

# Washington Suburban Sanitary Commission (WSSC) Plumbing and Fuel Gas Inspections and Plans Review Quick Reference Guide to Code Consistency

**Purpose** – The intent of this document is to explain the WSSC staff’s interpretation of various code related matters. It is not intended to be enforced as Code but rather provide commentary to and illustrate the Code we are enforcing.

- \* **Effective Date** – In general, the current Code governs long form permits issued, or short form permits activated, on or after [July 1, 2015](#). This document was last updated [May 1, 2015](#).

**Jurisdiction** – This code and WSSC staff have jurisdiction over the Washington Suburban Sanitary District (WSSD). The WSSD is effectively all of Montgomery and Prince George’s Counties, Maryland, except for the Cities of Rockville and Poolesville. The WSSC *does have* code jurisdiction in the City of Bowie including areas served by the City of Bowie public water and sewer system.

**Updates to This Living Document** – Older (and still relevant) items will be shown in black text; New items will be shown in [green text](#) and marked with two asterisks \*\* for printed versions; Revised items will be shown in [blue text](#) and marked with a single asterisk \* for printed versions.

## **Items from Previous Codes that are not in the Current WSSC or ICC Codes – Therefore not Enforced:**

1.) The IPC does not have a requirement to meet minimum backflow protection requirements when a water service is replaced. Plumbers should be diligent in their efforts to promote modern backflow protection best practices through customer awareness and completeness of services offered. See WSSC 502.3 for triggers requiring backflow protection.

## **Highlights of Interpretation (beginning with WSSC code, followed by the International Plumbing Code (IPC), the International Fuel Gas Code (IFGC), then a few Miscellaneous items:**

**WSSC 101.4.1 Propane** – As of November 1, 2007, the WSSC is responsible for Propane/LP gas inspections in the WSSD. Permits shall be completed in the normal way; there are no special fixture code designations for propane appliances. WSSC jurisdiction begins at the second stage regulator; this is the regulator that establishes the system pressure for the inside distribution piping. WSSC will not inspect the setting of the tank or the underground line from a remote tank to the building. For a small tank, generally serving a single appliance and located adjacent to the building, WSSC will inspect from the outlet of the tank into the building.

**Temporary Propane Construction Heaters** – WSSC shall inspect permanent piping prior to it be utilized to supply temporary heaters; this also includes hard piping temporarily installed (typically on a large scale project), for the sole purpose of supplying temporary heaters. WSSC shall not govern/inspect the portable hoses and heaters used residentially or commercially. See the IFGC, section 101.2.4 which provides an excellent guideline for work outside the scope of WSSC inspection authority and expertise; see item number 1. WSSC does have jurisdiction over all aspects of temporary natural gas construction heaters.

**Safety** – WSSC Inspectors reserve the right to disclose any unsafe conditions to the attention of MOSHA officials, building officials, the fire department, and/or the gas supplier. Such conditions may be, but not limited to; unsafe/unlisted/damaged appliances, make-up air, appliances or hoses subject to physical damage. This applies to heaters utilizing natural gas as well.

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- \*\* WSSC 102.3.10.2 Alternate Pipe Restoration Methods** – Epoxy lining of water services and water distribution piping is growing in popularity. Certain provisions were codified in July 2015:
- 1.) Containment backflow protection shall be installed before any inside relining work begins.
  - 2.) Existing backflow shall be tested and un-protected hazards shall have new BFPs installed.
  - 3.) Epoxy products under 180°F require an ASSE 1017 mixing valve and special signage.

**WSSC 106.2.3 Electric Water Heaters, Residential Type** – The replacement of a residential type electric water heater *does not require* a Short Form permit or inspection; effective by code change July 1, 2012, electric water heaters are considered a plumbing appliance and therefore are considered “exempt work.”

**WSSC 106.2.3.1 Backflow Preventer Test Reporting** – Test Reports submittals are required with 5 business days of a successful test. Test Reports shall be submitted electronically; exceptions will be granted on a limited case-by-case basis. Copies of the electronically submitted WSSC test reports are required on the jobsite for *Final* inspection for all testable backflow assemblies.

In general, the plumbing contractor shall only submit successful test results to WSSC. Unsuccessful test shall be repeated following corrective actions; i.e. cleaning, repairing, or replacing of the faulty backflow assembly.

If repairs cannot be immediately executed, recharging the system shall follow the following guideline;

- 1.) For failure of just one check - the system can be recharged.
- 2.) For failure of two checks – the system shall remain off until the backflow preventer is repaired or replaced. Fire protection systems, served by an ASSE 1015, may be reactivated prior to repair. However, where the fire protection system is served by an ASSE 1013 RPZ type backflow assembly (due to chemicals contained within the system), the system shall remain off and the fire marshal *shall be* notified.

In cases where the owner is unwilling to order timely corrective actions, the WSSC Cross Connection Control Office shall be notified immediately and a failed test report shall be submitted as well.

**WSSC 106.8.3 & 107.5 Minor Site Utility Systems** – (certain water systems 4” & larger, sewer systems 6” & larger) shall be installed under a plumbing permit and inspected by a WSSC Plumbing Inspector. The inspectors, at their discretion, may accept a test report for the required hydrostatic test.

**WSSC 106.9 Short Form Permits** – The intent of the Short Form Permit (SFP) is for work that will only require one inspection to complete the entire project. Examples include- water or sewer repairs and replacements; gas appliance replacement; additional gas appliance(s); and limited pipe repairs within the building. Examples of where a Long Form permit is required – finish basement, even if waste rough was present; generators and pool heaters when the appliance is not present and connectable at time of gas test. Basically, if there is a need for multiple plumbing or gas inspections, then a long form permit is required.

The following items may be covered by a Short Form permit in lieu of a Long Form: 1.) First time installation of a residential water treatment system including an ASSE 1024 backflow preventer unless a new receptor (open site) is needed. 2.) First time installation of an ASSE 1012 backflow preventer on an existing residential boiler make-up line or a water driven emergency back-up sump pump. 3.) First time installation of an ASSE1024 backflow preventer on a new or replacement gas or electric dryer which has a water misting/steamer connection. In all of these cases, the backflow preventer is considered as a

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separate inspection item on the short form permit and counts against the allowance of three items per permit.

**WSSC 106.9.3.3 Obstructed Process.** When a licensee has made a reasonable number of attempts to schedule a short form permit inspection and the property owner is uncooperative or refuses the inspection, the licensee shall notify an Inspection Supervisor in writing (email) and provide pertinent contact information for the property owner and documentation of their attempts to coordinate with same. WSSC will contact the owner in an attempt to highlight the need for the inspection. If still refused, WSSC will administratively schedule and fail the inspection, noting the obstructed process. Under ***NO circumstance***, including an impending expiration of the permit, is a licensee to simply schedule an inspection ***without the acceptance*** of the property owner.

