

# Special Specification 7209

## Special Specification for Sanitary Sewer Replacements and Adjustments




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### 1. DESCRIPTION

Furnish, install, or replace sanitary sewer pipe, manholes and appurtenances, service connections, encasement pipes for sanitary sewer lines, and supporting materials in conformance with the North Central Texas Council of Governments (NCTCOG) and details shown on the plans. All work must be completed in accordance with the NCTCOG technical specifications unless otherwise noted on the plans or specifications.

All work must conform to the City of Waxahachie requirements and details shown on the plans. Obtain necessary permits; provide testing as necessary, and request inspection of the completed water and sewer lines prior to being placed in service.

Provide and install complete sanitary sewer construction and adjustments in conformity with the details shown on the plans, as described herein, in compliance with the Department's Utility Accommodation Policy (UAP)(Title 43, T.A.C., Sections 21.31-21.55) or as directed.

Reference specifications of the American Society for Testing and Materials (ASTM), American Water Works Association (AWWA) and American National Standards Institute (ANSI) will mean the latest standard in effect on the date of the proposal

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### 2. PREQUALIFICATION

In addition to TxDOT's prequalification, water and sewer utility improvements included in this project must be performed by a Contractor acceptable to the City of Waxahachie.

In order to be considered for award of this bid, bidders must be able to demonstrate that they are qualified by experience and capability to successfully construct the project within the Contract Time and for the Contract Amount. At a minimum each bidder must demonstrate the following:

- 2.1. Firm experience of at least 5 yr. in the construction of public water and sanitary sewer projects.
- 2.2. Financial capability to prosecute the work as supported by an audited financial statement for the previous year.
- 2.3. List of equipment capable of performing the work.

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### 3. BIDDING

- 3.1. **Project documents.** Respondents are advised that the plans, specifications, and other documents on file constitute all the information which TxDOT and the City will furnish.
- 3.2. **Project documents review.** Respondents are required, prior to submitting any response, to review the plans, read the specifications, exhibits, contract, and bond forms carefully.
- 3.3. **Site Visit and Research.** Respondents are required, prior to submitting any response, to visit the site of the work; to examine carefully the local conditions; to inform themselves with their independent research, tests, and investigations of the difficulties to be encountered and judge for themselves the accessibility of the work

and all attending circumstances affecting the cost of doing the work or the time required for its completion and to obtain all information required to make an intelligent bid.

- 3.4. **Other Utilities.** The data furnished on the plans regarding the size and location of all other utility lines has been obtained from field surveys, the utility owner and the various utility companies. Neither the Department nor the Engineer assumes responsibility for the accuracy of the information presented nor does it warrant that all of the utility lines have been shown.

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#### 4. MATERIALS

- 4.1. Furnish all materials in accordance with the requirements shown on the plans or pick-up materials furnished by the utility companies and deliver to the project site. See Article 7, "Measurement," Table 1 in this document.
- 4.2. Submit five (5) copies of information to the City from all manufacturers for materials and equipment to be used on the project. This information must include:
- Product specifications sufficient to allow the City to determine whether the materials and equipment conform to the design concepts and project specifications.
  - Information on all warranties provided by the manufacturer.
  - All submittals must be stamped by the manufacturer indicating that the manufacturer has checked the submittal for compliance with the specifications. Unstamped or uncertified submittals will be returned to the manufacturer unprocessed. Contact the City for a pre-approved list of manufacturers and products.
  - Submittals must be provided to the City before or at the preconstruction meeting. Construction will not be allowed to proceed until all submittals have been approved or a written waiver is given by the City.
- 4.3. Submit plans and shop drawings demonstrating proposed methods of maintaining water service to properties and businesses. Methods may include providing temporary service lines from active mains, line stops, or jumpers from active fire hydrants, or combinations. Provide a shop drawing submittal to the City of Waxahachie for each waterline requiring temporary measures to maintain water service to properties.

