

Plumbing

Helpful Hints

Residential Construction

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Lincoln County

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Waste and vent fittings



Vent 90 medium 90 long 90



1/16 bend ,1/8 bend ,1/6 bend ,
medium 90



san tee combination Y-1/8



Double combination
Y-1/8 Fixture
Fitting



Vent 90, This fitting is to be used in the venting system only. This is not a drainage fitting because of its short sweep.



Medium 90, This fitting can be used in the drainage system from a horizontal drain to a vertical drop in a drain. This can be used anywhere in the vent system.

Waste and vent fittings



Long sweep 90, this fitting can be Used anywhere in drain and vent system



1/16 bend– 22 1/2 degree bend. This fitting is used to offset drain and vent pipe. Can be used in any position.



1/8 bend– 45 degree bend. This fitting is used to offset drain and vent pipe. Can be used in any position.



1/6 bend-60 degree. This fitting is used to offset drain and vent pipe. Can be used in any position



2x1-1/2x1-1/2" san tee. This fitting is used for fixture connections from the wall to the trap under the sink.



Combination y-1/8 bend. This fitting is used to connect a vertical drain to a horizontal drain or a Horizontal drain to a horizontal drain.

Waste and vent fittings



Double Fixture fitting. Used for connecting back to back fixtures with fixture rim heights at same level or under floor for back to back toilets. **This is not a double san tee.**



Double san tee. Used to connect two horizontal vents to a vertical stack. Fitting upside down.



Double combination y-1/8 bend. This fitting is used to connect a Horizontal drains to a vertical stack .



Two way cleanout tee .To be used just outside of the building foundation on the sewer drain line.

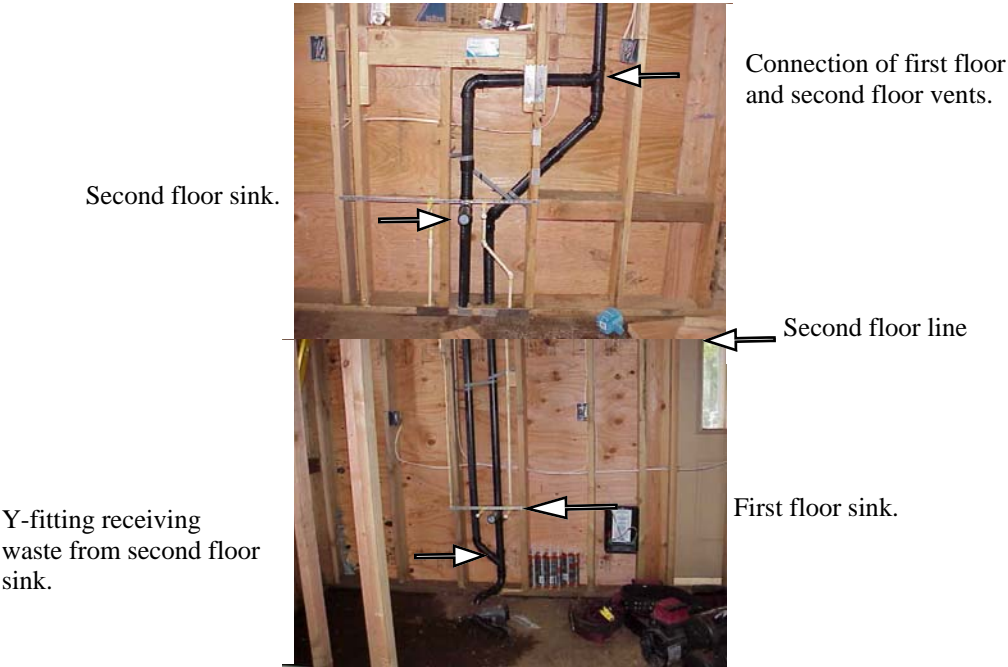


Trap adapter. This is used to connect the trap under a sink to the trap arm.



