



## **Heating, Ventilation & Air Conditioning (HVAC) Permits (except R-3 & R-2 occupancies)**

### **Submittal Requirements:**

- Site plan, indicating location of work in building
- Construction plans
- Mechanical Checklist (MECH-CHK) and Mechanical Summary (MECH-SUM). You may obtain mechanical checklist and summary forms at <http://waenergycodes.com>
- Structural calculations for gravity and lateral design for project if units and accessory equipment weigh over 400 pounds and are supported by the roof or ceiling.
- Cost of alterations to the building required to install mechanical equipment, unless alterations are covered by a separate permit.
- Equipment schedules for heating and cooling equipment
- Provide Manufacturer's Equipment Data and Installation instructions.

### **Minimum Requirements for Construction Drawings**

Plans shall be designed using the 2018 editions of the International Building Code (IBC); International Mechanical Code 2018 (IMC); International Fuel Gas Code (IFGC); the 2018 Uniform Plumbing Code (UPC); and the 2018 edition of the Washington State Energy Code (WSEC) as adopted and amended by the State of Washington and the City of Kent. Plans and general notes, soils reports, and engineering calculations based on other codes will not be accepted.

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.

PDF Files must be unlocked or unprotected, so city staff can make comments, reduced, flattened and full-size, one-to-one format (layers must be merged or flattened).

Washington State law requires that any registered professional who prepares or supervises the preparation of drawings and construction documents stamp and sign such documents. Where multiple copies of stamped submittal documents are submitted, at least one set must bear an original wet seal.

### **Equipment Schedules**

- 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.
- 4. Type and amount of refrigerant in each system.

### **Structural**

- 1. Provide a structural analysis prepared, stamped and signed by a professional engineer licensed by the State of Washington addressing gravity and lateral loads. Provide details for structural upgrades, alterations, supports, bracing, etc. Fasteners must be fully specified (type, size location, spacing). Note: structural analysis may not be required for total equipment weight of less than 400 pounds (total of unit, curb, supports, economizer, boots, etc.).

- 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 shall 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 the IBC. 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 per IMC Sec. 603.2
- 3. Provide calculations showing compliance with the ventilation requirements of IMC Chapter 4 and IBC Section 1203.

### **Ducts IMC Chapter 6**

- 1. Show locations of all heating, cooling and ventilating equipment.
- 2. 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 Sec. 603.10.
- 3. Indicate the R-value of duct insulation to comply with WSEC Table C402.1.4.
- 4. Specify the use and dimensions of all rooms and show the fire-rated corridors, walls, ceilings and/or floors.

### **Smoke Detection and Dampers**

- 1. Smoke Detection and Dampers shall be shown to comply with recognized standards (Duct Smoke Detectors—UL 268A, Fire Dampers—UL 555, Smoke Dampers –UL 555S, Ceiling Radiation Dampers\_\_555C).
- 2. Smoke detectors that are listed and labeled shall be installed in air distribution systems in accordance with the manufacturer's installation instruction. IMC Sec. 606.1. Upon activation, smoke detectors shall shut down all operational capabilities of the air distribution system per IMC Sec. 606.4. Duct smoke detectors shall be connected to a fire alarm system per IMC Sec. 606.4.1.
- 3. Where a detector is located in a duct, it shall be listed for the air velocity, temperature and humidity anticipated where installed. IMC 606.1
- 4. Provide the manufacturer's installation instructions when fire dampers are required by IBC Chapters 7 and 9. Fire dampers shall have been tested for closure under airflow conditions and shall be labeled for both maximum airflow permitted in the direction of flow.
- 5. 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. Only fire dampers labeled for use in dynamic systems shall be installed in HVAC systems which are intended to operate with fans "on" during a fire. IMC 607.3.1
- 6. 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 in accordance with the manufacturer's installation instructions.
- 7. Indicate on plans that fire dampers, smoke dampers and combination fire/smoke dampers will be equipped with access doors, appropriately labeled "FIRE DAMPER," "SMOKE DAMPER" or "FIRE/SMOKE DAMPER" as required by IMC 607.4.

## General

- 1. Separate temperature controls shall 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 C403.4.1.2.
- 2. 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.
- 3. Show required access for roof mounted equipment per IMC Sec. 306.5.
- 4. A 120-volt receptacle shall be shown at or near each piece of equipment. IMC 306.5.2 and NFPA 70 (National Electrical Code).
- 5. Specify that an accessible gas shut-off valve will be installed within 6' of all gas appliances. International Fuel Gas Code Sec 409.5.