Definitions, Location and Piping Technical Standards Sections I-III

Disclaimer pg. 13

- The listing of any proprietary product, technology or system in the Technical Standards should not be considered an endorsement of the product, technology or system, nor does it convey intellectual property rights.

Technical Standards Section I Definitions pg. 13

- **Accessory structure**
  - attached and detached garages
  - covered entryways
  - screened and enclosed 3-season (non-winterized)
  - porches/sunrooms
  - open decks, tool and lawn equipment storage sheds
  - gazebos, barns, etc.
  - All decks are permanent structures
- Small (<200 SF) portable structures w/out permanent foundation exempt

Accessory Structures/pools:

Definitions, Location and Piping, Tech. Standards Section I-III 4

Accessory Structures/pools:

Definitions, Location and Piping, Tech. Standards Section I-III 5

Decks

Definitions, Location and Piping, Tech. Standards Section I-III 6

Is this an accessory structure?

- 7.5’ x 7.5’ shed placed on the ground.
- 7.5’ x 7.5’ shed placed on slab.

Technical Standards Section I Definitions

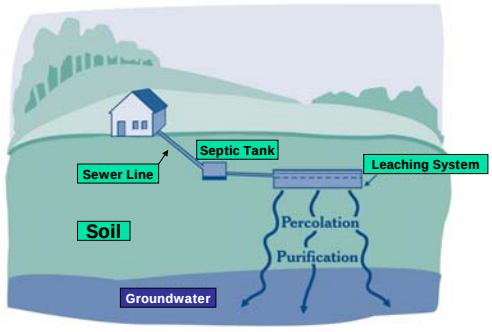
- **Approved aggregate** means stone and 2 inch tire chip aggregate or other product approved by the Commissioner of Public Health for use as backfill material in leaching system construction.

Technical Standards Section I Definitions

- **Bedroom**
  - Be a habitable or planned habitable space per Building Code requirements.
  - Provide privacy to the occupants
  - Full bathroom facilities
  - Entry is from a common area, not through a room already deemed a bedroom.

Technical Standards Section I Definitions

- **Building served**- physical structure that contains the habitable/interior portion of the building connected to the subsurface sewage disposal system.
- **Building sewer**- sewer pipe extending from the building served to the septic tank or grease interceptor tank.

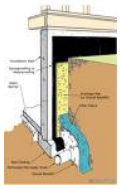


Technical Standards Section I Definitions

- **Effective leaching area**- a measure, in square feet, that takes into account the amount of infiltrative area and type of infiltrative interface. Effective leaching area criterion, product ratings, and sizing requirements are included in Section VIII.

Technical Standards Section I Definitions

- **Footing or foundation drains** drainage systems, consisting of stone or other free draining material with or without piping, which are installed to collect and redirect groundwater in order to protect below grade portions of a building.



Technical Standards Section I Definitions

- **Free draining material**- gravel, broken stone, rock fragments
- **Leaching gallery**- a minimum four-foot wide, level, hollow structure with perforated walls and which is surrounded by approved aggregate on the sides.
- **Leaching pit-** a hollow, covered structure with perforated sides and which is surrounded on the sides by approved aggregate.

Galleries – 12-inch high

Galleries - 27-inch Teepees

Galleries – 4’ x 4’

Gallery System

Technical Standards Section I Definitions

- **Leaching system-** structure, excavation or other facility designed to allow settled sewage to percolate into the underlying soil without overflow and to mix with the groundwater.
- **Leaching trench-** a level excavation, not exceeding four feet in width, with vertical sides and flat bottoms filled with approved aggregate and equipped with a single distribution line running the entire length of the excavation.

Technical Standards Section I Definitions

- **Proprietary leaching system-** a manufactured product approved by the Commissioner of Public Health to be used as a leaching system.
- **Select fill-** clean bank run sand, clean bank run sand and gravel, or approved manufactured fill having a gradation which conforms to the specifications stipulated in Section VIII A of the Technical Standards.

Technical Standards Section I Definitions

- **Solid pipe-** pipe that has no loose or open joints, perforations, slots or porous openings that would allow seepage to escape from, or water to enter the pipe.