Coupling. Used to connect pipes together.

Drains and Vents



San tee in vertical position. **San tee in horizontal position not permitted as drainage fitting.**



Y-fitting receiving waste from sink.



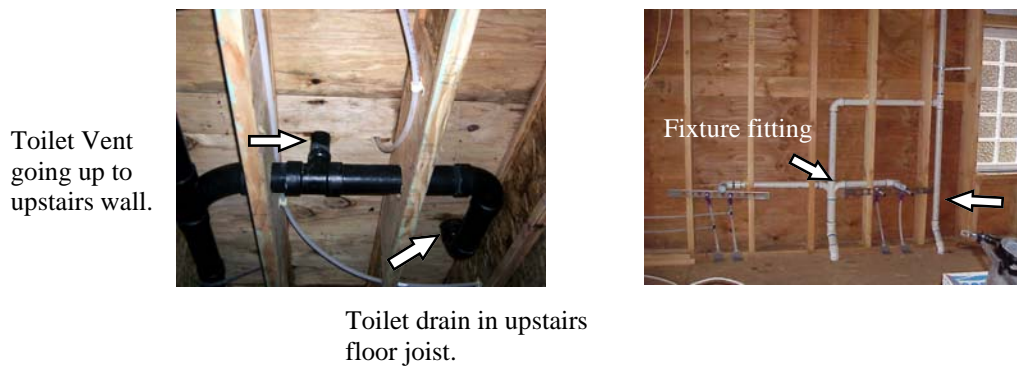
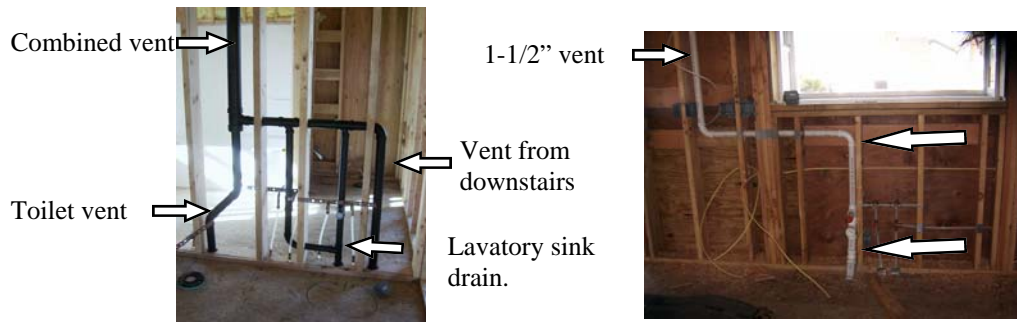
Connecting horizontal drain to horizontal drain with Y fitting.



Combination y-1/8 bend in horizontal position.

Drains and Vents

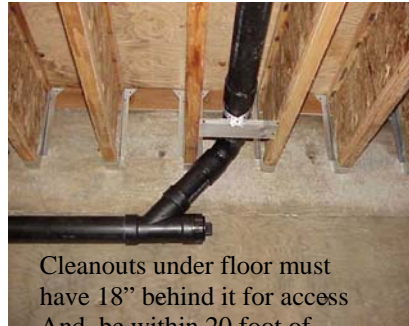
Fixture	Drain Size	Vent size	Trap size
Toilet	3"	2"	In Toilet
Kitchen sink	2"	1-1/2"	1-1/2"
Clothes washer	2"	1-1/2"	2"
Lavatory sink	1-1/4"	1-1/4"	1-1/4"
Laundry sink	2"	1-1/2"	1-1/2"
Bathtub	2"	1-1/2"	1-1/2"
Spa tub	2"	1-1/2"	1-1/2"
Shower	2"	1-1/2"	2"



Drains and Vents



1/4 inch per foot grade and hanger required every 48 inches..



Cleanouts under floor must have 18" behind it for access And be within 20 foot of crawl hole.



