



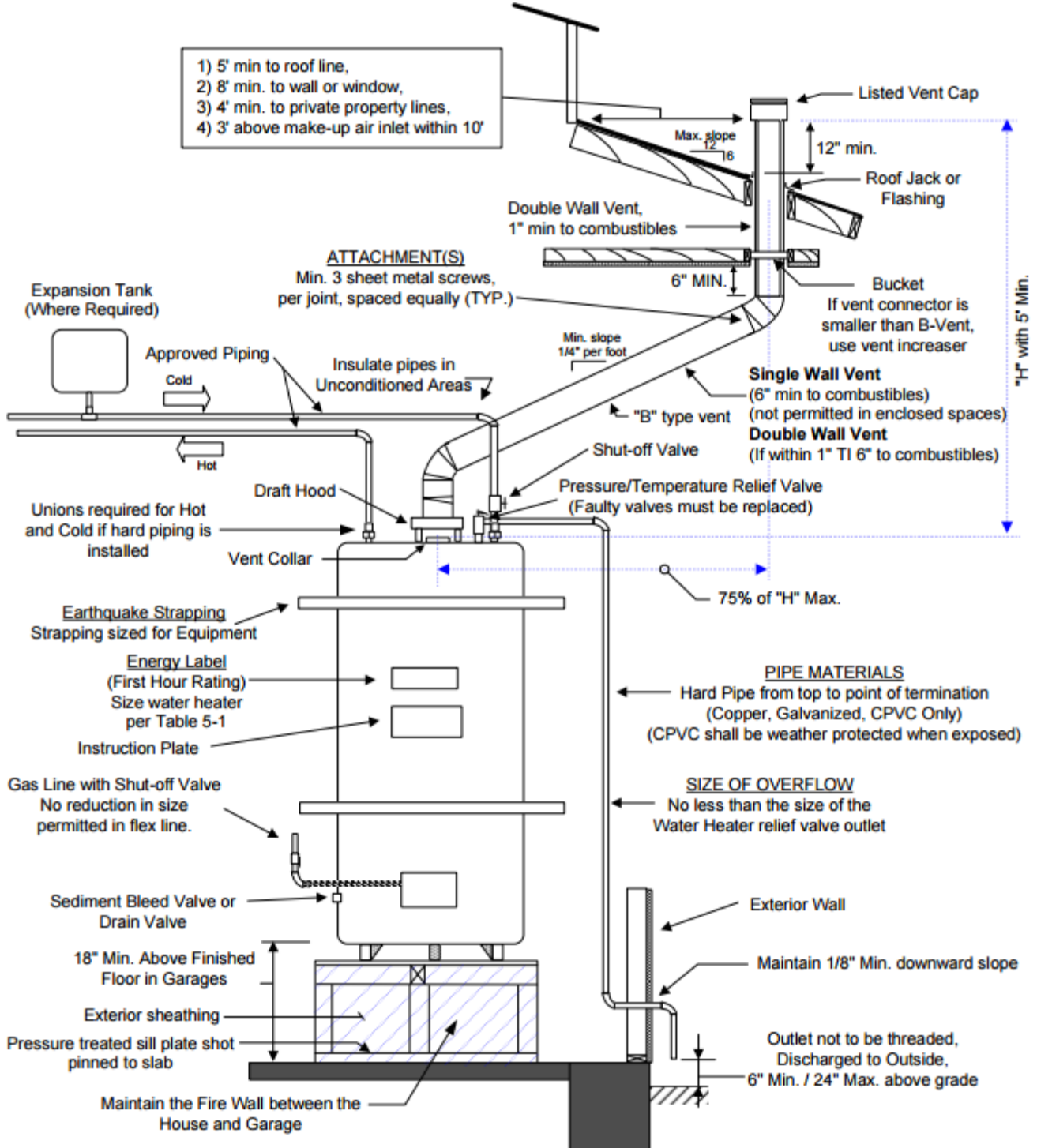
CITY OF PASADENA

BUILDING AND SAFETY DIVISION

175 North Garfield Avenue, Pasadena, CA 91101-1704
 (626) 744-4200 Fax: (626) 744-3979
www.cityofpasadena.net

TYPICAL RESIDENTIAL GAS-FIRED WATER HEATER

(The following information is not meant to replace complete set of plans.)





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TYPICAL RESIDENTIAL GAS-FIRED WATER HEATER

WATER HEATER

- Approved water heater by a recognized agency and installed per the manufacturers recommendations.
- Shall be installed plumb (vertical position) or as close as possible for proper operation of the unit.
- Prior to placing the water heater, please have prior approval from Building & Safety. If located in a garage, the 20' x 20' inside dimensions must be maintained, without any encroachment.

PRESSURE & TEMPERATURE RELIEF VALVE

- Installed per water heater manufacturer instructions
- The drain line shall be no smaller than the relief valve outlet. The internal bore of the pipe should match.
- The drain line shall be of galvanized steel, hard drawn copper piping and fittings, CPVC, or PB.
- The drain line installed to protect from vehicle damage.
- The discharge shall be to the outside with the end of the pipe not more than 24" and not less than 6" above grade. The pipe shall point downward.
- No part of the drain line shall be trapped (plumbing trap) and the terminal end shall not be threaded.
- Drain shall be hard piped from P & T to termination.
- Discharge from a relief valve into a water heater pan shall be prohibited.

EXPANSION TANK

- Any water system valve, backflow preventer, or other normally closed device that prevents dissipation of building pressure back into the water main shall be provided with an approved, listed, and adequately sized expansion tank or other approved device. (CPC 608.3)

CLEARANCES

GENERAL

- The definition of combustible materials includes wood, gypsum wallboard, etc.

