

**GENERAL NOTES:**

1. The intent of this handout is not to provide a complete summary of code requirements, but to provide general guidance on the installation and assembly of a typical drainage, waste and vent system for a typical single family dwelling. Other designs are possible and the Uniform Plumbing Code TM (U.P.C.) as well as a material installation instruction may have requirements that allow other methods which may be less or more restrictive.
2. Every plumbing fixture shall have a separate trap and each trap shall be vented.
3. All fitting shall be approved by and bear the "U.P.C." symbol.
4. All drains shall slope a minimum of 1/4" per foot or more. Vents shall not hold water or slope to drain to the trap served.
5. Consult Section 710.0 of the U.P.C. if the flood rim of any fixture is below the elevation of the upstream manhole cover.

For notes on vent termination see page 2 and Figure V-1

Never connect a dish washer down stream of a garbage disposal. Always connect dish washers through an approved airgap fitting.

All horizontal wastes longer than 5 feet require cleanouts

Sanitary tees at fixture inlets.

Keep traps a close to fixture as possible.

A 3" house drain will typically serve dwellings with up to three toilets.

Combination Wye & 1/8 Bend, (not a sanitary tee, never lay a sanitary tee on its back.)

1/4" in 12" Minimum grade for horizontal soil or waste pipe.

See page 4 for pipes in and around footings.

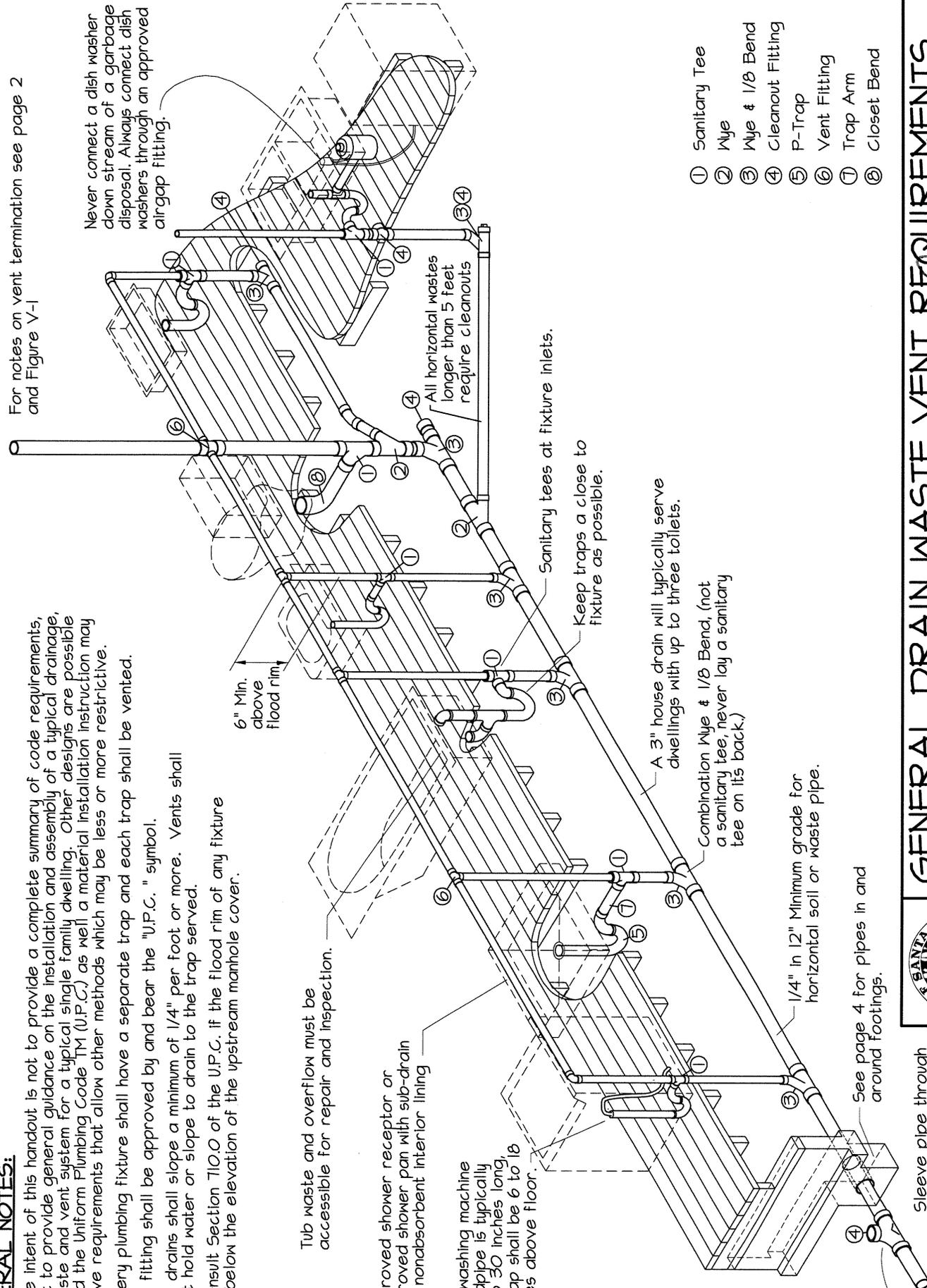
Sleeve pipe through footing min. 2" larger than pipe.