Cleanouts are required for the kitchen sink. Cleanouts on the second floor of the building are not required.



Two way cleanout outside of house is preferable or a end of line cleanout may be used. A sewer line must have cleanouts every 100 foot. Green tracer wire 18 ga. on sewer.

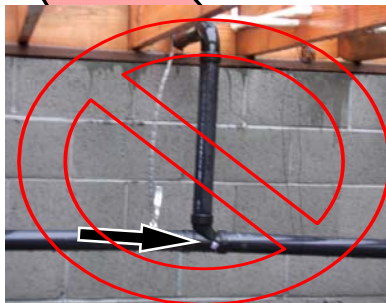


End of line cleanout. Cleanouts are required for change of direction over 135 degrees in horizontal turns. That's 1-90 degree turn and 1-45 degree turn.



Cleanout above washer so it can be used without moving washer

The most common *mistake* is to use this san tee in a horizontal position as a drainage fitting.



This is horizontal



Drain pipe from sink, tub, toilet or shower is **not permitted to drain into a san tee in a horizontal position.** This fitting must be a combination y and 1/8 bend. See fittings page.

Vents

1. The drainage system of the building must be vented by one or more pipes whose combined cross sectional area is at least equal to that of the largest required building drain line. This means that if the building main is 3" pipe you could vent with any combination of pipes that total 7 square inches.

Pipe size	Diameter of pipe
1-1/4"	1.2272
1-1/2"	1.7671
2"	3.1416
3"	7.0686

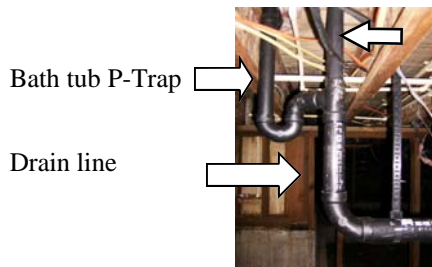
2. Using the chart above a 3" sewer would require 2-2" vents and 1-1-1/2" vent, $3.1416+3.1416+1.7671=8.0503$. This is large enough for the 3" sewer.



Vent 6" above roof. Never terminate vents in attic space. Hose for water test of the new waste system.



Vents connecting together in attic.