**WSSC 107.2.1.9 Self Certifications** – Self certification is recognized by Code and will be accepted by WSSC Inspection Supervisors on a case by case basis. WSSC will make every attempt to inspect the work as required; including on an overtime basis as needed. The plumbing contractor shall request, ***in advance***, for permission to self certify where job conditions present safety concerns or when weather hampers WSSC’s ability to perform inspections as scheduled. After-hour and weekend emergencies shall go through the emergency inspection request procedure; where overtime vs. self-certification shall be the determination of the responding WSSC official.

**WSSC 111.1.5 & 111.1.6 Capping-off or Abandoning Existing Service Connections** – The term ***cap-off*** generally indicates disconnected water and sewer service(s); a temporary condition needed to fulfill a condition requested by the building officials prior to their issuance of a building demolition (razing) permit. ***Cap-offs*** shall be accomplished at the property line unless another location outside of the area of demolition and reconstruction is justified and pre-approved by the Plumbing Inspector.

Upon request of the owner or agent, inside or outside WSSC meters, up to 1-1/2”, shall be pulled by WSSC personnel; 2” and larger meters shall be pulled by the plumber and returned to the warehouse. Plumbers and WSSC staff should review WSSC’s demolition procedures, including an important safety announcement at: <https://www.wsscwater.com/business--construction/developmentconstruction-services/demolition-practices.html>. After ***cap-off*** inspection is approved under a short form permit and if the WSSC account is in good standing, the WSSC will correspond to the building permit office that the WSSC services are disconnected and the razing permit can be approved.

***Abandonment*** generally indicates a permanent condition where the service connection is disconnected at the WSSC main. An ***abandonment*** is performed under a service connection permit (SCP) by a utility contractor or a plumber. Where one or more service connections require upsizing or relocation to serve a future use, the original connection(s) shall typically be ***capped-off*** first and then ***abandoned*** at the time of new SCP construction. Where razed buildings will create an unimproved lot for longer than 24 months, the connections shall be ***abandoned*** in addition to being ***capped-off***.

**WSSC 111.4.2.1 Fire Sprinkler Backflow and Metering** – For a building (other than R-3) with “inside” WSSC meter(s), the owner shall provide an ASSE 1048 double check detector assembly (DCDA). This device shall be installed under a separate permit indicating 5/8” DC; remote wire and conduit is required. These backflow assemblies will be shown on the permit as one fixture; a “Testable BFP”. The entire assembly including the meter “rack” may be horizontal or vertical. The Commission (Meter Services) shall be called to set the detector check (DC) meter or aka “tattle tale” meter, and then the plumber tests both BFP assemblies; two certification test tags and electronic submissions of WSSC backflow assembly test reports are required. The ASSE 1047 RPDA shall be required for chemically

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supplemented systems. For building(s) served by an “outside” WSSC master meter, the fire sprinkler BFP can be an ASSE 1015 or ASSE 1013 accordingly.

**WSSC 114.1 Apprenticeship** – WSSC will register apprentices by issuing a non-expiring license. This card will allow these tradesmen to be better connected to their career path and have a sense of belonging to our trade. Proof of work (W-2’s), under an active license Master Plumber and/or Gasfitter, is still required to exam at the journeyman level. Apprentices shall not work unattended without a journeyman supervising nearby.

**WSSC 302.3.5 & IPC 312 Testing** – In general, all phases of completed piping shall be tested. The following represents the practical application of these code sections; Note: The inspector is not required to witness the release of test, but reserves the right to do so.

**DWV** – Follow manufacturer’s instructions regarding maximum test parameters for test balls, plugs, caps, etc. For uppermost branch intervals, fill to 2”-3” in a bathtub or shower when applicable, above trap arms in other cases.

**Sewer** – It is acceptable to use water or air for testing. Do not exceed air test pressure limitations for plastic pipe materials. It is recommended to use water for testing. The inspector is not required to witness the release (water flow or air) of test pressure, but reserves the right to do so.

**Limits of testing** – Small DWV add-ons, limited ground works, and basic sewers will not require testing under the following limitations: **10 fittings** including tie-in and clean-outs; and **40 feet** of pipe (do not count length of dry vent).

**Water Service and/or Distribution Piping**– Is to be hydrostatically tested (per Code) equal to, or greater than, the working pressure within the building.

**Winter Testing, General** – The use of water for all above mentioned testing may be suspended in the winter; this is intended to provide a practical solution for the duration of time until permanent heat is available. The use of air shall be allowed as outlined in the product manufacture’s guidelines. The inspector will witness all testing as normal with the exception of CPVC and PVC water and/or DWV piping.

**Winter Testing, CPVC and PVC** - the plumbing contractor shall be responsible for a two step process as follows: (1) Shall be tested prior to wall close-in by the plumbing contractor using a safe and reliable method. DO NOT leave air pressure charged on an unmanned project and NO other work may be performed on premises during the test. (2) Then after permanent heat is available and prior to final inspection the plumbing contractor shall fill the CPVC water distribution system with water, at street pressure, to meet the Code prescribed requirement; and/or fill PVC DWV systems with water as described above. In lieu of water, a smoke test may be utilized for DWV following the parameters of IPC 312.4.

**Anti-Freeze** – The use of anti-freeze is *not* recommended for any above test method. The methods described above provide reasonable and safe alternatives. The use of anti-freeze creates a potential for human error in regards public safety and environmental impact. When used, the master plumber shall ensure and safeguard with redundant check points, that the proper and safe type of antifreeze is used.

**WSSC 302.5.1 & 302.5.2 Domestic Hot Water** – WSSC has codified several items relating to *Domestic Hot Water* beginning with a new definition to differentiate between water used for normal domestic functions (such as bathing, showering, bidets, hand washing, residential kitchen sinks and dishwashers, residential clothes washing, etc.) *and* commercial or industrial processes such as culinary, laundry operations, laboratory services, or other processes where extremely hot water may be utilized.

**302.5.1/IPC 501.1.2** is new language crafted by WSSC to “paint the picture” of what represents a “best practices” domestic hot water system:

1.) Hot water storage at 140° F or greater.

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2.) *All* domestic hot water distribution tempered by a master thermostatic mixing valve meeting ASSE 1017.

3.) *Guarded Domestic Hot Water Delivery Outlets* – Scald prevention faucets where required by **current** code parameters.

501.1.2 is not intended to be enforced as code, but rather depict what could/should be a best practice.

**IPC 501.2 Water heater as space heater** - This code language is unchanged; however WSSC staff offers the following interpretation relative to enforcement: Where a water heater serves space heating

applications such as baseboards or fancoils in conjunction with *domestic hot water*, and where *Guarded Domestic Hot Water Delivery Outlets* (point of use protections) **do not** exist, a thermostatic mixing valve meeting ASSE 1017 shall be installed regardless of whether, or not, the initial temperature setting is at or below 140° F.