Cleanouts shall be of the same material as the house drain and shall be located a minimum of 24" out from the foundation.

Tub waste and overflow must be accessible for repair and inspection.

Approved shower receptor or approved shower pan with sub-drain and nonabsorbent interior lining

The washing machine standpipe is typically 18 to 30 inches long, P-Trap shall be 6 to 18 inches above floor.



- ① Sanitary Tee
- ② Wye
- ③ Wye & 1/8 Bend
- ④ Cleanout Fitting
- ⑤ P-Trap
- ⑥ Vent Fitting
- ⑦ Trap Arm
- ⑧ Closet Bend

**GENERAL DRAIN WASTE VENT REQUIREMENTS**

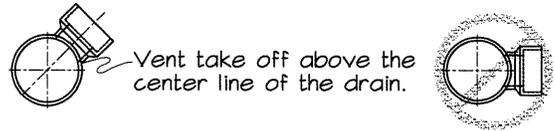
**HELP FOR THE HOMEOWNER**  
CITY OF SANTA PAULA, BUILDING AND SAFETY



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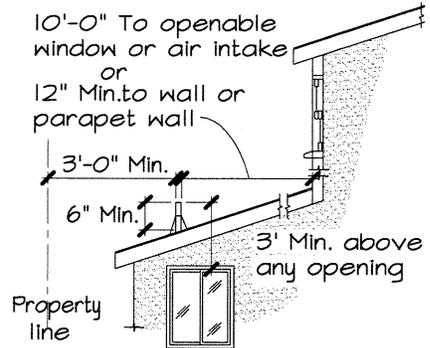
**GENERAL NOTES (Continued):**

6. Strap or support all piping every 4' and at ends and bends. For vertical piping support at the base, each floor and provide mid story guides.
7. Where a vent pipe connects to a horizontal drain the vent must be taken off above the center line of the drain. (See Figure of pipe section and vent take off to the right.)
8. Horizontal trap arms, connecting with a vertical stack or waste, shall enter through sanitary tee branches. A trap arm is that portion of a fixture drain between a trap and a vent. (See Figure V-2 below for typical fixture elements.) (See Table below for maximum lengths of trap arms.)
9. Nonmetallic pipes shall not be located outdoors without approved protective covering.