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#### 5. PERMITS, TESTING, AND INSPECTION

- 5.1. **Permits.** Acquire all necessary permits from the City of Waxahachie to perform the work. Please contact the following as needed:
- James Gaertner, PE, CFM, City Engineer, or  
 Jeff Chambers, Public Works Director  
 401 S. Rogers St.  
 Waxahachie, TX 75165  
 Office: 469-309-4303
- 5.2. **Testing.** Provide testing for water and sewer improvements in conformance with NCTCOG and the City of Waxahachie requirements or as directed by the Engineer. In general, perform the following testing as minimum:
- For water mains: hydrostatic test, poly pigging, and sterilization test.
  - Reference Specification "Purging and Disinfection of Water Conduits."
  - For sewer lines: Television inspection, deflection testing, and manhole vacuum testing.
  - Reference City of Waxahachie Amendments to NCTCOG Item 507.5

- 5.3. Inspection. All water mains, sewer lines, and their appurtenances will be inspected by a representative of the City of Waxahachie. These representatives' decision of acceptability of the installation will be final. The City of Waxahachie will hold three final inspections, one at water completion, one at sewer completion, and the third at roadway completion for final utility grade adjustments.
- 5.4. For all tie-ins to the city water or sewer system, City of Waxahachie personnel must be present. City of Waxahachie personnel will perform all live tap connections to existing water mains including all tapping saddles, tapping sleeves and valves, and insertion valves. City personnel will also operate valves in order to isolate sections of the water system. Refer to notes on the drawings for specific locations and requirements.

## 6. CONSTRUCTION

Protect all water mains, vaults and appurtenances at all times during the construction. Promptly repair, at no additional cost to the Owner, any damage to the existing water or sewer system and any interruption to the services such as line stoppages or breakage caused by the Contractor's operation.

### 6.1. Specifications.

Perform work in a manner consistent with current City of Waxahachie standards and specifications, the construction documents, Specifications for Public Works Construction – North Central Texas Governments (4th Edition, dated October 2004) standard details and specifications, and TxDOT standard details and specifications.

Where reference is made in these specifications to specifications compiled by others, such reference is made for expediency and standardization from the material supplier's point of view, and such specifications referred to are hereby made a part of these specifications.

### 6.2. Plans. A current set of City approved plans and specifications must be in the possession of the Contractor on the first day of the project. These must be shown to the State and City of Waxahachie Inspectors before any work is allowed to proceed on that project. A legible set of plans must be retained by the Contractor throughout the project until its completion.

### 6.3. Preconstruction Meeting. A preconstruction meeting is required before any project commences in the City of Waxahachie or its jurisdiction limits. Required meeting representatives, as applicable, must be:

- TxDOT Engineer
- City of Waxahachie representatives
- Contractor's representatives
- Affected utilities in the construction area represented

This meeting will consist of reviewing the plans with all the representatives present to discuss proposed construction methods and utility adjustment, to discuss project management and administrative procedures and to clear up any doubts about the plans and specifications. The Contractor will be required to present a proposed project schedule at the meeting. Location of the meeting will be at a location designated by the City. Call City of Waxahachie for specifics at least 48 hr. in advance of the meeting.

### 6.4. **Priority Contract Documents** (first having highest priority)

1. Construction Drawings
2. North Central Texas Council of Governments Details, Specifications, and Special Provisions
3. Texas Department of Transportation Details, Specifications and Special Provisions

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## 7. BID ITEM REFERENCES

- 7.1. **Bypass Pumping** - By-Pass Pumping is defined as furnishing all labor, materials, equipment, tools, appliances and incidentals necessary to perform all operations in connection with by-pass pumping of sewage flow for the purpose of preventing interference with the construction of the sanitary sewer manholes and mains as well as providing reliable sewer service to the areas being served.

Bypassing includes all mainline and service line bypassing required. Wastewater shall not be allowed to spill onto ground or into storm drains, street gutters, or open excavations. Any spills that occur must be taken care of properly and immediately. The City shall be notified immediately, and the Contractor shall bear all costs associated with any spills.

