shall be capable of supplying ventilation air to each zone with the minimum outdoor air quantities specified in WSVIAQ Table 3-4.

### **Ducts IMC Chapter 6**

Show locations of all heating, cooling and ventilating equipment.

1. Show duct layouts - include size, duct gage (if metal) and register locations and specify cfm ratings. Show materials, spacing, and size of supports for all ducts as set forth in IMC Table 603.10.
2. Indicate the R-value of duct insulation to comply with WSEC Table 14-5.
3. Either architectural plans that specify the use and dimensions of all rooms and show the fire-rated corridors, walls, ceilings and/or floors should be submitted or the mechanical plans should show that same information.

### **Smoke Detection and Dampers**

Smoke Detection and Dampers shall be shown to comply with recognized standards (Fire Dampers UL 555, Ceiling Dampers 555C).

1. Air-moving systems supplying air in excess of 2,000 cubic feet per minute to enclosed spaces within buildings shall be equipped with an automatic shutoff. Automatic shutoff shall be accomplished by interrupting the power source of the air-moving equipment upon detection of smoke in the main return-air duct served by such equipment. Smoke detectors shall be labeled by an approved agency for air-duct installation and shall be installed in accordance with the manufacturer's installation instructions. Such devices shall be compatible with the operating velocities, pressures, and temperatures of the system. Where fire detection or alarm systems are provided for the building, the smoke detectors required by this section shall be supervised by such systems. IMC 606.2
2. Ceiling dampers shall be installed in the fire-resistive ceiling elements of floor-ceiling and roof-ceiling assemblies. Fire dampers not meeting the temperature limitation of ceiling dampers shall not be used as substitutes.
3. Provide details to show that the ductwork will be connected to damper sleeves or assemblies in such a way that collapse of ductwork will not dislodge the damper. IMC Sec. 607.2, manufacturer's installation instructions, and IBC Sec. 712.2
4. Indicate on plans that fire dampers will be equipped with access doors, with a label reading "FIRE DAMPER," as required by IMC 607.4.

## General

1. Provide a drawing and details showing how equipment outside the building will be screened.
2. Separate temperature controls must be provided for each zone and shall be shown on plans. When used to control both heating and cooling, thermostatic controls shall be capable of a deadband of at least 5°F. WSEC 1412.2.
3. All mechanical equipment should be listed and labeled by an approved testing agency. If not, complete information on the equipment, including manufacturers' data sheets, test reports, etc., should be provided to allow for evaluation. Testing by an approved testing laboratory may be required before final approval is granted.
4. Show required access for roof mounted equipment per IMC Sec. 306.5.
5. A 120-volt receptacle shall be shown within 25' of each piece of equipment. ICC Electrical Code.
6. Specify that an accessible gas shut-off valve will be installed within 6' of all gas appliances. International Fuel Gas Code Sec 409.5.
7. On the plans, specify mechanical commissioning per section 1416 of the WA State Energy Code including documents, balancing report and commissioning report.