**302.5.1/IPC 501.3** Establishes a **minimum** storage temperature of 120° F in order to ward-off bacteria growth within the hot water tank(s). This section also establishes a **maximum** storage temperature of 125° F for older construction where *Guarded Domestic Hot Water Delivery Outlets* (point of use protections) do not exist.

**302.5.1/IPC 501.4** Acknowledges that *Domestic Hot Water* may be delivered up to 140° F to certain uses. However, where *Guarded Domestic Hot Water Delivery Outlets* (point of use protections) do not exist, delivery temperatures **shall not** exceed 125° F. It should be further noted, that even if *Guarded Domestic Hot Water Delivery Outlets* (point of use protections) are in place, domestic hot water distribution temperatures should not exceed 125° in order to provide additional protection at *Non-Guarded Domestic Hot Water Delivery Outlets* such as non-public lavatories, residential kitchen sinks, or laundry trays. These are fixtures/uses where “at-risk” users could also be scalded.

**302.5.2/IPC 501.9 Nursing Homes, Hospitals and Adult and Child Care Facilities** – Requires a master thermostatic mixing valve meeting ASSE 1017 where domestic hot water is used. The mixing valve shall be located at the water heater unless otherwise engineered and approved by the WSSC Plans Review office.

**302.5.2/IPC 501.10 Heat Transfer Systems** - Requires a master thermostatic mixing valve meeting ASSE 1017 where *domestic hot water* is produced through any form of heat transfer (residential or commercial). Examples include, but are not limited to: boilers, solar, refrigeration recovery, process water, geothermal.

**\*\* 302.5.3/IPC 501.11 Water Heater Sizing** – Code language and a new table provides a guideline for residential water heater sizing. It is only a guideline. As an alternative, smaller heaters with high storage temperatures, coupled with a mixing valve, may also be used to provide adequate quantities of hot water.

**WSSC 302.5.3; IPC 504.6; & 504.7 Water Heater Relief Valve Discharge and Safe Pans** – The discharge pipe from a water heater relief valve shall be rated for hot water distribution. The termination shall be to the floor (basement and slab on grade only), to the outside (must be indirect within sight of the water heater and the indirect piping **need not** be rated for hot water distribution), indirect to an approved indirect waste receptor, or to the safe pan. If terminated in a safe pan, the pan drain shall be full size and terminate over a suitably located indirect waste receptor, floor drain or extend outdoors per IPC 504.7.2. Safe pans are not required for tankless water heaters; for storage type, safe pans are not

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required in basements, above crawl spaces, or slab on grade applications regardless if adjacent areas are finished or unfinished. When safe pans are optionally installed, they shall comply as noted above.

- \*\* **WSSC 302.6.3; IPC 603.3 Tracer Wire** – Tracer wire is required with all non-metallic water services to make the pipeline locatable in the future. Required for all new services and full replacements. Not required for “trenchless” replacements.
- \*\* **WSSC 302.6.4; IPC 603.4 & 603.5 Limits of Underslab Piping and Restraints** – Requirements for large diameter water services at the entry into a building structure. Where conveying water for fire protection, service must turn-up within 5’ of the exterior wall. All through wall applications and underslab restraint systems, except standard blocking, shall be engineered designs. If blocking behind the “vertical” 90° elbow, use the block dimension from WSSC Standard Detail B/1.0. To restrain the vertical “spool” piece, use ¾” rods through 6” pipe and 7/8” rods for 8” – 12” pipe.
- WSSC 302.6.5; IPC 604.1 Water Pipe Sizing** – The WSSC Inspection and Plan Review Staff are recognizing four sizing methods for sizing of water service connections, water services, and water distribution systems;
  - 1.) IPC 604.1.1 IPC Appendix E, Section E103.3 Segment Loss Method
  - 2.) IPC 604.1.2 IPC Appendix E, Section E201. Size of water-service mains, branch mains and risers. This is the most attractive method for sizing residential inside distribution systems. The key is to only use the developed length for each segment and not apply the overall developed length from the main in the street.
  - 3.) IPC 604.1.3 Existing Service Connection Size Validation (Residential Only). This section should be followed to provide relief of requirements to upsize existing service connections where homes are replaced, significantly renovated, or are “first time” construction on an undeveloped lot. Emphasis should be placed on hydraulic demand for fire sprinkler systems and expected plumbing fixture use frequencies/demands. Owners may have to submit an acceptance affidavit.
  - 4.) Engineered Designs, plans review required.
- \*\* **WSSC 302.6.6; IPC 604.7.1 & 604.8.3 Responsibility for Booster Pumps and Pressure Reducing Valves** – Code language clarifies that the property owner, along with their design and construction team, are responsible for determining where booster pumps and pressure reducing valves are needed.
- WSSC 302.6.7; IPC 605.2 Lead content of water supply pipe and fittings** – Modifications to this IPC section codify WSSC’s requirement for lead reduction/elimination in pipe and fittings. WSSC revised this section to align with State and Federal Laws. Products will have to meet two NSF listings: a revised NSF 61, displayed as NSF 61-G, as well as NSF 372.
- \*\* **WSSC 302.7.1; IPC 703.7 Tracer Wire** - Tracer wire is required with metallic and non-metallic building sewers to make the pipeline locatable in the future. Required for all new sewers and full replacements. Not required for “trenchless” replacements or for segments that enter or exit private manholes.
- \*\* **WSSC 302.7.2; IPC 708.1.1 Exception: Cleanout Equivalent** – Allows for the removal of a fixture trap or fixture in lieu of a clean-out; limited to 7 fixtures on fixture branches up to 40 feet; exception *does not* apply to branches with urinals, building drains, building drain branches, and building sewers.
- \*\* **WSSC 302.7.4; IPC 708.3.1 Building Sewer Cleanout – Outside Only Installations** – This new provision requires *all* building sewer cleanouts to be installed outside of the structure. Where the face of

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the building wall is 10' or less from the property line clean out, the building sewer cleanout may be waived in favor of a readily accessible building drain cleanout installed in one of the following two ways:

- 1.) At grade level, residential garage, where garage floor slopes to the outdoors. Non-traffic bearing cover if located outside of normal wheel path.
- 2.) An unfinished area, minimum of 80 square feet (net), suitable for operation of drain cleaning equipment. The maximum distance from the inside cleanout to the property line cleanout is 40 feet.

**\* WSSC 302.7.7; IPC 715 Backwater Valves (BWV)** – All new work requires a BWV where the finished floor is below the elevation of the next upstream public or private manhole cover. **Where the BWV is retrofitted in and it is the only work purposed, separation of upper floor drainage from lower floor drainage is not required; although still a strong recommendation, if practical.** For remodeling work, a BWV will not be required if a limited number of fixtures are added, altered or replaced and the scope of work does not lend to installation of a BWV that would protect all the fixtures on that level. Where the building sewer connects directly to a public or private manhole (manhole tap), use this manhole's rim elevation for calculation purposes.