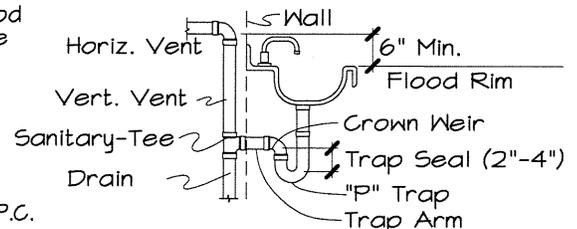


**VENT PIPING NOTES:**

1. The size of vent piping shall be determined from its length and the total number of fixture units connected thereto. In addition, the drainage piping of each building and each connection to a public sewer shall be vented by means of one or more vent pipes, the aggregate cross-sectional area of which shall not be less than that of the largest building sewer. (Section 904.1 U.P.C.)
2. Vents pipes shall extend through and terminate not less than 6" above the roof nor less than 1 ft. from any vertical surface. Also, each vent shall terminate not less than 10 ft. from, or at least 3 ft. above any openable window, door, opening, air intake, or vent shaft, nor less than 3 feet from any property line, except public right of way. (Section 906 U.P.C.) See Figure V-1 to for a general illustration of these requirements.
3. All vent and branch vent pipes shall be free from drops or sags and each vent shall be level or shall be so graded and connected as to drip back by gravity to the drainage pipe it serves. (Section 905.1 U.P.C.)
4. Each vent shall rise vertically to a point not less than 6" above the flood rim of the fixture served before offsetting of the fixture served before offsetting horizontally. Where prohibited by structural conditions and this is impossible, the vent piping shall be installed with approved drainage fittings, material and sloped to drain. (Section 905.3 U.P.C.) See Figure V-2 to for a general illustration of these requirements.
5. Never use the vent from one fixture as the drain for another fixture unless the system meets the requirement in the U.P.C. for "Vertical Wet Venting" and "Combination Waste and Vent Systems." Section 908 & 910 U.P.C.



**Figure V-1 VENT TERMINATION**



**Figure V-2 TYPICAL SINK**

**STEPS TO SIZE DRAINAGE AND VENT SYSTEM:**

1. Assign fixture unit values to each fixture.
2. Size traps and trap-arms of each fixture.
3. Assign proper fixture unit values for each line segment no matter how small going from uppermost fixture to the public sewer.
4. Assign proper pipe size for each line segment.
5. Check for special conditions (for example cross-sectional area.)

**TYPICAL SINGLE FAMILY DWELLING FIXTURES REQUIREMENTS**

For Fixture Units (F.U.), Trap Size, & Trap Arm Length

Plumbing Fixtures	Fixture Units (F.U.)	Min. Size Trap and Trap Arm	Max. Dist. From Trap to Vent.
Bathtub or Combination Bath/Shower	2.0	1-1/2"	3'-6"
Clothes Washer standpipe	3.0	2"	5'-0"
Shower single head	2.0	2"	5'-0"
Lavatory, single	1.0	1-1/4"	2'-6"
Bar Sink	1.0	1-1/2"	3'-6"
Kitchen Sink w/ or w/o DW & GD	2.0	1-1/2"	3'-6"
Laundry Sink	2.0	1-1/2"	3'-6"
Water Closet, Gravity Tank	3.0	3"	6'-0"

**GENERAL PIPE SIZING CRITERIA FOR A SIMPLE HOUSE**

Pipe Size	Drainage Pipe Max. F.U.	Max. Trap F.U.	Vent Pipe Max. F.U.	Max. Length	Cleanout Size
1-1/4"	1	1	1	45'	-
1-1/2"	1	3	8	60'	1-1/2"
2"	8	4	24	120'	1-1/2"
2-1/2"	14	-	48	180'	2-1/2"
3"	48	6	84	212'	2-1/2"

1. Use of table is limited to SFD with 3 toilets or less.
2. Not more than 1/3 of the length of the vent maybe installed in the horizontal position.
3. Maximum length of vents pipes shown in table do not apply when one pipe size larger than required in the table is used.

NOTE: Consult the UPC for actual code requirements for the sizing of pipes.



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Date

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**USE OF FITTING NOTES:**

- Vertical drainage lines connecting with horizontal drainage lines shall enter through 45 degree wye branches, combination wye and 1/8 bend branches, or other approved fittings of equivalent sweep.
- Horizontal drainage lines connecting with other horizontal drainage lines shall enter through 45 degree wye branches, combination wye and 1/8 bend branches, or other approved fittings of equivalent sweep.
- Horizontal drainage lines, connecting with a vertical stack, shall enter through 45 degree wye branches, 60 degree wye branches, combination wye and 1/8 bend branches, sanitary tee branches, or other approved fittings of equivalent sweep.

