

**CONSTRUCTION CHECKLIST**
Residential Plumbing Rough-In
September 2004

This checklist is intended for use to prepare for an inspection. This is only a general list and is not intended to address all possible conditions. References are to the 2003 Uniform Plumbing Code (UPC), the 2003 International Residential Code (IRC), 2002 National Electrical Code (NEC) and the 2003 International Fire Code (IFC).

Please verify the following before calling for a plumbing rough-in inspection.

Permits and Plans

- Job address is posted in a visible location. (IRC 321.1)
- Permit and approved plans are on site and accessible to the inspector. (UPC 103.3.2)
- Permit information is correct. (address, permit number, scope of work, etc). (UPC 103.2)
- Confirm that all fixtures are included. (UPC 103.2 & 103.5)

Underground Plumbing

- No pipes directly embedded in concrete. All pipes passing through concrete walls or floors are protected from breakage. Voids around piping passing through concrete floors on the ground are appropriately sealed. (UPC 313.1& 313.2)
- No flat venting. Vent pipe inverts taken off above the center line of the drain. (UPC 905.1 & 905.2)
- Vents downstream of trap. (UPC 905.2)
- Pipe trenches parallel to footings offset a minimum 45° from footing bearing line. (UPC 313.3)
- Type L copper for water lines installed underground. (See exceptions UPC 604.2)
- Ferrous metals must be wrapped. (UPC 609.3.1)
- Drains, waste and vents (DWV) water tested with a 10' head for 15 minutes or air tested at 5psi for 15 minutes. Plastic pipe not allowed to be tested with air. (UPC 712.1, 2 & 3)
- Water lines tested to working pressure or 50 psi for 15 minutes. Plastic water piping not allowed to be tested with air. (UPC 609.4)

Sewage Ejectors

- Only and all fixtures with flood rim below upstream manhole cover feed through accessible backwater valve. (UPC 710.1)
- Only fixtures below crown level of the sewer may discharge through ejector. (UPC 710.2)
- Backwater and gate valves on pump discharge. (UPC 710.4)
- Sized for 2 fixture units per gallon per minute of flow. (UPC 710.5)
- Minimum 2" discharge when a water closet discharges to the sump. (UPC 710.3 as amended by WA State)
- Lift to horizontal sewer then drain by gravity. (UPC 710.4)
- Pump(s) have audio and visual alarms and are readily accessible. (UPC 710.9)

Drains

- Drains, waste and vents (DWV) water tested with a 10' head for 15 minutes or air tested at 5 psi for 15 minutes. (UPC 712.1, 2 & 3)
- Drains properly sized. (UPC Table 7-3 & 7-5)
- Back to back fixtures require double fixture fitting. (UPC 704.2)
- Change in direction from vertical to horizontal or horizontal to horizontal through wye branches or 45° wye branches or fittings of equal sweep. (UPC 706.3 & 706.4)

- Double sanitary tees may be used when barrel of stack is 2 times larger than inlets, for connecting with a vertical stack. (UPC 706.2)
- No threaded ABS fittings or joints located in a non-accessible location. (UPC IS 5-316.1.59)
- Install 18 gauge nail plates when plastic or copper plumbing is within 1" of face of framing. (UPC 313.9)
- Hangers and straps don't compress, distort, cut or abrade the piping and allow free movement of pipe. Pipes exposed to damage by sharp surfaces are protected. (UPC IS 5-314.1)
- Support horizontal plastic lines at every 4'. Support at each horizontal branch connection. (UPC Table. 3-2)
- Support vertical plastic lines at base and each floor. Provide midstory guides. (UPC Table. 3-2)
- Support horizontal cast iron hubless at every other joint, unless over 4'. then support each joint. Support adjacent to joint, not to exceed 18". Support at each horizontal branch connection. Hangers not placed on the coupling. (UPC Table. 3-2)
- Support vertical cast iron hubless at base and each floor not to exceed 15'. (UPC Table. 3-2)
- Waste pipes installed outside or in exterior walls are protected from freezing where necessary. P-traps for example. (UPC 313.6 as amended by WA State)

Traps

- Each trap protected by a vent. (UPC 1002.2)
- The developed length of the trap arm not to exceed the following limits. (UPC Table. 10-1):

Pipe Size	Length of trap arm
1 1/4"	2' 6"
1 1/2"	3' 6"
2"	5'
3"	6'
4" & larger	10'

- Trap arms less than 3" cannot change direction more than 90° without the use of a cleanout. (UPC 1002.3)
- Trap arms 3" and larger cannot change direction more than 135° without the use of a cleanout when installed at the lowest level of the gravity drain. (UPC 707, 1002.3, exception & IAPMO interpretation)
- Vertical distance between fixture outlet and the trap as short as practicable and not over 24" in length except for clothes washer which can have maximum 30" standpipe. (UPC 1001.4)