WATER HEATER

- Water heater clearances shall be maintained per the listing. This should be specified on a label located on the water heater.

VENTING

- Single wall venting connectors shall maintain a minimum of 6" to combustibles, and shall not be run through an attic.
- Double wall venting connectors shall maintain a minimum of 1" to combustibles.

ACCESS

- Minimum access door/opening shall be a minimum of 2'-0" wide by 6'-8" high.

ENERGY

- California Energy Commission approved and insulated per the energy regulations.
- First hour rating of water heaters shall conform to Table 5-1 (Page 4)

"B" VENT

- Shall extend in a generally vertical direction with offsets not exceeding 45 degrees, except that a gravity vent may have only one offset not more than 60 degrees.
- Angles greater than 45 degrees from the vertical is considered a horizontal run. The total horizontal run of a vent, plus the length of horizontal vent connector, shall not exceed 75 percent of the vertical height.
- Vent offsets shall be supported for their weight and shall be installed to maintain proper clearance, prevent physical damage, and to prevent separation of the joints.
- The venting connector shall have a minimum slope of not less than 1/4" per foot measured from the appliance vent collar to the vent.
- Gravity-type vent system, other than listed appliance otherwise, shall terminate not less than 5 feet above the highest vent collar which it serves, (Due to draw).
- Listed vent caps, connectors, buckets, pipe, etc.
- Single wall vents shall be connected with a minimum of 3 sheet metal screws at the joints, spaced equally apart.
- Double wall vents that snap together shall not also be screwed together or it will destroy the integrity of the vent.

STAND

- The water heater must be elevated 18" above the floor to the flame when installed in garages or rooms adjacent to garages.
- Constructed of wood or pre-fabricated metal stand. Wood stands may be constructed of 1/2" CDX plywood or 2" x minimum top with a 2" x mid-span support, and 2" x 4" minimum studs as built per standard construction procedures per Chapter 23 of the CBC. An intermediate stud is required between ends.
- When the stand is built as part of a wall adjacent to a 1-Hour wall, the integrity of the 1-Hour rating shall be maintained.
- Exterior sheathing is required when constructed of stud framing.
 - a. Use 5/8" Type X Gypsum Wallboard when the stand is adjacent to the house framing, with 6d cooler nails or drywall screws at 6" oc at edges and intermediate framing members.
 - b. Otherwise, a minimum of 3/8" plywood is required with 8d nailing at 6" oc at edges and intermediate framing members.

CRASH POST

A crash post is required when located in a garage and the vehicle could drive into the water heater. Wheel stops are not sufficient to stop a vehicle.

WATTS VALVE

- Watts valves shall not be used in lieu of the P & T valve.



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STRAPPING REQUIREMENTS FOR WATER HEATERS

The State of California requires that all water heaters in our area be anchored or strapped to resist movement during an earthquake. This can be accomplished by installing any of the over-the-counter products especially made for restraining water heaters (example 1) or you can make your own out of a heavy-duty metal strap material (Example 2). It is required that at least two restraints are used, with one in the upper one-third and one in the lower one-third of the water heater. Fasten of the anchor or strap to the structure, use a screw not less than 1/4 " diameter with a minimum penetration of 1 1/2" into a wood stud of the wall, with a washer between the head of the screw and the restraint. Below are examples of acceptable methods for restraining a water heater.

***Note: A plumbing permit is required any time a water heater is replaced.**

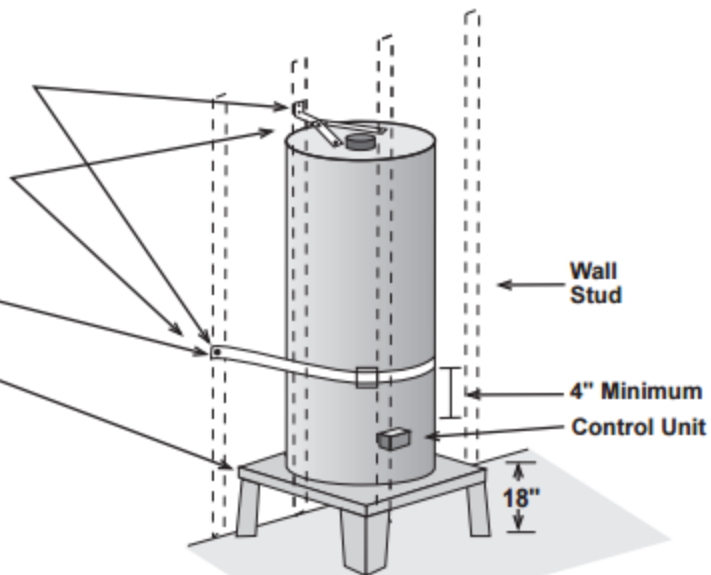
Example 1

These types of restraints are over-the-counter products sold at your local hardware store.

Drill pilots on center line of stud, insert screws through punched holes in strap. Use washers.

The lower strap must be a minimum of 4" above the control unit.

This 18" stand is required for heaters installed in a garage location.



Example 2

Minimum 22 Gauge metal strap material installed within the top 1/3 of the heater and the bottom 1/3 of the heater.

Drill pilots on center line of stud, insert screws through punched holes in strap.

Use minimum 1/4" screws with minimum 1 1/2" penetration. Use washers.

The lower strap must be a minimum of 4" above the control unit.

This 18" stand is required for heaters installed in a garage location.