Bypassing sewage will consist of pumps to convey an anticipated peak wet weather flow at upstream manholes to the nearest downstream manhole. If multiple upstream manhole is required to intercept flow, the contractor shall provide a wye connection to a single pipe that can connect to the bypass pump outlet.

### Sewage Interception

The Contractor must comply with the following:

- a. By-pass sewage from the proposed receiving manhole(s).
- a. Temporarily Plug the downstream end of the receiving manhole(s).
- b. Intercept sewage entering the receiving manhole(s).
- c. Provide, operate and maintain any necessary by-pass pumps, spill guard equipment and storage equipment or any other temporary diversion of sewage as well as provide one standby, by-pass pumping equipment of equivalent performance.
- d. Provide for the expected peak sewage flows.
- e. Once bypass pumping is started it shall continue non-stop until all improvements are completed.
- f. Bypass pumping system shall have a monitoring system with flow meter, pump monitoring and autodialer capabilities.
- g. Provide the City Inspector with a contact name and phone number in case of emergency, high level alarm or equipment breakdown during normal working hours or after hours. When in an emergency after hours; contact cannot be made with the Contractor's representative; or in the opinion of City emergency work cannot be performed satisfactorily or in time by the Contractor, the City will carry out emergency work at the Contractor's expense.
- h. Clean-up and restore any area affected by surcharge or overflow as a result of the Contractor's activities or otherwise as part of the work under the Contract. This will be at the Contractor's expense and to the satisfaction of the City.
- i. Where capacity of by-pass or storage equipment is exceeded, increase the by-pass or storage equipment capacity to match the higher actual or anticipated flow rate.

### Bypass Pumping

The Contractor is to prepare a wastewater flow control bypass implementation plan for the City's review. The Contractor will incorporate the following requirements into the flow control implementation plan:

- a. The Contractor will design his flow control plan to insure enough bypassing pump or pumps and piping system capacity to maintain wastewater flows. Bypass pumps shall have a minimum rated capacity to meet peak wet weather flows. The contractor will provide names of individuals, along with their training and qualifications that will be monitoring the wastewater flow control bypassing pumps and piping system.
- b. The Contractor will implement a minimum of a two-pipe bypassing flow control implementation plan. The bypassing pipelines will not be flexible hose type unless approved by City. All the bypass piping will be rigid type and will be pressure rated to meet the anticipated pressures and will have a minimum wall DR of 17 if thermoplastic pipe is used by the Contractor.

Provide adequate pumping equipment and force mains in order to maintain reliable sanitary sewer service in all sanitary sewer lines involved. The Contractor must have backup pumps and force mains on the job site in case of equipment failure. Under no circumstances will the flow be interrupted or stopped such that damage is done to either private or public property or sewage flows or overflows into a storm sewer or natural waterway.

All piping, joints and accessories must be designed to withstand the maximum by-pass system pressure, or a minimum of 50 psi, whichever is greater. During by-pass pumping, no sewage will be leaked, dumped, or spilled in or onto any area outside of the existing sanitary sewer system. When bypass pumping operations are complete, all piping must be drained into the sanitary sewer prior to disassembly.

- c. Provide, maintain and monitor a connected backup pump capacity with equal capacity as the primary pump or pumps.
- d. Mitigation of noise generate by the flow control implementation plan must be addressed by the Contractor. All pumps, primary and backup, will be at a minimum by sound-attenuated and insulated to maintain 68 decibels at 25-feet or better. Placement and location of all pumps shall be placed in such a way to minimize the noise level to the greatest extent possible.
- e. Pump placement details and support appurtenances must be detailed in the flow control implementation plan submitted by the Contractor.

## 7.2.

### **Polyvinyl Chloride (PVC) Sewer Pipe.** NCTCOG reference: Item 501 and 507.

The following sanitary sewer pipe is acceptable for this project in accordance with the assigned NCTCOG Standard Specifications:

- 6-inch to 10-inch PVC gravity sewer pipe shall be manufactured in accordance with ASTM 03034 SDR- 26 PVC (Green in Color).
- 12-inch PVC gravity sewer pipe shall be manufactured in accordance with ASTM 03034 SDR- 35 PVC (Green in Color).
- 18" to 27" Diameter - ASTM F-679 Solid Wall PVC Gasketed Gravity Sanitary Sewer Pipe, Pipe Stiffness 46 (Green in Color).