Fitting	Vert. to Horiz.	Horiz. to Horiz.	Horiz. to Vert.
45 Wye	X	X	X
60 Wye			X
Combination Wye & 1/8 Bend or Long Sweep Tee	X	X	X
Sanitary-Tee			X
Long Sweep (1/4 Bend)	X	X	X
Short Sweep (1/4 Bend)	X	X	X
1/4 Bend			X
1/8 Bend	X	X	X
1/6 Bend	X		X

(Horiz. - Horizontal Drainage Piping Vert. - Vertical Drainage Piping)

**VENT FITTINGS:**

Vent fitting have little to no sweep and cannot be used in a drain.

- Vent Tee
- Vent 1/4 Bend

**OTHER FITTINGS**

- Bell Reducer
- P-Trap
- Closet Bend
- Toilet Flange
- Kelly or Two-Way Cleanout Fitting
- Cleanout Cap Fitting

**CLEANOUT NOTES:**

- Cleanouts Required:
  - Each horizontal line at its upper terminal;
  - Each run of piping more than 100 feet shall have a cleanout spaced at no more than 100 ft. intervals;
  - All sinks and urinals; and
  - Horizontal change exceeding 135 degrees.

- EXCEPTIONS:**
- Horizontal line less than 5 ft except sinks and urinals;
  - on pipes sloping less than 72 degrees from vertical;
  - except building drain and branches, piping above the first floor; and
  - two way cleanouts stubbed for upper end cleanout.

- Provide 18" min. clearance in front of cleanout. Cleanouts shall be accessible and above ground within 20' of a crawl hole. Cleanouts shall be of the same material as the house drain and shall be located a minimum of 24" out from the foundation.

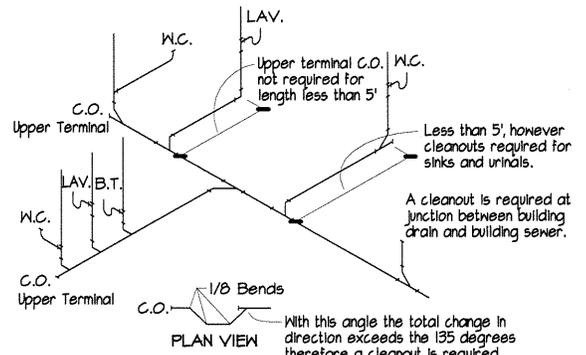


Figure C-1 TYPICAL CLEANOUT LOCATIONS

**INSPECTION NOTES:**

- Twenty-four hour notice is required for inspections. The Inspection Line at the City of Santa Paula is (805)933-4218.
- Soil lines shall be filled with at least a ft. head of water.
- Water lines shall be connected to potable water system.
- Gas lines shall have a minimum pressure of ten pounds shown on gauge.
- Building and Safety inspection and approval is required prior to covering or concealing work.
- Work to be inspected shall be ready to stand tests as prescribed when notification is given.