Technical Standards Section I Definitions

- **Stone aggregate-** broken stone, crushed stone, or screened gravel meeting Department of Transportation Form 816 Specification M.01.01 for No. 4 and 6 stone
- Free of silt, dirt or debris meeting gradation specifications

Section I: Definitions

	No. 4 Stone Aggregate (A.K.A., 1 & 1/4 " Stone)	No. 6 Stone Aggregate (A.K.A., 3/4" Stone)
SIEVE SIZE	PERCENT PASSING (by weight)	PERCENT PASSING (by weight)
2-inch	100	N/A
1.5-inch	90 – 100	N/A
1-inch	20 – 55	100
3/4-inch	0 – 15	90 - 100
1/2-inch	N/A	20 - 55
3/8-inch	0 – 5	0 - 15
#4	N/A	0 - 5
#40	0 - 3	0 - 3
#200	0 – 1.5	0 – 1.5

- Table will be located in the Leaching System Section (Section VIII A) pg. 38

Section I: Definitions

- No 4 (1 & ¼" Stone) and No. 6 (3/4") stone.
- The Leaching System Section (Section VIII) will allow use of smaller stone (3/4") with leaching trenches and proprietary systems.
- Leaching pits and galleries will require use of the larger stone.

Technical Standards Section I Definitions

- **Tight Pipe-** those pipes that exhibit both wall strength and watertight joints. Pipes approved for use under this classification are listed in Table No. 2-C.

Technical Standards Section I Definitions

- **Two (2) inch nominal tire chip aggregate**-tire chips approved for distribution by the Department of Environmental Protection (DEP) for beneficial use in leaching systems in accordance with DEP's General Permit issued on September 30, 2005.

Section I. Definitions (pg. 14)

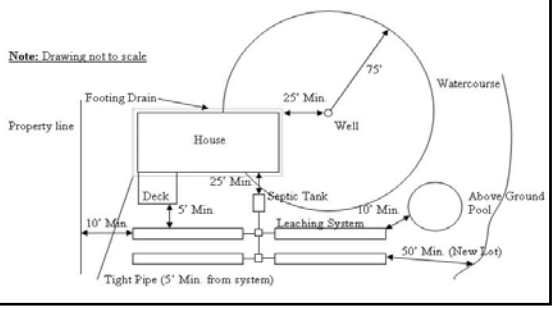
- 2-inch Nominal Tire Chips: Includes sizing criteria, maximum wire protrusion. DEP General Permit referenced. Additional requirements included in Section VIII.

Technical Standards Section II Location of Septic System- Table No.1 (Pg. 15)

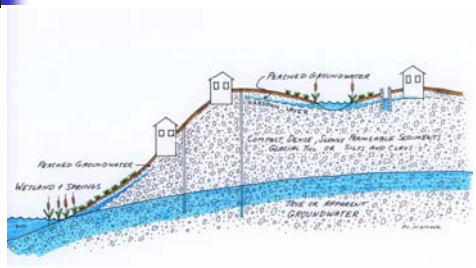
Item	Separating Distance (Feet)	Special Provisions
A. Water supply well (potable, open loop geothermal, irrigation), spring or domestic water suction pipe Required withdrawal rate < 10 gal. per minute 10 to 50 gal. per minute > 50 gal. per minute	 75 150 200	1. Separating distance to the leaching system shall be doubled when the percolation rate is faster than one minute/inch and the leaching system is less than 8 feet above ledge rock. 2. Separating distance shall be increased as necessary to protect the sanitary quality of a public water supply well.
B. Human habitation on adjacent property	15	Building without drains. See items G & H for distance to building with drains.
C. Building served	15	Building without drains. See items G & H for distance to building with drains. Separating distance to a septic tank septic tank/pump chamber/grease interceptor tank shall be reduced to 10 feet for buildings without drains.
D. Open watercourse	50	When not located on a public water supply watershed, distance shall be reduced as necessary to not less than 25 feet on lots in existence prior to the effective date of this regulation (8/16/82) and thereafter recorded as required by statute.
E. Public water supply reservoir	100	
F. Surface or groundwater drain constructed of solid pipe	25	Tight pipe with rubber gasketed joints or accepted equal (see Table No. 2-C) are exempted from this requirement as long as the pipe excavation is not backfilled with free draining material, however no tight pipe shall be less than 5 feet from system. Leakage tests may be required to verify water tightness.

