

# Special Specification 7264

## Water Mains and Sanitary Sewers



### 1. DESCRIPTION

This Item will govern for all materials, equipment, and labor necessary for the installation of all exterior water mains, all sanitary sewer lines, drain lines, and all distribution lines connected to the various structures as shown on the plans or as directed. This item will supersede all other special specifications for joint-bid ventures in the City of San Marcos. Special provisions or design specifications shown in a given plan set will supersede this Item.

Refer to the City of San Marcos Standard Specifications for the most recent specifications.  
<https://www.sanmarcostx.gov/420/Standard-Specifications>

### 2. MATERIALS

Furnish all materials in accordance with the requirements shown on the plans or pickup materials furnished by the City of San Marcos and deliver to the project site. Items that will conform to Department Standards and Specifications are as follows:

- Item 100, "Preparing Right of Way"
- Item 104, "Removing Concrete"
- Item 105, "Removing Treated and Untreated Base and Asphalt Pavement"
- Item 132, "Embankment"
- Item 160, "Topsoil"
- Item 164, "Seeding for Erosion Control"
- Item 166, "Fertilizer"
- Item 169, "Soil Retention Blankets"
- Item 247, "Flexible Base"
- Item 334, "Hot-Mix Cold-Laid Asphalt Concrete Pavement"
- Item 351, "Flexible Pavement Structure Repair"
- Item 400, "Excavation and Backfill for Structures"
- Item 401, "Flowable Backfill"
- Item 402, "Trench Excavation Protection"
- Item 403, "Temporary Special Shoring"
- Item 420, "Concrete Substructures"
- Item 421, "Hydraulic Cement Concrete"
- Item 432, "Riprap"
- Item 440, "Reinforcement for Concrete"
- Item 442, "Metal for Structures"
- Item 461, "Structural Plate Structures"
- Item 471, "Frames, Grates, Rings, and Covers"
- Item 476, "Jacking, Boring, or Tunneling Pipe or Box"
- Item 479, "Adjusting Manhole and Inlets"
- Item 496, "Removing Structures"
- Item 500, "Mobilization"
- Item 502, "Barricades, Signs, and Traffic Handling"
- Item 506, "Temporary Erosion, Sedimentation, and Environmental Controls"
- Item 528, "Colored Textured Concrete and Landscape Pavers"

- Item 530, "Intersections, Driveways, and Turnouts"
- Item 531, "Sidewalks"
- Item 666, "Retroreflectorized Pavement Markings."

Where encroachment into private property is called for on the plans, the City of San Marcos will supply new water meters equal to the size and type of the existing water meter. Contact the City of San Marcos one week before commencing operations.

- 2.1. **Buy America Requirements.** Materials must meet the "Buy America" requirements set forth by the Federal Highway Administration (FHWA) and the Department.

Contractor may certify all materials for the entire project at once or suppliers can certify each individual step or separate production process.

Every certification must clearly reference the heat number. When reviewing certifications, compare the heat numbers or other tracing methods on delivered material to the certification document to ensure that the information is the same.

A mill certification must also be produced to prove that the raw steel or iron was smelted and formed in the United States. The certification can be a signed letter or merely included as a signed statement on the delivery tickets.

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### 3. CONSTRUCTION

- 3.1. **General Requirements.** Install each system in accordance with the construction methods detailed on the plans and adhere to any guidelines set forth in the latest version of the City of San Marcos Standard Specifications and Standards Manual drawings with exclusions of all environmental protection measures, which will be in accordance with the standard Department methods and as detailed on the plans. Unless otherwise specifically stated elsewhere, perform all work in accordance with the Utility Accommodation Rules as set forth in 43 Texas Administrative Codes §21.31 et. seq. adopted by the Department.

Protect all water mains, sewer lines, 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.

Place the City of San Marcos facility in accordance with the rules adopted by the Texas Commission on Environmental Quality (TCEQ) or have a variance approved by TCEQ before placement.

Provide trench excavation protection as required by the provisions of, Part 1926, Subpart P-Excavations, and applicable appendices of the Occupational Safety and Health Administration's Standards and Interpretations and conform with Department Item 402, "Trench Excavation Protection." All trench excavation protection plan submittals will be conducted by the Engineer. Contractor must remain solely and completely responsible for all trench excavations and for the associated means, methods, procedures, and materials.

