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</table>
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 shall be the following, unless otherwise approved, specified, or directed by the District:

<table>
<thead>
<tr>
<th>Installation Method and Conditions</th>
<th>Pipe Material</th>
<th>Joint type</th>
<th>Spec Section</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Open Trench.</strong> Typical, unless otherwise required below</td>
<td>PVC Solid Wall C900/C905, DR 18 or thicker, Or High Density Polyethylene</td>
<td>Bell and Spigot, Or Butt-Fusion Welded, de-beaded</td>
<td>Section 15064, POLYVINYL CHLORIDE (PVC) PIPE, Or Section 15066, HIGH DENSITY POLYETHYLENE (HDPE) PIPE</td>
</tr>
<tr>
<td><strong>Open Trench</strong> &lt;3 ft cover w/o pipe protection, or at utility crossings</td>
<td>Ductile Iron Pipe, Min Class 53</td>
<td>Push-On</td>
<td>Section 15061, DUCTILE IRON PIPE (DIP)</td>
</tr>
<tr>
<td><strong>Open Trench</strong> Repairs to Existing VCP</td>
<td>Vitrified Clay Pipe</td>
<td>Bell and Spigot</td>
<td>Section 15055, VITRIFIED CLAY PIPE (VCP)</td>
</tr>
<tr>
<td><strong>Pipe Bursting, Reaming, and/or HDD</strong> (Min 3 ft cover in ROW)</td>
<td>High Density Polyethylene SDR 17 or thicker</td>
<td>Butt-Fusion Welded, de-beaded</td>
<td>Section 15066, HIGH DENSITY POLYETHYLENE (HDPE) PIPE</td>
</tr>
<tr>
<td>Installation Method and Conditions</td>
<td>Pipe Material</td>
<td>Joint Type (Restrained Where Indicated)</td>
<td>Spec Section</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---------------</td>
<td>---------------------------------------</td>
<td>--------------</td>
</tr>
</tbody>
</table>
| **Open Trench, Buried**           | PVC Solid Wall C900/C905, DR 18 or thicker,  
Or Ductile Iron Pipe, Min Class 53,  
Or High Density Polyethylene, SDR 17 or thicker | Bell and Spigot,  
Or Push-On with Field Lok Gasket, or Mechanical,  
Or Butt-Fusion Welded, de-beaded | Section 15064, **POLYVINYL CHLORIDE (PVC) PIPE**,  
Or Section 15061, **DUCTILE IRON PIPE (DIP)**,  
Or Section 15066, **HIGH DENSITY POLYETHYLENE (HDPE) PIPE** |
| **Exposed Piping**                | Ductile Iron Pipe  
Or, UV Rated HDPE | Flanged or Grooved End  
Or, Butt-Fusion Welded, de-beaded | Section 15061, **DUCTILE IRON PIPE (DIP)**,  
Or Section 15066, **HIGH DENSITY POLYETHYLENE (HDPE) PIPE** |
| **Pipe Bursting, Reaming, and/or HDD (Min 3 ft cover in ROW)** | High Density Polyethylene, SDR 17 or thicker | Butt-Fusion Welded, de-beaded | Section 15066, **HIGH DENSITY POLYETHYLENE (HDPE) PIPE** |
SIDE SEWER
PIPING SCHEDULE

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

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

*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)*

<table>
<thead>
<tr>
<th>Installation Method and Conditions</th>
<th>Pipe Material</th>
<th>Joint type</th>
<th>Spec Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Trench. Typical</td>
<td>PVC Schedule 80, or High Density Polyethylene, DR17</td>
<td>Solvent Welded, Threaded as required, or Butt-Fusion Welded, de-beaded</td>
<td>Section 15064, <strong>POLYVINYL CHLORIDE (PVC) PIPE</strong> Section 15066, <strong>HIGH DENSITY POLYETHYLENE (HDPE) PIPE</strong></td>
</tr>
<tr>
<td>Pipe Bursting, Reaming, and/or HDD (min 3 ft cover in ROW)</td>
<td>High Density Polyethylene, DR17</td>
<td>Butt-Fusion Welded, de-beaded</td>
<td>Section 15066, <strong>HIGH DENSITY POLYETHYLENE (HDPE) PIPE</strong></td>
</tr>
</tbody>
</table>
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. Tegrproof 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. HPDE 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. Kerrneos, 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](image1)

