GAS WATER HEATER INSTALLATIONS
1. **Permits Are Required** for new and replacement water heaters.
2. **Inspection Is Required** after the water heater is installed to verify compliance within the minimum safety requirements of the code regarding; location of water heater, combustion air, venting & 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, connections, metallic piping continuously bonded, to meet required Energy compliance and if required by location 18 inch elevation, vehicle damage protecting and drain pan with drain.
3. **Water Heater Locations:** Water heater installations in bedrooms and bathrooms shall be in accordance with one of the following:
   a. Fuel-burning water heaters shall be permitted to be installed in a closet located in the bedroom or bathroom provided the closet is equipped with listed, gasketed door assembly and listed self-closing device. Self-closing doors shall swing easily and freely and shall be equipped with a self-closing device to cause the door to close and latch each time it is opened. The closing mechanism shall not have a hold-open feature. The door assembly shall be installed with a threshold and bottom door seal. Gasketing on gasketed doors and frames shall be furnished in accordance with the published listings of the door, frame, or gasketing material manufacturer. Combustion air for such installations shall be obtained from the outdoors. Outdoor air shall be provided through opening(s) to the outdoors. Two permanent openings, one commencing within 12 inches of the top and one commencing within 12 inches of the bottom of the enclosure shall be provided. The openings shall communicate directly, or by ducts, with the outdoors or spaces that freely communicate with the outdoors as follows: Where directly communicating with the outdoors through vertical ducts, each opening shall have a free area of not less than 1 square inch per 4000 Btu/h of total input rating of appliances in the enclosure. Where communicating with the outdoors through horizontal ducts, each opening shall have a free area of not less than 1 square inch per 2000 Btu/h of total input rating of appliances in the enclosure.
   b. Water heaters shall be of the direct vent type.
4. **Seismic Bracing System** shall be installed to provide protection from displacement due to earthquake motion. Water heater shall be anchored or secured with a code approved restraint system consisting of strapping the upper and lower 1/3's of the water heater, minimum 4 inches above gas control valve.
5. **Temperature and Pressure Relief Valve & Discharge Line.** Water Heaters shall be provided with a T & P relief valve and drain installed in compliance with the manufactures instructions and terminate not more than 2 feet nor less than 6 inches above the ground or installed, and the terminating end shall not be threaded.
6. **Combustion Air Vents** within 12 inches of top and bottom of enclosure is required where enclosure has volume less than 50 C.F. per 1000 B.T.U. /H of all appliances within enclosure. Minimum area per opening shall be based on 1 square inch per 4000 B.T.U. /H of input capacity, with minimum screen mesh of a ¼ inch. One vent within the upper 12 inches is allowed with restrictions.
7. **Venting System** shall be constructed, sized appropriately and installed to code and per manufactures installation instructions.
8. **Venting Clearance** Single wall metal vent connector piping shall be installed in a manor to provide 6 inch clearance from combustible materials and shall be secured together with Tek Screws or rivets. Single wall vent connector 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 manor to provide 1 inch clearance from combustibles materials and shall not be secured together with Tek screws or rivets or tape.
9. **Vent Pipe Termination** shall not terminate less than 12 inches above roof, additional height required if the roof pitch is greater than 6:12 slope, nor shall a vent terminate less than 8 feet from and second story exterior wall. Vents larger than 12” in diameter shall not terminate any less than 2 feet about any structure within 10 feet. Other rules may apply.
10. **Gas Appliance Connectors** 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 B.T.U. input rating of water heater.
11. **Sediment Trap** shall be installed downstream of the shutoff valve and before the flex connector. The sediment trap shall consist of a “T” fitting and a minimum 3 inch nipple in length with cap.
12. **When Applicable Metallic Piping** to be bonded continuously with a copper bonding wire, sized per current adopted Electrical Code, and bonding clamps, to cold and gas lines to tie systems together at water heater.
13. **Water Piping Insulation** shall be installed 8 feet on the cold and 8 feet on the hot water supplies at water heater when possible and to maintain 6 inches clearance from vent and flue. NOTE: if water heater has a re-circulation pump system the entire length of circulation piping loop will need to be insulated.
14. **State Energy Regulations** requires the following: if the water heater has an EF of less than 0.58 and R-12 water Heater blanket is required (internal insulation cannot be used to satisfy this mandatory requirement). For water heater with 0.58 EF or higher, no blanket is required. The blanket should be securely attached around the water heater. The top of the water heater should not be insulated and a cut out in the blanket should be provided for combustible air intake and controls.
15. **Installation Instructions** for water heaters to be on site and readily available for reference.
16. **Working Platform** A level working surface not less than 30” X 30” shall be provided for service.
17. **Thermal Expansion Tank System** water piping systems equipped with backflow or pressure reducing device on the main shall require a thermal expansion tank to protect water heater and water piping system from excess pressure due to thermal expansion.
18. **Water Heater Stand** or built in platform is required when water heater is installed in garage to elevate burner a minimum 18” above grade.
19. **Vehicle Protection** must be provided where subject to mechanical damage.
20. **Drain-Pan** shall be required when a water heater and/or tank is installed in a location where it could cause damage; in case of failure/leak to floor, sub-floor, drywall. Drain pan shall be installed with a minimum ¾” drain outlet and discharge that drains to the exterior of the building or an approved location. Note: Discharge from a T&P relief valve cannot terminate into water heater drain pan.
21. **Electrical Water Heater** shall be provided with a disconnect. Electric water heaters require a disconnecting means within sight of, not exceeding 50’ from the appliance.