

RESIDENTIAL TANK TYPE WATER HEATER INSTALLATION General Guidance

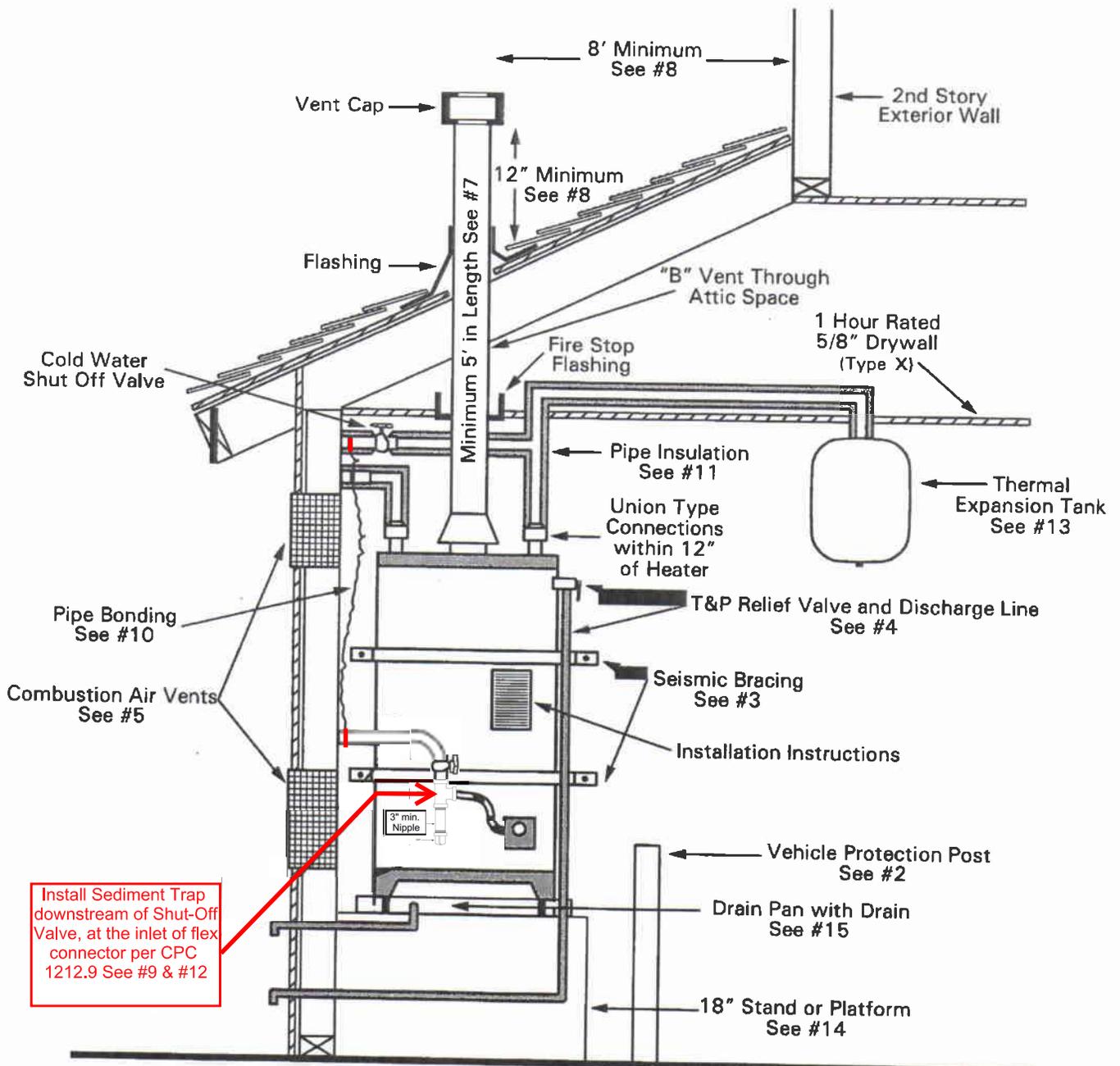
1. **Permits are Required** for new and replacement water heaters. (502.0 C.P.C. 2013) Contact the Building Division to obtain needed permit.
2. **Inspection is Required** after the water heater is installed to verify compliance with the intent of this code. See diagram for general requirements. (503.0 C.P.C. 2013)
3. **Seismic Bracing System** shall be installed to provide protection from displacement due to earthquake motion. Water heater shall be anchored/secured into framing members with a code-approved restraint system consisting of strapping the upper 1/3 and lower 1/3 of the water heater's vertical dimensions, minimum 4" above gas control valve and 4" below side T & P outlet (507.2 C.P.C. 2013 & 17958.5 Health & Safety Code)
4. **Temperature and Pressure (T & P) Relief Valve & Discharge Line** Water heaters shall be installed with a T & P relief valve that is ran in rigid, approved piping (galvanized steel or hard-drawn copper, or CPVC or listed relief valve drain tube) from T&P valve to the outside of the building with slope and the end of the pipe not more than 2' feet nor less than 6" above the ground or flood level of the area receiving the discharge and pointing downward. The discharge line shall not be trapped or have a valve installed and the terminating end shall not be threaded. (505.2 & 608.5 C.P.C. 2013)
5. **Combustion Air Vents** within 12" of the top and bottom of enclosure is required where enclosure has volume less than 50 cubic feet per 1,000 Btu/hour of all appliances within enclosure. Minimum area per opening shall be based on 1" square inch per 4000 Btu/h of input capacity, with minimum screen mesh of one-fourth (1/4") inch. (506.2 C.P.C. 2013)
6. **Venting System** shall be constructed, sized appropriately, and installed to code per manufacturer's installation instructions; in no case shall vent piping be smaller than required for water heater's draft diverter or venting outlet. (802.3.2 C.M.C 2013)
7. **Venting Clearance** Single wall metal vent piping shall be installed in a manner to provide 6" clearance from combustible materials and shall be secured together with Tex screws or rivets. Single wall vent piping shall not be installed in a confined space, and only installed below fire stop flashing. Type B Double wall vent piping shall be installed in a manner to provide 1" clearance from combustible materials and shall not be secured together with Tex screws or rivets. (Table 802.73.4(1) C.M.C. 2013)
8. **Vent Pipe Termination** shall not terminate less than 2 feet above roof. Additional height required if roof pitch is greater than a 6:12 slope, nor shall a vent terminate less than 8 feet from any second story exterior wall. Vent termination, in all other cases, shall not terminate any less than 2 feet above any structure within 10 feet. Other venting rules may apply. See Section (509.5.4 C.P.C. 2013)
9. **Gas Appliance Connectors** shall not exceed 3 feet in length and shall not be reused per manufacturer's installation instructions. Gas connectors shall be attached to a hand shut-off-type gas valve and be properly sized to BTU rating of water heater. Sediment Trap shall be a minimum of 3 inches in length.
10. **Metallic Piping to be Bonded** continuously with copper bonding wire and bonding clamps to cold, hot, and gas lines to tie systems together at water heater, using a #8 for 100 amp service and a #6 for 200 amp service. (250.104. C.E.C. 2013)
11. **Water Piping Insulation** shall be installed 5 feet on the cold and 5 feet on the hot water supplies at water heater when possible and maintain 6" clearance from vent and flue. NOTE: If water heater has a recirculating pump system, the entire length of circulating piping loop will need to be insulated (2013 California Energy Commission Mandatory Requirements/Title 24)
12. **SEDIMENT TRAP** New in 2016 & 2019 CPC, Section 1212.8 the Sediment Trap shall be installed downstream of the appliance shutoff valve as close to the inlet of the appliance as practical, but before the flex connector, where used, at the time of appliance installation. The sediment trap shall be either a tee fitting with a capped nipple in the bottom out-let, or other device recognized as an effective sediment trap.