E. Public water supply reservoir	100	this regulation (8/16/82) and thereafter recorded as required by statute
F. Surface or groundwater drain constructed of solid pipe	25	Tight pipe with rubber gasketed joints or accepted equal (see Table No. 2-C) are exempted from this requirement as long as the pipe excavation is not backfilled with free draining material, however no tight pipe shall be less than 5 feet from system. Leakage tests may be required to verify water tightness.
G. Groundwater drains (curtain, footing, foundation, etc.), storm water infiltration or retention/detention system located up gradient, or on the side of system	25	
H. Groundwater drains (curtain, footing, foundation, etc.), storm water infiltration or retention/detention system located down gradient	50	1. No such drain shall be constructed down gradient of the leaching system for the purpose of collecting sewage effluent regardless of the distance. 2. Distance to septic tank/pump chamber/grease interceptor tank shall be reduced to 25 feet if tank is verified to be watertight (Concrete tanks: See Section V.A.6).
I. Top of embankment (Down gradient and on sides)	10	Cuts within 50 feet down gradient of leaching systems shall not be allowed if bleed-out conditions are possible.
J. Property line	10	1. Separating distance between the primary leaching system and a down gradient property line shall be increased to 25 feet whenever MLSS is applicable. 2. Separating distance to the leaching system shall be increased to 15 feet whenever the top of the leaching system is above natural grade unless grading rights from the affected property owners are secured or retaining walls are utilized (See Section VIII.A for retaining wall provisions).
K. Potable water and/or irrigation lines which flow under pressure	10	Excavations between 10 – 25 feet from system shall not be backfilled with free draining material.
L. Below ground swimming pool	25	See item H for down gradient pools with drains.
M. Above ground swimming pool	10	Includes hot tubs.
N. Accessory structure	10	Structure shall have no footing drains. See items G & H if drains provided. Structures without full wall, frost protected footings shall be reduced to 5 feet.
O. Utility service trench (Underground electric, gas, phone services, etc.)	5	Excavations between 5 – 25 feet from system shall not be backfilled with free draining material.
P. Water treatment wastewater disposal system	10	See Section X.
Q. Closed loop geothermal system Borehole (Vertical) Horizontal loop/geothermal piping	 75 10	Separating distance from borehole to leaching system and watertight tanks shall be reduced to 50 feet and 25 feet, respectively, as long as a CT licensed well driller installs borehole with a permit certifying construction standards per Department of Public Health EHS Circular Letter #2007-12 dated April 27, 2007. Excavations between 10 – 25 feet from system shall not be backfilled with free draining material.

Section II Location of Septic System



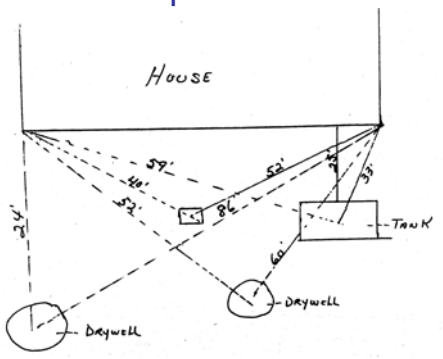
What is Down Gradient?



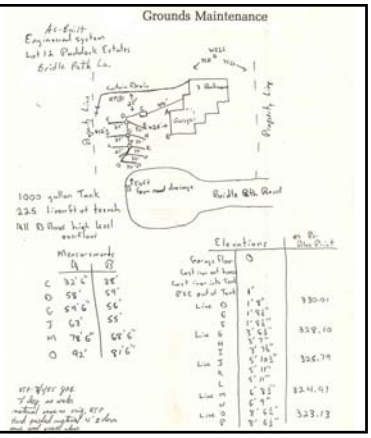
Record Plan or As-built

- Following system installation a record plan or as-built drawing must be prepared by the installer unless Local Health requires an Engineered drawing.
  - Building sewer exit location
  - Tank cleanouts
  - Distribution boxes and access ports
  - Ends of rows
- Scale plan
- Tie Plan

Is this acceptable?



- How about this one?