Bath tub P-Trap

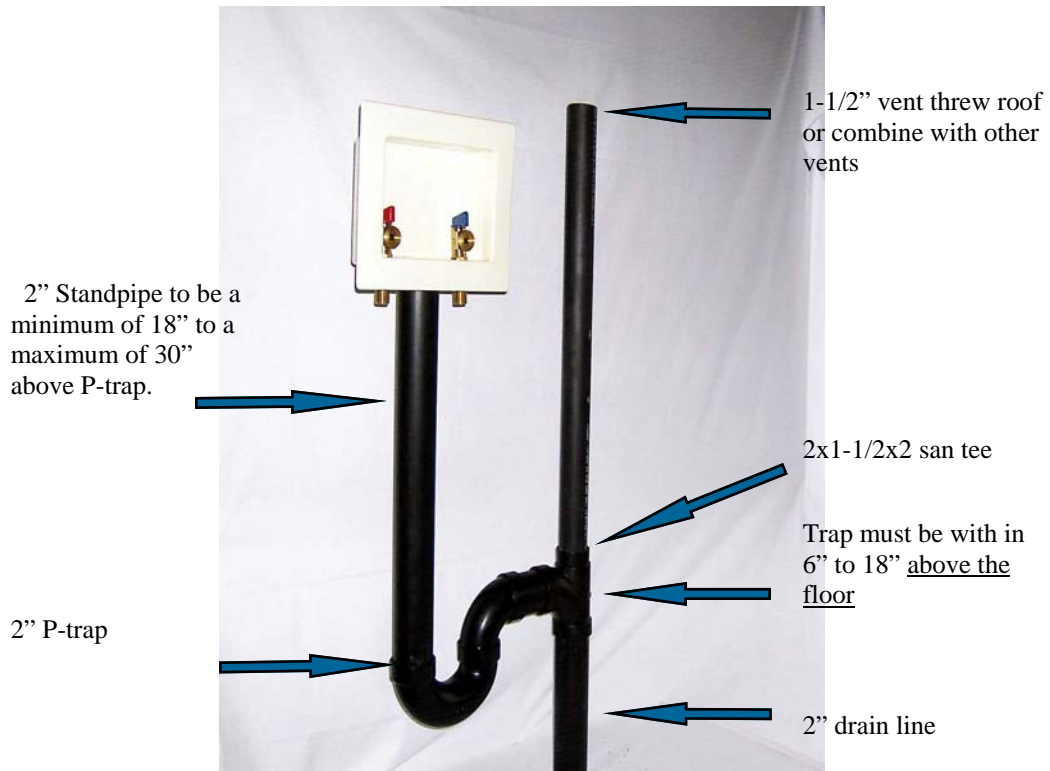
Drain line

Vertical vent on bathtub drain in under floor crawl space. 1-1/2" vent.

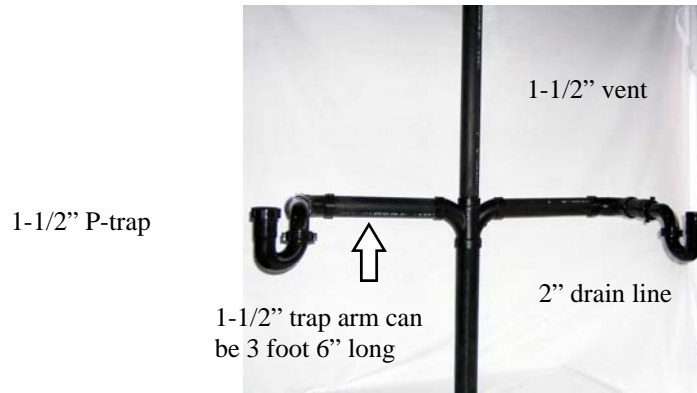


Vent connection of downstairs fixtures must be 6" above the overflow rims of fixtures on this floor.

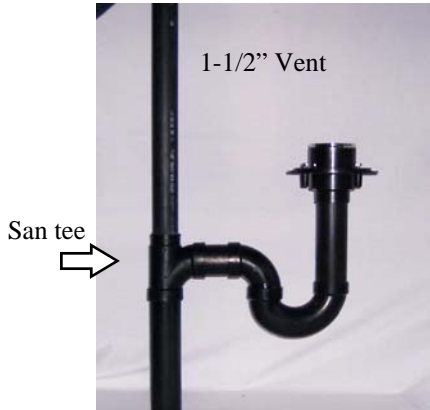
Washing Machine Rough



Sinks



Showers and Tubs



Shower drain, 2" Drain and P-trap.



Shower drain, flat vent can be used where additional vertical clearance is required. See below.



Bath tub drain with vertical vent.

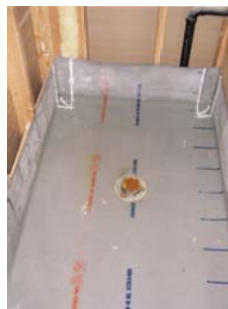
1-1/2" vent.
1-1/2" P-trap
2" drain



Bath tub drain with flat vent. Looking up at second floor, floor joist.



Shower access box in concrete floor.



Tile shower liner. Liner slopes at a 1/4" per foot towards drain.