Complete all adjustments before the placement of the final surface.

Unless otherwise approved, connections to existing lines or reconnections of services must be performed at night or on the weekend.

- 3.2. **Permits.** Acquire all necessary permits from the City of San Marcos. Street cuts made outside the Department's right of way will require a street cut permit and will be directly coordinated with the City of San Marcos. The City of San Marcos will provide all right of way and utility adjustments needed for performance of work on sites not owned or to be acquired by the Department. If the City of San Marcos is the owner of any part of the project site, the City of San Marcos will permit the Department or its authorized representative access to the site to perform any activities required to execute the work.

- 3.3. **Testing.** Provide testing for water mains in conformance to the City of San Marcos requirements or as directed. Retesting charges will be deducted from payments for any test that fails to meet the required Standards described in the City of San Marcos Specification items. Make appropriate repairs to those elements that do not pass any of the tests. Perform the testing as a minimum in accordance with the list below.
- For water mains: hydrostatic test, low pressure air test, leakage test, poly pigging, and sterilization test.
  - Reference Specification Item No. 510- Pipe: "Quality Testing for Installed Pipe."
- 3.4. **Sterilization of Potable Water Lines.** Protect all piping materials from contamination during storage, handling, and installation.
- 3.5. **Safety.** Exercise reasonable precautions for the safety of workers and the public, and comply with applicable provisions of all Federal and State safety laws and regulations. The safety precautions taken, and their adequacy must be the sole responsibility of the Contractor.
- When pedestrian facilities are closed or relocated, provide temporary facilities that are detectable and include accessibility features consistent with features presented in the existing pedestrian facilities. Temporary facilities must be placed at locations in accordance with the Texas Manual on Uniform Traffic Control devices (TMUTCD).
- 3.6. **Inspection.** All water main, sewer lines, and their appurtenances will be inspected by a representative of the local municipality. These representatives' decision of acceptability of the installation will be final. The local municipality will hold two final inspections, one at water completion and the other at roadway completion for final utility grade adjustments according to specifications.
- 3.7. **Warranty Agreement.** A warranty agreement between the City of San Marcos and Contractor must be executed to cover this item of work. The cost of the warranty agreement is subsidiary to this item of work. The warranty agreement includes the requirement of a maintenance bond for not less than 10% of this item's cost for a one-year warranty period beginning after final completion. The City of San Marcos will assume responsibility for the maintenance of the existing and completed water and wastewater facilities during and upon completion of the construction contract.
- 3.8. **Manholes.** All manholes must have a minimum inside diameter of 48 in. Manhole base section or junction box dimension must be appropriately increased to accommodate all converging pipe. Maintain a minimum horizontal clearance of 12 in. between adjacent pipes.
- Complete all adjustments before the placement of the final roadway surface except on pavement reconstruction projects, where castings may be adjusted after paving is completed.
- Brick will not be used in making height adjustments to wastewater manholes. Mortar will not be used for any purpose on the inside of wastewater manholes.
- Carefully remove manhole components to be reused and clean the contact areas of all mortar, concrete, grease, and sealing compounds. Any items broken in the process of removal and cleaning must be replaced in kind by the Contractor at its expense.
- If the adjustment involves lowering the top of a manhole, a sufficient depth of pre-cast concrete rings or brick courses must be removed to permit reconstruction. Clean existing mortar from the top surface remaining in place and from all brick or concrete rings to be reused and the manhole rebuilt to the required elevation. Install the manhole ring and cover with the top surface conforming to the proposed grade.
- If the adjustment involves raising the elevation of the top of the manhole in accordance with reference Specification Item No. 506- Manholes: "Minor Manhole Height Adjustment," clean the top of brick or concrete ring and build up vertically to the new elevation, using new or salvaged concrete rings or bricks and the ring and cover installed with the top surface conforming to the proposed grade.

After the rings and covers are set to grade, wipe the inside and outside of the precast concrete grade rings with non-shrink grout to form a durable surface and water-tight joints. The grouted surface must be smooth and even with the manhole cone section. Grout must not be placed when the atmospheric temperature is at or below 40°F. If a sudden drop in temperature below 40°F occurs or temperatures below 40°F are predicted, protect the grouted surfaces against freezing for at least 24 hrs.

