CITY OF DIXON
600 EAST A ST.
DIXON, CA 95620-3697
PHONE (707) 678-7000
Building Info Building@cityofdixonca.gov

Water Heater Replacement-Storage Tank-Gas

Please visit the Dixon Civic Access Portal City of Dixon, CA to apply for a residential water heater changeout permit. Please see the bottom of page 5 if you are replacing a gas fired storage tank water heater with an electric heat pump (hybrid) type.

The following items represent the most common correction items found by the City of Dixon Inspection staff when inspecting water heater changeouts/replacements. Please review and use this checklist to save both yourself and the City of Dixon Inspection Staff from performing additional and unnecessary final inspections:

GENERAL REQUIREMENTS

- ☐ Water heaters located in garages must be protected from mechanical damage. This means placing them out of the path of vehicular traffic or providing a protective post or raised from drive path. (CMC 305.1)
- ☐ Water heaters must be seismic strapped. Provide two 1-1/2" X 18 ga. Straps. Locate the top strap – 1/3 of the way down and the bottom strap in the lower 1/3 of the water heater. See drawing on page 4. Provide a minimum of 4 inches of clearance from the temperature control valve. Use 3/8" dia. Lag bolts to connect the straps to the framing members. Do not use molly bolts or lag shields into the drywall only. (CPC 507.2)
- ☐ Provide a temperature and pressure relief valve as required by the manufacturer and hard pipe plumb to the outside and directed to the ground and terminated a minimum of 6" to a maximum of 24" above grade. Relief valve may not discharge into a secondary drain pan. (CPC 504.6)
- ☐ A water heater, when located inside or above habitable space, where damage may occur if a leak developed, is required to have a secondary pan with a ¾" minimum drain line run to the outside. (CPC 507.5)
- ☐ The water heater shall have a category III or IV vent, or a type B vent with straight pipe (no bends or offsets) between the outside termination and the space where the water heater is located. (CMC 802.3.3 and CMC 802.6.1)

PROHIBITED LOCATIONS

- ☐ Water heaters that are located in a bedroom or bathroom are required to be in accordance with one of the following: (CPC 504.1)
  - ✓ Be installed in a dedicated closet with a listed, gasketed door assembly and a self-closing device, the door assembly installed with a threshold and door bottom seal, all combustion air shall be obtained from the outside and the closet shall be for the exclusive use of the water heater. (CPC 504.1.)
  - ✓ The water heater shall be of the direct vent type.
- ☐ Water heaters installed in attic spaces or floor ceiling / floor subfloor assemblies where damage may result from a leaking heater (CPC 507.5)

- ✓ A watertight pan of corrosion resistant materials shall be installed beneath the water heater with a minimum ¾" dia.
- ✓ Drain to an approved location and readily visible.
- ✓ Pan shall be minimum 1 ¼ inch depth and the piping shall be rated for the temperature of the liquid being discharged.

INSULATION

The following pipe insulations are required measures of the current California Energy Code:

- ☐ The first 5 feet of hot and cold water pipes from the water heater or storage tank.
- ☐ All hot water pipes ¾" or larger requires full and continuous pipe insulation. New construction
- ☐ All accessible piping associated with a hot water re-circulation system regardless of the diameter.
- ☐ Piping from the water heating source to a storage tank and/or between tanks.
- ☐ Piping buried below grade.
- ☐ All hot water piping between the heat sources to the kitchen fixtures. New Construction

FUEL GAS

Fuel gas piping must be sized for the demand upon it. If a water heater is replaced with a larger one, then the pipe sizing should be reviewed. A listed flexible supply with a maximum length of 3 feet is required. Do not re-use an old flexible supply line. The gas shutoff valve must be located in a readily accessible location. Sediment trap (drip leg) installed between gas shut-off valve and flex connector -typical. (CPC 1212.9)

COMBUSTION AIR

Fuel burning water heaters must be provided with a sufficient supply of air to assure proper combustion of fuel. (CPC 506.0 and CMC 701.11) In tightly constructed buildings with vapor barriers and weather stripping, the combustion air must be ducted in from the outside or from attic spaces that freely communicate with the outside via permanent screened openings. Combustion air openings must be placed so that one half of the required supply enters the water heater enclosure within 12" of the ceiling and one half enters within 12" of the floor. Openings must be a minimum of three inches in least dimension.

