

SECTION 02505 – SANITARY SEWER SERVICE LINES AND CONNECTIONS

PART 1 - GENERAL

1.1 SUMMARY

This section applies to sanitary sewer service lines and connections to a public sewer which lie within public rights-of-way or in utility easements under the control of the City for sewer purposes. A sanitary sewer service line or sewer lateral is defined as the sewer line that begins and extends from the building which receives the sewage discharge of the building and conveys it to a public sewer or another private sewer. The sanitary sewer service line connection is the point where the sewer service line taps into the public sewer. The property owner owns the sanitary sewer service line from their building to the public sewer, including its connection thereto, and is solely responsible for its operation and maintenance (drawing 02505-1 illustrates the boundaries of this responsibility within public rights-of-way). If this specification conflicts with other specifications, this specification shall govern. If this specification conflicts with the Code of Ordinances, the Code of Ordinances govern.

1.2 RELATED SECTIONS

- A. Section 01000 – General Project Requirements.
- B. Section 01300 – Submittals.
- C. Section 02200 – Earthwork.
- D. Section 02250 – Trenching, Pipe Embedment and Backfill.
- E. Section 02575 – Surface Restoration.
- F. Section 02620 – Ductile Iron Pipe for Sewers.
- G. Section 02624 – Polyvinyl Chloride (PVC) Gravity Sewer Pipe.
- H. Section 06012 – Rehabilitation of Sewer Laterals and Sewer Lateral Connections.

1.3 CODES AND STANDARDS

- A. Sanitary sewer service lines and its connection to the public sewer shall conform to all requirements set forth by the City, including but not limited to, ordinances, standards and specifications.
- B. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.
- C. American Society for Testing and Materials (ASTM):
 - A746 Standard Specification for Ductile Iron Gravity Sewer Pipe.
 - D16 Standard Terminology for Paint, Related Coatings, Materials, and Applications.
 - D1784 Standard Specification for Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Polyvinyl Chloride (CPVC) Compounds.
 - D2241 Standard Specification for Polyvinyl Chloride (PVC) Pressure Rated Pipe (SDR Series).
 - D2412 Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel Plate Loading.
 - D3034 Standard Specification for Type PSM Polyvinyl Chloride (PVC) Solid Wall Sewer Pipe and Fittings.
 - D3212 Standard Specification for Joints for Drain and Sewer Plastic Pipes Using

- Flexible Elastomeric Seals.
- E329 Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.
- F477 Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- F679 Standard Specification for Poly Vinyl Chloride (PVC) Large Diameter Plastic Gravity Sewer Pipe and Fittings.

1.4 SUBMITTALS

- A. Drawings, specifications, and data covering the proposed materials shall be submitted to the City in accordance with Section 01300 - Submittals. The Contractor shall submit the following to the City for review and approval:
 - 1. Pipe, fittings and couplings.
 - 2. Information on gasket polymer properties.
 - 3. Tee fabrication details.
 - 4. Application methods, application requirements and chemical resistance data for all products furnished.
 - 5. Manufacturer's Certificate of Compliance.
 - 6. Pipe embedment, backfill, materials and sub-contractor used for site restoration.
 - 7. CCTV Inspection Equipment: Submit minimum 15 days prior to performing inspections:
 - a. Name and qualifications of inspection firm.
 - b. Brand name and model number of video equipment to be used.
 - 8. CCTV inspection video and inspection logs. Video shall become property of the City.
 - 9. Permits:
 - a. The Contractor shall obtain all necessary permits and licenses required by the City, County and State.

1.5 DEFINITIONS

- A. ABS: Acrylonitrile Butadiene Styrene.
- B. ANSI: American National Standards Institute.
- C. ASTM: American Society for Testing and Materials.
- D. AWWA: American Water Works Association.
- E. CCTV: Closed Circuit Television.
- F. CIPP: Cured In-Place Pipe.
- G. DIP: Ductile Iron Pipe.
- H. PVC: Poly Vinyl Chloride.
- I. SDR: Standard Dimension Ratio.
- J. VCP: Vitrified Clay Pipe.

1.6 QUALITY ASSURANCE

- A. The Contractor is responsible for the quality assurance and quality control of the Work.
- B. All Work shall be performed by a Contractor with a proven record of performance for similar installations. Contractor shall submit the following:
 - 1. CCTV Inspection Company must have actively performed such services for minimum of 2 years.
 - 2. Warranty Terms and Period: Contractor's warranty period shall be three (3) years

for the performance and maintenance of the work performed.

