CATAWBA COUNTY
NORTH CAROLINA

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- OLD CODE
  - 2006 NC Plumbing Code
    - Based on the 2003 International Plumbing Code with NC Amendments

- NEW CODE
  - 2009 NC Plumbing Code
    - Based on the 2006 International Code with NC Amendments

Course Names and Numbers

2009 NC Plumbing Code Chapters 1-6 06-216-091

2009 NC Plumbing Code Chapters 7-9 06-217-091

2009 NC Plumbing Code Chapters 10-12 06-218-091

Licensed Design Professional Code Choices

- 2006 or 2009 NC Codes *until* July 01,2009
- 2009 NC Codes *After* July 01, 2009
- NC Rehab Code

(For Review)

Break Down Of Chapters

- 1)Administration
- 2)Definitions
- 3)General Regulations
- 4)Fixtures, Faucets And Fixture Fittings
- 5)Water Heaters
- 6)Water Supply And Distribution
- 7)Sanitary Drainage
- 8)Indirect/Special Waste
- 9)Vents
- 10)Traps, Interceptors And Separators
- 11)Storm Drainage
- 12)Special Piping And Storage Systems
- 13)Referenced Standards
- Appendices

From Ch. 11: 2009 NCBC (Accessibility)

Note: The Rules Review Commission received 10 written requests for Legislative review of this rule (Chapter 11, Accessibility and ICC A117.1). The rule becomes effective on the thirty-first legislative day of the 2009 session of the General Assembly unless a bill that specifically disapproves this rule is introduced. The rule becomes effective on day of adjournment of the 2009 session of the General Assembly if a bill is introduced and not ratified.

The 1999 Accessibility Code (with 2002, 2004 amendments) will remain effective until then.

When does NC Building Code Ch. 11 and ANSI A117.1 go into effect?

The note at the beginning of the 2009 NC Building Code Ch. 11 states that Ch. 11 and ANSI A117.1 ("the rule") go into effect on the day of adjournment of the legislature's current session. On June 9, 2009, the NC Building Code Council voted to allow a transition period between the current NC Accessibility Code (NCAC) and Ch. 11 and ANSI A117.1. The transition period will extend from the time that the legislature adjourns until December 31st, 2009. During that time, a designer may choose whether to design the building using the 2004 NCAC or 2009 NCBC Ch. 11 + ANSI A117.1.

Contact me for the complete letter from DOI

Letter Designations in Front of Section Numbers

In each code development cycle, proposed changes to this code are considered at the Code Development Hearing by the International Energy Conservation Code Development Committee, whose action constitutes a recommendation to the voting membership for final action on the proposed change. Proposed changes to a code section whose number begins with a letter in brackets are considered by a different code development committee. For instance, proposed changes to code sections which have the letter [EB] in front (e.g., [EB] 101.2.2.1), are considered by the International Existing Building Code Development Committee at the Code Development Hearing. Where this designation is applicable to the entire content of a main section of the code, the designation appears at the main section number and title and is not repeated at every subsection in that section.

The content of sections in this code which begin with a letter designation is maintained by another code development committee in accordance with the following: [B] = International Building Code Development Committee; [EB] = International Existing Building Code Development Committee and [M] = International Mechanical Code Development Committee.

Marginal and Text Markings

Solid vertical lines in the margins within the body of the code indicate a technical change from the requirements of the 2000 edition of the *International Plumbing Code*. Deletion indicators (➡) are provided in the margin where a paragraph or item has been deleted. Underlines within the body of the code indicate a technical change to the 2006 *North Carolina Plumbing Code* from the requirements of the 2003 edition of the *International Plumbing Code*.

TYPES OF CHANGES

- Change to IPC
- Change in NC amendments
- IPC Deletions
- NC amendments in the “09” NCPC that have been removed reverting back to IPC
- There are many changes in the numbering of code sections without being a code change. These changes may not be noted during the class.

Building drain (**"09" NC Plumbing Code)** That part of the lowest piping of a drainage system that receives the discharge from soil, waste and other drainage pipes inside and that extends to 10 feet beyond the walls of the building and conveys the drainage to the building sewer.

The **06 NCPC** read 10 feet in developed length
A July 27, 2007 memo from NCDOI revised this to developed length

(2006 IPC) For sake of discussion
BUILDING DRAIN. That part of the lowest piping of a drainage system that receives the discharge from soil, waste and other drainage pipes inside and that extends 30 inches (762mm) in developed length of pipe beyond the exterior walls of the building and conveys the drainage to the building sewer. Building drains are usually considered to be the main drain of a drainage system within a structure. Building drains are horizontal (including vertical offsets) and are the portion of the drainage system that is at the lowest elevation in the structure. All horizontal drains above the elevation of the building drain are horizontal branches. The building drain terminates at the point where it exits the building [see commentary, Table 710.1(1)].

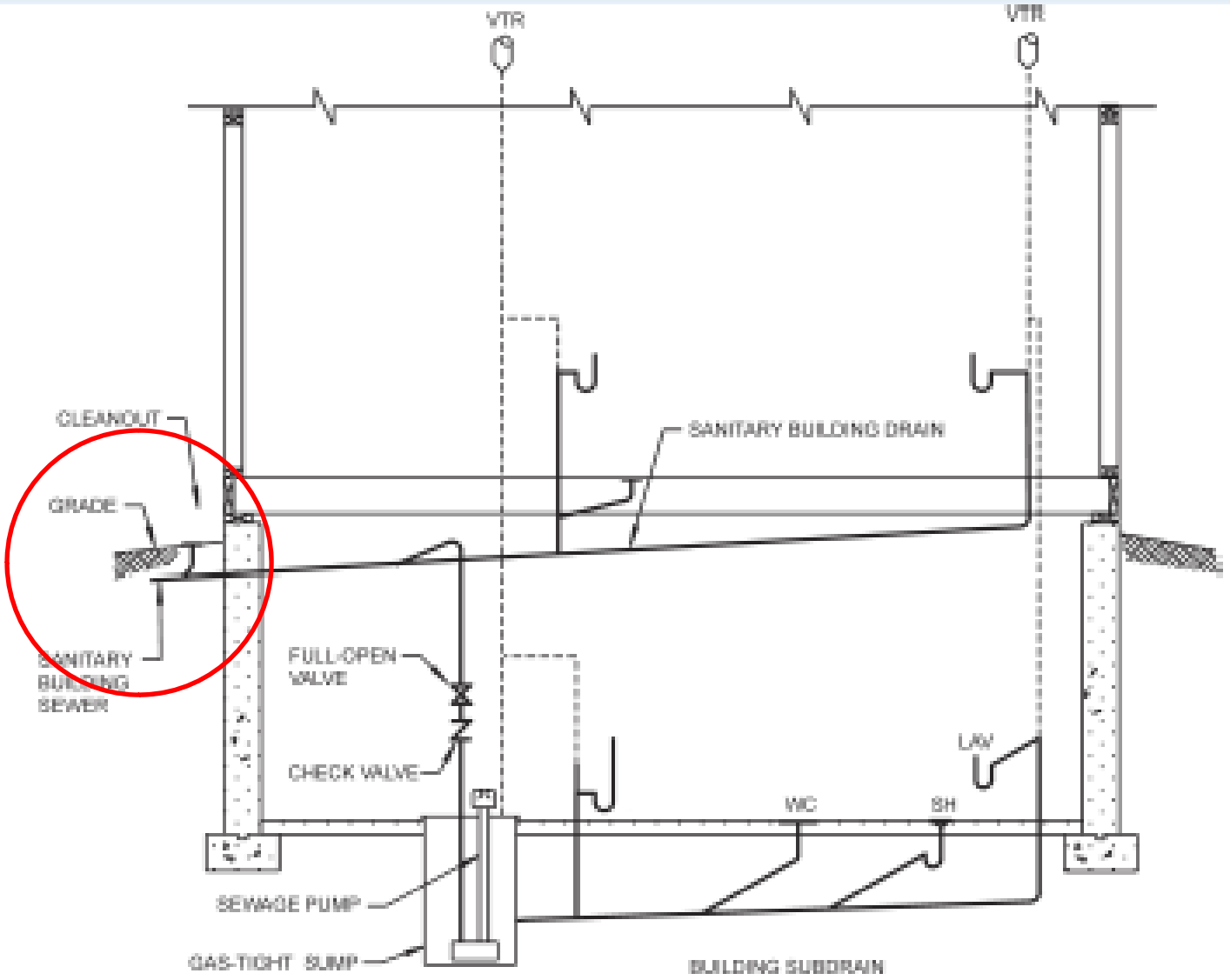
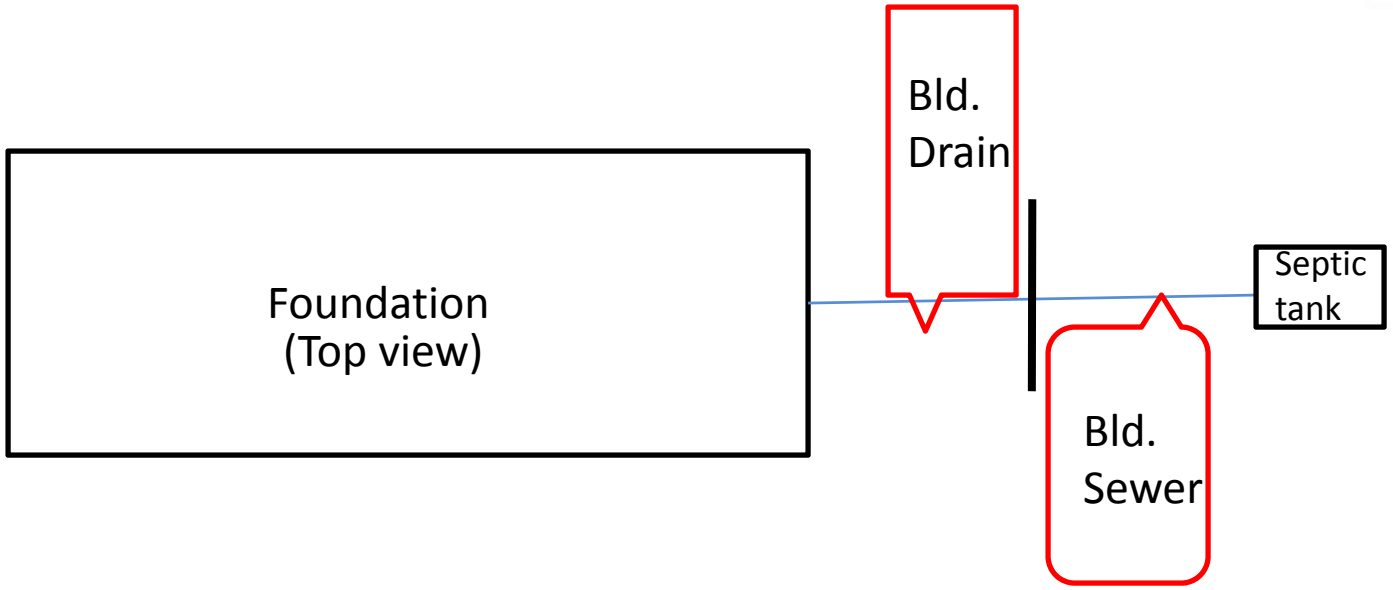
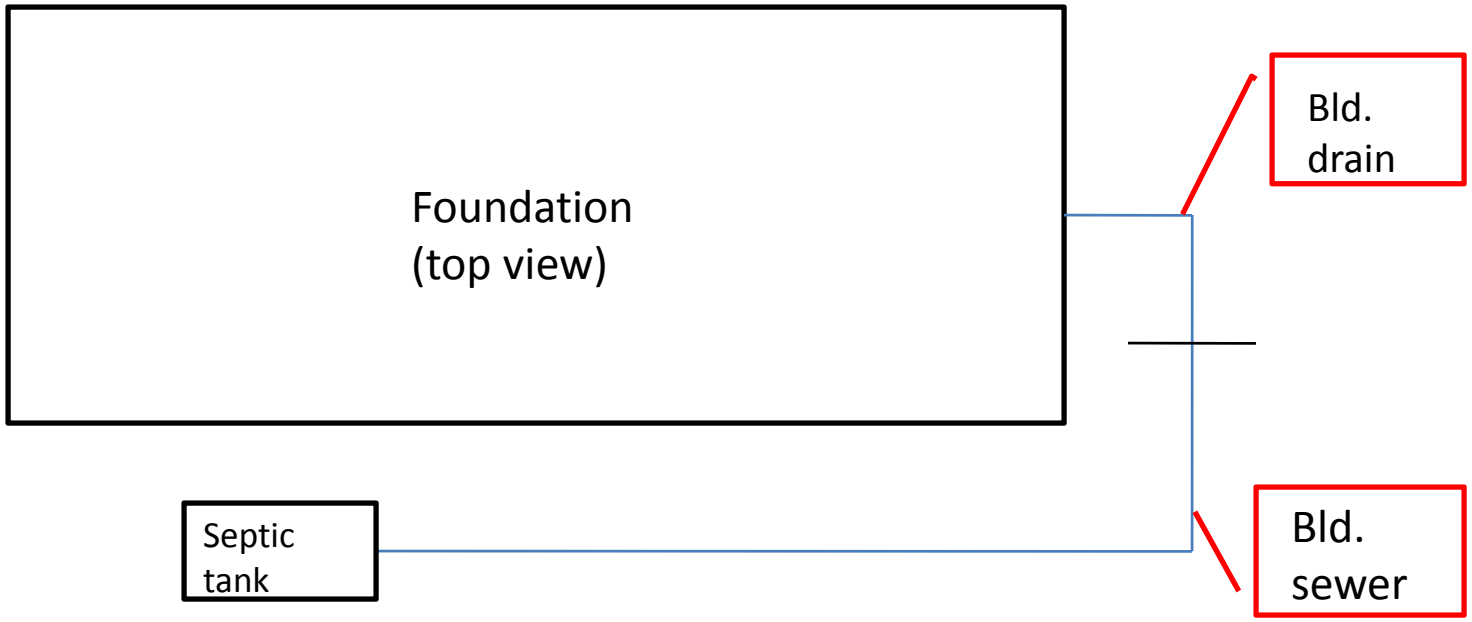


