

**ROSS VALLEY SANITARY DISTRICT**

# **APPROVED MATERIALS LIST**

**JUNE 2020**

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**2960 KERNER BOULEVARD, SAN RAFAEL, CA, 94901**

# TABLE OF CONTENTS

<b>TITLE PAGE.....</b>	<b>1</b>
<b>TABLE OF CONTENTS.....</b>	<b>2</b>
<b>GENERAL REQUIREMENTS.....</b>	<b>3</b>
<b>MAIN SEWER PIPING SCHEDULE.....</b>	<b>4</b>
<b>SIDE SEWER PIPING SCHEDULE.....</b>	<b>6</b>
<b>MANHOLE PRODUCTS.....</b>	<b>8</b>
<b>MANHOLE AND WET WELL REHABILITATION SYSTEMS.....</b>	<b>10</b>
<b>GROUTS.....</b>	<b>11</b>
<b>UTILITY BOXES.....</b>	<b>12</b>
<b>PRECAST VAULTS &amp; HATCH COVERS.....</b>	<b>13</b>
<b>DAMPROOFING &amp; MOISTUREPROOFING.....</b>	<b>14</b>
<b>GEOTEXTILE FABRIC.....</b>	<b>15</b>
<b>ADJUSTABLE REPAIR COUPLINGS.....</b>	<b>16</b>
<b>HDPE COUPLINGS.....</b>	<b>17</b>
<b>BACKWATER PREVENTION DEVICES.....</b>	<b>18</b>
<b>BACKWATER CHECK VALVES.....</b>	<b>19</b>
<b>TAP CONNECTIONS TO EXISTING SEWER MAINS.....</b>	<b>20</b>
<b>SIDE SEWER FITTINGS.....</b>	<b>21</b>
<b>CURED-IN-PLACE PIPE (CIPP) PRODUCTS.....</b>	<b>23</b>
<b>DUCTILE IRON PIPE PRODUCTS.....</b>	<b>24</b>
<b>FORCEMAIN VALVES.....</b>	<b>25</b>
<b>FORCEMAIN COUPLINGS.....</b>	<b>26</b>
<b>JOINT RESTRAINT SYSTEMS.....</b>	<b>27</b>
<b>INDIVIDUAL LOT PACKAGED PUMP SYSTEMS.....</b>	<b>28</b>
<b>TRACER WIRE.....</b>	<b>29</b>
<b>MISCELLANEOUS APPROVED MATERIALS.....</b>	<b>30</b>

# **GENERAL REQUIREMENTS**

## **PRODUCTS OF THE USA**

Materials and products manufactured in the USA shall be used when feasible.

## **SUBSTITUTIONS**

Materials and products included herein are used to establish the standards of quality and utility required. Additional performance based specifications are included in the District's Standard Specifications, see applicable sections.

Substitutions which are equal in quality and utility to those included herein will be permitted subject to the following provisions:

1. The Contractor shall submit to the District sufficient data, drawings, samples, literature, calculations, or other detailed information as will demonstrate to the District or its appointed Representative that the proposed substitute is equal in quality and utility to the material or product included herein.
2. The District or its appointed Representative must favorably review in writing such proposed substitutions as are, in its opinion, equal in quality to the items or materials included herein and in conformance with the District's Standard Specifications.

Failure of the Contractor to submit proposed substitutions for review in the manner described above shall be sufficient cause for rejection by the District of any substitutions otherwise proposed.

## **MISCELLANEOUS METALS**

Unless otherwise noted, all bolts, nuts, and metal hardware shall be Type 316 stainless steel.

# MAIN SEWER PIPING SCHEDULE

Main sewer piping shall be the following, unless otherwise approved, specified, or directed by the District:

