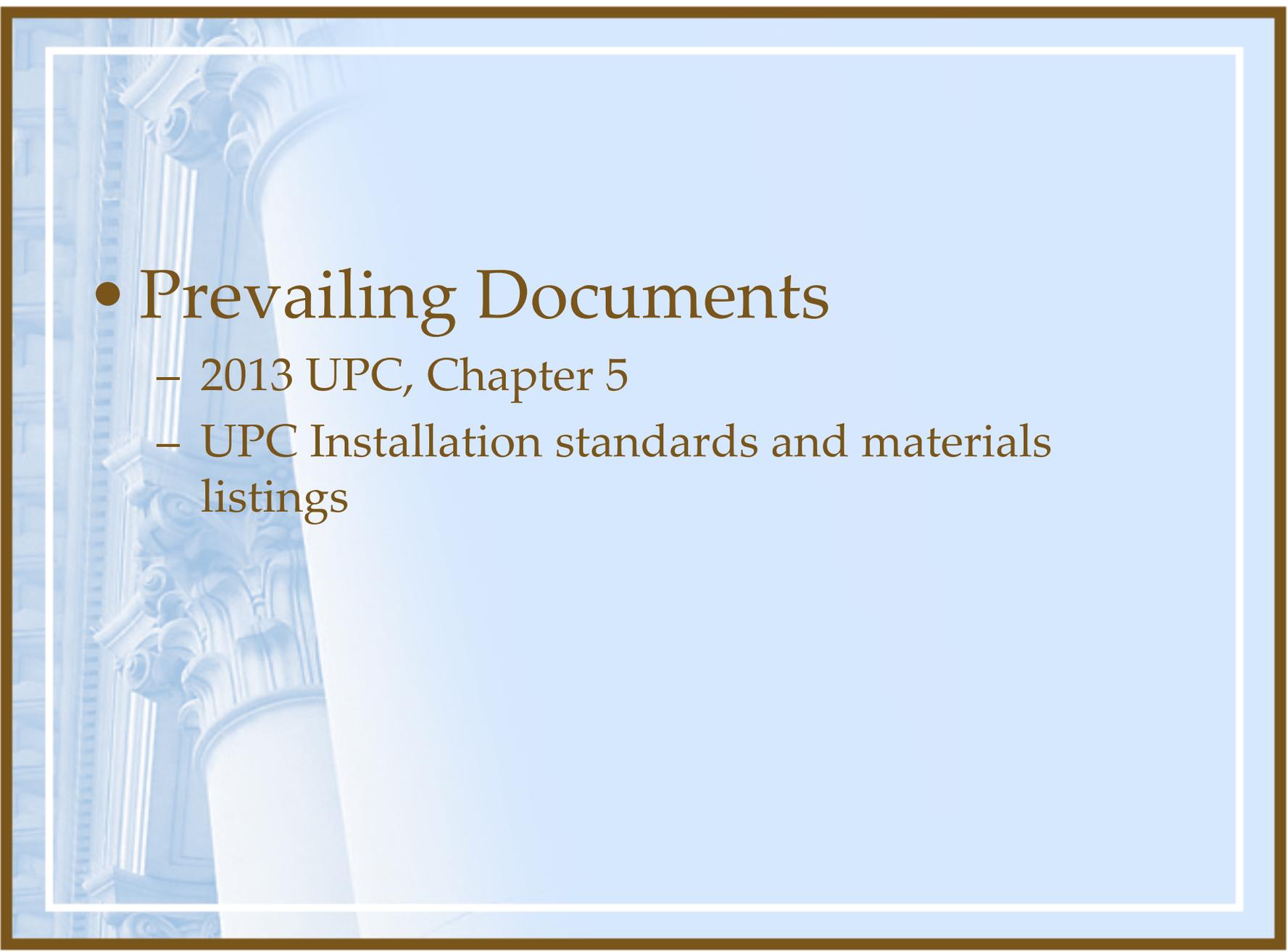


The background of the slide features a light blue gradient with a faint, semi-transparent image of classical architectural columns on the left side. The columns are white with detailed capitals and fluted shafts. The entire slide is framed by a dark brown border.