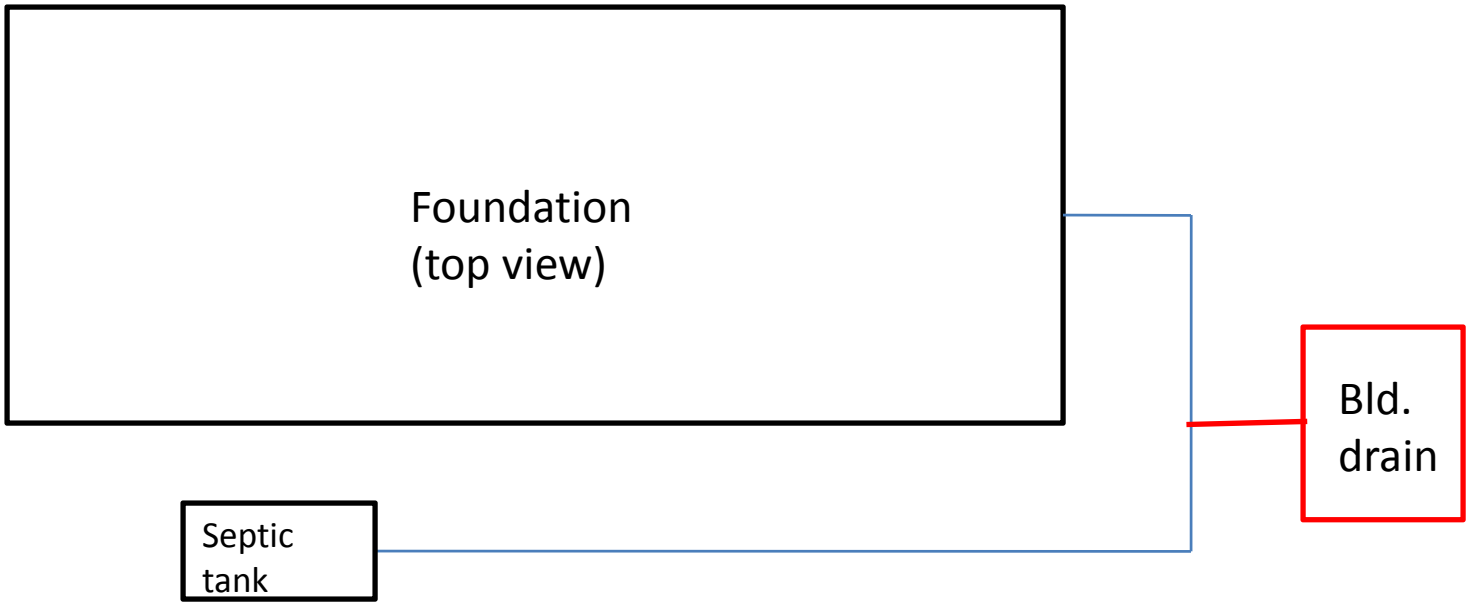
Figure 202(3)
DRAINAGE SYSTEM COMPONENTS



Building drain (**"09" NC Plumbing Code)** That part of the lowest piping of a drainage system that receives the discharge from soil, waste and other drainage pipes inside and that extends to 10 feet beyond the walls of the building and conveys the drainage to the building sewer.



"06" NCPC Building Drain definition read 10 feet in developed length of pipe beyond the exterior of the walls of the building. This was revised by a memo from NCDOI dated July 27, 2007 to read 10 feet perpendicular from the exterior of the build



Building drain (**"09" NC Plumbing Code)**
That part of the lowest piping of a drainage system that receives the discharge from soil, waste and other drainage pipes inside and that extends to 10 feet beyond the walls of the building and conveys the drainage to the building sewer.

(New Definition)

FLOW CONTROL (Vented). A device installed upstream from the interceptor having an orifice that controls the rate of flow through the interceptor and an air intake (vent) downstream from the orifice that allows air to be drawn into the flow stream.

(The following is from the IPC Commentary) Referenced standard ASME A112.14.3 and Section 1003.3.4.2 use this term in connection with grease interceptors. This device is necessary to control the flow rate of waste through the interceptor and to entrain air to assist in separation of grease and oily waste from the water. Grease interceptors depend on having the necessary waste retention time to allow the fats, oils and grease to separate. If the influent flow rate is too high, the waste will pass through the interceptor too quickly, not allowing sufficient time for separation to occur. Entraining air in the waste influent will cause air bubbles to attach to grease globules, making them more buoyant and thereby enhancing the separation process.

"06"

GREASE INTERCEPTOR. A passive interceptor whose rated flow exceeds 50 gpm (189 L/m).

"09"

GREASE INTERCEPTOR. A plumbing appurtenance that is installed in a sanitary drainage system to intercept oily and greasy wastes from a wastewater discharge. Such device has the ability to intercept free-floating fats and oils.

(New Definition)

GREASE REMOVAL DEVICE, AUTOMATIC (GRD). A plumbing appurtenance that is installed in the sanitary drainage system to intercept free-floating fats, oils and grease from wastewater discharge. Such a device operates on a time- or event-controlled basis and has the ability to remove free-floating fats, oils and grease automatically without intervention from the user except for maintenance.

Referenced standard ASME A112.14.4 and Section 1003.3.4 use this term in connection with grease interceptors. An automatic grease removal device serves the same function as a grease interceptor with the distinction that the unpleasant aspect of grease removal is performed automatically. There are two main types of automatic GRD; pump out and skimmer type. The
pump out type has an internal sensor that senses a build up of collected grease, liquefies it and pumps it out to an external container for proper environmental disposal. The skimmer type has a timer-activated skimmer mechanism to mechanically collect and transport the collected grease to an external container. Both types usually have internal heaters to keep the
grease in liquid form for easy pumping or skimming. Although the solids interceptor section of the GRD still requires manual maintenance to remove waste stream particulates such as food scraps, broken glass and plastics, the task is relatively easy, thus having the likelihood of being performed regularly [see Commentary Figures 202(12) through 202(14)].