Remove manholes designated on the drawings for abandonment to a level not less than 4 ft. below grade. Cut and remove 2 ft. sections of the inlet and outlet pipes on the outside of the manhole. Securely plug the ends of the remaining pipe and the pipe sections penetrating the manhole wall and fill the structure with material in accordance with Standard 506S-15 or as directed.

- 3.9. **Pipe.** Where feasible, water, and wastewater lines should be no closer to each other than 9 ft. between outside diameters in all directions and must be in separate trenches.

Encase pipes that cross under a utility structure or storm sewer and the tops of the pipes are within 18 in. of the bottom of the utility structure.

Replace the sewer lines with one 20 ft. joint of ductile iron where trenches wider than 12 in. cross under the existing wastewater lines.

Where nonmetallic pipe is installed longitudinally install a durable metal wire concurrently or provide other means for detection purposes. Casings should extend a minimum of 5 ft. beyond each curb or edge of shoulder.

Encase all pipelines crossing under roadways with the type and size of encasement pipe indicated on the plans. Casings will extend a minimum of 3 ft. beyond each curb or edge of shoulder.

Casing must be metal of ample strength to withstand handling stresses, the pressure of concrete, and the surrounding earth or backfill materials and must be watertight.

Place inductive tracer detection tape directly above the centerline of all non-metallic pipe a minimum of 12 in. below subgrade or, in areas outside the limits of pavement, a minimum of 18 in. below finished grade. Encase the tracer tape in a protective, inert, plastic jacket, and color coded according to *American Public Works Association Uniform Color Code*. Except for minimum depth of cover, place the tracer tape according to manufacturer's recommendations. Manufacturers must be listed on SPL WW-597.

- 3.10. **Wastewater Connections to Existing System.** Unless otherwise specified by the Engineer, make all connections to the existing mains at the manholes with the crown of the inlet pipe installed at the same elevation as the crown of the existing pipe. Install service stubs on the existing system by use of tapping saddles unless otherwise approved by the Engineer. Exercise extreme care to prevent material from depositing in the existing pipe as the taps are being made.

When connections to existing mains are made, install a temporary plug approved by the Engineer downstream in the manhole to prevent water and debris from entering the existing system before final completion. Remove these plugs after the castings are adjusted to finish grade or before final completion.

- 3.11. **Removing Old Structures.** When out of service masonry structures or foundations are encountered in the excavation, remove such obstructions for the full width of the trench and to a depth of 1 ft. below the bottom of the trench. When abandoned inlets or manholes are encountered and no plan provision is made for adjustment or connection to the new sewers, remove such manholes and inlets within the construction limits completely to a depth of 1 ft. below the bottom of the trench. In each instance, restore the bottom of the trench to grade by backfilling and compacting by the methods provided above. Where the trench cuts through storm or wastewater sewers which are known to be abandoned, cut these sewers flush with the sides of the trench and blocked with a concrete plug in a manner satisfactory to the Engineer. When old structures are encountered, which are not visible from the existing surface and are still in service, protect and adjust the structures as required to the finished grade.

Remove the complete joints of AC pipe to minimize the release of asbestos fibers and replace with the same diameter ductile iron or approved PVC pipe using the appropriate sleeves, adapters, or repair coupling at each end. All work associated with AC pipe removal must conform with Department Item 6, "Control of Materials."

Wet or pressure tapping may be performed on AC pipe.

- 3.12. **Mobilization.** Mobilization must include, but not be limited to: the movement of equipment, personnel, material, supplies, etc., to the worksite; the installation of temporary facilities (when not paid for separately); and, the establishment of office and other necessary facilities before the initiation of the work. The cost of the payment bond and performance bond on the work that is delayed due to circumstances beyond the Contractor's control, a closed construction season, or for the convenience of the City of San Marcos will be considered part of the mobilization item under this Contract.

- 3.13. **Sediment Containment Dikes.** Select the material for the dikes, unless otherwise indicated, conforming to the details on the drawings and standard details provided on the plans.

Place the filter dikes with the filter ends tightly abutting the adjacent filter. Anchor each filter and skirt securely in place using 6 in. staples at a maximum spacing of 12 in. on center. Anchoring on impervious areas must be accomplished with sand or gravel bags placed at 18 in. on center or with a nominal 1 in. by 4 in. board nailed at 18 in. on center.