<b>Gravity Sewer Mains</b>			
<b>Installation Method and Conditions</b>	<b>Pipe Material</b>	<b>Joint type</b>	<b>Spec Section</b>
<b>Open Trench.</b> Typical, unless otherwise required below	PVC Solid Wall C900/C905, DR 18 or thicker, Or High Density Polyethylene	Bell and Spigot,  Or  Butt-Fusion Welded, de-beaded	Section 15064, <b>POLYVINYL CHLORIDE (PVC) PIPE,</b>  Or  Section 15066, <b>HIGH DENSITY POLYETHYLENE (HDPE) PIPE</b>
<b>Open Trench</b> <3 ft cover w/o pipe protection, or at utility crossings	Ductile Iron Pipe, Min Class 53	Push-On	Section 15061, <b>DUCTILE IRON PIPE (DIP)</b>
<b>Open Trench</b> Repairs to Existing VCP	Vitrified Clay Pipe	Bell and Spigot	Section 15055, <b>VITRIFIED CLAY PIPE (VCP)</b>
<b>Pipe Bursting, Reaming, and/or HDD</b> (Min 3 ft cover in ROW)	High Density Polyethylene SDR 17 or thicker	Butt-Fusion Welded, de-beaded	Section 15066, <b>HIGH DENISTY POLYETHYLENE (HDPE) PIPE</b>

<b>Force Mains</b>			
<b>Installation Method and Conditions</b>	<b>Pipe Material</b>	<b>Joint Type (Restrained Where Indicated)</b>	<b>Spec Section</b>
<b>Open Trench, Buried</b>	PVC Solid Wall C900/C905, DR 18 or thicker,  Or	Bell and Spigot,  Or	Section 15064, <b>POLYVINYL CHLORIDE (PVC) PIPE</b> ,
	Ductile Iron Pipe, Min Class 53,  Or	Push-On with Field Lok Gasket, or Mechanical,  Or	Or Section 15061, <b>DUCTILE IRON PIPE (DIP)</b> ,  Or
	High Density Polyethylene, SDR 17 or thicker	Butt-Fusion Welded, de-beaded	Section 15066, <b>HIGH DENSITY POLYETHYLENE (HDPE) PIPE</b>
<b>Exposed Piping</b>	Ductile Iron Pipe  Or,	Flanged or Grooved End  Or,	Section 15061, <b>DUCTILE IRON PIPE (DIP)</b>  Or
	UV Rated HDPE	Butt-Fusion Welded, de-beaded	Section 15066, <b>HIGH DENSITY POLYETHYLENE (HDPE) PIPE</b>
<b>Pipe Bursting, Reaming, and/or HDD (Min 3 ft cover in ROW)</b>	High Density Polyethylene, SDR 17 or thicker	Butt-Fusion Welded, de-beaded	Section 15066, <b>HIGH DENISTY POLYETHYLENE (HDPE) PIPE</b>

# SIDE SEWER PIPING SCHEDULE

Side sewer piping shall be the following, unless otherwise approved, specified, or directed by the District:

<b>Gravity Side Sewers</b>			
<b>Installation Method and Conditions</b>	<b>Pipe Material</b>	<b>Joint type</b>	<b>Spec Section</b>
<b>Open Trench.</b> Typical, unless otherwise required below	PVC C900/C905, DR 18 or thicker,  Or  High Density Polyethylene, DR17	Bell and Spigot,  Or  Butt-Fusion Welded, de- beaded	Section 15064, <b>POLYVINYL CHLORIDE (PVC) PIPE,</b>  Or  Section 15066, <b>HIGH DENSITY POLYETHYLENE (HDPE) PIPE</b>
<b>Open Trench.</b> w/ District Approval	PVC Schedule 80	Solvent Welded, Threaded as required	Section 15064, <b>POLYVINYL CHLORIDE (PVC) PIPE</b>
<b>Open Trench.</b> <3 ft cover in ROW w/o pipe protection, or at utility crossings	Ductile Iron Pipe, Min Class 53	Push-On	Section 15061, <b>DUCTILE IRON PIPE (DIP)</b>
<b>Pipe Bursting, Reaming, and/or HDD</b> (min 3 ft cover in ROW)	High Density Polyethylene	Butt-Fusion Welded, de-beaded	Section 15066, <b>HIGH DENISTY POLYETHYLENE (HDPE) PIPE</b>
<b>Exposed Piping</b>	Ductile Iron Pipe, or Cast Iron Pipe,  Or,  UV Rated HDPE, DR17	Push-on/bell & Spigot, or stainless steel shear banded coupling*  Or,  Butt-Fusion Welded, de-beaded	Section 15061, <b>DUCTILE IRON PIPE</b> <b>Cast Iron Pipe</b> per ASTM A74,  Or  Section 15066, <b>HIGH DENSITY POLYETHYLENE (HDPE) PIPE</b>

\*Exposed SS shear band is acceptable, and shall be approved by the District in the rare cases where burial is not possible, i.e., in laterals suspended on the side of or under bridges.