Plan Adherence

- The installer is responsible for installing the system in accordance with the approved plan.
- Site conditions not noted on the plan must be reported the local health department and, if applicable, the design engineer

System Abandonment

- Eliminate danger of system components from collapsing.
- Property owners responsibility
- Proper abandonment procedure
  - Pump
  - Crush
  - Backfill

Benchmarks

- Plans prepared by a Professional Engineer must have vertical and horizontal controls
- Field staking is acceptable
- Plans must have accurate topography

Benchmarks

- a point of reference for a measurement
- the height above sea level
- Usually set by the engineer in a permanent location, top of catch basin or foundation. Occasionally a nail in a tree, however not recommended.

Section III: Piping

- **Building Sewers**
  - Minimum size 4” pipe
  - Minimum pitch 4” pipe: ¼” per foot
  - Minimum pitch 6”- 8” pipe: 1/8” per foot
  - High strength pipe
  - Table No. 2

Piping

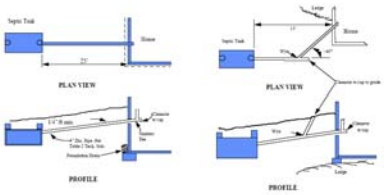


Table No. 2
Accepted Building Sewer Pipe from Building Served to Septic Tank or Grease Interceptor Tank & Accepted Sewer Pipe Within the Sanitary Radius of a Water Supply Well

NOTE: The local director of health shall inspect all building sewer piping and joints prior to covering

USE	PIPE DESCRIPTION	ACCEPTABLE JOINT	REMARKS
Building sewer from foundation wall to septic tank or grease interceptor tank, within 25 feet of building served. OR, Sewer pipe (building or distribution) within the sanitary radius of a water supply well. NOTE: The following minimum distances shall be maintained from wells based on withdrawal rates: 1-10 gpm: 25 feet 10 – 50 gpm: 75 feet >50 gpm: 100 feet NOTE: Building sewer may cross potable water lines under pressure. To reduce separation distances for the following other items listed in Table No. 1: -Human habitation on adjacent property -Building served -Property line -Pressure water lines -Swimming pools -Accessory structures -Utility service trench -Closed loop geothermal borehole (10 feet minimum)	Cast iron hubless ASTM A 888	Cast iron split sleeve hubless joint with rubber gasket, MG coupling or equal OR 3” stride, heavy duty, stainless steel banded coupling with rubber gasket: clamp-all ANACO SD 4000, or equal	Roll-on “donut type” gaskets not acceptable if connection is within 25 feet of foundation wall. Pipe must be properly bedded, laid in straight line on uniform grade
	Cast iron bell and spigot ASTM A 74	Rubber compression gaskets	FERNCO - stainless steel 3” wide shear band allowed for connection of dissimilar piping materials.
	PVC Schedule 40, ASTM D 1785 or ASTM D 2665	Rubber compression gasket couplings, Mission MFG. ASTM D 3139 or equal* OR Solvent weld couplings, fittings using primer two step PVC solvent solution procedure	*Use of 3” stride approved stainless steel banded couplings on PVC Schedule 40 ASTM D 1785 or 2665 is acceptable US (green) Piping - Schedule 40- 3/6 max. radius sweep piping (90°) may be obtained without a clean-out. ABS Schedule 40 is not acceptable
	Ductile iron ANSI A 21.51	Rubber compression gaskets	Connection to cast iron building sewer must be made with compression gaskets.
	PVC AWWA C 900 (PC 100 psi min.)	Rubber compression gaskets	“O” ring gasket is not acceptable
	PVC ASTM F 1760, Schedule 40	Rubber compression gaskets	Only 4” pipe approved Maximum 1 curve as vehicular loaded traffic areas

Section III: Piping

- **Public Sewer Connections and Lines Near Wells (25' to 75')**
  - Table No. 2A
  - Table No. 2B

Table No. 2-A

Accepted Sewer Pipe for Sewer Connections/Laterals Within the Sanitary Radius of a Water Supply Well

All sewer lines installed within the sanitary radius of a water supply well shall be inspected and approved by the local director of health or sewer inspector prior to back filling.

