LETTER OF TRANSMITTAL

PIPELINE CONTRACTORS
8600 Verbena St.
Commerce City, CO 80022
Office 303-289-4355
Fax 303-289-4353

ISSUED TO:

Owner ATTN: Owner Representative

DATE: 8/7/19

TRANSMITTAL NO.: A-001

REGARDING:

Project JBS Job No 00XX

We are issuing you under separate cover the following (via): Email

- [ ] Blue Prints
- [X] Submittals
- [ ] Change Order
- [ ] Request for Information
- [ ] Copy of a letter
- [ ] Shop Drawings

#	Copies	Item Dated	Item #	Description
	1-Electronic		A-001	Sanitary Sewer Pipe and Appurtenances

- [ ] For your bid
- [ ] Returned for Correction
- [X] For Approval
- [ ] For Review and Comment
- [ ] As Requested
- [ ] For Pricing
- [ ] Prints are loaned to you and are to be returned to us by: Date:
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COMMENTS

CC:

Amie Parent

Amie Parent
JBS Pipeline Contractors

SANITARY SEWER

FERGUSON Waterworks

PVC Sewer Pipe

FERGUSON Waterworks

Sani-21™: PVC Sewer Pipe

SPECIFICATION DATA

Sani 21™
SANITARY SEWER PIPE FOR THE 21st CENTURY

D3034 & F679
SEWER SPECIFICATION DATA

Diamond gravity sewer pipe 4 inches through 48 inches shall be made of compounds conforming to material requirements of ASTM D3034 and ASTM F679 in accordance with ASTM D1784. Diamond PVC Sewer Pipe meets all the dimensional, chemical, and physical requirements as outlined in ASTM D3034 and ASTM F679.

The pipe sizes 4 inches through 48 inches are made with an integral bell "water-tight" joint that meets the requirements of ASTM D3212 and that utilizes a Rieber gasket system for sealing that meets the requirements of ASTM F477.

Each male end shall be beveled to facilitate joining and referencing marked for proper insertion depth. Diamond furnished lubricant is to be used in the joining process.

Physical Properties of ASTM D3034 & F679

Pipe Materials:
Pipe shall be made of PVC plastic having a minimum cell classification of 12454 or 12364 as defined in Specification D1784.

Property	ASTM Test	Minimum
Specific Gravity	D792	1.40
Tensile Strength, psi	D638	7,000
Tensile Modulus, psi	D638	400,000
IZOD Impact Strength,	D256	.65ft., lb./in.

Pipe Stiffness

Pipe	Modulus	
SDR	E = 400,000	E = 500,000
41	28	35
35	46	57
26	115	144

Standard laying lengths are 14 and 22 feet

SHORT FORM **Specification for Diamond PVC Solid-Wall Sewer Pipe SDR 26 or SDR 35 or PS 46 or PS 115**
All PVC Solid-Wall Sewer PIpe shall be made of compounds conforming to ASTM D1784 manufactured in accordance with the material requirements of ASTM D3034 or ASTM F679. All PVC Sewer Pipe must meet dimensional, chemical, and physical requirements as outlined in ASTM D3034 orASTM F679. Joints shall meet the requirements of ASTM D3212 and shall be formed using Rieber Technology.
PVC Sewer Pipe shall be installed according to the requirements of ASTM D2321, Uni-Bell's Uni-Pub 6 and the manufacturer's recommendations.

DIAMOND PLASTICS® CORPORATION

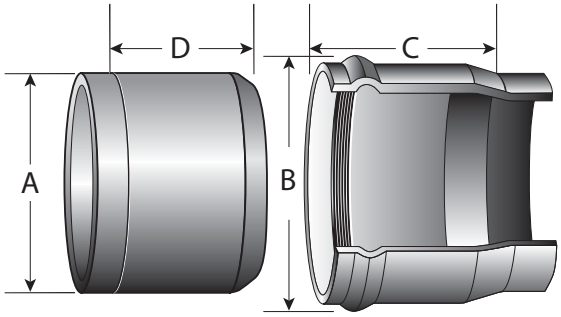
Corporate Headquarters • 1212 Johnstown Road • P.O. Box 1608 • Grand Island, NE 68802-1608