**Pressure Side Sewers  
(Discharge from Individual Lot Pump Stations)**

<b>Installation Method and Conditions</b>	<b>Pipe Material</b>	<b>Joint type</b>	<b>Spec Section</b>
<b>Open Trench. Typical</b>	PVC Schedule 80,	Solvent Welded, Threaded as required,	Section 15064, <b>POLYVINYL CHLORIDE (PVC) PIPE</b>
	Or High Density Polyethylene, DR17	Or Butt-Fusion Welded, de-beaded	Section 15066, <b>HIGH DENSITY POLYETHYLENE (HDPE) PIPE</b>
<b>Pipe Bursting, Reaming, and/or HDD (min 3 ft cover in ROW )</b>	High Density Polyethylene, DR17	Butt-Fusion Welded, de-beaded	Section 15066, <b>HIGH DENISTY POLYETHYLENE (HDPE) PIPE</b>

# MANHOLE PRODUCTS

## **Precast Concrete Components**

Precast Concrete components shall be manufactured by, or approved equal:

1. Central Precast (US Concrete Precast Group), Pleasanton, CA
2. Hanson Concrete Products, Milpitas, CA.
3. Cook Concrete Products, Redding, CA
4. Oldcastle Precast, Pleasanton, CA

## **Manhole Frames and Covers**

Cast metal manhole frame and covers can be obtained from the following approved manufacturer:

1. D&L Foundry and Supply, Phone Number: (707) 557-4525
2. South Bay Foundry, Phone Number: (209) 367-1940

## **Joint Gaskets:**

Manhole joints gaskets shall be manufactured by, or equal:

1. Henry Company, Ram-Nek joint sealant
2. ConSeal, CS-102 Butyl Rubber Sealant

## **External Joint Sealant Tape:**

External manhole joint sealant tape shall be manufactured by, or equal:

1. Henry Company, RU116-Rub'R Nek External Joint Wrap
2. J-K Polysource, External Joint Wrap M-860

## **Manhole Waterproofing:**

All concrete and grout on interior of manholes shall be coated with two coats of waterproofing. Waterproofing shall be one of the following, or approved equal:

1. Xypex Concentrate by the Xypex Chemical Corporation,
2. Tegraproof by Tremcrete Systems

## **O-Ring Waterstops:**

At pipe penetrations into manhole walls and cast-in-place bases, manufactured by or approved equal:

- Calpico, Manhole Adapter Seals, EPDM
- Fernco, Large Diameter Waterstops (For pipe diameter is > 8in)

## **Flexible Pipe Connectors (only for approved pre-cast bases):**

The flexible connector shall be manufactured by, or approved equal:

1. Z-Lok Connector manufactured by A-Lok Products, Inc

Pipe connector shall cast into the base at the precast plant.

## **Manhole Debris Catcher:**

The manhole debris catcher shall be manufactured by, or approved equal:

1. Manhole Debris Catcher manufactured by USABlueBook.

**HDPE Manholes**

Only for use in easements with difficult access and with District approval.  
HDPE manholes shall be manufactured by, or approved equal:

1. KATN Industries

**MANHOLE PRODUCTS**



**Ram-Nek, Joint Gasket**



**Rub'R Neck, External Joint Wrap**



**Calpico, O-Ring Waterstops**



**Z-Lok, Flexible Pipe Connector  
(Only for approved pre-cast bases)**



**Manhole Debris Catcher**



**KATN Industries, HDPE Manhole  
(Only for use in easements)**

# MANHOLE AND WET WELL REHABILITATION LINERS/COATINGS

For rehabilitation of existing manholes and/or wet wells or new manholes where specified.

## **Calcium Aluminate Mortar Systems:**

Manufactured by, or approved equal:

1. Kernefos, SewperCoat PG
2. Strong-Seal Systems, Strong-Seal High Performance

## **Epoxy System:**

Manufactured by:

- Madewell Products Corporation, Mainstay Composite Liner (Manhole rehabilitation Only)
- Raven Lining Systems, Raven 405 epoxy system with Raven 155 primer

## **Polyurethane System:**

Manufactured by:

- Sprayroq Protective Lining Systems, Spraywall

# GROUTS

The District prefers the use of products manufactured by Sika, where feasible.

