

SECTION 200

SANITARY SEWER MATERIAL SPECIFICATIONS

MATERIAL SPECIFICATION LIST

SEWER UTILITY

General:

1. All manufacturers' products listed are preferred. Others may be submitted to OFS Engineering for pre-approval, prior to construction.
2. Sewer distribution piping from 4" through 15" may be smooth exterior wall per ASTM D3034, above 12" may be profile exterior (ribbed) pipe per ASTM F794.
3. All specification references include any and all updates, replacements and revisions.
4. Abbreviations used herein:

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| ASTM | American Society for Testing and Materials |
| Uni-Bell | Uni-Bell PVC Pipe Association |
| AASHTO | American Association of State Highway and Transportation Officials |
| ACI | American Concrete Institute |
| AWG | American Wire Gauge |
| HMW-PE | High Molecular Weight-Polyethylene |

| ITEM | DESCRIPTION | SIZE | SPECIFICATION | MANUFACTURER |
|------|--|---------------------|--|--|
| 1. | <p>PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings - The standard dimension ratio (SDR) of all pipe and fittings shall be a minimum of 35. Pipe joints shall be integral bell, bell and spigot type with rubber gasket.</p> <p>Smooth wall interior, exterior may be ribbed pipe. Fittings (force mains, drop manholes) shall be full body and/or gasketed.</p> | 4" – 36" | <p>ASTM D 3034 (pipe) ASTM D 3212 (joints) ASTM F 477 (gaskets)</p> <p>ASTM F679 ASTM F794 ASTM F949 Uni-Bell Uni-B-9</p> | |
| 2. | <p>Polyvinyl Chloride Pipe (C-900 PVC) - Pressure Class 150 min. Integral bell end w/ elastomeric gaskets</p> | | See Water Utility Material Specification List. | |
| 3. | <p>Ductile Iron Pipe and fittings with ceramic epoxy lining – See also Water Material Spec. for D.I. pipe and fittings.</p> | 4" – 64" | <p>See also Water Material Spec.</p> <p>Lining qualified under: ASTM E-96, G-95, B-117, G-14, D-714, D-1308. Lining shall be 40 mil, nominal</p> | <p>See also Water Material Spec.</p> <p>Protecto 401 Ceramic Epoxy</p> |
| 4. | Polyethylene (PE) Pipe and Fittings | 4" – 63" | <p>See also Water Material Spec. AWWA C906-99</p> | See also Water Material Spec. |
| 5. | <p>Manhole Frames and Covers - To meet H-20 Loading, Labeling required</p> | Per US-8, 9, 10, 11 | <p>AASHTO M 306-05 (or latest publication) Made in America</p> | <p>East Jordan Iron Works – 2023 (std.), 134283 (water tight), V2339 (bolted, vented).</p> |

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|------|--|------------------------|---|---|
| 6. | Concrete Precast Manholes – 4ft. dia., 24 or 36-inch cones, 5-inch min. wall thickness. 6ft. dia., flat top, 7-inch min. wall thickness. Completed manholes must meet AASHTO H-20 loading | Per US- 5, 6, 7 | ASTM C 478 AASHTO M 199 ACI Standard 318 | Western Precast Concrete, Inc. |
| 7. | Inflow Protectors - Sized to fit manhole and removable, with relief or check valve to vent at one psi. | Per US- 11 | | East Jordan Iron Works, Pollard Water, J.C. Utility Sales. |
| 8. | Inserta Tees[®] - | | | Inserta Fittings Co. |
| 9. | Sewer Saddles | | Romac "CB" Sewer Saddles Strap – Stainless Steel Casting - Ductile Iron Gasket - ASTM D 2000 | Romac Industries |
| 10. | Casing End Seals – Complete with stainless steel adjustable band clamps. | | | T.D. Williamson, Inc. – Z seals PWM – Wrap-around End Seal |
| 11. | Casing Spacers (insulators) – Injection molded high-density polyethylene material with low friction coefficient and high dielectric strength | | | T.D. Williamson, Inc. – M-2 Plastic Thinsolator |

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| 12. | Extruded Sealing Tape (Joint Sealant) - Butyl Resin Sealant formula, conforming to Federal and State Highway Specifications, summer grades or warmer climates. | | ASTM C-990 | Public Works Marketing, Inc.- Ram Neck. NPC Bidco, Inc. – Bidco C-56 preformed butyl mastic sealant Concrete Sealants Inc. – CS 102, CS 102B |
| 13. | Manhole Stop Rings | | ASTM C-923 | Newby Rubber, Inc.-Water Works Gaskets |
| 14. | Tracing Wire – (force mains only) HMW-PE insulation, 45 mils, solid copper conductor, color shall be green. | #12 AWG | | Paigespec, Kris-Tech Wire Co. Coleman Cable |
| 15. | Direct Bury Splice Kits - 30 volt rating. | | Per manufacturer instructions, applicable codes. | 3M – DBR kits. King Safety Products – Direct Bury Wire Connector. |

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| 16. | <p>Warning Tape – Six-inch width, with a permanent APWA sewer line green pigment at a maximum spacing of 30” along its length reading “<i>CAUTION SEWER LINE BURIED BELOW</i>”. The tape material shall be formulated from 100% virgin polyolefin resins. Resins shall be pigmental for chemical stability and resistance to sulfide staining. Tape shall be constructed by the mechanical lamination of two plies of three-layer blown film as to produce a bi-axially oriented structure. Tape to be wound on a plastic core with a 3-inch inner diameter and made to 1,000 ft. lengths.</p> | | <p><u>ASTM Method/ Property/ Value</u> D2103/ Std. Weight/ 25.6lb/1000s.f. D2103/ Thickness/ 6.0 mils D882/ 3” Tensile MD/ 85.0 lbs. D882/ 3” Tensile MD/ 4040 psi D882/ 3” Tensile TD/ 75.0 lbs. D882/ 3” Tensile TD/ 3570 psi D882/ Elongation MD/ 700% D882/ Elongation TD/ 500% D2582/ PPT Tear MD/ 18 lbs. D2582/ PPT Tear TD/ 18 lbs. D1938/ Tongue Tear MD/ 2.6 lbs. D1938/ Tongue Tear TD/ 2.2 lbs. D1712/ Sulfide Stain/ pass 48 hrs. (no discoloration, manufacturing tolerance +/-10%)</p> | <p>PRO-LINE Safety Products – Non-detectable underground utility marking tape, super stretch.</p> <p>Reef Industries Terra Tape – Extra Stretch</p> |
| 17. | <p>Test Station – Non-conductive ABS plastic construction, 2½” I.D., 18” shaft length, with flared ends, and cast iron lid and collar. Terminal block of reinforced polyester laminate with 2 wire terminals. Green, locking lid with pentagonal bolt cast in the center, allowing a quarter turn to open.</p> | | | <p>Handley Industries – PT5L</p> <p>C.P. Test Services – C.P. Mini Box.</p> |
| 18. | <p>Casing – Black, plain end, standard schedule steel pipe.</p> | | <p>API Grade B, or ASTM A 53</p> | |