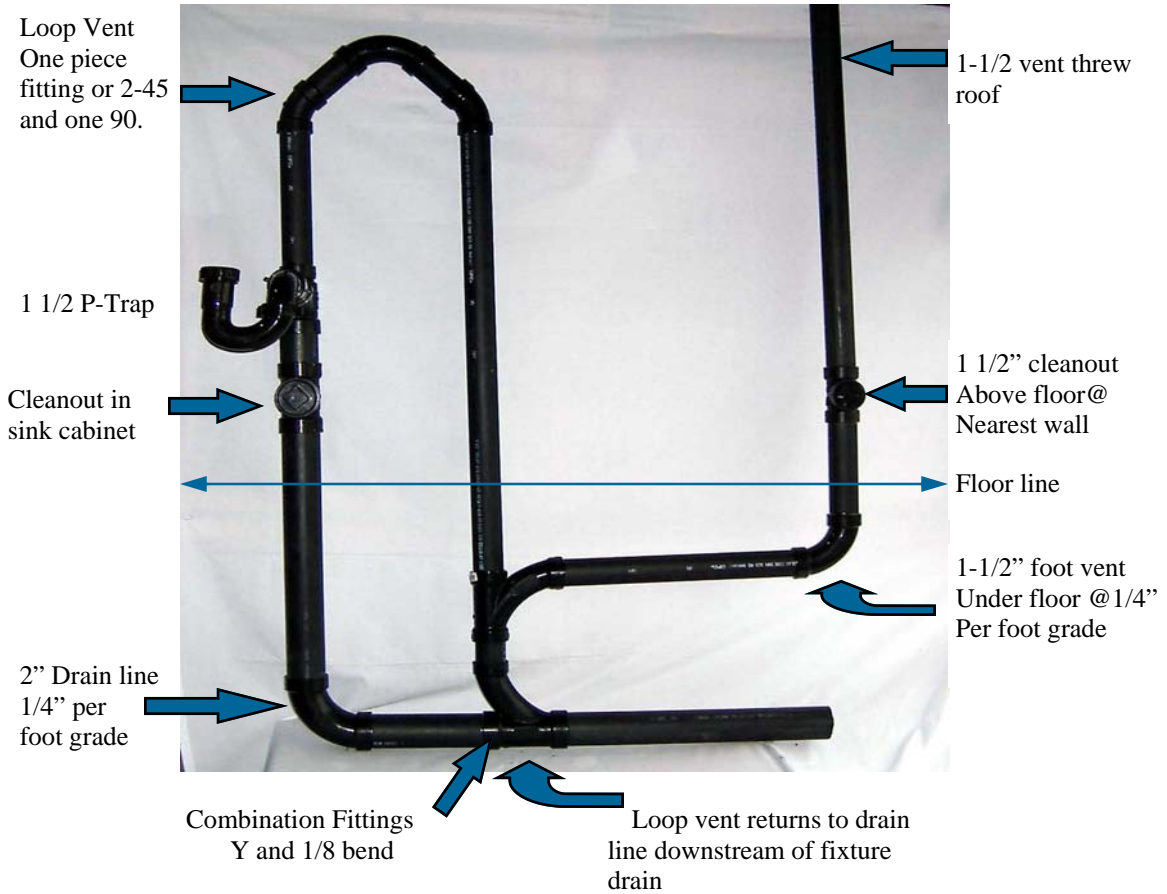


Split face shower drain

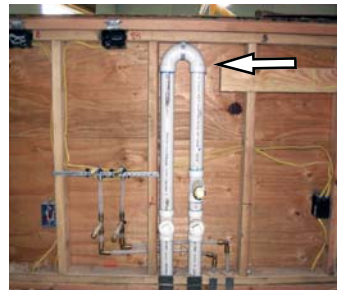


Pressure balance shower valve is required.

