

# CAST IRON SOVENT® DESIGN MANUAL #802

## Version E802.04



As published by

Conine Manufacturing Co., Inc.  
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Welcome to the electronic version of the Cast Iron Sovent® Design Manual #802. The information presented herein correlates directly with the complete printed volume catalog currently distributed by our office. In order to maintain page number integrity some blank pages will appear in this document. These pages have been clearly marked and do not alter the technical content or provisions. Contact our office with any questions regarding this manual.

### TABLE OF CONTENTS

INTRODUCTION.....	Page 2
DESIGN NOTES .....	Page 3
HOW SOVENT® WORKS .....	Page 4
BLANK PAGE.....	Page 5
DRAINAGE FIXTURE UNIT TABLES "A" & "A-1".....	Page 6
STACK, BUILDING DRAIN AND BRANCH TABLES "B", "C" & "D".....	Page 7
AERATOR FITTING DIMENSIONS .....	Page 8
DE-AERATOR FITTING DIMENSIONS & INLET TOLERANCE TABLE "E".....	Page 9
AERATOR AND STACK RULES .....	Page 10
DE-AERATOR AND BUILDING DRAIN RULES .....	Page 11
BRANCH RULES .....	Page 12
INTRODUCTION TO ILLUSTRATIONS OF BASIC RULES.....	Page 13
DRAWING #1 / SOVENT® SIZING REQUIREMENTS.....	Page 14
DRAWING #2 / REQUIRED AERATOR CONNECTION .....	Page 15
DRAWING #3 / "IN-LINE OFFSET REQUIREMENT .....	Page 16
DRAWING #4 / DIRECT STACK CONNECTIONS .....	Page 17
DRAWING #5 / STACK OFFSET REQUIREMENTS.....	Page 18
DRAWING #6 / COMBINING STACKS.....	Page 19
DRAWING #7 / VENT STACK OFFSET REQUIREMENTS .....	Page 20
DRAWING #8 / BASE OF STACK REQUIREMENTS .....	Page 21
DRAWING #9 / PRESSURE RELIEF LINE DETAILS.....	Page 22
DRAWING #10 / BASE OF STACK CONNECTIONS.....	Page 23
DRAWING #11 / PRESSURE RELIEF LINE BRANCH CONNECTION .....	Page 24
DRAWING #12 / INTERIM LEVEL REMOTE PLUMBING.....	Page 25
DRAWING #13 / "CONVENTIONAL" VENT CONNECTIONS.....	Page 26
DRAWING #14 / DE-AERATOR TRANSITION DETAILS.....	Page 27
DRAWING #15 / REMOTE PENTHOUSE CONNECTIONS.....	Page 28
DRAWING #16 / SOIL BRANCH DEVELOPED LENGTHS.....	Page 29
DRAWING #17 / WASTE BRANCH DEVELOPED LENGTHS.....	Page 30
DRAWING #18 / MISCELLANEOUS BRANCH DETAILS .....	Page 31
DRAWING #19 / BRANCH SIZING – VERTICAL DROPS .....	Page 32
DRAWING #20 / MISCELLANEOUS BRANCH DETAILS .....	Page 33
SUPPLEMENTAL ILLUSTRATIONS A-1 THRU A-32 .....	Pages 34 - 42
BLANK PAGE.....	Page 43
DIMENSIONAL ROUGH-IN DATA.....	Pages 44 – 46
SAMPLE SPECIFICATIONS.....	Page 47
ILLUSTRATED ORDERING GUIDE .....	Page 48

# CAST IRON SOVENT® DESIGN MANUAL #802 – Version E802.04

## INTRODUCTION TO CAST IRON SOVENT®

The Cast Iron Sovent® system is an engineered single-stack drainage concept for multi-story buildings typically three stories and taller. Two primary fittings, the Aerator and De-aerator, in conjunction with standard DWV materials render the Sovent® concept unique by accomplishing the function of drainage, waste and venting within one vertical pipe instead of two. This along with the elimination of individual fixture vents results in reduced costs, reduced resource consumption, and reduced space requirements.

The Sovent® system was developed in Switzerland in the 1950's and represented the first time a scientific approach was taken to the protection of trap seals in sanitary systems. The hydraulic and pneumatics characteristics of intermittent flows were studied using a 10-story testing tower complete with measuring instruments. It was found that controlled flow velocities reduced the excessive pressure excursions that can occur in traditional systems. The unique interior geometry of the Sovent® fitting provides this control and maintains these pressures within acceptable limits. Once fully perfected, the Sovent® system was marketed to other industrialized countries around the world. Developed initially in cast iron, Sovent® was introduced to the United States marketplace in the mid-1960s in the form of a copper DWV system. In 1977, Conine Manufacturing Co., Inc. began offering Sovent® in hubless cast iron, which offered superior noise suppression characteristics and ease of assembly. Conine Manufacturing Co., Inc. has since furnished thousands of projects worldwide and continues to be the oldest and most experienced licensed manufacturer/marketer of Cast Iron Sovent in the USA.

Sovent® continues to be the most extensively tested DWV system to date. In addition to laboratory testing and analysis, actual field installations have been subjected to various performance tests. Certified testing by both independent and government agencies is available showing Sovent® meets and exceeds the performance standards required for sanitary systems. Periodic monitoring of Sovent® projects shows no problems attributable to the Sovent® concept.

Code approval procedures for Cast Iron Sovent® systems continue to change as model codes are revised and updated to reflect new and different approaches to plumbing. Most model codes, including various city and state versions, do not specifically address Sovent® systems and the approval process will differ slightly in each jurisdiction. Sovent® approvals are often granted under Alternate Material & Methods or Alternate Engineered Design sections of the prevailing code. In some cases, the approval must be sought for each individual project in a particular jurisdiction. Many areas require the manufacturers review and approval of the design and usually must bear the seal of a Registered Professional Engineer having a license in that jurisdiction. Conine Manufacturing Co, Inc. can assist with the approval process with respect to technical data and plan review services.

In the view of many practitioners of plumbing, systems have traditionally been over-designed. The art of plumbing has evolved through trial and error rather than a truly engineered approach to design. While traditional DWV plumbing systems certainly work well, the inventor and subsequent developers of Sovent® have provided the industry with design criteria and techniques to engineer DWV systems scientifically and professionally. This results in performance and savings that are attractive to the real professionals of the plumbing industry and is evidenced by the fact that they continue to specify, install, and promote the use of Sovent®.

The savings realized with the use of this proven technological advancement in plumbing helps to maintain a healthy construction industry that benefits us all. Innovations such as Sovent® should be encouraged. Sovent® is proven safe, economical, and functional. The performance record is excellent. Contact our office for ways Cast Iron Sovent® can help you with your next multi-story project.

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## CAST IRON SOVENT® DESIGN NOTES

The Cast Iron Sovent® system represents advancement in the art and technology of sanitary drainage systems. This manual is intended to address basic plumbing rules that apply when designing, installing, or inspecting a Cast Iron Sovent® system.

The use of *Cast Iron Sovent® Design Manual #802* along with good plumbing practices and techniques will assure a safe and modern plumbing system. Installation requirements such as clean-outs, hydraulic integrity, support systems, slab penetrations and fireproofing do not differ from traditional DWV practices and continue to be the responsibility of the designers, installers and inspectional authorities.

Cast Iron Sovent® Aerators and De-aerators may be used with stacks, branches, and run-outs made from any acceptable DWV material providing proper transition couplings are used. Penetrations of floor/ceiling assemblies, shafts, and fire rated assemblies must be protected in accordance with the Building Code requirements.

The definition of sweeps and bends shall be based on cast iron hubless fittings.

The written rules shall prevail. Illustration drawings are included for interpretation and clarity only.

Designs and conditions not outlined in this manual shall be submitted for approval to Conine Manufacturing Co., Inc.

In accordance with our policy of continual product improvement, we reserve the right to amend specifications without prior notification. Although every effort is made to ensure accuracy, Conine Manufacturing Co., Inc. cannot be held responsible for errors and omissions in the printing of this manual.

All Cast Iron Sovent® technical data provided by Conine Manufacturing Co., Inc. including but not limited to drawings, catalogs, and consultations remain the exclusive property of Conine Manufacturing Co., Inc. Use of this information for purposes other than Cast Iron Sovent® products made by Conine Manufacturing Co., Inc. is strictly prohibited and may result in the assessment of fees or charges.

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## HOW SOVENT® WORKS

The Sovent® system controls the flow within the pipe to keep pressure excursions from exceeding +/- one-inch of water column which is the standard for sanitary drainage systems. The system consists of a vertical stack open to the atmosphere, horizontal branches to each fixture, Sovent® Aerator fittings, and Sovent® De-aerator fittings.

The Sovent® stack conveys waste from the upper levels of the building to the base of each stack. Flow through a vertical stack will cling to the interior wall surface and proceed downward in a swirling motion leaving the center portion as an open airway. As long as this airway exists, pressures are balanced within the stack. Left uncontrolled, the flow will increase in speed to a point known as terminal velocity and can form a complete cross-sectional blockage of the tube. This will result in positive and negative pressures ahead and behind the flow that may cause trap seal failures through induced siphonage and/or blowback. The Sovent® system eliminates the formation of the “hydraulic plug” and maintains a core of air throughout the vertical stack.

The horizontal branches connect to the plumbing fixture and transport wastes to the Sovent® stack. Sovent® branch sizing criteria allocates approximately 75% of the cross-sectional area for venting purposes. Sovent® branch design remains the key to flexibility and the developed length limitations that exclude additional re-vent piping far exceed those of “conventional” systems. The branch size may telescope allowing a possible run-out of fifty-seven feet without a return vent pipe. Developed length is determined by measuring along the centerline of all horizontal piping located in the ceiling and/or wall space. The vertical drop distance is not included in the calculation. A Sovent® system does not use the traditional “S-trap” configuration rather it employs a sizing criteria designed to eliminate self-siphonage and provide proper venting. A typical Sovent® branch connection to a lavatory would consist of a 1-1/4” tailpiece, a 1-1/2” trap-arm, and a 2” vertical drop making it impossible to completely fill the 1-1/2” trap-arm with a 1-1/4” tailpiece – much less the 2” vertical drop.

The third component of a Sovent® system is the Aerator fitting. Aerators are placed in the vertical stack usually at each typical floor level and must remain in a full upright position. They contain no moving parts and require no special tools for maintenance. Their ability to balance the pressure excursions stem from the geometry of the full size waterways through the body of the fitting. Two distinct chambers are found in the body of the Aerator fitting. One is called an offset chamber where flows from the upper floors enter the fitting and actually “offset” around the horizontal branch inlets. This offset is designed to reduce the flow velocity and also break up any “hydraulic plug” formation associated with terminal velocity. Once leaving the offset chamber it will again cling to the interior surface of the pipe leaving the center area open for air. This occurs as the flow reaches Aerator fittings at each floor and also eliminates the need for the “yoke-vents” required in “conventional” systems. Vertical distance between Aerators must not exceed twenty feet. Interior baffles are situated to control the effects of flow through the Aerator. To guard against blocking the cross-sectional area of the stack with a horizontal discharge, a second chamber is provided adjacent to the offset chamber. This mixing chamber is completely separated from the vertical stack flow through the use of a separation baffle. As horizontal flow enters the Aerator fitting, it must transition to a vertical flow before smoothly uniting with any stack flow. These actions take place on an intermittent basis as both stack and branch flows may not be present simultaneously. At the top of the separation baffle, a vent aperture or opening can be found. This provides the venting action between the branches and stack, which balances any pressure fluctuations. A second baffle is located perpendicular to the separation baffle in the mixing chamber to prevent cross-flow from opposing branch inlets.

The final component of the Sovent® system is the De-aerator fitting. It is located at the base of each stack and at any horizontal stack offset. It is designed to effectively deal with the pressure fluctuations that occur when vertical flow transitions to horizontal flow. This phenomenon is referred to as hydraulic jump and in some cases, can cause a complete cross-sectional blockage of the horizontal pipe. The De-aerator fitting has two features designed to overcome these adverse effects. The first feature is an internal nosepiece, which reduces the flow velocity prior to the horizontal transition. It also allows the air and waste to separate thus balancing the internal pressures. The second feature of the De-aerator fitting is the Pressure Relief Line (P.R.L.). The P.R.L. outlet is located on top of the De-aerator and is routed from the De-aerator to the horizontal drain. It connects to the horizontal drain above the centerline at a minimum of distance of ten pipe diameters downstream from the stack. The ten pipe diameters are based on the stack size (i.e. 4” stack = 40” minimum) and this places the P.R.L. connection beyond the hydraulic jump zone. Note that all connections into the horizontal drain must meet this minimum distance requirement. The Sovent system terminates at the P.R.L. connection point to the horizontal drain.

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## TABLE A

Fixture Type	Trap Size	D.F.U. Rating
Bar Sink	1-1/2	2
Bath Group (Full) *		6
Bathtub	1-1/2	2
Bidet	1-1/2	2
Clothes Washer	2	4
Dishwasher	1-1/2	2
Disposer	1-1/2	3
Drinking Fountain	1-1/4	1
Floor Drain - 2"	2	2
Floor Drain - 3"	3	5
Kitchen Group ***		5
Lavatory	1-1/4	1
Service Sink	3	5
Shower	2	2
Sink	1-1/2	2
Urinal	2	4
Water Closet	3	6

All Other Fixtures	
Trap Size	D.F.U. Rating
1-1/4	1
1-1/2	2
2	3
2-1/2	4
3	5
4	6

\* Bath Group (Full) consists of (1) W.C., (1) Lavatory & (1) Tub/Shower

\*\* Bath Group (Half) consists of (1) W.C. & (1) Lavatory

\*\*\* Kitchen Group consists of (1) Sink Trap, with Dishwasher and Disposer

## TABLE A-1 - D.F.U. Values For Water Saving Fixtures

Building Type - D.F.U. Rating		Apartments & Condominiums	Office Building & Commercial	Hotels & Motels
Fixture Type	Trap Size			
Bar Sink	1-1/4	0.5	0.5	0.5
Bath Group (Full) *		3.0		4.0
Bath Group (Half) **		2.0		3.0
Bathtub	1-1/2	3.0		3.0
Bidet	1-1/2	1.0		1.0
Clothes Washer	2	4.0		
Dishwasher	1-1/2	2.0	2.0	
Disposer	1-1/2	0.5		
Drinking Fountain	1-1/4		0.5	
Floor Drain (Emergency)	2 thru 4	0.0	0.0	0.0
Kitchen Group ***		3.0		
Lavatory	1-1/4	1.0	1.0	0.5
Service Sink	3	3.0	3.0	3.0
Shower	2	2.0		2.5
Sink	1-1/2	2.0	2.0	2.0
Urinal	2		3.0	
Water Closet	3	3.0		3.0
Water Closet (Public)	3		4.0	

NOTE: Increased W.C. branch sizing as outlined in Cast Iron Sovent Design Manual #802 (Branch Rules - para. H) does not apply when using Table A-1.

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## CAST IRON SOVENT® STACK LOADING TABLE B

Stack Size	Maximum Drainage Fixture Units
* 3"	64
* 3" <sup>over 7 floors</sup>	102
4"	504
5"	1,010
6"	2,200
8"	3,900

\* No more than twelve (12) W.C.'s are permitted on 3" stacks. The 3" stack will use a 4" De-aerator at the base of the stack.

## CAST IRON SOVENT® BUILDING DRAIN LOADING TABLE C

Drain Size	1/4"/ft. (2%) Max. D.F.U.	1/8"/ft. (1%) Max. D.F.U.
4"	120	96
5"	350	280
6"	850	680
8"	2,700	2,160
10"	3,900	3,120
12"	5,800	4,640

Note: This table is also used for sizing horizontal stack offsets.

## CAST IRON SOVENT® BRANCH LOADING TABLE D

Branch Size	1/4"/ft. (2%) Max. D.F.U.	1/8"/ft. (1%) Max. D.F.U.
2"	**6	**5
3"	16	13
4"	90	72

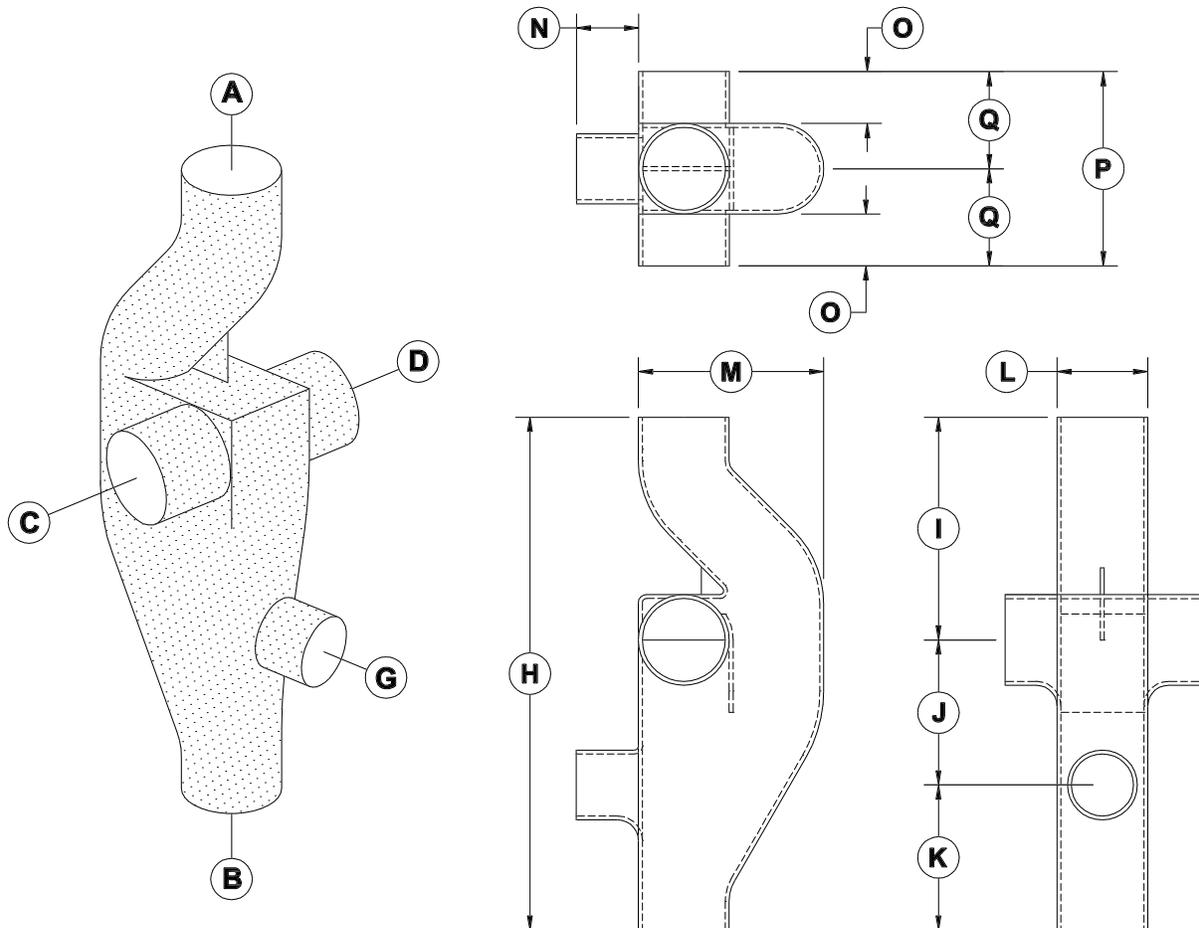
\*\* No W.C.'s are permitted on 2" branches. Clothes washer branches 2" in size shall not exceed five feet (5'-0") in developed length.

Cast Iron Sovent systems shall be designed using the load values as shown herein. For loading values and design applications not shown in this manual, please contact our office.

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## AERATOR DIMENSIONS

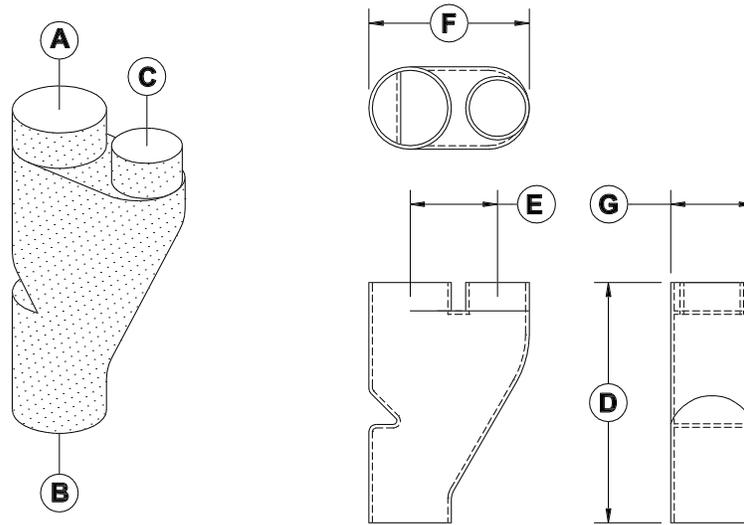


Nominal Aerator Size	Nominal Inlet Size (inches)					Fitting Dimensions (inches)									
	A	B	C	D	G	H	I	J	K	L	M	N	O	P	Q
3"	3	3	3	3	2	19.50	8.25	5.00	6.25	3.35	6.75	2.25	2.00	7.25	3.63
4"	4	4	4	4	3	24.75	10.75	7.00	7.00	4.38	9.75	3.00	2.50	9.50	4.75
4" x 3"	4	4	3	3	3	24.75	8.81	7.00	8.94	4.38	8.75	2.50	2.00	8.38	4.19
5"	5	5	4	4	3	30.75	13.75	7.00	10.00	5.30	12.50	2.25	3.50	12.50	6.25
6"	6	6	4	4	3	30.75	13.75	7.00	10.00	6.30	13.25	2.25	3.50	13.25	6.63
8"	8	8	4	4	4	36.00	15.00	10.00	11.00	8.38	15.00	4.50	4.50	17.50	8.75

Nominal inlet dimensions and tolerances are shown in Table E.  
 Specify nominal Aerator size and all required lettered inlets when ordering.  
 Inlets not required are blanked off flush with the body of the fitting.  
 Unused inlets may be capped for future additions and alterations.

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DE-AERATOR DIMENSIONS



Nominal Deaerator Size	Nominal Inlet Size (inches)			Fitting Dimensions (inches)			
	A	B	C	D	E	F	G
4"	4	4	3	12.75	4.63	8.50	4.38
5"	5	5	4	16.00	5.63	10.50	5.30
6"	6	6	4	20.75	6.75	12.25	6.30
8"	8	8	6	21.00	9.00	16.50	8.38

Nominal inlet dimensions and tolerances are shown in Table E.  
Specify nominal Deaerator size only when ordering.

TABLE E

Nominal Inlet Size	Inside Diameter (inches)	Outside Diameter (inches)	Nominal Wall Thickness (inches)	Minimum Wall Thickness (inches)
2"	2.00 +.06 / -.06	2.35 +.09 / -.09	.16	.13
3"	3.00 +.06 / -.06	3.35 +.09 / -.09	.16	.13
4"	4.00 +.06 / -.06	4.38 +.09 / -.05	.19	.15
5"	4.94 +.09 / -.09	5.30 +.09 / -.05	.19	.15
6"	5.94 +.09 / -.09	6.30 +.09 / -.05	.19	.15
8"	7.94 +.13 / -.13	8.38 +.13 / -.09	.23	.17

Tolerances and dimensions for stack, soil and waste inlets on Aerators and Deaerators are in accordance with CISPI 301-97 for hubless pipe and fittings as listed by BOCA, IAPMO, IPC, NSPC and SBCCI.

Cast Iron Sovent fittings are gray cast iron of chemical composition in accordance with ASTM-126.