(**New Definition)**

GRIDDED WATER DISTRIBUTION SYSTEM. A water distribution system where every water distribution pipe is interconnected so as to provide two or more paths to each fixture supply pipe. A gridded water distribution system is more hydraulically efficient than a parallel or branch line layout but not necessarily more cost efficient. The design balances pressure and equalizes flow so that fixtures farthest from the water service entry point will operate under the same pressure and flow conditions as those closest to the water service entry point. Commentary Figure 202(15) illustrates various distribution layouts.

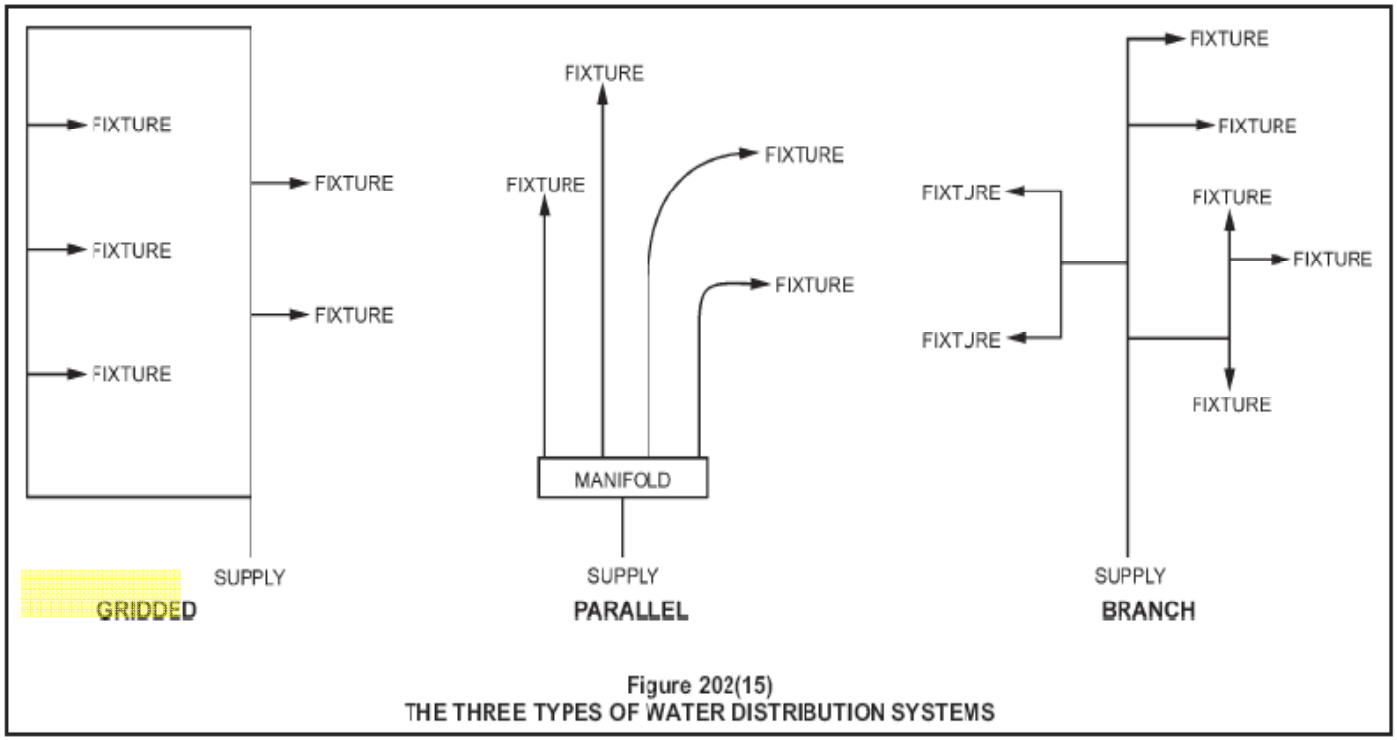


Figure 202(15)
THE THREE TYPES OF WATER DISTRIBUTION SYSTEMS

(New section)

310.5 Urinal partitions. Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy. The construction of such walls or partitions shall incorporate waterproof, smooth, readily cleanable and nonabsorbent finish surfaces. The walls or partitions shall begin at a height not more than 12 inches (305 mm) from and extend not less than 60 inches (1524 mm) above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal a minimum of 18 inches (457
mm) or to a point not less than 6 inches (152 mm) beyond the outermost front lip of the urinal measured from the finished back wall surface, whichever is greater.

Exceptions:

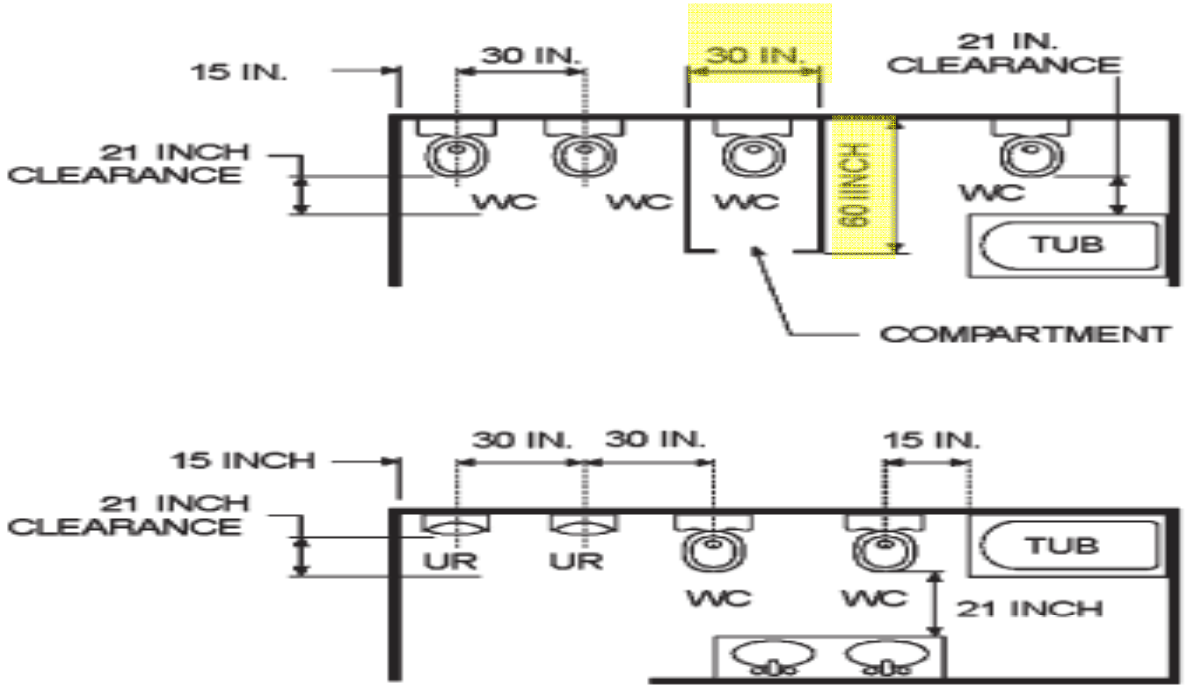
1. Urinal partitions shall not be required in a single occupant or unisex toilet room with a lockable door.
2. Toilet rooms located in day care and child care facilities and containing two or more urinals shall be permitted to have one urinal without partitions

Section 403
Minimum Plumbing Facilities

Table 403.1 footnote d. **The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.** (This footnote applies to A-1, A-2, and A-3: see page 19 “09” NCPC)

403.9.3 Occupant load for teachers and staff. (last sentence added back; was in 2002 NCPC, deleted in 2006 NCPC) Staffing ratio for grades 9 through 12 is 70-percent female and 30-percent male.

Section 405 Installation Of Fixtures



For SI: 1 inch = 25.4 mm.

FIGURE 405.3.1
FIXTURE CLEARANCES

Section 405 Installation of Fixtures

405.3.1 Water closets, urinals, lavatories and bidets. (new, NC amendment)

Exception: For one and two family dwellings and townhouses see the North Carolina Residential Code.

Section 405 Installation of Fixtures

R307.1 Space required Fixtures shall be spaced as per Figure R307.1.