Island Sink Waste and Vent



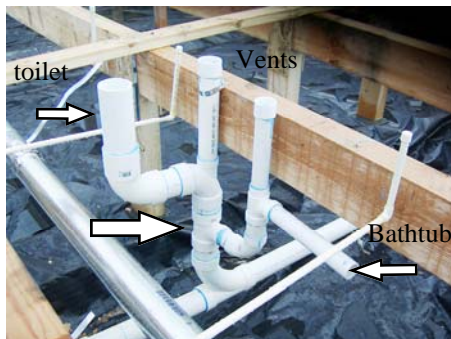
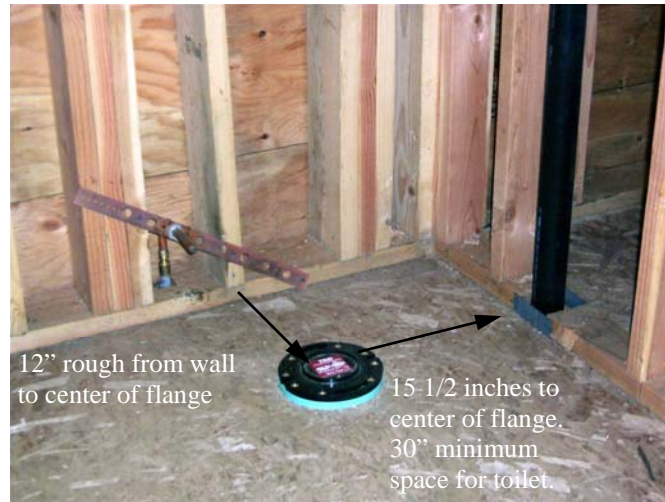
Loop vent to top of cabinet



One piece fitting

Rough in of loop vent and water

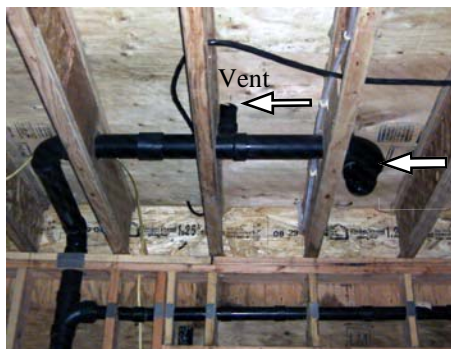
Toilet Rough In



Bathtub waste connection downstream of toilet drain.



Vertical vent to wall above. Looking up at second floor, floor joist.



Closet bend may have long turn 90. Six foot maximum from vent to closet flange.



Waste connection downstream of toilet

Toilet rough in

1. The center of the floor flange should be 12" from the wall studding behind the toilet and 15-1/2" to each side of the center of the toilet flange to wall studs, 30" space required.
2. The toilet requires a 3" drain line. Up to 3 toilets may be installed on a 3" horizontal drain line, then at the point where the 4 th. Toilet drain line enters the building drain, the drain must be increased to a 4" drain line.
3. The toilet vent **cannot** be used as a drain for fixtures on the second floor of the building.
4. The closet bend can be up to 6 foot long. No drains from other fixtures may enter into the closet bend. Only downstream of the vent.



Water lines

1. Water line sizing for a residential home can be quite complex, so here is a rule of thumb. Most two and three bathroom houses can be plumbed with a 1" water service to the house. Install the 1" pipe to the water heater so you will have enough water on the hot side to. There are a few things that must be done. The water pressure at the house must be 60 pounds and the total length of the pipe from the well or meter, to the farthest fixture, must be under 200 foot. No more than two fixtures may be installed on a 1/2" pipe.
2. **PVC water lines are not permitted in a house** , only outside in ground.



.Water pressure can be increased with a well pump and bellows tank.



Expansion tank on water heater. This is used when there is a check valve on water service.



Water shut off valve in valve box, outside in ground.



With water pressure over 80 psi a pressure regulator is required.



House water shut off under cabinet..



Pex manifold.

Hangers and Supports

Materials	Type of joint	.Horizontal	Vertical
Copper pipe	Soldered, Blazed	1-1/2 inch and smaller 6 foot.	Each floor, and every 10 foot
CPVC	Solvent Cemented	1-inch and smaller 3 foot. 1-1/4 and larger 4 foot	Base and each floor Mid-Story guides
PEX	Clamp-memory	3/2 inch	Base and each floor Mid -story guides
ABS-PVC SCH.40 Waste-Drain Pipe	Solvent Cemented	4 foot	Base and each floor Mid-Story guides



Hang ABS or PVC waste pipe at 4 foot on center.