Manufacturers Standards for Cast Iron Sovent Fittings: CISMA Designation 177-85

National Standard for Cast Iron Sovent Fittings: ASME B16.45-1998

Performance Standard for Cast Iron Sovent System: ASSE No. 1043

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# CAST IRON SOVENT® DESIGN MANUAL #802 – Version E802.04

## SOVENT® AERATOR AND STACK RULES

- (A) The stack size shall be in accordance with Table B based on the total fixture unit load determined by Table A or A-1.
- (B) The stack shall not telescope or decrease in size and must be continued full size through the roof.  
(Drawing No. 1)
- (C) An Aerator fitting is required at each level where the following horizontal branches enter the stack:
  - (1) Any soil branch
  - (2) A waste branch the same size as the stack size
  - (3) A waste branch one pipe size smaller than the stack size(Drawing No. 2)
- (D) The Aerator fitting shall be placed in a vertical plane. Tilting the Aerator to offset the Sovent® stack is not permitted.
- (E) At any level where an Aerator is not required, an “in-line” offset consisting of two one-eighth bends and one quarter bend may be used. The vertical distance between Aerators or “in-line” offsets shall not exceed twenty feet (20'-0”). No more than two consecutive “in-line” offsets are permitted.  
(Drawing No. 3)
- (F) Waste branches two pipe sizes smaller than the stack size may connect directly to the stack through a sanitary fitting.  
(Drawing No. 4)
- (G) Horizontal stack offsets exceeding sixty degrees (60°) from vertical require a De-aerator fitting and Pressure Relief Line (PRL). The Pressure Relief Line (PRL) shall connect to the vertical portion of the stack downstream of the offset. Soil and waste branches may connect to the horizontal portion of the offset. These connections shall be made BETWEEN the two vertical portions of the stack at a minimum distance of ten pipe diameters (based on stack size) downstream of the higher vertical stack. Branch connections to a horizontal stack offset less than ten pipe diameters in length shall be made as far downstream on the horizontal as possible. Soil and waste branches shall not connect where the offset makes a horizontal change of direction. Waste branches may connect to the horizontal portion of the Pressure Relief Line (PRL), except on office building battery type installations. Waste branches shall be at least one pipe size smaller than the PRL. Waste branch connections shall not be made into any vertical portion of the PRL. Clothes washers shall not connect to the PRL. Horizontal stack offsets shall be sized per Table C based on the total fixture unit load of all fixtures connecting to the offset and fixtures upstream. The entire stack size shall be no smaller than the largest horizontal offset size.  
(Drawing No. 5)
- (H) Sovent® stacks may be combined before entry into the main sewer drain. The stacks shall combine downstream of each Pressure Relief Line (PRL) termination point. The total fixture unit load of the combined stacks determines collection drain line sizing.  
(Drawing No. 6)
- (I) Stack vent headers above the highest fixture may offset prior to the vent thru roof penetration (VTR). The horizontal vent header and VTR shall be increased one pipe size when exceeding twenty feet (20'-0”) in horizontal length.  
(Drawing No. 7)
- (J) Stack vent headers above the highest fixture may be combined prior to the vent thru roof penetration (VTR) with one vertical stack extending through the roof. The one combined vertical stack shall be one pipe size larger than the largest of the combined stacks. If the distance between any stack and the VTR exceeds twenty feet (20'-0”), the horizontal offset shall be increased one (1) pipe size larger than the downstream stack.  
(Drawing No. 7)

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## SOVENT® DE-AERATOR AND BUILDING DRAIN RULES

- (A) A De-aerator fitting is required at the base of each stack. The De-aerator fitting shall be installed in the vertical portion of the stack. The distance between the De-aerator fitting and the Sovent® building drain shall not exceed five feet (5'-0"). The Sovent® building drain size shall be in accordance with Table C based on the total fixture unit load determined by Table A or A-1. The transition to a larger Sovent® building drain size shall be made in the vertical stack below the De-aerator fitting, except as noted in paragraph "I".  
(Drawing No. 8)
- (B) The De-aerator fitting uses a Pressure Relief Line (PRL). The Pressure Relief Line (PRL) connects to the Sovent® building drain a MINIMUM distance of ten pipe diameters (based on stack size) downstream from the centerline of the stack. The PRL connects to the Sovent® building drain above the centerline of the drain. The PRL may be rolled to the side providing the bottom of the PRL is above the centerline of the Sovent® building drain.  
(Drawing No. 9)
- (C) The installed slope for the Sovent® building drain and PRL is recommended to be one-quarter inch per foot (2%). Installed slopes of one-eighth inch per foot (1%) are permitted however pipe capacity is reduced by a factor of 0.8 as shown in Table C. Installed slopes less than one-eighth inch per foot (1%) are strictly prohibited.
- (D) Soil and waste branches may connect to the Sovent® building drain BETWEEN the centerline of the stack and the termination point of the Pressure Relief Line (PRL). All connections shall be made a MINIMUM distance of ten pipe diameters (based on stack size) downstream from the centerline of the stack. Soil and waste branches shall not connect where the Sovent® building drain makes a horizontal change of direction.  
(Drawing No. 10)
- (E) Waste branches may connect to the horizontal portion of the Pressure Relief Line (PRL), except on battery type installations. Waste branches shall be at least one pipe size smaller than the PRL. Waste branch connections shall not be made into any vertical portion of the PRL. Clothes washers shall not connect to the PRL.  
(Drawing No. 11)
- (F) Soil and waste branches may connect downstream of the PRL termination point providing conventional plumbing rules are applied. The vent header from these fixtures may connect to the vertical portion of a Sovent® stack below an Aerator fitting through a sanitary tee installed with the flow radius down. The vent load of these fixtures shall be added to the fixture unit load on the Sovent® stack.  
(Drawing No. 13)
- (G) Soil and waste branches may connect to the vertical stack below the De-aerator fitting. These connections shall be made through a wye-type fitting or through an Aerator fitting. Entry to the Sovent® building drain from the stack shall be made using a short sweep, long sweep, two one-eighth bends, or a combination wye & one-eighth bend fitting.  
(Drawing No. 14)
- (H) Fixtures considered too remote from the Sovent stack may be plumbed by conventional methods. This waste and vent area shall be sized in accordance with local prevailing ordinances.  
(Drawings No. 12 & No. 15)
- (I) Office building battery type installations and Sovent® stacks serving clothes washers shall use a De-aerator fitting equal in size to the Sovent® building drain serving that stack. A four-inch (4") De-aerator fitting will be required on three-inch (3") Sovent® stacks.

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# CAST IRON SOVENT® DESIGN MANUAL #802 – Version E802.04

## SOVENT® BRANCH RULES

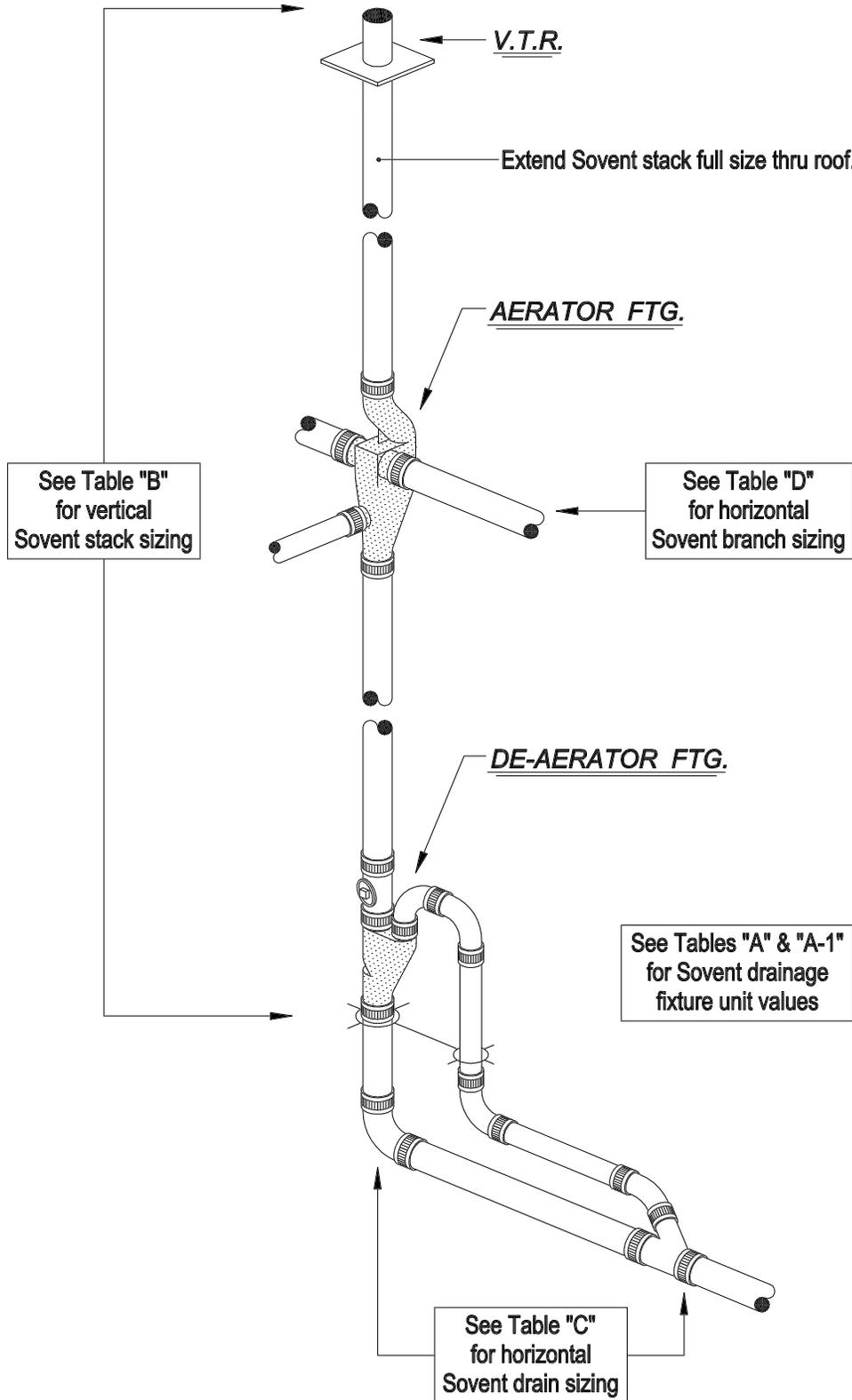
- (A) The maximum developed length of a three-inch (3") soil branch shall not exceed twelve feet (12'-0"). The maximum developed length of a four-inch (4") soil branch shall not exceed twenty-seven feet (27'-0"). Developed lengths are measured along the centerline of all horizontal branch piping located in ceiling and wall areas. Vertical drops from trap arms or fixtures are not included in the developed length calculations.  
(Drawing No. 16)
- (B) The maximum developed length of a two-inch (2") waste branch shall not exceed fifteen feet (15'-0"). The maximum developed length of a three-inch (3") waste branch shall not exceed fifteen feet (15'-0"). Developed lengths are measured along the centerline of all horizontal branch piping located in ceiling and wall areas. Vertical drops from trap arms or fixtures are not included in the developed length calculations. Waste branches two pipe sizes smaller than the stack size may connect directly to the stack through a sanitary fitting.  
(Drawing No. 17)
- (C) Branch sizing shall be in accordance with Table D based on the total fixture unit load determined by Table A or A-1. The installed slope for horizontal branches is recommended to be one-quarter inch per foot (2%). Installed slopes of one-eighth inch per foot (1%) are permitted however pipe capacity is reduced by a factor of 0.8 as shown in Table D. Installed slopes less than one-eighth inch per foot (1%) are strictly prohibited.
- (D) Branches having three ninety degree (90°) horizontal changes of direction shall be increased one pipe size at the third ninety degree (90°) change of direction nearest the stack. This increase is not required if one of the directional changes can be made with two one-eighth bends or a short sweep radius bend.  
(Drawing No. 18)
- (E) The transition from a horizontal or vertical branch to another horizontal branch must be made with a wye-type fitting.  
(Drawing No. 18)
- (F) Horizontal branch piping at the base of a vertical drop exceeding forty inches (40") in height shall be increased one pipe size. This increase is not required when the lower portion of the drop is made at forty-five degrees (45°) and the upper vertical portion is less than forty inches (40").  
(Drawing No. 19)
- (G) Branch piping with vertical drops exceeding ten feet (10'-0") shall be increased one pipe size.  
(Drawing No. 19)
- (H) A three-inch (3") soil branch shall be increased one pipe size at the connection point of other fixtures. This increase is not required when computing fixture unit loads from Table A-1.
- (I) Two fixtures using 1-1/4" tailpiece/trap sizes may combine into a single two-inch (2") vertical drop. Fixtures using 1-1/2" tailpiece/trap sizes and larger require separate vertical drops from each trap arm or may combine into a single vertical drop that is increased one pipe size. This increase is not required if the change in elevation is made at forty-five degrees (45°). The fixture trap arm shall be one pipe size larger than the fixture tailpiece and this increase may be made at the wall.  
(Drawing No. 20)
- (J) Clothes washer branches shall be three-inch (3") in size. Clothes washer branches with no vertical drops and developed lengths five feet (5'-0") or less may be two-inch (2") in size.  
(Drawing No. 20)
- (K) Pressure Equalizing Lines may be used as an alternate to the rules concerning increased branch sizes. Pressure Equalizing Lines shall rise vertically above the branch and connect to the Sovent stack above the flood rim of the fixtures they serve. Pressure Equalizing Lines may be led directly through the roof.

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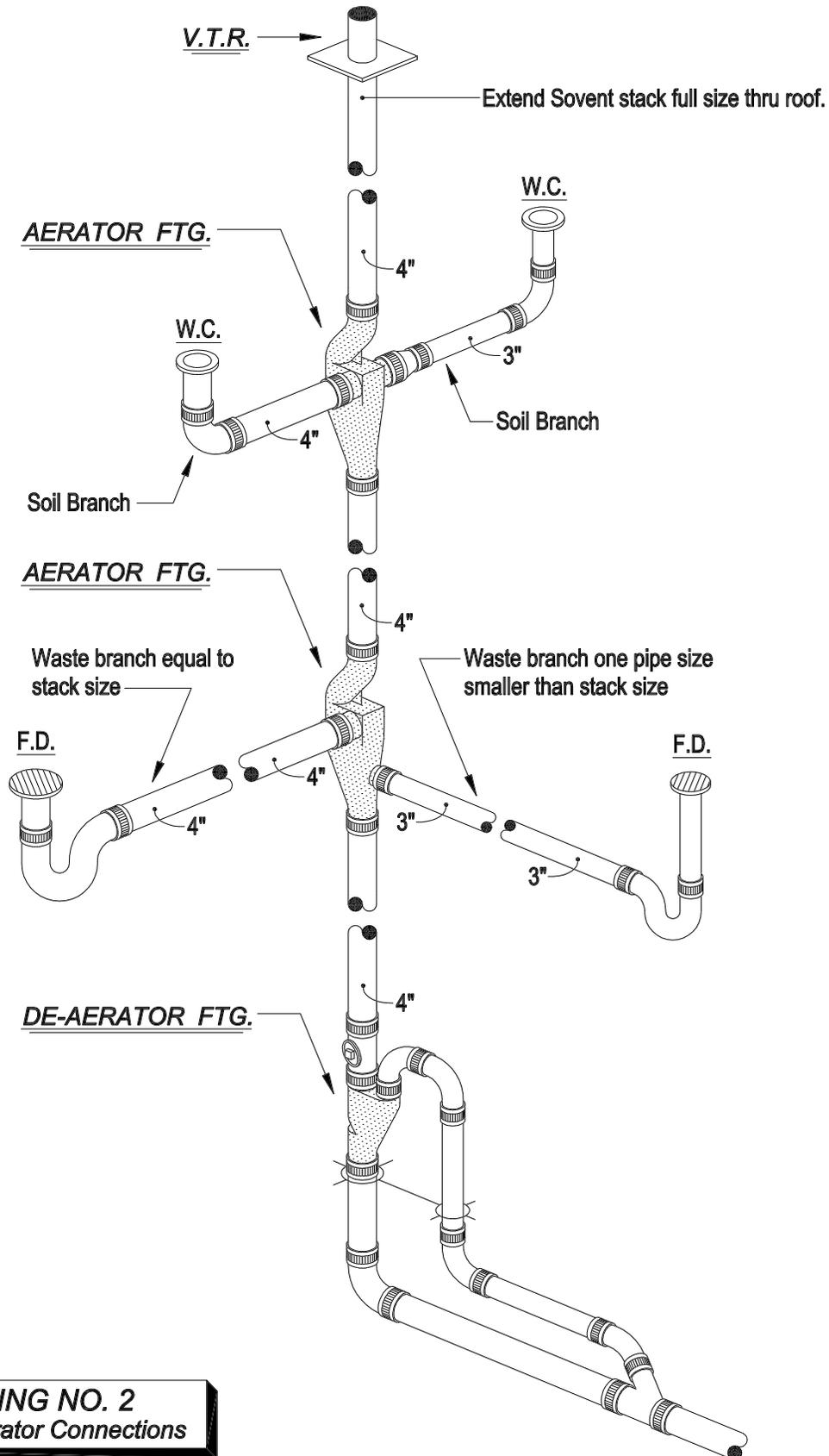
## ILLUSTRATIONS OF SOVENT® SYSTEM RULES

The following pages are to be used for interpretation and clarity of the written rules listed on the preceding pages. The written rules shall take precedence over all illustrations. All possible scenarios are not covered by these illustrations. Designs and conditions not shown may require approval by the manufacturer.

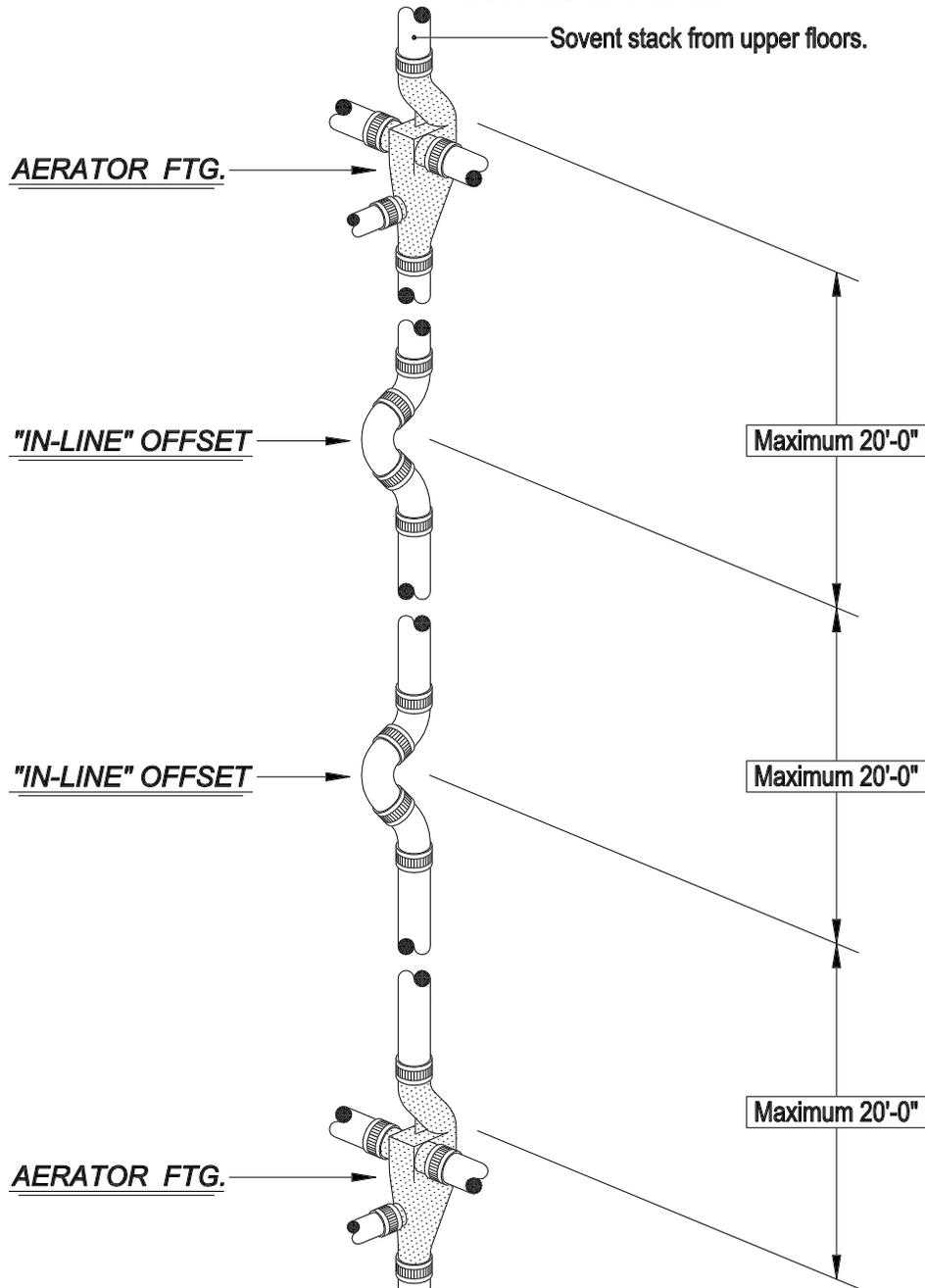
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**DRAWING NO. 1**  
**Sovent Sizing Requirements**



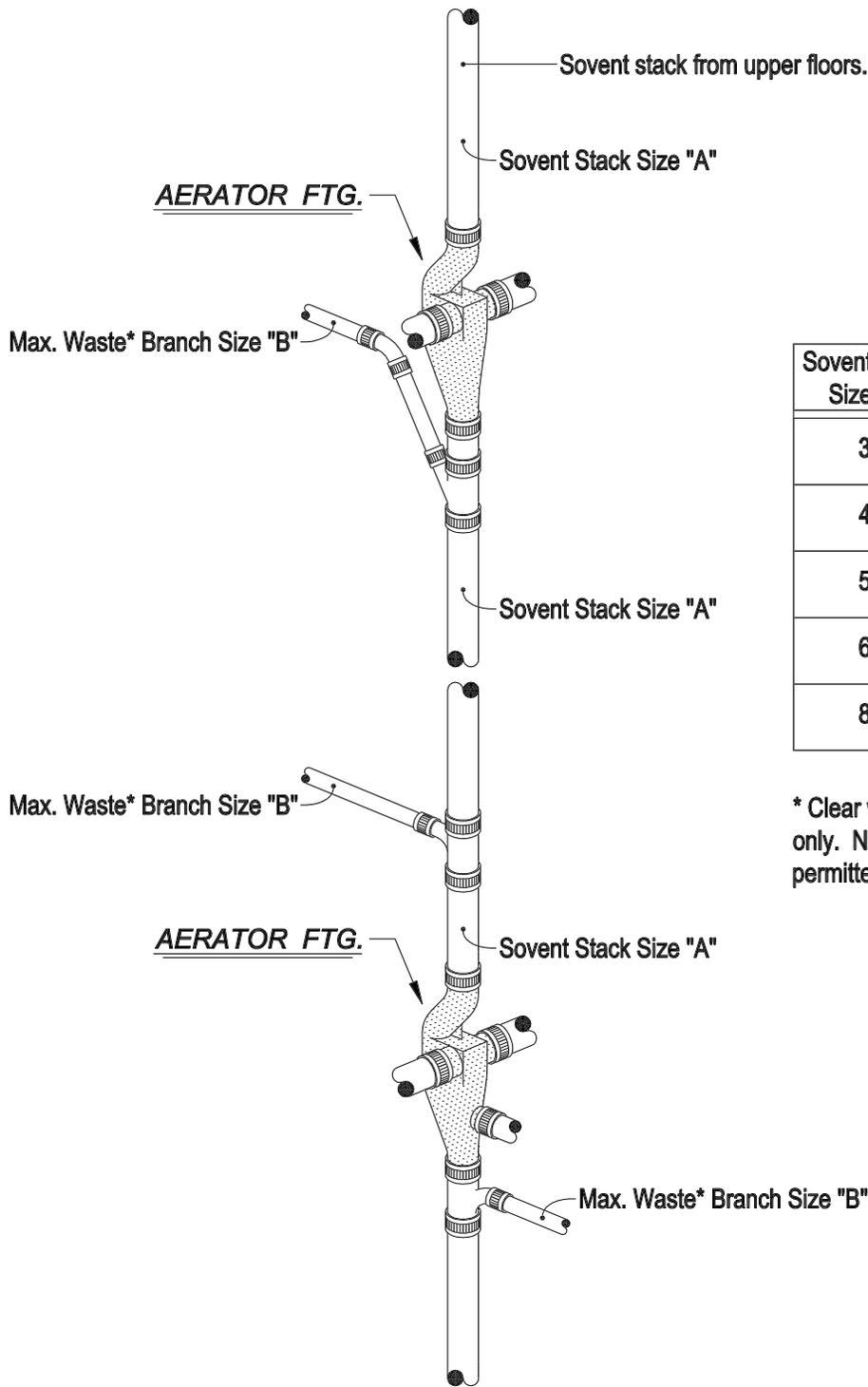
**DRAWING NO. 2**  
*Required Aerator Connections*



"In-line" Offsets are made by using (1) eighth-bend, (1) quarter-bend & (1) eighth-bend.

MAXIMUM of (2) consecutive "In-line" Offsets are permitted.