The access cover shall be labeled warning against covering the access with finish flooring. Also, a tag must be affixed to the main water supply valve indicating use and location of the BWV(s).

Backwater valves and volume based grease interceptors – It is highly recommended to install a BWV downstream of an outdoor grease interceptor where a BWV is required due to the elevation of the connected fixtures. Access for maintenance/removal shall be required and presented to plan review for approval. Note: where fixtures do not require a BWV, a BWV shall not be required solely for the interceptor based on its flood level rim. Also, where the grease collection piping is multi-story, it is acceptable to waive the requirement to segregate the lower floor from the upper floor(s) and install the BWV downstream of the GI. The owner/designer may elect to locate the BWV(s) inside the building, within the grease collection piping, and that is acceptable.

**WSSC 302.9.4; IPC 918 Air Admittance Valves (AAV)** – Code update codifies several key components of product listings and manufacturer's instructions and also provides additional parameters to ensure safe practices such as: prohibiting use of an AAV below grade or in attics.

**WSSC 402.3.1; IFGC 304.12.2 Carbon Monoxide Alarms, Existing Construction** - Affects: *Only* Single Family Homes and Townhomes (Group R-3 Occupancies). Requirement triggered by gas appliance replacement or where gas is installed new to a home. Alarms shall be "Plug-in" type, battery only type, or hard wired; all shall meet UL 2034, and be installed in accordance with International Residential Code parameters. **Note:** CO Detector Alarms are required in all forms of **new construction** (residential and commercial) where bedrooms or sleeping area exist.

**\* WSSC 402.5.1; IFGC 503.5.5, 503.5.6, 504.2.9 & 504.3.20 Interior and Exterior Masonry Chimneys** – When gas equipment is installed new or replaced, the following interpretations below shall be strictly adhered to for single and multi-appliance venting where a masonry chimney passageway (flue) is utilized as the vent. **In lieu of this general interpretation, detailed information is available on WSSC's Regulatory Services web pages at: <https://www.wsscwater.com/gasappliances> - click on the Safety Alert.** Overall, the latest code changes have resulted in defacto prohibition of masonry chimney's continuing their use for venting residential size/type gas appliances without the retrofit installation of a listed liner system.

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**503.5.5 Size of chimneys** – Methods 2 & 3 have been deleted because they are antiquated sizing methods which discount the science and research on which Section 504 and its Tables are based.

**503.5.6 Inspection of chimneys** – The Exception under 503.6.1 has been deleted because, with the implementation of the 2015 U.S. Department of Energy requirements, residential water heaters have increased energy efficiencies and therefore, there is no longer an application where an appliance replacement can be viewed as “like for like”.

**504.2.9 Chimney and vent locations (Single Appliance Venting)** – Under the second paragraph, “interior and” was added to the first sentence just in front of “exterior”. This recognizes that most interior masonry chimneys, in this region, have a significant code temperature exposure in un-heated/un-insulated attics. Because of this, they shall be treated/viewed as exterior chimneys and every application should utilize the exterior sizing tables for interior chimneys as well.

Under number 3, “equipped” was changed to “factory-equipped” to eliminate after-market accessories. And a further restriction added to disqualify any appliance with a damper or fan-assist. These shall be treated as “FAN” appliances when using the sizing tables.

Under number 6, “any” was put in place of “space heating” so that Table 504.2(6) would be used for water heater only applications; where the water heater would need to be of significant minimum size in order to be able to vent into a masonry chimney.

**504.3.20 Chimney and vent locations (Multiple Appliance Venting)** – Under the second paragraph, “interior and” was added to the first sentence just in front of “exterior”. This recognizes that most interior masonry chimneys, in this region, have a significant code temperature exposure in un-heated/un-insulated attics. Because of this, they shall be treated/viewed as exterior chimneys and every application should utilize the exterior sizing tables for interior chimneys as well.

Under number 2, “equipped” was changed to “factory-equipped” to eliminate after-market accessories. And a further restriction added to disqualify any appliance with a damper or fan-assist. These shall be treated as “FAN” appliances when using the sizing tables.

Under number 4, “total” and “all” were put in place so that Table 504.3(7a) or 504.3(7b) would be used for all appliance applications; where the total appliance load would need to be of a significant minimum amount in order to be able to vent into a masonry chimney.

Tables 504.2(6), 504.3(6a), 504.3(6b), 504.3(7a) and 504.3(7b), re-title as “INTERIOR AND EXTERIOR MASONRY CHIMNEY”

Tables 504.2(6), 504.3(6b), and 504.3(7b), delete “Space-heating” from table headings.

**WSSC 502.3 Backflow Containment** – This is a new requirement by amendment of the IPC requiring a backflow containment device be installed on the domestic supply, after the take-off to the fire sprinkler system. This only applies to new construction and retrofit construction (remodeling and additions), initiated by the building owner. This requirement does not apply to properties where the water service is being repaired or replaced solely due to failure, leak or obstruction. This requirement will also trigger the requirement of thermal expansion abatement, see below.