All Testing shall be per NCTCOG Item 507.5.

The specified embedment shall be accurately shaped and trimmed to receive the pipe barrel and each pipe section, when in place, shall have a uniform bearing on the subgrade for the full length of the pipe barrel. Pipe shall not be laid unless the subgrade is free of water and in a satisfactory condition. Adjustments of the pipe to line and grade shall be made by scraping away or filling in with granular material, and not by wedging or blocking up the bell.

The interior of the pipe shall be clean and joint surfaces shall be clean and dry when the pipe is lowered into the trench. Each pipe shall be lowered into the trench carefully and laid true to line and grade.

7.3. **Steel Casing for Sanitary Sewer** - NCTCOG reference: Items 503.2 and 503.3.

Provide minimum wall thicknesses in accordance with those shown in Table 7.3.1 for HS-20 live loads and depths of bury of up to 16 ft.

Supply the pipe in double random lengths, of at least 16 ft. and at most 40 ft., unless otherwise shown on the plans. Bevel the ends of the pipe for field butt welding. Provide welder qualification in accordance with AWWA C206.

**Table 7.3.1  
Casing Pipe**

Casing Pipe Size (in.)	Outside Diameter (in.)	Min. Wall Thickness (in.)	Approx. Weight Uncoated (lb./ft.)
6	6.625	0.219	14.97
8	8.625	0.219	19.64
10	10.750	0.219	24.60
12	12.750	0.219	29.28
14	14.000	0.219	32.00
16	16.000	0.219	36.86
20	20.000	0.250	52.73
24	24.000	0.250	63.41
30	30.000	0.250	79.43
36	36.000	0.250	95.45
42	42.000	0.250	111.50
Note: It is the design Engineer's responsibility to review the design for conditions more extreme than those indicated by this specification and to design accordingly. Do not use a thickness of the pipe wall less than that defined in Table 1.			

Furnish steel casing pipe coated with coal-tar enamel externally and with polyamide epoxy internally.

Reference City of Waxahachie Standard Construction Detail W19, "Casing Spaces."

7.4. **Sanitary Sewer Service** – NCTCOG reference: Item 502.10.4.

Reference NCTCOG Standard Detail 5120 and 5140. Construct Sanitary Sewer services with commercial sanitary cleanout where indicated on the plans or directed by the Engineer.

7.5. **Sanitary Sewer Manhole** - NCTCOG reference: Items 502.1 and 702.

Precast or cast in place manholes shall be constructed in accordance with the details provided in the construction plans and shall be constructed with NCTCOG Item 702.2.4.2 Class F concrete. Manhole installation shall be in accordance with NCTCOG Item 502.1. - Manholes. Testing shall be in accordance with NCTCOG Item 502.1.5 - Manhole Testing.

Interior and Exterior Coatings

The interior surfaces of manholes, control structure and wet wells, including lift-out panels shall be coated with an epoxy coating. The epoxy coating shall be a total 125-mil thickness of Raven Lining System's Raven 405, Tnemec's Perma-Shield H2S Series 434, Standard Cement Material's Standard 4553 Epoxy Coating or Quadex Structure Guard. The concrete surfaces shall be allowed to cure for a minimum of 28 days prior to applying the epoxy coating. After curing and prior to application, the surface shall be blasted to remove laitance, form release agents, curing compounds, sealers and other contaminants to provide a surface profile as required by the manufacturer. The concrete surfaces shall be prepared in accordance with SSPC-SP13/NACE 6 standards prior to applying epoxy coating. Visible voids, bugholes and other cavities should be filled with resurfacing or patching material recommended by the epoxy manufacturer. All steel reinforcement exposed through the surface preparation must be properly cleaned and primed per SSPC-SP10/NACE 2 "Near White Metal Blast Cleaning" and primed using an epoxy primer as recommended by the

manufacturer. Outgassing must be considered, and the application shall include methods or products to reduce outgassing. All products shall be stored, mixed, handled and applied according to the manufacturer's recommendations, using equipment approved for application by the manufacturer. The epoxy material and shall be tested for thickness during application using a wet film gauge in at least four locations selected by the Owner and in the presence of the Owner. The epoxy material shall be completely tested for holidays using high voltage discontinuity testing performed in accordance with NACE RP0188 and the manufacturer's instructions once the coating has cured in the presence of the Owner.