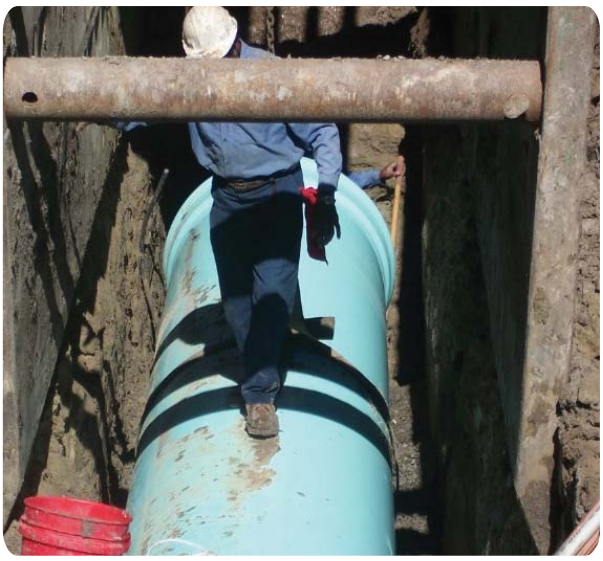
Sani-21™: PVC Sewer Pipe

SPECIFICATION DATA

SANITARY SEWER PIPE FOR THE 21st CENTURY

Reiber Joint Illustration





Sani-21 is supplied in 14 foot and 22 foot laying lengths.

Sani-21™ D3034 & F679 SEWER SPECIFICATION DATA

Strength

Nominal Pipe Size in. (mm)	Outside Diameter A Inches	Bell Socket Diameter B Inches	Socket Depth C Inches	Insert Mark D Inches	Wall Thickness SDR26/PS115 (t) Inches	Wall Thickness SDR35/PS46 (t) Inches
D-3034 Pipe Dimensions						
4" (100)	4.215	5-1/4	4-5/8"	4"	0.162	0.120
6" (150)	6.275	7-1/2	4-3/4"	4"	0.241	0.180
8" (200)	8.400	9-7/8	6-1/8"	5"	0.323	0.240
10" (250)	10.500	12-3/8	6-3/4"	5"	0.404	0.300
12" (300)	12.500	14-5/8	7-1/4"	5-1/2"	0.481	0.360
15" (375)	15.300	18	7-1/4"	6"	0.588	0.437
F-679 Pipe Dimensions						
18" (450)	18.701	21-3/4"	9-1/2"	8-1/4"	0.671	0.499
21" (525)	22.047	25-1/2"	10"	8-1/2"	0.791	0.588
24" (600)	24.803	28-3/4"	11"	10"	0.889	0.661
27" (675)	27.953	32-1/2"	11"	10"	1.002	0.745
30" ciod (750)	32.000	37-1/4"	14"	13-1/2"	1.148	0.853
36" ciod (900)	38.300	43-1/4"	15"	14"	1.373	1.021
42" ciod (1050)	44.500	53"	18"	16-3/4"	1.596	1.187
48" ciod (1200)	50.800	60"	18"	17"		1.355

Prices are subject to a firm policy of "Price in effect at time of shipment on regular purchases"

DIAMOND PLASTICS® CORPORATION

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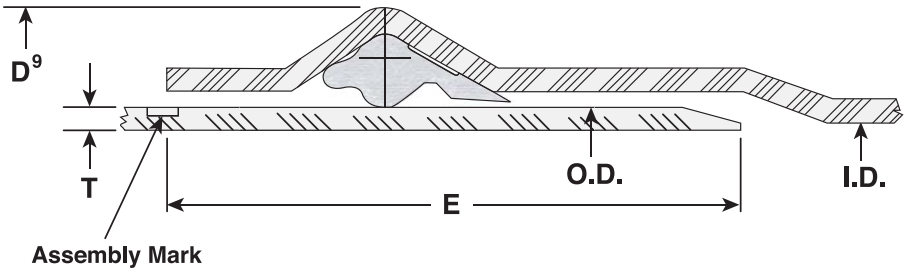
JM Eagle *Building essentials for a better tomorrow™*