Remove silt accumulation behind the triangular sediment filter dikes at a maximum depth of 6 in. or when, in the opinion of the Engineer or designated representative, the structure ceases to function as intended.

Inspect all dikes at least monthly and after each rainfall. Dikes must be repaired or replaced when necessary or as directed.

After completion of construction or when directed, remove the dike and re-grade the site to the final grades. Fill any depression and spread or remove any accumulations of silt to a permitted disposal area. After removal of the dike, grade and seed the area in accordance with Department Item 164, "Seeding for Erosion Control."

#### 4. MEASUREMENT

Work and acceptable materials as prescribed by this Item will be measured as shown on the plans as listed below.

- 4.1. **Jacking and Boring Pipe (ITEM 501S- JACKING AND BORING PIPE).** This Item will be measured by the foot of pipe specified. Such measurements will be made between the ends of the pipe along the central axis as installed.
- 4.2. **Adjusting Structures (ITEM 504S- ADJUSTING STRUCTURES).** This Item will be measured by each adjustment made. When a pay item is included in the Contract for service pipe to the structure to be adjusted, the service pipe will be measured as "Pipe" below.
- 4.3. **Manholes (ITEM 506- MANHOLES).** This Item will be measured as listed below.
- When a pay item is included in the contract for "Vertical Extension (Manhole)," "Manholes" will be measured as each manhole, from the flowline to 8 ft. above the flowline. The remainder, including ring and cover, will be measured as "Vertical Extension (Manhole)."
  - When a pay item is not included in the contract for "Vertical Extension (Manhole)," "Manholes" will be measured as each manhole.
  - Abandonment of manholes, when called for in drawings, will be measured by the each, "Abandon Manhole."
- 4.4. **Vertical Extension (Manhole).** This Item will be measured by the foot of manhole extension. Measurement will be made from a point 8 ft. above the flowline of the manhole to the top the ring and cover.

- 4.5. **Manhole Rehabilitation.** This Item will be measured by each manhole rehabilitated.
- 4.6. **Pipe (ITEM 510- PIPE).** This Item will be measured as listed below.
- When a pay item for "Fittings" is included in the Contract, "Pipe" will be measured by the foot along the flowline. This measurement for "Pipe" will not include the length of fittings, valves or other items included in the Contract for separate pay.
  - When a pay item for "Fittings" is not included in the Contract, "Pipe" of the diameter and type specified will be measured by the foot horizontally along the centerline of the pipe. This measurement for "Pipe" will include the length of fittings, valves, vertical stacks for wastewater services or other items included in the Contract. Other items will not include manholes or junction boxes. Where manholes or junction boxes are included in lines of pipe, that length of pipe tying into the structure wall will be included for measurement, but no other portion of the structure length or width will be so included.
  - For pay item "By-Pass Pumping", where called for on drawings, will be measured as lump sum for all distances, depths, amount of flow to be pumped, and time needed for by-pass pumping operations.
- Where the pipe is to connect to an existing pipe, measurement of "Pipe" will be made to the visible end of the existing pipe or the outside surface of the fitting flange to which the "Pipe" connects.
- 4.7. **Abandon Pipe.** This Item will be measured by the foot along the centerline of existing pipe when included on the plans as a pay item. Only those pipes designated on the plans and by the Engineer to be abandoned will be measured for payment under this item.
- Cement-Stabilized Backfill (ITEM 401S- STRUCTURAL EXCAVATION AND BACKFILL).** This Item will be measured by the cubic yard as dimensioned on the plans. Quantities for "Cement-Stabilized Backfill" as shown on the plans and in the proposal will be considered as final quantities and no further measurement will be required, unless the alignment, grades, or sewer and water line locations are revised by the Engineer during construction. In addition, final determination of cement-stabilized backfill quantities for individual pipe mains and laterals will be made, if, in the opinion of the Engineer or upon evidence furnished by the Contractor, substantial variations exist between quantities shown on the plans and actual quantities due to changes in cross-sections or apparent errors.
- 4.8. **Concrete Trench Cap (ITEM 509S- EXCAVATION SAFETY SYSTEM).** This Item will be measured by the foot of trench cap placed.
- 4.9. **Wet Connections.** This Item will be measured by each connection.
- 4.10. **Pressure Taps.** This Item will be measured by each tap, including valves.
- 4.11. **Cast Iron or Ductile Iron Fittings.** This Item will be measured by the ton of fittings used, when included on the plans as a pay item. Fittings for pipe sizes larger than 24 in. are subsidiary to the pipe and no measurement or payment will be made.
- 4.12. **Valves (ITEM 511S- WATER VALVES).** This Item will be measured by each unit placed.
- 4.13. **Fire Hydrants/Drain Valve Assemblies.** This Item will be measured by each assembly that is placed.
- 4.14. **Manual and Automatic Air Release Assemblies.** This Item will be measured by each assembly that is placed.
- 4.15. **Concrete Retards (ITEM 593S- P.C. CONCRETE).** This Item will be measured by the cubic yard or by the each of concrete retard placed.
- 4.16. **Tunneling.** This Item will be measured by the foot of completed tunneling along the centerline of completed tunnel for the various sizes of lining in accordance with these specifications complete in place and accepted by the Engineer including all excavation, blasting, ventilation, supports, primary and final lining, grouting,