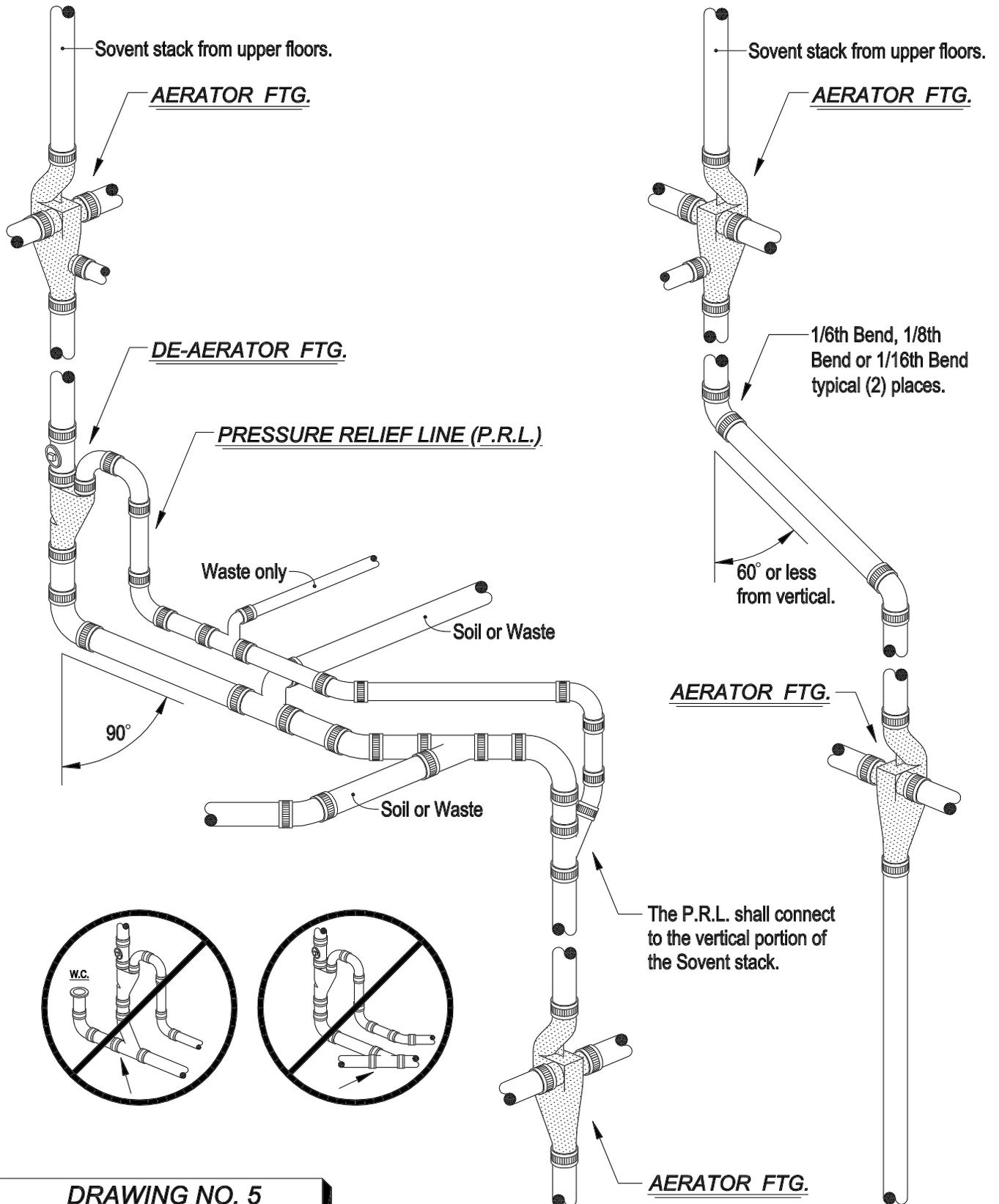
**DRAWING NO. 3**  
**"In-line" Offset Requirements**



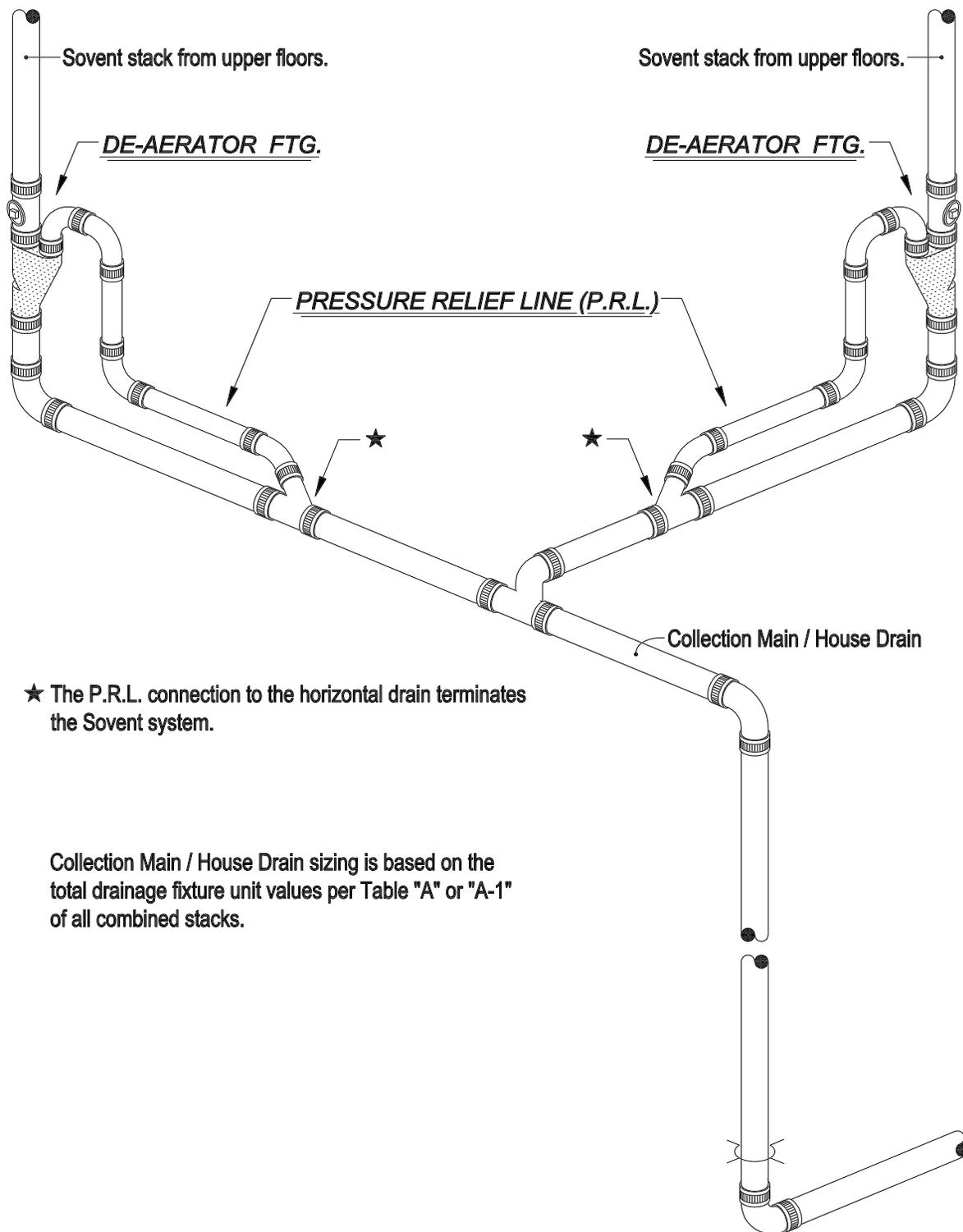
Sovent Stack Size "A"	Max. Waste* Size "B"
3"	2"
4"	2-1/2"
5"	3"
6"	4"
8"	5"

\* Clear water waste branches only. No soils from W.C.'s are permitted.

**DRAWING NO. 4**  
*Direct Stack Connections*



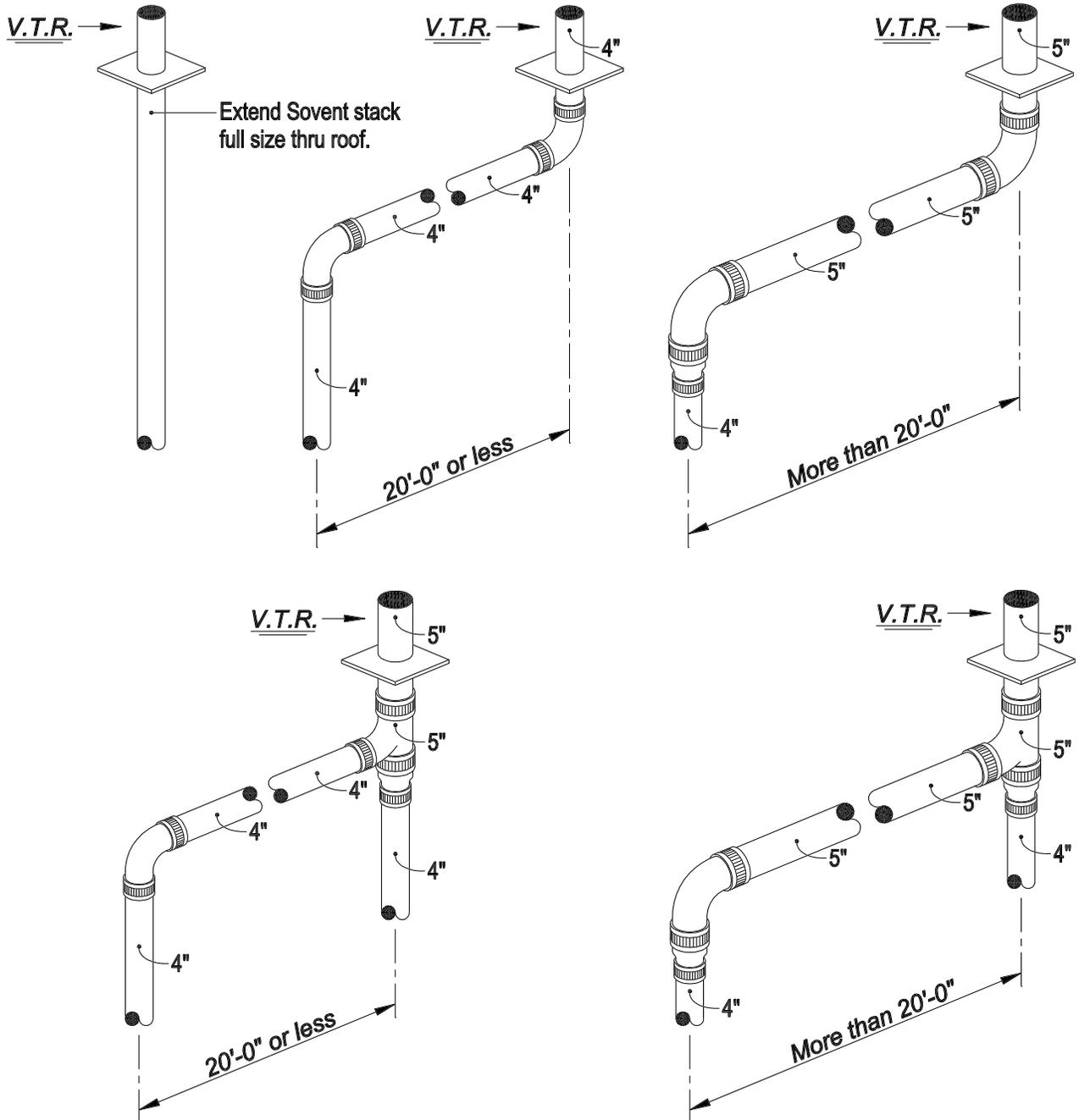
**DRAWING NO. 5**  
**Stack Offset Requirements**



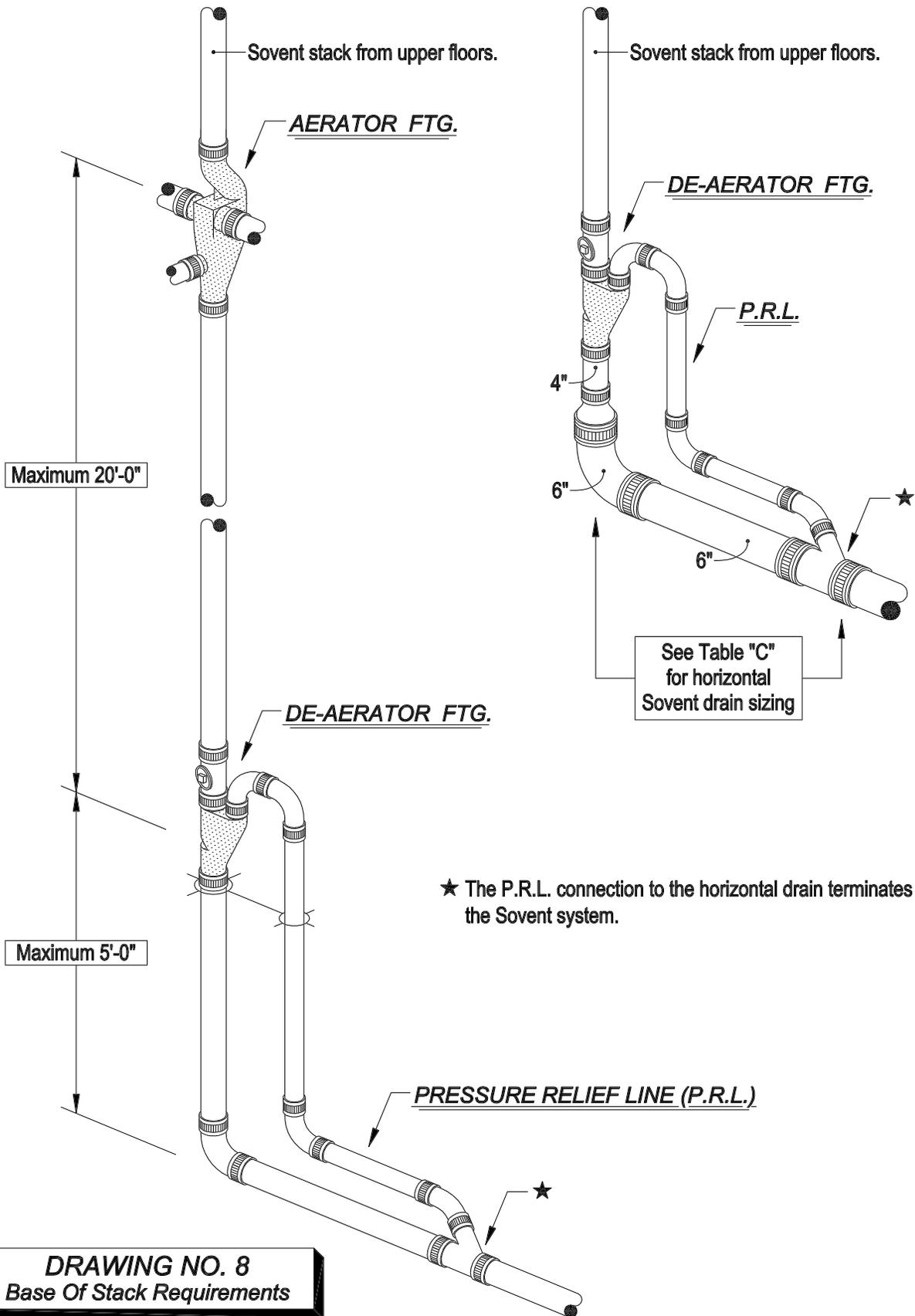
★ The P.R.L. connection to the horizontal drain terminates the Sovent system.

Collection Main / House Drain sizing is based on the total drainage fixture unit values per Table "A" or "A-1" of all combined stacks.

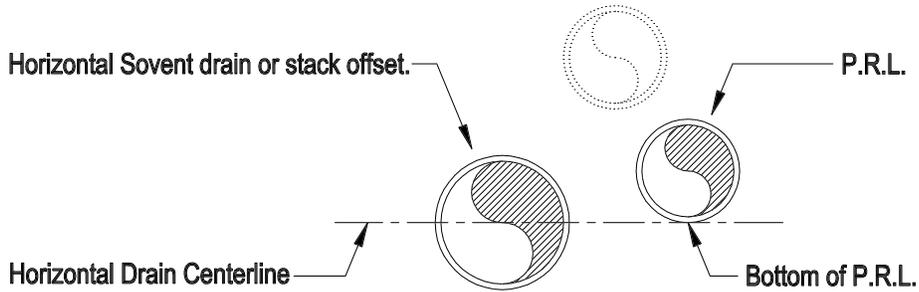
**DRAWING NO. 6**  
**Combining Stacks**



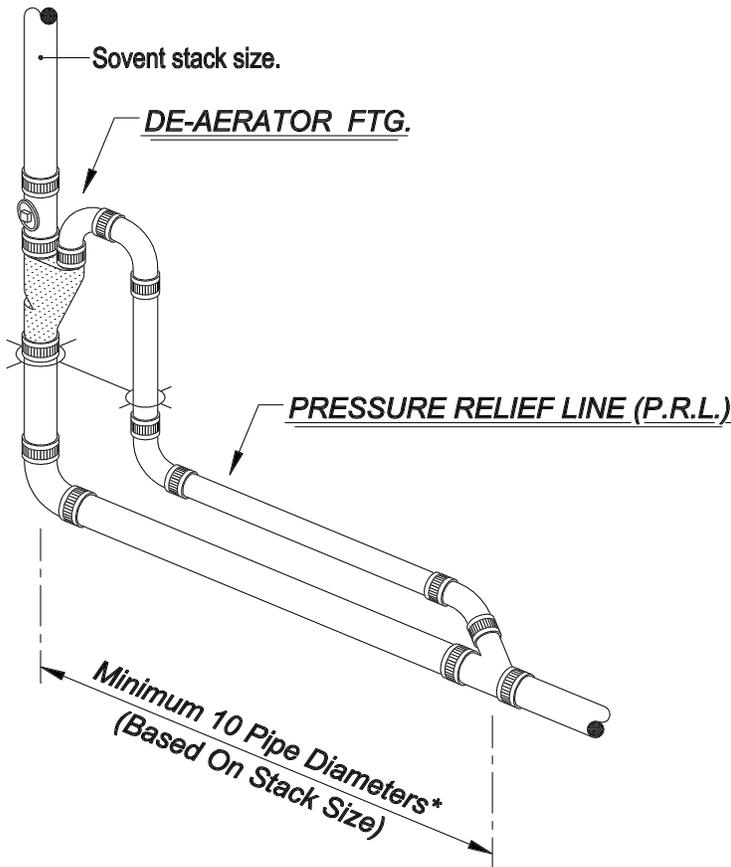
**DRAWING NO. 7**  
**Vent Stack Offset Requirements**



**DRAWING NO. 8**  
**Base Of Stack Requirements**



**MINIMUM P.R.L. ELEVATION REQUIREMENTS**



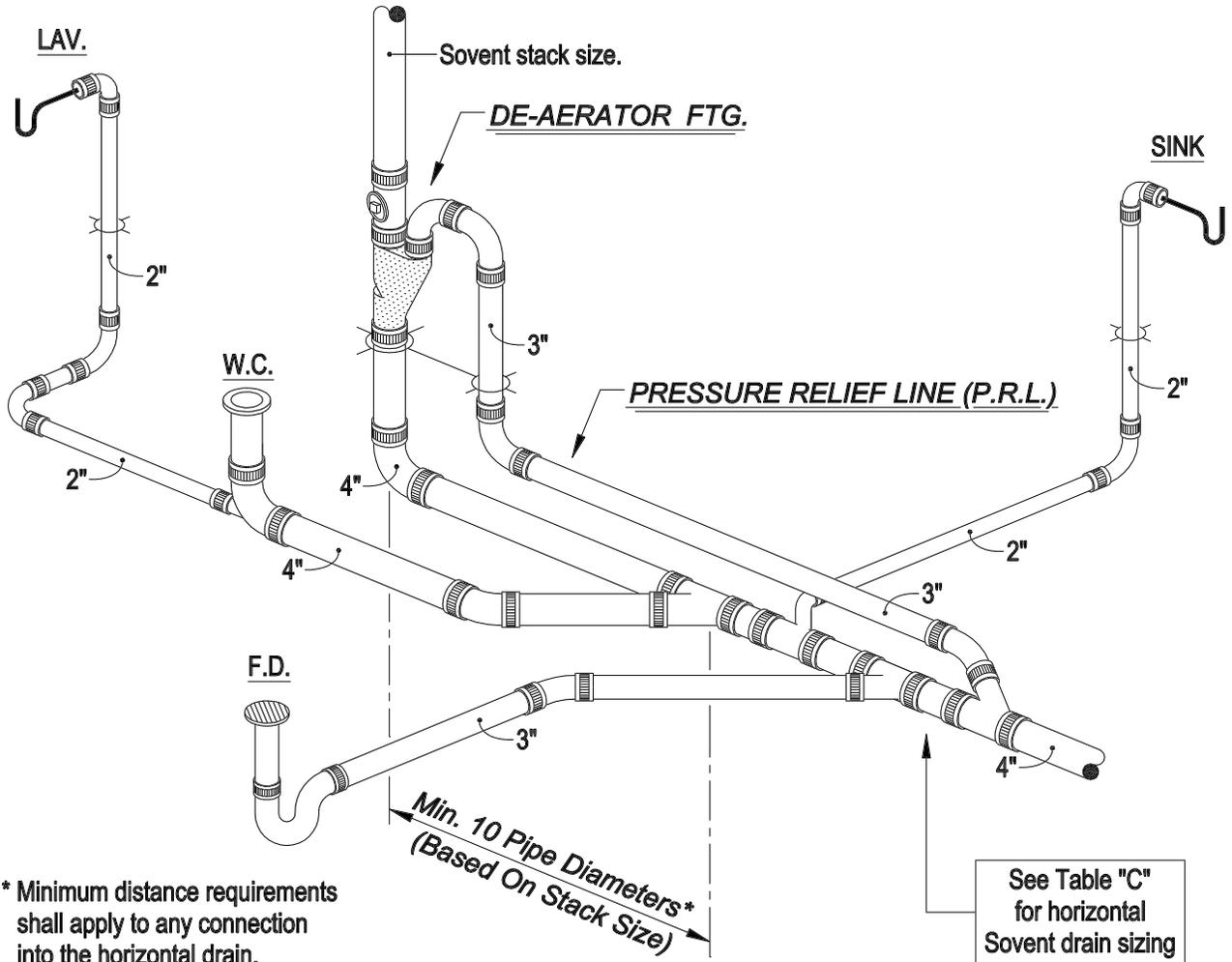
Sovent Stack Size	Minimum Distance*
3"	30"
4"	40"
5"	50"
6"	60"
8"	80"

\* Minimum distance requirements shall apply to any connection into the horizontal drain.

De-aerator** Size	P.R.L. Size
4"	3"
5"	4"
6"	4"
8"	6"

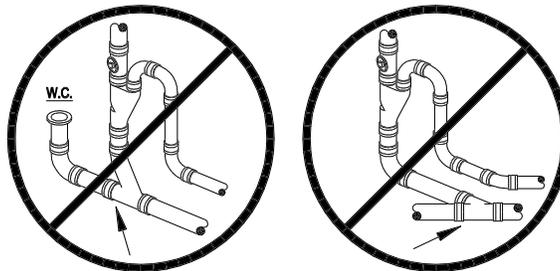
\*\* 3" Sovent stacks will use a 4" De-aerator at the base of the stack.

**DRAWING NO. 9**  
**Pressure Relief Line Details**



\* Minimum distance requirements shall apply to any connection into the horizontal drain.