- ✓ A typical 50 gallon water heater will require two – 6" round ducts (25 sq. in. each) Consult the plumbing code for further information on combustion air sizing.
- ✓ Combustion air ducts located in the attic space shall not be screened. (CMC 701.11 #5)

VENTING

- A single wall vent connector must be fastened with sheet metal screws, rivets or other approved fasteners at each joint, or according to manufacturers installaton requirements . Do not use cloth tape. (CMC 603.9)
- The maximum length of a single wall vent connector shall be 75% of the height of the vent except for engineered systems. (CMC 802.10.8.1)
- No portion of the connector may penetrate or be concealed within the construction of the building. (CMC 802.10.13)
- Vent connectors must be the same size as the draft hood outlet on the appliance. (CMC 802.7.4) They must slope up from the draft hood to the vent at least ¼" per foot. (CMC 802.10.7)
- A type B or L venting system must terminate above roof and a minimum of 5 feet above the draft hood or flue collar except for fan-assisted Category I appliances shall be 6 feet above draft hood or flue collar. (CMC 802.6.1) and (CMC 803). A roof top gas vent, less than 12 inches in size, shall have a termination located not less than 8 feet away from a vertical wall and shall extend a minimum of 2 feet above the highest point where it passes through the roof. (CMC 802.6.2.1 (b))
- In sizing multiple venting situations the largest vent size plus 50% must be used. (CMC 802.10.2.3)
- Natural draft (Gravity) vents and mechanical draft systems operating under positive pressure shall not be interconnected. (CPC 810.10.3.2.)