USE	PIPE DESCRIPTION	ACCEPTABLE JOINT	REMARKS
Sewer connections laterals to public sewers within the sanitary radius of a water supply well. NOTE: The following minimum distances shall be maintained from wells based on withdrawal rates: < 10 gpm: 25 feet 10 – 50 gpm: 75 feet > 50 gpm: 100 feet	Cast iron hubless ASTM A 888	Cast iron split sleeve hubless connector with rubber gasket. MG coupling or equal to 3" wide, heavy-duty stainless steel banded coupling with rubber gasket. Clamp-all ASJaCO 925 4000, or equal	Rolled-on "donut type" gaskets not acceptable if used within 75 feet of well. Pipe must be properly bedded in accordance with pipe manufacturer's specifications. Install on a straight line on a uniform grade
	Cast iron bell and spigot. ASTM A 74	Rubber compression gaskets	
Note: Pump (i.e., Grinder) vaults are sources of pollution and must be located at least 75 feet from < 10 gpm water supply wells. Increased separating distances required for wells with withdrawal rates of 10 gpm or greater (See PHC Sec. 19-13-B51d)	Ductile iron ANSI A21.51	Rubber compression gasket	
	Extra strength PVC pressure water pipe AWWA C 900 (PC 100 psi min.)	Rubber compression gasket	
Note: Force mains must use approved pipe rated for pressure applications.	Schedule 40, PVC ASTM D 1785 or ASTM D 2665 PVC ASTM D 2241. SDR 21, 17 or 13.5 PVC ASTM F 1760. Schedule 40 or SDR 35 PVC ASTM D 3034. SDR 35 PVC ASTM F 789 PVC ASTM F 679 PVC. CONTECH A-2026. ASTM F 949 PVC. CONTECH A-2000. ASTM F 949 DI. ASTM D 3035. SDR 21 or lesser	Rubber compression gasketed couplings. Hutco Mfg., ASTM D 3139 or equal. OR Solvent weld couplings. fittings using proper two step PVC solvent cement procedure Integral rubber compression gaskets or roll-on compression gaskets Elastomeric gasket meets ASTM F 477 Gaskets meets ASTM F 477 No couple. Heat butt fused connections on	Use of 3" wide approved stainless steel banded couplings on PVC Schedule 40 ASTM D 1785 is acceptable ABS Schedule 40 is not acceptable Joints must meet ASTM D 3212 specifications Bedding in accordance with ASTM D 2321 for PVC pipe Joints meet ASTM 3212 Joints meet ASTM 3212

Municipal Sewer Lateral

Note: Pump (i.e., Grinder) vaults are sources of pollution and must be located at least 75 feet from less than 10 GPM wells.

Well Regs. 19-13-B51

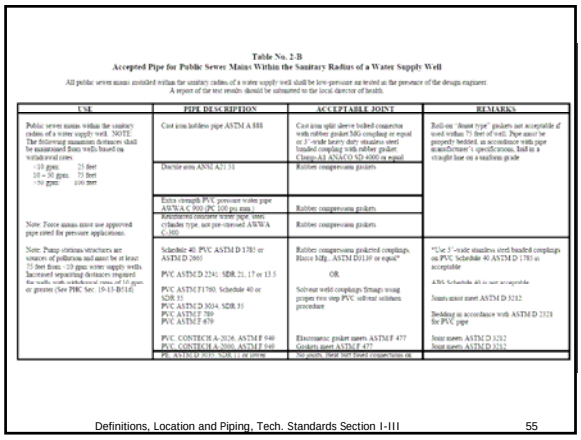


Table No. 2-B
Accepted Pipe for Public Sewer Mains Within the Sanitary Radius of a Water Supply Well

All public sewer mains installed within the sanitary radius of a water supply well shall be low-pressure air tested in the presence of the design engineer. A report of the test results should be submitted to the local director of health.