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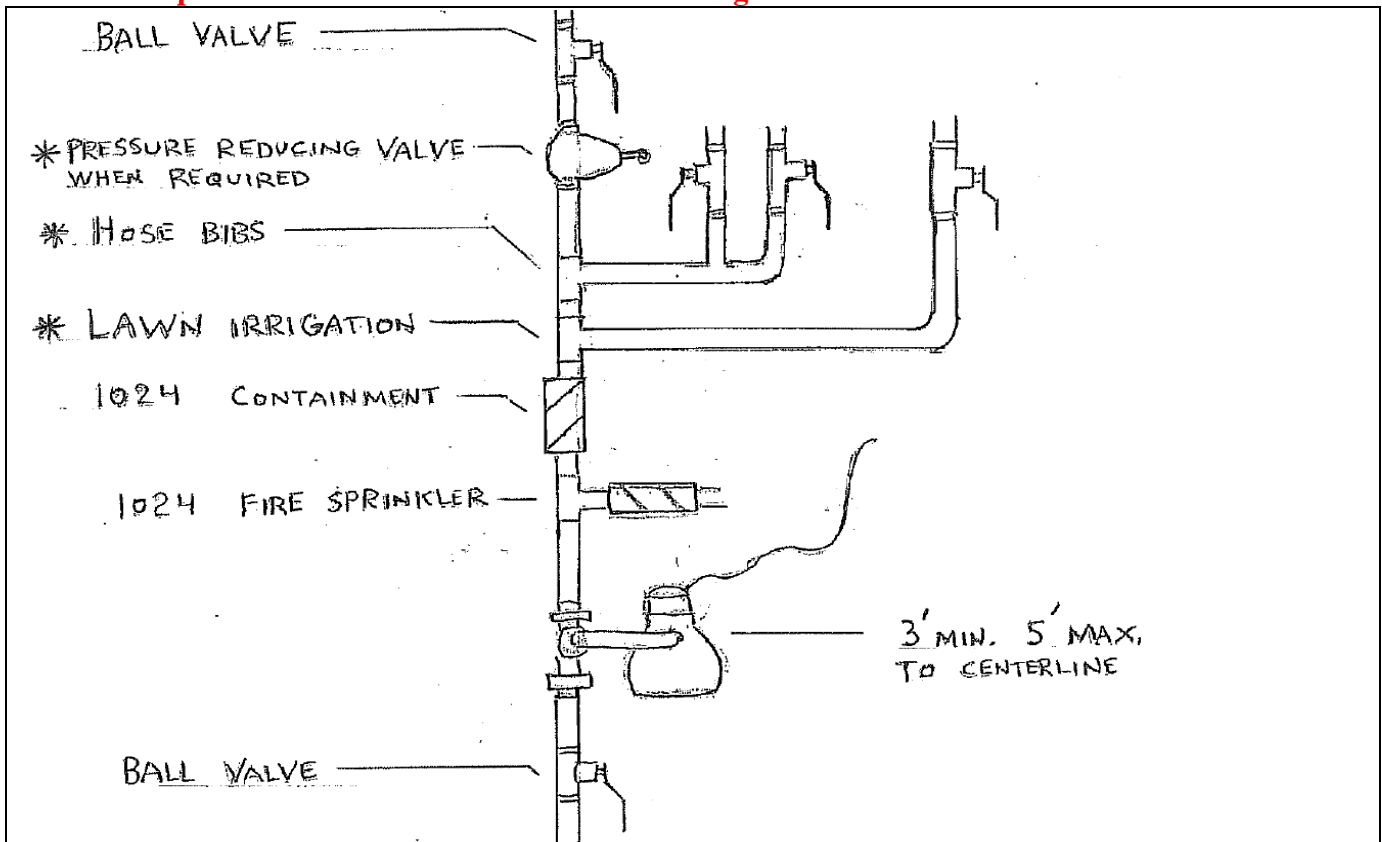
**WSSC Table 5.1 – ASSE 1024 (Use Column)** - Can also use for every application where an ASSE 1022 is required *except* for a *carbonated* beverage dispenser.

**WSSC 506.9 Fire Sprinkler Backflow (Residential)** – WSSC Code now allows a non-testable backflow (ASSE 1024) for residential fire sprinkler systems. From 2007 to 2009, WSSC Code required a testable backflow preventer for those applications. Homeowners are required to have their backflow assemblies tested annually or they can elect to replace it with a 1024. A Short Form permit is required if replaced by a plumbing contractor. If replaced by the homeowner, they must contact the Cross Connection office to have the testable assembly removed from the backflow records and in order to eliminate past due letters.

**WSSC 507.6.4 Prohibited Locations** – Backflow prevention assemblies are not prohibited in swimming pool equipment rooms or similar areas with questionable atmospheres due to chemical storage or usage. However, these arrangements should be avoided when practical or care *shall be* given to preserve invaluable information from the manufacturer’s identification plate; these soft metal plates are the first to erode. Copy duplicate information onto a card or paper then seal by lamination or placing in a zip type bag offer two methods of preservation; while engraving a non-corrosive substitute plate is another.

**WSSC 506.10.5 ASSE 1024 DCV** – “Limited” Fire Sprinkler Systems up to 7 heads. This codifies a long standing policy.

**WSSC Chapters 5 & 6 – Residential 1” Meter Setting:**



**\* Must be after the containment device. And may be ahead of, or after, the 2<sup>nd</sup> ball valve.**

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**IPC 305.1, 305.4 & 305.5 Sleeves and Pipe Protection –**

1.) All water service piping passing through foundation walls shall be sleeved. The required sleeve length is limited to the thickness of the foundation wall plus extra material needed to facilitate satisfactory required waterproofing. The penetration through the foundation wall shall be waterproofed

on the outside. For water service separation see IPC 603.2 and commentary in this document under 603.2.

2.) For all metallic piping passing through walls or slabs made of concrete, cinders, or other corrosive materials, a sleeve is not required; but is allowed. At minimum, the pipe shall be protected by wrapping or coating.

3.) Water services or distribution lines, where sleeved, shall only be sleeved with smooth wall material such as PVC, CPVC, Polyethylene, or similar conforming to approved materials in IPC Table 605.3; 702.2; or 702.3.

4.) Underground transitions between any piping material and a sleeve shall be sealed with a “ferenco” type reducing coupling.

5.) Residential stacks and building drains do not have to be sleeved, wrapped or coated where they pass through a foundation wall or slab (unless copper or aluminum is used – this is unusual). The penetration through the foundation wall shall be waterproofed on the outside.

6.) Commercial water services, water distribution lines, building drains, stacks, and/or similar shall be sleeved when passing through foundation walls or interior concrete/masonry walls. A penetration through the lowest level slab does not require a sleeve. Pipe shall be pre-coated or resistant to concrete aggression; copper shall be wrapped or coated. Waterproofing may be either mechanically gasketed or conventionally sealed.

**IPC 305.6 Protection of Piping - Shield (Kick) Plates –** This Code requirement calls for enlarged shield plates that extend two inches above the bottom wall sole plate and two inches below the top wall sole plate. The qualifier for when a shield is required has also changed; where the pipe is within 1.5 inches of the edge of a framing member, a shield is required.

**IPC 403.1 Minimum Fixture Requirements: Service Sinks –** The latest revision to the IPC Table 403.1 allows **Business** (with 15 or fewer occupants) and **Mercantile** (with 100 or fewer occupants) occupancies to omit the required service sink. Plans Review approval is required.

\* **IPC 403.3.1 Access to Public Toilet Facilities –** Establishments providing quick transactions such as *carry-out only* service, having a public access area of 300 sq. ft. or less, do not have to provide toilet facilities for public use.

**IPC 416.5 Tempered Water for Public Hand Washing Facilities –** Tempered Water, ranging between 85-110 degrees Fahrenheit, is required at hand washing sinks in *public toilet rooms and other hand washing operations to be used by customers, patrons, employees, patients, inmates and visitors*. An ASSE 1070 water temperature limiting device is required. A single 1070 device can serve multiple sinks in close proximity. The faucet(s) may deliver straight tempered water or may allow for further mixing with cold water. By adding a definition of *public hand washing facility* to WSSC’s Chapter 2, fixtures such as: classroom sinks in child/adult daycare or schools, medical/dental patient areas and exam room sinks, individual toilet rooms available for similar transient public users, detention centers including cells, and general hand sinks shall be provided with tempered water per 416.5.

**IPC 417.5 Field Fabricated Shower Pan Liners –** Field installed shower liners shall be sloped at 2% toward the drain(s). This liner shall be present at the time of close-in inspection and shall be pre-tested

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by the contractor. If located on the uppermost floor the test may be performed along with the DWV test, see testing above. Code now allows for a liquid, trowel applied, liner material meeting ANSI A118.10.

