

Letter of Transmittal

Attention:	Ryan McGinnis, P.E.
	Schlagel & Associates, P.A.
	14200 W 107th Street
	Lenexa, KS 66215

Project: Winterset 13th Plat ESS JOB# 17-W-20

Date: 7/2/2020

New Submittal ____2____

Transmittal No. ____1____

Previous Transmittal No.____

Resubmittal

Specification Section Description Supplier Action City Of Lee Summit MO Sanitary Sewer Pipe Materials - Product Data KC Winwater For Review Specification 3500 City Of Lee Summit MO Storm Sewer Pipe Materials - Product Data KC Winwater For Review Specification 2600 City Of Lee Summit MO Water Line Pipe Materials - Product Data KC Winwater For Review Specification 3900

Signed: Dustin Levell

Contractor: Emery Sapp and Sons, Inc.

Thank

Remarks:

K Reviewed N	lot Required for Our Review
Rejected	Revise and Resubmit
Revise Where Note	d. Resubmittal Not Required
SCHLAGEL &	ASSOCIATES, P.A.
By: apar	Date: //2/2020

Reviewed By: _

Date: 07/62/2020

SANITARY SEWER

KANSAS CITY WINWATER

3939A NE 33RD TERRACE KANSAS CITY MO 64117 (816) 459-8600

> Date: 7-2-20 To: Emery Sapp & Sons Attn: Dustin Job: Winterset Valley 13th Lee's Summit Drawings for approval Enclosed:

SDR26 PVC PIPE TRACER WIRE DETECTABLE TAPE TRACER BOX ANODE ROD SDR PVC FITTINGS MANHOLE BOOT CLEANOUT COVER NORTH AMERICAN COPPERHEAD AA THREAD SEAL COPPERHEAD COPPERHEAD PLASTIC TRENDS PRESS SEAL SIGMA

***Submittal Approval is recommended before orders are entered THANK YOU

www.northamericanpipe.com

Product Description:



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 nonpressure 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. North American Pipe's ASTM D3034 Gravity Sewer pipe utilizes Reiber style gaskets throughout the entire product offering. North American Pipe produces a full range of ASTM D3034Gravity Sewer pipe in SDR-35 and SDR-26 classifications. Whether specifying or installing our pipe you can be assured that North American Pipe will provide the pipe "Right, On Time, All the Time".

This product is made in accordance with the following specifications:

ASTM D3034 ASTM D3212 ASTM D1784

ASTM F477

Short Form Specification for North American Pipe Corporation ASTM D3034 Gasketed Gravity Sewer Pipe

PVC gravity sewer pipe shall be made from a compound conforming to a cell classification of 12454 or 12364 as defined by ASTM D1784 and in accordance with ASTM D3034 for sizes four inch through fifteen inch. The wall thickness, when tested according to ASTM D3412, shall correspond to a dimension ratio of SDR 35 with a pipe stiffness value of 46 or SDR26 with a pipe stiffness of 115 for heavy wall pipe. Integral bells shall incorporate locked in gaskets meeting the requirements of ASTM D3212 and F477. The pipe shall be provided in lengths of 14 feet or 20 feet as required.





Rev: 06/2009

www.northamericanpipe.com

North American Pipe Corporation



NOMINAL PIPE SIZE	OUTSIDE DIA. – NOM. (OD)	*APPROX. BELL DIA. (BD)	**APPROX. BELL DEPTH (C)	INSERT MARK (L)
4"	4.215	5.25	3.75	3.13
6"	6.275	7.50	4.63	4.00
8"	8.400	10.00	5.25	4.13
10"	10.500	12.25	5.88	5.13
12"	12.500	14.25	6.50	5.38
15"	15.300	17.25	7.75	7.38

NOMINAL	SDR 35	SDR 26	SDR 23.5
PIPE SIZE	(T)	(T)	(T)
4"	.120	.162	.178
<mark>6"</mark>	.180	.241	.265
<mark>8"</mark>	.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

Rev: 06/2009



Copperhead® High Strength Tracer Wire Spec

- Use Copperhead High Strength Tracer Wire
- Part # 1230*-HS-**
- * = Color: B=Blue Water, G=Green Sewer, P=Purple Reclaim Water R=Red Electric, N=Orange Communications, K=Black
- ** = Spool Size: 500', 1000', 2500'

Tracer wire shall be a #12 AWG (0.0808" diameter) fully annealed, high carbon 1055 grade steel, high strength solid copper clad steel conductor (HS-CCS), insulated with a 30 mil, high-density, high molecular weight polyethylene (HDPE) insulation, and rated for direct burial use at 30 volts. HS-CCS conductor must be at 21% conductivity for locate purposes. Break load of 452 lbs. HDPE insulation shall be RoHS compliant and utilize virgin grade material. Insulation color shall meet the APWA color code standard for identification of buried utilities. Manufacturers supplying copper clad steel tracer wire must have available detailed performance data including 5 years of underground testing in terms of durability related to damage of protective insulation and effects of potential corrosion of the specific copper clad steel used. Origin of copper clad steel manufacturer is required and steel core must be manufactured in the United States. If manufacturer has not completed 5 year corrosion testing, a 5 year warranty must be provided. Tracer wire shall be Copperhead® High Strength HS-CCS HDPE 30 mil or district pre-approved equal and made in the USA.

CAUTION FORCE MAIN BURIED BELOW CAUTION SEWER LINE BURIED BELOW CAUTION WATER LINE BURIED BELOW

DETECTABLE TAPE

		Thickness: 5 MIL		
Item Number	Size	Description	Quantity/Case	Weight/Case
65003	3" X 1000'	BLUE Waterline Tape	4	23
65006	6" X 1000'	BLUE Waterline Tape	4	45
65103	3" X 1000'	GREEN Sewer Tape	4	23
→ 65106	6" X 1000'	GREEN Sewer Tape	4	45
65203	3" X 1000'	BROWN Force Main Tape	4	23
65206	6" X 1000'	BROWN Force Main Tape	4	45

SPECIFICATIONS

- 5 MIL Overall Thickness
- Solid Aluminum Foil Core
- Virgin Clear Polypropylene Film
- Acid, Alkali, Chemical, and Oil Resistant
- Direct Burial Rated
- Printed with metallic design for maximum visibility
- Meets the AWPA Color-Code Standard for identification of buried utilities

CAUTION CAUTION CAUTION CAUTION

NON-DETECTABLE BARRICADE TAPE

Thickness: 2 MIL							
Item Number	Size	Description	Quantity/Case	Weight/Case			
65903	3" X 1000'	YELLOW Caution Tape	20	48			

AA Thread Seal Tape, Inc.

1275 Kyle Court | Wauconda, IL 60084 Phone: (847)-526-2120 | Toll Free: (800)-537-7139 | Fax: (847)-526-2209 www.aathread.com | sales@aathread.com



SnakePit's exclusive **Encapsulated Magnet System** makes locating your access boxes easier by magnifying the ferromagnetic signal!

The only magnetized tracer box

which effectively amplifies the ferromagnetic signal. The result is clear — and you can hear if for yourself. Magnetized Tracer Boxes that are easier to find, every time.

ANTI-CORROSION TECHNOLOGY

Corrosion and oxidation of wires is never a problem with the SnakePit. Each Magnetized Tracer Box features a corrosion-resistant brass wire lug and a wax pad to cover wire connections after installation. Wax pads block out moisture, are reusable and conform to irregular surfaces. Secure it, cover it, and don't worry about it your wire connection will be protected by SnakePit.

INSULATED DIRECT CONNECTION

Time is money. Thanks to SnakePit's Insulated Direct Connection you never have to remove the cover to access your tracer wire. Simply hook-up your locator transmitter directly to the brass connecting lug. Signal loss is a thing of the past.

COLOR-CODED COVER

SnakePit's Cast Iron covers are color-coded according to American Public Works Association (APWA) standards. What does that mean for you? Instant recognition of the utility you are tracing.

LOCKING COVER ELIMINATES TAMPERING

SnakePit also features a pentagon locking cover that stops would-be tampering from creating unnecessary problems.

Embedded magnet for easy detector location.

Hook-up to underground wires without removing the cover!

There is a SnakePit Magnetized Tracer Box for **every** job.

All SnakePits feature the UNIVERSAL insulated direct connection hook-up with anti-corrosion technology and APWA color coded locking covers.

LITE DUTY BOX

This SnakePit is designed for light traffic areas such as yards and ditches. Also perfect for retrofitting existing sites. LD14*TP

LITE DUTY Adjustable Box

The adjustable SnakePit was designed for locations in which the soil is unsettled. You can adjust your SnakePit to be level with ground for a flush fit. *LD14*TP-ADJ*

LITE DUTY XL BOX

All the benefits of the Lite Duty but with a Posi-Lock pull out restraint & anti-sink flange adaptor. Perfect for all new construction where shifting soil may be an issue. *LDXL36*TP*

ROADWAY BOX

The toughest and strongest of all SnakePits. With its 5" top flange it can take the constant beating of heavy traffic. *RB14*TP*



CONCRETE/ Driveway box

Complete with a 6" top flange, this SnakePit is ideal for all concrete/ driveway applications. *CD14*TP*

NOITATE VER

All SnakePits are available with a cast iron cover. The Lite Duty boxes are also available with an optional durable ABS cover.

> TO LEARN MORE, PLEASE VISIT: **c o p p e r h e a d w i r e . c o m** PHONE: **1.877.726.5644** FAX: **1.763.271.3694 Copperhead Industries, LLC** P.O. Box 1081 Monticello, MN 55362 Made in U.S.A.

Cast Iron

APWA UNIFORM COLOR CODE







Ground Rod:

- Use Copperhead® Ground Rod
- Part # ANO-12, 1.5# x 1.315"D x 18.5"L, Magnesium Drive in Anode.

Grounding a tracer wire system at all dead end points completes the needed electrical circuit for accurate locates. This will significantly enhance your signal strength and pinpoint your tracer wire to its target.

Your Copperhead Ground Rod includes an HDPE cap and 20' of factory installed Copperhead red 12 AWG SuperFlexTM copper clad steel tracer wire with a 30 mil high-density polypropylene (HDPE) insulation. The factory installed wire is also rated for direct burial use at 30 volts with 21% conductivity. HDPE insulation shall be RoHS compliant and utilize virgin grade material. Package includes one Copperhead SnakeBiteTM connector, part # SCB-01-SR, which is filled with nonhardening, dielectric, moisture displacement silicon for c8orrosion protection. The connector is provided to splice the factory installed anode tracer wire to the mainline tracer wire. The Copperhead Anode described above must be used or a **pre-approved equal** and made in the USA.