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Packaging, handling, delivery and storage of materials shall be done in accordance with this Section, the manufacturer's recommendations and in accordance with Section 01000 – General Project Requirements.
- B. Delivery of materials shall be in manufacturer's original unopened and undamaged packages. Materials shall be clearly marked to identify brand name, contents and order number on each package. Packages showing signs of damage that may affect the condition of the contents are not acceptable.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Pipe:
 - 1. Approved pipe materials are: polyvinyl chloride (PVC) or ductile iron pipe (DIP).
 - 2. Pipe materials other than those listed above shall not be used for sanitary sewer service laterals unless otherwise approved by the City.
 - 3. General requirements:
 - a. No sanitary sewer service line shall be constructed with an inside diameter of less than four (4) inches.
 - b. Ductile Iron Pipe (DIP) shall conform to Section 02620 – Ductile Iron Pipe for Sewers.
 - c. Polyvinyl Chloride (PVC) pipe shall conform to Section 02624 – Polyvinyl Chloride (PVC) Gravity Sewer Pipe.
- B. Fittings:
 - a. All fittings shall be factory-produced and shall be designed for installation on the pipe to be used. Fittings shall be of the same quality and material as the pipe used.
 - b. Saddles for Tapping the Public Sewer:
 - i. VCP sewer main: a plastic (PVC) strap on saddle with a neoprene gasket under the saddle shall be used.
 - ii. PVC sewer main: a plastic (PVC) strap on saddle with a neoprene gasket under the saddle shall be used.
 - iii. DIP sewer main: a plastic (PVC) strap on saddle with a neoprene gasket under the saddle shall be used.
 - iv. ABS sewer main: a plastic (PVC) strap on saddle with a neoprene gasket under the saddle shall be used.
 - c. Couplings for point repairs:
 - i. All couplings shall form tight compression joints.
 - ii. When connecting to the existing sanitary sewer service line, the Contractor shall use Non-Shear Fernco Strongback 5000 series couplings, MaxAdaptor couplings or City approved equal.

PART 3 - EXECUTION

3.1 SAFETY

- A. All work shall be performed in accordance with applicable OSHA standards.

3.2 PREPARATION

- A. Contractor shall clear the work area required for excavation in accordance with Section 02200 – Earthwork. It is the Contractor’s responsibility to provide a photo or video log of the work zone(s) and to protect and restore the area to a condition as good as or better than it was before the Work was started. All removed fences; shrubbery, sidewalks, planters and landscaping shall be restored utilizing new materials unless otherwise directed in writing by both the Owner/Occupant and the City.
- B. Existing Utilities:
 - 1. The Contractor is responsible for protecting all utilities. All permits and licenses required for the execution of the Work shall be obtained by the Contractor.
 - 2. The Contractor shall notify all utilities at least 48 hours in advance before making excavation in accordance with Missouri State Law.
 - 3. When water mains or water service lines exist in the area, the Contractor shall comply with all applicable rules and regulations of the Kansas City, Missouri Water Services Department and the Missouri State Board of Health.

3.3 INSTALLATION

- A. General Construction Requirements:
 - 1. The maximum turn permissible at any one fitting shall be forty-five (45) degrees (one-eighth ($\frac{1}{8}$) bend).
 - 2. Sanitary sewer service lines shall be connected to a tee, wye or a manhole on the public sewer when such is available. Where no tee, wye or manhole is available, the sewers shall be tapped. Paragraph 2.1.B. lists the type of saddles permissible depending on the material of the sewer to be tapped.
 - 3. Open cut point repairs on a sanitary sewer service lateral shall be done in accordance with drawing 02505-2 and as described herein.
 - 4. Open cut replacement of a sanitary sewer service line connection shall be done in accordance with drawing 02505-3 and as described herein.
- B. Excavation:
 - 1. Excavation required for sanitary sewer service lines shall be done in accordance with Section 02200 – Earthwork except as modified herein.
 - 2. Width of Trench: The width of trench at the top of a pipe shall not exceed the outside diameter of the pipe plus eighteen (18) inches.
 - 3. Boring/Tunneling:
 - a. Boring/Tunneling will be permitted only under existing utilities or upon permission from the Water Services Department.
 - b. If boring/tunneling is permitted, the Contractor shall submit to the Water Services Department for approval the method of boring/tunneling, type of bracing and precautions used to prevent a collapse.
 - 4. Sheeting, Shoring and Bracing: The Contractor shall do all necessary trench bracing, shoring, or sheeting to prevent slides or cave-ins. Additional shoring, sheeting, and bracing shall be placed wherever required, as determined by the Water Services Department, for the successful and safe prosecution of the work.
- C. Pipe Embedment:
 - 1. The granular embedment for sanitary sewer service lines shall be placed in accordance with Section 02250 – Trenching, Pipe Embedment and Backfill.