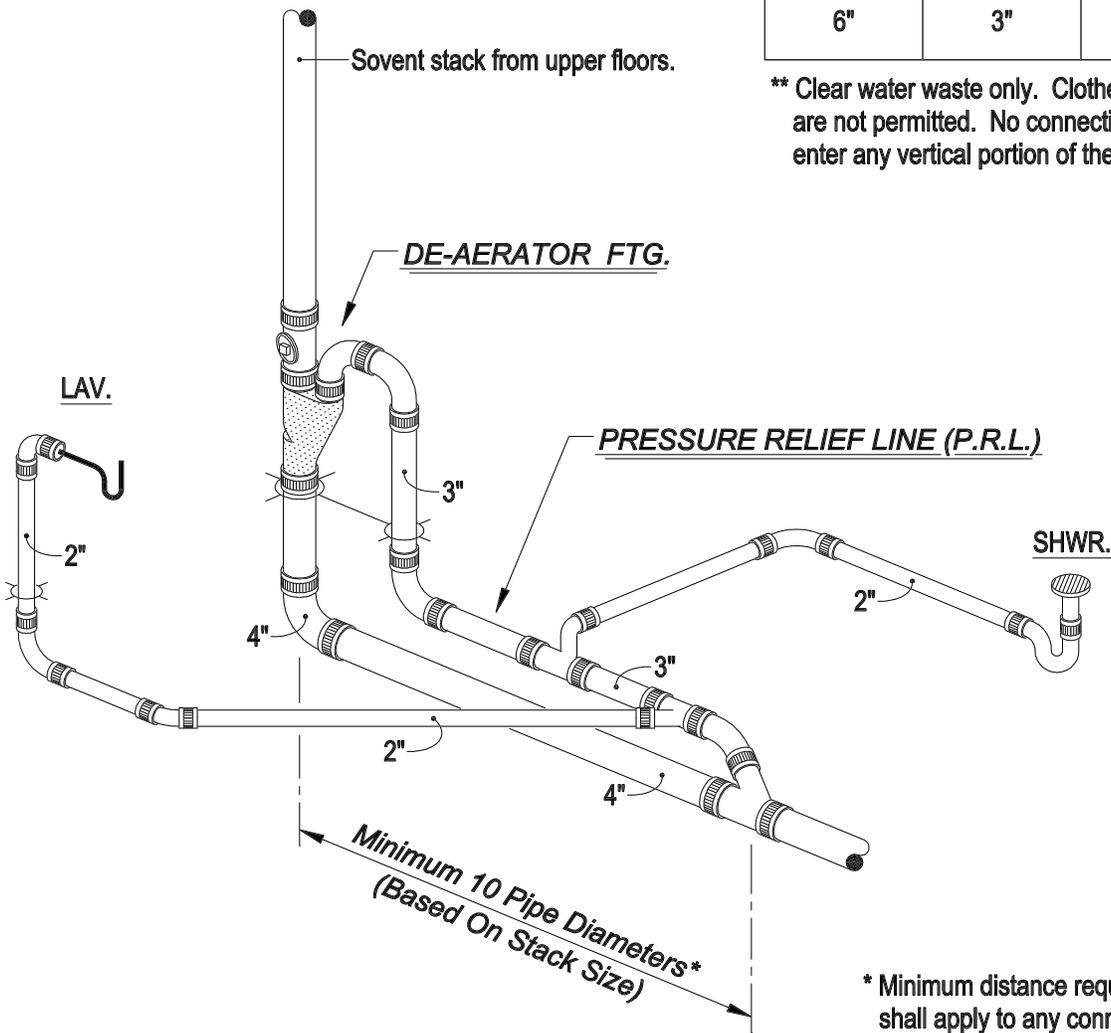
See Table "C" for horizontal Sovent drain sizing



**DRAWING NO. 10**  
**Base Of Stack Connections**

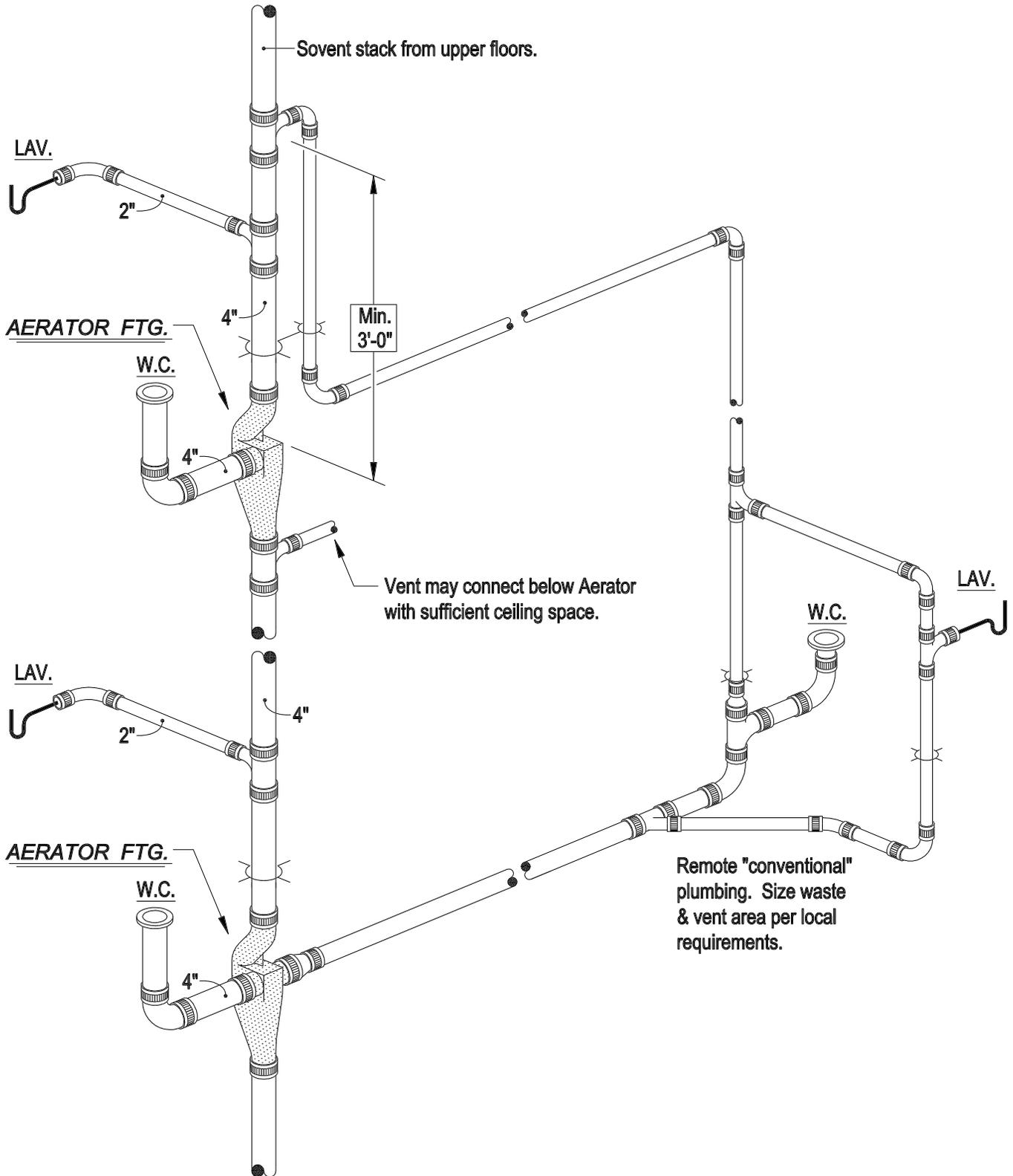
P.R.L. Size	Maximum Branch Size**	Maximum P.R.L. Dfu's
3"	2-1/2"	16
4"	3"	90
6"	3"	90

\*\* Clear water waste only. Clothes washers are not permitted. No connections shall enter any vertical portion of the P.R.L.

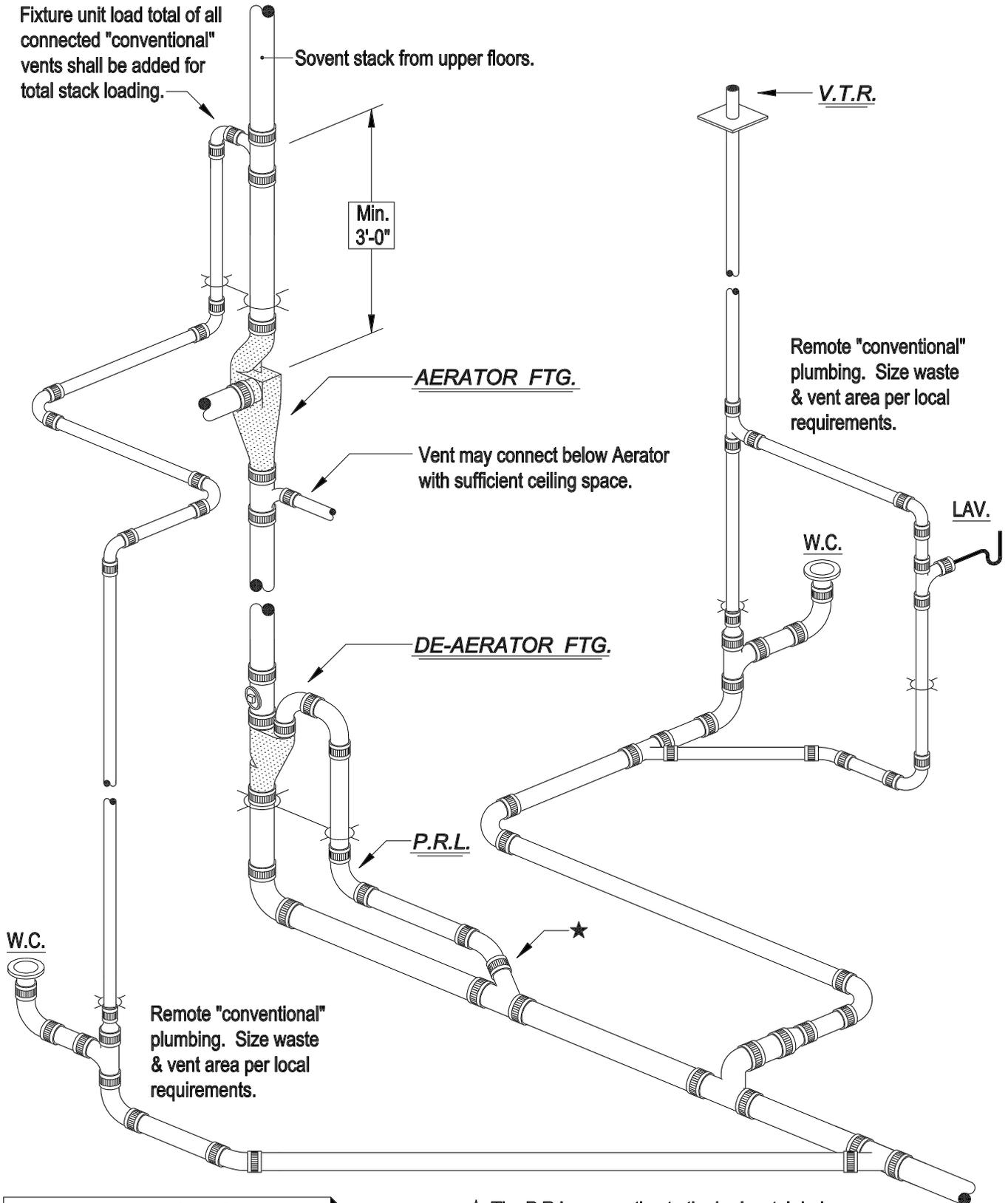


\* Minimum distance requirements shall apply to any connection into the horizontal drain.

**DRAWING NO. 11**  
**Branch Connections To P.R.L.**

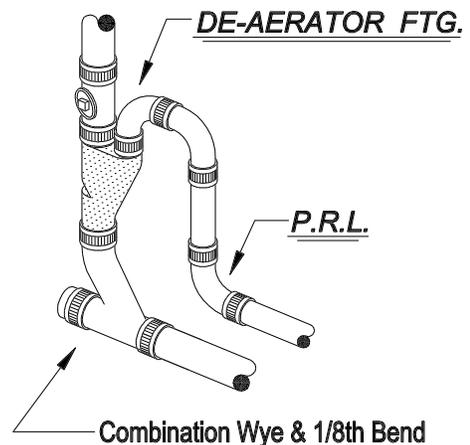
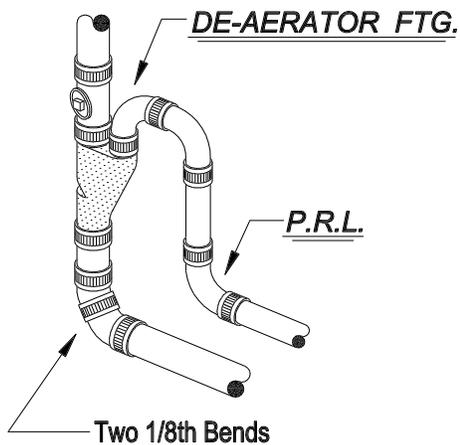
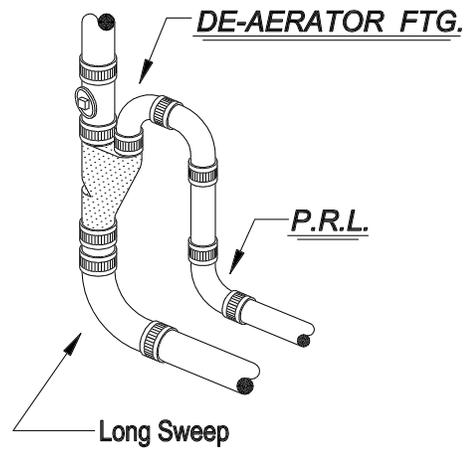
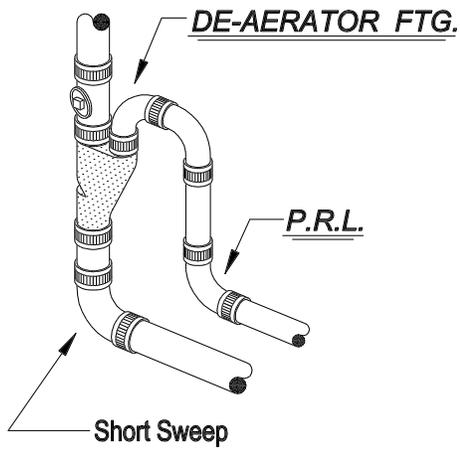
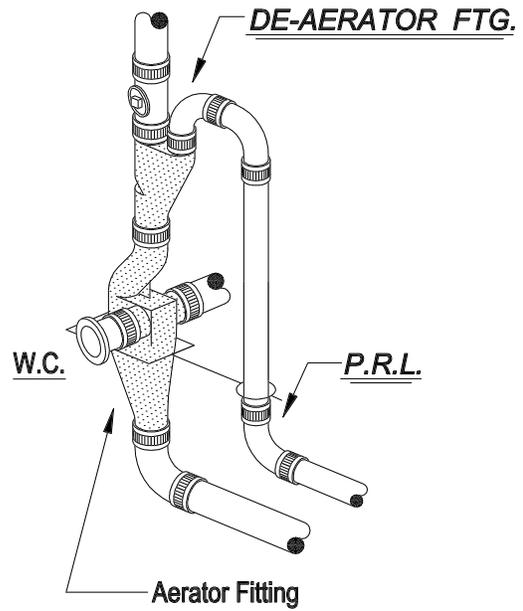
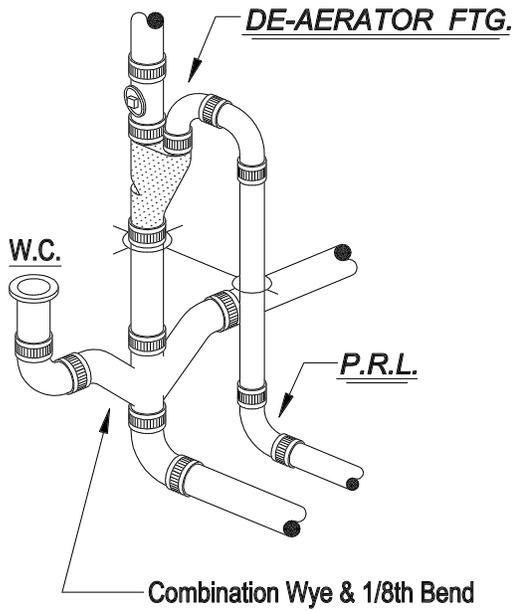


**DRAWING NO. 12**  
*Interim Level Remote Plumbing*



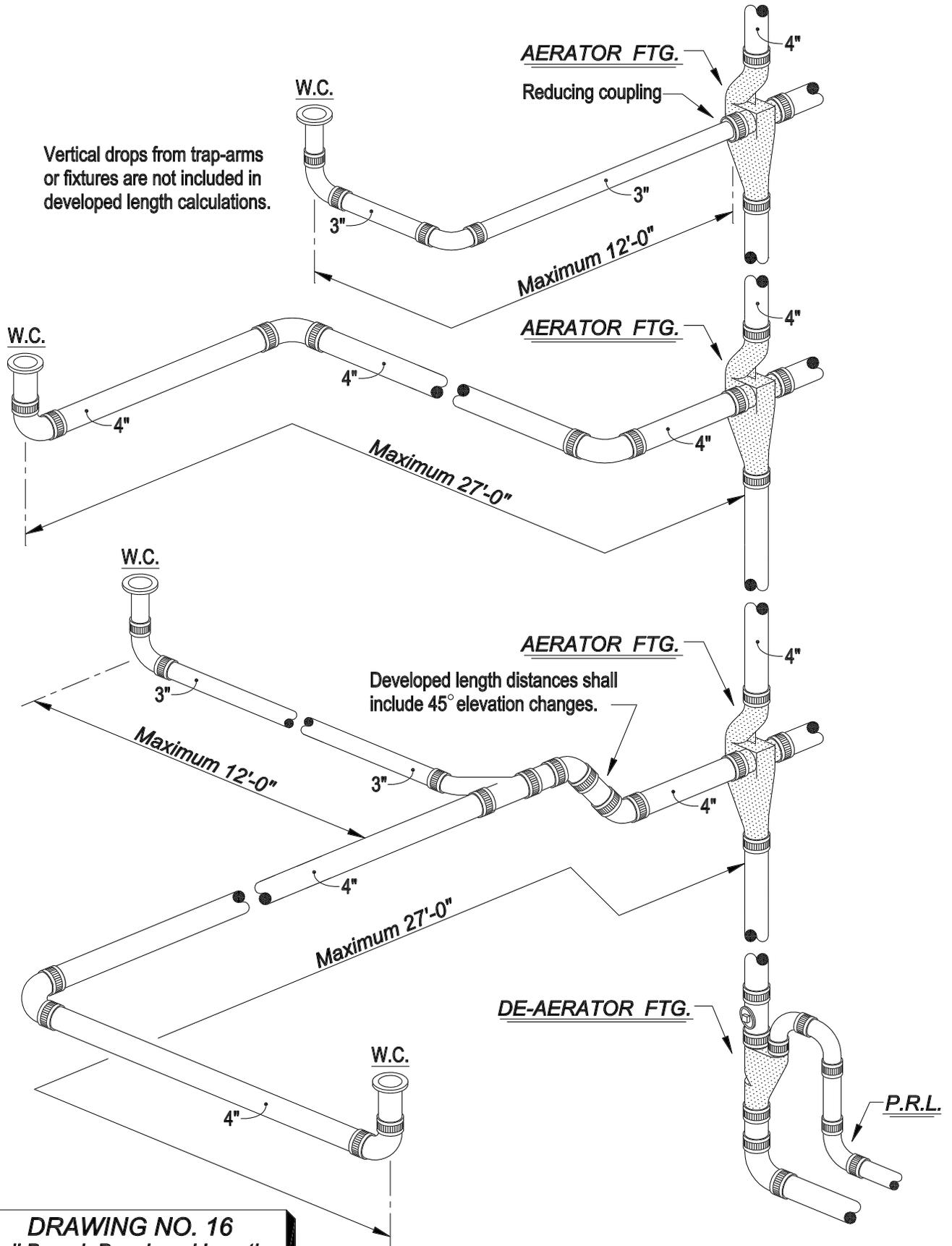
**DRAWING NO. 13**  
**"Conventional" Vent Connections**

★ The P.R.L. connection to the horizontal drain terminates the Sovent system.