**IPC 603.2 Separation of Water and Sewer Piping** – Water Service piping shall be in separate trenches and 5' apart horizontally from the sewer. Except as follows:

- 1.) Water is 12" above the sewer *and* the sewer piping material conforms to the current approved materials shown in building sewer pipe IPC Table 702.3.
- 2.) Same trench, any elevations, any crossing, any arrangement, provided the sewer material conforms to the most restrictive materials as shown in the underground building drainage and vent pipe IPC Table 702.2.
- 3.) If the sewer only complies with the lesser IPC Table 702.3, sleeve the water through the crossing. The sleeve shall extend until 5' separates water and sewer; and the water service and its sleeve materials must comply with IPC Table 605.3; 702.2; or 702.3. For sleeves, also see IPC 305 and commentary in this document under 305.

**IPC 605.9 Prohibited joints and connections** – Item number (4.) under this section prohibits “saddle type fittings”. WSSC will strictly enforce this prohibition as it relates to the use of saddle tee valves in all areas of new commercial construction. In residential (Group R-3) occupancies, *new* saddle tee valves [serving *new* or existing humidifiers, refrigerators, ice makers, and similar appliances], *may* be utilized by the appliance installer. Keeping in mind, *all new* water supply lines are required to be on a long form permit and are subject to SDC's, when applicable. Where such valves pre-exist prior to any retrofit work, (e.g. replacement water heaters and furnaces), such arrangements may remain providing there are no visible signs of compromise.

**IPC 607.2 Hot Water Circulation** - The IPC requires a hot water re-circulation system or heat tracing for distribution systems over 50 feet in developed length; regardless of building or occupancy type, or hours of operation. In addition, the IPC references the International Energy Code which requires that the supply and return piping shall be covered with 1" insulation; and the heat maintenance system (circulator or heat tracing) shall be equipped with a convenient means (automatic or manual) to be shut off when *not in use* for Group R-3 structures (homes and townhomes) or shut off when *demand is limited* in all other structure types. For R-3's the system may be controlled by timers, motion sensors, or manual switch; thermostatically controlled systems and gravity systems are prohibited. In all other structure types; timers, motion sensors, or manual switches may be used if system is small in scale or hours of operation are limited. In larger structures or those with extended hours of hot water demand, a thermostat sensor(s) may be the only practical means to shut down re-circ pumps or heat trace when actual flow negates their need; essentially the opposite of a home's intermittent/dormant conditions.

\* **IPC 607.3 Thermal Expansion** – All new work requires an approved expansion tank for thermal expansion control. **A secondary relief valve is no longer allowed in lieu of an expansion tank.** In addition, the same protection shall be provided for a replacement water heater when one of the following exists: 1.) PRV with or without a by-pass; 2.) BFP or check valve; 3.) Excessive system pressure.

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**IPC 608.15 & WSSC Cross Connection Control Chapter, Table 5.1 Backflow Protection for Yard Hydrants** – The cold water supply to a yard hydrant and the outlet of the yard hydrant shall be protected as follows:

<b>Yard Hydrants, Backflow, and Freeze Protection</b>									
Level of Hazard	Condition	Type of Yard or Roof Hydrant						Hose Bibs Wall Hydrants	
		Standing (above grade) with drain port		Standing (above grade) without drain port		Flush at grade with drain port		Multiple	Single
		Multiple	Single	Multiple	Single	Multiple	Single		
High Hazard Applications (Footnotes 2 & 4)	Supply Line Backflow for High Hazard Application (Footnote 5)	1013	1013	1013	1013	1013	1013	1013	1013
	Spout/Hose Thread Applied Vacuum Breaker	Yes	No	Yes	No	Yes	No	Yes	No
	Signage: "Non-Potable Water - Do Not Drink"	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Low Hazard Applications (Footnotes 3 & 4)	Supply Line Backflow for Low Hazard Application (Footnotes 5 & 6)	1024	1024	Not Required	Not Required	1013	1024	Not Required	Not Required
	Spout/Hose Thread Applied Vacuum Breaker	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Signage: "Non-Potable Water - Do Not Drink"	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Signage: "Potable Water for Drinking, Bathroom & Culinary Only"	Not Allowed	Not Allowed	Yes (Footnote 1)	Yes (Footnote 1)	Not Allowed	Not Allowed	Yes (Footnote 1)	Yes (Footnote 1)
1.) Even when connected to a dedicated potable end use									
2.) Commercial/Industrial applications including but not limited to: Construction, Maintenance Yard, Service Garage, Gas Station, Farm, Nursery, Garden Center, Moderate/Large Park, Manufacturing, Food Processing, Loading Docks, etc.									
3.) Residential applications, small park settings, or outside or rooftop of commercial buildings (with no known high hazard nearby). Ok for the following uses including but not limited to: Residential Construction, Yard/Garden/Planting Beds, and similar providing - hose use only, no hard piping, no high hazards.									
4.) Where outside underground distribution lines serve different uses, each distribution shall branch off upstream of the other supply line "containment" assembly or device. (i.e. a drinking fountain supply in a downtown park shall tee off ahead of the 1024 serving a yard hydrant in the same park.)									
5.) Seasonal applications shall be fitted with a means to winterize by high pressure air displacement. Below grade valves and pipe openings are prohibited. When an ASSE 1024 Backflow device is set-up for winter removal, inlet and outlet piping shall be arranged to be capped or plugged while the device is out of position.									
6.) Regardless of seasonal or year round application, below grade installations of ASSE 1024 backflow devices shall be accessible for replacement. Follow the spirit of an outside meter setting detail W/5.7. (14"-20" below the cover and a means to cap or plug when removed.)									

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**IPC 610 Disinfection of Potable Water Systems** – In general, commercial water distribution piping shall be disinfected following one of procedures noted in IPC 610 or utilizing the method detailed in IPC 610. WSSC inspection staff *does not* have to witness the actual chlorination or de-chlorination processes, or see proof of same. The WSSC Plumbing Inspection *shall be* presented with a written copy of the final bacteriological testing at the time of final inspection.

Exception: small commercial projects of newly constructed water lines measuring 160 feet in total length (hot and cold measured separately and then added together), *may* only require a thorough flushing, in lieu of the chlorination process, providing this action results in potable quality water delivered from the fixture(s) at the time of final inspection. Water quality/testing is the responsibility of the plumber and the WSSC inspector will not be expecting written test results at final inspection. This exception does not apply to Minor Site Utility projects; chlorination and bacteria testing for these projects shall follow parameters outlined on the approved plans.

Group R-3 residential (single family home and townhome) construction, of any size distribution system, *may* also allow for a thorough flushing in lieu of the published chlorination processes, providing this action results in potable quality water delivered from the fixture(s) at the time of final inspection.