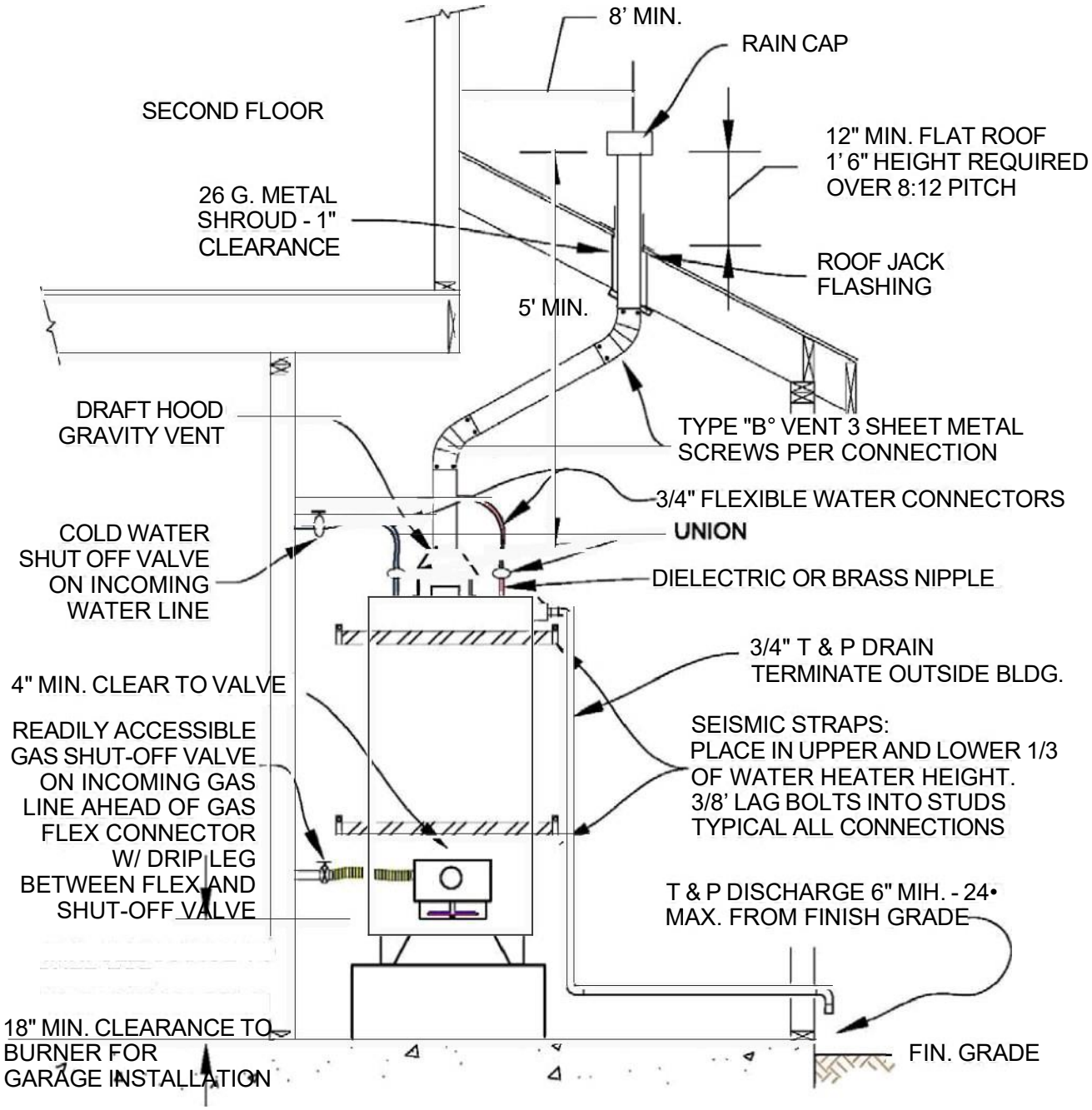
CLEARANCES

- Clearances for most water heaters are found on the appliance label. Please note
- the front clearance is usually greater than the side and rear. Access and working
- space must be provided min 30 inches in depth, width and for the full height of the
- equipment shall be maintained (CPC 507.25)
- Shutoff valves must be located in a readily accessible location. (From the access and working space provided) (CPC 507.25)
- When the water heater is located within a compartment or attic space, the opening must be at least 24 inches wide and large enough to remove the water heater. (CPC 508.4)
- Water heaters installed in a garage must be elevated so that burners and burner ignition devices are located not less than 18" above the floor unless it is ***listed*** as Flammable Vapor Ignition Resistant (sealed combustion chamber) (CPC 507.13).
- Water heaters installed within an approved compartment having access only from outside the garage shall be permitted to be installed at floor level provided the required combustion air is taken from and discharged to the exterior. (CPC 507.13.2)

PENETRATIONS

- Pipes, both water and gas, must be sealed with an approved material when penetrating a rated wall or ceiling assembly. (CPC Chapter 14 as required)
- Single wall vent connectors shall not penetrate an interior wall, ceiling or other assembly.(CMC 802.7.3.2)
- Single wall vent connectors shall not originate in an attic or concealed space and shall not pass through an attic concealed space or floor. (CMC 802.7.3.2)
- B type vents shall use an approved thimble (bucket) or as required by CPC chapter 14 when penetrating a rated assembly.

TYPICAL WATER HEATER INSTALLATION



Heat Pump Water Heater

Important Note: If your permit is going to involve removing a gas-fired storage tank water heater and installing an electric heat pump water heater then specific requirements will apply that are not included above. A newly installed heat pump permit will require the following additional requirements.

1 Residential load calculations* please visit Welcome to the Official Website of the City of Dixon, CA - Forms, Fees, and Permits

2 An anternative to this would be the calculation as required in CEC 228.83(B) also located Welcome to the Official Website of the City of Dixon, CA - Forms, Fees, and Permits. Look for SFR Existing L-Cal No HVAC

3 Manufacturers Installation requirements

4 Separate disconnect within sight CEC 422.31A

5 Project to be submitted to an approved registry such as CHEERS and a CF-1R submitted with your permit application

6 Many of the above requirements will also be required

7 When used we will require the complete listing and manufacurers istallation requirements for Energy Management Systems including the requirements of CEC 220.60, CEC750, UL916, etc for Smart Panels, Span Panels. etc. Additional information may be required.

8 This type of permit will require plan review and is not available for “over-the-counter”

9 From the Dixon Access Portal City of Dixon, CA enter/create a log-in as required

10 Select **Permit Type:** Plumbing (Residential)

11 Select **Work Class:** Water Heater (Fuel Source Only)

12 Further information can be found Welcome to the Official Website of the City of Dixon, CA - Forms, Fees, and Permits