GRAVITY SEWER

SUBMITTAL AND DATA SHEET

PIPE SIZE (IN)	AVERAGE O.D. (IN)	NOM. I.D. (IN)	MIN. T. (IN)	MIN. E (IN)	APPROX. D (IN)	APPROX. WEIGHT (LBS/FT)
SDR 35 (PS46) ASTM D3034						
→ **4**	4.215	3.975	0.120	3.50	4.695	1.05
6	6.275	5.915	0.180	4.25	6.995	2.36
→ **8**	8.400	7.920	0.240	4.75	9.360	4.24
10	10.500	9.900	0.300	6.00	11.700	6.64
→ **12**	12.500	11.780	0.360	6.25	13.940	9.50
15	15.300	14.426	0.437	7.25	17.048	14.19
SDR 26 (PS115) ASTM D3034						
4	4.215	3.891	0.162	3.50	4.863	1.40
6	6.275	5.793	0.241	4.25	7.239	3.11
8	8.400	7.754	0.323	4.75	9.692	5.63
10	10.500	9.692	0.404	6.00	12.116	8.84
12	12.500	11.538	0.481	6.25	14.424	12.56
15	15.300	14.124	0.588	7.25	17.652	18.90
PS46, ASTM F679						
18	18.701	17.629	0.499	8.00	20.845	21.43
21	22.047	20.783	0.588	9.50	24.575	29.88
24	24.803	23.381	0.661	9.60	27.647	38.96
27	27.953	26.351	0.745	10.10	31.157	49.47
30 CIOD	32.000	30.194	0.853	16.75	35.612	64.18
36 CIOD	38.300	36.042	1.021	19.02	42.816	93.00
42 CIOD	44.500	41.948	1.187	22.43	49.604	—
48 CIOD	50.800	47.888	1.355	24.78	56.624	—
PS115, ASTM F679						
18	18.701	17.261	0.671	8.00	21.581	28.49
21	22.047	20.349	0.791	9.50	25.443	—
24	24.803	22.891	0.889	9.60	28.627	—
27	27.953	25.799	1.002	10.10	32.261	—
30 CIOD	32.000	29.070	1.148	16.75	36.348	—
36 CIOD	38.300	35.464	1.373	19.02	45.438	—
42 CIOD	44.500	41.072	1.596	22.43	51.356	—
48 CIOD	50.800	46.886	1.822	24.78	58.628	—



I.D. : Inside Dameter
O.D. : Outside Diameter
T. : Wall Thickness
D^9 : Bell Outside Diameter
E : Distance between Assembly Mark to the end of spigot.

Product Standard:	ASTM 3034 (4”–15”)
	ASTM F679 (18”–48”)
Pipe Compound:	ASTM D1784 Cells Class 12454 or 12364
Gasket:	ASTM F477
Integral Bell Joint:	ASTM D3212
Pipe Stiffness:	ASTM D2412 F/ΔY = 46 PSI or 115 PSI
Pipe Length:	14 or 20 feet laying length
Installation:	ASTM D 2321
	JM Eagle™ Installation Guide

North American Pipe Corporation™

ASTM D3034: *Gasketed Gravity Sewer Pipe*

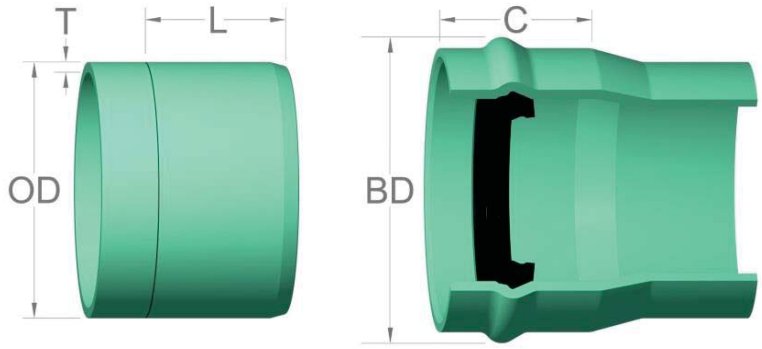
North American Pipe's ASTM D3034 Gravity Sewer PVC product line is manufactured to meet the needs of modern municipal waste water systems, residential waste water control and other non-pressure applications. With top quality raw materials and modern processing technology, North American Pipe's ASTM D3034 Gravity Sewer pipe meets all industry standards; in addition to our own rigorous quality control standards. Our ASTM D3034 Gravity Sewer pipe utilizes Reiber style gaskets throughout the entire product offering. Whether specifying or installing our pipe, you can be assured that North American Pipe will provide the pipe "Right, On Time, All the Time".

Short Form Specification
ASTM D3034 Gasketed Gravity Sewer Pipe

Pipe Standard:	ASTM D3034
Pipe Compound:	ASTM D1784 Cell Class 12454 or 12364
Gasket:	ASTM F477
Integral Bell Joint:	ASTM D3212
Wall Thickness:	ASTM D3034 SDR 35 (46 PS) or SDR 26 (115 PS)
Applications:	Wastewater & Storm Drainage
Color:	Green
Lay Length:	14' or 20'
Installation:	North American Pipe's Installation Guide for PVC Solid Wall Sewer Pipe

North American Pipe Corporation™

ASTM D3034: *Gasketed Gravity Sewer Pipe*



NOMINAL PIPE SIZE	OUTSIDE DIA. – NOM. (OD)	*APPROX. BELL DIA. (BD)	**APPROX. BELL DEPTH (C)	INSERT MARK (L)
4”	4.22	5.25	3.75	3.13
6”	6.28	7.50	4.63	4.00
8”	8.40	10.00	5.25	4.13
10”	10.50	12.25	5.88	5.13
12”	12.50	14.25	6.50	5.38
15”	15.30	17.25	7.75	7.38