SDR 26 PVC Heavy Wall Gasketed Sewer Fittings

Injection Molded in Sizes 4" - 12" Fabricated in Sizes 15" - 36"

SDR 26 extra heavy duty gasketed sewer fittings are designed for maximum performance in the toughest environments with a reinforced wall that is 34.5% thicker than SDR 35, and a superior, high impact, gasket retention ring. Heavy duty reducing branches utilizing a minimum of SDR 18 wall thickness are used in our injection molded 8", 10", and 12" tees, wyes, and tee-wyes to reinforce the strength of important branch intersections.

The gasket and shock absorbing properties of the gasket retention ring combine to reduce the effect of impact on 4" to 8" sizes for a more resilient system. A special collar design permanently locks the gasket onto the fitting ensuring a secure fit and a robust seal that prevents infiltration and ex-filtration. To make it easy to identify in the field, the collar and ring are a distinctive green color. A deep lead into the gasket enhances assembly and reduces the possibility of gasket damage or rolling, and our square pipe stop resists pipe push-through from over insertion.

Our vertical riser system utilizes many H Series components for a complete sewer protection solution.

Design Advantages

- Heavy duty, shock-absorbing collar designed to permanently lock the gasket onto the fitting, and inhibit fittings breaking under impact
- Specially-designed square pipe stop prevents damage from over insertion, requires 30% more force before spearing
- Reinforced wall thickness at key branch intersections for added strength. Injection molded joint withstands 200 psi hydrostatic pressure and 22" mercury vacuum pressure
- Distinctive green high impact retention rings and gaskets for easy identification in the field



Applications

Non-pressure drainage of sewer and surface water wherever extra heavy SDR 26 is specified.

Typical Uses:

Lateral Connections to Municipal Sewers Sanitary Storm

Surface Drainage

Area drainage Parking lot drainage

Attention: Royal Building Product's fittings are <u>not</u> to be used or tested with compressed air or gases.



H-Series

The H series fitting line is a fully-integrated SDR 26 fitting design using reinforced branches and intersections to enhance the structural integrity of the installation and provide long-lasting performance.



Short Form Specifications

4" through 12" injection molded gasketed SDR 26 sewer fittings shall be manufactured in accordance with ASTM D3034, ASTM F1336 and CSA B182.2. They shall be injection molded from virgin PVC compound having a cell classification of 12454 or 13343 in accordance with, and certified by the National Sanitation Foundation (NSF), to meet ASTM D1784. Gaskets shall be manufactured in accordance with ASTM F477 or ASTM F913. Gaskets shall be firmly seated in fitting in order to ensure proper installation and to prevent dislocation or misalignment during system assembly. Gasket joints must comply with ASTM D3212 Internal Pressure Test (ex-filtration) and Vacuum Test (infiltration) at 5 degrees of gasket joint deflection certified at 200 psi and a 22" mercury vacuum pressure.

Where available, reducing branches on injection molded 8", 10", and 12" tees, wyes, and tee-wyes shall be minimum SDR 18 wall thickness in the reducing branch body and reducing branch hub below the gasket race.

Gasketed SDR 26 sewer fittings shall be certified by the National Sanitation Foundation (NSF) and, in applicable configurations, to meet ASTM D3034, and by the Canadian Standards Association (CSA) to meet CSA B182.2.

Certification

Our Gasketed SDR 26 Molded Sewer fittings are third party tested and listed by NSF and CSA to meet specifications defined in ASTM D3034 and CSA B182.2, where applicable.





HIGH-PERFORMANCE PIPE-TO-MANHOLE CONNECTOR

What It Is

PSX: Direct Drive is a high-performance flexible pipe- to-manhole connector that offers easy installation and long-term performance in one convenient product. Whether you core or cast your holes, **PSX:Direct Drive** fits right into your production methods, ready to seal your toughest applications every time.



<u>How It Works</u>

PSX:Direct Drive has superior materials and technology

- Specially developed synthetic rubber is continuously tested and lab-certified
- Power Sleeve made from tempered Series 304 stainless steel
- Installation Mechanism made from Series 300 stainless steel
- Installation Mechanism is infinitely adjustable
- Installation tools are calibrated and certified
- Take-up clamps made from Series 304 stainless steel with quick-adjusting screws

Why It's Better

- Installs quickly and easily from outside the manhole
- Requires no retightening or adjustment
- All stainless-steel components
- No plastic parts to crack or break
- · Accurately compensates for hole size variation
- Available for pipes from 1.7"- 44" OD
- Additional torque and multiple adjusters on larger diameters
- Use in manholes, wet wells, pump and lift stations, stormwater structures, on-site treatment structures, grease interceptors, or any application requiring a flexible watertight connector

How It Performs

PSX:Direct Drive meets or exceeds all requirements of the following Specifications and/or Test Methods:

ASTM C 923 ASTM C 1244 ASTM C 1478 ASTM F 2510

Protected by one or more of the following patents: 6805359, 7146689, 7263746

Press-Seal believes all information is accurate as of its publication date. Information, specifications, and prices are all subject to change without notice. Press-Seal is not responsible for any inadvertent errors. Copyright 2007



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Providing Products and Services That Protect Our Planet's Clean Water Supply

800-348-7325 Fax (260) 436-1908 email: sales @press-seal.com web: www.press-seal.com



PSX:DIRECT DRIVE

PRODUCT SPECIFICATION

Submittal Specification

A watertight flexible pipe-to-manhole connector shall be employed in the connection of the sanitary sewer and/or stormwater pipe to precast manholes or other structures.

The connector shall be PSX:DIRECT DRIVE as manufactured by Press-Seal Gasket Corporation, Fort Wayne, Indiana, or approved equal.

The connector assembly shall be the sole element relied on to assure a flexible watertight seal of the pipe to the structure. The connector shall consist of a rubber gasket, an internal expansion sleeve, and one or more external compression take-up clamps. Approved materials for the connector shall be natural or synthetic rubber and Series 300 non-magnetic stainless steel. No plastic components shall be permitted.

The rubber gasket element shall be constructed solely of synthetic or natural rubber, and shall meet/exceed the requirements of ASTM C 923, and shall have a minimum tensile strength of 1600 PSI. Minimum thickness of the cross-section shall be 0.275 inches.

The internal expansion sleeve components shall be made of Series 300 non-magnetic stainless steel and shall utilize no welds in their construction. Installation shall be performed using a calibrated installation tool available from the connector manufacturer. Installation of the sleeve shall require no retightening after the initial installation.

The external compression take-up clamp(s) shall be constructed of Series 300 non-magnetic stainless steel and shall utilize no welds in its constructions. The clamp(s) shall be installed by torquing the adjusting screw using a torque-setting wrench available from the connector manufacturer.

Selection of the proper size connector for the manhole and pipe requirement, and installation thereof, shall be in strict conformance with the recommendations of the connector manufacturer. Any dead end pipe stubs installed in connectors shall be restrained from movement per ASTM C 923.

The finished connection shall provide sealing to 13 psi (minimum), and shall accommodate deflection of pipe to 7 degrees (minimum) without loss of seal.

Vacuum testing shall be conducted in strict conformance with ASTM C 1244 prior to backfill. Other testing shall be conducted in strict conformance with the requirements of the connector manufacturer.

TYPICAL TEST RESULTS for PSX:Direct Drive (as in ASTM C 923 and C 1478)							
Test	ASTM Test Method	Test Requirements	Typical Result				
CHEMICAL RESIST- ANCE; 1N SULFURIC ACID and 1N HYDROCHLORIC ACID	D 534, AT 22ºC FOR 48 HRS	NO WEIGHT LOSS NO WEIGHT LOSS	NO WEIGHT LOSS NO WEIGHT LOSS				
TENSILE STRENGTH	D 412	1200 PSI, MIN.	2100 PSI				
ELONGATION AT BREAK	D 412	350%, MIN.	525%				
HARDNESS	D 2240 (SHORE A DUROMETER)	±5 FROM THE MANUFACTURER'S SPECIFIED HARDNESS	<2				
ACCELERATED OVEN-AGING	D 573, 70± 1°C FOR 7 DAYS	DECREASE OF 15%, MAX. OF ORIGINAL TEN- SILE STRENGTH, DECREASE OF 20%, MAX. OF ELONGATION	-13% TENSILE CHANGE, -14% ELONGATION CHANGE				
COMPRESSION TEST	D 395, METHOD B, AT 70°C FOR 22 HRS	DECREASE OF 25%, MAX. OF ORIGINAL DEFLECTION	13%				
WATER ABSORPTION	D 471 IMMERSE 0.75 BY 2-IN.SPECIMEN IN DISTILLED WATER AT 70°C FOR 48 hrs	INCREASE OF 10%, MAX. OR ORIGINAL BY WEIGHT	3.50%				
OZONE RESISTANCE	D 1171	RATING 0	PASS				
LOW-TEMP, BRITTLE POINT	D 746	NO FRACTURE AT -40°C	PASS				
TEAR RESISTANCE	D 624, METHOD B	200 LBF/IN. (MIN.)	450 LBF/IN.				

Protected by one or more of the following patents: 6805359, 7146689, 7263746

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PSX:Direct Drive meets and/or exceeds all requirements of ASTM C 923, including physical properties of materials and performance testing. Performance testing includes:

- 13 psi minimum in straight alignment
- 10 psi at minimum 7°angle
- 10 psi minimum under shear load of 150 lbs/in. pipe diameter

PSX:Direct Drive meets and/or exceeds the following specifications:

- ASTM C 923 Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
- ASTM C 1478 Standard Specification for Storm Drain Resilient Connectors Between Reinforced Concrete Storm Sewer Structures, Pipes and Laterals
- ASTM F 2510 Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures and Corrugated High Density Polyethylene Drainage Pipes
- ASTM C 1244 Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test



STORM SEWER

KANSAS CITY WINWATER

3939A NE 33RD TERRACE KANSAS CITY MO 64117 (816) 459-8600

> Date: 7-2-20 To: Emery Sapp & Sons Attn: Dustin Job: Winterset Valley 13th Lee's Summit Drawings for approval Enclosed:

HDPE STORM PIPE

ADS

***Submittal Approval is recommended before orders are entered THANK YOU

ADS N-12[®] ST IB PIPE (per AASHTO) SPECIFICATION

Scope

This specification describes 4- through 60-inch (100 to 1500 mm) ADS N-12 ST IB pipe (per AASHTO) for use in gravity-flow drainage applications.