Why: This code section was added to clarify the trap placement such that locating the drip leg prior to the corrugated gas flex connector captures sediment prior to it reaching kinks and crenellations on the interior of the corrugated flex connector which would otherwise tend to collect and trap sediment fouling the flex connector.
13. **Thermal-Expansion Tank System** shall be required to protect water heater and water piping system from excess pressure due to thermal-expansion and set per manufacturer's installation instructions. Expansion tank is required in City of Woodland (608.3 C.P.C. 2013 & 1005.0 C.M.C. 2013)
14. **Water Heater Stand** or built- in platform is required when water heater is installed in a garage to elevate water heater a minimum 18" above grade. Stands or platforms are to be anchored and secured appropriately. Note that electric water heaters with a switch and/or heating element located less than 18" above the base must also be elevated. (507.13 C.P.C. 2013)
15. **Drain-Pan** shall be required when a water heater and/or tank is installed in a location where it could cause damage such as in the case of failure/leak to floor, sub-floor, drywall, or platform. Drain pain shall be installed with a min. 3/4" drain outlet and discharge that drain to the exterior of the building or approved location (507.4 C.P.C. 2013) The Drain Pan shall not be less 1 1/2 Inches in depth /CPC 507.5

NOTE: Discharge from T&P relief valve cannot terminate into water heater drain pan. (507.5 C.P.C. 2013)

RESIDENTIAL WATER HEATER REQUIREMENTS

Picture shows a water heater with combustion air, venting and vent cap, seismic protection/strapping, access and working space around water heater and other appliances, clearances to combustibles, gas piping supply with sediment trap and connections, temperature and pressure relief valve and discharge piping to outside, water and gas hand shutoff valves, water piping and connections, metallic piping continuously bonded, to meet required Energy compliance and, if required by location, 18" elevation, vehicle damage protection and drain pan with drain. See other side for details on each numbered item.



The Information in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.

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