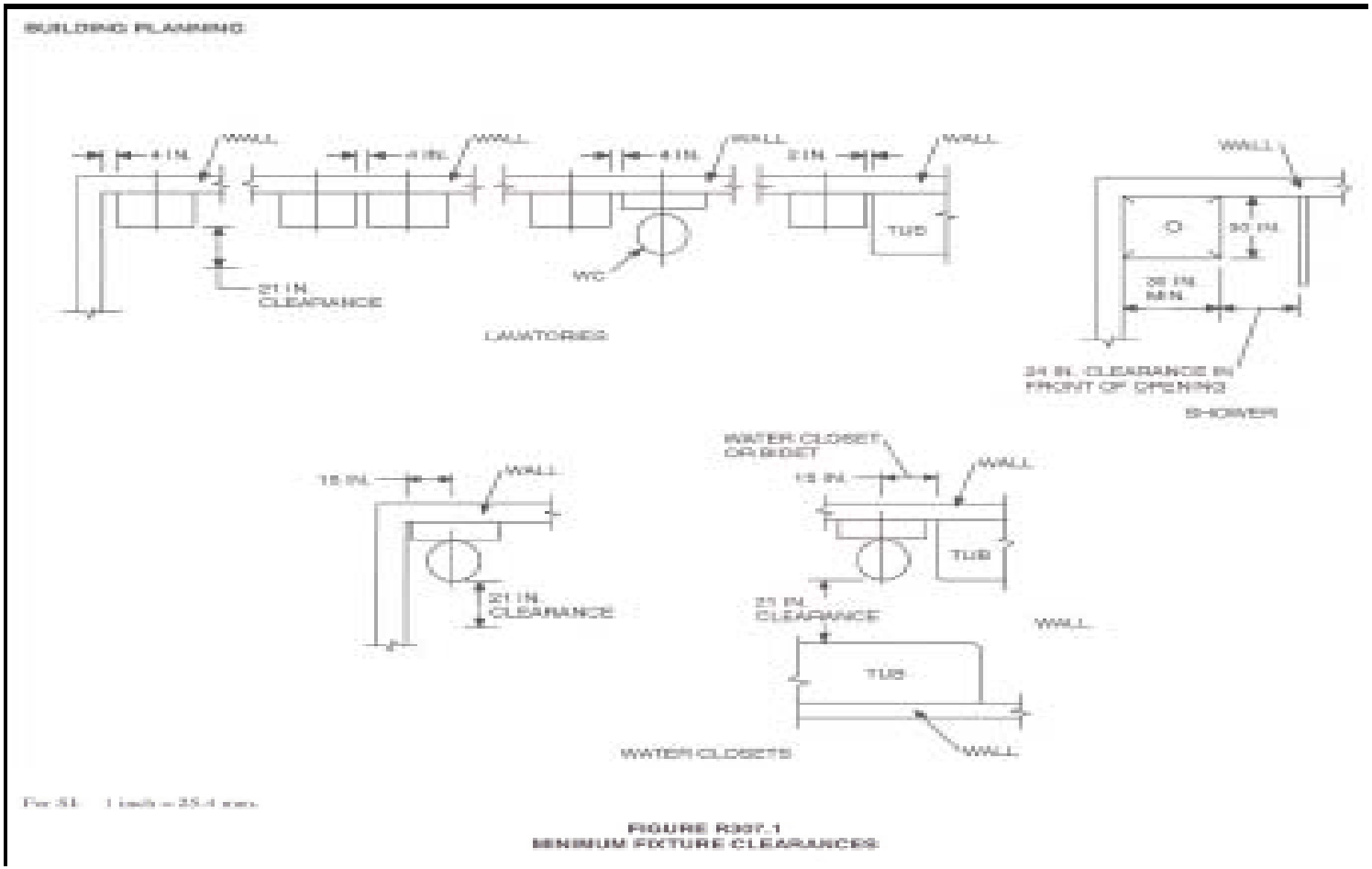


FIGURE R307.1
MINIMUM FIXTURE CLEARANCES

405.3.2 Public lavatories. In employee and public toilet rooms, the required lavatory shall be located in the same room as the required water closet, except in Education K-5, lavatories may be provided in a common toilet room vestibule, visible from the corridor.

“06” NCPC

417.5.2 Shower lining. Floors under shower compartments, except where prefabricated receptors have been provided, shall be lined and made water tight utilizing material complying with Sections 417.5.2.1 through 417.5.2.4. Such liners shall turn up on all sides at least 2 inches (51 mm) above the finished threshold level. Liners shall be recessed and fastened to an approved backing so as not to occupy the space required for wall covering, and shall not be nailed or perforated at any point less than 1 inch (25 mm) above the finished threshold. Liners shall be pitched one-fourth unit vertical in 12 units horizontal (2-percent slope) and shall be sloped toward the fixture drains and be securely fastened to the waste outlet at the seepage entrance, making a water-tight joint between the liner and the outlet.

“09” NCPC

417.5.2 Shower lining. Floors under shower compartments, except where prefabricated receptors have been provided, shall be lined and made water tight utilizing material complying with Sections 417.5.2.1 through 417.5.2.4. Such liners shall turn up on all sides at least 2 inches (51 mm) above the finished threshold level. Liners shall be recessed and fastened to an approved backing so as not to occupy the space required for wall covering, and shall not be nailed or perforated at any point less than 1 inch (25 mm) above the finished threshold. Liners shall be securely fastened to the waste outlet at the seepage entrance, making a water-tight joint between the liner and the outlet.

“06”

424.1.2 Waste fittings. Waste fittings shall conform to one of the standards listed in Tables 702.1 and 702.4 for above-ground drainage and vent pipe and fittings, or the waste fittings shall be constructed of tubular stainless steel with a minimum wall thickness of 0.012 inch (0.30 mm), tubular copper alloy having a minimum wall thickness of 0.027 inch (0.69 mm) or tubular plastic complying with AS-TM F 409.

“09”

424.1.2 Waste fittings. Waste fittings shall conform to ASME A112.18.2, ASTM F 409, CSA B125 or to one of the standards listed in Tables 702.1 and 702.4 for above-ground drainage and vent pipe and fittings.

06”

424.2 Hand showers. Hand-held showers shall conform to ASSE 1014 or CSA B125.

“09”

424.2 Hand showers. Hand-held showers shall conform to ASME A112.18.1 or CSA B125.1. Hand-held showers shall provide backflow protection in accordance with ASME A112.18.1 or CSA B125.1 or shall be protected against backflow by a device complying with ASME A112.18.3.

(New Section)

424.4 Multiple (gang) showers. Multiple (gang) showers supplied with a single-tempered water supply pipe shall have the water supply for such showers controlled by an approved automatic temperature control mixing valve that conforms to ASSE 1069 or CSA B125, or each shower head shall be individually controlled by a balanced-pressure, thermostatic or combination balanced-pressure/thermostatic valve that conforms to ASSE 1016 or CSA B125 and is installed at the point of use. Such valves shall be equipped with a means to limit the maximum setting of the valve to 120°F (49°C), which shall be field adjusted in accordance with the manufacturer's instructions.

(New Section)

424.5 Bathtub and whirlpool bathtub valves. The hot water supplied to bathtubs and whirlpool bathtubs shall be limited to a maximum temperature of 120°F (49°C) by a water temperature limiting device that conforms to ASSE 1070, except where such protection is otherwise provided by a combination tub/shower valve in accordance with Section 424.3. (NC Amendment) Scald preventive valves are not required in dwelling units with individual water heaters set at 120 degrees F.

504.7.1 Pan size and drain. Minimum diameter drain pipe changed from 1 inch to .75 inch.

The following sections have been added to the “09” NCPC after being deleted from the “06” NCPC.

602.3.2 Minimum quantity.
602.3.3 Water quality.
602.3.4 Disinfection of system.
602.3.5 Pumps
602.3.5.1 Pump enclosure.

The following section was deleted from the “06” NCPC
605.6 Flexible water connectors. Flexible water connectors exposed to continuous pressure shall conform to ASME A112.18.6. Access shall be provided to all flexible water connectors.

605.7 Valves. All valves shall be of an approved type and compatible with the type of piping material installed in the system. Ball valves, gate valves, globe valves and plug valves intended to supply drinking water shall meet the requirements of NSF 61.

(New section)
605.21 Polypropylene (PP) plastic. Joints between PP plastic pipe and fittings shall comply with Section 605.21.1 or 605.21.2.

(New section)
605.21.1 Heat-fusion joints. Heat-fusion joints for polypropylene pipe and tubing joints shall be installed with socket-type heat-fused polypropylene fittings, butt-fusion polypropylene fittings or electrofusion polypropylene fittings. Joint surfaces shall be clean and free from moisture. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM F 2389.

(New section)
605.21.2 Mechanical and compression sleeve joints. Mechanical and compression sleeve joints shall be installed in accordance with the manufacturer's instructions.

608.2 Plumbing fixtures. The supply lines and fittings for every plumbing fixture shall be installed so as to prevent backflow. Plumbing fixture fittings shall provide backflow protection in accordance with ASME A112.18.1.

CATAWBA COUNTY
NORTH CAROLINA

Table 608.1. Application of Backflow Preventers additional applicable standards

TABLE 608.1
APPLICATION OF BACKFLOW PREVENTERS

DEVICE	DEGREE OF HAZARD[a]	APPLICATION[b]	APPLICABLE STANDARDS
Air gap	High or low hazard	Backsiphonage or backpressure	ASME A112.1.2
Air gap fittings for use with plumbing fixtures, appliances and appurtenances	High or low hazard	Backsiphonage or backpressure	ASME A112.1.3
Antisiphon-type fill valves for gravity water closet flush tanks	High hazard	Backsiphonage only	ASSE 1002, CSA B125
Backflow preventer for carbonated beverage machines	Low hazard	Backpressure or backsiphonage Sizes ¼" - ¾"	ASSE 1022, CSA B64.3.1
Backflow preventer with intermediate atmospheric vents	Low hazard	Backpressure or backsiphonage Sizes ¾" - 2"	ASSE 1012, CSA B64.3
Barometric loop	High or low hazard	Backsiphonage only	(See Section 608.13.4)
Double check backflow prevention assembly and double check fire protection backflow prevention assembly	Low hazard	Backpressure or backsiphonage Sizes ¾" - 16"	ASSE 1015, AWWA C510, CSA B64.5, CSA B64.5.1
Double check detector fire protection backflow prevention assemblies	Low hazard	Backpressure or backsiphonage (Fire sprinkler systems) Sizes 2" - 16"	ASSE 1048
Dual-check-valve-type backflow preventer	Low hazard	Backpressure or backsiphonage Sizes ¼" - 1"	ASSE 1024, CSA B64.6
Hose connection backflow preventer	High or low hazard	Low head backpressure, rated working pressure, backpressure or backsiphonage Sizes ½" -1"	ASSE 1052, CSA B64.2.1.1
Hose connection vacuum breaker	High or low hazard	Low head backpressure or backsiphonage Sizes ½", ¾", 1"	ASSE 1011, CSA B64.2, CSA B64.2.1
Laboratory faucet backflow preventer	High or low hazard	Low head backpressure and backsiphonage	ASSE 1035, CSA B64.7
Pipe-applied atmospheric-type vacuum breaker	High or low hazard	Backsiphonage only Sizes ¼" - 4"	ASSE 1001, CSA B64.1.1
Pressure vacuum breaker assembly	High or low hazard	Backsiphonage only Sizes ¾" - 2"	ASSE 1020, CSA B64.1.2
Reduced pressure principle backflow preventer and reduced pressure principle fire protection backflow preventer	High or low hazard	Backpressure or backsiphonage Sizes ¼" - 16"	ASSE 1013, AWWA C511, CSA B64.4, CSA B64.4.1
Reduced pressure detector fire protection backflow prevention assemblies	High or low hazard	Backsiphonage or backpressure (Fire sprinkler systems)	ASSE 1047
Spillproof vacuum breaker	High or low hazard	Backsiphonage only Sizes ¼" - 2"	ASSE 1056
Vacuum breaker wall hydrants, frost-resistant, automatic-draining type	High or low hazard	Low head backpressure or backsiphonage Sizes ½", 1"	ASSE 1019, CSA B64.2.2

For SI: 1 inch = 25.4 mm.

a. Low hazard–See Pollution (Section 202).
High hazard–See Contamination (Section 202).

b. See Backpressure (Section 202).
See Backpressure, low head (Section 202).
See Backsiphonage (Section 202).