NOMINAL PIPE SIZE	PS 46 SDR 35 (T)	PS 115 SDR 26 (T)
4”	.120	.162
6”	.180	.241
8”	.240	.323
10”	.300	.404
12”	.360	.481
15”	.437	.588

Note: These dimensions are for estimating purposes only * Dimension given for Approx. Bell Diameter (BD) is for highest pressure class ** Nominal depth, depth will vary by pressure class

VINYLTECH SEWER PIPE
TECHNICAL DATA SUBMITTAL

VINYLTECH VT PVC • PIPE

CONFORMANCE
These specifications designate the requirements for manufacturing and installing Vinyltech PVC sewer pipe.
ASTM D3034 - Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
ASTM F679 - Standard Specification for Poly (Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings
ASTM D3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
ASTM D2152 - Standard Test Method for Extruded Poly (Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion
ASTM D2444 - Standard Test Method for Determination of the Impact Resistance of Thermoplastic Pipe and Fittings by Means of Tup (Falling Weight)
ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and other Gravity-Flow Applications
ASTM D2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
IAPMO (File No. 2128) - Uniform Plumbing Code (UPC) - Vinyltech sewer pipe is IAPMO listed for ASTM D3034 SDR 35 4-15 inch and SDR 26 4-12 inch.

PIPE COMPOUND
The pipe shall be extruded from compounds meeting the requirements of Cell Classification 12454, as defined in ASTM D1784, Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

PIPE
Vinyltech pipe shall be manufactured in accordance with ASTM D3034 and ASTM F679.

GASKET JOINT
The gasket shall be reinforced with a steel ring and meet the requirements of ASTM F477. Vinyltech pipe shall have an integral bell end with a locked-in factory installed gasket and shall meet the requirements of ASTM D3212.

MARKING
The pipe shall be marked in accordance with ASTM D3034 and F679.

QUALITY CONTROL
Requirements for manufacturing and testing are conducted in strict accordance with ASTM specifications and are outlined in ASTM D3034 and F679.

INSTALLATION
Recommended installation procedure of Vinyltech Corporation and the Uni-Bell PVC Pipe Association are outlined in ASTM D2321, Underground Installation of Flexible Thermoplastic Sewer Pipe. Vinyltech recommends the Uni-Bell Handbook of PVC Pipe as an invaluable resource guide.

ASSEMBLING THE PIPE
Assembling of PVC Sewer Pipe is easily accomplished by hand or by using a bar and block. A depth of entry mark serves as a visual check for rapid, accurate joint inspection. **Do not over insert.**

1) Remove any mud, sand, or other foreign matter from the belled and spigot ends of the pipe. Carefully clean the gasket area.
2) With a clean applicator (a brush or hand) lubricate the entire surface of the pipe from the spigot end to the depth of entry mark and the contact surface of the gasket with **Vinyltech Brand Lubricant.**
3) Brace the bell to avoid disturbing the already installed joints. Align the pipe, insert the spigot into the bell and push.
4) **Do not insert past the entry mark line.**

SEWER PIPE

VINYLTECH VT PVC • PIPE
201 S. 61st Avenue • Phoenix, AZ 85043
602 233-0071 • 602 272-4847 Fax • www.vtpipe.com
AN OTTERTAIL COMPANY

Effective 05/13

VINYLTECH VT PVC • PIPE

GRAVITY SEWER MAIN

TECHNICAL DATA SUBMITTAL

SEWER PIPE

ASTM D3034 SDR 35/PS 46 PVC SEWER PIPE					
NOMINAL SIZE (IN)	(mm)	OUTER DIAMETER (IN)	MINIMUM WALL	14' LENGTH WEIGHT (LB/100')	20' LENGTH WEIGHT (LB/100')
4	(100)	4.215	0.120	105.7	104.2
6	(150)	6.275	0.180	232.6	229.0
8	(200)	8.400	0.240	417.8	410.3
10	(250)	10.500	0.300	657.4	643.9
12	(300)	12.500	0.360	944.1	922.7
15	(375)	15.300	0.437	1390.0	1361.0

ASTM D3034 SDR 26/PS 115 PVC SEWER PIPE				
NOMINAL SIZE (IN)	(mm)	OUTER DIAMETER (IN)	MINIMUM WALL	14' LENGTH WEIGHT (LB/100')
4	(100)	4.215	0.162	150.0
6	(150)	6.275	0.241	320.0
8	(200)	8.400	0.323	580.0
10	(250)	10.500	0.404	900.0
12	(300)	12.500	0.481	1300.0
15	(375)	15.300	0.588	2000.0