Pipe Requirements

ADS N-12 ST IB pipe (per AASHTO) shall have a smooth interior and annular exterior corrugations.

- 4- through10-inch (100 to 250 mm) shall meet AASHTO M252, Type S.
- 12- through 60-inch (300 to 1500 mm) shall meet AASHTO M294, Type S or ASTM F2306.
- Manning's "n" value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined using a bell & spigot joint meeting AASHTO M252, AASHTO M294 or ASTM F2306. The joint shall be soil-tight and gaskets, when applicable, shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable wrap to ensure the gasket is free from debris. A joint lubricant supplied by the manufacturer shall be used on the gasket and bell during assembly.

Fittings

Fittings shall conform to AASHTO M252, AASHTO M294, or ASTM F2306. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the soil-tight joint performance requirements of AASHTO M252, AASHTO M294 or ASTM F2306.

Material Properties

Virgin material for pipe and fitting production shall be high density polyethylene conforming with the minimum requirements of cell classification 424420C for 4- through 10-inch (100 to 250 mm) diameters, or 435400C for 12- through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The 12- through 60-inch (300 to 1500 mm) virgin pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306, respectively.

Installation

Installation shall be in accordance with ASTM D2321 and ADS's published installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot. (0.3 m) and for 54- and 60-inch (1350 and 1500 mm) diameters, the minimum cover shall be 2 ft. (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1, Class 2 (minimum 90% SPD) or Class 3 (minimum 90%) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.01. Contact your local ADS representative or visit our website at <u>www.ads-pipe.com</u> for a copy of the latest installation guidelines.

Pipe Dimensions

Nominal Diameter, in (mm)														
Pipe I.D.	4	6	8	10	12	15	18	24	30	36	42	48	54*	60
in (mm)	(100)	(150)	(200)	(250)	(300)	<mark>(375)</mark>	<mark>(450)</mark>	<mark>(600)</mark>	(750)	(900)	(1050)	<mark>(1200)</mark>	(1350)	(1500)
Pipe O.D.**	4.8	6.9	9.1	11.4	14.5	18	22	28	36	42	48	54	61	67
in (mm)	(122)	(175)	(231)	(290)	(368)	(457)	(559)	(711)	(914)	(1067)	(1219)	(1372)	(1549)	(1702)
Perforations All diameters available with or without perforations														

*Check with sales representative for availability by region.

**Pipe O.D. values are provided for reference purposes only, values stated for 12- through 60-inch are ± 1 inch. Contact a sales representative for exact values.

N-12[®] ST IB (per AASHTO) JOINT SYSTEM

(Joint configuration & availability subject to change without notice. Product detail may differ slightly from actual product appearance.)



4" - 60" (100-1500 MM)

ADS FLARED END SECTION SPECIFICATION

Scope

This specification describes 12- through 36-inch (300 to 900mm) ADS Flared End Sections for use in culvert and drainage outlet applications.

Requirements

The ADS Flared End Section shall be high density polyethylene meeting ASTM D3350 minimum cell classification 213320C; contact manufacturer for additional cell classification information. When provided, the metal threaded fastening rod shall be stainless steel.

Installation

Installation shall be in accordance with ADS installation instructions and with those issued by state or local authorities. Contact your local ADS representative or visit <u>www.ads-pipe.com</u> for the latest installation instructions.

PIPE DIAMETER, in (mm)									
Diameter	12	<mark>15</mark>	18	24	30	36			
in (mm)	(300)	<mark>(375)</mark>	(450)	(600)	(750)	(900)			
А	6.5	6.5	7.5	7.5	7.5	7.5			
in (mm)	(165)	(165)	(191)	(191)	(191)	(191)			
B (max)	10.0	10.0	15.0	18.0	22.0	25.0			
in (mm)	(254)	(254)	(381)	(475)	(559)	(635)			
Н	6.5	6.5	6.5	6.5	8.6	8.6			
in (mm)	(165)	(165)	(165)	(165)	(218)	(218)			
L	25.0	25.0	32.0	36.0	58.0	58.0			
in (mm)	(635)	(635)	(813)	(914)	(1473)	(1473)			
W	29.0	29.0	35.0	45.0	63.0	63.0			
in (mm)	(737)	(737)	(889)	(1143)	(1600)	(1600)			



Product detail may differ slightly from actual product appearance.

KANSAS CITY WINWATER

3939A NE 33RD TERRACE KANSAS CITY MO 64117 (816) 459-8600

> Date: 7-2-20 To: Emery Sapp & Sons Attn: Dustin Job: Winterset Valley 13th Lee's Summit Drawings for approval Enclosed:

C900 WATER PIPE TRACER WIRE DUCTILE IRON PIPE POLYWRAP DETECTABLE TAPE FBE MJ FITTINGS MEGALUGS GATE VALVES FIRE HYDRANTS BUTTERFLY VALVE VALVE BOX NORTH AMERICAN COPPERHEAD MCWANE DUCTILE AA THREAD SEAL AA THREAD SEAL STAR PIPE STAR PIPE CLOW VALVE CLOW VALVE PRATT SIGMA CO

***Submittal Approval is recommended before orders are entered THANK YOU

North American Pipe Corporation

AWWA C900: Gasketed Integral Bell PVC Pipe

Municipal

Water, Wastewater, Reclaimed Water

North American Pipe Corporation's AWWA C900 Gasketed Integral Bell PVC Pipe product line is manufactured to meet the needs of modern municipal water, wastewater, and reclaimed water systems. With top quality raw materials and modern processing technology, our C900 pipe meets all industry standards in addition to our own rigorous quality control requirements.

Our C900 pipe utilizes Rieber style gaskets throughout the entire product offering to create a leak-free joint.

Whether specifying or installing our pipe, you can be assured that North American Pipe will provide the pipe "Right, On Time, All the Time".

Pipe Standard:	AWWA C900
Diameter Standard:	Cast Iron Outside Diameter (CIOD)
Nominal Sizes:	4", 6", 8", 10", 12"
Dimension Ratios & Pressure Classes:	DR 25 – 165 psi DR 18 – 235 psi (150 psi)** DR 14 – 305 psi (200 psi)**
Lay Length:	20'
Pipe Compound:	ASTM D1784 Cell Class 12454
Pipe Joint Std.:	ASTM D3139
Gasket Standard.:	ASTM F477
Gasket Material Offerings:	Styrene-Butadiene Rubber [Std.] Nitrile, EPDM [Optional]
Installation Std.:	AWWA C605







Applications:	Water	Wastewater	Reclaimed Water
Color:	Blue	Green	Purple
Certifications:	NSF 14* NSF 61 UL 1285 FM 1612**	None	None

* NSF 14 certified products must be requested at time of order.

** FM 1612 does not include DR 25 and reclassifies DR 18 as150 psi and DR 14 as 200 psi.

TDS-C900-1 Rev: A00

Right, On Time, All the Time_®

www.northamericanpipe.com

North American Pipe Corporation

AWWA C900: Gasketed Integral Bell PVC Pipe

DUAL INSERTION MARK VERSION



NOMINAL PIPE SIZE	OUTSIDE DIAMETER (OD)	*APPROX. BELL DIAMETER (BD)	APPROX. BELL DEPTH (C)	1 st INSERTION MARK (L1)	2 nd INSERTION MARK (L2)
4"	4.800	6.250	5.000	3.375	4.375
6"	6.900	8.625	5.750	4.625	5.625
8″	9.050	11.500	7.000	5.625	6.625
10"	11.100	14.000	7.250	6.125	7.125
12"	13.200	16.563	8.000	6.875	7.875

		MINIMUM WALL THICKNESS (T)	
SIZE	PC 165 DR 25	PC 235 DR 18	PC 305 DR 14
4"	.192	.267	.343
6"	.276	.383	.493
<mark>8"</mark>	.362	.503	.646
10"	.444	.617	.793
12"	.528	<mark>.733</mark>	.943

Notes:

- 1. These dimensions are for estimating purposes only. All dimension are in inches.
- 2. DR = Dimension Ratio
- 3. PC = Pressure Class (psi).
- 4. * Dimension given for Approx. Bell Diameter (BD) is for highest pressure class.

TDS-C900-1 Rev: A00

Right, On Time, All the Time.

www.northamericanpipe.com



Copperhead® High Strength Tracer Wire Spec

- Use Copperhead High Strength Tracer Wire
- Part # 1230*-HS-**
- * = Color: B=Blue Water, G=Green Sewer, P=Purple Reclaim Water R=Red Electric, N=Orange Communications, K=Black
- ** = Spool Size: 500', 1000', 2500'

Tracer wire shall be a #12 AWG (0.0808" diameter) fully annealed, high carbon 1055 grade steel, high strength solid copper clad steel conductor (HS-CCS), insulated with a 30 mil, high-density, high molecular weight polyethylene (HDPE) insulation, and rated for direct burial use at 30 volts. HS-CCS conductor must be at 21% conductivity for locate purposes. Break load of 452 lbs. HDPE insulation shall be RoHS compliant and utilize virgin grade material. Insulation color shall meet the APWA color code standard for identification of buried utilities. Manufacturers supplying copper clad steel tracer wire must have available detailed performance data including 5 years of underground testing in terms of durability related to damage of protective insulation and effects of potential corrosion of the specific copper clad steel used. Origin of copper clad steel manufacturer is required and steel core must be manufactured in the United States. If manufacturer has not completed 5 year corrosion testing, a 5 year warranty must be provided. Tracer wire shall be Copperhead® High Strength HS-CCS HDPE 30 mil or district pre-approved equal and made in the USA.

MCWANE DUCTILE IRON PIPE



Boltless restrained joint systems • Multiple design options available from 3"-36" • Fast and easy installation • 350 psi pressure rating • Independently tested



IRON STRONG

mcwaneductile.com

TYTON® JOINT PIPE

1111117 ann NOMINAL LAYING LENGTH R

Tyton® Joint											
Pipe Size	Pi Thicki	ipe 1ess In.	Outside Diameter	*Dimensions In.							
	From To		In.	A	В						
3	.25	.40	3.96	5.80	3.00						
4	.25	.41	4.80	7.10	3.15						
6	.25	.43	6.90	8.63	3.38						
8	.25	.45	9.05	10.94	3.69						
10	.26 .47		11.10	13.32	3.75						
12	.28	.49	13.20	15.06	3.75						
14	.28	.51	15.30	17.80	5.00						
16	.30	.52	17.40	19.98	5.00						
18	.31	.53	19.50	22.00	5.00						
20	.33	.54	21.60	24.12	5.25						
24	.33 .56		25.80	28.43	5.50						
30	.34	.63	32.00	35.40	6.55						
36	.38	.73	38.30	41.84	7.00						
*Nominal le	wing longth is 1	8 ft									

Nominal laying length is 18 ft.