## Non-Shrink Grout

Nonmetallic, non gas-liberating type, as manufactured by, or approved equal:

1. Sikagrout 328
2. BASF, Master Flow 713
3. UPCO Company, UPCON, High Flow



**Sika Grout 328**

## Epoxy Grout

Manufactured by, or approved equal:

1. Sika, Sikadur 35 Hi-Mod
2. Sikadur 42 Grout-Pak
3. Master Builders, Ceilcote HT648 Grout
4. BASF, Concrecive No. 14011001



**Sikadur 35 Hi-Mod**

W.R. Meadows Rezi-Weld will not be allowed.



# UTILITY BOXES

All lids shall be marked/labeled "Sewer" as available, unless otherwise noted.

LOCATION	ITEM DESCRIPTION	PRODUCT
Traffic Areas (including all paved areas and driveways)	Cleanout Boxes	Christy B16 (Only used if it is not for H2O load rated) Christy B1017
	Backwater Prevention Devices (Type 2)	Christy V12 Box w/ V12-71W grate.
	Backwater Check Valves	Christy B1017
	Box at end of pressure side sewer (for private pump stations)	Christy B1324 w/ steel cover
	Forcemain Valve Boxes	Christy G05T or G08T
	Tracer Wire Connection Boxes	Christy G05T or G08T
Non-Traffic Areas	Cleanout Boxes	Christy B09 Box, w/ precast concrete lid
	Backwater Prevention Devices (Type 2)	Christy V09 Box (Christy B09 box w/ V09-71C Grated Cast Iron Lid)
	Box at end of pressure side sewer (for private pump stations)	Christy B16
	Backwater Check Valves	Christy B09 Box, w/ precast concrete lid
	Tracer Wire Connection Box	Christy F08 Box, w/ precast Concrete Lid



**Christy B1017**



**Christy V12 Box w/ V12-71W Grate**



**Christy G05T**



**Christy B09**



**Christy V09**



**Christy F08**

# PRECAST VAULTS AND HATCH COVERS

## **Precast Concrete Vaults**

Manufactured by, or equal:

1. Central Precast
2. Oldcastle Precast
3. Jensen Precast

## **Joints Gaskets**

Manufactured by, or equal:

1. Henry Company, Ram-Nek joint sealant
2. ConSeal, CS-101 Butyl Sealant

## **External Joint Sealant Tape**

Manufactured by, or equal:

1. Henry Company, RU116-Rub'R Nek External Joint Wrap
2. J-K Polysource, External Joint Wrap M-60

## **Aluminum Hatch Covers**

Gutter-type, cast into precast at the precast plant, manufactured by the following, or approved equal:

1. Bilco, type "JD"
2. Babcock-Davis
3. Syracuse Castings, DTD



Hatches for openings larger than 42 inches will require double-leaf doors.  
Design for max 30 lb opening force.

# DAMPROOFING & MOISTUREPROOFING OF BELOW GRADE STRUCTURES

## **Waterproofing Membrane**

For exterior surfaces of below grade vaults and/or structures, where specified.

Manufactured by, or equal:

- Grace Construction Products, Bituthene 4000 and Preprufe
- Tremco Commercial Sealants and Waterproofing, Paraseal

## **Dampproofing**

For below grade on exterior of all miscellaneous concrete structures, including, but not limited to electrical handholds, electrical pullboxes, vaults, and miscellaneous structures.

Applied to exterior of manholes where specifically indicated. Manufactured by, or equal:

- Tremco Sealants, TREMproof 201/60

Total dry film thickness shall be 60 mils  $\pm$ 5; applied in two coats of 30 mils each.

## **Crystalline Waterproofing**

Treating the concrete with the crystalline waterproofing product/technology, prior to the sealant performs as a combination for damp proofing/waterproofing. Crystalline waterproofing technology and products shall be manufactured by, or equal:

- Xypex Chemical Corporation

# GEOTEXTILE FABRIC

Geotextile fabric for laying and wrapping/separating backfill materials shall be manufactured by, or approved equal:

1. Mirafi, 140N
2. US Fabrics, US 135NW
3. Carthdage Mills, FX-45HS

# ADJUSTABLE REPAIR COUPLINGS

Use for connecting Ductile Iron pipelines, Cast Iron Side Sewers pipelines, and dissimilar pipe materials. Banded rubber couplings shall have four (4) clamps and metal shear bands.