**DRAWING NO. 14**  
**De-aerator Transition Details**



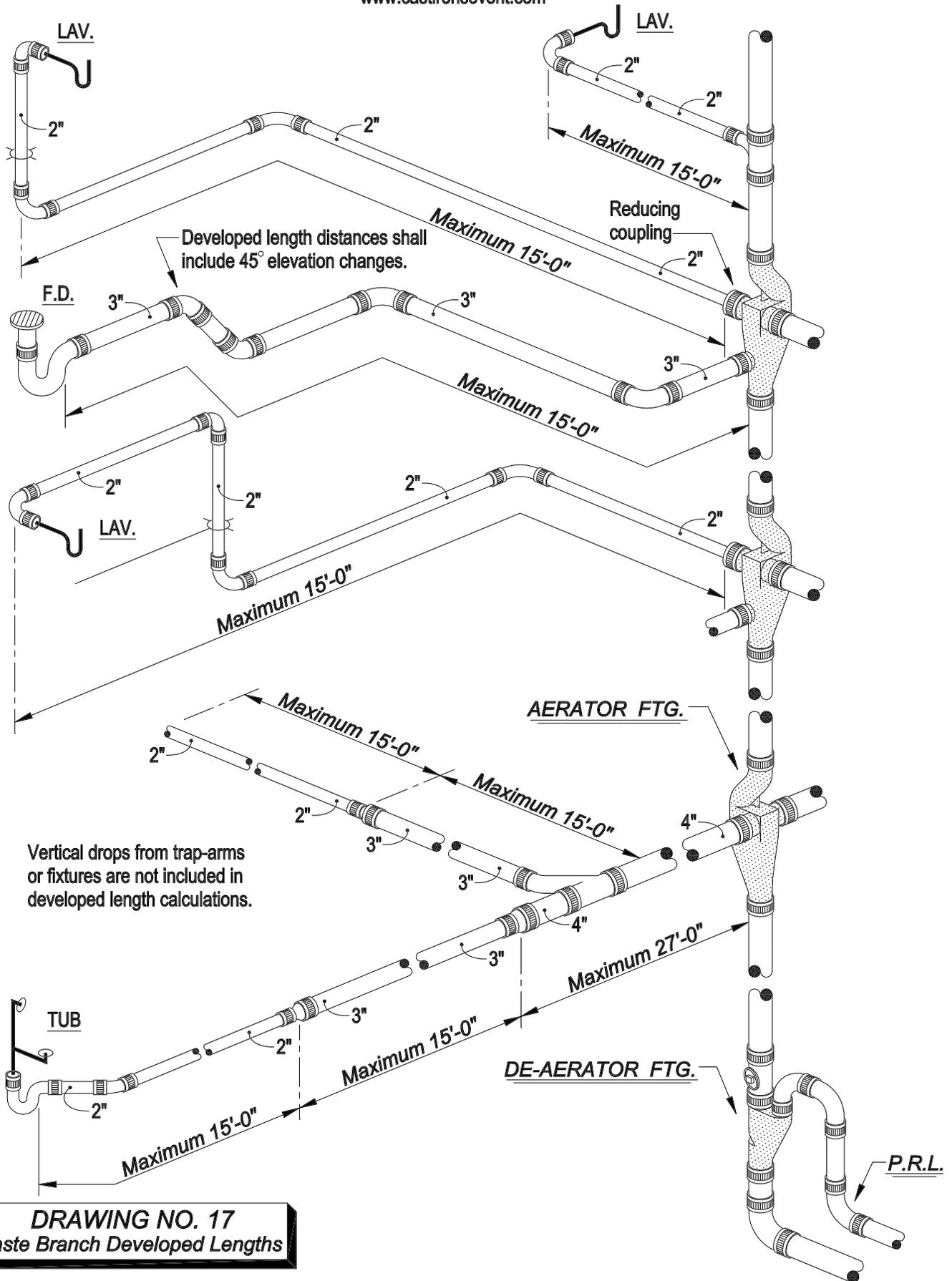


**DRAWING NO. 16**  
 Soil Branch Developed Lengths

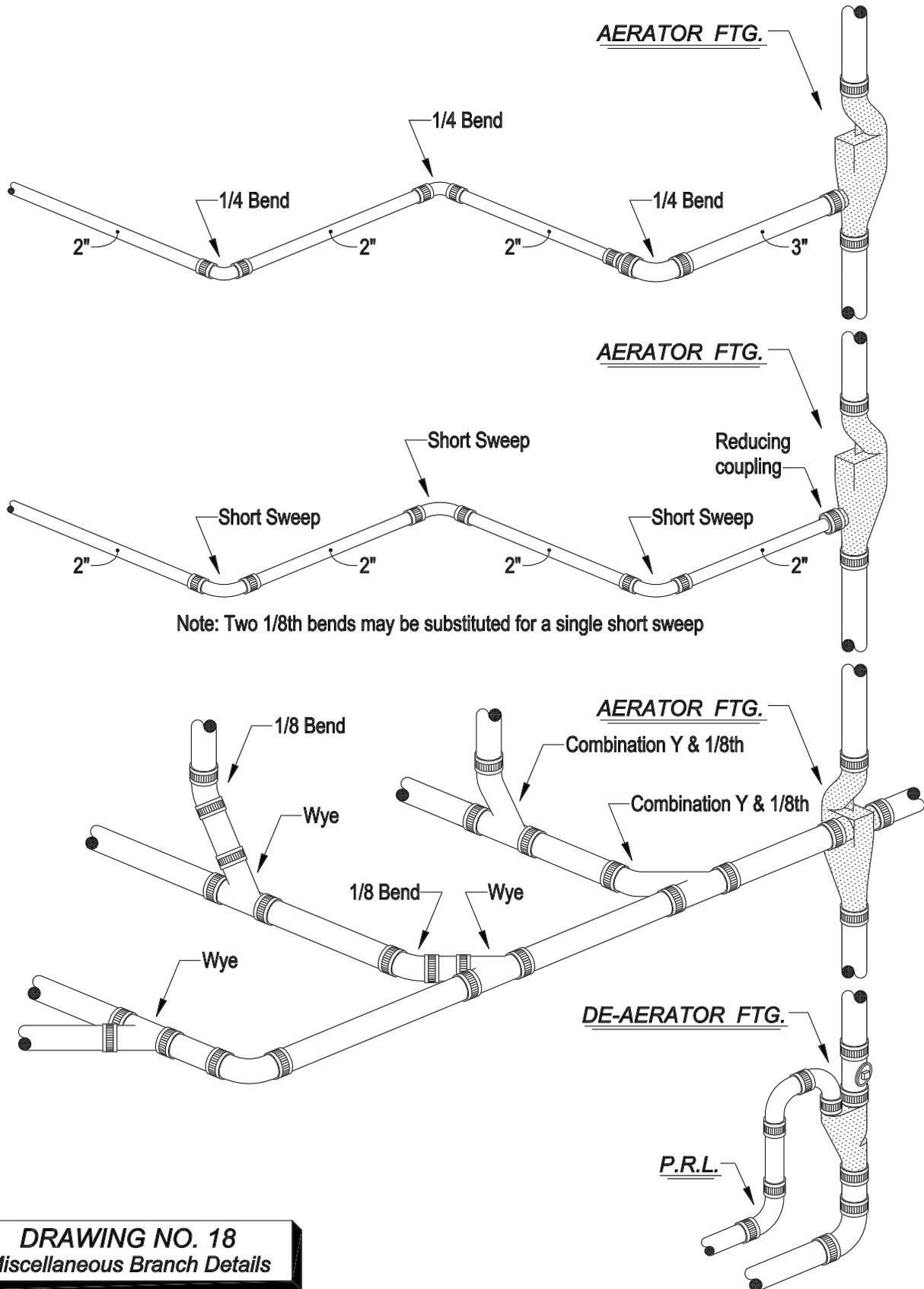
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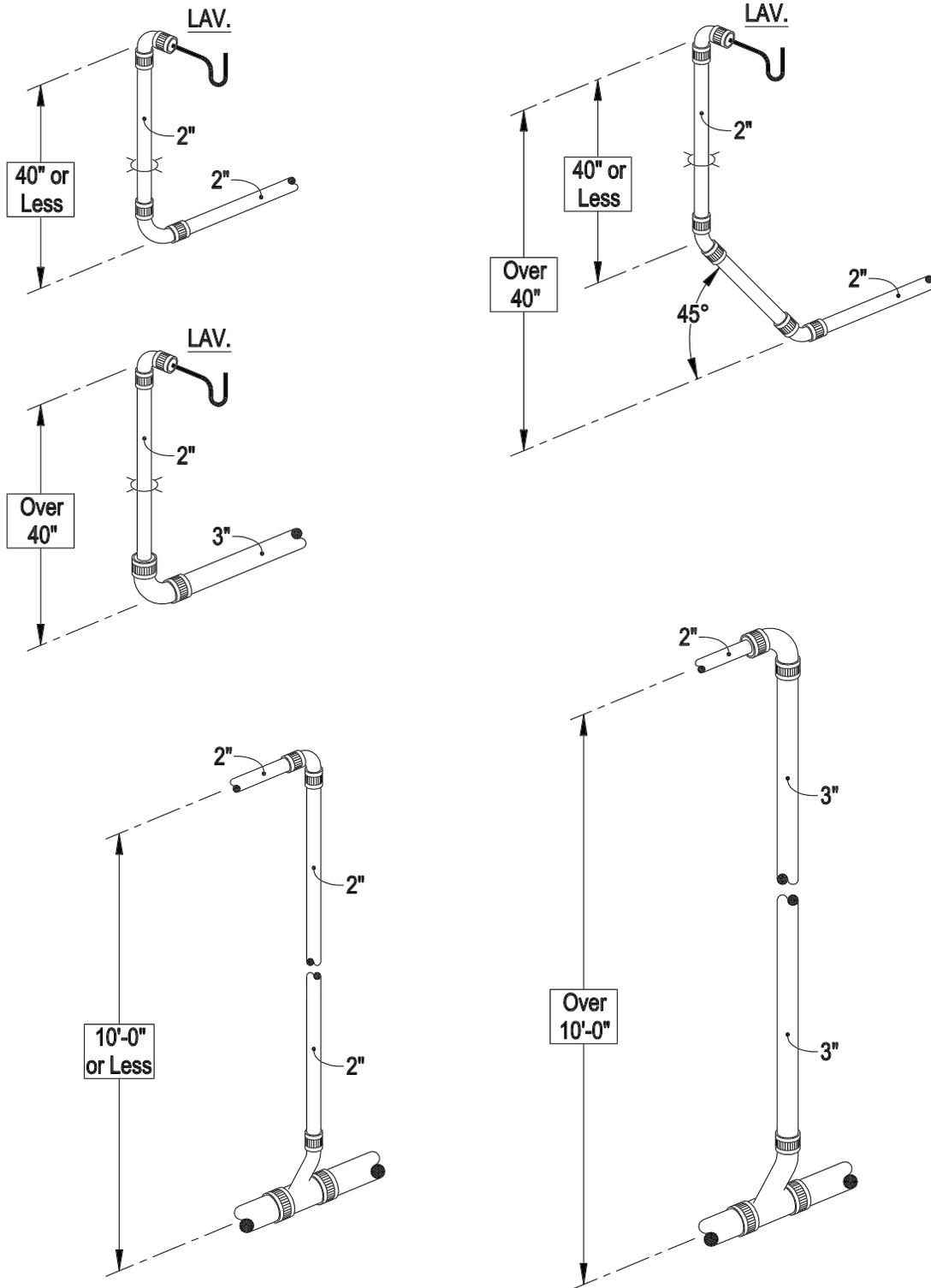
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**DRAWING NO. 17**  
Waste Branch Developed Lengths



**DRAWING NO. 18**  
*Miscellaneous Branch Details*

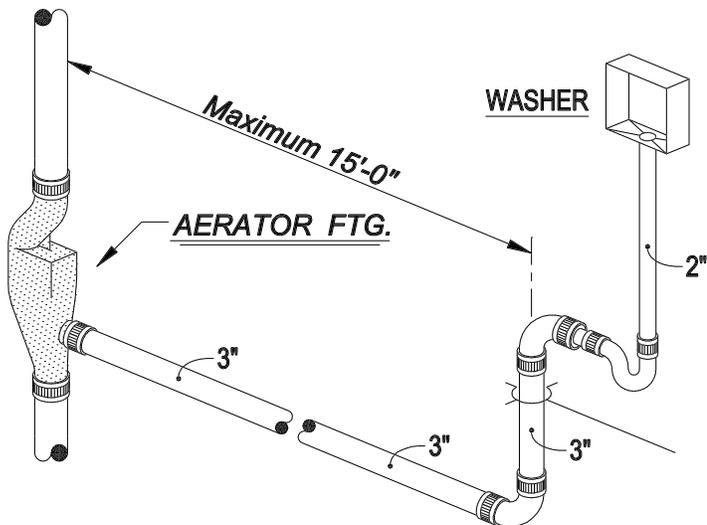
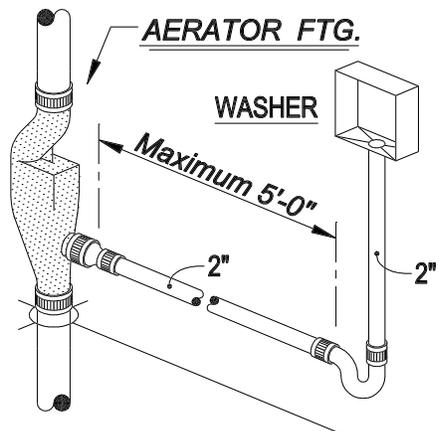
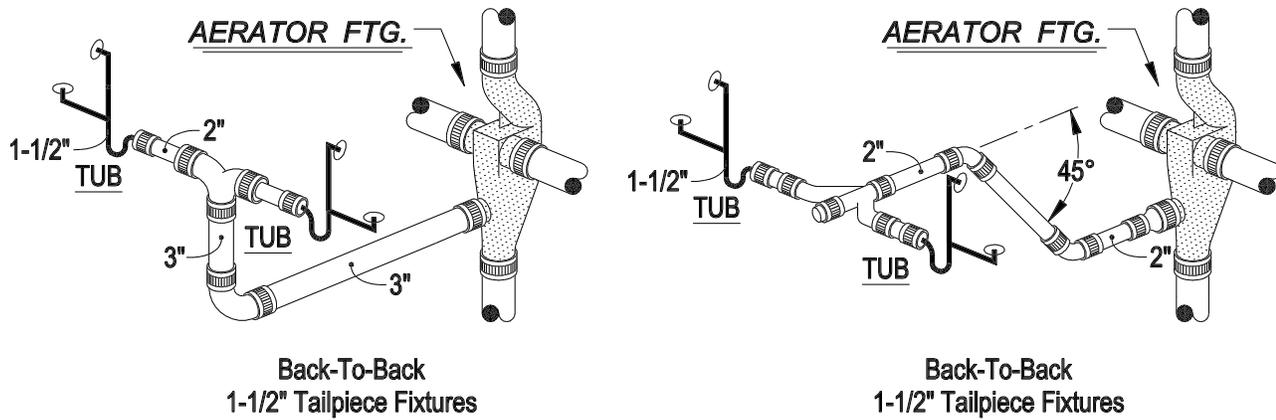
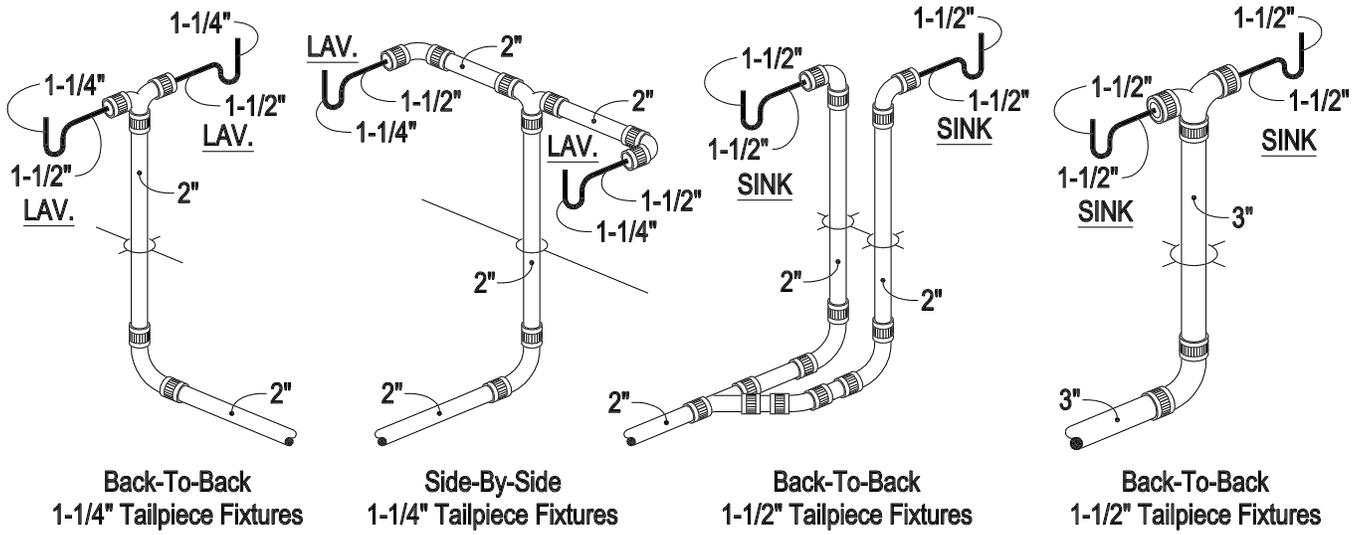


**DRAWING NO. 19**  
*Branch Sizing - Vertical Drops*

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**DRAWING NO. 20**  
 Miscellaneous Branch Details

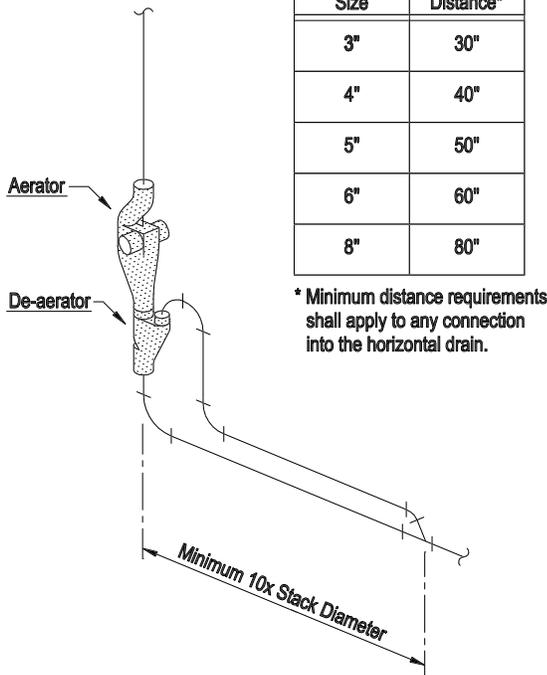
SUPPLEMENTAL ILLUSTRATIONS OF CAST IRON SOVENT®  
SYSTEM RULES

The following pages are to be used for interpretation and clarity of the written rules listed on the preceding pages. The written rules shall take precedence over all illustrations. All possible scenarios are not covered by these illustrations. Designs and conditions not shown may require approval by the manufacturer.

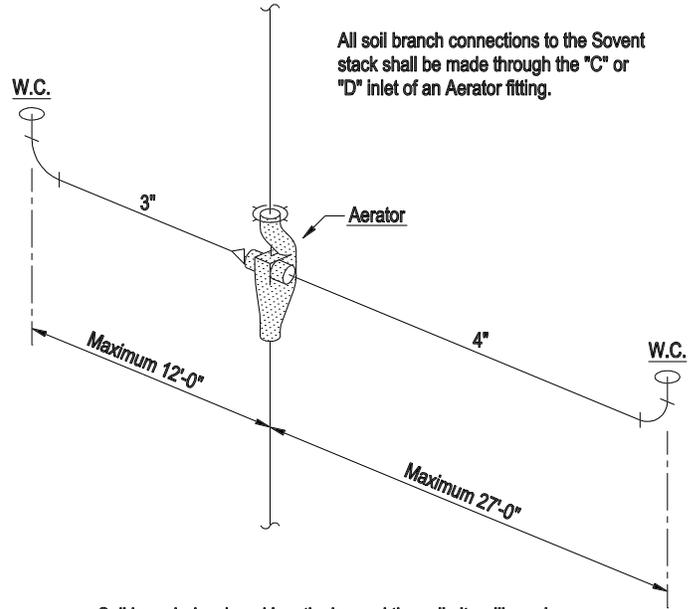
Pressure Relief Line – Length and Sizing .....	Drawing A-1
Soil Branch Developed Length.....	Drawing A-2
Waste Branch Developed Length .....	Drawing A-3
Base of Stack Information .....	Drawing A-4
Base of Stack Minimum Elevations.....	Drawing A-5
Base of Stack Branch Connections.....	Drawing A-6
Branch Details.....	Drawing A-7
Stack Offset Method “A”.....	Drawing A-8
Stack Offset Method “B”.....	Drawing A-9
Stack Offset Method “C”.....	Drawing A-10
Stack Detail – General Branch Connections.....	Drawing A-11
Stack Detail – Floor Mount Bottom Outlet W.C.....	Drawing A-12
Stack Detail – Floor Mount Back Outlet W.C.....	Drawing A-13
Stack Detail – Wall Hung W.C.....	Drawing A-14
Stack Detail – Miscellaneous W.C. Connections .....	Drawing A-15
Stack Detail – Wall Hung W.C. Office Battery.....	Drawing A-16
Stack Detail – Floor Mount W.C. Office Battery .....	Drawing A-17
Stack Detail – Lavatory Connections .....	Drawing A-18
Stack Detail – Hotel/Apartment Bathroom Connections.....	Drawings A-19 thru A-28
Stack Detail – Miscellaneous Fixture Connections .....	Drawing A-29
Branch Sizing – Trap Arm & Tailpiece Assemblies .....	Drawing A-30
Stack Sizing – Multiple Horizontal Stack Offsets.....	Drawing A-31
Vent Sizing – Multiple Vent Header Collection Method.....	Drawing A-32

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Sovent Stack Size	Minimum Distance*
3"	30"
4"	40"
5"	50"
6"	60"
8"	80"

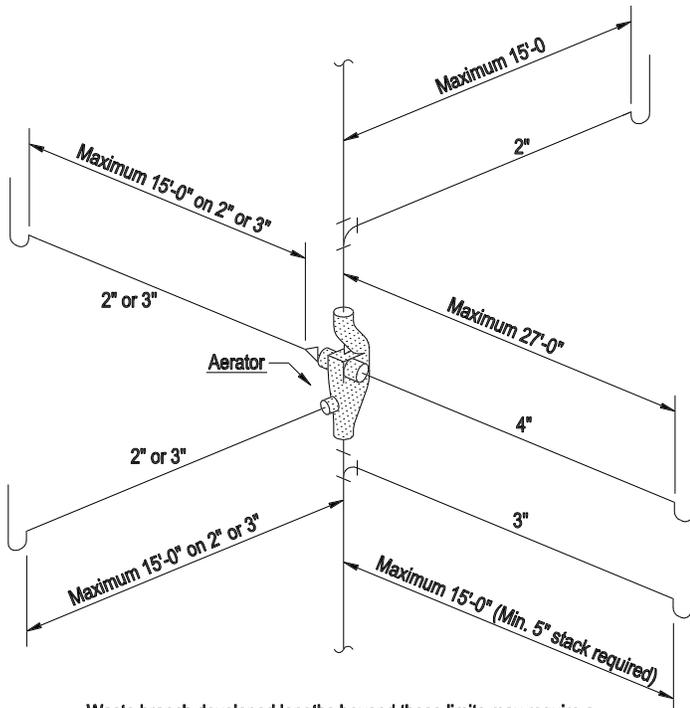


**A-1**  
**MINIMUM P.R.L. DISTANCES**



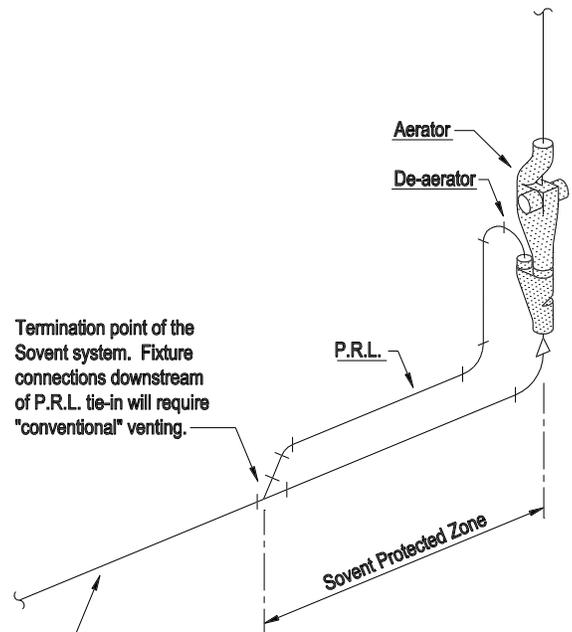
Soil branch developed lengths beyond these limits will require a "conventional" vent or a 2" Pressure Equalizing Line. The vent header or P.E.L. may connect to the Sovent stack a minimum of 3'-0" above the Aerator fitting.

**A-2**  
**SOIL BRANCH DEVELOPED LENGTH**



Waste branch developed lengths beyond these limits may require a "conventional" vent or a Pressure Equalizing Line. The vent header or P.E.L. may connect to the Sovent stack a minimum of 3'-0" above the Aerator fitting. P.E.L. Sizing - 4" waste / 2" P.E.L. 3" waste / 1-1/2" P.E.L. - 2" waste / 1-1/4" P.E.L.

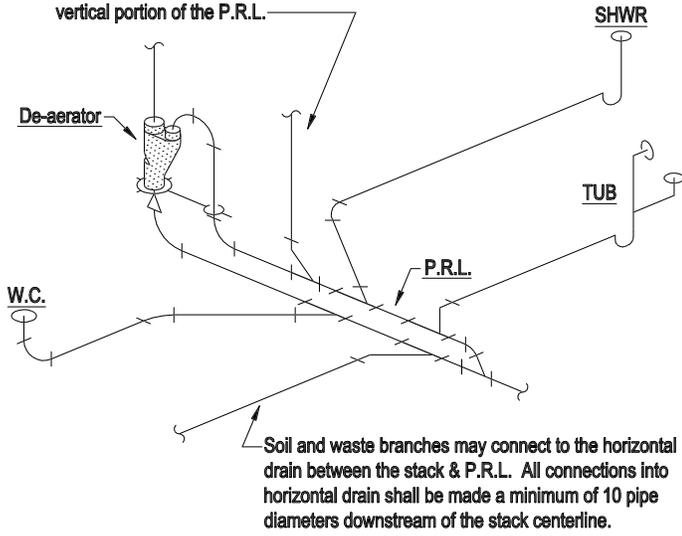
**A-3**  
**WASTE BRANCH DEVELOPED LENGTH**



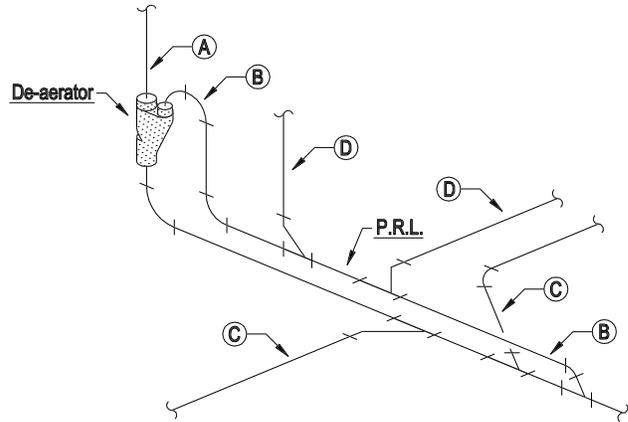
This portion of piping is considered to be "conventional" plumbing and shall be sized by the prevailing Local Plumbing Code or CISDM #802 - Table "C", whichever is applicable. Fixture unit values shall be based on data found in CISDM #802 - Table "A" or "A-1".

**A-4**  
**BASE OF SOVENT STACK INFORMATION**

Waste branches one pipe size smaller than P.R.L. may connect to P.R.L. Soil branches and washing machines are not permitted. No connections permitted into any vertical portion of the P.R.L.