**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, Concresive No. 14011001

![Sikadur 35 Hi-Mod](image2)

W.R. Meadows Rezi-Weld will **not** be allowed.
**UTILITY BOXES**

All lids shall be **marked/labeled “Sewer”** as available, unless otherwise noted.

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>ITEM DESCRIPTION</th>
<th>PRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Areas (including all paved areas and driveways)</td>
<td>Cleanout Boxes</td>
<td>Christy B16 (Only used if it is not for H20 load rated) Christy B1017</td>
</tr>
<tr>
<td></td>
<td>Backwater Prevention Devices (Type 2)</td>
<td>Christy V12 Box w/ V12-71W grate.</td>
</tr>
<tr>
<td></td>
<td>Backwater Check Valves</td>
<td>Christy B1017</td>
</tr>
<tr>
<td></td>
<td>Box at end of pressure side sewer (for private pump stations)</td>
<td>Christy B1324 w/ steel cover</td>
</tr>
<tr>
<td></td>
<td>Forcemain Valve Boxes</td>
<td>Christy G05T or G08T</td>
</tr>
<tr>
<td></td>
<td>Tracer Wire Connection Boxes</td>
<td>Christy G05T or G08T</td>
</tr>
<tr>
<td>Non-Traffic Areas</td>
<td>Cleanout Boxes</td>
<td>Christy B09 Box, w/ precast concrete lid</td>
</tr>
<tr>
<td></td>
<td>Backwater Prevention Devices (Type 2)</td>
<td>Christy V09 Box (Christy B09 box w/ V09-71C Grated Cast Iron Lid)</td>
</tr>
<tr>
<td></td>
<td>Box at end of pressure side sewer (for private pump stations)</td>
<td>Christy B16</td>
</tr>
<tr>
<td></td>
<td>Backwater Check Valves</td>
<td>Christy B09 Box, w/ precast concrete lid</td>
</tr>
<tr>
<td></td>
<td>Tracer Wire Connection Box</td>
<td>Christy F08 Box, w/ precast Concrete Lid</td>
</tr>
</tbody>
</table>

---

Christy B1017

Christy B09

Christy V09

Christy V12 Box w/ V12-71W Grate

Christy G05T

Christy F08

June 2020
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 ±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

The following are not allowed:

- 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.

<table>
<thead>
<tr>
<th>BPD Type</th>
<th>MANUFACTURER</th>
<th>PRODUCT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1 or &quot;Mushroom&quot; Type</td>
<td>Genplex</td>
<td>Kelly Backwater Device (No-Hub &amp; IPS)</td>
</tr>
<tr>
<td></td>
<td>DDF</td>
<td>Sewer Relief Device (SRD)</td>
</tr>
<tr>
<td>Type 2</td>
<td>Stephens Corp</td>
<td>Sewer Popper™ Model S62-304</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>EX MAIN PIPE MATERIAL</th>
<th>MAINLINE TAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACP</td>
<td>Cascade Waterworks MNFR Co, CSWRY Stainless Steel Sewer Saddle –Wye</td>
</tr>
<tr>
<td>HDPE</td>
<td>Electrofusion saddles: ≤12” main wye type, &gt;12” main may be tee type, manufactured by, or equal:</td>
</tr>
<tr>
<td></td>
<td>• Central Plastics</td>
</tr>
<tr>
<td></td>
<td>• Industrial Pipe Fittings, LLC – Plasson</td>
</tr>
<tr>
<td></td>
<td>Or, Sidewall (Saddle) Fusion fittings. Manufactured by, or equal: Faction Fusion</td>
</tr>
<tr>
<td>Ex Pipe Lined w/ CIPP</td>
<td>Remove host pipe at connection and install directly to CIPP.</td>
</tr>
<tr>
<td></td>
<td>• Inserta Tee (For large diameter sewer pipes ≥12” Only)</td>
</tr>
<tr>
<td></td>
<td>• Cascade Waterworks MNFR Co, CSWRY Stainless Steel Sewer Saddle – Tee</td>
</tr>
<tr>
<td></td>
<td>• QwikSeal (For large diameter sewer pipes ≥10”)</td>
</tr>
<tr>
<td>VCP, PVC, DIP, Cast Iron</td>
<td>Connection material shall match the main materials</td>
</tr>
<tr>
<td></td>
<td>Or, QwikSeal (For large diameter sewer pipes ≥10”)</td>
</tr>
</tbody>
</table>