survey monuments, portal and backfilling, unless otherwise specified on the plans. Transitions will be measured by the foot along the centerline of the completed tunnel for the largest size of lining.

- 4.17. **Adjusting or Relocation of Water Meters (ITEM 504S- ADJUSTING STRUCTURES).** This Item will be measured by each meter that is adjusted or relocated, including new meter boxes, traffic bearing boxes and lids, where called for on the plans.
- 4.18. **Lateral Services.** This Item will be measured by each service line placed of the existing pipe size or minimum of 1 in. diameter. New pipe will be installed between the meter and the new or existing water main.
- 4.19. **Sediment Containment Dikes.** This Item will be measured by the foot of "Sediment Containment Dikes" placed.
- 4.20. **Mobilization (ITEM 700S- MOBILIZATION).** This Item will measured by the lump sum. Mobilization is calculated on the base bid only and will not be paid for separately on any additive alternate items added.
- 4.21. **Traffic Control.** This Item will measured by the lump sum.
- 4.22. **Removal of Existing Wastewater Manholes (ITEM 506S- MANHOLES).** This item is subsidiary to Prep ROW.
- 4.23. **Controlled Low Strength Material.** This Item will be measured by the cubic yard of material placed.
- 4.24. **Grout Abandoned Lines, All Sizes.** This Item will be measured by the cubic yard of grout placed in the existing pipe when included on the plans as a pay item. Only those pipes designated on the plans to be abandoned and as directed will be measured for payment under this item.
- 4.25. **Reconnect Existing Sewer Service.** This Item will be measured by each connection. Service pipe from the main to the service connection will be measured by the foot.

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## 5. 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 prices bid for the items hereinafter described.

Payment is full compensation for all staking and engineering work, testing, disinfection, furnishing and installing all materials, accessories and incidentals necessary to complete the work prescribed in this specification and as detailed on the plans. Said payment will also be full compensation for all excavation and backfilling, all freight, loading, unloading, handling of materials, labor, tools and equipment and incidentals necessary to complete work.

- 5.1. **Jacking and Boring Pipe.** Payment will be made at the unit price bid for "Jacking or Boring Pipe," of the type, size and class specified. This price is full compensation for furnishing all materials, pipe and liner materials required, for all preparation, hauling and installing of same, and for all labor, tools, equipment and incidentals necessary to complete the work, including excavation, backfilling and disposal for surplus materials.
- 5.2. **Adjusting Structures.** Payment will be made at the unit price bid for "Adjusting Structures," of the type specified. This price is full compensation for furnishing all materials, handling, placing, labor, tools, taps, equipment and incidentals necessary to complete the work.
- 5.3. **Manholes.** Payment will be made at the unit price bid for "Manholes," of the diameter and type specified. This price is full compensation for furnishing all concrete, reinforcing steel, brick, mortar, aluminum and castings, frames, grates, rings and covers and for all other materials, tools, equipment and incidentals required to complete the work. When indicated in the drawings, abandonment of existing manholes will be made at the unit price bid for "Abandon Manhole."