Sovent Stack Size - "A"	P.R.L. Size "B"	Soil or Waste Max. Size - "C"	Waste Size Max. - "D"
3"	3"	4"	2-1/2"
4"	3"	4"	2-1/2"
5"	4"	4"	3"
6"	4"	4"	3"
8"	6"	4"	3"



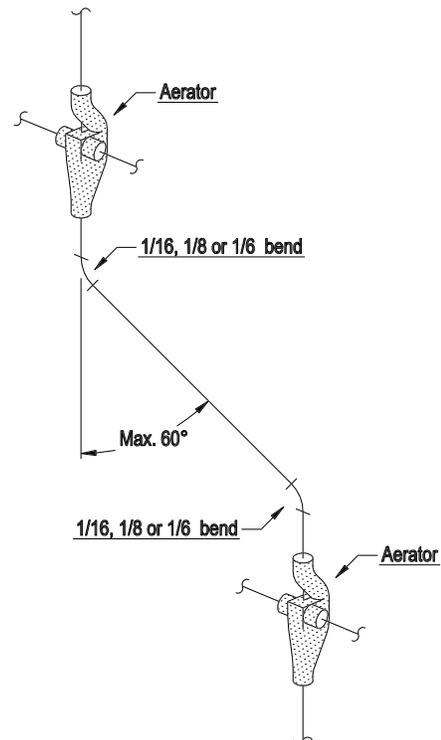
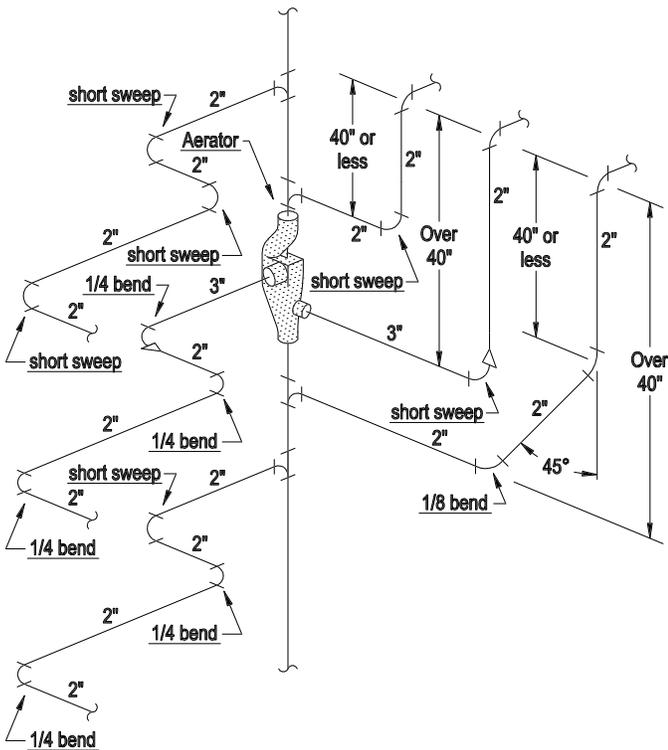
Rough-in height limitations can be reduced by eliminating the Aerator fitting and connecting the lower level fixtures into the horizontal portion of the Sovent system as shown. The De-aerator fitting may be installed above the finish floor providing it remains within 5'-0" of the horizontal drain.

**A-5**

**BASE OF STACK MINIMUM ELEVATION PRACTICES**

**A-6**

**BASE OF STACK BRANCH CONNECTIONS**

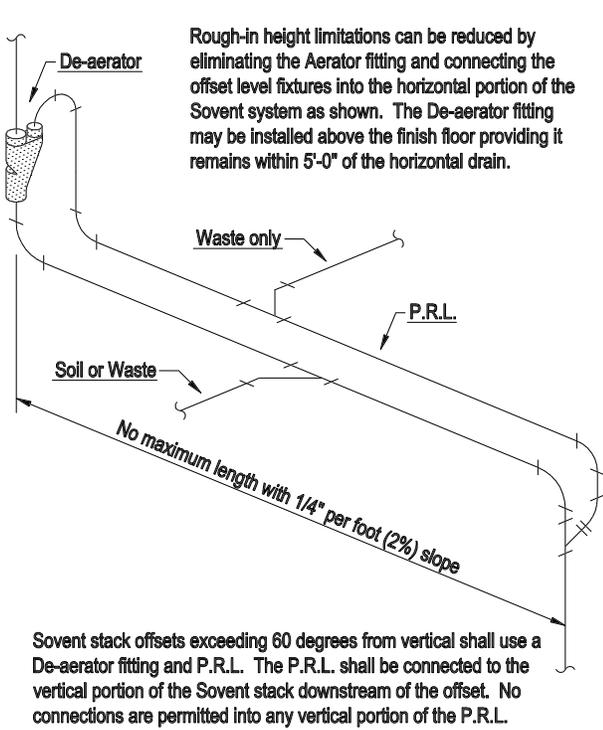


**A-7**

**BRANCH DIRECTION / DISTANCE SIZING CHANGES**

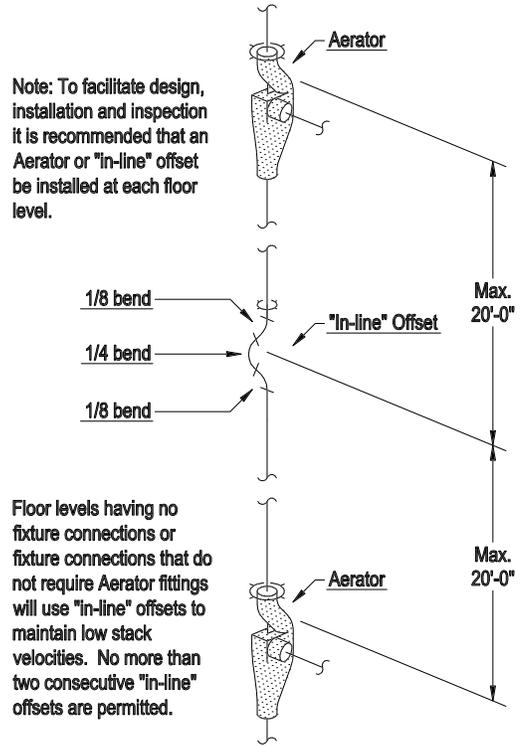
**A-8**

**SOVENT STACK OFFSET - METHOD "A"**



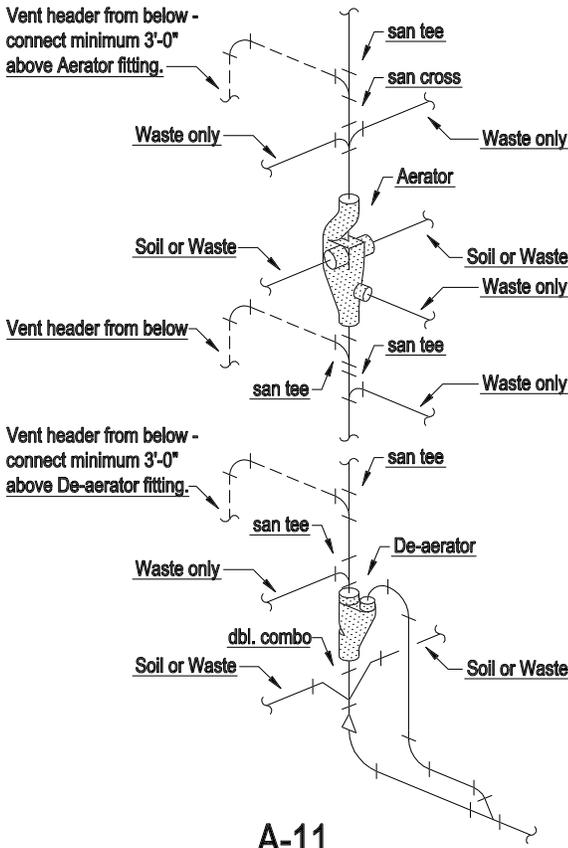
**A-9**

**SOVENT STACK OFFSET - METHOD "B"**



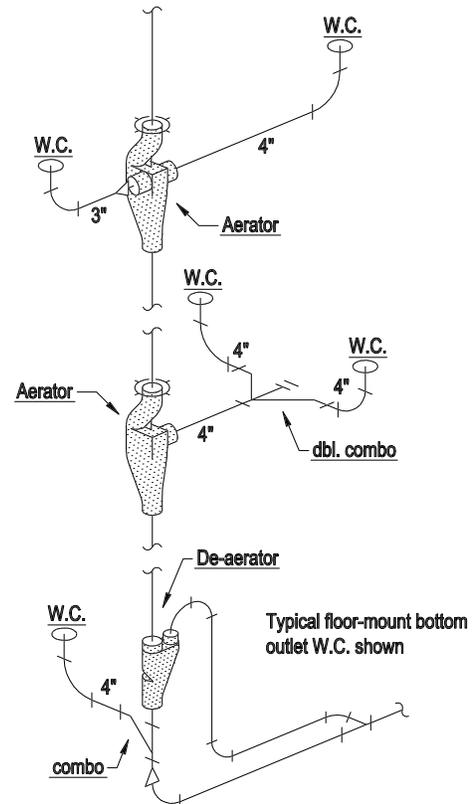
**A-10**

**SOVENT STACK OFFSET - METHOD "C"**



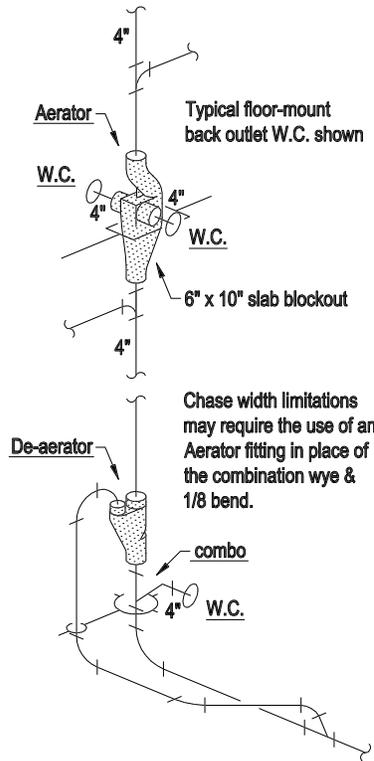
**A-11**

**PERMITTED SOVENT STACK CONNECTIONS**



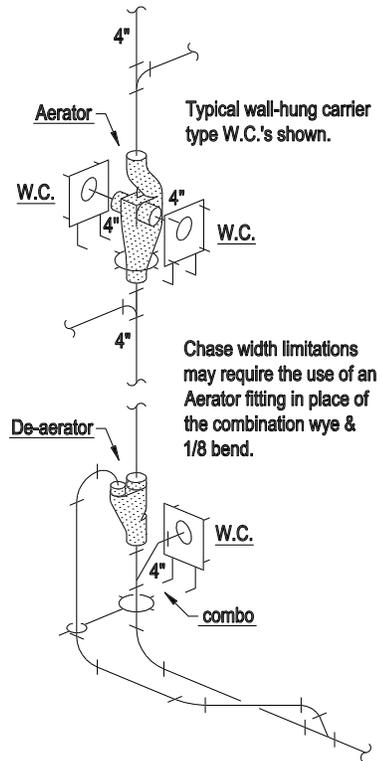
**A-12**

**SOVENT STACK W.C. CONNECTIONS - METHOD "A"**



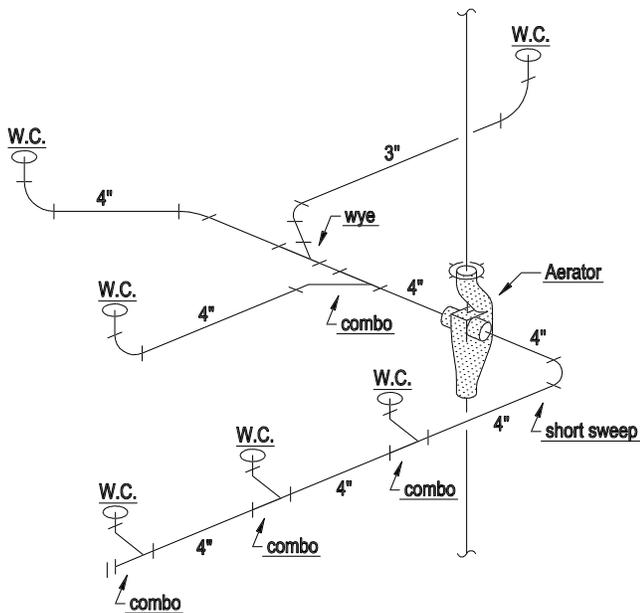
**A-13**

**SOVENT STACK W.C. CONNECTIONS - METHOD "B"**



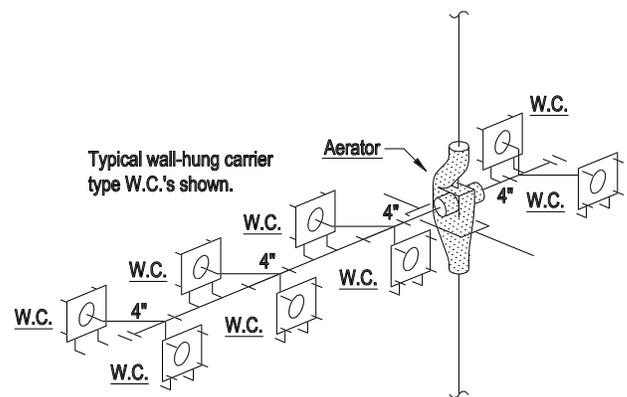
**A-14**

**SOVENT STACK W.C. CONNECTIONS - METHOD "C"**



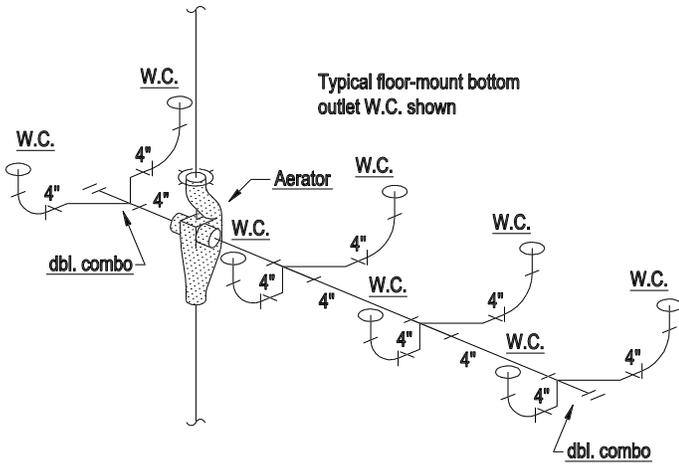
**A-15**

**SOVENT STACK W.C. CONNECTIONS - MISCELLANEOUS**



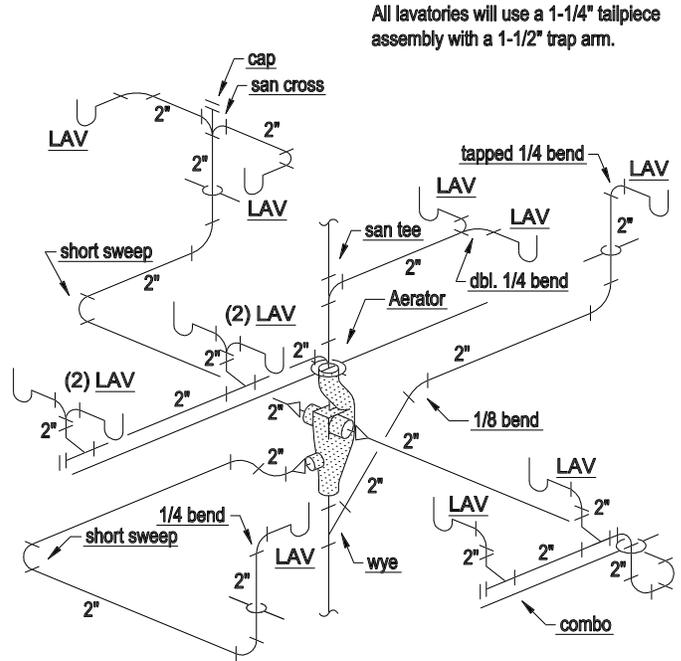
**A-16**

**SOVENT STACK W.C. CONNECTIONS - OFFICE BLDG.**



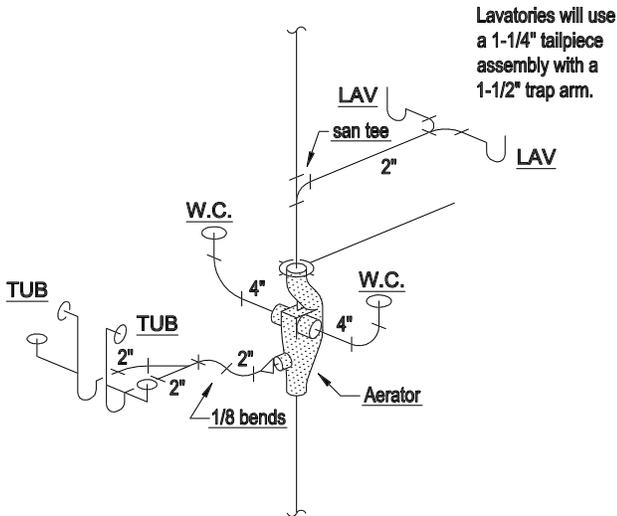
**A-17**

**SOVENT STACK W.C. CONNECTIONS - OFFICE BLDG.**



**A-18**

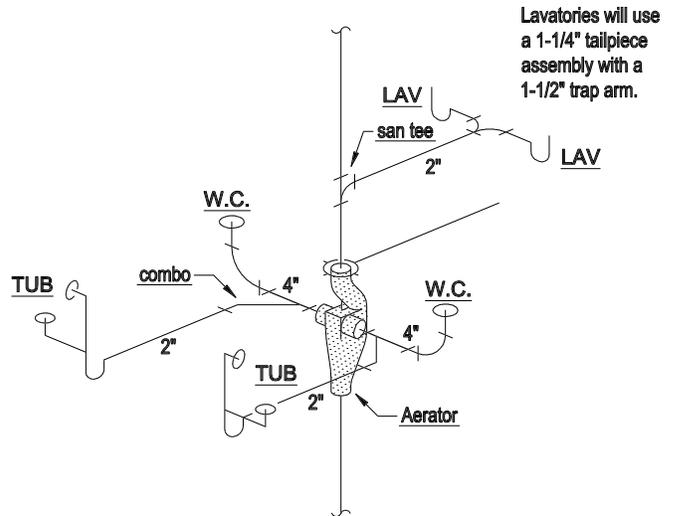
**SOVENT STACK LAVATORY CONNECTIONS**



Back-to-back installation shown. Single bath unit is similar.

**A-19**

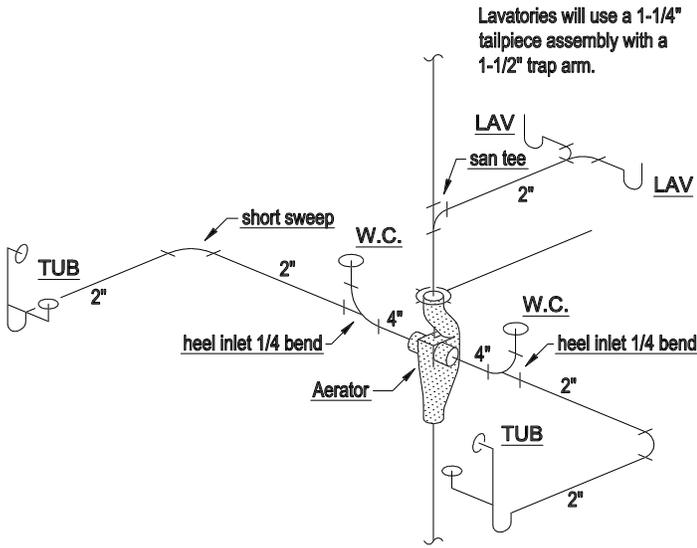
**SOVENT STACK BATHROOM CONNECTIONS**



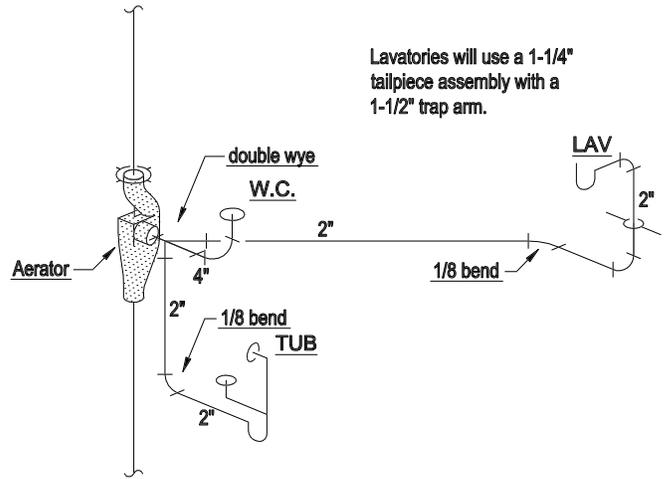
Back-to-back installation shown. Single bath unit is similar.

**A-20**

**SOVENT STACK BATHROOM CONNECTIONS**



Back-to-back installation shown. Single bath unit is similar.



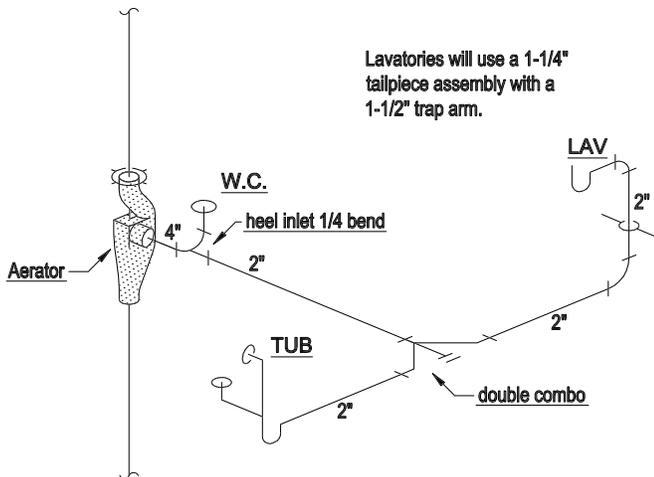
Single bath installation shown. Back-to-back unit is similar.

**A-21**

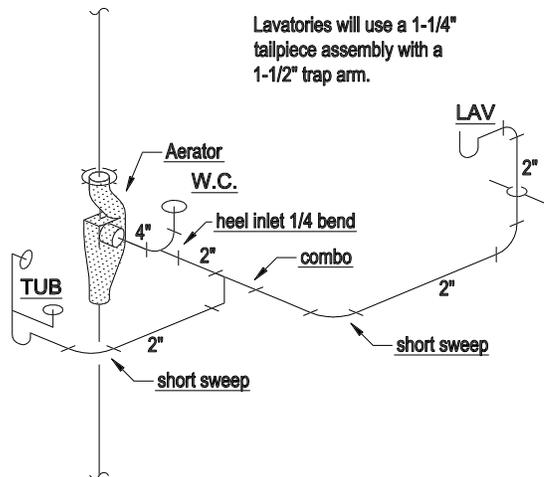
**SOVENT STACK BATHROOM CONNECTIONS**

**A-22**

**SOVENT STACK BATHROOM CONNECTIONS**



Single bath installation shown. Back-to-back unit is similar.



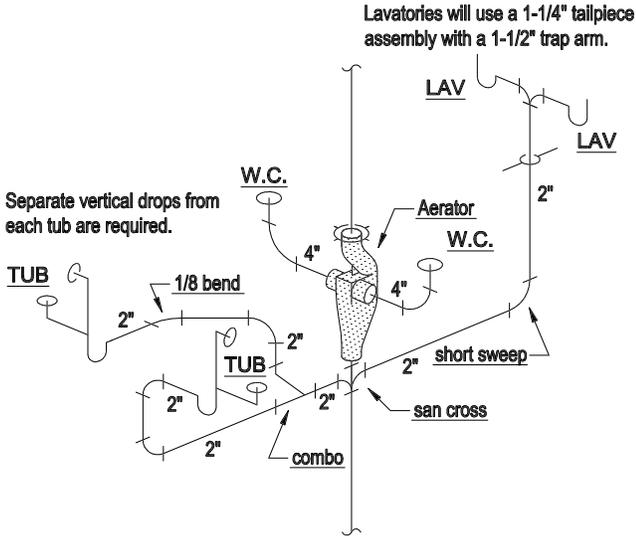
Single bath installation shown. Back-to-back unit is similar.

**A-23**

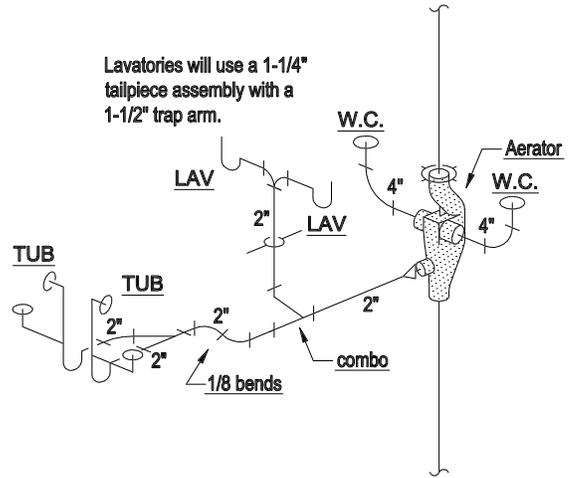
**SOVENT STACK BATHROOM CONNECTIONS**

**A-24**

**SOVENT STACK BATHROOM CONNECTIONS**



Back-to-back installation shown. Single bath unit is similar.