**All hardware shall be Type 316 Stainless Steel**, including shear bands.

Adjustable repair couplings shall be manufactured by, or approved equal:

1. Fernco, 5000 Series RC Coupling, w/ all type 316 SS hardware
2. Mission Rubber Company, Adjustable Repair Coupling



**Fernco, 5000 Series RC Couplings**



**Mission Rubber Co, Adjustable Repair Coupling**

allowed:

The following are not



**Mission® Band Seal**



**Joints® Calder Coupling**



**Anaco – Husky Couplings**



**Fernco, Proflex Coupling**



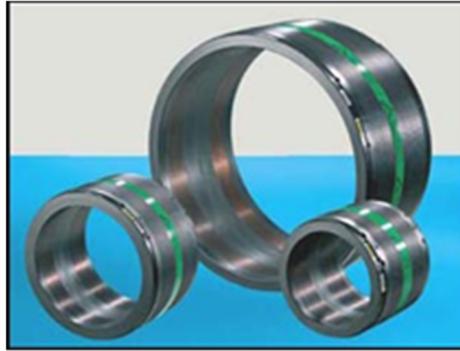
**Mission Clay Band-Seal (Type 1 or 2)**

# HDPE COUPLINGS

Use for field closure of HDPE pipe, as required.

Electrofusion couplings, manufactured by, or approved equal:

1. Ipex USA LLC, Friatec Couplings
2. Central Plastics



**Friatec - Electrofusion Coupling**

# Backwater Prevention Devices (BPDs)

Required at every location where sanitary sewer piping exits a building/home to prevent sewage from entering homes and businesses and reroute the spill outside the building.

BPD Type	MANUFACTURER	PRODUCT NAME
Type 1 or "Mushroom" Type	Genplex	Kelly Backwater Device (No-Hub & IPS)
	DDF	Sewer Relief Device (SRD)
Type 2	Stephens Corp	Sewer Popper™ Model S62-304

## Type 1



**Mushroom Type**



**SRD**

## Type 2



**Sewer Popper™ OPD**

# **BACKWATER CHECK VALVES**

Backwater check valves shall be extendable type. Manufactured of PVC

Manufactured by the following, or approved equal

1. Rector Seal, Clean Check Backwater Valve
2. Mainline Backflow Products, Adapt-A-Valve Inspector chamber w/ Test-Eze Gate Feature



**PVC Extendable Backwater Valve**

# TAP CONNECTIONS TO EXISTING SEWER MAINS

**All connections to new mains shall be with new wye fittings** matching the main pipe material, or electrofusion saddles for new HDPE mains.

**Tap connections will only be allowed for connection to existing mains 10-inch and larger** and will require District approval. However, all new connections to existing mains with an existing CIPP liner shall be with a tap connection (new wye fittings will not be allowed on existing CIPP).

Tap connections shall be **“Wye type”** where is feasible.

EX MAIN PIPE MATERIAL	MAINLINE TAP
ACP	Cascade Waterworks MNFR Co, CSWRY Stainless Steel Sewer Saddle –Wye
HDPE	Electrofusion saddles: ≤12” main wye type, >12” main may be tee type, manufactured by, or equal: <ul style="list-style-type: none"> <li>• Central Plastics</li> <li>• Industrial Pipe Fittings, LLC – Plasson</li> </ul> Or, Sidewall (Saddle) Fusion fittings. Manufactured by, or equal: Faction Fusion
Ex Pipe Lined w/ CIPP	Remove host pipe at connection and install directly to CIPP. <ul style="list-style-type: none"> <li>• Inserta Tee (For large diameter sewer pipes ≥12” Only)</li> <li>• Cascade Waterworks MNFR Co, CSWRY Stainless Steel Sewer Saddle – Tee</li> <li>• QwikSeal (For large diameter sewer pipes ≥10”)</li> </ul>
VCP, PVC, DIP, Cast Iron	Connection material shall match the main materials Or, QwikSeal (For large diameter sewer pipes ≥10”)



Cascade CSWRY Tee



Cascade CSWRY Wye



Inserta Tee



QwikSeal



HDPE – IPF Plasson

# SIDE SEWER FITTINGS

Side sewer fitting material shall match side sewer pipe material (either lower or upper lateral), unless otherwise directed or allowed by the District.