- 5.4. **Vertical Extension (Manhole).** Payment will be made at the unit price bid for "Vertical Extension (Manhole)" of the diameter and type specified. This price is full compensation for furnishing all concrete, reinforcing steel, brick, mortar, aluminum and castings, frames, grates, ring and covers and for all other materials, tools, equipment, and incidentals required to complete the work.
- 5.5. **Manhole Rehabilitation.** Payment will be made at the unit price bid for "Manhole Rehabilitation," all types and sizes. This price is full compensation for furnishing all concrete, reinforcing steel, brick, mortar, aluminum and castings, frames, grates, rings and covers and for all other materials, labor, tools, equipment and incidental required to complete the work.
- 5.6. **Pipe.** Payment will be made at the unit price bid for "Pipe," of the diameter and type specified. This price is full compensation for all bedding materials, fittings, (except for cast iron or ductile iron fittings smaller than 24 in. size), concrete encasement, caps, bulkheads, joints, wyes, vertical stacks, clean-outs, connections, plugs, lugs, pipe coatings, connection to the existing system (when not included in the contract as a separate pay item), disposal of surplus materials, laying of pipe, excavation, backfilling, installation of tree protection fence and soil retention blankets and all labor, tools and incidentals necessary to complete the work. Payment will also represent full compensation for removal and replacement of pavement, curb, drainage structures, driveways, pavement and any other improvements damaged during construction. No separate payment will be made for concrete blocking, thrust blocks, welded joints and harnessed joints required for thrust restraint. The bid item price will also include any and all steel plates required, pot-holing for existing utility elevations, and plugging and abandoning utilities that will be retired as a result of this project.
- 5.7. **Abandon Pipe.** Payment will be made at the unit price for "Abandon Pipe" of the size and type specified. This price is full compensation for furnishing all materials, tools, labor, equipment and incidentals necessary to complete the work in accordance with Department Standards and Specification Item 100, "Preparing Right of Way."
- 5.8. **Cement-Stabilized Backfill.** Payment will be made at the unit price bid for "Cement-Stabilized Backfill." This price is full compensation for all excavation and backfill including placing, sprinkling and compaction of material; all soundings; constructing all cofferdams; all dewatering; and for furnishing all materials, hauling, labor equipment, tools; for sheathing and bracing, if required for support of walls of trenches less than 5 ft. in depth; for cofferdams; pumps, drills, explosives, disposition of surplus material; for cutting and restoration of pavement and base to neat lines; and for incidentals necessary to complete the work.
- This is a plans quantity measurement item and the quantity to be paid for will be that quantity shown on the plans, except as may be modified by Department Article 9.8. If no adjustment of quantities is required, additional measurements or calculations will not be required.
- 5.9. **Concrete Trench Cap.** Payment will be made at the unit price bid for "Concrete Trench Cap," of the type specified. This price is full compensation for furnishing all materials, handling, placing, labor, tools, equipment and incidentals necessary to complete the work.
- 5.10. **Wet Connections.** Payment will be made at the unit price bid for "Wet Connections," of the type and size specified. This price is full compensation for furnishing all materials, handling, placing, labor, tools, equipment, and for all work required to make the connection and place the pipe in service, except that cast iron or ductile iron fittings will be paid for as a separate item.
- 5.11. **Pressure Taps.** Payment will be made at the unit price bid for "Pressure Taps," for the type and size specified. This price is full compensation for furnishing all materials, including valves, handling, placing, labor, tools, equipment and for all necessary excavation, backfill, blocking, anchoring and for all work required to make the tap and keep the pipe in service.
- 5.12. **Cast Iron or Ductile Iron Fittings.** Payment will be made at the unit price bid for "Cast Iron or Ductile Iron Fittings," of the type specified for fitting sizes smaller than 16 in. Fitting sizes 16 in. and larger will not be paid for directly but will be considered subsidiary to the pipe. This price is full compensation for furnishing all materials, handling, placing, labor, tools, equipment and incidentals necessary to complete the work according to ANSI A 21.10 (AWWA C/110) and ANSI A 2153-88 (AWWA C 153) scheduled weights for

mechanical joint fittings furnished. These scheduled weights will be considered as final and no compensation will be made for amounts over these. Steel cylinder pipe fittings will not be paid for separately but will be considered subsidiary to the item "Pipe." Glands, bolts and gaskets will be subsidiary to the fittings and will not be paid for directly.