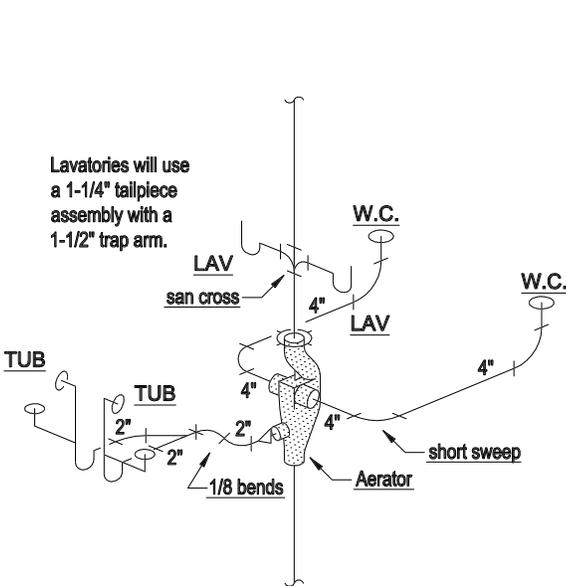
Back-to-back installation shown. Single bath unit is similar.

**A-25**

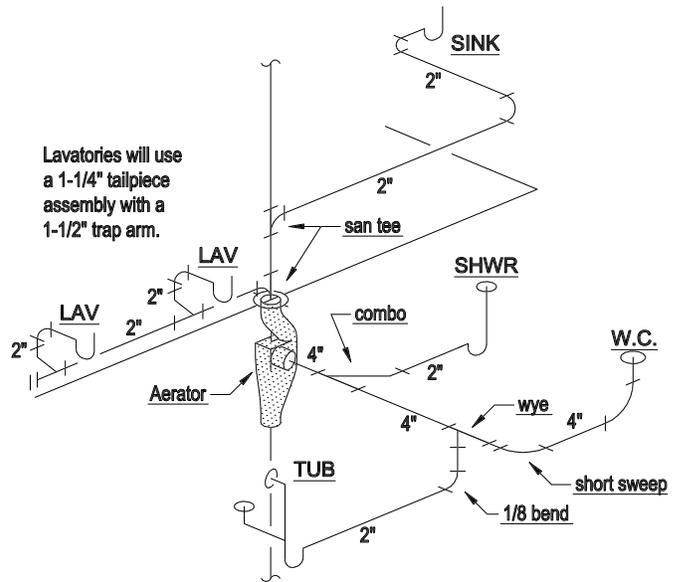
**SOVENT STACK BATHROOM CONNECTIONS**

**A-26**

**SOVENT STACK BATHROOM CONNECTIONS**



Back-to-back installation shown. Single bath unit is similar.



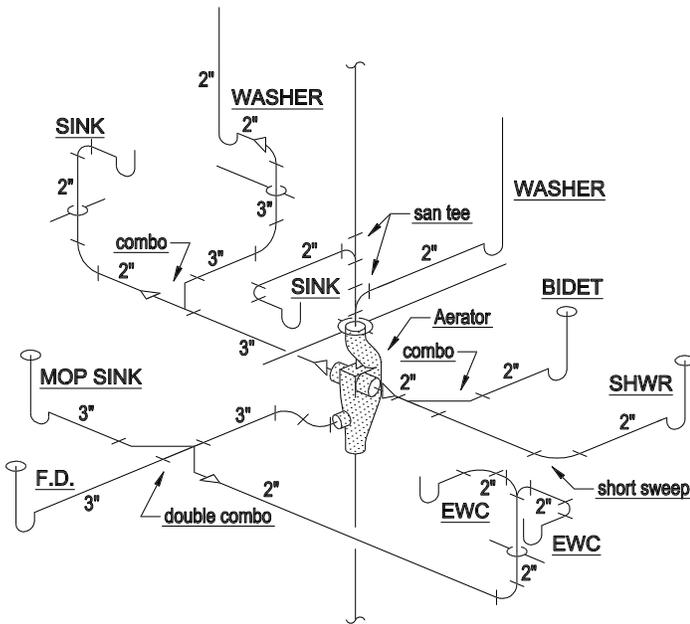
Single bath installation shown. Back-to-back unit is similar.

**A-27**

**SOVENT STACK BATHROOM CONNECTIONS**

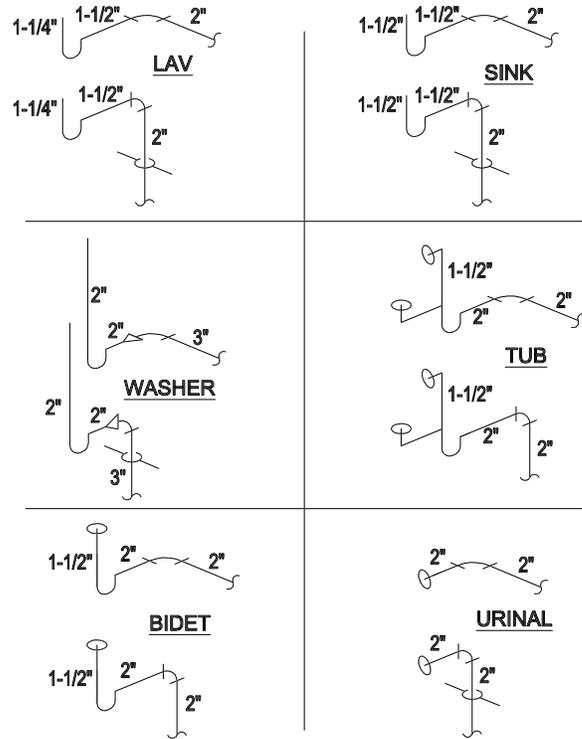
**A-28**

**SOVENT STACK BATHROOM CONNECTIONS**



**A-29**

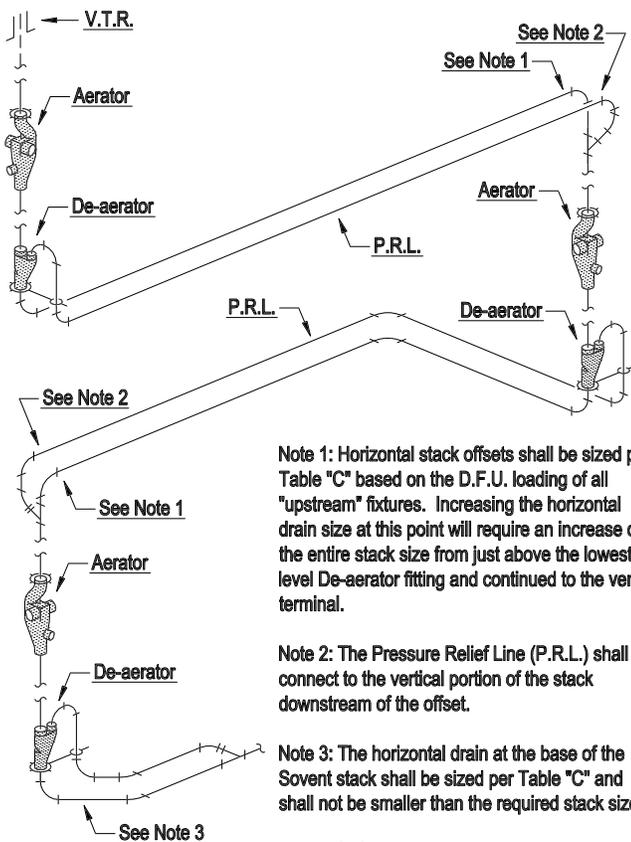
**MISCELLANEOUS FIXTURE CONNECTIONS**



Note: All branch piping located in ceiling or wall areas will be a minimum of 2\"/>

**A-30**

**BRANCH, TRAP-ARM & TAILPIECE SIZES**



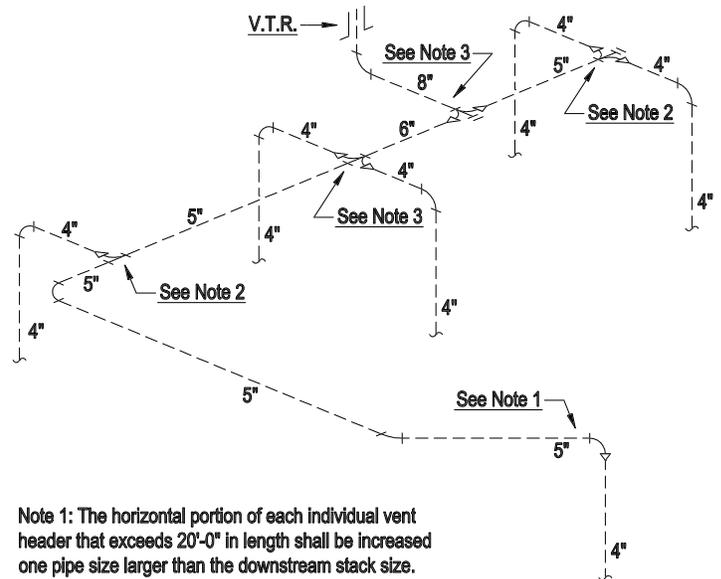
**Note 1:** Horizontal stack offsets shall be sized per Table "C" based on the D.F.U. loading of all "upstream" fixtures. Increasing the horizontal drain size at this point will require an increase of the entire stack size from just above the lowest level De-aerator fitting and continued to the vent terminal.

**Note 2:** The Pressure Relief Line (P.R.L.) shall connect to the vertical portion of the stack downstream of the offset.

**Note 3:** The horizontal drain at the base of the Sovent stack shall be sized per Table "C" and shall not be smaller than the required stack size.

**A-31**

**MULTIPLE OFFSET STACK SIZING REQUIREMENTS**



**Note 1:** The horizontal portion of each individual vent header that exceeds 20'-0" in length shall be increased one pipe size larger than the downstream stack size.

**Note 2:** The vent header from two combined vent headers shall be increased one pipe size larger than the largest individual vent. This increased sizing does not apply if previously made as noted above.

**Note 3:** Sizing for three or more combined vent headers is based on the cumulative D.F.U. total from each stack and capacities shown in the table at the right.

Vent Header Size	Maximum D.F.U. Load
5"	600
6"	1380
8"	3600

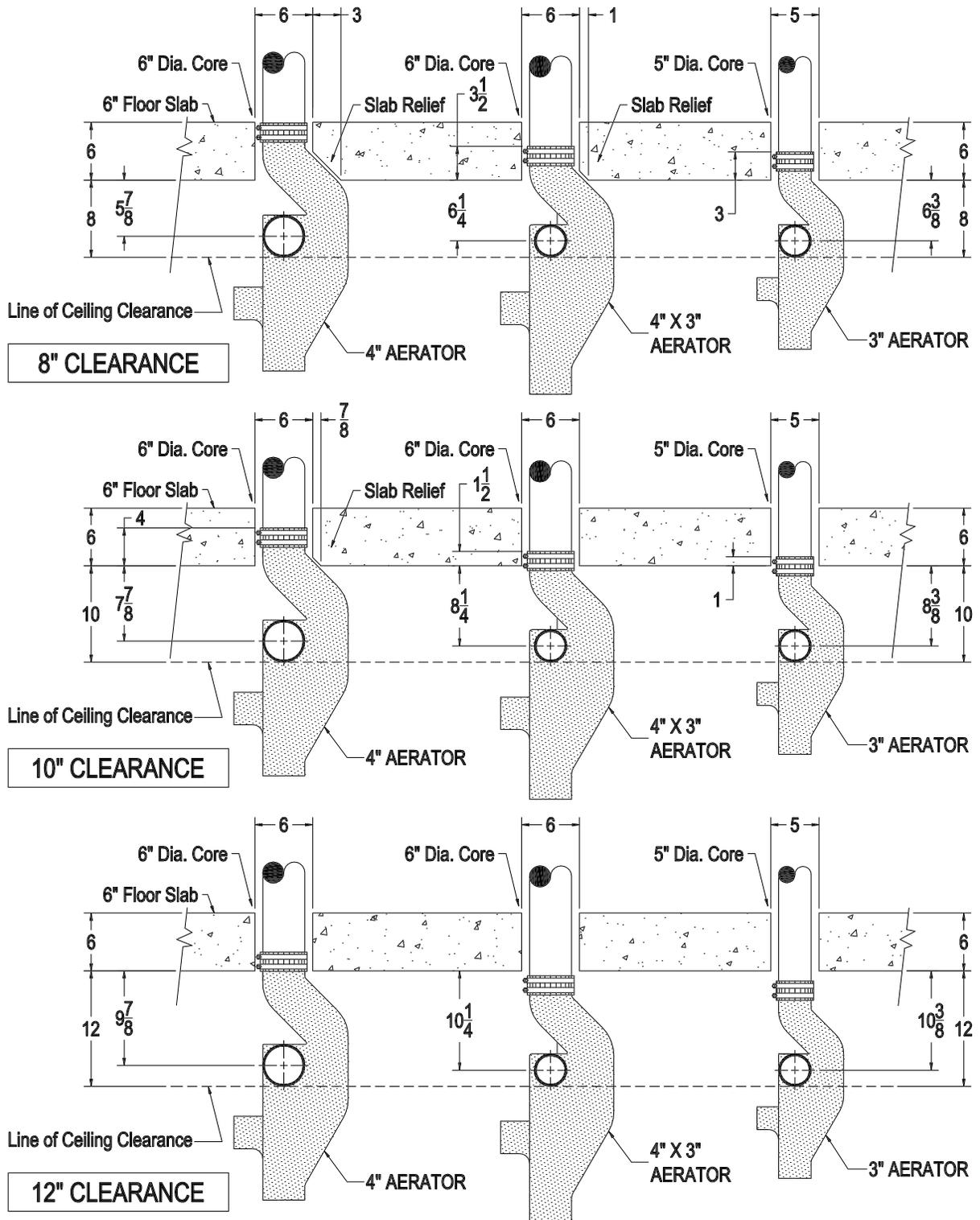
**A-32**

**MULTIPLE VENT HEADER SIZING REQUIREMENTS**

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## CAST IRON SOVENT® AERATOR ROUGH-IN / CEILING SPACE & SLEEVING

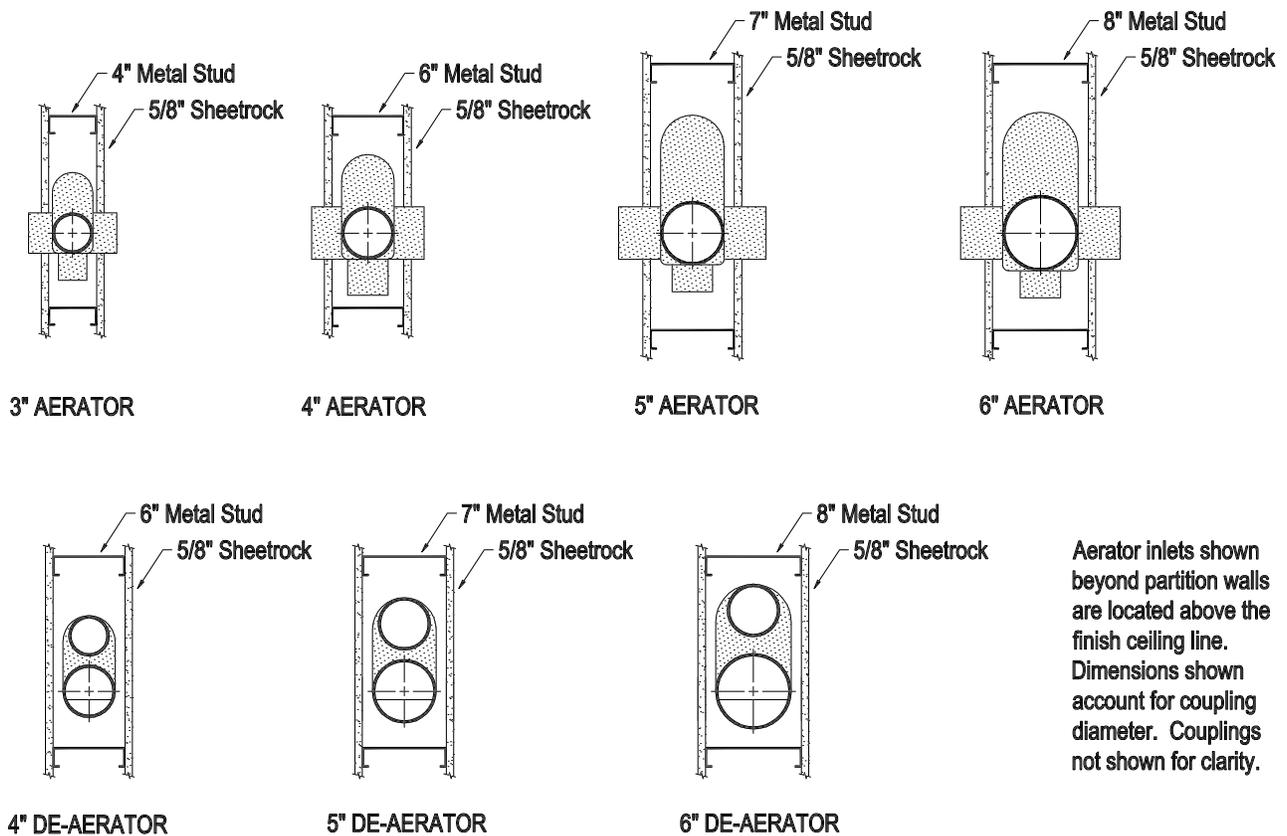
Cast Iron Sovent® can be adapted to most multi-story projects with a minimal amount of structural impact while reducing the space requirements for DWV systems. The available space created by dropped ceiling areas will alter the Aerator fitting location and resulting slab penetration. The following illustrations show various dimensional requirements for conditions commonly found in the construction market. Contact our office for assistance with conditions not shown.



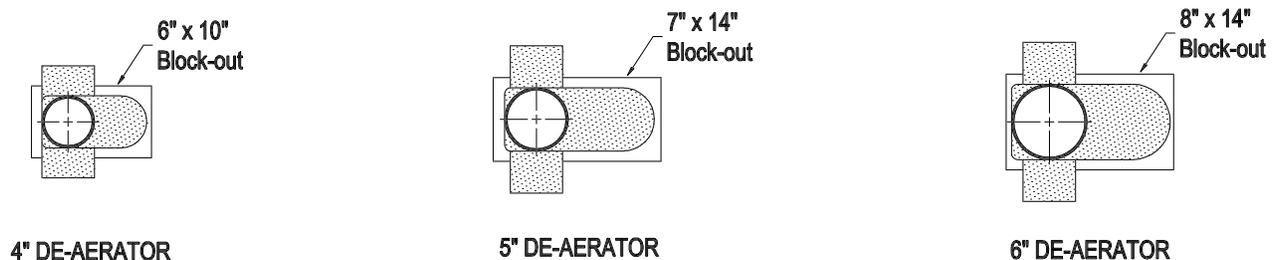
## CAST IRON SOVENT® FITTING ROUGH-IN / WALL SPACE & SLAB BLOCK-OUTS

Cast Iron Sovent® can be adapted to most multi-story projects with a minimal amount of structural impact while reducing the space requirements for DWV systems. The partition space required for a properly orientated Aerator or De-aerator fitting is equal to that of a nominal size drainage pipe. Rectangular slab block-outs allow for recessing the Aerator fitting to accommodate back-outlet and wall-hung fixtures. The following illustrations show various dimensional requirements for conditions commonly found in the construction market. Contact our office for assistance with conditions not shown.

### SUGGESTED PARTITION WALL DIMENSIONS



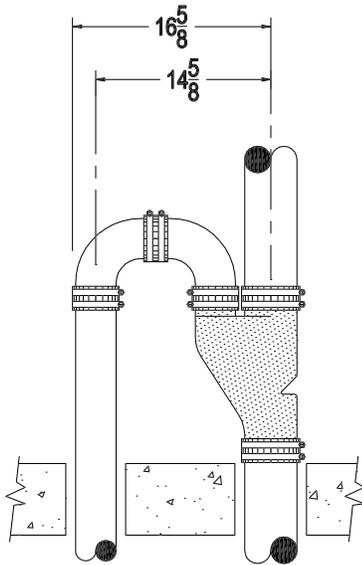
### SUGGESTED BLOCK-OUT DIMENSIONS / ABOVE FLOOR ROUGH-IN



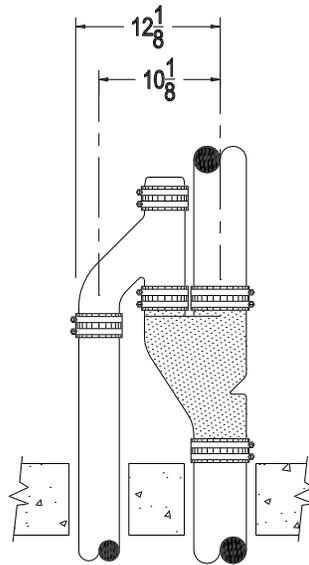
## CAST IRON SOVENT® DE-AERATOR ROUGH-IN / P.R.L. & CEILING SPACE

Cast Iron Sovent® can be adapted to most multi-story projects with a minimal amount of structural impact while reducing the space requirements for DWV systems. The P.R.L. connection method to the De-aerator fitting can be made with a variety of standard sanitary fittings to adapt to chase space conditions. The De-aerator fitting is often located above the finish floor to reduce the ceiling space requirements. The following illustrations show various dimensional requirements for conditions commonly found in the construction market. Contact our office for assistance with conditions not shown.

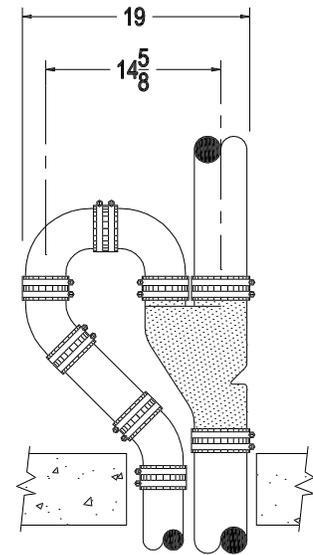
### SUGGESTED P.R.L. ROUGH-IN DIMENSIONS



**4" DE-AERATOR WITH 3" QUARTER BENDS**



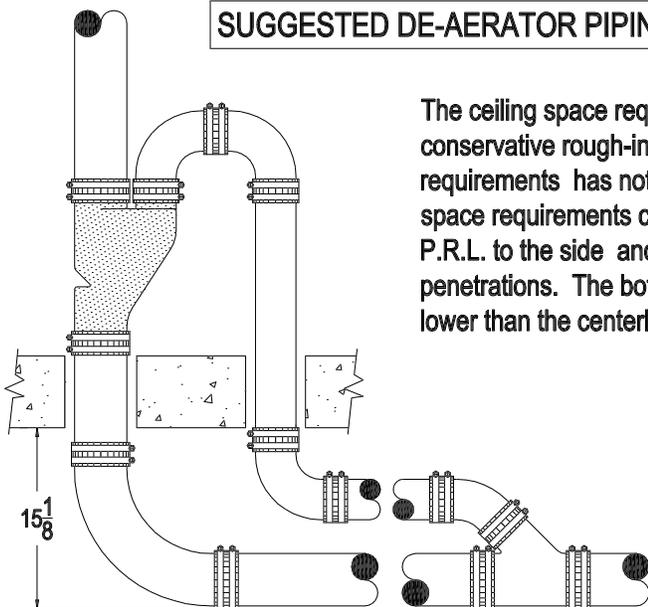
**4" DE-AERATOR WITH 3" UPRIGHT WYE & CAP**



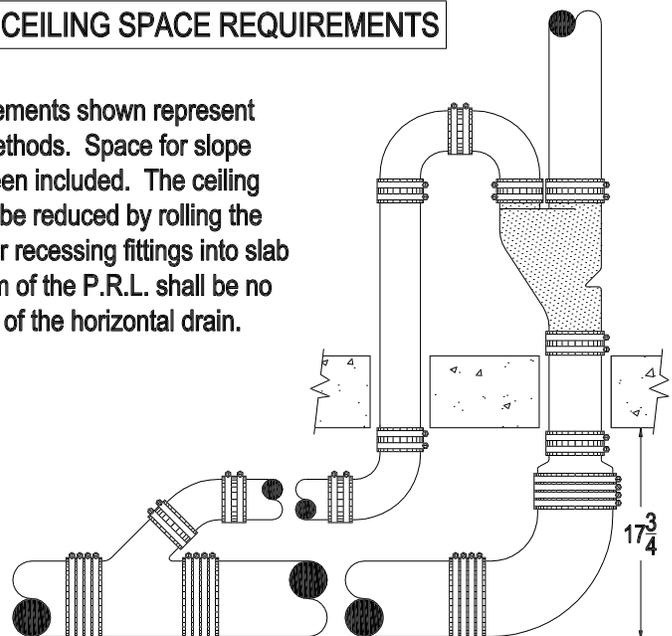
**4" DE-AERATOR WITH 3" EIGHTH & QUARTER BENDS**

### SUGGESTED DE-AERATOR PIPING CEILING SPACE REQUIREMENTS

The ceiling space requirements shown represent conservative rough-in methods. Space for slope requirements has not been included. The ceiling space requirements can be reduced by rolling the P.R.L. to the side and/or recessing fittings into slab penetrations. The bottom of the P.R.L. shall be no lower than the centerline of the horizontal drain.