**\*\* IPC 705.11.2 Solvent Cementing** – The IPC was revised to “*not require*” primer for PVC solvent cemented joints, up to 4”, non-pressure piping. Use of ASTM D 2564 rated solvent cement is required.

However, according to the listing of the PVC piping and fittings, the product standard states that the pipe and fitting socket shall be prepared (cleaning of the joining surfaces), by one of four methods:

- 1.) clean steel wool;
- 2.) fine abrasive paper;
- 3.) chemical cleaner; or
- 4.) primer.

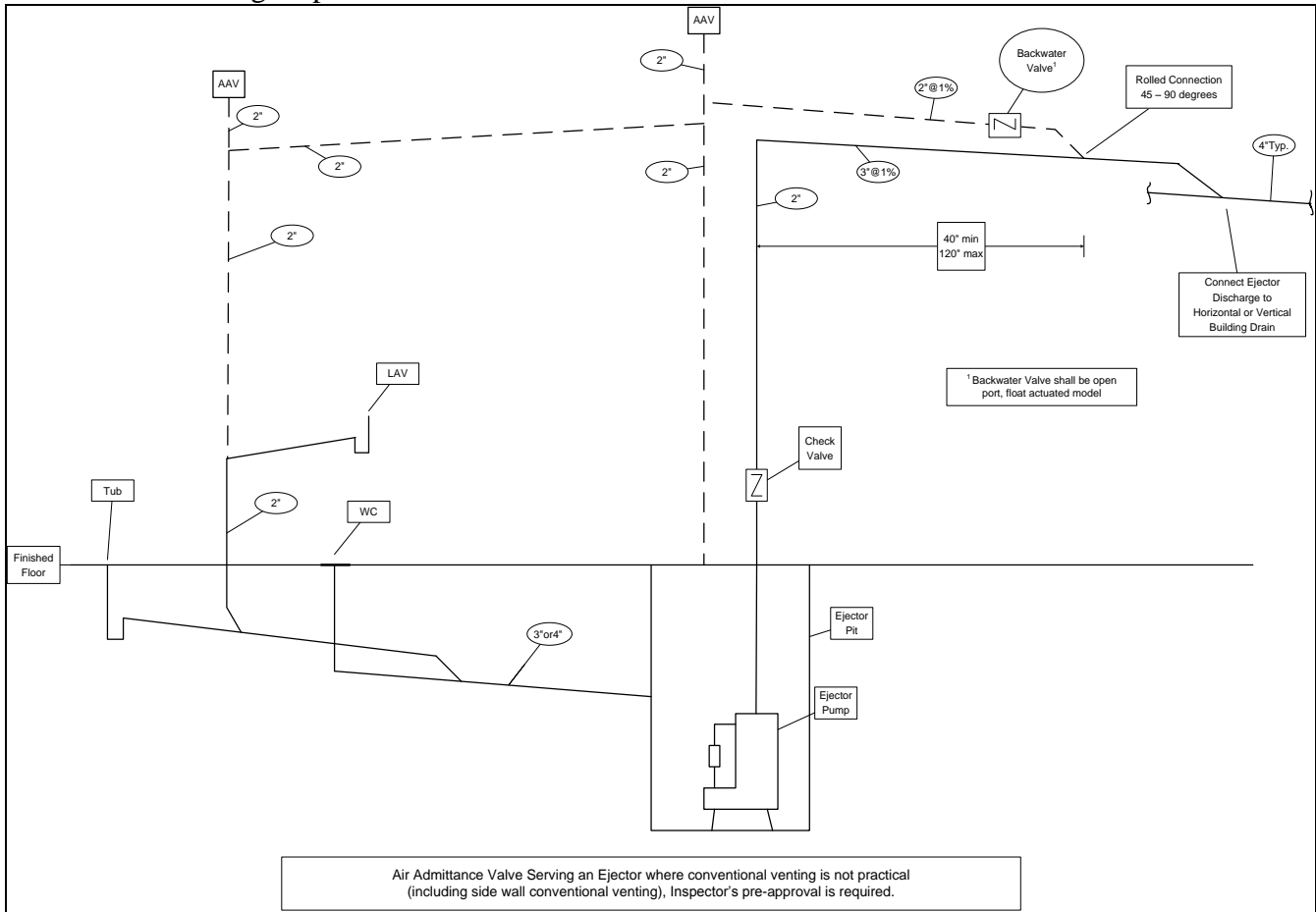
WSSC Interpretation: primer may be skipped in lieu of one of the three other joint preparation methods required by the standard. Failure to conduct any recognized method of joint preparation shall subject all joints to a minimum of a 20 foot head test (*absolutely no elevated air testing will be allowed*).

**\*\* IPC 706.4 Heel-inlet or side-inlet quarter bends** – The IPC language is confusing and misleading when utilizing a heel or side inlet quarter bend as a water closet bend (the vertical to horizontal change in direction directly below the closet flange). In these applications, WSSC offers the following interpretation:

- 1.) Low-heel inlet quarter bends are *prohibited* for use as a closet bend or any other drainage application.
- 2.) High-heel inlet quarter bends may serve as a closet bend provided the inlet is “washed” with a fixture(s) by either a wet vented or stack vented application.
- 3.) Side inlet quarter bends may serve in the same manner as the high-heel inlet quarter bend.
- 4.) A “dry” individual fixture vent *shall not* connect to a high-heel or side inlet serving as a closet bend.

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**IPC 917.8 Air Admittance Valves serving a Sewage Ejector Pump System** – In general, ejector systems shall be served by conventional venting. In the event, conventional venting is not practical, including side wall venting, the following engineered drawing shall be utilized after prior approval by the WSSC Plumbing Inspector:



\* **IPC 1002.4 Trap Seals (Trap Seal Protection Devices)** – Under 1002.4.1.4, the IPC is recognizing the newly created standard ASSE 1072 for Trap Seal Protection Devices. Any product that is constructed, tested, and listed to this new standard will be acceptable as an alternate to mechanically priming or passively priming a trap that is subject to evaporation.