![Cascade CSWRY Tee](image1)
![Cascade CSWRY Wye](image2)
![Inserta Tee](image3)
![QwikSeal](image4)
![HDPE – IPF Plasson](image5)
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

<table>
<thead>
<tr>
<th>SIDE SEWER MATERIAL</th>
<th>SIDE SEWER FITTINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVC C900 DR-18</td>
<td>PVC C900, min DR-18 thickness, bell and spigot. Tee, Wye, or 45° fitting. White color where feasible. Manufactured by, or equal:</td>
</tr>
<tr>
<td></td>
<td>• Specified Fittings, C900 Gasketed</td>
</tr>
<tr>
<td></td>
<td>• Multi Fittings, Sewer Brute</td>
</tr>
<tr>
<td>HDPE</td>
<td>HDPE, SDR 17 min thickness.</td>
</tr>
<tr>
<td></td>
<td>• 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, Agra America, or equal.</td>
</tr>
<tr>
<td></td>
<td>• Electrofusion tees. Manufactured by Central Plastics, Harrington Corp, or equal.</td>
</tr>
<tr>
<td></td>
<td>• Electrofusion taps (for cleanout risers). Manufactured by Central Plastics Harrington Corp, or equal.</td>
</tr>
<tr>
<td></td>
<td>• Sidewall (Saddle) fusion fittings. Manufactured by: Faction Fusion, or equal.</td>
</tr>
<tr>
<td>SCH 80 PVC</td>
<td>Schedule 80 PVC. Tee, Wye, or 45° fitting, fittings. Solvent welded, threaded, or flanged joints.</td>
</tr>
<tr>
<td>CIP, or DIP</td>
<td>Push-on</td>
</tr>
</tbody>
</table>
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

**CIPP Point Repairs**
Use only where approved by the District. Manufacture by, or approved equal:
- LMK Technologies, 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)

Eccentric Plug Valves
Eccentric plug valves shall be manufactured by, or approved equal:
1. Milliken, Millcentric
2. Golden Anderson, ECO-Centric

Combination Air Valves
Manufactured by, or approved equal:
- Vent-O-Mat Series RGX
- Crispin, UX Series
- Apco, DeZURIK
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 RERAINT SYSTEMS

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

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

Description:

<table>
<thead>
<tr>
<th>VENDOR</th>
<th>SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-One</td>
<td>D-Series, W-Series, I-Series and G-Series</td>
</tr>
<tr>
<td>Liberty</td>
<td>2448- Series, Pro370 Series, Pro380 Series</td>
</tr>
<tr>
<td>Aqua Pro Pump Systems</td>
<td>E-Series, EDP Series, ESP-Series, SG-Series, DG-Series</td>
</tr>
</tbody>
</table>

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.
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](image)

**Tracer wire for Horizontal Directional Drilling**
Manufactured by, or equal.
## MISCELLANEOUS APPROVED MATERIALS

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