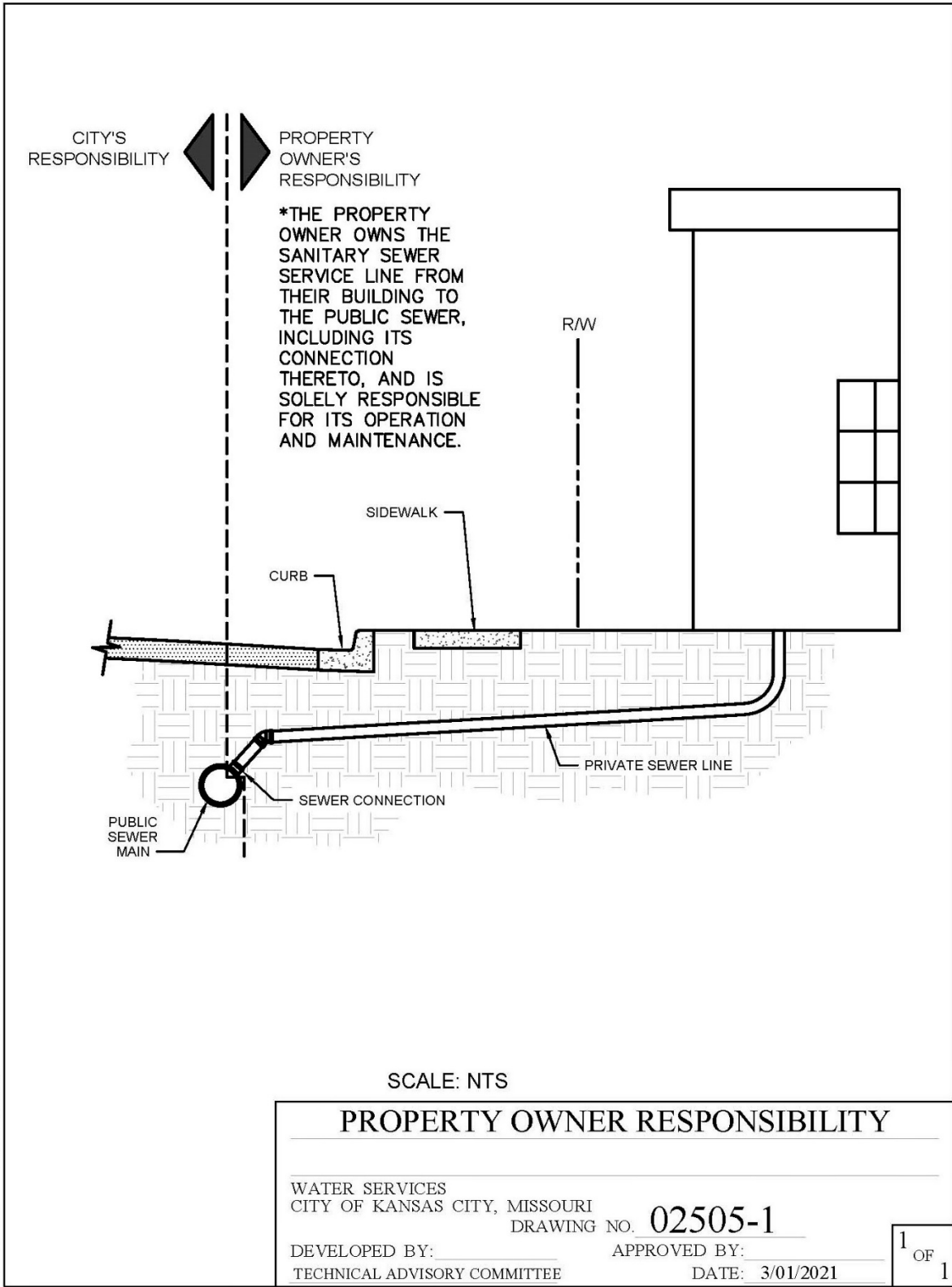
2. The sewer trench in earth excavation shall be carried to a point not less than four (4) inches below bottom of the pipe barrel and in rock excavation to a point not less than six (6) inches below bottom of pipe barrel.
3. Installation:
 - a. The pipe bedding shall be compacted to the bottom of pipe with proper allowance for bell joints. After each joint of pipe has been shoved "home" and placed in proper alignment, pipe embedment shall be placed and compacted to a minimum of twelve (12) inches above the pipe bell. In no case shall brick or other large stones be used as bedding.
- D. Line and Grade: Minimum Grade: The minimum grade allowable for private sewers in public right-of-way will be one-fourth ($\frac{1}{4}$) inch per linear foot. A grade as little as one-eighth ($\frac{1}{8}$) inch per linear foot may be allowed in special cases upon written permission from the Water Services Department. In no case will a private sewer in public right-of-way be constructed having a grade less than one-eighth ($\frac{1}{8}$) inch per linear foot.
- E. Minimum Allowable Cover: A minimum cover of four (4) feet from top of pipe to the finish grade of ground surface is required for all sanitary sewer service lines in public rights-of-way or in utility easements under the control of the City for sewer purposes.
- F. Backfill:
 1. Backfill shall be done in accordance with Section 02250 – Trenching, Pipe Embedment and Backfill.
 - a. Bedding material shall be placed a minimum of one (1) foot above the top of the sanitary sewer service line. Such material shall be carefully tamped around the pipe by hand or mechanical tampers.
 - b. See Section 02250 – Trenching, Pipe Embedment and Backfill for backfill requirements in paved areas and in unpaved areas.
 2. Filling the annular space in a casing (space between carrier pipe and casing):
 - a. Material shall be stabilized sand consisting of sand mixed to a ratio of twelve (12) parts sand to one (1) part cement.
 - b. Stabilized sand shall be placed in a manner that will completely fill all voids between the casing and the outside diameter of the pipe. Adequate provisions shall be made to prevent the mixture from running out the ends of the casing.
- G. Tapping City Sewers: All applicable tapping policies and procedures are made part of these specifications by reference and are subject to change by the City without notification. Copies of current policies and procedures as well as fee schedules used in charging for City-made taps can be obtained from the Water Services Department.