MECHANICAL JOINT PIPE



Pipe Size	Pipe Thickness In.		Outside Diameter	*Dimensions In.					B	olts	Bell Weight	Gland** Bolts Gasket
In.	From	То	In.	В	J	K1	K2	No.	Size In.	Length In.	Lb.	Lb.
3	.25	.40	3.96	2.50	6.19	7.62	7.69	4	5/8	3	11	7
4	.26	.41	4.80	2.50	7.50	9.06	9.12	4	3/4	3-1/2	16	10
6	.25	.43	6.90	2.50	9.50	11.06	11.12	6	3/4	3-1/2	18	16
8	.27	.45	9.05	2.50	11.75	13.31	13.37	6	3/4	4	24	25
10	.29	.47	11.10	2.50	14.00	15.62	15.62	8	3/4	4	31	30
12	.31	.49	13.20	2.50	16.25	17.88	17.88	8	3/4	4	37	40
14	.33	.51	15.30	3.50	18.75	20.25	20.25	10	3/4	4-1/2	61	45
16	.34	.52	17.40	3.50	21.00	22.50	22.50	12	3/4	4-1/2	74	55
18	.35	.53	19.50	3.50	23.25	24.75	24.75	12	3/4	4-1/2	85	65
20	.36	.54	21.60	3.50	25.50	27.00	27.00	14	3/4	4-1/2	98	85
24	.38	.56	25.80	3.50	30.00	31.50	31.50	16	3/4	5	123	105

* Nominal laying length is 18 ft.

** Weight shown for regular grey cast iron follower gland, corton bolts and rubber gasket.

BALL AND SOCKET JOINT PIPE



Dino	Thickn	ess	А	В	Full Le	Safe				
Size	Class	_	Pipe	Retainer	As	Under	Under Water			
m.	(A21.51)	· ·	0.D.	0.D.	Shipped	Full of Air	Full of Water	Lb.		
6	55	.40	6.90	13.88	545	240	465	50,000		
8	55	.42	9.05	16.63	770	240	655	70,000		
10	55	.44	11.10	19.13	1005	220	860	95,000		
12	55	.46	13.20	22.00	1270	155	1080	120,000		
14	56	.51	15.30	24.50	1655	160	1410	145,000		
16	56	.52	17.40	27.00	1990	45	1685	165,000		
10	56	.53	10 50	20.00	2375	-70	2015	195,000		
10	58*	.59	19.50	30.00	2560	110	2170			
20	56	.54	21.60	22.75	2810	-200	2375	210 000		
20	59*	.63	21.00	32.75	3110	100	2635	210,000		
24	56	.56	25.00	20.25	3700	-620	3110	260.000		
24	62*	.74	23.00	30.23	4415	95	3715	260,000		
20	58	.71	22.00	16.25	5855	-900	4920	225 000		
- 30	61*	.83	32.00	40.20	6435	-180	5360	335,000		
26	57	.78	20 20	E4 25	8145	-1300	6880	400,000		
30	59*	88	30.30	54.25	8725	-725	7330			

* Thickness required to overcome buoyancy.

** Weights listed are for 18'-0" laying lengths. Nominal full lengths vary by size. Pipe, Bell, Ball and Retainer are ductile iron.

Dimensions and weights are subject to manufacturing tolerances.

6 in. – 24 in. pressure rating: 350 psi

30 in. – 36 in. pressure rating: 250 psi

STANDARD DIMENSIONS AND WEIGHTS OF 3" THROUGH 36" PUSH-ON JOINT DUCTILE IRON PIPE

Pino Prossuro		Nominal		Wt. of	Tyton [®] Joint				
Size In.	Class psi	Thickness In.	OD* In.	Barrel Per Ft. † Lb.	Wt. of Bell Lb.	Wt. Per Lgth.† Lb.	Avg. Wt. Per Ft.‡ Lb.		
3	350	0.25	3.96	8.90	7.00	185	9.20		
4	350	0.25	4.80	10.90	9.00	225	11.30		
6	350	0.25	6.90	16.00	11.00	300	16.60		
8	350	0.25	9.05	21.10	17.00	395	22.00		
10	350	0.26	11.10	27.10	24.00	510	28.40		
12	350	0.28	13.20	34.80	29.00	655	36.40		
	250	0.28	15.30	40.40	45.00	770	42.90		
14	300	0.30	15.30	43.30	45.00	825	45.80		
	350	0.31	15.30	44.70	45.00	850	47.20		
	250	0.30	17.40	49.30	54.00	940	52.30		
16	300	0.32	17.40	52.50	54.00	1000	55.50		
	350	0.34	17.40	55.80	54.00	1060	58.80		
	250	0.31	19.50	57.20	59.00	1090	60.50		
18	300	0.34	19.50	62.60	59.00	1185	65.90		
	350	0.36	19.50	66.20	59.00	1250	69.50		
	250	0.33	21.60	67.50	74.00	1290	71.60		
20	300	0.36	21.60	73.50	74.00	1395	77.60		
	350	0.38	21.60	77.50	74.00	1470	81.60		
	200	0.33	25.80	80.80	95.00	1550	86.10		
24	250	0.37	25.80	90.50	95.00	1725	95.80		
24	300	0.40	25.80	97.70	95.00	1855	103.00		
	350	0.43	25.80	104.90	95.00	1985	110.20		
	150	0.34	32.00	103.50	139.00	2000	111.20		
	200	0.38	32.00	115.50	139.00	2220	123.20		
30**	250	0.42	32.00	127.50	139.00	2435	135.20		
	300	0.45	32.00	136.50	139.00	2595	144.20		
	350	0.49	32.00	148.40	139.00	2810	156.10		
	150	0.38	38.30	138.50	184.00	2675	148.70		
	200	0.42	38.30	152.90	184.00	2935	163.10		
36**	250	0.47	38.30	170.90	184.00	3260	181.10		
	300	0.51	38.30	185.30	184.00	3520	195.50		
	350	0.56	38.30	203.20	184.00	3840	213.40		

† Including bell; calculated weight of pipe rounded off to the nearest 5 lb.

‡ Including bell; average weight per foot, based on calculated weight of pipe before rounding.

Tolerances of OD of spigot end: 3-12 in. = +0.06 in. & -0.06 in. ; 14-24 in. = +0.05 in. & -0.08 in. ;

30-36 in. = +0.08 in. & -0.06 in.

** Fastite® Joint

LAYING CONDITIONS



Type 1* Flat-bottom trench.† Loose backfill.



Type 4

Pipe bedded in sand, gravel, or crushed stone to depth of 1/8 pipe diameter, 4 in. (100 mm) minimum. Backfill compacted to top of pipe. (Approximately 80 percent Standard Proctor, AASHTO T-99.)



Consideration of the pipe-zone embedment conditions included in this figure may be influenced by factors other than pipe strength. For additional information on pipe bedding and backfill, see ANSI/AWWA C600.

American Association of State Highway and Transportation Officials, 444 N. Capitol St. N.W., Suite 225, Washington, DC 20001.

Type 3

Pipe bedded in 4 in. (100 mm)

minimum of loose soil ++ Backfill lightly consolidated to top of pipe.

* For 14 in. (355-mm) and larger pipe, consideration should be given to the use of laying conditions other

† "Flat-bottom" is defined as undisturbed earth.

++ "Loose soil" or "select

material" is defined as

native soil excavated from

the trench, free of rocks,

foreign materials, and

than Type 1.

frozen earth.

STANDARDS APPLICABLE TO DUCTILE IRON PIPE AND FITTINGS

Type 2

Type 5

Pipe bedded in compacted

of pipe. Compacted granular

or select material++ to top of

pipe. (Approximately 90 percent

Standard Proctor, AASHTO T-99.)

granular material to centerline

Flat-bottom trench.† Backfill lightly

consolidated to centerline of pipe.

THICKNESS DESIGN OF DUCTILE IRON PIPE	ANSI/AWWA C150/A21.50
DUCTILE IRON PIPE FOR WATER AND OTHER LIQUIDS	ANSI/AWWA C151/A21.51
	FEDERAL WWP421D, Grade C
DUCTILE IRON PIPE FOR GRAVITY FLOW SERVICE	ANSI/ASTM A746
DUCTILE IRON FITTINGS FOR WATER AND OTHER LIQUIDS	
3 in. through 36 in.	ANSI/AWWA C110/A21.10
DUCTILE IRON COMPACT FITTINGS	
3 in. through 24 in.	ANSI/AWWA C153/A21.53
FLANGED FITTINGS	ANSI/AWWA C110/A21.10
	ANSI B16.1
DUCTILE IRON PIPE WITH THREADED FLANGES	ANSI/AWWA C115/21.15
COATINGS AND LININGS	
Asphaltic	ANSI/AWWA C151/A21.51
	ANSI/AWWA C110/A21.10
	ANSI/AWWA C153/A21.53
Cement Lining	ANSI/AWWA C104/A21.4
Various Epoxy Linings and Coatings	MANUFACTURER'S STANDARD
Exterior Polyethylene Encasement	ANSI/AWWA C105/A21.5
JOINTS – PIPE AND FITTINGS	
Push-On and Mechanical Rubber-Gasket Joints	ANSI/AWWA C111/A21.11
	FEDERAL WWP421D
Flanged	ANSI/AWWA C115/A21.15
	ANSI B16.1
Grooved and Shouldered	ANSI/AWWA C606
PIPE THREADS	ANSI B2.1
INSTALLATION	ANSI/AWWA C600



IRON STRONG

NEW JERSEY 183 Sitgreaves St. Phillipsburg, NJ 08865 908-454-1161 mcwaneductile.com