Cleanouts

- Each horizontal drainage pipe provided with a cleanout at its upper terminal and each run of piping which is more than 100' in total developed length, provided with a cleanout for each 100', or fraction thereof, in length of such piping. See exceptions. (UPC 707.4)
- Cleanouts not required at horizontal runs <5' except sinks. (UPC 707.4, ex.1)
- Cleanouts may be omitted on any horizontal drainage pipe installed on a slope of 72° or less from the vertical angle. (UPC 707.4, ex. 2)
- Cleanouts not required above the lowest level of the gravity drain. (UPC 707.4, ex.3 & IAPMO interpretation)
- An approve (2) way cleanout fitting, installed inside the building wall near the connection between the building drain and building sewer or installed outside of a building at the lower end of a building drain and extended to grade, may be substituted for an upper terminal cleanout. (UPC 707.4, ex.4)
- Required at each aggregate horizontal change of direction exceeding 135°. (UPC 707.5)
- Each cleanout installed so that it opens to allow cleaning in the direction of flow of the soil or waste or at right angles thereto and, except in the case of wye branch and end-of-line cleanouts, installed vertically above the flow line of the pipe. (UPC 707.6)
- Underfloor cleanout not more than 20' from access door with an unobstructed 30" wide x 18" high pathway. (UPC 707.10)
- Cleanouts are accessible. 12" clearance required at lines less than or equal to 2", 18" clearance at lines greater than 2". (UPC 707.10)
- Extend above floor or outdoors if access limited. (UPC 707.10)

Island-Sink Venting

- Drain loop method requires fittings be of drainage type only. (UPC 909)
- Drain serving the island serves no other fixtures upstream from return vent. (UPC 909)
- Island sink cleanout in vertical section of foot vent. (UPC 909)

Vents

- Horizontal vent above fixture flood rim except island sink, where structurally impossible or when allowed by the local jurisdiction. (UPC 905.3)
- Vent pipe located below flood level of rim must be drainage pattern. (UPC 905.3)
- Takeoffs for vents must be above the weir. (UPC 905.5)
- No flat venting. Vent pipe inverts are taken off above the center line of horizontal drainage pipe. (UPC 905.2)
- Aggregate vent areas must be \geq to the building drain. (UPC 904.1)
- Vents terminate a minimum 6" above roof line. (10" in high snow load areas) (UPC 906.7)
- Vent clearance to building openings are 3' above or 10' horizontal. (UPC 906.2)

Air-Admittance Valves

- Minimum 4" above drain. (Per local jurisdiction)
- Minimum 6" above insulation in attic. (Per local jurisdiction)
- Must be accessible and open to air flow. (Per local jurisdiction)

Wet Vents

- Minimum 2". (UPC 908.2)
- Not greater than 6' vertically above the floor. (UPC 908.1)
- Minimum one pipe size larger than the required waste. (UPC 908.2)
- Limited to traps of one and two fixture units. (UPC 908.1)
- Not to serve as vent to more than four fixtures. (UPC 908.1)

Water Service

- Minimum service $\frac{3}{4}$ ". (UPC 610.8)
- Minimum static pressure 40 psi. (UPC 608.1)
- Maximum unregulated pressure 80 psi. (UPC 608.2)
- Main valve on discharge side of the meter is full bore type. (UPC 605.2)
- Dielectric fittings or other approved fittings used between galvanize and copper piping. (UPC 508.1 & 604.1)
- Replacement of metal pipe water service with plastic pipe water service has not affected the building grounding system. (UPC 604.8 & NEC 250.104)
- Backflow prevention for protection from fire-sprinkler, irrigation systems, or other cross connection/contaminations. (UPC 603.4)
- Water service buried deep enough to protect from freezing. Minimum is typically 18" or 12" below frost level, but varies from jurisdiction to jurisdiction. (UPC 609.1 & 313.6 as amended by WA State)
- Materials: Copper, Polyethylene, PVC, CPVC, PEX galvanize are all approved by the State of Washington. All installed per manufacture's installation requirements. (UPC 604 as amended by WA. State)
- 50 lbs. minimum water test required or working pressure for 15 minutes. Plastic water piping not allowed to be tested with air. (UPC 609.4)
- Inside the building, barbed insert fittings with hose clamps on plastic water pipe are prohibited. A ford fitting or equal must be installed. (UPC 604.14 as amended by WA State)
- If you can verify water pressure and if it exceeds 80 lbs, a pressure reducing valve is required CPVC water supplies under a slab require 150 PSI 2hr text. Plastic water piping cannot be air tested. (UPC 608.2.IS 20-609.4 & 604.14 as amended by WA State).