3.4 COMPLETION OF WORK AND SITE RESTORATION

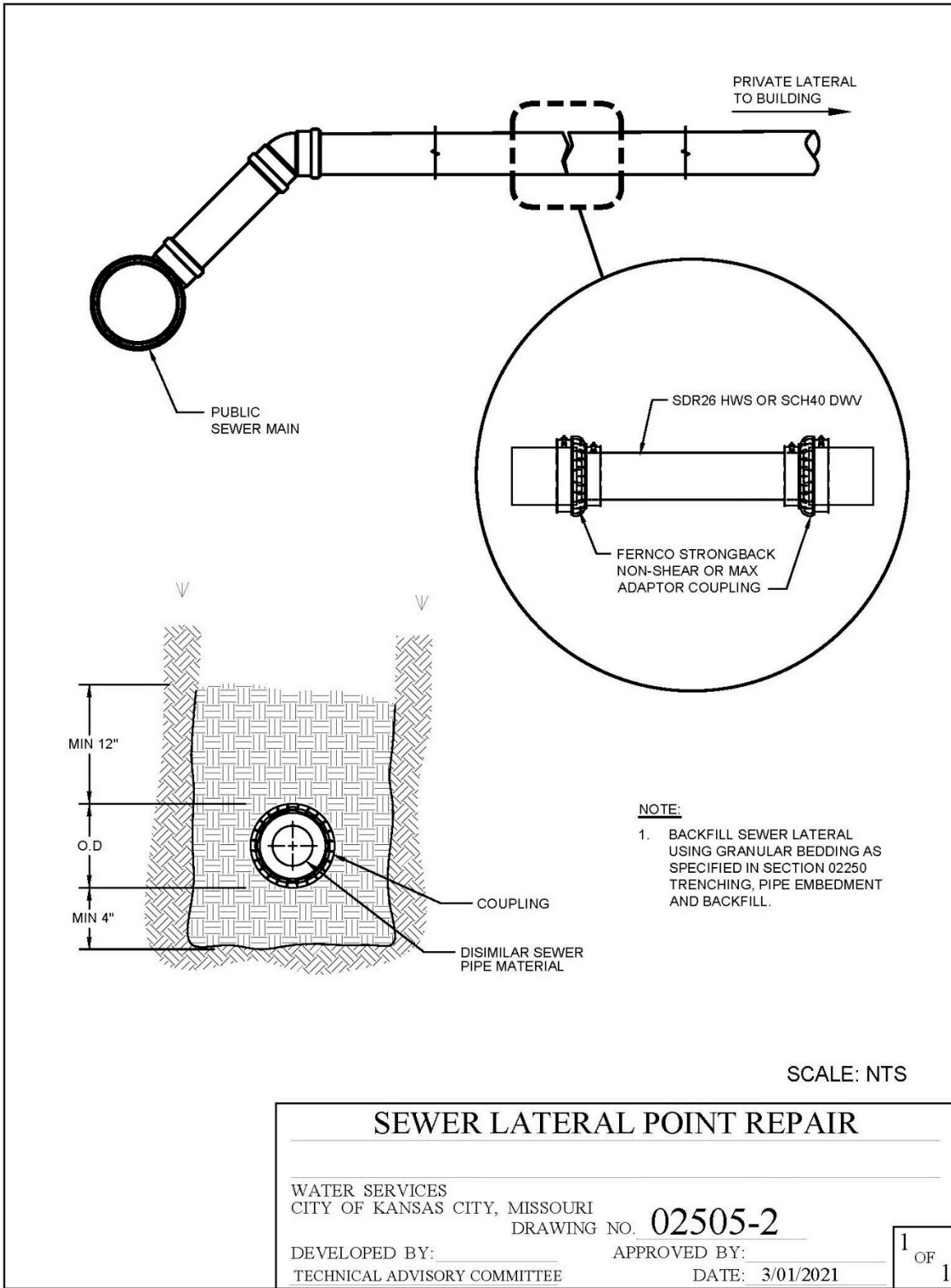
- A. All applicable inspection policies, procedures, and charges are made part of these specifications by reference and are subject to change by the City without notification. Copies of current policies, procedures and fee schedules may be obtained from the Water Services Department.
- B. Site Restoration shall be done in accordance with Section 02575 – Surface Restoration. All pavement, surfacing, driveways, sidewalks, curb, gutter, sod, landscape and all other surface structures affected by the work shall be restored.