The exterior of all precast manhole sections shall be factory coated with a 12 to 16 mil dry film thickness of coal tar epoxy paint. Paint shall be as manufactured by Tnemec Company, Inc. or approved equal and shall meet requirements of Corps of Engineers Specification C200.

Interior and Exterior manhole coatings will not be paid for separately, but the cost thereof shall be included in the appropriate item of the Proposal and Bid Schedule for Furnishing and Installing Manholes and addition to vertical feet of Manholes.

7.6. **Trench Excavation Protection for Sanitary Sewer Line** - NCTCOG reference: Item 107.19.3.

7.7. **Abandon Sanitary Sewer Lines**

When shown on the plans, existing sewer lines, including any washouts and voids, are to be abandoned by injecting the line with a flowable cement based grout of at least 100 psi. The grout mix design and method of installation are to be approved prior to beginning operation.

Abandonment of sanitary sewer lines shall be accomplished by installing the grout material with sufficient pressure and in numerous locations. The method of installation shall be able to meet the requirement of completely filling the existing sanitary sewer line and any voids adjacent to the sanitary sewer line. The method shall adequately provide for the removal and legal disposal of existing sewer materials in the system. The method shall provide for the release of air. When intermediate points are required to be constructed for the abandonment of the system, they shall be a part of the abandonment project process.

Sanitary sewer pipes smaller than 15 inches in diameter are generally not required to be grouted, unless it is required by the plans. Pipes to be abandoned shall be grouted only if required by the plans and payment as per these specifications is provided.

7.8. **Abandon or Remove Sanitary Sewer Manhole**

Manholes existing on sewer lines replaced by new sewer piping and which are no longer needed for the revised sewer network are to be classified as "Abandon Manhole". Work required on an abandoned manhole is to consist of installing a permanent concrete plug on all pipes within the manhole, removing the top of the manhole to an elevation of 2 feet below proposed subgrade or existing grade, whichever is the lower elevation, and backfilling the manhole with a grout material as specified. The ring and cover of the manholes are to be removed and delivered to the Sanitary Sewer Owner's facility designated by the Engineer. If directed, drainage holes are to be drilled in the bottom of manhole walls prior to backfilling.

7.9. **Traffic Control**

General.

Follow procedures for traffic control safety according to Item 502 of the Department's Standard Specifications for Construction of Highways, Streets and Bridges.

All streets and traffic ways shall be kept open for the passage of traffic and pedestrians during the construction period unless otherwise approved.

When required to cross, obstruct or temporarily close a street or traffic way, the Contractor shall provide and maintain suitable bridges, detours or other approved temporary expedients for the accommodation of traffic.

Closing a street or traffic way shall be for the least amount of time required, to complete the work that is requiring the closure, if less than 8 hours. Passage on the street or traffic way shall be restored immediately upon completion of the work.

The Contractor shall give the required advance notice of proposed operations to the fire and police departments and area medical facilities.

The Contractor shall give 48 hours' notice to owners or tenants of private property who may be affected by proposed operations.

The Contractor shall provide signs, signals, barricades, lights and all other equipment, service and personnel required to regulate and protect all traffic and warn of hazards as approved and directed. The Contractor shall remove temporary equipment and facilities when no longer required and restore the area to its original or specified condition.

Provide and operate traffic control required to direct and maintain an orderly flow of traffic in all areas under the Contractor's control or affected by the Contractor's operations.

Provide traffic control at the following locations:

- at each change of direction of a roadway and at each crossroad,
- at detours and hazardous areas, and
- at parking areas.

Traffic Notes and Special Conditions.