Property line cleanouts shall be a two-way, wye or a “Tee” as specified below:

- PVC C900: Two-way
- HDPE: “Wye” (facing sewer main)
- Sch 80: “Wye” (facing sewer main)
- CIP/DIP: “East Bay” Two-way
- Blowoff: Tee
- BPD: Tee

SIDE SEWER MATERIAL	SIDE SEWER FITTINGS
<b>PVC C900 DR-18</b>	PVC C900, min DR-18 thickness, bell and spigot. Tee, Wye, or 45° fitting,. White color where feasible. Manufactured by, or equal: <ul style="list-style-type: none"> <li>• Specified Fittings, C900 Gasketed</li> <li>• Multi Fittings, Sewer Brute</li> </ul>
<b>HDPE</b>	HDPE, SDR 17 min thickness. <ul style="list-style-type: none"> <li>• Butt fusion Tee, Wye, 11.25°, 22.5° or 45° fitting. Fuse directly to side sewer, or use couplings as required. Manufactured by: Performance Pipe, Agru America, or equal.</li> <li>• Electrofusion tees. Manufactured by Central Plastics, Harrington Corp, or equal.</li> <li>• Electrofusion taps (for cleanout risers). Manufactured by Central Plastics Harrington Corp, or equal.</li> <li>• Sidewall (Saddle) fusion fittings. Manufactured by: Faction Fusion, or equal.</li> </ul>
<b>SCH 80 PVC</b>	Schedule 80 PVC. Tee, Wye, or 45° fitting, fittings. Solvent welded, threaded, or flanged joints.
<b>CIP, or DIP</b>	Push-on

## PVC FITTINGS AND HDPE FITTINGS



**Butt Fusion Tee**



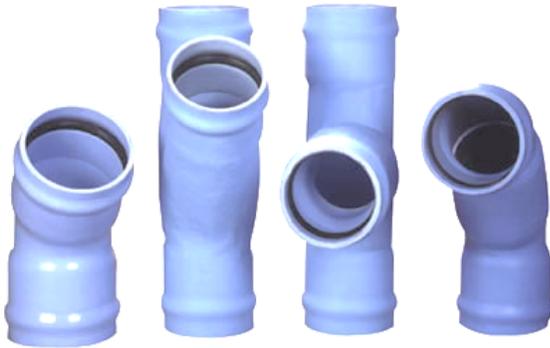
**Butt Fusion Wye**



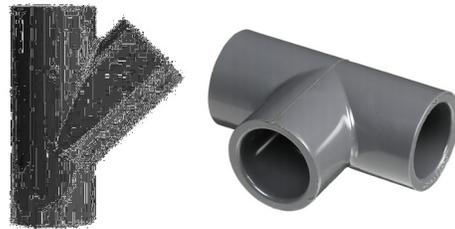
**Electrofusion Tee**



**Electrofusion Tap**



**PVC C900 fittings**



**Schedule 80 PVC fittings**

# Cured-in-Place Pipe (CIPP) Products

## Chemical Grout

For sealing side sewer connection to mains and/or pipe connections to manholes. Manufacturer shall be, or approved Equal

- Avanti, AV-100

## CIPP Main to Side Sewer Seals

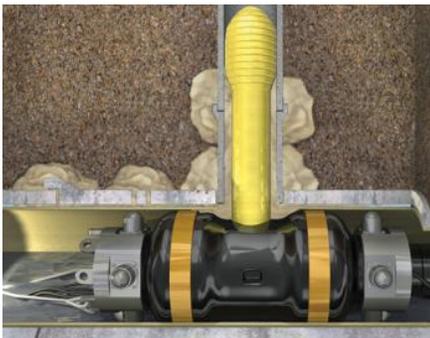
For repairing side sewer connection to mains 8-inch or larger where main is in suitable condition, as Determined by the District. Manufactured by, or approved equal:

- Pro Pipe Professional Pipe Services, Top Hat Lateral Seals

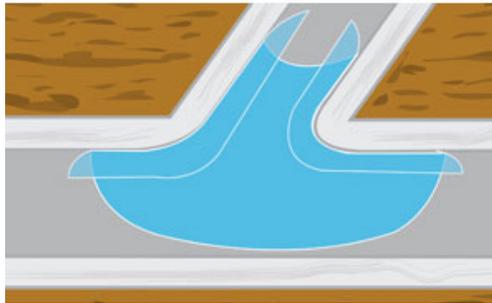
## Main to Side Sewer CIPP Connection Liners

For repairing side sewer connection to mains 8-inch or larger where the main is in suitable condition, as Determined by the District. Manufactured by, or approved equal:

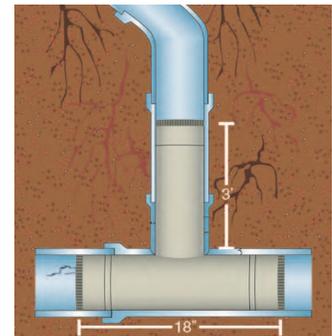
- LMK Technologies, T-Liner/Shorty



Avanti, AV-100



Top Hat

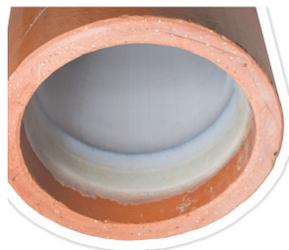


T-Liner/Shorty

## CIPP Point Repairs

Use only where approved by the District. Manufacture by, or approved equal:

- LMK Technologies, Mainline Sectional Repair



LMK Mainline Sectional Repair

## CIPP for Side Sewers

Use only where approved by the District. Installer must be certified by the manufacturer. CIPP Manufacturer shall be, or approved equal:

- Perma-Liner Industries, LLC
- MAXLINER LLC

# DUCTILE IRON PIPE (DIP) PRODUCTS

AWWA C150 and AWWA C151, Class 53 wall thickness

## Ductile Iron Pipe

Manufactured in the USA, by one of the following, or approved equal:

1. U.S. Pipe and Foundry Co.
2. American
3. McWane Ductile

## Ductile Iron Fittings

Manufactured in the USA, by one of the following, or approved equal:

1. Tyler Union
2. Mueller Company
3. American

## Protective Lining

Interior surfaces of all ductile iron pipe and fittings shall be lined with one of the following:

1. Protecto 401 Ceramic Epoxy,
2. Tnemec 431 Perma-Shield, or approved equal.

The dry film thickness shall be no less than 40 mils.

## Protective Coating

Buried DIP: asphaltic coating with polyethylene encasement (polywrap)

Exposed DIP: Coat per Standard Spec Section 09800, Protective Coatings

Exposed DIP in Wet Wells, one of the following:

1. Tnemec 141, at min dry film thickness of 16 mils
2. US Pipe Ceramawrap, at min Dry film thickness 20 mils

## Polywrap

For all buried ductile iron pipe. Polywrap shall be manufactured by, or approved equal:

1. T. Christy Enterprises.

General purpose adhesive tape to connect plastic film shall be two inches wide by 10 mils thick. Adhesive tape shall be manufactured by, or equal:

1. Scotchwrap No. 50
2. Polyken No. 900
3. Tapecoat CT



**DIP: Asphaltic coated with Polywrap**

## Flange Gaskets

EPDM, suitable for use with wastewater service.

## Grooved Couplings and Adapters

Rigid type, manufactured by, Victaulic, or approved equal.

# FORCEMAIN VALVES

## Check valves

The District prefers Swing Type with lever and weight, manufactured by, or approved equal.

1. Golden Anderson Industries, Fig. 220-DS
2. Apco Valve, Series 6000, CLW
3. CCNE/Milliken, Series 9001

Other approved check valves, and shall be manufactured by, or approved equal

1. Fivalco Tite-check, Model 5201 (Flanged end)
2. Flygt, Ball Check Valve (used for pump stations and in narrow vertical applications)



CCNE/Milliken, Series 9001



Fivalco Tite-check, Model 5201

## Eccentric Plug Valves

Eccentric plug valves shall be manufactured by, or approved equal:

1. Milliken, Millcentric
2. Golden Anderson, ECO-Centric



Millcentric Plug Valve

## Combination Air Valves

Manufactured by, or approved equal:

- Vent-O-Mat Series RGX
- Crispin, UX Series
- Apco, DeZURIK



Vento-O-Mat, Series RGX



Crispin, UX Series



Apco CAV

# FORCEMAIN COUPLINGS

All bolts and hardware shall be Type 316 stainless steel.