Inspection Standard for Tuolumne County - Water Heaters

What you should know before calling
for an inspection.

Presented by,
Doug Oliver
Chief Building Official
County of Tuolumne

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- Prevailing Documents

- 2013 UPC, Chapter 5

- UPC Installation standards and materials listings

Did we find your project?

- Address must be posted per County Standard for all inspections
 - 4 inch stroke
 - 1/2" lettering
 - Contracting, reflectorized background

Why Inspect Water Heaters?



Low probability- HIGH RISK!

- Fire
- Explosion
- Carbon Monoxide
- Scalding

Inspection Ensures:

- Correct product installation
- Correct clearance from combustibles
- Adequate combustion air
- Adequate fuel supply
- Safe plumbing practices

Location, Location, Location

- Basements/Underfloor (propane)
 - Must be able to provide ventilation of gas at lowest point of space directly to exterior
 - Drip pans don't count!
- Garages
 - Open flame of unit must be 18" above floor. (units w/o sealed combustion chambers)
 - Protect from impact
- Bedrooms and Bathrooms Prohibited!
 - Exceptions: In a closet with gasketed door and direct vent appliances.

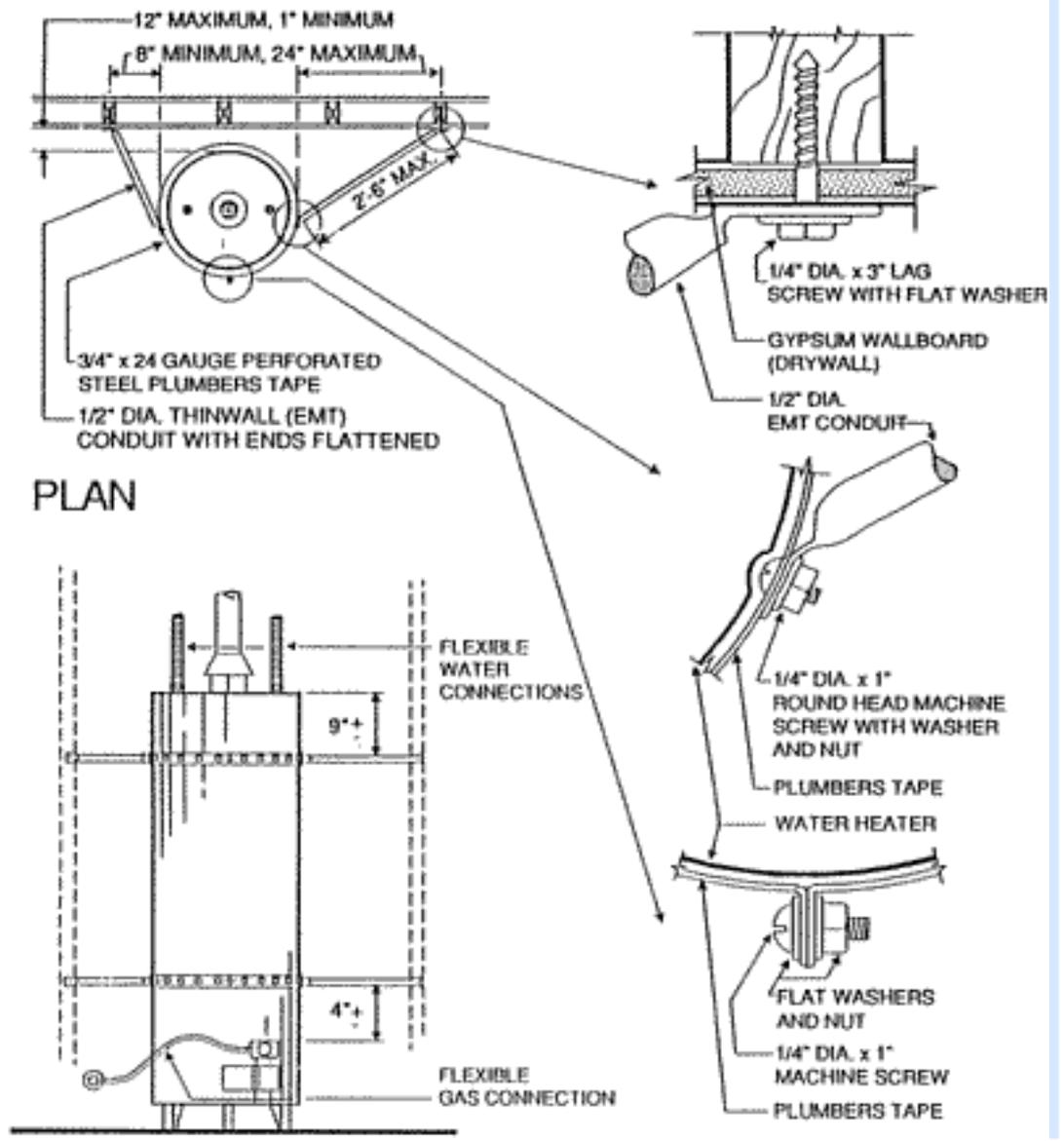
Water heater area/enclosure

- Must have door large enough to remove unit.
- Must have adequate ventilation (more on that later)
- Must be structurally sound enough to adequately secure unit.
- If resting on the ground, must be on a concrete pad 3" above grade