OHIO 2266 S. 6th St. Coshocton, OH 43812 740-622-6651

mcwaneductile.com

UTAH 1401 E 2000 S. Provo, UT 84603 801-373-6910 mcwaneductile.com



CANADA 1757 Burlington St. E Hamilton, ON L8N-3R5 905-547-3251 canadapipe.com



DIMENSIONS AND WEIGHTS FOR SPECIAL CLASSES OF PUSH-ON DUCTILE IRON PIPE

Pipe		Nominal	0.0.*	Wt. of	Tyton [®] Joint		nt	
Size In.	Class	Thickness In.	In.	Barrel Per Ft. † Lb.	Wt. of Bell Lb.	Wt. Per Lgth.† Lb.	Avg. Wt. Per Ft.‡ Lb.	
3	52	0.28	3.96	9.9	7	185	10.3	
3	54	0.34	3.96	11.8	7	220	12.2	
3	56	0.40	3.96	13./	/	255	14.1	
4	52	0.20	4.80	11.3	9	210	12.1	
4	53	0.32	4.80	13.8	9	255	14.3	
4	54	0.35	4.80	15	9	280	15.5	
4	56	0.41	4.80	17.3	9	320	17.8	
6	50	0.25	6.90	16	11	300	16.6	
6	51	0.28	6.90	17.8	11	330	18.4	
6	52	0.31	6.90	19.6	11	365	20.2	
6	5/	0.34	6.90	21.4	11	/130	22.0	
6	55	0.40	6.90	25	11	460	25.6	
6	56	0.43	6.90	26.7	11	490	27.3	
8	50	0.27	9.05	22.8	17	425	23.7	
8	51	0.30	9.05	25.2	17	470	26.1	
<mark>8</mark>	<u>52</u>	0.33	9.05	27.7	17	515	28.6	
8	54	0.30	9.05	30.1	17	600	31.0	
8	55	0.42	9.05	34.8	17	645	35.7	
8	56	0.45	9.05	37.2	17	685	38.1	
10	50	0.29	11.10	30.1	24	565	31.4	
10	51	0.32	11.10	33.2	24	620	34.5	
10	52	0.35	11.10	36.2	24	675	37.5	
10	53	0.38	11.10	39.2	24	/30	40.5	
10	55	0.41	11.10	4 <u>2.</u> //5.1	24	780	43.4	
10	56	0.44	11 10	43.1	24	890	40.4	
12	50	0.31	13.20	38.4	29	720	40.0	
12	51	0.34	13.20	42	29	785	43.6	
12	52	0.37	13.20	45.6	29	850	47.2	
12	53	0.40	13.20	49.2	29	915	50.8	
12	54	0.43	13.20	52.8	29	980	54.4	
12	2 55 0.46		13.20	56.3	29	1040	57.9	
14	50	0.49	15.20	<u> </u>	<u>29</u> 45	900	50.0	
14	51	0.36	15.30	51.7	45	975	54.2	
14	52	0.39	15.30	55.9	45	1050	58.4	
14	53	0.42	15.30	60.1	60.1 45		62.6	
14	54	0.45	15.30	64.2	45	1200	66.7	
14	55	0.48	15.30	68.4	45	1275	70.9	
14	56	0.51	15.30	/2.5	45	1350	/5.0	
16	50	0.34	17.40	55.8 60.6	54	1060	58.8	
16	52	0.37	17.40	65.4	54	1230	68.4	
16	53	0.43	17.40	70.1	54	1315	73.1	
16	54	0.46	17.40	74.9	54	1400	77.9	
16	55	0.49	17.40	79.7	54	1490	82.7	
16	56	0.52	17.40	84.4	54	1575	87.4	
18	50	0.35	19.50	64.4	59	1220	67.7	
18	51	0.38	19.50	69.8	59	1315	73.1	
10	52	0.41	19.50	80.6	59	1410	83.9	
18	54	0.47	19.50	86	59	1605	89.3	
18	55	0.50	19.50	91.3	59	1700	94.6	
18	56	0.53	19.50	96.7	59	1800	100.0	
20	50	0.36	21.60	73.5	74	1395	77.6	
20	51	0.39	21.60	79.5	74	1505	83.6	
20	52	0.42	21.60	01 5	74	1015	05.6	
20	53	0.45	21.00	97.5	74	1830	101.6	
20	55	0.51	21.60	103.4	74	1935	107.5	
20	56	0.54	21.60	109.3	74	2040	113.4	
24	50	0.38	25.80	92.9	95	1765	98.2	
24	51	0.41	25.80	100.1	95	1895	105.4	
24	52	0.44	25.80	107.3	95	2025	112.6	
24	53	0.4/	25.80	114.4	95	2155	119./	
24	55	0.50	25.00	121.0	95	2303	120.9	
24	56	0.56	25.80	135.9	95	2540	141.2	
30	50	0.39	32.00	118.5	139	2270	126.2	
30	51	0.43	32.00	130.5	139	2490	138.2	
30	52	0.47	32.00	142.5	139	2705	150.2	
30	53	0.51	32.00	154.4	139	2920	162.1	
30	54	0.55	32.00	166.3	139	3130	174.0	
20	50	0.59	32.00	1/0.2	139	3345	100.9	
30	50	0.03	38 30	156.5	184	3000	166.7	
36	51	0.48	38.30	174.5	184	3325	184.7	
_ 36	52	0.53	38.30	192.4	184	3645	202.6	
36	53	0.58	38.30	210.3	184	3970	220.5	
36	54	0.63	38.30	228.1	184	4290	238.3	
36	55	0.68	38.30	245.9	184	4610	256.1	
36	56	0.73	38.30	263.7	184	4930	2/3.9	

†Including bell; calculated weight of pipe rounded off to the nearest 5 lb.

‡Including bell, average weight per foot, based on calculated weight of pipe before rounding.
*Tolerances of OD of spigot end; 3–12 in. ±0.06 in., 14–24 in. +0.05 in., -0.08 in., 30–36 in. +0.08 in., -0.06 in.



AA Thread Seal Tape, Inc.

PTFE Thread Seal Tapes | PTFE Universal Joint Sealants Polyethylene Encasements for Ductile Iron Pipe PVC Pipe Wrapping Tapes | Industrial Tapes & Supplies



Linear Low Density Polyethylene – Clear (12MIL) Polywrap Pipe Sleeves

Specifications

Application: Barrier encasement of pipe to prevent corrosion

Product Specifications

Raw Material: Linear Low Density Polyethylene

Group: 2 (Linear)

Finished Material: Linear Low Density Polyethylene Film

Color: Clear

Standard: ANSI/AWWA C105/A21.5-99

Test	AWWA C105 Min. Req.	AA Thread's Film*
Tensile	3600psi MD/TD	MD-4495psi
Strength	(ASTM D882)	TD-4410psi
Elongation	800% Minimum MD/TD (ASTM D882)	MD-1073% TD-1126%
Dielectric Strength	800 V/MIL (ASTM D149)	1946V/MIL
Impact Resistance	600 grams (ASTM D1709)	1189 grams
Propagation Tear Resistance	2550 grams force MD/TD (ASTM D1922)	MD-4462 grams force TD-5539 grams force
Minimum Thickness	0.008" (8MIL)	0.012" (12MIL)

*Tests are averages performed by independent lab results.

Markings: Material printed with AWWA Spec No., Pipe Diameter, Year of manufacturing, Manufacturing Mark, and Warning of Corrosion Protection/Repair Damage.

AA Thread Seal Tape, Inc. | 1275 Kyle Court | Wauconda, IL 60084 | sales@aathread.com Phone: (847) 526-2120 | Fax: (847) 526-2209 | Toll Free: (800) 537-7139 | www.aathread.com

CAUTION FORCE MAIN BURIED BELOW CAUTION SEWER LINE BURIED BELOW CAUTION WATER LINE BURIED BELOW

DETECTABLE TAPE

			Thickness: 5 MIL		
-	Item Number	Size	Description	Quantity/Case	Weight/Case
	65003	3" X 1000'	BLUE Waterline Tape	4	23
	→ 65006	6" X 1000'	BLUE Waterline Tape	4	45
	65103	3" X 1000'	GREEN Sewer Tape	4	23
	65106	6" X 1000'	GREEN Sewer Tape	4	45
	65203	3" X 1000'	BROWN Force Main Tape	4	23
	65206	6" X 1000'	BROWN Force Main Tape	4	45

SPECIFICATIONS

- 5 MIL Overall Thickness
- Solid Aluminum Foil Core
- Virgin Clear Polypropylene Film
- Acid, Alkali, Chemical, and Oil Resistant
- Direct Burial Rated
- Printed with metallic design for maximum visibility
- Meets the AWPA Color-Code Standard for identification of buried utilities

CAUTION CAUTION CAUTION CAUTION

NON-DETECTABLE BARRICADE TAPE

Thickness: 2 MIL											
Item Number	Size	Description	Quantity/Case	Weight/Case							
65903	3" X 1000'	YELLOW Caution Tape	20	48							

AA Thread Seal Tape, Inc.

1275 Kyle Court | Wauconda, IL 60084 Phone: (847)-526-2120 | Toll Free: (800)-537-7139 | Fax: (847)-526-2209 www.aathread.com | sales@aathread.com

Compact MJ Fittings ANSI/AWWA C153/A21.53

AWWA EMBE

FN

APPROVED

2" - 64" DUCTILE IRON MECHANICAL JOINT COMPACT FITTINGS

GENERAL SPECIFICATIONS

MATERIAL:	Ductile Iron per ASTM A536
PRESSURE:	350 PSI rating for 2" - 24" sizes, 250 PSI rating for 30" - 48" sizes and 150 PSI rating for 54" - 64" sizes
TESTING:	In accordance with ANSI/AWWA C153/A21.53 and UL requirements
LAYING LENGTH:	In accordance with ANSI/AWWA C153/A21.53 (fittings not listed in ANSI/AWWA have dimensions per Star design as noted in the catalog)
DEFLECTION:	2"-4"=8° 6"=7° 8"-12"=5° 14"-16"=3 ½° 18"-24"=3° 30"-48"=2°
WEIGHTS:	Are in pounds, unless noted otherwise and do not include accessories, cement lining and coating
FLANGES:	Flanged ends on fittings match ANSI/AWWA C115/A21.15 and ANSI B16.1 class 125 flanges
CEMENT LINING:	In accordance with ANSI/AWWA C104/A21.4 size 2" - 3" single thickness and sizes 4" - 64" double thickness. <u>Click here for a pressure jetting</u> <u>discussion</u> or visit <u>http://www.starpipeproducts.com/pressure_cleaning_guidelines.asp</u> .
COATING:	Aspinalite seal coat inside and out in accordance with ANOI/ANY WE CTOT/A21.; and referenced in ANOI/ANY WE CTOS/A21.60
GASKETS:	SBR in accordance with ANSI/AWWA C111/A21.11 (see pg. 16)
T-BOLTS/NUTS:	Low alloy steel in accordance with ANSI/AWWA C111/A21.11 (see pg. 18)
APPROVALS:	3" - 12" UL/ULC Listed 2" and greater are UL/ANSI/NSF Standards 61 and 372 3" - 16" FM APPROVED. Please consult factory for detail listing and approvals.
DIMENSIONS:	All dimensions are in inches unless noted otherwise