Drawings 02505-1 through 02505-3 are on the following three pages.

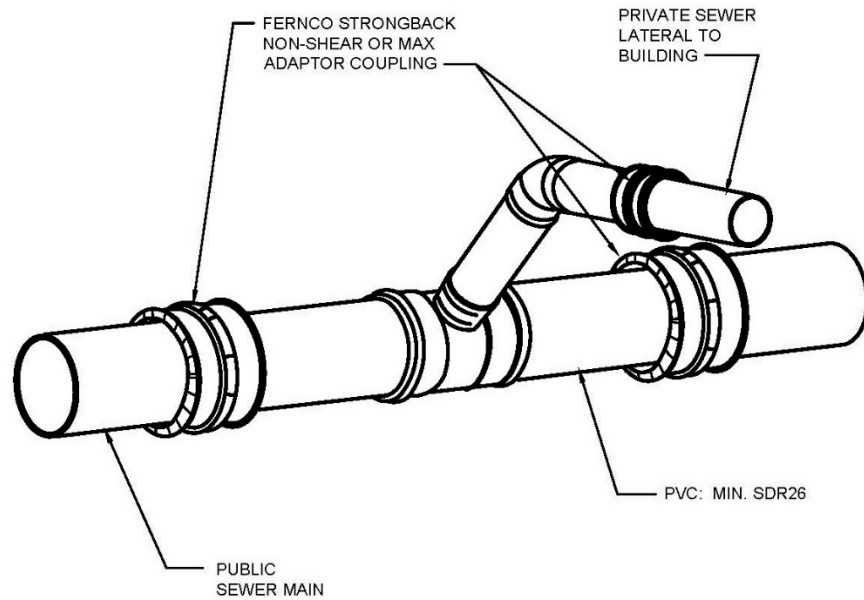
Drawing 02505-1



Drawing 02505-2



Drawing 02505-3



NOTE:

1. BACKFILL PUBLIC SEWER MAIN AND PRIVATE SEWER LATERAL USING GRANULAR BEDDING AS SPECIFIED IN SECTION 02250 TRENCHING, PIPE EMBEDMENT AND BACKFILL.

SCALE: NTS

SEWER LATERAL CONNECTION REPAIR

WATER SERVICES
CITY OF KANSAS CITY, MISSOURI

DRAWING NO. **02505-3**

DEVELOPED BY: _____
TECHNICAL ADVISORY COMMITTEE

APPROVED BY: _____
DATE: 3/01/2021

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END OF SECTION