



Inspection Checklist Residential Plumbing Rough In

This Inspection Checklist reflects code requirements of the 2015 International Residential Code (IRC), 2015 Uniform Plumbing Code (UPC), 2014 National Electrical Code (NEC) and the 2015 International Fire Code (IFC)

Please verify the following before calling for a building final inspection

Permits and Plans

- Job address is posted in a visible location. (IRC 319.1)
- Permit and approved plans are on site and accessible to the inspector. (Amend. Ord.)
- Permit information is correct. (address, permit number, scope of work, etc). (UPC 104.3)
- Confirm that all fixtures are included. (UPC 104.3)

Underground Plumbing

- Backwater valves are required to be accessible for inspection and repair at all times. (UPC 710.6)
- 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 312.1 & 312.2)
- Sleeves are used for piping passing through concrete or masonry that are not bored or drilled. (UPC 312.10)
- Horizontal wet venting. Vent pipe inverts taken off above the center line of the drain. (UPC 905.2)
- Vents downstream of trap. (UPC 905.2)
- Pipe trenches parallel and deeper than footings offset a minimum 45° from footing bearing line. (UPC 314.1), or as approved in accordance with (UPC Section 301.2).
- Type L copper for water lines installed underground. Type M is allowed underground outside the building. Copper joints under a slab shall be brazed, (UPC 609.3(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 except PEX piping per manufacture shall be tested with air when subject to freezing. (UPC 609.4)

Sewage Ejectors

- Only and all fixtures installed on a floor level lower than the next upstream manhole cover feed through accessible backwater valve (unless fixture is above manhole). (UPC 710.1)
- Only fixtures on floor levels below crown level of the sewer may discharge through ejector. (UPC 710.2 & 709.1)
- Backwater and gate / ball 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.
- Lift to horizontal sewer then drain by gravity. (UPC 710.2) If the connection is to a horizontal sewer, connect at the top with a wye type branch fitting, (UPC 710.4 & 710.7).
- Pump(s) have audio and visual alarms and are readily accessible. (UPC 710.9)
- Cleanout on backwater valves have to be labeled. (UPS 710.1)
- Sump tank top shall be provided with a vent sized for fixtures sump is serving per table 703.2. (UPC710.10)

Drains

- Drains, waste and vents (DWV) water tested with a 10' head for 15 minutes or air tested at 5 psi for 15 minutes. Plastic DWV not allowed to be tested with air. (UPC 712.1, 2 & 3)
- Drains properly sized. (UPC Table 703.2) θ 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)
- Tub waste openings into crawl spaces must be closed off with metal collars or metal screens fastened to structure with openings no greater than 1/2 inch. (UPC 312.12.3)
- Double sanitary tees may be used when barrel of stack is 2 pipe sizes larger than inlets, for connecting with a vertical stack. (UPC 706.2)
- Install 18 gauge nail plates when plastic or copper plumbing is within 1" of face of framing. (UPC 312.9) θ 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 IS5-2.3 & IS-9-2.5.1)
- Support plastic lines at every 4'. Support at each horizontal branch connection. (UPC Table 313.3)
- Support vertical plastic lines at base and each floor. Provide mid-story guides. (UPC Table 313.3)
- 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 313.3)
- Support vertical cast iron hubless at base and each floor not to exceed 15'. (UPC Table 313.3)
- Waste pipes installed outside or in exterior walls are protected from freezing where necessary. P-traps for example. (UPC 312.6)

Traps

- Each trap protected by a vent the vent system shall be designed to prevent a trap seal from being exposed to a pressure differential that exceeds 1 inch water column on the outlet side of the trap (UPC 901.3)
- Each trap protected by a vent. (UPC 1002.2)
- The developed length of the trap arm not to exceed the following limits. (UPC Table 1002.2):

Pipe Size	Length of Trap Arm
1 ¼"	2' 6"
1 ½"	3' 6"
2"	5'
3"	6'
4" & Larger	10'

- The development length between the trap of a water closet or similar fixture (measured from the top of the closet flange to the inner edge of the vent) and its vent shall not exceed six (6) feet (1,829 mm).
- 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 (UPC 1002.3, exception)
- 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 1001.1 & 804.1)

Clean Outs

- 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)
- 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 floor level of the lowest floor of building. (except building drain and its branches) (UPC 707.4, ex.#3)
- An approved (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 707.4)
- 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 707.5)
- Underfloor cleanout not more than 5' from access door with an unobstructed 30" wide x 18" high pathway. (UPC 707.9)
- Cleanouts are accessible. 18" clearance required at lines less than or equal to 2", 24" clearance at lines greater than 2". (UPC 707.9)
- Extend above floor or outdoors if access limited. (UPC 707.9)

Island-Sink Venting

- Loop vent method requires fittings be of drainage type on vent below floor. (UPC 909.1)
- Drain serving the island serves no other fixtures upstream from return vent. (UPC 909.1)
- Accessible cleanout in vertical section of foot vent. (UPC 909.1)

Vents

- Unless prohibited by structural conditions, the vent must rise vertically 6" above the flood level rim before continuing to horizontal. (UPC 905.3)
- Vent pipe fittings located less than 6" above flood level of rim must be drainage pattern, and pipe must have drainage slope. (UPC 905.3)
- Takeoffs for vents must be above the trap weir, except water closet and similar fixtures. (UPC 905.5)
- Vent pipe inverts are taken off above the center line of horizontal drainage pipe, except horizontal wet vents. (UPC 905.2)
- Aggregate vent areas must be > to the building drain. (UPC 904.1) θ Vents terminate a minimum 6" above roof line (10" in high snow load areas). (UPC 906.1 & 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 and manufacturer's installation instructions)
- Minimum 6" above insulation in attic. (Per local jurisdiction and manufacturer's installation instructions)
- Must be accessible and open to air flow. (Per local jurisdiction and manufacturer's installation instructions)
- Limited use, install in vertical position as high as possible. (Per local jurisdiction and manufacturer's installation instructions)

Wet Vents

- Vertical wet vent not greater than 6' developed length, all fixtures on the same story. (UPC 908.1)
- Minimum one pipe size larger than the required waste (upper fixture), and one size larger than the minimum vent size for fixture units (lower fixture), and minimum 2". (UPC 908.1.1)
- 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)
- Horizontal wet venting is allowed for a bathroom group located on the same floor when installed in compliance with (UPC Section 908.2).