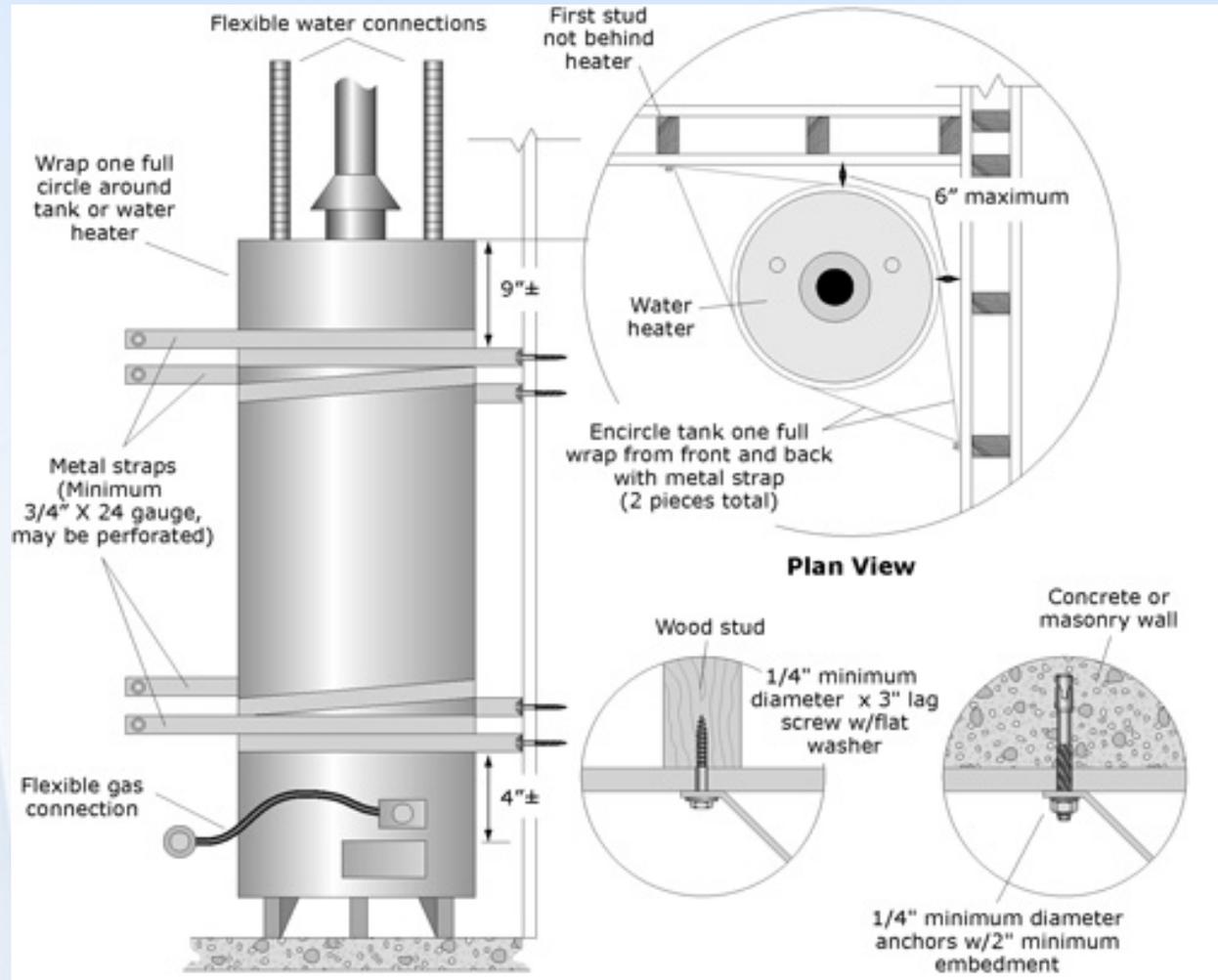
Installing the water heater

- Seismic Strapping – 507.2
 - Two Straps: one at the upper and one at the lower 1/3 of the unit
 - 4" above the controls
 - No distinction on size: use approved strap designed to the use. Or 24 gauge plumbers tape!
 - DO NOT FASTEN STRAPS TO WATER HEATER WITH SCREWS!
- Other fastening methods allowed per manufacturer.
 - Provide install instructions on site for special fastening methods

Standard detail



FEMA guidelines



Problems?



- 
- The background of the slide features a faint, light blue image of classical architectural columns, possibly from a Greek or Roman temple, with detailed capitals and fluted shafts. The image is semi-transparent and serves as a decorative backdrop for the text.
- TPR Valves – 504.6 **REQUIRED!**
 - Cannot discharge into the pan!
 - Relief Drains 608.5