ASTM F679 PS 46 PVC SEWER PIPE				
NOMINAL SIZE (IN)	(mm)	OUTER DIAMETER (IN)	MINIMUM WALL	14' LENGTH LB/100'
18	(475)	18.701	0.499	2115.0
* 21	(560)	22.047	0.588	2962.0
* 24	(630)	24.803	0.661	3740.0

ASTM F679 PS 115 PVC SEWER PIPE				
NOMINAL SIZE (IN)	(mm)	OUTER DIAMETER (IN)	MINIMUM WALL	14' LENGTH LB/100'
18	(475)	18.701	0.671	2790.0
* 21	(560)	22.047	0.791	3940.0
* 24	(630)	24.803	0.889	4980.0

* Northern Pipe Products

VINYLTECH VT PVC • PIPE

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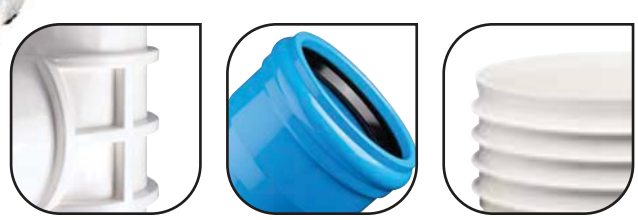
PVC Sewer Fittings

FERGUSON Waterworks

MULTI FITTINGS

HIGHER STANDARDS™



Committed to HIGHER STANDARDS

www.multifittings.com

PVC SEWER FITTINGS

TRENCH TOUGH PLUS™ ADVANTAGES

Locked-in Gasket Design
Makes assembling the joints easy, requiring less effort in the trench, while ensuring leak-proof reliability in the ground.

Advanced Material Formulation
Our high strength yet flexible fittings will accommodate the extreme loads that cause more rigid PVC fittings to fail.

Structural Reinforcements
Reinforced at key intersecting locations for added strength without losing flexibility.


Structural Durability


Impact Strength


Structural Reinforcement

Injection Molded
4" - 15"

Fabricated
12" - 48"

TRENCH TOUGH PLUS™

GASKETED SDR35 SEWER FITTINGS

- Ideal for use in wastewater, stormwater and industrial waste applications.
- Reinforced to SDR26 thickness at key locations such as the branches of tees and wyes for optimal long-term performance.
- Joint withstands 15 psi hydrostatic pressure and a -10.8 psi vacuum pressure.
- Leak-proof at 5° joint deflection and 5% ring deflection.

TRENCH TOUGH PLUS™

LARGE DIAMETER MOLDED SDR35 SEWER FITTINGS

- Multi is the only manufacturer to offer 12" and 15" molded fittings.
- Designed to exceed all applicable standards and are built to withstand higher impact forces, higher loads and jobsite conditions.
- Reinforced at key intersecting locations for added strength without losing flexibility.

Injection Molded
12" - 15"

Injection Molded
4" - 12"

Fabricated
12" - 18"

~~TRENCH TOUGH PLUS™~~

~~HEAVY WALL SDR26 GASKETED SEWER~~ FITTINGS

- ~~Compatible with SDR26 and SDR35 sewer pipe and are used in areas where the installation conditions are more challenging, such as deep burial applications or projects in poor soils.~~
- ~~Service fittings are manufactured with an "extra heavy wall" SDR24 thickness.~~
- ~~Easily identifiable with its grey gaskets.~~

SPECIFICATION CHART

SEWER FITTINGS	OPTIONS	SIZE RANGE	REFERENCED STANDARDS
 **Trench Tough Plus Gasketed Fittings**	SDR35	INJECTION MOLDED: up to 15" FABRICATED: up to 42"	ASTM D3034, F679, F170 CSA B182.2 CSA B181.2 IAPMO File 2431
 **Trench Tough Plus Gasketed Heavy Wall**	SDR26	INJECTION MOLDED: up to 12" FABRICATED: up to 27"	ASTM D3034, F679, F170
 **CIOD Sewer Fittings**	DR51 DR25 DR41 DR18 DR32.5 DR14	INJECTION MOLDED: 4" - 8" (DR18) FABRICATED: 10" - 48"	AWWA C900 AWWA C907 AWWA C905
 **Solvent Weld**	SDR35	INJECTION MOLDED: 3" - 8" FABRICATED: 8" - 15"	ASTM D2665 (6" & 8") NSF 14 (6" & 8") CSA B181.2 (6" & 8")
 **Ultra-Rib**	Open Profile	8" - 24"	ASTM F794 AASHTO M304 CSA B182.4 ASTM D3034
 **DWV Schedule 40 PVC**	PVC	INJECTION MOLDED: 6" - 12" FABRICATED: 10" - 24"	CSA, IAPMO, NSF
 **Backwater Valves**	ABS PVC	3" - 6"	CSA, IAPMO, NSF, SBC