Mid-story strap waste, vents and water lines.



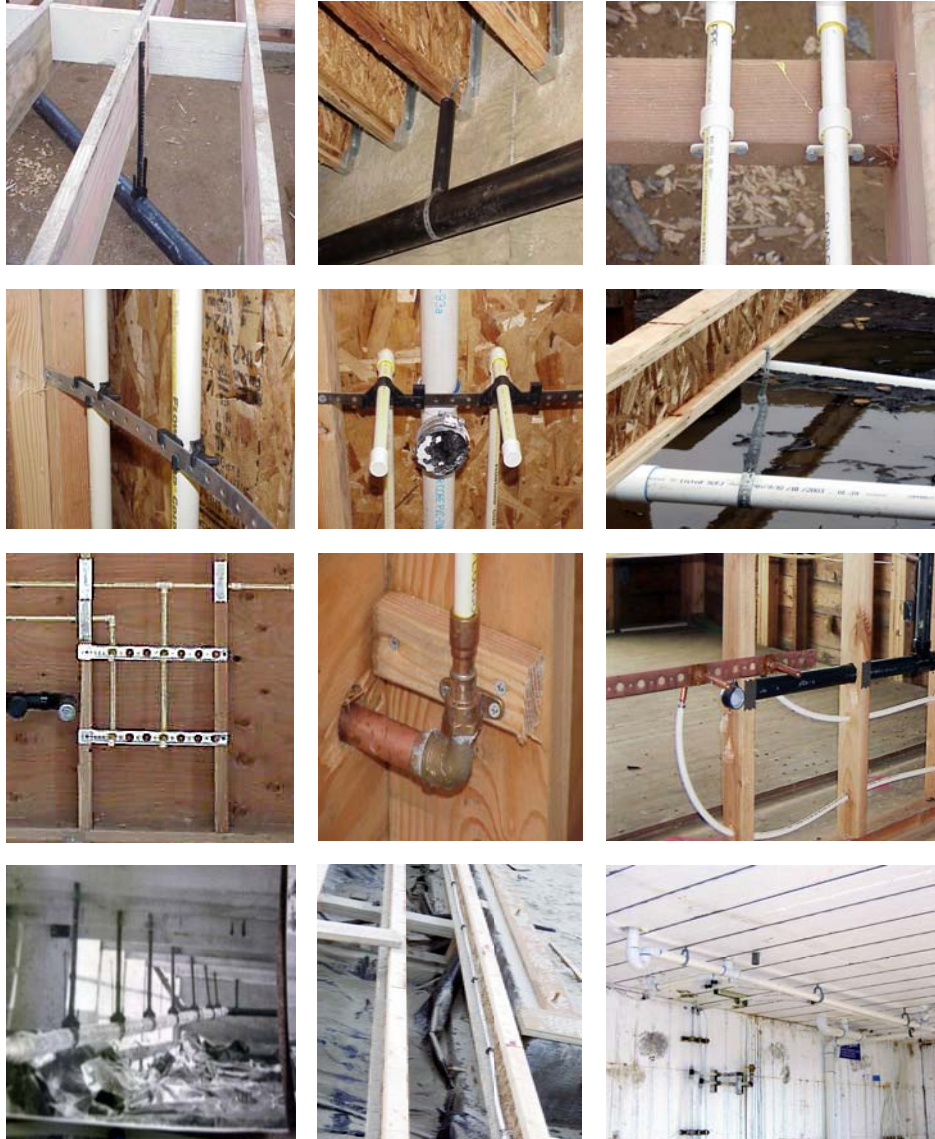
Strap water pipe using chart above.



Under floor pipe up in joist space where it will be insulated

Hangers and Supports

All piping shall be supported in such a manner as to maintain its alignment and prevent sagging.