USE	PIPE DESCRIPTION	ACCEPTABLE JOINT	REMARKS
Public sewer mains within the sanitary radius of a water supply well. NOTE: The following minimum distances shall be maintained from wells based on withdrawal rates. <10 gpm: 25 feet 10 – 50 gpm: 75 feet >50 gpm: 100 feet	Cast iron hubless pipe ASTM A 888	Cast iron split sleeve bolted connector with rubber gasket MG coupling or equal or 3"-wide heavy duty stainless steel banded coupling with rubber gasket. Clamp-All ANACO SD 4000 or equal	Roll-on "donut type" gaskets not acceptable if used within 75 feet of well. Pipe must be properly bedded, in accordance with pipe manufacturer's specifications, laid in a straight line on a uniform grade
	Ductile iron ANSI A21.51	Rubber compression gaskets	
	Extra strength PVC pressure water pipe AWWA C-900 (PC 100 psi min.)	Rubber compression gaskets	
Note: Force mains must use approved pipe rated for pressure applications.	Reinforced concrete water pipe, steel cylinder type, not pre-stressed AWWA C-300	Rubber compression gaskets	
Note: Pump stations structures are sources of pollution and must be at least 75 feet from >10 gpm water supply wells. Increased separating distances required for wells with withdrawal rates of 10 gpm or greater (See PHC Sec. 10-13-B114)	Schedule 40, PVC ASTM D 1785 or ASTM D 2665 PVC ASTM D 2241. SDR 21, 17 or 13.5 PVC ASTM F1760. Schedule 40 or SDR 35 PVC ASTM D 3034. SDR 35 PVC ASTM F 789 PVC ASTM F 679	Rubber compression gasketed couplings, Hasco Mfg., ASTM D3139 or equal* OR Solvent weld couplings fittings using proper two step PVC solvent solutions procedure	*Use 3"-wide stainless steel banded couplings on PVC Schedule 40 ASTM D 1785 as acceptable ABS Schedule 40 is not acceptable Joints must meet ASTM D 3212 Bedding in accordance with ASTM D 2321 for PVC pipe
	PVC. CONTECH A-2026. ASTM F 949 PVC. CONTECH A-2000. ASTM F 949	Elastomeric gasket meets ASTM F 477 Gaskets meet ASTM F 477	Joint meets ASTM D 3212 Joint meets ASTM D 3212
	PE. ADS N-12. ASTM F 667. AASHTO M-294. 24-inch maximum diameter	No joints. Field fusion required	

Section III: Piping

- **Acceptable tight pipes**:
  Table No. 2C
  - Less than 25' from open watercourse
  - Groundwater or storm piping less than 25'
  - Distribution piping located less than minimum separation distances in Table No. 1

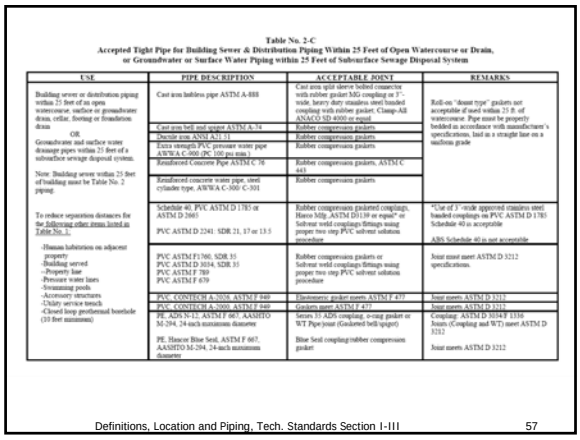


Table No. 2-C
Accepted Tight Pipe for Building Sewer & Distribution Piping Within 25 Feet of Open Watercourse or Drain, or Groundwater or Surface Water Piping within 25 Feet of Subsurface Sewage Disposal System