PRESSURE FITTINGS	OPTIONS	SIZE RANGE	REFERENCED STANDARDS
 **Blue Brute C900/C905/C907 CIOD**	DR 51 DR 41 DR 32.5 DR 25 DR 18 DR 14	INJECTION MOLDED: 4" - 8" (DR 18) FABRICATED: 10" - 48"	AWWA C900 & C905 (Fabricated Fittings) AWWA C907 (Molded Fittings) CSA B137.2 (Molded Fittings) CSA B 137.3 (Fabricated Fittings) Factory Mutual (4" - 12") Underwriter's Laboratories
 **Cycle Tough Pressure Fittings for Series 200 IPS Pipe**	DR 21	INJECTION MOLDED: 1½" - 8" FABRICATED: 10" - 24"	ASTM D1784,D3139,D1599, D2241,F477 CSA B137.3 NSF-61

SDR35 D 3034 / PS46 F 679 FITTING SPECIFICATIONS

1.0 **GPK PVC Sewer Fittings** shall be manufactured in accordance with either ASTM D 3034, F1336 or F 679. The PVC material shall have a minimum cell classification of 12454, 13343 or 12364 as defined in ASTM D 1784.

2.0 The **purpose** of GPK in-line fittings is to convey municipal sanitary and industrial wastes, storm water runoff and many other related applications. They are designed to be used in gravity flow and low pressure applications not to exceed 10.8 psi. (74.5 kPa).

3.0 **Injection Molded Fittings** are produced in sizes 4" (100mm) through 12" (300mm) diameter. **Fabricated Fittings** are produced in sizes 4" (100mm) through 36" (973mm) diameter. A fabricated fitting is considered any fitting made from pipe or a combination of pipe and molded components.

4.0 **Chemical Resistance** GPK fittings resist attack from certain alcohols, alkalies, salt solutions, acids and other types of chemicals. Refer to chemical resistant chart for suitability.

5.0 **Marking.** GPK fittings shall be marked with applicable size, "PVC", company name or logo, PSM and the ASTM specification number (D 3034, F 1336 or F679). The fittings and/or packaging shall include the manufacturer's date and shIft code.

6.0 **Testing.** A test after installation of either low pressure air (Uni-B-6) or a water infiltration-exfiltration test is recommended.

7.0 **Deflection Test.** The maximum allowable pipe fitting deflection should be 7 ½% of base ID as shown in table X1.1 of D 3034, and X2.1 of F 679.

8.0 **Backfilling and Tamping.** Backfilling should follow closely after assembly of pipe and fittings.

8.1 **Backfilling.** with proper material is important to achieve desired density in haunching area which enables pipe, fitting and soil to work together to meet designed load requirements. This eliminates excess deflection and shear breaks due to heavy loads. Approved material shall be used properly, compacted continuously above and around the pipe and fittings as well as between fitting and trench wall. A cushion of approved material up to a minimum of 12" (305mm) over the fittings and between the trench walls shall be applied in accordance with the engineers' specifications.

8.2 **Tamping.** This shall be done by hand tamping of the embedment material between the trench wall of the service line fitting and riser connection. Tamping can also be done by mechanical tampers or by using water to consolidate the embedment material. **Extreme unstable ground conditions** may require wider trenches to enable you to compact a larger area around the pipe and fittings to the density consistent of the original ground surface conditions.

9.0 **Service Lines.** Normally, service lines from the property line to the collection sewer should be a minimum depth of 3 feet (1 meter) at the property line and should be laid in straight alignment and uniform slope of not less than ¼" per foot (20.8mm/meter) for 4" (100mm) nominal pipe and 1/8" (10.4mm/meter) per foot for 6" (150mm) pipe. Where collection sewers are deeper than 7 feet (2 meters) a vertical standpipe or stack is permitted but not recommended, consult the project engineer for proper installation details. Deep sewer chimney and risers necessitate extreme care during backfilling. Where surface loading is anticipated the final backfill must be compacted to a density compatible with those surface loads to be encountered.

9.1 **Backfilling around pipe service laterals on slope.** Extra attention should be given on slopes to prevent the newly backfilled trench from becoming a "French Drain". Before backfilling completely there is a tendency for ground and surface water to follow the direction of the looser soil. This flow may wash out soil from under or around pipe and branch line fittings, reducing or eliminating the support needed. To avoid this problem the backfilling should be of greater compaction. Tamping should be done in 4" (100mm) layers and continued in this manner all the way up to the ground or surface line of the trench. Concrete collars or other concrete poured around the fitting to stabilize unwanted movement is recommended to prevent water from undercutting the underside of the pipe and fittings.