## **Sleeve-Type Couplings**

Manufactured by, or approved equal:

1. Dresser, Style 38 or 138
2. Smith-Blair, Style 411



Sleeve length shall be a minimum of 12 inches.

## **Flange Coupling Adapters**

Manufactured by, or equal.

1. Dresser, Style 128.
2. Smith-Blair



## **Grooved End Couplings**

See Ductile Iron Pipe Products.

## JOINT RESTRAINT SYSTEMS

PIPE MATERIAL	MANUFACTURER	JOINT RESTRAINT SYSTEM
<b>DIP</b>	U.S. Pipe	“TR FLEX” Restrained Push-On Joint
	U.S. Pipe	“Field-Lok 350 Gaskets”
	American Ductile Iron Pipe	“Lok-Fast” Restrained Joint
	McWane Ductile	Thrust-Lock
<b>PVC ≤ 16” Bulldog Restraint System</b>	Diamond Plastics	Diamond Lok-21
	JM Eagle	Eagle Loc 900
	Specified Fittings	Bulldog
	Sigma Co	PV-LOK Serration Lock Restraints
<b>PVC &gt; 16”</b>	EBBA Iron	2800 Megalug Restraint Harness, or Series 2200 for connection to DIP fittings. All bolts and hardware type 316 SS.

# INDIVIDUAL LOT PACKAGED PUMP SYSTEMS

**Material Type(s):** Pre-Approved Pump Systems, Pipe

**Description:**

VENDOR	SYSTEM
E-One	D-Series, W-Series, I-Series and G-Series
Liberty	2448- Series, Pro370 Series, Pro380 Series
Aqua Pro Pump Systems	E-Series, EDP Series, ESP-Series, SG-Series, DG-Series

**Note:** Complete packages are required for Pre-Approved Pump Systems. This includes a pump, alarm panel, isolation and check valves, sump and sump extensions (as required). Individual parts of Pump System are not pre-approved by the District. Models include but are not limited to the ones below, contact the District for special approval of all others.



**E-One Model D-H071**



**Liberty 2448 Series**



**E-One® Model Gator**



**Liberty® Pro370 Series**  
(2" discharge system, required Access Driver)



**Liberty® Pro380 Series**  
(2" discharge system, required Access Driver)



**Aqua Pro SG-1182-2**

# TRACER WIRE

Tracer wire shall be provided for all buried public sanitary sewer main pipes.

## **Tracer wire for Pipe Bursting**

Manufactured by, or equal.

1. Copperhead Wire, SoloShot Xtreme.



SoloShot Xtreme

## **Tracer wire for Horizontal Directional Drilling**

Manufactured by, or equal.

1. Copperhead Wire, SoloShot Extra-High Strength Tracer Wire.

## MISCELLANEOUS APPROVED MATERIALS

MATERIAL	MANUFACTURER	PRODUCT
<b>Epoxy Adhesive Anchors</b>	Sika	FI System with Sikadur® Injection Gel Epoxy
	Hilti	HIT HY150 Adhesive Anchors
	BASF	Concresive® 1420 Gel Epoxy Adhesive
	BASF	Concresive® Paste LPL
<b>Expanding Type Anchors</b>	ITW	Red Head®, Trubolt Wedge Anchor
	Hilti	Kwik-Bolt 3 Expansion Anchor
<b>Glass Capsule Polyester Resin Adhesive Anchors</b>	Hilti	HVU Adhesive Capsule
<b>Solvent Cements (for Sch 80 PVC)</b>	Weld-On	700 Series, PVC Solvent Cement
	Oatey	Hercules, PVC Solvent Cement
<b>Rubber Check Valves “Duckbill Valves”</b>	Red Valve Company, Inc.	Tideflex Check Valves
<b>Test Couplings for Side sewers</b>	Rector Seal	HubSett

## Miscellaneous Approved Materials



Trubolt, Wedge Anchor



HVU Adhesive Capsule



HIT HY150 Adhesive Anchor



Oatey, PVC Cement



Weld-On, PVC Cement



Tideflex, Rubber Check Valve



HubSett, Test Couplings