**4" DE-AERATOR WITH 4" HORIZONTAL DRAIN LINE**



**4" DE-AERATOR WITH 6" HORIZONTAL DRAIN LINE**

# CAST IRON SOVENT® DESIGN MANUAL #802 – Version E802.04

## CAST IRON SOVENT® SAMPLE SPECIFICATION

We suggest the following specification.

The Cast Iron Sovent® DWV system shall be installed in accordance with approved construction plans and specifications, and in compliance with criteria set forth by Cast Iron Sovent® Design Manual #802 as published by Conine Manufacturing Co., Inc. The cast iron Sovent® Aerator and De-aerator fittings shall be manufactured and distributed by Conine Manufacturing Co., Inc. The Aerator and De-aerator fittings shall be in compliance with ASME Standard B16.45-1998 as published by the American Society of Mechanical Engineers. Contact Conine Manufacturing Co., Inc. by phone at 903/894-6150 or fax at 903/894-6702 for additional information.

### MANUFACTURER SERVICES

In addition to normal business services, Conine Manufacturing Co., Inc. will:

- 1) Furnish complete technical assistance and information on the latest techniques of design, installation and inspection of the Cast Iron Sovent® system.
- 2) Provide design/drawing assistance, plans check, and drawing review.
- 3) Provide Value Engineering assistance.
- 4) Provide field inspection service with written reports furnished to all designated parties. Inspections and reports will be subject to a negotiated, equitable fee.
- 5) Provide assistance in training of designers, installers and inspectors on an as needed, invitational basis. Seminars will be subject to a negotiated, equitable fee.

These pledges assume the obvious. Conine Manufacturing Co., Inc. shall furnish all Cast Iron Sovent® products and the design shall comply with all appropriate criteria set forth by Cast Iron Sovent® Design Manual #802.

All Cast Iron Sovent® technical data provided by Conine Manufacturing Co., Inc. including but not limited to drawings, catalogs, and consultations remain the exclusive property of Conine Manufacturing Co., Inc. Use of this information for purposes other than Cast Iron Sovent® products made by Conine Manufacturing Co., Inc. is strictly prohibited and may result in the assessment of fees or charges.

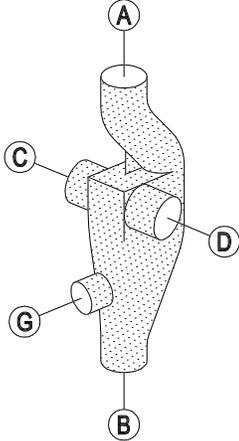
Conine Manufacturing Co., Inc.  
P.O. Box 6561 - Tyler, TX 75711  
Phone: (903) 894-6150 - Fax: (903) 894-6702  
[www.castironsovent.com](http://www.castironsovent.com)

## ILLUSTRATED ORDERING GUIDE

Aerator fittings are available in several nominal sizes and configurations. The illustration below shows the letter designation assigned to each inlet for ordering purposes. Fittings will be furnished with the inlet sizes shown in the table at the right. Ordering information shall include quantity, the nominal fitting size(s) and the required inlet(s) by letter designation.

De-aerator fittings are available in several nominal sizes. Inlet options are not available. Ordering information shall include quantity and nominal size(s) only.

All orders and requests for quotations shall include project name and location.



Nominal Fitting Size	Inlet Sizes By Letter				
	"A"	"B"	"C"	"D"	"G"
3" Aerator	3	3	3	3	2
4" Aerator	4	4	4	4	3
4" x 3" Aerator	4	4	3	3	3
5" Aerator	5	5	4	4	3
6" Aerator	6	6	4	4	3
8" Aerator	8	8	4	4	-



Qty. \_\_\_\_\_ 3" ABC Aerator



Qty. \_\_\_\_\_ 4" ABC Aerator

Qty. \_\_\_\_\_ 4" x 3" ABC Aerator

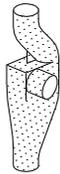
Qty. \_\_\_\_\_ 5" ABC Aerator

Qty. \_\_\_\_\_ 6" ABC Aerator

Qty. \_\_\_\_\_ 8" ABC Aerator



Qty. \_\_\_\_\_ 3" ABD Aerator



Qty. \_\_\_\_\_ 4" ABD Aerator

Qty. \_\_\_\_\_ 4" x 3" ABD Aerator

Qty. \_\_\_\_\_ 5" ABD Aerator

Qty. \_\_\_\_\_ 6" ABD Aerator

Qty. \_\_\_\_\_ 8" ABD Aerator



Qty. \_\_\_\_\_ 3" ABCD Aerator



Qty. \_\_\_\_\_ 4" ABCD Aerator

Qty. \_\_\_\_\_ 4" x 3" ABCD Aerator

Qty. \_\_\_\_\_ 5" ABCD Aerator

Qty. \_\_\_\_\_ 6" ABCD Aerator

Qty. \_\_\_\_\_ 8" ABCD Aerator



Qty. \_\_\_\_\_ 3" AB Aerator



Qty. \_\_\_\_\_ 4" AB Aerator



Qty. \_\_\_\_\_ 3" ABCG Aerator



Qty. \_\_\_\_\_ 4" ABCG Aerator

Qty. \_\_\_\_\_ 4" x 3" ABCG Aerator

Qty. \_\_\_\_\_ 5" ABCG Aerator

Qty. \_\_\_\_\_ 6" ABCG Aerator



Qty. \_\_\_\_\_ 3" ABDG Aerator



Qty. \_\_\_\_\_ 4" ABDG Aerator

Qty. \_\_\_\_\_ 4" x 3" ABDG Aerator

Qty. \_\_\_\_\_ 5" ABDG Aerator

Qty. \_\_\_\_\_ 6" ABDG Aerator



Qty. \_\_\_\_\_ 3" ABCDG Aerator

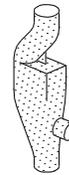


Qty. \_\_\_\_\_ 4" ABCDG Aerator

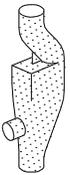
Qty. \_\_\_\_\_ 4" x 3" ABCDG Aerator

Qty. \_\_\_\_\_ 5" ABCDG Aerator

Qty. \_\_\_\_\_ 6" ABCDG Aerator



Qty. \_\_\_\_\_ 3" ABG Aerator



Qty. \_\_\_\_\_ 4" ABG Aerator



Qty. \_\_\_\_\_ 4" De-aerator



Qty. \_\_\_\_\_ 5" De-aerator

Qty. \_\_\_\_\_ 6" De-aerator

Qty. \_\_\_\_\_ 8" De-aerator

Contact: \_\_\_\_\_ Phone: \_\_\_\_\_

Company Name: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project Location: \_\_\_\_\_

CONINE MANUFACTURING CO., INC.

Design

Manual No. 802



**SOVENT<sup>®</sup>**

Cast Iron Single Stack DWV

# CAST IRON SOVENT®

## TERMS AND CONDITIONS OF SALE

### QUOTATIONS

Request for quotations must include job name, location and Engineer of Record to insure validity. Quotations are for 30 days and must be confirmed by Conine Manufacturing Co., Inc.

### PRICING

Selling prices are on a per job basis defined by fitting description, quantity, delivery point, and other special considerations as determined by Conine Manufacturing Co., Inc. Prices shall be verified by Conine Manufacturing Co., Inc. and are subject to change without notice. Clerical errors are subject to correction.

### PAYMENT TERMS

Terms are NET 30 Days unless otherwise determined in writing by Conine Manufacturing Co., Inc.

### FREIGHT CONDITIONS

Prices are F.O.B. plant with full freight allowed to one destination for one shipment only. Partial shipments may be made at our sole discretion and other special freight conditions may be negotiated. Conine Manufacturing Co., Inc. reserves the right to make final determination of freight terms.

### DAMAGED AND SHORTED GOODS

Conine Manufacturing Co., Inc. responsibility ceases upon delivery of shipment to carrier.

### RETURNED GOODS

Cast Iron Sovent® fittings and related products of Conine Manufacturing Co, Inc. are custom made for the Job/Purchase order requirements. No return goods will be accepted.

### DEFECTIVE GOODS

All goods are warranted to be free from defects. Warranty claims must be reported within five days of receipt of goods. The warranty shall be limited to the replacement or credit of said goods, not to exceed the original purchase price. Installation materials and labor or consequential charges of any kind are not included. No other warranty is expressed or implied. Conine Manufacturing Co., Inc. neither assumes nor authorizes any person to assume any liability in the connection with the sale of its products.

### DESIGN SERVICES

Design assistance and sample suggested isometric layouts are furnished at no cost based on conditions defined by Conine Manufacturing Co., Inc. We reserve the right to charge for technical support services if these conditions are not satisfied. Please contact us for details.

### PLAN REVIEWS

Plan check and drawing review services for compliance with published design criteria are furnished at no cost based on conditions defined by Conine Manufacturing Co., Inc. We reserve the right to charge for technical support services if these conditions are not satisfied. Please contact us for details.

### INSPECTION SERVICES

On-site field inspection services are available for a negotiable and equitable fee. Written reports are furnished to those designated by our client. Please contact us for details.

### EDUCATIONAL SERVICES

On-site technical guidance and training seminars are available under certain conditions. Please contact us for details.

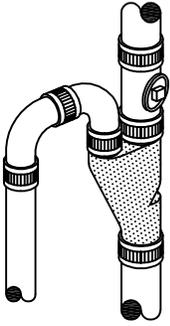
### ACCEPTANCE

Possession of this catalog does not constitute offer to sell. All orders must be accepted in writing by Conine Manufacturing Co., Inc.

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# Conine Manufacturing Co., Inc.

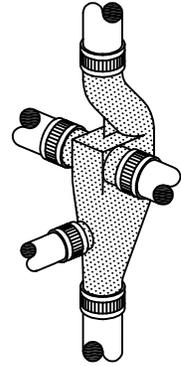


## CAST IRON SOVENT®

### Technical Update #1501

For

### 3" DE-AERATOR FITTINGS



## INTRODUCTION

Conine Manufacturing Co., Inc. now offers a 3" De-aerator fitting for use on Cast Iron Sovent® DWV systems. This technical update will address guidelines for design and installation. It will be applicable to both printed (copyright 2004) and electronic (E802.04) versions of the **Cast Iron Sovent® Design Manual #802**. The primary purpose is to allow for a 3" Sovent® stack offset at an interim level without increasing the overall stack size. Other applications are possible subject to the limitations listed below.

## FEATURES

The 3" De-aerator has the same internal nosepiece and Pressure Relief Line (PRL) as other nominal size De-aerator fittings. The PRL is 3" in size in accordance with national manufacturing standards. This will also permit certain branch connections to the PRL. The 3" De-aerator is designed for use with clear-water waste only. Any 3" Sovent® stack that serves water closets shall use a 4" De-aerator at the base of the stack and is not permitted to offset.

The 3" horizontal drain in conjunction with a 3" De-aerator has a maximum capacity of 24 drainage fixture units (DFU's) at one-quarter inch per foot (2%) slope and 19 DFU's at one-eighth per foot (1%) slope. Table A or A-1 will determine individual fixture DFU values; however, the use of group loading values is not permitted.

## SUMMARY

This update will affect the following pages of the **Cast Iron Sovent® Design Manual #802**.

Page 7 / CAST IRON SOVENT® BUILDING DRAIN LOADING - TABLE C

Page 9 / DE-AERATOR DIMENSIONS

Page 11 / SOVENT® DE-AERATOR AND BUILDING DRAIN RULES - PARAGRAPH "I"

The specific revisions are shown on the next page for easy insertion into current versions of our published criteria and will be incorporated into future editions. Contact our office for additional information.

# Technical Update #1501 for 3" De-aerators

Cast Iron Sovent® Design Manual #802 - Page 7 Revision

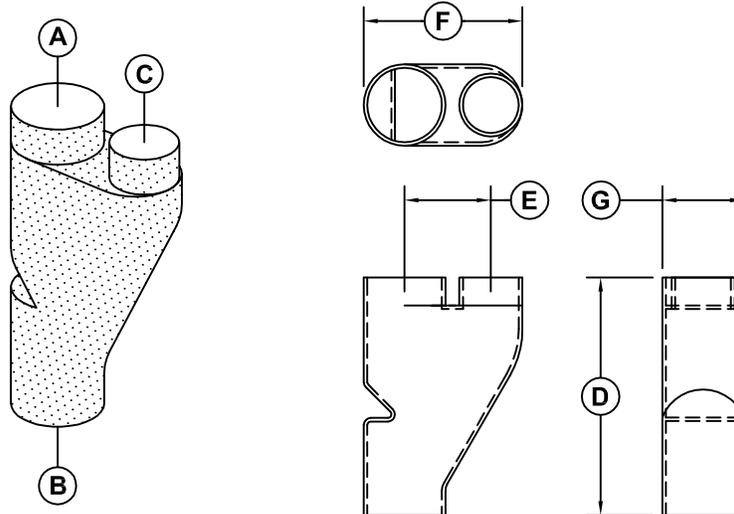
## CAST IRON SOVENT® BUILDING DRAIN LOADING TABLE C

Drain Size	1/4"/ft. (2%) Max. D.F.U.	1/8"/ft. (1%) Max. D.F.U.
3"	24	19
4"	120	96
5"	350	280
6"	850	680
8"	2,700	2,160
10"	3,900	3,120
12"	5,800	4,640

Note: This table is also used for sizing horizontal stack offsets. No W.C.'s are permitted on 3" drains.

Cast Iron Sovent® Design Manual #802 - Page 9 Revision

## DE-AERATOR DIMENSIONS



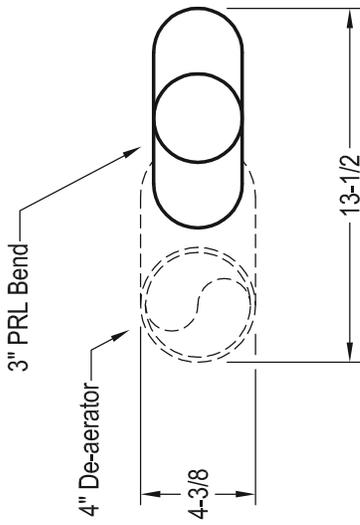
Nominal Deaerator Size	Nominal Inlet Size (inches)			Fitting Dimensions (inches)			
	A	B	C	D	E	F	G
3"	3	3	3	10.75	4.00	7.35	3.35
4"	4	4	3	12.75	4.63	8.50	4.38
5"	5	5	4	16.00	5.63	10.50	5.30
6"	6	6	4	20.75	6.75	12.25	6.30
8"	8	8	6	21.00	9.00	16.50	8.38

Cast Iron Sovent® Design Manual #802 - Page 11 Revision

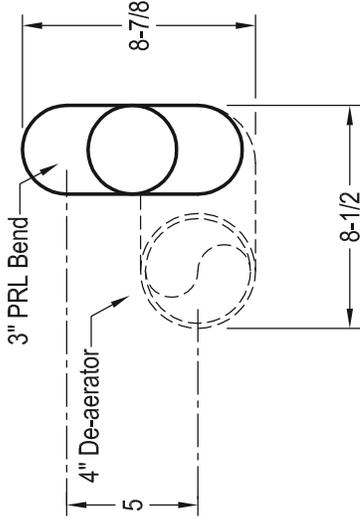
## SOVENT® DE-AERATOR AND BUILDING DRAIN RULES

(I) Office building battery type installations and Sovent® stacks serving clothes washers shall use a De-aerator fitting equal in size to the Sovent® building drain serving each stack. A three-inch (3") Sovent® stack serving water closets shall use a four-inch (4") De-aerator at the base of the stack. The use of group (DFU) loading values is not permitted for sizing three-inch (3") horizontal drain lines. A three-inch (3") De-aerator shall serve clear-water waste fixtures only.

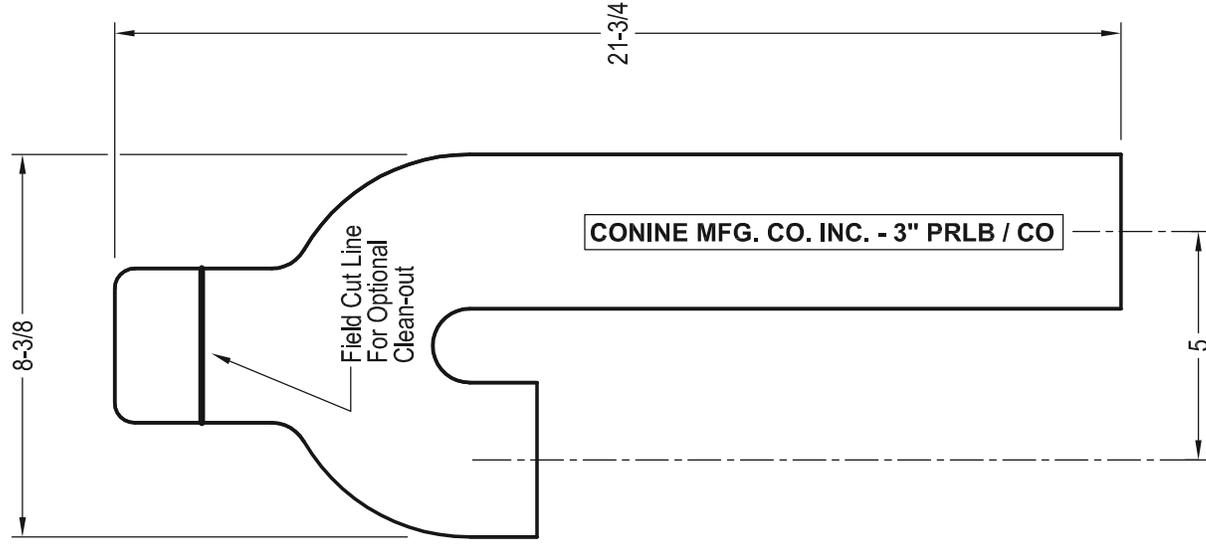
Conine Manufacturing Co., Inc.  
P. O. Box 2188 - Flint, TX 75762  
Phone (903) 894-6150 - Fax (903) 894-6702  
www.castironsovent.com



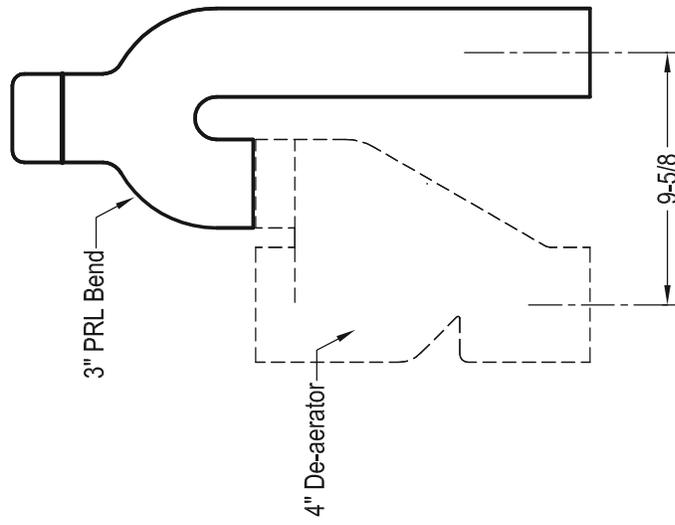
PLAN VIEW - CHASE WALL APPLICATION



PLAN VIEW - COLUMN APPLICATION



ELEVATION VIEW - CHASE WALL APPLICATION



ELEVATION VIEW - COLUMN APPLICATION

Drawing Notes:

- 1) PRL Bend shall be used with Cast Iron Solvent® systems supplied by Conine Manufacturing Co., Inc. exclusively.
- 2) Clean-out feature is strictly optional and not required for proper system performance.
- 3) Clean-out cap is furnished closed. Field cut at line indicated - ends shall be free from burrs and flat spots.
- 4) The cap requires a Contractor supplied 3" hub-less coupling assembly.

**3" PRL Bend with Optional Clean-out for Cast Iron Solvent® Systems**

CONINE MANUFACTURING CO., INC.  
 P.O. BOX 2188 - FLINT, TX - 75762  
 PHN: 903/894-6150 - FAX: 903/894-6702  
 www.castironsovent.com

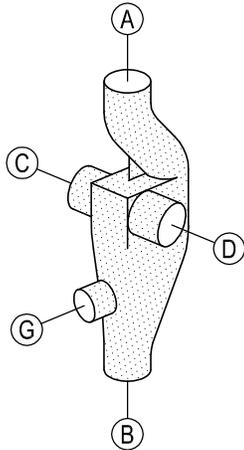
PRL BEND LAYING LENGTHS

# 2020 - Illustrated Ordering Guide - Conine Manufacturing Co., Inc.

P.O. Box 2188 Flint, TX 75762 --- Phn: (903) 894-6150 --- www.castironsovent.com

Aerator fittings are available in several nominal sizes and configurations. The illustration below shows the letter designation assigned to each inlet for ordering purposes. Fittings will be furnished with the inlet sizes shown in the table at the right. Ordering information shall include quantity, the nominal fitting size(s) and the required inlet(s) by letter designation.

De-aerator fittings are available in several nominal sizes. Inlet options are not available. Ordering information shall include quantity and nominal size(s) only. All orders and requests for quotations require a project name and city location.



Nominal Fitting Size	Inlet Sizes By Letter				
	"A"	"B"	"C"	"D"	"G"
3" Aerator	3	3	3	3	2
4" Aerator	4	4	4	4	3
4" x 3" Aerator	4	4	3	3	3
5" Aerator	5	5	4	4	n/a
6" Aerator	6	6	4	4	n/a



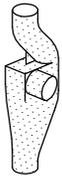
Qty. \_\_\_\_\_ 3" ABC Aerator



Qty. \_\_\_\_\_ 4" ABC Aerator



Qty. \_\_\_\_\_ 3" ABD Aerator



Qty. \_\_\_\_\_ 4" ABD Aerator



Qty. \_\_\_\_\_ 3" ABCD Aerator



Qty. \_\_\_\_\_ 4" ABCD Aerator



Qty. \_\_\_\_\_ 3" AB Aerator



Qty. \_\_\_\_\_ 4" AB Aerator

Qty. \_\_\_\_\_ 4" x 3" ABC Aerator

Qty. \_\_\_\_\_ 4" x 3" ABD Aerator

Qty. \_\_\_\_\_ 4" x 3" ABCD Aerator

Qty. \_\_\_\_\_ 5" ABC Aerator

Qty. \_\_\_\_\_ 5" ABD Aerator

Qty. \_\_\_\_\_ 5" ABCD Aerator

Qty. \_\_\_\_\_ 6" ABC Aerator

Qty. \_\_\_\_\_ 6" ABD Aerator

Qty. \_\_\_\_\_ 6" ABCD Aerator



Qty. \_\_\_\_\_ 3" De-aerator



Qty. \_\_\_\_\_ 4" De-aerator



Qty. \_\_\_\_\_ 3" ABCG Aerator



Qty. \_\_\_\_\_ 4" ABCG Aerator



Qty. \_\_\_\_\_ 3" ABDG Aerator



Qty. \_\_\_\_\_ 4" ABDG Aerator



Qty. \_\_\_\_\_ 3" ABCDG Aerator



Qty. \_\_\_\_\_ 4" ABCDG Aerator

Qty. \_\_\_\_\_ 5" De-aerator

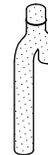
Qty. \_\_\_\_\_ 6" De-aerator

Qty. \_\_\_\_\_ 8" De-aerator

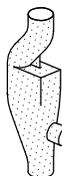
Qty. \_\_\_\_\_ 4" x 3" ABCG Aerator

Qty. \_\_\_\_\_ 4" x 3" ABDG Aerator

Qty. \_\_\_\_\_ 4" x 3" ABCDG Aerator



Qty. \_\_\_\_\_ 3" PRL Bend



Qty. \_\_\_\_\_ 3" ABG Aerator



Qty. \_\_\_\_\_ 4" ABG Aerator

Contact: \_\_\_\_\_ Phone: \_\_\_\_\_

Company Name: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project Location: \_\_\_\_\_