- This table is to be used to assist in the determination of which type of backflow prevention devices should be installed in a water distribution system. The "Degree of Hazard" is the level of risk to which the water distribution system is subjected, and the "Application" lists the type of backflow for which the device is rated. This table contains general information about various types of backflow preventers. There are instances throughout Section 608 where specific provisions override the general information in Table 608.1. For example, Section 608.16.6 states that potable water connections subject to backpressure must be protected by a reduced pressure principle backflow preventer. However, Table 608.1 lists several devices rated for backpressure. Therefore, to avoid the apparent conflict, the rule of thumb is the "specific" code provision overrides the general classifications given in the table.

(New section)

608.16.10 Coffee machines and noncarbonated beverage dispensers. The water supply connection to coffee machines and noncarbonated beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an air gap.

NEW SECTION

SECTION 614
PARTIAL SPRINKLER PROTECTION IN ONE- AND TWO-FAMILY DWELLINGS

614.1 Partial protection. Nothing herein shall be deemed to prohibit the connection to the domestic water distribution system of a system of one or more fire suppression sprinkler heads in one or more rooms of a one- or two-family dwelling, nor shall such installation impose additional requirements on said domestic water distribution system with regard to pipe size, water pressure, meter size, monitoring or alarm, provided that:

1. The sprinkler heads used are residential fast-response type.
2. Each branch feeding one or more sprinkler heads shall be provided with an isolation valve which shall be readily accessible and the function thereof shall be marked.
3. Each isolation valve shall be identified as to function with a tag or other device which shall indicate that the system does not meet the requirements of NFPA 13D.
4. The piping installation and material shall comply with the requirements of the Plumbing Code.

(New Sections)

705.16 Polyethylene plastic pipe. Joints between polyethylene plastic pipe and fittings shall be underground and shall comply with Section 705.16.1 or 705.16.2.

705.16.1 Heat-fusion joints. Joint surfaces shall be clean and free from moisture. All joint surfaces shall be cut, heated to melting temperature and joined using tools specifically designed for the operation. Joints shall be undisturbed until cool. Joints shall be made in accordance with ASTM D 2657 and the manufacturer's instructions.

705.16.2 Mechanical joints. Mechanical joints in drainage piping shall be made with an elastomeric seal conforming to ASTM C 1173, ASTM D 3212 or CSA B602. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

705.17 Polyolefin plastic. Joints between polyolefin plastic pipe and fittings shall comply with Sections 705.17.1 and 705.17.2.

705.17.1 Heat-fusion joints. Heat-fusion joints for polyolefin pipe and tubing joints shall be installed with socket-type heat-fused polyolefin fittings or electrofusion polyolefin fittings. Joint surfaces shall be clean and free from moisture. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM F 1412 or CSA B181.3.

705.17.2 Mechanical and compression sleeve joints. Mechanical and compression sleeve joints shall be installed in accordance with the manufacturer's instructions.

708.3.5 Building drain and building sewer junction. There shall be a cleanout near the junction of the building drain and the building sewer. The cleanout shall be outside the building wall and shall be brought up to the finished ground level. An approved two-way cleanout is allowed to be used at this location to serve as a required cleanout for both the building drain and building sewer. The cleanout at the junction of the building drain and building sewer shall not be required if the cleanout on a 3-inch (76 mm) or larger diameter soil stack is located within a developed length of not more than 15 feet (was 10 feet in the "06" NCPC) from the building drain and building sewer connection and is extended to the out-side of the building. The minimum size of the cleanout at the junction of the building drain and building sewer shall comply with Section 708.7. 9.

New section: However, did not change the code.

708.10 Location. Each horizontal drainage pipe shall be provided with a cleanout at the upstream end of the pipe.

Exceptions: The following plumbing arrangements are acceptable in lieu of the upstream cleanout.

1. "P" traps connected to the drainage piping with slip joints or ground joint connections. A water closet may be used as the cleanout for the water closet branch only.
2. "P" traps into which floor drains, shower drains or tub drains with removable strainers discharge.
3. "P" traps into which the straight-through type waste and overflow discharge with the overflow connecting to the top of the tee.
4. "P" traps into which residential washing machines discharge.
5. Test tees or cleanouts in a vertical pipe above the flood-level rim of the fixtures that the horizontal pipe serves.
6. Cleanout near the junction of the building drain and the building sewer which may be rodded both ways.
7. Water closets for the water closet fixture drain only.
8. Cast-iron cleanout sizing shall be in accordance with referenced standards in Table 702.4, ASTM A 74 for hub and spigot fittings or ASTM A 888 or CISPI 301 for hubless fittings.

(for review)

Vents

Dry vents

Vent Stacks

Stack Vents

Branch Vents

Relief Vents

Island Vents

Individual Vents

Wet Vents

Circuit Vents

Combination Drain and Vents

Waste Stack Vents

Different Level Common Vents

901.2.1 Venting required. Every trap and trapped fixture shall be vented in accordance with one of the venting methods specified in this chapter. All fixtures discharging down-stream from a water closet shall be individually vented except as provided in Section 911. (the highlighted NC amendment has been removed from the "09" NCPC)

"06"

TABLE 906.1
MAXIMUM DISTANCE OF FIXTURE TRAP FROM VENT

SIZE OF TRAP (inches)	SIZE OF FIXTURE DRAIN (inches)	SLOPE (inch per foot)	DISTANCE FROM TRAP (feet)
1¼	1¼	¼	3½
1½	1½	¼	5
1½	1½	¼	5
1½	2	¼	6
2	2	¼	6
3	3	¼	10
4	4	¼	12

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 inch per foot = 83.3 mm/m.

"09"

TABLE 906.1
MAXIMUM DISTANCE OF FIXTURE TRAP FROM VENT

SIZE OF TRAP (Inches)	SLOPE (Inch per foot)	DISTANCE FROM TRAP (Feet)
1¼	¼	5
1½	¼	6
2	¼	8
3	¼	12
4	¼	16

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm,
1 inch per foot = 83.3 mm/m.

Took out size of fixture drain column

908.3 Connection at different levels. Where the fixture drains connect at different levels, the vent shall connect as a vertical extension of the vertical drain. The vertical drain pipe connecting the two fixture drains shall be considered the vent for the lower fixture drain, and shall be sized in accordance with Table 908.3. The upper fixture shall not be a water closet or clothes washer.

Section 912
Combination Waste and Vent System

(New section to NCPC)
912.2.3 Vent size. The vent shall be sized for the total drainage fixture unit load in accordance with Section 916.2.

(New section to NCPC)
912.2.4 Fixture branch or drain. The fixture branch or fixture drain shall connect to the combination drain and vent within a distance specified in Table 906.1. The combination drain and vent pipe shall be considered the vent for the fixture.

1002.1 Fixture traps. Each plumbing fixture shall be separately trapped by a water-seal trap, except as otherwise permitted by this code. The vertical distance from the fixture outlet to the trap weir shall not exceed 24 inches (610 mm) and the horizontal distance shall not exceed 30 inches (610 mm) measured from the centerline of the fixture outlet to the centerline of the inlet of the trap. The height of a clothes washer standpipe above a trap shall conform to Section 802.4.Afixture shall not be double trapped.

Section 1003
Interceptors and Separators

"06"

1003.3 Grease traps and grease interceptors. Grease traps and grease interceptors shall comply with the requirements of Sections 1003.3.1 through 1003.3.4.2.

"09"

1003.3 Grease interceptors. Grease interceptors shall comply with the requirements of Sections 1003.3.1 through 1003.3.5 or with the requirements of the local utility department or health department.

Section 1003
Interceptors and Separators

"06"

1003.3.1 Grease traps and grease interceptors required. A grease trap or grease interceptor shall be required to receive the drainage from fixtures and equipment with grease-laden waste located in food preparation areas, such as in restaurants, hotel kitchens, hospitals, school kitchens, bars, factory cafeterias, or restaurants and clubs.

"09"

1003.3.1 Grease interceptors and automatic grease removal devices required. A grease interceptor or automatic grease removal device shall be required to receive the drainage from fixtures and equipment with grease-laden waste located in food preparation areas, such as in restaurants, hotel kitchens, hospitals, school kitchens, bars, factory cafeterias and clubs. Fixtures and equipment shall include pot sinks, prerinse sinks; soup kettles or similar devices; wok stations; floor drains or sinks into which kettles are drained; automatic hood wash units and dishwashers without prerinse sinks. Grease interceptors and automatic grease removal devices shall receive waste only from fixtures and equipment that allow fats, oils or grease to be discharged.

Section 1003
Interceptors and Separators

(New section)
1003.3.5 Automatic grease removal devices. Where automatic grease removal devices are installed, such devices shall be located downstream of each fixture or multiple fixtures in accordance with the manufacturer's instructions. The automatic grease removal device shall be sized to pretreat the measured or calculated flows for all connected fixtures or equipment. Ready access shall be provided for inspection and maintenance.