Summary: Due to various ground conditions and different situations, installation techniques vary widely. We warranty our products to be free of manufacturer's defects. We will not replace the products that are installed or used incorrectly. The design of the systems that our product is used in is a factor that cannot be overlooked.

GPK FITTING SUBMITTAL SHEET

Intro: GPK manufactures PVC sewer fittings in accordance with either ASTM D 3034, F 1336 or F 679 to be used in gravity flow or low pressure applications. Injection molded fittings are produced in sizes 4" (100mm) through 12" (300mm) diameter. Fabricated fittings are produced in sizes 4" (100mm) through 36" (973mm) diameter.

Material: Fabricated fittings are manufactured from PVC pipe and molded components meeting the requirements of either ASTM D 3034, F 1336 or F 679 for workmanship, extrusion quality, stiffness, impact resistance, dimensions and structural performance.

Extruded pipe components are made from PVC material with a minimum cell classification of 12454, 13343 or 12364 as defined in ASTM D1784.

Injection molded fittings are made from PVC material with a minimum cell classification of 12454 or 13343 as defined in ASTM D 1784.

Extrusion Quality: Extruded components are tested in accordance with and meet the requirements of ASTM D 2152 for properly fused PVC.

Impact Resistance: Extruded Components are tested in accordance with ASTM D 2444 using a 20 lb (9.07kg). Tup A and a Flat Plate Holder B. The strength shall equal or exceed the values shown below:

4" – 5" 150 Ft-Lbs (100mm – 125mm 203 J)	6" – 8" 210 Ft-Lbs (150mm – 200mm 284 J)	10" – 36" 220 Ft-Lbs (250mm – 973mm 299 J)

Impact Resistance: Injection molded fittings are tested in accordance with ASTM D 2444 using a 20 lb (9.07kg). Tup A and a Flat Plate Holder B. The strength shall equal or exceed the values shown below:

4" 50 Ft-Lbs (100mm 68 J)	6" – 8" 75 Ft-Lbs (150mm – 200mm 102 J)	10" – 12" 90 Ft-Lbs (250mm – 300mm 122 J)

Pipe Stiffness: Extruded Components are tested in accordance with ASTM D 2412. The stiffness equals or exceeds the requirements of ASTM D 3034 and F 679.

Pipe Flattening: Extruded components are flattened as described in ASTM D 3034 and F 679 until the distance between the plates is 40% of the outside diameter of the pipe. There shall be no splitting, cracking or breaking.

Pressure/Pressure Deflection: Gasketed joints are tested in accordance with ASTM D 3212.
Pressure: 10 minutes @ 10.8 psi (74.5 kPa) + 10 minutes deflected @ 10.8 psi (74.5 kPa).
Vacuum: 10 minutes @ 22 in. Hg (74 kPa) + 10 minutes deflected @ 22 in. Hg (74kPa).

Branch Bending: The chemically fused areas around the fabricated branches of tee, wye and tee-wye fittings are tested to ASTM F 1336 to verify their strength and integrity.

Pipe Stop Support: Tee and tee-wye fittings are tested to requirements of ASTM F 1336 for pipe stop load support. No cracking or splitting shall occur and pipe spigot shall not protrude into waterway of the fitting.

Joining Methods: Chemically Fused Solvent Weld Joints
Solvent cement is handled and tested in accordance with ASTM D 2564 and D 2855. The Lap Shear Strength shall equal or exceed 900 psi (6205 kPa) @ 72 hours.

Heat Fusion Welded Joints (Butt Fusion Welds)

Elastomeric Seals (Gaskets)
Must meet all requirements of ASTM F 477 and D 3212.

Saddles: Injection Molded saddle tees and saddle wyes shall have skirts with a minimum of 80 square inches (516 square cm) surface area which can be bonded to pipe.

Fabricated saddle tees and saddle wyes shall have skirts with a minimum of 160 square inches (1032 square cm) surface area which can be bonded to pipe.

The worm drive saddle straps used to fasten the saddles are manufactured with corrosion resistant 300 series AISI stainless steel.

GPK does not recommend gasket skirts where air tests are required.

Epoxy Reinforced Welds.

Miscellaneous

FERGUSON Waterworks

PRESCO

Detectable Underground Utility Marking Tape

Specifications, Test Data & Color Codes

1. Specifications

Tape consists of a minimum 5.0* mil overall thickness, with a 0.35 mil (0.00035") solid aluminum foil core. Construction is 0.8 mil clear film, reverse print laminated to an aluminum foil to 3.75 MIL clear film, making the film permanently printed and plowable. All Presco Products tape meets or exceeds the industry standards including the American Public Works Association (APWA) color code.