Water Service

- Minimum service ¾". (UPC 610.8) θ Maximum unregulated pressure 80 psi. (UPC 608.2)
- Main valve on discharge side of the meter is full way type. (UPC 606.2)
- Dielectric fittings or other approved fittings used between galvanized and copper piping. (UPC 605.15, 605.16)
- Replacement of metal pipe water service with plastic pipe water service has not affected the building grounding system. (UPC 604.10 & NEC 250.50)
- Backflow prevention for protection from fire-sprinkler, irrigation systems, or other cross connection/contaminations. (UPC 603 and WA. State Cross-Control Manual)
- 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)
- Materials: Copper, Polyethylene, PVC, CPVC, PEX, and galvanized pipe, and solvent cements, sealers, solder, thread sealants and flux, must all be approved by the AHJ, and meet the requirements. of NSF 61. (UPC 604.1, and Table 604.1) All installed per manufacture's installation requirements (UPC 604).
- 50 lbs. minimum water test required or working pressure for 15 minutes. Plastic water piping not allowed to be tested with air except PEX which manufacture requires it to be tested with air during periods subject to freezing. (UPC 609.4) CPVC water supplies under a slab require a pressure test of 150 psi for two hours.
- 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. Plastic water piping cannot be air tested (except PEX < 100 PSI per manufacturer). (UPC 608.2.)
- 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 606.5 & 608.2)
- 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. (NEC 250-52(A)) If 10' of metallic piping cannot be installed consult the building official for a viable option. Blue 18 gauge tracer wire required from meter to foundation. (UPC604.10.1)
- Unsuitable bedding and backfill such as rocks larger than ¾", 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. (UPC 314.4)
- Building shutoff valve required to be full way type. (UPC 606.2)

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 installed. Devices are installed per manufacturer's specifications for location and installation. (UPC 609.10 & 609.10.1)
- Hot and cold-water lines installed outside the building or conditioned space insulated with minimum R-3. (UPC 312.6)
- Water lines tested to working pressure or 50 psi for 15 minutes. Plastic water piping not allowed to be tested with air except PEX may be tested with air per manufacture. (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 weir roughed in minimum 6", maximum 18" above the floor. (UPC 804.1)
- Water hammer arrestors installed. Devices are installed per manufacturer's specifications for location and installation. (UPC 609.10 & 609.10.1)

Kitchen

- Dishwasher drain requires air gap. (UPC 807.3)
- Water hammer arrestors installed. Devices are installed per manufacturer's specifications for location and installation. (UPC 609.10 & 609.10.1)

Bathroom

- Rigidly support faucet and shower head fittings. (UPC 609.1)
- Minimum shower area 900 sq. in. with a 30" clear diameter to 70" from the floor of the shower. (UPC 408.6)
- Minimum shower rough pan 30" x 30". (UPC 408.6)
- Listed anti-scald/pressure balance valve required. (120° F. maximum) (UPC 408.3 & 409.4)

- Water closet set a minimum of 15" to center from side wall with a total clear width of 30" and 21" at the front. (UPC 402.5)
- Flange secured with corrosion resistant fasteners. (UPC 402.6.2 & 402.6.3)
- Closet ring to vent is maximum distance of 6'. (UPC Table 1002.2)
- Slip joints used at tub drain are accessible. Access door a minimum of 12" x 12". (UPC 402.10)
- Over rim tub faucets set with a minimum 1" air gap to tub rim. (UPC Table 603.3.1 and 603.3)

Shower Subpans

- See section above for minimum dimensions. θ Dam > 2" and < 9". Exception: ADA $\frac{1}{2}$ " maximum dam. (ANSI A117.1-09) The dam is measured from the top of the drain to the top of the dam. (408.5)
- Approved listed pan liner, 3 layers hot mop type 15 lb. felt or other approved membrane. (UPC 408.7) θ Liner minimum 3" above the finished dam. (UPC 408.7)
- Slope/pitch of lining minimum $\frac{1}{4}$ " per foot. (UPC 408.7)
- No fasteners less than 1" above finished dam. (UPC 408.7)
- Weep holes at drain are clear. (UPC 408.7) θ Doorway minimum finished opening of 22" wide. UPC 408.5)
- Shower head cannot discharge directly at entrance. (UPC 408.9)
- Test for shower receptor required. (UPC 408.7.5) θ Permanent seats in shower require $\frac{1}{4}$ " per foot pitch. (UPC 408.7)
- Permanent seats in shower require $\frac{1}{4}$ " per foot pitch. (UPC 408.7)

Exterior

- Vacuum breakers on all hose faucets. (UPC 603.5.7)
- Backflow protection on all irrigation systems. (UPC Table 603.2 & 603.5.6)
- No valves downstream of vacuum breakers. (UPC Table 603.2)