Waste Vent Requirements

GENERAL NOTES:
- 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 material installation instruction
  may have requirements that allow other methods which may be less or more restrictive.
- Every plumbing fixture shall have a separate trap and each trap shall be vented.
- All fitting shall be approved by and bear the "U.P.C. " symbol.
- All drains shall slope a minimum of 1/4" per foot or more. Vents shall
  slope to drain and shall be served, and not hold water.
- Consult Section 110.0 of the U.P.C. if the flood rim of any fixture
  is below the elevation of the upstream manhole cover.

Tub waste and overflow must be accessible for repair and inspection
unless trap is glazed.

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

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

A 4" house drain is required where
dwellings have four or more toilets.

Combination Nye & 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.

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

For notes on vent termination see page 2
and Figure V-1.
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.)
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. No additional 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 404-1 U.P.C.)
2. Vents pipes shall extend through and terminate not less than 6" above the roof nor less that 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 shall, not less than 3 ft. from any property line, except public right of way. (Section 406 U.P.C.)
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 drain back by gravity to the drainage pipe it serves. (Section 405.1 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 405.3 U.P.C.)
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 Venting and Combination Waste and Vent Systems," Section 406.4 U.P.C.

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 and Trap Arm Length

<table>
<thead>
<tr>
<th>Plumbing Fixtures</th>
<th>Fixtures Units (F.U.)</th>
<th>Min. Size</th>
<th>Max. Dist. from Trap Arm to Vent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bathtub or Combination Bath/Shower</td>
<td>2.0</td>
<td>1-1/2&quot;</td>
<td>3' - 6&quot;</td>
</tr>
<tr>
<td>Clothes Washer standpipe</td>
<td>3.0</td>
<td>1-1/2&quot;</td>
<td>5' - 0&quot;</td>
</tr>
<tr>
<td>Shower single head</td>
<td>3.0</td>
<td>2&quot;</td>
<td>4' - 0&quot;</td>
</tr>
<tr>
<td>Lavatory, single</td>
<td>1.0</td>
<td>1-1/2&quot;</td>
<td>2' - 6&quot;</td>
</tr>
<tr>
<td>Bar Sink</td>
<td>1.0</td>
<td>1-1/2&quot;</td>
<td>3' - 6&quot;</td>
</tr>
<tr>
<td>Kitchen Sink w/o or w/o DW &amp; LD</td>
<td>2.0</td>
<td>1-1/2&quot;</td>
<td>3' - 6&quot;</td>
</tr>
<tr>
<td>Laundry Sink</td>
<td>2.0</td>
<td>1-1/2&quot;</td>
<td>3' - 6&quot;</td>
</tr>
<tr>
<td>Water Closet, Gravity Tank</td>
<td>3.0</td>
<td>3&quot;</td>
<td>6' - 0&quot;</td>
</tr>
</tbody>
</table>

GENERAL PIPE SIZING CRITERIA FOR A SIMPLE HOUSE

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Drainage Pipe Size</th>
<th>Vent Pipe Size</th>
<th>Cleanout Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Max.</td>
<td>F.U. Max.</td>
<td>F.U.</td>
<td>Length</td>
</tr>
<tr>
<td>1-1/4&quot;</td>
<td>1</td>
<td>1</td>
<td>45'</td>
</tr>
<tr>
<td>1-1/2&quot;</td>
<td>1</td>
<td>3</td>
<td>60'</td>
</tr>
<tr>
<td>2&quot;</td>
<td>8</td>
<td>6</td>
<td>120'</td>
</tr>
<tr>
<td>2-1/2&quot;</td>
<td>14</td>
<td>14</td>
<td>180'</td>
</tr>
<tr>
<td>3&quot;</td>
<td>40</td>
<td>40</td>
<td>212'</td>
</tr>
<tr>
<td>5&quot;</td>
<td>48</td>
<td>48</td>
<td>212'</td>
</tr>
</tbody>
</table>

1. Use of table is limited to 500 sq.ft. with 3 toilets or less.
2. Not more than 1/3 of the length of the vent pipe 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.
**USE OF FITTING NOTES:**

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>45° Yoke</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>60° Yoke</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Combination Yoke &amp; 1/8 Bend or Long Sweep Tee</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sanitary Tee</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Long Sweep (1/4 Bend)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Short Sweep (1/4 Bend)</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>1/8 Bend</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>1/6 Bend</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

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

**CLEANOUT NOTES:**

1. 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 12 degrees from vertical;
   - except building drain and branches, piping above the first floor; and
   - two way cleanouts stubbed for upper end cleanout.

2. 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.

**VENT FITTINGS:**
- Vent fitting have little to no sweep and cannot be used in a drain.
- Vent Tee
- Vent 90° Bend

**OTHER FITTINGS**
- Bell Reducer
- P-Traps
- Closet Bend
- Toilet Flange
- Kelly or Two-Way Cleanout Fitting
- Cleanout Cap Fitting

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**Figure C-1 TYPICAL CLEANOUT LOCATIONS**