 - Cannot terminate in crawlspace
 - Must be 6" to 2' above grade and terminate outdoors
 - Drain Pans – 507.4
 - Required on all wood support systems
 - $\frac{3}{4}$ " drain required

Attic and underfloor access – 508.4

- 22" x 30" opening
- 6' high 2' wide path of travel or distance to unit restricted to 20 feet
- 30x30 platform in front of the control and maintenance side.
- Light, switch, and 120 volt plug required

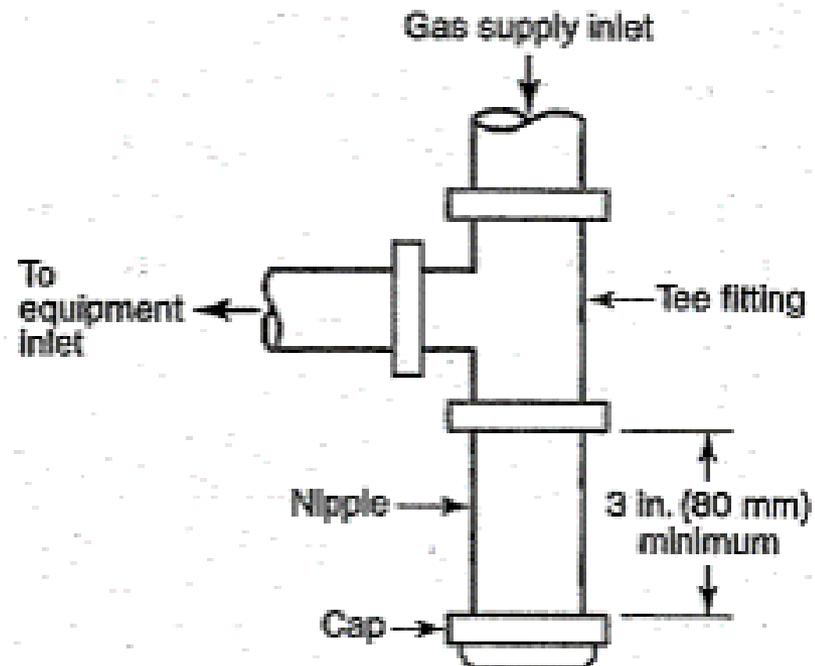
Nuts and bolts

- Gas piping
- Combustion Air
- Vent installation

Gas Piping

- Must be sized correctly
- Must be provided with a Shut off prior to the sediment trap.
- Sediment trap required

Sediment trap detail



Combustion Air - 506

- Indoor

- Only if 50 cu ft/1,000 btu is provided
- Openings to connect spaces: 1 sq in./1000 btu.
No less than 100 sq. inches within upper 12 and lower 12 inches of enclosure.