It is the Contractor's responsibility to insure that all traffic control devices are properly installed and maintained. All locations and distances will be determined in the field, by the Contractor, using the Texas Manual on Uniform Traffic Control Devices. If the traffic control devices do not conform to established standards, or are incorrectly placed or insufficient, the Engineer shall have the authority to stop construction operations, without suspending time charges, until such time as the conditions are corrected.

The Contractor shall notify the City of Waxahachie one week in advance of any street closure.

As work progresses, location for traffic control devices will be adjusted and modified by the Contractor, as necessary or directed.

Additional traffic control devices, special directional devices, or business name signs (as requested by businesses) may be required at the Contractor's expense.

The Contractor shall be responsible for suitable access accommodations for:

- pedestrians, including school children,
- delivery of mail by the U.S. Postal Service, and
- residents and all businesses during all phases of work.

At no time shall the Contractor have more than 50-ft. of trench un-backfilled or un-concreted, nor more than two open excavation areas at any one time, unless previously approved.

The Contractor shall provide for lane closings and traffic routing such that a minimum of two lanes on one-way streets and one lane each way on two-lane streets is maintained open to traffic at all times.

Parking Control.

Contractor related vehicular parking shall not interfere with public traffic or parking, access by emergency vehicles, other utility operations, or construction operations.



Temporary parking facilities for the public will be provided by the Contractor as required due to construction operations.

Parking of all construction and private vehicles will be monitored by the Contractor.

Free vehicular access to and through parking areas will be maintained.

Parking will be prohibited in non-designated areas.

Haul Routes. The Contractor shall consult with governing authorities to establish haul routes and site access.

Traffic Control While By-Pass Pumping. The Contractor shall locate by-pass pumping suction and discharge lines so as to not cause undue interference with the use of streets, private driveways and alleys; to include the possible temporary trenching of force mains at critical intersections. Traffic control shall be approved.

7.10. **Pavement Repair** – NCTCOG reference: Item 402.4.

7.11. **Television Inspection**

Pre-Construction Television Inspection

Immediately upon cleaning the sanitary sewers, all new sewer mains are to be televised and videotaped to determine the condition of the line and to locate service connections. The Engineer, Inspector and Contractor will observe the TV inspection in progress. The Contractor is to submit 1 copy of a color DVD of the recordings and logs of the televised inspection to the Engineer.

The Contractor shall not be allowed to float the camera. There may be occasions during the televised inspection of a manhole section when the camera will be unable to pass an obstruction. At that time, and prior to proceeding, the Contractor shall contact the Inspector. If the length of sewer line cannot be televised because of obstructions, the Contractor shall clean the system as is necessary. If, in the opinion of the Inspector, the obstruction is attributed to a collapsed main or pipe deflection, televising shall be suspended, payment shall be made based on the actual televised length, and the remaining televising of the sewer line shall be continued upon successful correction of the blockage by the Contractor at his expense. No additional payment shall be made for additional setups required due to obstructions encountered during televising.

The Contractor is solely responsible for any damage of sewer mains as a direct result of televising operations. Any repair shall also be the responsibility of the Contractor. The method(s) used for securing passage of the camera are at the discretion of the Contractor, as approved by the Engineer. No separate and/or additional payment will be made for any excavation, man entry, or any other method which may be required to retrieve video equipment that may have been hung up, destroyed, and/or lost during the operation.

Post-Construction Television Inspection.

TV inspection is to be done one manhole (structure) section at a time the flow in the section being televised shall be by-passed if the line is in service and the flow exceeds 25% of the internal pipe diameter. When the depth of flow at the upstream manhole of the manhole section being viewed is above the maximum allowable for television inspection, the flow shall be reduced to allowable levels by temporarily plugging or blocking the flow or by-pass pumping, as approved

Obstructions and Hindrances. All sections of the new sewer main are to be televised. Contractor is to insure the main is clean and clear of obstructions prior to performing televising activities. Any abnormalities such as, but not limited to, misaligned joints, cracked/defected pipe, rolled gaskets, shall be repaired by the contractor at his expense. Sections requiring repair shall be re-televised to verify condition of repair. No

additional payment is to be made for additional set-ups required or delays due to repairs or removal of obstructions.