\* **IFGC 310.1.1 Corrugated Stainless Steel Tubing (CSST) Fuel Gas Pipe Bonding** – CSST remains an approved material and may be installed per manufacture’s instructions, including below grade applications. Code now calls for the same bonding requirement set forth in the manufacture’s installation instructions. Bonding is the act of connecting a metallic piping system to the building’s electrical grounding system. The bonding of a fuel gas pipe system is under the jurisdiction of the respective County Electrical Inspector. However, the WSSC Inspector will take steps to ensure that bonding is performed in advance of our inspection. The following are key inspection points for WSSC;

- Bonding clamp shall be applied to a CSST fitting and not to the tubing.
- The bonding wire shall be as short as practical; shortest distance between any portion of the fuel gas piping and the main building ground, ground wire or panel. **WSSC amendment trumps IFGC requirement to attach bond wire upstream of the first CSST fitting. Our amendment/practice should**

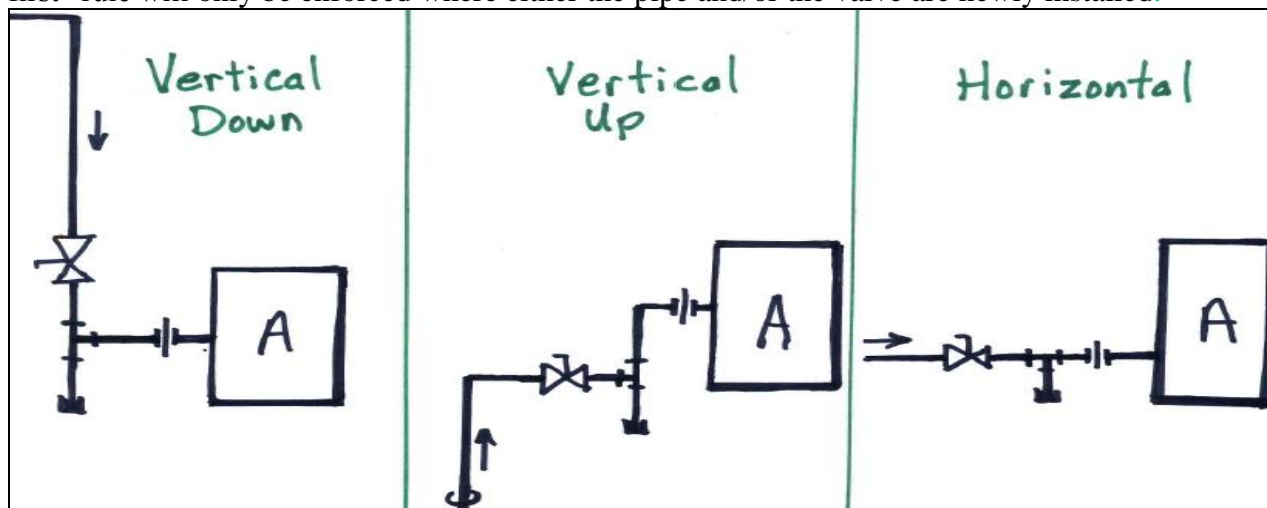
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result in bond wires much less than 75ft. But if not, the 2015 IFGC amendment limiting the bond wire to 75 feet shall be enforced.

- Where a mix of steel and/or copper, and CSST exist, the bond shall be attached to the copper or steel if that is the closest section of pipe to main ground.
- Bonding wire shall be a minimum of # 6 AWG copper wire, unless greater is specified.
- Bonding requirements shall be the same for all CSST products. This includes those with special coverings or referred to as counterstrike or arc resistant.
- Bonding wire shall be tied directly to the existing grounding probe or to the main grounding wire between the grounding probe and the panel using standard electrical components.
- It is also permissible to connect inside the panel to the main bonding bar, although this may not be practical given the other available options. (Electricians Only)
- A separate driven ground *shall not* be utilized.
- For gas appliance add-ons, where the requisite electrical permit is likely not present, the WSSC Inspector reserves the right to ensure the bonding work is performed, but ultimately is not responsible for sizing or installation of the bonding system.

**IFGC 403.10.4 Metallic Fittings & 404.5 Fittings in Concealed Locations (Press Fittings)** – The IFGC now recognizes the revised standard ANSI LC-4-2012, the standard includes steel press fittings for steel gas pipe. One product has been verified to be constructed, tested, and listed to this new standard; it is Viega – MegaPressG. Note: *WSSC does not extend the approval of steel press fittings for use* in below grade or below slab applications.

**IFGC 408.4 Sediment Traps** – the code requires sediment traps to be piped in a manner where the pipe nipple (of any length) and cap extend vertically down from the bottommost outlet of the tee. All three orientations below are acceptable; the horizontal configuration is the least effective. For new construction the appliance shutoff valve *shall be* upstream of sediment trap. For retrofits, the “valve first” rule will only be enforced where either the pipe and/or the valve are newly installed.



**\*\* IFGC 503.4.1 Plastic Piping for Appliance Vents** - Revised section says that *specific* plastic piping material shall be included in the manufacturer’s installation instructions.

**IFGC 503.10.11 Chimney Connections** – The International Code recognizes the use of fireclay, rigid refractory material, or metal as a thimble to a masonry chimney. The use of metal becomes significantly attractive when the vent connector needs to be enlarged in conjunction with a water heater replacement.

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The thimble or sleeve must extend from the face of the chimney to the inside face of the vertical liner. Likewise, the vent connector must extend through the sleeve to end at the inside face of the vertical liner. The vent connector must be properly supported and secured in a manner that would prohibit undesired movement in either direction.

**IFGC 505.1.1 Commercial cooking appliances vented by exhaust hoods** - The IFGC requires an interlock between the main gas supply to commercial cooking equipment and the exhaust hood serving them to ensure the by-products of combustion are exhausted from the space. This requirement can be met three ways:

- 1.) The cooking appliances and the exhaust hood are controlled by common controls – turn on the appliance and the hood comes on automatically. (This option is for Electronic Ignition Only)
- 2.) A solenoid valve is placed in the main gas supply ahead of the appliances (which are under the hood); the valve is normally closed and energized open. The valve is wired to the exhaust fan switch; (fan on – valve opens, gas flows; fan off – valve closes, gas flow stops). A by-pass around the solenoid valve, to keep pilots burning, *is prohibited*. (This option is for Electronic Ignition Only)
- 3.) The “Exception”, allows for a heat sensor to operate the fan and this meets the intent of the interlock. This is the only practical design in which appliances utilizing standing pilots can be used. (This option is for Electronic Ignition or Standing Pilots).

## **Miscellaneous**

**Water Driven Emergency Sump Pumps** – Yes, they are allowed by WSSC and shall be installed and inspected under the appropriate WSSC permit: Long Form Permit for new installation on new construction; Short Form permit for a first time installation, or replacement, within an existing structure. On a long form permit use fixture code (7G) with the description: “Water Driven Emergency Sump Pump”. The following short description will appear on the permit and inspector’s work tickets: “Wtr2EmergPump”. Connection shall be made to an appropriately sized cold water main, including a sub-metered line. No sump discharge may be routed to the sanitary; such existing arrangements must be corrected in order to approve the back-up pump. An ASSE 1012 backflow preventer is required and must be listed on the permit. SDC does not apply; these pumps shall only be installed as a back-up.

**Gas Meter Set Policy Changes** – Washington Gas has changed the timing of their meter set for conversion projects. The meter may be set and gas will be on to a new outlet valve prior to house piping being installed and/or prior to the testing of house lines. When the meter and outlet valve are in place first, the house line *shall not* be connected until the inside piping system has been tested, inspected, and approved. Testing against a live valve is prohibited per IFGC 406.1.4. When the inside piping is approved prior to the meter set, Washington gas will set the meter and make all final connections as before.