USE	PIPE DESCRIPTION	ACCEPTABLE JOINT	REMARKS
Building sewer or distribution piping within 25 feet of an open watercourse, surface or groundwater drain, cellar, footing or foundation drain OR Groundwater and surface water drainage pipes within 25 feet of a subsurface sewage disposal system. Note: Building sewer within 25 feet of building must be Table No. 2 piping. To reduce separation distances for the following other items listed in Table No. 1: -Human habitation on adjacent property -Building served -Property line -Pressure water lines -Swimming pools -Accessory structures -Utility service trench -Closed loop geothermal borehole (10 feet minimum)	Cast iron hubless pipe ASTM A-888	Cast iron split sleeve bolted connector with rubber gasket MG coupling or 3"-wide, heavy duty stainless steel banded coupling with rubber gasket. Clamp-All ANACO SD 4000 or equal	Roll-on "donut type" gaskets not acceptable if used within 25 ft. of watercourse. Pipe must be properly bedded in accordance with manufacturer's specifications, laid in a straight line on a uniform grade
	Cast iron bell and spigot ASTM A-74	Rubber compression gaskets	
	Ductile iron ANSI A21.51	Rubber compression gaskets	
	Extra strength PVC pressure water pipe AWWA C-900 (PC 100 psi min.)	Rubber compression gaskets	
	Reinforced Concrete Pipe ASTM C 76	Rubber compression gaskets, ASTM C 443	
	Reinforced concrete water pipe, steel cylinder type, AWWA C-300/ C-301	Rubber compression gaskets	
	Schedule 40, PVC ASTM D 1785 or ASTM D 2665 PVC ASTM D 2241. SDR 21, 17 or 13.5	Rubber compression gasketed couplings, Hasco Mfg., ASTM D3139 or equal* or Solvent weld couplings/fittings using proper two step PVC solvent solution procedure	*Use of 3"-wide approved stainless steel banded couplings on PVC ASTM D 1785 Schedule 40 is acceptable ABS Schedule 40 is not acceptable
	PVC ASTM F1760. SDR 35 PVC ASTM D 3034. SDR 35 PVC ASTM F 789 PVC ASTM F 679	Rubber compression gaskets or Solvent weld couplings/fittings using proper two step PVC solvent solution procedure	Joint must meet ASTM D 3212 specifications.
	PVC. CONTECH A-2026. ASTM F 949	Elastomeric gasket meets ASTM F 477	Joint meets ASTM D 3212
	PVC. CONTECH A-2000. ASTM F 949	Gaskets meet ASTM F 477	Joint meets ASTM D 3212
	PE. ADS N-12. ASTM F 667. AASHTO M-294. 24-inch maximum diameter PE. Hancor Blue Seal. ASTM F 667. AASHTO M-294. 24-inch maximum diameter	Series 35 ADS coupling, o-ring gasket or WT Pipe/joint (Gasketed bell/spigot) Blue Seal coupling/rubber compression gasket	Coupling: ASTM D 3034/F 1336 Joints (Coupling and WT) meet ASTM D 3212 Joint meets ASTM D 3212

Section III: Piping

- **Acceptable Force Mains:**

  Table No. 2D

  - Force mains between 25-75 feet from well
  - Force mains less than 25 feet from watercourse or drains
  - Force mains located less than minimum separation distances in Table No. 1

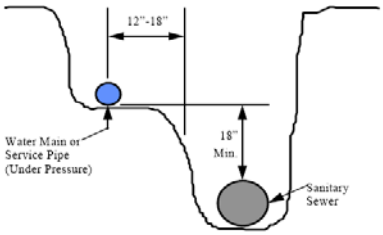
Table No. 2-D

Accepted Sewer Pipe for Use as Sewer Force Main for Specific Applications

USE	PIPE DESCRIPTION	ACCEPTABLE JOINT	REMARKS
Sewer force main piping within the sanitary radius of a water supply well. NOTE: The following minimum distances shall be maintained from wells based on withdrawal rates: <50 gpm: 25 feet 10 – 50 gpm: 75 feet >50 gpm: 100 feet OR Sewage force mains within 25 feet of an open watercourse, surface or groundwater drain, footing or foundation drain. To reduce separation distances for the following other items listed in Table No. 1:	PVC pressure pipe ASTM D 2241, SDR 21, 17, or 13.5	Bell and spigot with compression rubber gaskets	
	PVC pressure water pipe AWWA C-900 (PC 200 psi minimum)		
	PVC ASTM D 1785 / ASTM D 2665, Schedule 40 or Schedule 80	Solvent welded, threaded joints or gasketed couplings	
- Human habitation on adjacent property -Building served -Property line -Pressure water lines -Swimming pools -Accessory structures -Cholaty service trench -Closed loop geothermal borehole (10 feet minimum)	PE ASTM D 2239 PE ASTM D 2737	No joints within 75 ft. of well or 25 ft. of open watercourse, ground or surface water drains	Pipe available in 100-ft. and longer coiled lengths.
	PE ASTM D 3035, SDR 11 or lower	No joints. Heat butt fused connections ok	

Section III: Piping

- **Water Pipe Trenches**
  - Water Service & Building Sewers in Same Trench
  - Water Service & Building Sewer Crossings



Section III: Piping

- **Air Pressure Testing of Sewer Pipe**
  - Sewer Lines Between 25-75 feet from well