- Outdoor

- Two openings: 1 sq in./4000 btu (similar to above).
- One opening: 1 sq in./3,000 btu, located in upper 12 inches of enclosure.

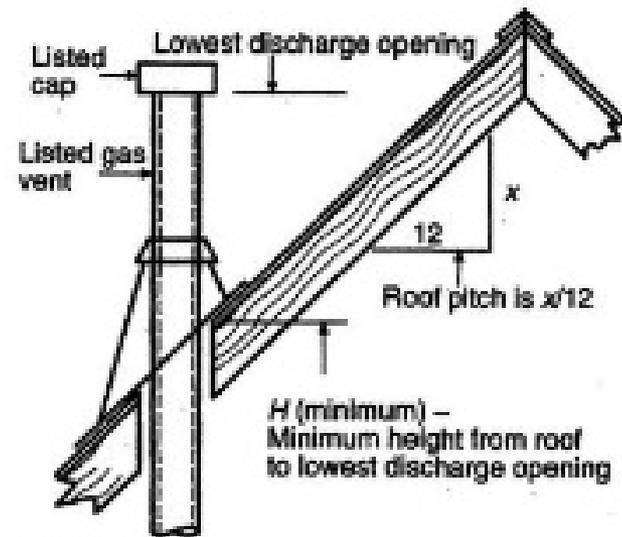
- Indoor Outdoor: Don't over complicate it!

Vent Installation – Keeping it simple

- Single wall vent limited to 5 feet vertical.
- B vent must be vertical (no more than one 60 degree offset, otherwise 45 degree offsets only!)
- No more than 75% of the height can be horizontal.
- B vent must extent minimum 5 ft vertical.
 - Not length, but height. Watch the offsets!

Do not connect Forced Air Units and Gravity units to a common vent!

Vent Termination



ROOF PITCH HEIGHTS

ROOF PITCH	H(minimum) ft.	m
Flat to $\frac{1}{12}$	1.0	0.30
Over $\frac{1}{12}$ to $\frac{2}{12}$	1.25	0.38
Over $\frac{2}{12}$ to $\frac{3}{12}$	1.5	0.46
Over $\frac{3}{12}$ to $\frac{4}{12}$	2.0	0.61
Over $\frac{4}{12}$ to $\frac{5}{12}$	2.5	0.76
Over $\frac{5}{12}$ to $\frac{6}{12}$	3.25	0.99
Over $\frac{6}{12}$ to $\frac{7}{12}$	4.0	1.22
Over $\frac{7}{12}$ to $\frac{8}{12}$	5.0	1.52
Over $\frac{8}{12}$ to $\frac{9}{12}$	6.0	1.83
Over $\frac{9}{12}$ to $\frac{10}{12}$	7.0	2.13
Over $\frac{10}{12}$ to $\frac{11}{12}$	7.5	2.27
Over $\frac{11}{12}$ to $\frac{12}{12}$	8.0	2.44

Other vent considerations

- Gravity:
 - Must be 3 feet above a forced air inlet within 10 feet of the vent.
 - Must extend 2 feet above any portion of a building within 10 feet or vertical walls within 8 feet
- Forced Air Vent Through a Wall
 - Not less than 4 foot below, 4 foot horizontally, or one foot above openable window.
 - Not less than 12" above grade

1" Clearance
from B vent to
combustible
construction.

6" from single
wall!



DON'T FORGET EXPANSION!

- Expansion tanks are required on closed water systems.
 - Any system with a check valve
 - Every house with fire sprinklers ☹

Simple Inspection!

- By Board Direction, the permit fee is intentionally reduced in anticipation of only one inspection.
 - If there is a re-inspection, a re-inspect fee is automatically charged.

Questions?