INSTALLATION: Per ANSI/AWWA C600 and C111 using DIP conforming to C150/C151 and PVC pipe conforming to C900/C905



MECH	MECHANICALJOINT DIMENSIONS														
NOM.		р	CDIA		EDIA	LDIA			т	м	c	a	V DIA	BOLT	ſS
SIZE	A DIA.	Б	C DIA.	D DIA.	F DIA.	J DIA.	KI DIA.	K2 DIA.	L	M	3	U U	A DIA.	SIZE	NO.
2	2.50	2.50	3.39	3.50	2.61	4.75	6.19	6.25	0.58	0.62	0.36	28°	3⁄4	5% x 3	2
3	3.96	2.50	4.84	4.94	4.06	6.19	7.62	7.69	0.58	0.62	0.39	280	3⁄4	5% x 3	4
4	4.80	2.50	5.92	6.02	4.90	7.50	9.06	9.12	0.60	0.75	0.39	28°	7⁄8	³ / ₄ x 3 ¹ / ₂	4
6	6.90	2.50	8.02	8.12	7.00	9.50	11.06	11.12	0.63	0.88	0.43	28°	7⁄8	3⁄4 x 3 1⁄2	6
8	9.05	2.50	10.17	10.27	9.15	11.75	13.31	13.37	0.66	1.00	0.45	28°	7⁄8	³ / ₄ x 3 ¹ / ₂	6
10	11.10	2.50	12.22	12.34	11.20	14.00	15.62	15.62	0.70	1.00	0.47	280	7⁄8	3⁄4 x 3 1⁄2	8
12	13.20	2.50	14.32	14.44	13.30	16.25	17.88	17.88	0.73	1.00	0.49	28°	7⁄8	³ / ₄ x 3 ¹ / ₂	8
14	15.30	3.50	16.40	16.54	15.44	18.75	20.25	20.25	0.79	1.25	0.55	28º	7⁄8	³ ⁄4 x 4	10
16	17.40	3.50	18.50	18.64	17.54	21.00	22.50	22.50	0.85	1.31	0.58	28º	7⁄8	³ ⁄4 x 4	12
18	19.50	3.50	20.60	20.74	19.64	23.25	24.83	24.75	1.00	1.38	0.68	28º	7⁄8	³ ⁄4 x 4	12
20	21.60	3.50	22.70	22.84	21.74	25.50	27.08	27.00	1.02	1.44	0.69	28º	7⁄8	³ ⁄ ₄ x 4	14
24	25.80	3.50	26.90	27.04	25.94	30.00	31.58	31.50	1.02	1.56	0.75	280	7⁄8	³ / ₄ x 4 ¹ / ₂	16
30	32.00	4.00	33.29	33.46	32.17	36.88	39.12	39.12	1.31	2.00	0.82	20°	1 1/8	1 x 5 ½	20
36	38.30	4.00	39.59	39.76	38.47	43.75	46.00	46.00	1.45	2.00	1.00	20°	1 1/8	1 x 5 ½	24
42	44.50	4.00	45.79	45.96	44.67	50.62	53.12	53.12	1.45	2.00	1.25	20º	1 3/8	1 ¼ x 6	28
48	50.80	4.00	52.09	52.26	50.97	57.50	60.00	60.00	1.45	2.00	1.35	20°	1 3/8	1 ¼ x 6	32
54															
60	{Fittings & Dimensions Available On Request }														





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REGISTERED TRADEMARK OF STAR PIPE PRODUCTS

Red Oxide

 1.40 ± 0.05

6 to 10 mils

STAR® PIPE PRODUCTS



FOR UTILITY FITTINGS

PHYSICAL PROPERTIES

Color

Specific Gravity

Dry Film Thickness

FEATURES AND BENEFITS

Star Pipe Products fusion bonded epoxy (FBE) is a high-performance coating that exhibits excellent adhesion and provides a tough smooth finish that is resistant to abrasion and corrosion. FBE provides a thinner/lighter coating as compared to cement mortar lining, thus reducing fitting weight during handling and installation. The smooth hard coating surface reduces friction as compared to cement mortar lining resulting in more efficient flow. Star Pipe FBE coated fittings are NSF 61 and NSF 372 approved for potable water service.

APPLICABLE SPECIFICATIONS AND STANDARDS

- ANSI/AWWA C153/A21.53 American Water Works Association Standard for Ductile-Iron Compact Fittings
- ANSI/AWWA C110/A21.10 American Water Works Association Standard for Ductile-Iron and Gray-Iron Fittings
- ANSI/AWWA C116/A21.16 American Water Works Association Standard for Protective Fusion-Bonded Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings
- ANSI/AWWA C550 American Water Works Association Standard for Protective Interior Coatings for Valves and Hydrants
- NSF/ANSI 61 Drinking Water System Components Health Effects
- NSF/ANSI 372 Drinking Water System Components Lead Content

FILM PROPERTIES

TEST	METHOD	CONDITIONS	RESULT			
Pencil Hardness	ASTM D3363		Pass 4H			
Gloss 60°	ASTM D523		70-85			
Direct Impact	ASTM D2794		40inch-lbs min.			
Mandrel Bend	ASTM D522	0.125 @ 3mils	Pass			
Adhesion	ASTM D3359 Method A	X-cut and Tape	5A			
Adhesion	ASTM D3359 Method B	Crosshatch and Tape	5B			
Abraison Resistance	ASTM D4060	CS-17 Wheels, 1000 Cycles, 1kg Load	32 mg loss			
Salt Spray	ASTM B117	1000 Hours	No blisters or face rust, no scoreline creepage			
Water Resistance	AWWA C550	90 days immersion @ 70°C (158°F)	Pass			
Weather Resistance	ASTM G154	UVA-340 cycle 4 hrs @ 60°C, 4 hrs condensation @ 50°C	Chalks after 200 hrs exposure			

CHEMICAL RESISTANCE

Recommended for Immersion Environments with the following Chemicals				
Aliphatic Hydrocarbons	Kerosene			
Calcium Carbonate (saturated solu- tion)	Magnesium Sulfate (saturated solution)			
Calcium Chloride (10% solution)	Motor Oil			
Calcium Hydroxide (10% solution)	Potassium Acetate (saturated solution)			
Calcium Sulfate (saturated solution)	Salt Water			
Diesel Fuel	Sewage Water			
Distilled Water	Soap Solutions			
Fresh Water	Sodium Chloride (5% solution)			
Fuel Oil	Sodium Hydroxide (5% solution)			
Gasoline (unleaded)	Sodium Nitrate (10% solution)			
Hexane	Trisodium Phosphate (5% solution)			

Recommended for Splash and Spillage Envi- ronments against the following Chemicals
Aromatic Hydrocarbons
Butanol
Ethanol
Hydrochloric Acid (5% solution)
Isopropyl Alcohol
Methanol
Sulfuric Acid (5% solution)
Toluene
Xylene
These recommendations are intended as a

unese recommendations are intended as a guide only, and unless noted, temperatures are ambient. For compatibility with fluids not shown here, consult Star Pipe Products.





Joint Restraint Products

PVC Stargrip[®] series 4000

Mechanical Joint Wedge Action Restraint for AWWA C900/C905 and IPS PVC Pipe



INFORMATION

The PVC Stargrip® Mechanical Joint Restraint System is a unique product with a proven design that provides an exceptional restraining system for mechanical joint fittings (AWWA C153 or C110), valves, fire hydrants on all classes of PVC pipe.

Unique Product with a Proven Design

6" PVC Stargrip® Series 4000 for PVC Pipe

FEATURES & ADVANTAGES

- The design has been proven in the market since 1992.
- Can be used on 4"-12" AWWA C900, 14"-36" AWWA C905 PVC pipe or 3"-12" IPS PVC pipe* (*transition gasket required on IPS PVC Pipe 12" and under).
- Gland is made from high strength Ductile Iron per ASTM A536 Grade 65-45-12 and is compatible with all Mechanical Joints Conforming to ANSI/AWWA C111/A21.11.
- Eliminates tie rods and thrust blocks
- Listed with Underwriters Laboratories in sizes 4"-12" for use on DR18 class 235 C900 PVC pipe at 150 PSI. Approved by Factory Mutual Research in sizes 4"-12" for use on DR18 class 235 at 150 PSI and for sizes 4"-10" DR14 class 305 C900 PVC pipe at 200 PSI.
- Tested to and meets the requirements of ASTM F1674 through 14" size for DR18 PVC pipe.
- The safety factor is twice (2:1) the standardized pressure rating listed on Page 18.
- Will fit any Mechanical Joint configuration, meaning compatibility with different types of installations.
- PVC Stargrip® offers 5° deflection through 12", 3° on 14"-24" and 2° on 30"-36".
- Larger ID allows easier installation on out-of-round pipe.
- Torque limiting bolts are designed so that you can't over torque and damage PVC pipe.
- All sizes have curved wedges that will not flatten pipe.
- For use on HDPE or C909 pipe, please contact Star Engineering.
- Standard gland color is Coral Red (RAL 3016).

SAMPLE SPECIFICATIONS

Restrainer mechanism shall be integrated into the design of the follower gland. As the mechanism is activated, multiple wedging action shall be imparted against the pipe increasing its resistance as internal pressure increases. After burial of the restraining mechanism, joint flexibility shall be maintained.

The actuating bolt shall be threaded into the gland and have a 1-1/4" hex operating nut. The actuating bolt system shall have a torque-limiting head designed to break off at preset torque levels, thus insuring proper action of the restraining device. After removal of the torque-limiting head, a secondary hex head shall remain to facilitate the removal and re-assembly of the gland. Glands, bolts and wedges shall be manufactured of high strength ductile iron in accordance with ASTM A536 Grade 65-45-12 requirements.

Applicable dimensions conforming to ANSI/AWWA C111/A21.11, C110/A21.10 and C153/A21.53 and shall be incorporated into the design so that the device facilitates use with standard mechanical joint sockets.

The restraining mechanism shall have a pressure rating as stated in most current catalog and shall have a safety factor of at least 2:1. The restraining device for C900/C905 PVC and IPS PVC Pipe shall be Star® Pipe Products PVC Stargrip® Series 4000 or equal.