Appendix C: Gray Water Recycling Systems (which is adopted as part of the 2009 NCPC)

Appendix C: Gray Water Recycling Systems has expanded from 1page to 3 pages of text and 2 pages of illustrations.

Gray water recycling is a big component of "green" building technology.

Note: *Section 301.3 of this code requires all plumbing fixtures that receive water or waste to discharge to the sanitary drainage system of the structure. In order to allow for the utilization of a gray water system, Section 301.3 should be revised to read as follows:*

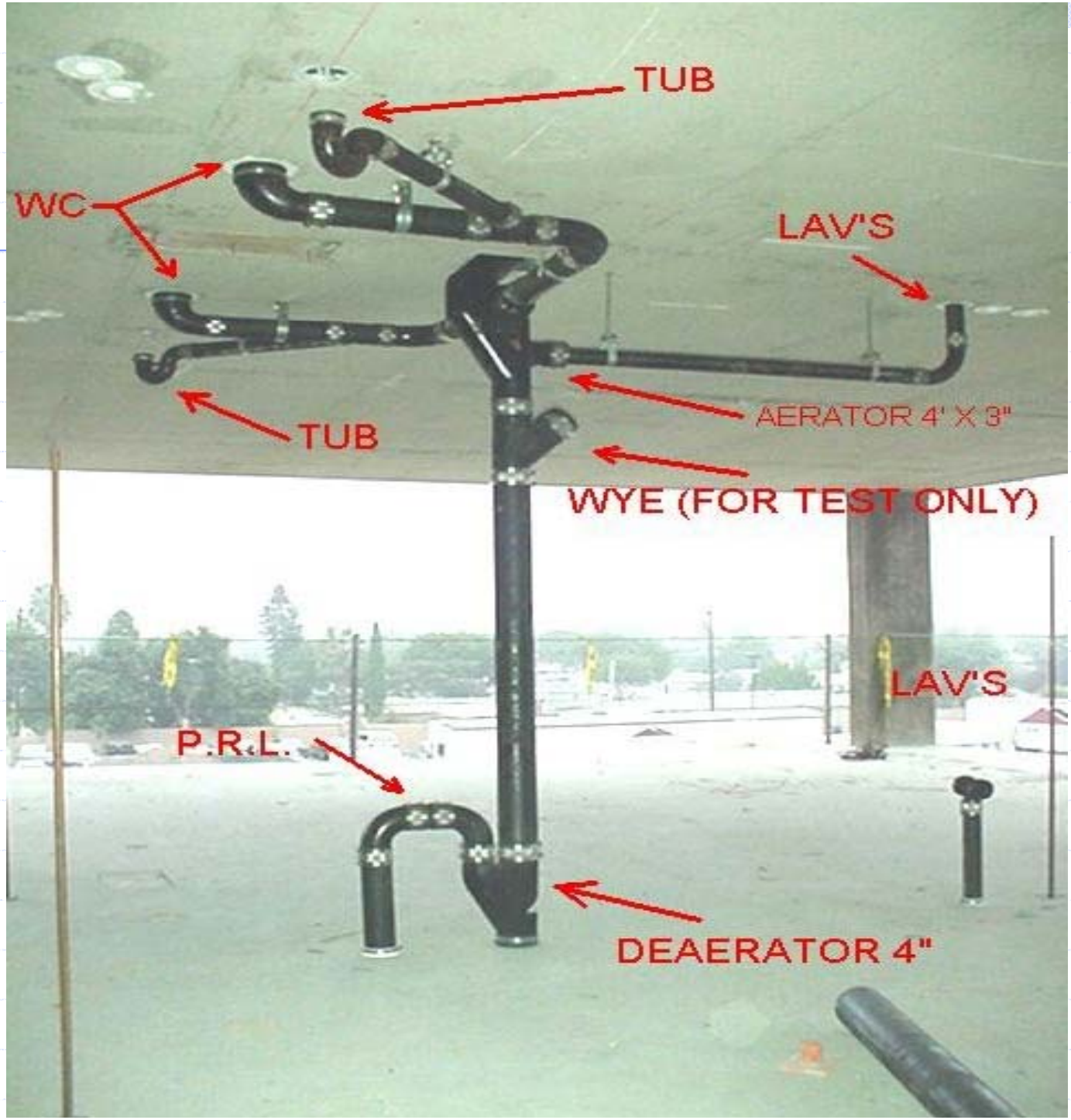
301.3 Connections to drainage system. All plumbing fixtures, drains, appurtenances and appliances used to receive or discharge liquid wastes or sewage shall be directly connected to the sanitary drainage system of the building or premises, in accordance with the requirements of this code. This section shall not be construed to prevent indirect waste systems required by Chapter 8.

Exception: Bathtubs, showers, lavatories, clothes washers and laundry trays shall not be required to discharge to the sanitary drainage system where such fixtures discharge to an approved gray water system for flushing of water closets and urinals or for subsurface landscape irrigation.

The text and illustrations are for two different types of gray water systems.

Section C102 Systems for Flushing Water Closets and Urinals:

SectionC103 Subsurface Landscape irrigation Systems:


TUB
WC
LAV'S
TUB
AERATOR 4' X 3"
WYE (FOR TEST ONLY)
LAV'S
P.R.L.
DEAERATOR 4"

Section 920 Single Stack Plumbing Systems (SOVENT)

Sovent

Sovent is a patented engineered combination waste and vent system for multi-story buildings.

Sovent System

How It Performs

The cast iron Sovent® is a specially designed single stack soil and waste system using aerator fittings at each floor were soil and waste enter the stack and deaerator fittings at the base of the stack. By incorporating these fittings into a single multi-story stack the volume of drainage is greatly increased over the standard two stack waste & vent system.

The aerator fitting is designed with an offset chamber to slow the soil and waste matter at each floor, never allowing it to reach its terminal velocity thus eliminating back pressure.

The deaerator fitting at the base of the stack is designed to eliminate any build up of solids and slow the contents before the change in direction. At the base of the stack the pressure relief line eliminates any pressure build up which might occur. This fitting is designed to assure a smooth drainage flow from the vertical stack into the horizontal drain. The loop in the pressure relief line accommodates "hydraulic jump" that occurs at the base of the stack.

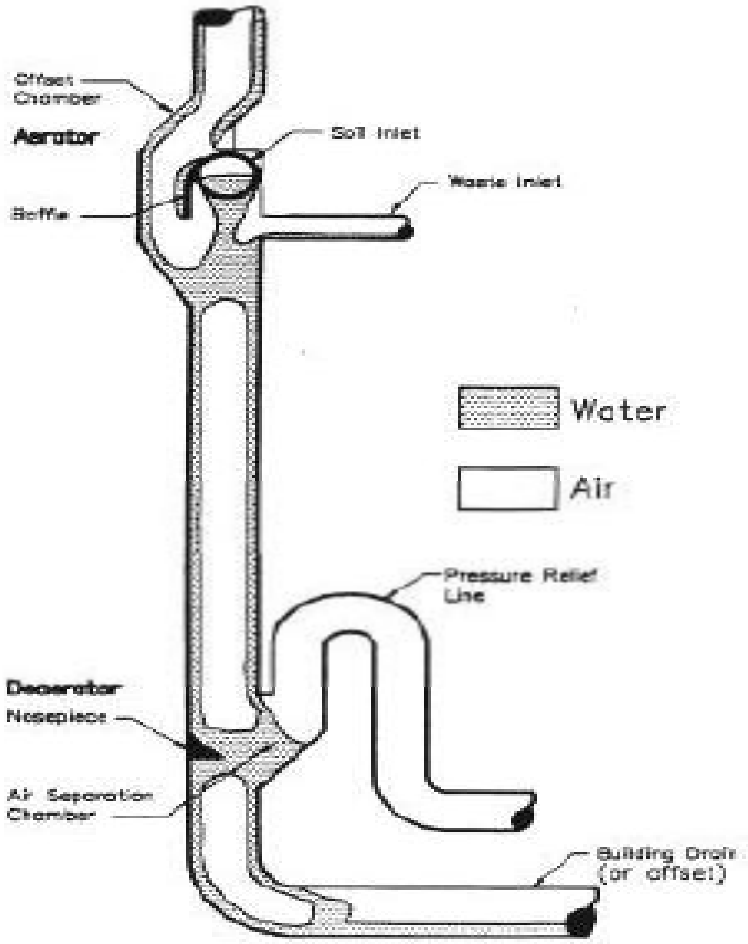
For more information on Sovent® please refer to our online design manual number 101/o located in the Engineers CAD Corner portion of our website.

Sovent® Brief Sheet

- Invented, tested, proven on highly instrumented test tower/Berne, Switzerland. (The first such performance test of a multi-story DWV plumbing system)
- Patented, offered to other countries early 60's.
- Introduced to U.S. market - mid 60's (Thoroughly tested)
- First North American Sovent Project - Habitat (Olympic Village, Montreal-1967
- First U.S. Project - Unimet-Richmond, California-1968. (Tested formally - Conclusion: "Performed better than adjacent building that was plumbed with UPC criteria)
- Saves substantial materials and installatoin labor. (Vigorously opposed by labor elements and cast iron soil pipe producers)
- Meets intent of all plumbing codes for health and safety. (Resisted by many who wish to maintain high labor and material costs)
- Has been installed in all four U.S. model code jurisdictions. (Some by variance procedures)
- Recognized, accepted by HUD
- ASME/ANSI Standard B16.45-1998
- CAST IRON SOVENT® DESIGN MANUAL NO. 802
- Design assistance available
- In use in 22 industrialized countries
- Installed and functioning in 42 states of the U.S.
- Installed and functioning in 275 cities of the U.S.
- Installed and functioning in 300,000 prestige hotel rooms
- Specified by 225 U.S. Consulting Engineeres
- Installed by 350 U.S. Plumbing/Mechanical Contractors
- In world market for over 40 years
- In U.S. market for over 30 years
- Thousands of prestige projects in U.S.
- Thoroughly tested in lab and field

SOVENT

Single Stack DWV System



THE CAST IRON SOVENT SYSTEM: HOW IT PERFORMS

The cast iron Sovent is a specially designed single stack soil and waste system using aerator fittings at each floor where soil and waste branches enter the stack and deaerator fittings at the base of the stack. By incorporating these fittings into a single multi-story stack the volume of the drainage is greatly increased over the standard two stack waste and vent system.