Joints and connections



Plumb-Pex clamp and fitting. Use inside house or outside in ground. All water pipe outside must be 24" deep.



Rehau Pex clamp and fitting. Use inside house or outside in ground.



Wirsbo Pex coupling with memory ring. Use inside house or outside in ground.



Flow Guard gold pipe and fitting. One step yellow glue. Use inside house or outside in ground.



Copper pipe and fitting. Soldered with lead free solder. Use inside house or outside in ground.



Connection of PVC to CPVC outside of house. **PVC is not allowed to be inside of house.**

Joints and connections



Flow Guard gold CPVC water pipe fastened to structure for hose bib outside.



Outside frost proof hose bib with vacuum breaker.



Wirsbo Pex water pipe fastened to structure for hose bib outside.



Connection of CPVC to Polybutylene. **Polybutylene is to be used outside only. The black pipe.**

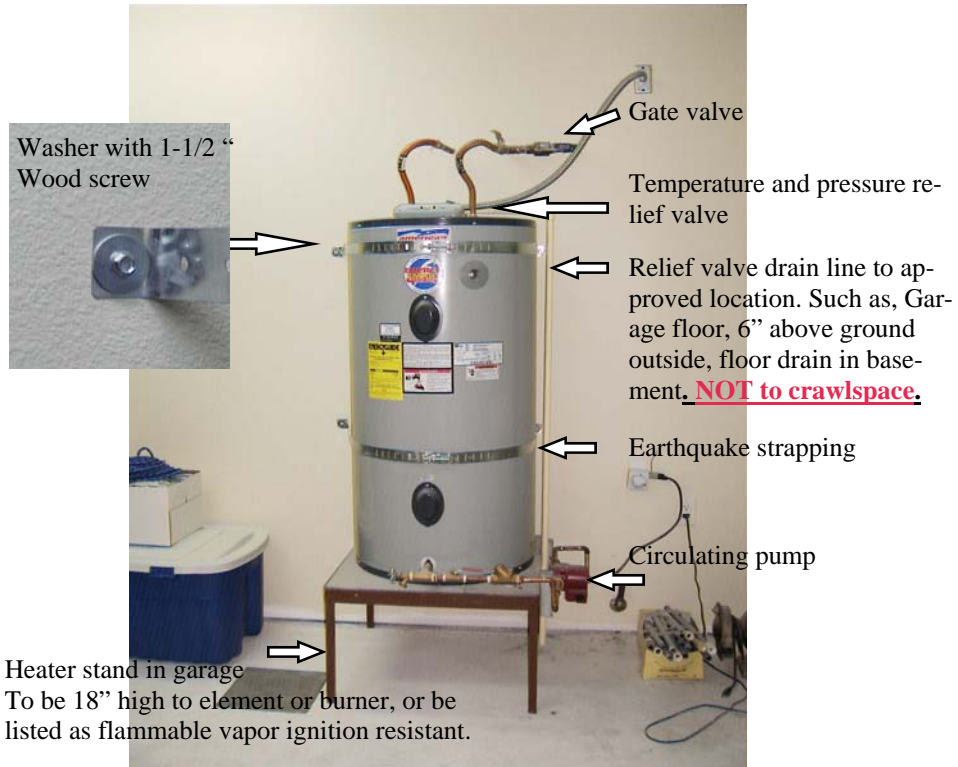


Connection of ABS waste pipe to septic tank using a Fernco rubber coupling.



Connection of valve in wall. Wall framed for valve access.

Water heaters



Testing waste and water pipe for rough inspection.



Hose in roof vent filling waste with water for test. Ten foot head of water.



Test plug in cleanout. Filled with 30 Lb. Air.



Cap all waste and water lines for test.



Toilet flange with brass screws holding it to floor. Cap for test. Blue spacer ring for sub sheeting.



Ten foot head of water for test of under slab plumbing.



Test cap on sewer line.