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MJ Accessories ANSI/AWWA C111/A21.11

T-Bolts, Double Ended Rods & Nuts

HSLA STEEL

SPECIFICATIONS:

- Bolts & Nuts are manufactured in accordance with ANSI / AWWA C111 / A21.11.
- Material is High Strength Low Alloy Steel per ANSI/AWWA C111/A21.11.
- Threads per ASME B1.1 unified standard coarse (Class 2A & 2B)

MECHANICAL PROPERTIES

CHEMICAL PROPERTIES

- Yield Strength 45000 PSI (min)
 - - Manga
- Elongation in 2in. 20% (min)

Carbon 0.20% Max Manganese 1.25% Max Sulfur 0.05% Max Nickel 0.25% Min Copper 0.20% Min Combined 1.25% Min (Ni, Cu, Cr)

BLUE BOLT/NUT/ROD

T-Bolts, Rods & Nuts have fluoropolymer coating material which is VOC-compliant, resin-bonded, thermally cured and dry lubricant.

COATING PHYSICAL PROPERTIES

Film Thickness:	0.3 to 0.4 mil per coat
Number of Coats:	3 to 4 coats
Adhesion:	1 mm cross hatch test + 5 Pulls. Good knife resistance
Cure Test:	50+Rubs with MEK. No substrate exposure
Pencil Hardness:	Pencil Hardness: 4-6H
Volatile Organic Compounds	2.74lbs/gal

Stainless Steel T-Bolts & Nuts

ALLOYS SS 304 & SS 316 PER ASTM F593

SPECIFICATIONS:

- T-bolt dimensions are manufactured in accordance with ANSI / AWWA C111 / A21.11.
- T-bolt alloys SS 304 and SS 316 per ASTM F593
- Heavy Hex Nut Alloys SS 304 & SS 316 per ASTM F594.

MECHANICAL PROPERTIES

- Tensile Strength: 85,000 PSI to 140,000 PSI
- Yield Strength: 45,000 PSI (min)

COATING SPECIFICATION

Nuts have fluoropolymer coating material which is VOC-Compliant, resin-bonded, thermally cured and dry lubricant.

COATING PHYSICAL PROPERTIES

- Film Thickness: 0.3 to 0.4 mil per coat
- Number of Coats: 3 to 4 coats
- Adhesion: 1mm cross hatch test + 5 Tape Pulls.
- Cure Test: 50+ Rubs with MEK, no substrate exposure
- Pencil Hardness: 4-6H
- Volatile Organic Compounds 2.74 lbs/gal
- Continous use temperature 356°F





* REGISTERED TRADEMARK OF STAR PIPE PRODUCTS STAR' PIPE PRODUCTS

HOUSTON CORPORATE |TOLL FREE 1-800-999-3009 |FAX 281-558-9000 www.starpipeproducts.com





AWWA C509 250 PSI • UL/FM Approved 200 PSI • NSF 61 Certified • Full Water Way • Fusion Bond Epoxy Coated • 10 Year Limited Warranty



Clow Valve is a division of McWane, Inc.

www.clowvalve.com



For Generations

RESILIENT WEDGE VALVE

In 1975, Clow recognized the increased requirements and escalating maintenance cost of water systems in the United States.

Clow responded by introducing the first R/W (Resilient Wedge) Valve in America. This introduction revolutionized the valve market in the U.S.









F-6111 MECHANICAL **CUTTING IN JOINT** 4"- 12"



F-6120 **MECHANICAL JOINT** POST INDICATOR VALVE 2"- 12"

Clow was the first to introduce, and still leads in the design and technical development, of the bubble-tight resilient seating valve.

The Clow Resilient Wedge Valve, with its unique features and benefits, were the first to be manufactured with both AWWA and UL/FM approval for all water system requirements.







F-6112 TYTON ENDS FOR DUCTILE **IRON AND C900 PVC PIPE** 4"- 12"



F-6136 FLANGED OS & Y **CONSTRUCTION** 2"- 12"



F-6106 FLANGED X MJ 3"- 12"



F-6113 FLANGED X TYTON 4"- 12"

NOTE:

It is recommended that valves be installed with stems vertical when used in raw sewage or sludge applications or in water with excessive sediment. Flanged end connections not recommended for buried service.

VE SIZE	A	В	C	D	E	G	н	Р	٥	R	S	U	v	NO. OF TURNS To full open
2″	7	3-1/4	-	5-3/8	10-7/8	-	-	3	10	12	7-1/4	-	-	6-1/2
2-1/2″	7-1/2	-	-	7-1/8	11-3/8	-	-	3-1/4	16-3/8	13-7/8	7-1/4	-	-	8
3″	8	3-1/2	-	7-1/8	12-3/8	-	5-3/4	3-1/2	18-7/8	15-5/8	10	5-3/4	8-1/4	10
4″	9	4-1/2	6-3/4	-	14-3/4	4-5/8	6-3/4	4-1/2	22-3/4	18-1/4	10	6-3/4	9-1/4	13-1/2
<mark>6"</mark>	<mark>10-1/2</mark>	<mark>5-1/2</mark>	<mark>7-7/8</mark>	_	<mark>19</mark>	<mark>5-1/4</mark>	8	5	<mark>30-1/8</mark>	<mark>23-3/4</mark>	<mark>12</mark>	8	<mark>10-1/2</mark>	<mark>19-1/2</mark>
<mark>8"</mark>	<mark>11-1/2</mark>	<mark>8-1/8</mark>	<mark>8-1/2</mark>	_	<mark>22-1/2</mark>	<mark>5-5/8</mark>	<mark>9-3/4</mark>	<mark>5-1/2</mark>	<mark>37-3/4</mark>	<mark>29-1/4</mark>	14	<mark>10-3/4</mark>	<mark>13-1/4</mark>	<mark>25-1/2</mark>
10″	13	10-1/2	10	-	26-1/2	7	11-3/4	7	45-3/4	35-3/8	18	12-1/2	14-7/8	31-1/2
12″	14	10-3/4	11-1/4	_	30	8-1/2	12	8-1/2	53-1/8	40-5/8	18	12-1/2	15	37-3/4

ENGINEERING FEATURES

THRUST BEARINGS

Delrin thrust bearings above and below the thrust collar reduce friction and minimize operating torques.

COPPER ALLOY STEM

Long, trouble-free life with high strength, non-corrosive copper alloy stem and stem nut.

STAINLESS STEEL HARDWARE

304 stainless steel nuts and bolts provide long-life corrosion protection.

100% COATED WEDGE

100% coated wedge ensures bubble-tight seal every time up to 250 PSI. With twin seal design.

ELLIPTICAL BOLT HOLES

Hole design on MJ connection eliminates the need for anti-rotation bolts.

MINIMAL FLOW LOSS

Smooth, unobstructed waterway is free of pockets, cavities and depressions, allowing for minimal flow loss and lower pumping costs. All valves accept full-size tapping cutter.

REPLACEABLE O-RINGS

Two O-ring seals are replaceable with the valve fully open and subjected to full-rated working pressure.

NO FLAT GASKETS

O-ring seals at stuffing box and bonnet to body flanges to ensure the best possible seal. No flat gaskets.

EPOXY COATING

Clow corrosion resistant fusion-bonded epoxy coating, conforming to AWWA C550 and NSF 61 Certified, protects both inside and outside of valve.

EASY STORAGE

Pads on the bottom of all valves keep valve in upright position for easier storage and protection from the elements.

VALVE RATING: All valves are rated at 250 PSI for AWWA service and 200 PSI for UL/FM service. All valves are hydrostatically tested to 500 PSI.



COMMITTED TO ENVIRONMENTAL RESPONSIBILITY

CLOW VALVE COMPANY IS COMMITTED TO PROTECTING OUR NATURAL RESOURCES THROUGH ENVIRONMENTALLY RESPONSIBLE MANUFACTURING PRACTICES, INCLUDING THE USE OF 80+% RECYCLED CONTENT IN OUR HYDRANTS AND VALVES.

To learn more about our commitment to the environment, call 800-829-2569.

RECOMMENDED SPECIFICATIONS

- 1. Valves shall conform to the latest revision of AWWA Standard C509 covering resilient seated gate valves for water supply service.
- 2. The valves shall have an iron body, bonnet, and O-ring plate. The wedge shall be totally encapsulated with rubber.
- 3. The sealing rubber shall be permanently bonded to the wedge per ASTM D429.
- Valves shall be supplied with O-ring seals at all pressure retaining joints. No flat gaskets shall be allowed.
- 5. The valves shall be either non-rising stem or rising stem, opening by turning left or right, and provided with 2" square operating nut or a handwheel with the word "Open" and an arrow to indicate the direction to open.
- Stems shall be cast copper alloy with integral collars in full compliance with AWWA. All stems shall operate with copper alloy stem nuts independent of wedge and of stem (in NRS valves).

- All stems shall have two O-rings located above thrust collar and one O-ring below. Stem O-rings shall be replaceable with valve fully opened and subjected to full pressure. The stems on 2" – 12" shall also have a low torque thrust bearing located above and below the stem collar to reduce friction during operation.
- 8. Waterway shall be smooth, unobstructed and free of all pockets, cavities and depressions in the seat area. Valves 2" and larger shall accept a full size tapping cutter.
- The body, bonnet and O-ring plate shall be fusion-bonded epoxy coated, both interior and exterior on body and bonnet. Epoxy shall be applied in accordance with AWWA C550 and be NSF 61 Certified.
- 10. Each valve shall have maker's name, pressure rating, and year in which it was manufactured cast in the body. Prior to shipment from the factory, each valve shall be tested by hydrostatic pressure equal to the requirements of AWWA C509 (and UL/FM where applicable).
- 11. Valves shall have all component parts cast and assembled in the USA and shall be manufactured by the Clow Valve Company.









www.clowvalve.com



902 South 2nd Street • Oskaloosa, Iowa 52577 PHONE 641-673-8611 FAX 641-673-8269



For Generations





clowvalve.com

MEDALLION HYDRANT

AWWA C502 • UL LISTED • FM APPROVED NSF 61/372 CERTIFIED • 250 PSI WORKING PRESSURE 10-YEAR LIMITED WARRANTY



Clow Valve, A Division of McWane, Inc.

For Generations

MEDALLION HYDRANT

FIRE PROTECTION

The Clow Medallion hydrant was designed and built to provide unsurpassed fire protection. Utilizing computer-developed data, Clow engineers painstakingly sculpted interior surfaces to provide the smoothest possible waterway, resulting in the lowest possible loss of head through the hydrant. The result? More water to the nozzles faster. With the Clow Medallion, it's performance that counts.

MAINTENANCE

Extraordinary steps are taken in both the design and manufacturing process to ensure that the Clow Medallion can be routinely serviced and repaired easily. All working parts are readily accessible from the top of the hydrant and are built from the highest-quality materials.