2. Test Data

Test Data	Method	Value
Thickness	ASTMD2103	5.0 mil
Tensile Strength	ASTMD882	35 lbs/inch (7,000 PSI)
Elongation	ASTMD882-75B	80 %
Colors	APWA CODED	See below
Bond Strength	BOILING WATER	5 hours w/o peel
Adhesives	MFG. SPECS	Morton 548 or equivalent
Bottom Layer	MFG. SPECS	Virgin PE
Top Layer	MFG. SPECS	Virgin PET
Foil	MFG. SPECS	Industry Standard
Message Repeat	MFG. SPECS	Varies per legend
Inks	MFG. SPECS	AXL II
Flexibility	ASTM 671-76	Pliable hand
Printability	ASTMD 2578	45 Dynes

3. Color Code

Blue	Water & Associated Lines
Brown	Force Mains & Associated Lines
Green	Sanitary & Associated Lines
Orange	Telecommunications & Telephone Lines
Purple	Reclaimed Water Lines
Red	Electric & Associated Lines
Yellow	Gas & Associated Lines

4. Burial Depths

Maximum Detectable Burial range is as follows. Bear in mind the types of locators utilized have a direct input on depth.

2"	6" to 12"
3"	12" to 24"
6"	22" to 30"

**** Values are a nominal + or - 10% to allow for manufacturing variance***

Presco 1201 E. Pecan Sherman, TX 75090 ph: 800.527.3295 fax: 903.893.2328

5 Mil Detectable Underground Stock Tape

Part Number	Case Qty	Size	Mil Thickness	LB Per Roll	Color	Legend
D2105B52-457	12	2" x 1000'	5	4	Blue	CAUTION BURIED WATERLINE BELOW
D2105G4-457	12	2" x 1000'	5	4	Green	CAUTION BURIED SEWER LINE BELOW
D2105G1051-457	12	2" x 1000'	5	4	Green	CAUTION BURIED FORCE MAIN LINE BELOW
D2105O1056-457	12	2" x 1000'	5	4	Orange	CAUTION BURIED OIL LINE BELOW
D2105O51-457	12	2" x 1000'	5	4	Orange	CAUTION BURIED FIBER OPTIC LINE BELOW
D2105PP115-457	12	2" x 1000'	5	4	Purple	CAUTION BURIED RECLAIMED WATER LINE BELOW
D2105R6-457	12	2" x 1000'	5	4	Red	CAUTION BURIED ELECTRIC LINE BELOW
D2105Y5-457	12	2" x 1000'	5	4	Yellow	CAUTION BURIED GAS LINE BELOW
D3105B52-457	8	3" x 1000'	5	6	Blue	CAUTION BURIED WATERLINE BELOW
D3105G4-457	8	3" x 1000'	5	6	Green	CAUTION BURIED SEWER LINE BELOW
D3105O51-457	8	3" x 1000'	5	6	Orange	CAUTION BURIED FIBER OPTIC LINE BELOW
D3105PP115-457	8	3" x 1000'	5	6	Purple	CAUTION BURIED RECLAIMED WATER LINE BELOW
D3105R6-457	8	3" x 1000'	5	6	Red	CAUTION BURIED ELECTRIC LINE BELOW
D3105R2598-457	8	3" x 1000'	5	6	Red	CAUTION BURIED HIGH VOLTAGE CABLE BELOW
D3105Y5-457	8	3" x 1000'	5	6	Yellow	CAUTION BURIED GAS LINE BELOW
D6105B52-457	4	6" x 1000'	5	11.5	Blue	CAUTION BURIED WATERLINE BELOW
D6105G4-457	4	6" x 1000'	5	11.5	Green	CAUTION BURIED SEWER LINE BELOW
D6105O51-457	4	6" x 1000'	5	11.5	Orange	CAUTION BURIED FIBER OPTIC LINE BELOW
D6105PP115-457	4	6" x 1000'	5	11.5	Purple	CAUTION BURIED RECLAIMED WATER LINE BELOW
D6105R6-457	4	6" x 1000'	5	11.5	Red	CAUTION BURIED ELECTRIC LINE BELOW
D6105Y5-457	4	6" x 1000'	5	11.5	Yellow	CAUTION BURIED GAS LINE BELOW
D12105B52-457	1	12" x 1000'	5	23	Blue	CAUTION BURIED WATERLINE BELOW
D12105G1051-457	1	12" x 1000'	5	23	Green	CAUTION BURIED FORCE MAIN LINE BELOW
D12105G4-457	1	12" x 1000'	5	23	Green	CAUTION BURIED SEWER LINE BELOW