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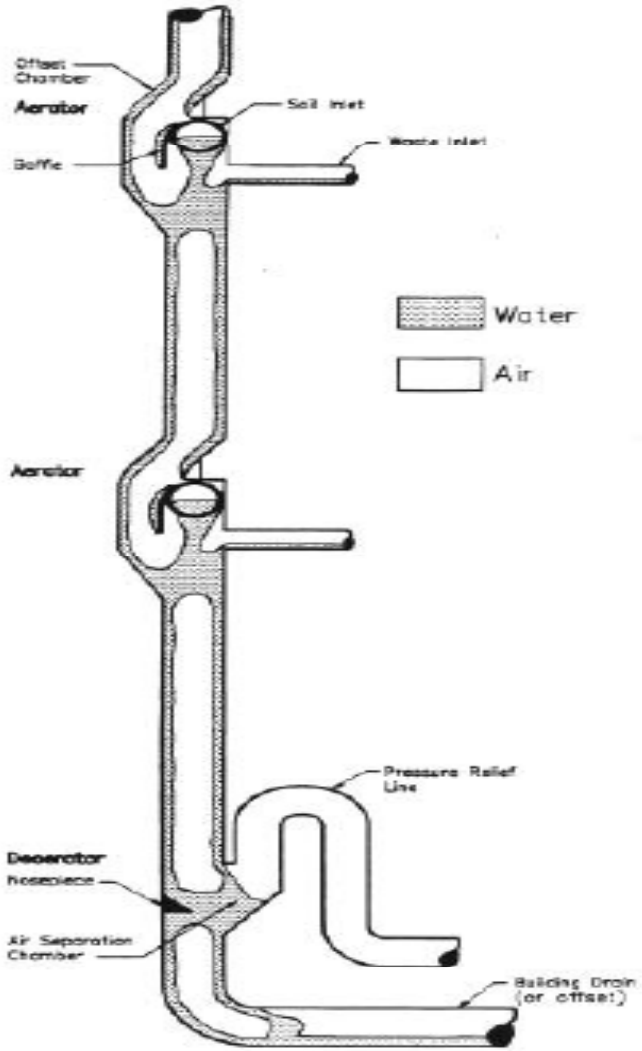
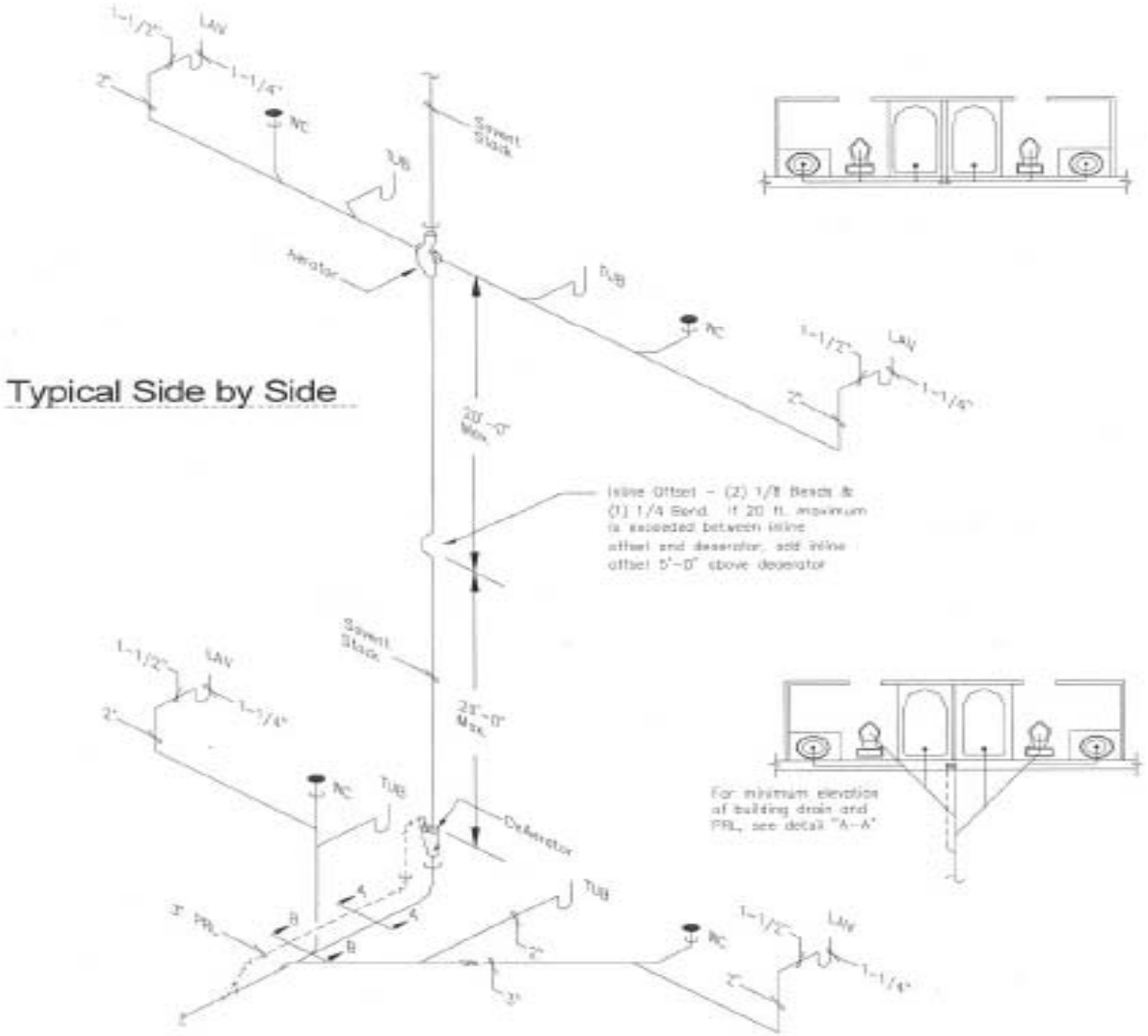
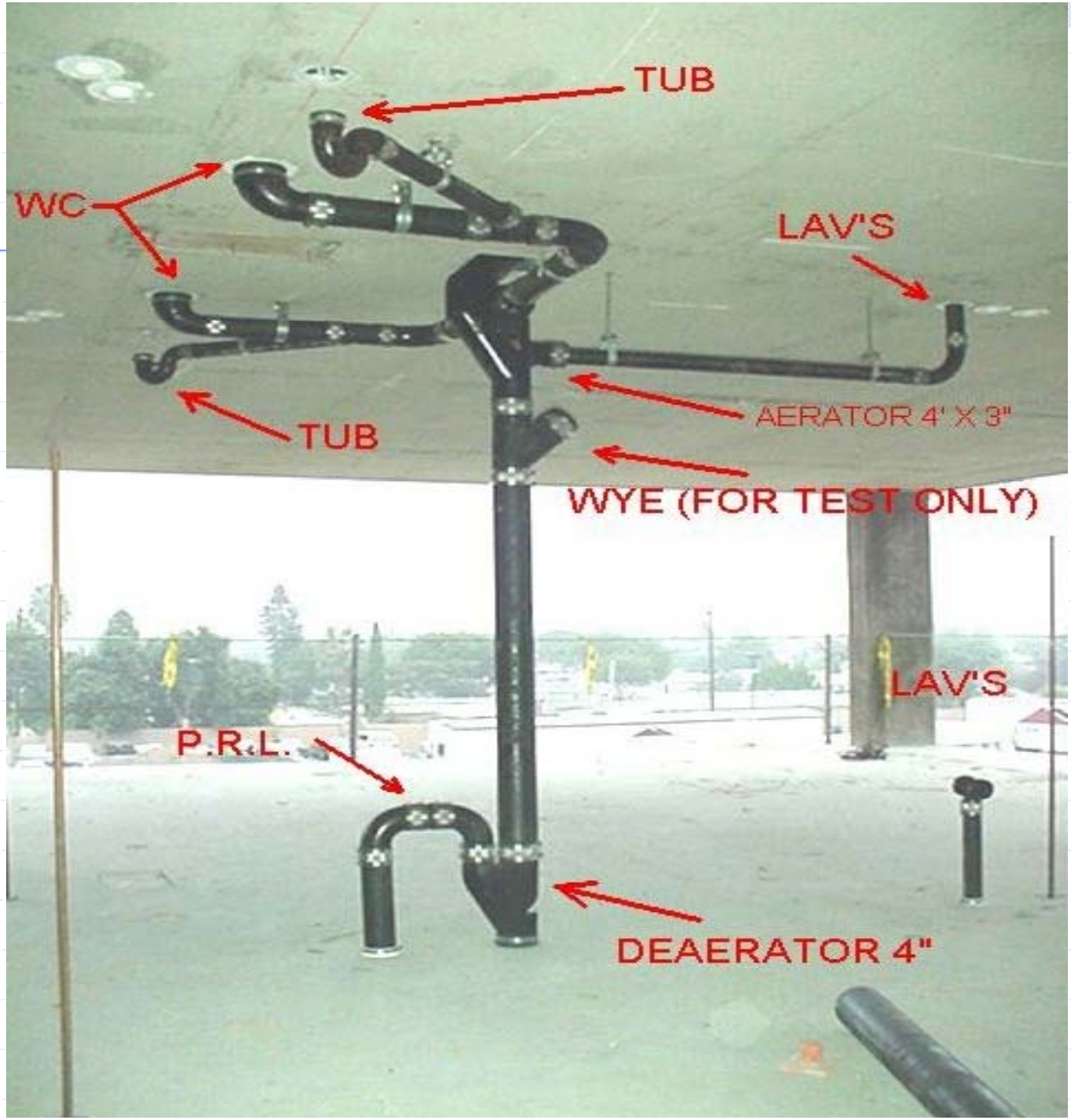