10-YEAR LIMITED WARRANTY

The Clow Medallion carries a 10-year limited warranty on materials and workmanship. The hydrant also equals or exceeds all applicable American Water Works Association (AWWA) requirements. It has been listed by Underwriters Laboratories (UL) and is approved by Factory Mutual Approvals (FM).



MEDALLION HYDRANT PARTS ASSEMBLY

ITEM NO.	DESCRIPTION	MATERIAL	QTY.
1	Operating Nut O-Ring	Rubber	1
2	Thrust Bearing	Plastic	2
3	Operating Nut	Copper Allov	1
4	Bonnet Stop	Zinc Plated Steel	1
5	Upper Stem Sleeve	Copper Allov	1
7	Upper Stem	Steel	1
8	Pin	Stainless Steel	1
9	Cotter Pin	Stainless Steel	2
10	Safety Stem Coupling	Stainless Steel	1
11	Safety Coupling Pin	Stainless Steel	2
12	Lower Stem	Steel	1
13	Pin	Stainless Steel	1
15	Pin	Stainless Steel	4
16	Drain Valve Facing	Plastic	2
17	Upper Valve Plate	Copper Allov	1
18	Seat Ring Upper O-Ring	Rubber	1
19	Seat Ring	Copper Allov	1
20	Seat Ring Lower O-Ring	Rubber	1
21	Main Valve Seat	Rubber	1
22	Lock Washer	Stainless Steel	1
24	Lower Valve Plate	Cast Iron	1
25	Hex Head Bolt	Zinc Plated Steel	1
26	Weather Cap	Gray Iron	1
27	Thrust Nut	Copper Alloy	1
28	Thrust Nut O-Ring	Rubber	1
29	Hex Head Bolt & Nut	Zinc Plated Steel	4
30	Bonnet	Gray Iron	1
31	Stem O-Ring	Rubber	2
32	Bonnet O-Ring	Rubber	1
33	Nozzle Section	Gray Iron	1
34	Socket Set Screw	Stainless Steel	3
35	Pumper O-Ring	Rubber	1
36	Pumper Nozzle	Copper Alloy	1
37	Pumper Nozzle Gasket	Rubber	1
38	Pumper Cap	Gray Iron	1
40	Hose O-Ring	Rubber	2
41	Hose Nozzle	Copper Alloy	1
42	Hose Nozzle Gasket	Rubber	2
43	Hose Nozzle Cap	Gray Iron	2
44	Nozzle Cap Chain	Zinc Plated Steel	3
45	Chain "S" Hook	Zinc Plated Steel	1
46	Hex Head Bolt & Nut	Zinc Plated Steel	8
47	Barrel O-Ring	Rubber	1
48	Barrel Upper Flange	Ductile Iron	1
49	Safety Flange	Gray Iron	2
50	Barrel	Ductile Iron	1
51	Hex Head Bolt & Lock Nut	Stainless Steel	8
52	Barrel Lower Flange	Ductile Iron	1
53	Drain Ring O-Ring	Rubber	1
54	Drain Ring	Copper Alloy	1
57	Shoe	Ductile Iron	1



ENGINEERING FEATURES



Durable cast iron weather cap combines with one piece copper alloy operating nut and O-rings to provide reliable, corrosion-resistant operation under all weather conditions.

LUBRICATION RESERVOIR

O-ring sealed reservoir may be filled easily without disassembly.

TGIC

Coating provides a longer-lasting, more durable finish.

STAINLESS STEEL SAFETY STEM COUPLING SYSTEM

Breakaway parts shear cleanly below the top of the barrel, reducing nozzle section damage or opening of the main valve.

COPPER ALLOY UPPER VALVE PLATE

Solid design for added strength and durability.

COPPER ALLOY TO COPPER ALLOY

Copper alloy seat ring threads into copper alloy drain ring for corrosion-resistant protection.

COMPRESSION SEATING

High-durometer rubber valve closes with the water pressure for a positive seal.

PADS

Pads on hydrant shoe give large surface areas for standing and blocking hydrant.

ANTI-FRICTION

Thrust bearings above and below the copper alloy thrust collar provide low-torque operation even at 250 PSI working pressure.

BONNET SEALS

Standard O-rings secure mating flanges and sealing throughout the Medallion. All O-rings are dependable and easy to replace.

COPPER ALLOY NOZZLES

Mechanically locked, corrosionresistant, field-replaceable copper alloy nozzles have 0-ring seals for water-tight connections.

DRAIN VALVE

Plastic valve facing provides tight, life-long seal. Copper alloy seat ring has 360 degree drain channel. Double ports flush with each use.

LOWER VALVE PLATE

Bottoms out in the ductile iron shoe. Prevents seat from falling below the seat ring.

NUTS & BOLTS

All fasteners below grade are stainless steel.

DUCTILE IRON HYDRANT SHOE

Shaped for low turbulence and maximum flow, the shoe is offered in a variety of end connections. Comes standard with epoxy coating inside and out.

The Medallion hydrant meets the definition of low lead based on the Safe Drinking Water Act.





GROUNDHOG WITH MECHANICAL JOINT ENDS

TECHNICAL DATA

Sizes	4" - 20"	
Body Styles	Cast Iron with Mechanical Joints	
Other Body Style Options	 Flanged ends Wafer and Victaulic Couplings Push-on joint (12", 16") Push-on x flange (12", 16") for C900 PVC and ductile iron pipe. 	
Pressure Class	*Class 150B per AWWA Standard C504	
Actuators	Pratt traveling nut design actuator in strict compliance with AWWA C504 latest revision. Specially designed and built for buried service. (Refer to page 12 for design details.)	
Service	Distribution, potable or raw water	
Accessories	DIVINER [®] ground-level position indicator, handwheel, extension stem (standard and slipjoint).	

*Valves can be tested for 200 psi upon request.

GROUNDHOG AWWA CLASS 150B

SIZES	END CONNECTION	Machir
4″ - 48″	MJ x MJ	
3″ - 72″	Flg x Flg	
6″ - 36″	Flg x MJ	
12″, 16″	Push on x Push on	Concentrated
24″ - 54″	Victaulic	Stress on 1" Strip Juncture
12″, 16″	Push on x Flg	Bonded Sample Under Test
12″, 16″ 24″ - 54″ 12″, 16″	Push on x Push on Victaulic Push on x Flg	Concentrated Stress on 1" Strip Juncture Bonded Sample Under Test

For end connections other than those listed, please contact a Pratt representative.

4"- 20" GROUNDHOG® Buried Service Butterfly Valves

Underground distribution and transmission systems are most often designed with 4" through 20" mains. For isolation applications the Pratt* Groundhog Butterfly valve is designed to be buried and forgotten until needed. Components are selected for long-term reliability, so the valves will provide service life equaling or exceeding that of the pipeline.

A key design feature is the molded-in rubber seat which is bonded to the valve body. Made of a specially compounded Buna-N rubber, the seat is engineered so that no replacement or adjustment is required throughout the life of the valve, under normal operating conditions. The unique seat retention method eliminates the possibility of "ballooning" or "blow-out" of the seat and affords more precise control of circumferential tolerance, which assures bubble-tight valve performance even in the harshest operating environment.

The on-center disc, the only part exposed to water, is streamlined to minimize pressure drop and turbulence. At full open the valves create no more friction loss than a 45° elbow. The disc also provides built-in damage resistance. As the disc approaches the closed position, a high-velocity area is created which "flushes" the seat. The disc itself sweeps particles ahead to keep the seat clean.

Other important design features include: self-adjusting packing which should never need replacing; a corrosion-resistant, one-piece stainless steel shaft; an extra-heavy cast iron body; large, chemically inert nylon bearings which have tested out at more than 100,000 cycles; and a tamper-proof disc centering mechanism which maintains positive disc alignment without play.

Groundhog valves in 4'' - 20'' sizes meet all requirements of AWWA C504. A Pratt MDT buried service actuator is standard, and either flanged, mechanical joint, push-on joint, wafer or Victaulic coupling styles are available.

PERFORMANCE TESTED RELIABILITY

Clamp of

To assure a thoroughly reliable valve seat, the Pratt rubber seat bond is tested by the ASTM Test D-429, Method B. This test, one of the most stringent means of measuring bond effectiveness, consists of a minimum 75-pound pull on a 1" sharp line at 90° to the sample. Repeated testing confirms the integrity of the rubber seat bond at over 100 pounds pull.

DESIGN DETAILS 4" – 20" Groundhog[®] Buried Service Butterfly Valves



CHEVRON V PACKING

Packing is self-adjusting, long lasting and should never need replacement because quarter-turn valve operation causes little or no wear. Packing bears on turned, ground and polished stainless steel.

CORROSION RESISTANT SHAFT

To prevent corrosion of a vital structural component, shaft is constructed of Type 304 stainless steel which affords protection against the harmful effects of corrosion. Shaft is one-piece, through-shaft construction sized to meet or exceed requirements of AWWA Standard C504 for Class 150B service.

HEAVY DUTY BODY

Cast iron body is extra heavy with flanges fully faced and drilled per ANSI B16.1 Class 125 Standard for cast-iron flanges. Other ends, including integrally cast mechanical joint, push-on (for DI and PVC C900), wafer, and Victaulic coupling ends are also available. Operator mounting trunnion is machined and drilled for four-bolt connection.

SELF-LUBRICATING BEARINGS

Chemically inert nylon bearings, liberally sized, are self-lubricating. These bearings should outlast the life of the pipeline.

STREAMLINED DISC

Lens-shaped disc is designed to minimize pressure drop and turbulence. Full open valve creates no more friction loss than a 45° elbow. Disc is secured to the shaft by stainless steel pins sized to transmit torques required and withstand stresses imposed under severe operating conditions. Disc is cast iron ASTM A 126 Class B with Type 316 stainless steel disc edge.

BODY SEAT

Seat is a special rubber compounded in the Pratt materials laboratory. It is bonded to the body by skilled technicians and special machinery. The result is a seat that cannot be torn from the body under normal pipeline conditions. The precision molding process also insures that the disc-seat indentation cannot cause excessive wear or abrasion upon closing.

TAMPER-PROOF DISC CENTERING

Precision molded flats in the bonded seat at the body trunnion mate with machined flats on the disc to provide tamper-proof centering of the disc in the body. Positive disc alignment without play is maintained, assuring long seat life. SIGMA
 Valve, Curb, & Service Boxes
 Construction

VB261-8 and VB461-8



GS

AS