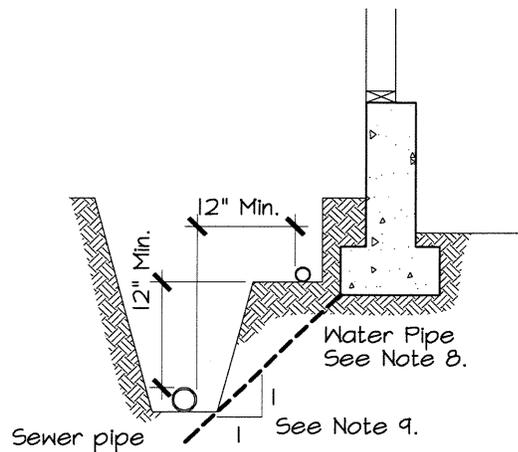
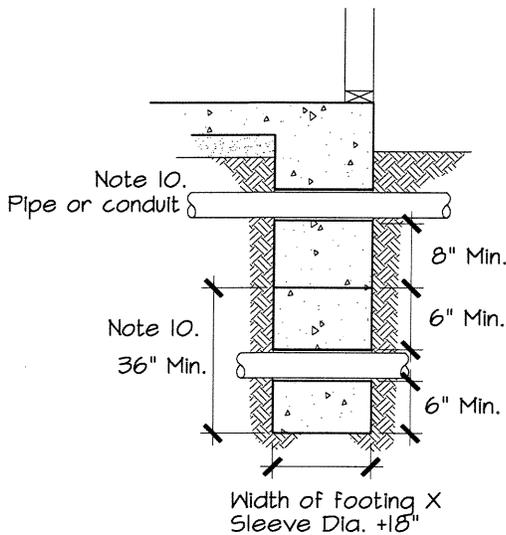
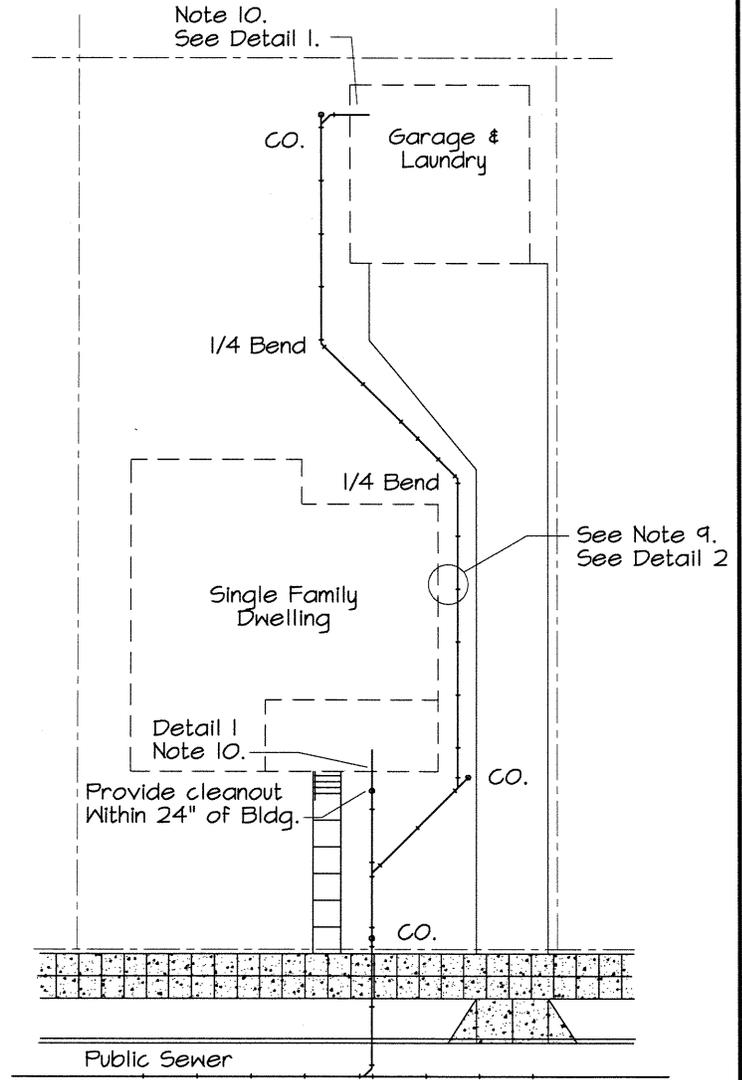
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**TYPICAL ON LOT HOUSE SEWER NOTES:**

1. Be located only on the lot which they serve.
2. Be 3" minimum diameter and 12" below ground if nonmetallic.
3. Not be nonmetallic when within 2'-0" of any building except approved plastics.
4. Not be joined by means of cement mortar joints.
5. Be supported on a firm bed throughout their entire length.
6. Have a 1/4" per foot slope toward the street sewer.
7. Be provided with a cleanout at their upper terminal, of changes in direction in excess of 135 degrees and at intervals of not to exceed 100' in straight runs.
8. Clay pipe shall not be located in the same ditch with domestic water piping unless the water piping rests on a solid shelf 12" to one side and 12" above the sewer.
9. Not be located in an excavation which is deeper than the bottom of a parallel foundation unless the bottom edge of the excavation is at least one foot away from the foundation for each foot of excess depth. See Detail 2.
10. Where pipes cross below or within a footing, the pipes shall be run through a sleeve 2" larger in diameter than the pipe or conduit, embedded in concrete the width of the footing a minimum of 18" longer than the diameter of the sleeve. See Detail 1.



DETAIL 1 - FOOTING PERPENDICULAR TO CONDUIT      DETAIL 2 - FOOTING PARALLEL TO CONDUIT



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