**By-Pass Pumping.** The Contractor shall perform by-pass pumping operations in accordance with the Specifications.

**Video Equipment Operations.** The Contractor is to be responsible for the TV inspection equipment having an accurate footage counter which displays on the monitor the distance of the camera from the centerline of the starting manhole.

The camera height is to be adjusted such that the camera lens is always centered (1/2 ID or higher) in the pipe being televised. In no case will the television camera be pulled or propelled through the line at a speed greater than 40-ft. per minute.

**Post Repair TV Inspection.** Upon completion of any repairs required by the Inspector, Engineer, the Contractor will re-televiser the sewer and submit these DVDs to the Inspector. These DVDs are to be permanently labeled as described in Section 2.I. and are to be used as a portion of the acceptance criteria. This post repair-TV inspection is to be done to the satisfaction of the Engineer and is subject to the same acceptance criteria as the post construction-TV inspection DVDs. Post repair-TV inspection is to be provided at the Contractor's expense.

No separate or additional payment will be made for any excavation, man entry or any other method, which may be required to retrieve video equipment that has been entangled, destroyed or lost during the televising operation.

7.12. **Erosion Control Measures** – NCTCOG reference: Item 201.

This item shall include furnishing, installing, maintaining and removing silt fences, inlet protection, stone outlet sediment trap, construction entrances, and all required erosion control devices.

Measurement and payment shall be made on the basis of the bid price per Month (Mo.) and shall be the total compensation for furnishing all labor, materials and equipment necessary to complete the work. No additional time or compensation will be provided under this pay item for construction delays, unless approved by change order.

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**8. WORKMANSHIP, WARRANTIES, AND GUARANTEES**

Unless otherwise expressly provided in the Contract drawings or specifications, the work must be performed in accordance with the best modern practice with materials and workmanship of the highest quality and suitable for their purpose. The Owner will judge and determine the CONTRACTOR'S compliance with these requirements.

Promptly correct or replace all work rejected by the Owner as defective or as failing to conform to the Contract documents whether observed before or after substantial completion and whether or not fabricated, installed or completed. The CONTRACTOR will bear all costs of correcting such rejected work, including costs incurred for additional services made necessary thereby.

If within two years after final acceptance of the work by the Owner, as evidenced by the final certificate of acceptance or within such longer or shorter period of time as may be prescribed by law or by the terms of any other applicable special warranty on designated equipment or portions of work as required by the Contract documents, any of the work is found to be defective or not in accordance with the Contract documents, the CONTRACTOR must correct it promptly after receipt of a written notice from the Owner to do so. This obligation will survive termination of the Contract. The Owner will give such notice promptly after discovery of the condition.

Remove all portions of the work from the site which are defective or nonconforming and which have not been corrected unless removal is waived in writing by the Owner.

All subcontractors', manufactures' and suppliers' warranties and guarantees, express or implied, respecting any part of the work and any materials used therein, will be obtained and enforced by the CONTRACTOR for the benefit of the Owner without the necessity of separate transfer or assignment thereof, provided that if directed by the Engineer, the CONTRACTOR will assign such warranties and guarantees in writing to the Owner.

Any work repaired or replaced, pursuant to this section, will be subject to the provisions of this section to the same extent as work originally performed.

The rights and remedies of the Owner provided in this section are in addition to, and do not limit, any rights or remedies afforded to the Owner by law or any other provision of the Contract documents, or in any way limit the Owner's right to recovery of damage due to default under the Contract.

## 9. PROTECTION OF PERSONS AND PROPERTY

Should CONTRACTOR cause damage to the work or property of any separate CONTRACTOR at the site, or should any claim arise out of CONTRACTOR'S work, CONTRACTOR must promptly attempt to settle with such other CONTRACTOR by agreement, or to otherwise resolve the dispute by arbitration or at law. Should a separate contractor cause damage to the work or property of CONTRACTOR or should the performance of work be any separate contractor at the site give rise to any other claim, CONTRACTOR must not institute any action, legal or equitable, against Engineer or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Engineer on account of any such damage or claim.