Typical Side by Side
Inline Offset - (2) 1/8 Bends & (1) 1/4 Bend. If 20 ft. maximum is exceeded between inline offset and deaerator, add inline offset 5'-0" above deaerator
For minimum elevation of building drain and PRL, see detail "A-A"
Deaerator
Aerator
Sweet Stack
Detail "B-B"
Detail "A-A"
Typical Side by Side
Base of Stack


TUB
WC
LAV'S
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AERATOR 4' X 3"
WYE (FOR TEST ONLY)
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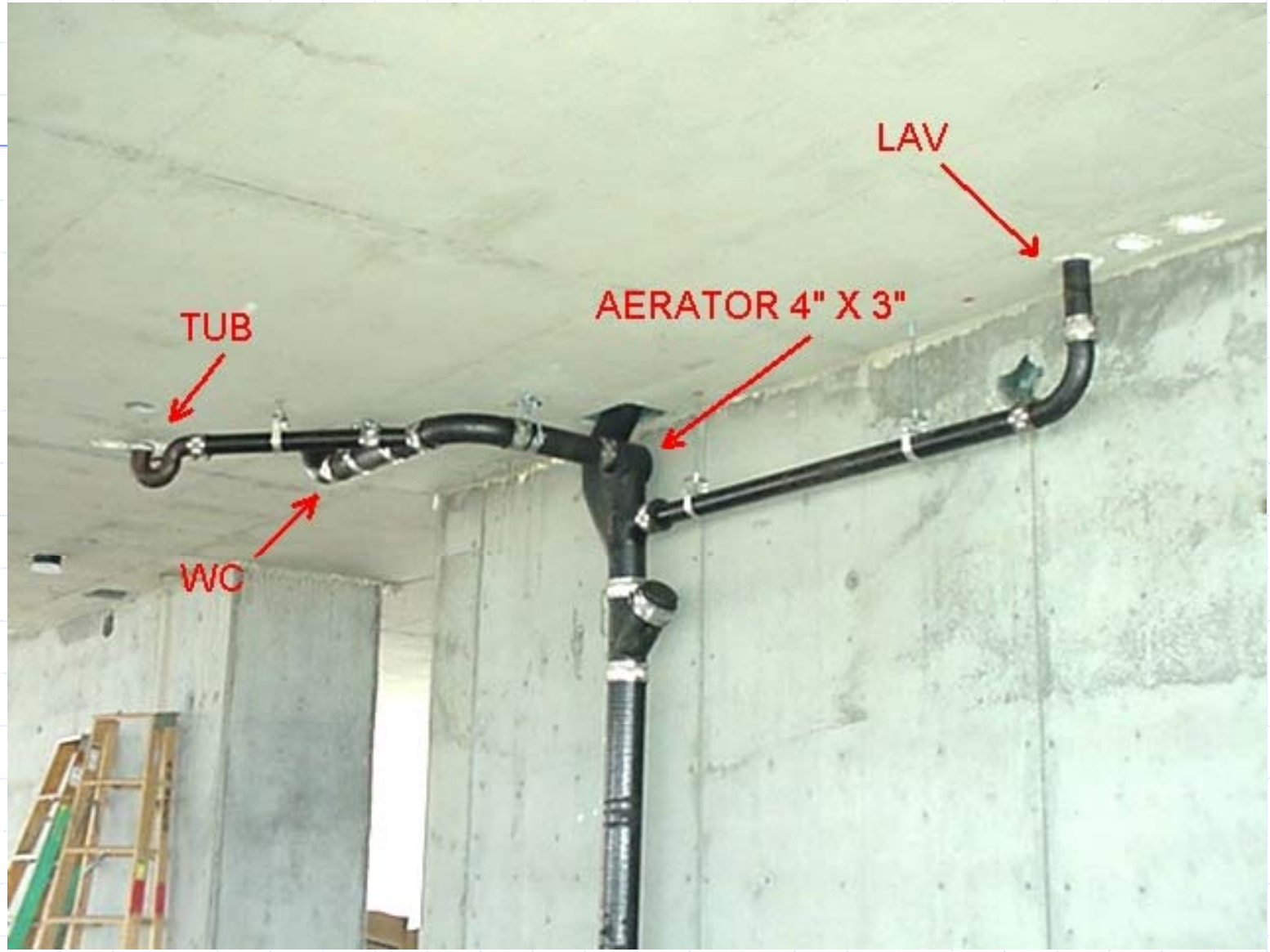

LAV
AERATOR 4" X 3"
TUB
WC

ProVent™ PVC Single Stack System with Whisper-Quiet Shell Pipe™

(Patents Pending)

Proven benefits of single stack system in 3" and 4" stack sizes

Significant reduction in pipe and fittings
Savings in materials and labor
Improved performance
Simplifies job - easier to stay on or ahead of schedule
Same design rules as cast iron Sovent® systems

Easier to install

Light weight (7.5 pounds)
Easier to handle
Self-supporting*

Allows for pipe expansion and contraction*

Whisper-Quiet PVC Shell Pipe

Noise-absorbing ribs on the StackVent
ProVent™ Whisper Quiet Shell Pipe

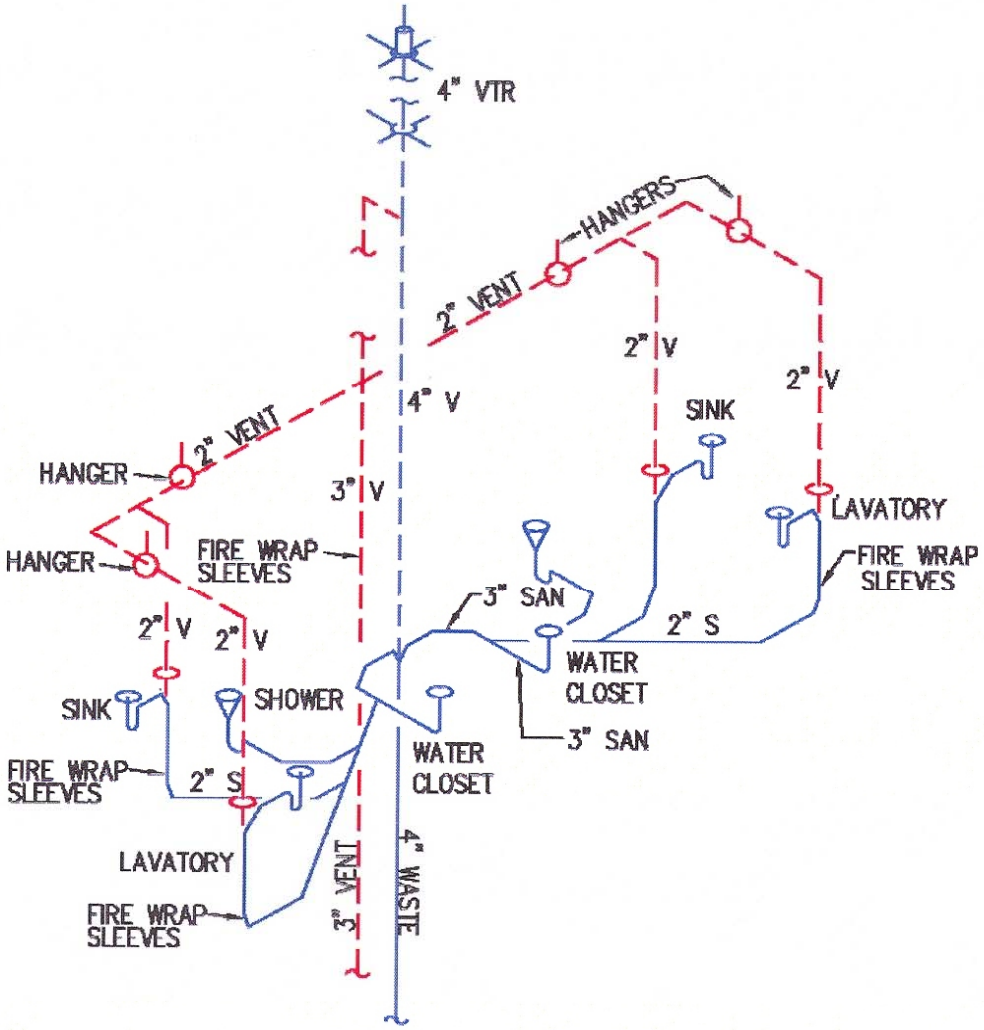
- Noise level 3 Times Less Than Cast Iron**
- Noise level 8 Times Less Than PVC**

Can a PVC Stack really be Quieter than a Cast Iron Stack? (check inside)

* When used with ProSet Systems penetrations
** In comparative tests as described on inside pages

ProVent Systems, Inc. ■ 1355 Capital Circle ■ Lawrenceville ■ GA ■ 30043 ■ 800-262-5355 ■ fax: 770-339-1784
www.ProVentSystems.com

Conventional Piping Design



Additional Materials for Conventional Design (per 2 Bathrooms)	
4	2″ Fire Wrap Sleeves
1	3″ Fire Wrap Sleeves
1	3″ x 2″ PVC Cross
6	2″ PVC Ells
6	2″ PVC Tees (Instead of Ells)
52 ft	2″ PVC Pipe
10 ft	3″ PVC Pipe
4	2″ Pipe Hangars

Estimate of Additional Cost of Conventional Design (per 2 Bathrooms)	
Additional Materials	$91.00
Additional Labor	$585.00
TOTAL	$676.00

ProVent Piping Design