- Water pipes not in same trench as building sewer or drainage piping constructed of clay or materials which are not approved for use within a building unless both of the following conditions are met. The bottom of the water pipe, at all points, is at least twelve inches above the top of the sewer or drain line and the water pipe is placed on solid shelf excavated at one side of the common trench with a minimum clear horizontal distance of at least 12" from the sewer or drain line. (UPC 609.2.1 & 609.2.2)
- Water pipes crossing sewer or drainage piping constructed of clay or materials which are not approved for use within a building are laid a minimum of 12" above the sewer or drain pipe. (UPC 609.2.2)
- Water piping installed within a building and in or under a concrete floor or slab resting on the ground installed per section. (UPC 609.3)
- Ferrous piping has a protective coating of an approved type, machine applied and conforming to recognized standards. Field wrapping to provide equivalent protection and is restricted to those short sections and fittings necessarily stripped for threading. Galvanized coating is not deemed adequate protection for piping or fittings. Approved non-ferrous piping not required to be wrapped. (UPC 609.3.1)
- Underground copper tubing installed without joints where possible. Where joints are permitted, they are brazed and fittings are of wrought copper. (Within the fixed limits of the building foundation). (UPC 609.3.2)
- Valves, including pressure reducing valves, if installed in the ground require access boxes. (UPC 605.6)
- For the replacement of metallic water services metallic water pipe must be replaced with metallic pipe or an approved grounding system installed when installing plastic water pipe. Per the electrical code, a minimum of 10' of copper piping is installed in the ground on the house side to maintain the existing electrical grounding system. (UPC 604.8, NEC 250-81) If 10' of metallic piping cannot be installed consult the building official for a viable option.
- Unsuitable bedding and backfill such as rocks larger than 3/4", asphalt and debris cannot be installed below or above the water service. If backfill material looks bad you should require select fill minimum 6" below and 12" above the water service. Inspection of the fill prior to covering. Water service may be sleeved with SCH 40 sleeve 2 pipe sizes larger than pipe in lieu of select fill. (UPC 315.4)
- Building shutoff valve required to be full bore type. (UPC 605.2)

Water Lines

- It is required to have adequate backflow prevention when the building has a fire sprinkler system. A RPBP (reduced pressure backflow preventer) is required when there is a water supply to a hydronic heat boiler. If a backflow device such as an RPBP or DCVA is within the building, verify that it has been tested and signed off. (UPC 603.1)
- Water hammer arrestors or air chambers installed. Devices are installed per manufacturer's specifications for location and installation. (UPC 609.10.2)
- Hot and cold water lines installed outside the building or conditioned space insulated with minimum R-3. (UPC 313.6 as amended by WA State)
- Water lines tested to working pressure or 50 psi for 15 minutes. Plastic water piping not allowed to be tested with air. (UPC 609.4)

Laundry

- Standpipe receptor ≥ 18 in. & ≤ 30 in. above trap. (UPC 804.1)
- No trap for clothes washer stand pipe installed below the floor. (UPC 804.1)
- Trap minimum 6", maximum 18" above the floor. (UPC 804.1)
- Water hammer arrestors or air chambers installed. Devices are installed per manufacturer's specifications for location and installation. (UPC 609.10.2)

Kitchen

- Dishwasher waste discharges into garbage disposal when garbage disposal is installed. (UPC 405.4)
- Dishwasher drain requires air gap. (UPC 807.4)
- Water hammer arrestors or air chambers installed. Devices are installed per manufacturer's specifications for location and installation. (UPC 609.10.2)

Bathroom

- Rigidly support faucet and shower head fittings. (UPC 609.1, 412.12)
- Minimum shower area 1024 sq. in. to 70" & 30" circle. (UPC 412.7)
- Minimum shower rough pan 32" x 32". (UPC 412.7)
- Listed anti-scald/pressure balance valve required. (120° F. maximum) (UPC 420)
- Water closet set a minimum of 15" to center from side wall with a total clear width of 30" and 24" at the front. (UPC 408.6)
- Flange secured with corrosion resistant fasteners. (UPC 408.3)
- Closet ring to vent is maximum distance of 6'. (UPC Table. 10-1)
- Slip joints used at tub drain are accessible. Access door a minimum of 12" x 12". (UPC 405.02)
- Over rim tub faucets set with a minimum 1" air gap to tub rim. (UPC Table. 6-3, 602.3 & 603.3.5)
- Water hammer arrestors or air chambers installed. Devices are installed per manufacturer's specifications for location and installation. (UPC 609.10.2)

Shower Subpans

- See section above for minimum dimensions.
- Dam $\geq 2"$ and $\leq 9"$. (UPC 412.6)
- Pan liner plastic, 3 layers hot mop type 15 lb. felt or other approved membrane. (UPC 412.8)
- Liner minimum 3" above the dam. (UPC 412.8)
- Slope underlayment 1/4" per foot. (UPC 412.6)
- No fasteners less than 1" above dam. (UPC 412.8)
- Weep holes at drain are clear. (UPC 412.8)
- Doorway design for out-swing door with a minimum opening of 22" wide. (UPC 412.6)

Exterior

- Vacuum breakers on all hose faucets. (UPC 603.4.7)
- Backflow protection on all irrigation systems. (UPC Table. 6-2 & 603.4.6 as amended by WA State)
- No valves downstream of vacuum breakers. (UPC Table. 6-2)