Work will not be allowed until trench safety plans are submitted and approved. The preparation and approval of these documents are also included in the total contract time and should be completed expeditiously by the CONTRACTOR.

## 10. EXISTING UTILITIES AND SERVICE LINES

The CONTRACTOR will be responsible for the protection of all existing utilities and service lines crossed or exposed by the construction operations. Where existing utilities and service lines are cut, broken or damaged, the CONTRACTOR must replace the utilities and service lines with the same type of original construction, or better, at his own cost and expense.

If it is necessary to change or move the property of any owner or of a public utility, such property will not be moved or interfered with until authorized by the ENGINEER. The right is reserved to the owner of any public utility to enter upon the limits of the project for the purpose of making such changes or repairs of their property that may be made necessary by the performance of this contract.

## 11. MEASUREMENT

Sanitary Sewer Items will be measured as follows:

Description Code	Bid Item Description	Unit
6001	Bypass Pumping (27" Replacement)	DAY
6002	27" ASTM F-679 PVC San. Sew. by Open Cut	LF
6003	10" SDR 26-PVC San. Sew. by Open Cut	LF

6004	8" SDR-26 PVC San. Sew. by Open Cut	LF
6005	6" SDR-26 PVC San. Sew. by Open Cut	LF
6006	16" Steel Enc. Pipe (1/4" Thick) by Open Cut	LF
6007	Commercial Service Connection (San. Sew.)	EA
6008	San. Sew. Cleanout - Commercial	EA
6009	4' Dia. Std. San. Sew. Manhole	EA
6010	5' Dia. Std. Sanitary Sewer Manhole	EA
6011	4' Dia. Sanitary Sewer Drop Manhole	EA
6012	Trench Excavation Protection (5'-10')	LF
6013	Trench Excavation Protection (10'-15')	LF
6014	Abandon Sanitary Sewer (6"-12")	LF
6015	Abandon Sanitary Sewer (15"-27")	LF
6016	Abandon Existing San. Sew. Manhole	EA
6017	Traffic Control	MO
6018	Permanent Pavement Repair	SY
6019	Temporary Pavement Repair	SY
6020	Pre-Construction Television Inspection	LF
6021	Post Television Inspection	LF
6022	Erosion Control Measures	MO

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## 12. PAYMENT

The work performed, and materials furnished in accordance with this Item and measured as provided by under "Measurement," will be paid for at the unit price bid for the various items specified on the plans. This price is for full compensation for furnishing all equipment, materials, tools, labor, permits, testing, and incidentals necessary to satisfactorily complete the work as detailed on the plans including excavation, embedment, and backfill.

Items required to complete respective construction items that are not specified to be paid for separately, will be considered subsidiary to other pay items.

- 12.1. **Trench Excavation, Embedment and Backfill** - Excavation, embedment and backfill will not be measured for payment for pipeline trenches but will be considered subsidiary to the various bid items.
- **Backfill.** NCTCOG reference: Items 504.5.3 and 504.6.  
The material used in the backfill shall be pulverized to the extent necessary to produce, a free-flowing material free of clay balls larger than 6" diameter.
  - **Pipe Embedment.** NCTCOG reference: Item 504.5.2.15. Class "H" Embedment  
On PVC Pipe 18 inches through 27 inches in diameter the crushed stone shall be brought up in uniform layers to a point nine inches over the top of the pipe when compacted.  
Reference City of Waxahachie Standard Detail S02, "Embedment 'H' Wastewater:"
- 12.2. **Sewer System** - Testing of sewer lines and manholes will not be measured but will be considered subsidiary to the various bid items. For sewer services, no separate payment will be made for the connection to the main or private lines, which are subsidiary to the sewer service pay item.
- 12.3. **Disposal of materials** - Disposal of materials will not be measured for payment but will be considered subsidiary to the various items. NCTCOG reference: Item 107.25.