- 5.13. **Valves.** Payment will be made at the unit price bid for "Valves," for the type and size specified. This price is full compensation for furnishing all materials, handling, placing, concrete bearing pads, labor, tools, equipment and incidentals including, valve stem casing and cover, excavation, setting and adjusting to proper grade and anchoring in place.
- 5.14. **Fire Hydrants/Drain Valve Assemblies.** Payment will be made at the unit price bid for "Fire Hydrant/Drain Valve." This price is full compensation for fittings, between the main line and the fire hydrant, setting, adjusting to grade, anchoring in place, and other appurtenances necessary for proper operation; but will not include pipe and valve between the main line and fire hydrant/drain valve. The unit price bid will be full compensation for furnishing and installing all materials, labor, tools, equipment, and incidentals necessary to complete the work. Payment will also include all labor and other incidentals for removal of newly abandoned fire hydrants specified on the plans within limits of construction.
- 5.15. **Manual and Automatic Air Release Assemblies.** Payment will be made at the unit price bid for "Manual and Automatic Air Release Assemblies." This price will include the main line tap or outlet, all pipes, valves, fittings, box or vault and cover, and other appurtenances necessary for proper operation. The unit price bid is full compensation for furnishing and installing all materials, labor, tools, equipment, and incidentals necessary to complete the work.
- 5.16. **Concrete Retards.** Payment will be made at the unit price bid for "Concrete Retards," for the type specified. This price is full compensation for all excavation, reinforcing, furnishing, hauling and placing all materials required in the construction, disposal of excavated material and for all manipulation, labor tools, equipment and incidentals necessary to complete the work.
- 5.17. **Tunneling.** Payment will be made at the unit price bid for "Tunneling" of the type specified. This price is full compensation for furnishing all materials, pipe, liner materials required for tunnel operations, for all preparation, hauling and installing of same and for all labor, tools, equipment and incidentals necessary to complete the work, including excavation, backfilling and disposal of surplus material.
- 5.18. **Adjusting or Relocation of Water Meters.** Payment will be made at the unit price bid for "Adjusting of Water Meters" or "Relocation of Water Meters," all sizes, complete in place. This price is full compensation for furnishing all materials, handling, placing, labor, tools, equipment and incidentals necessary to complete the work.
- 5.19. **Lateral Services.** Payment will be made at the unit price bid for "Lateral Services." This price is full compensation for furnishing all materials, handling, placing, labor, tools, and incidentals necessary for the installation or reconnection of the service line between the meter and the new or existing water main.
- 5.20. **Sediment Containment Dikes.** Payment will be made at the unit price bid for "Sediment Containment Dikes." This price is full compensation for furnishing, hauling and placing all materials including all labor, tools, equipment and incidentals needed to complete the work, the repair and/or replacement of materials, the removal and disposal of all silt and debris, and the removal of all dikes, silt and debris after completion of construction or when directed by the Engineer or designated representative.
- 5.21. **Mobilization.** Payment will be made at the unit price bid for "Mobilization." This price is full compensation and will include and not be limited to the cost to mobilize and demobilize equipment to the project site, sediment control, construction staking, the cost of bonds and insurance, and all other incidental costs associated with this work.
- 5.22. **Traffic Control.** Payment will be made at the unit price bid for "Barricades, Signs and Traffic Handling." This price is full compensation and will include and not be limited to the Traffic control for the duration of the

project, including all signage, temporary paving, cones, striping, buttons, detours, traffic phasing, and related items and appurtenances, complete in place.

- 5.23. **Removal of Existing Wastewater Manholes.** Payment will be made at the unit price bid for "Removal of Existing Wastewater Manholes." This price is full compensation for furnishing all labor, tools, equipment, excavation, backfilling, stockpiling materials, transportation, disposal and incidentals necessary to complete the work. This item is subsidiary to Prep ROW
- 5.24. **Controlled Low Strength Material.** Payment will be made at the unit price bid for "Controlled Low Strength Material." This price is full compensation for furnishing, hauling, and placing materials and for equipment, tools, labor, and incidentals.
- 5.25. **Grout Abandoned Lines, All Sizes.** Payment will be made at the unit price bid for "Abandon Pipe" of the size and type specified. This price is full compensation for furnishing all materials, tools, labor, equipment and incidentals necessary to complete the work in accordance with Department Standards and Specification Item 100, "Preparing Right of Way."
- 5.26. **Reconnect Existing Sewer Service.** Payment will be made at the unit price bid for "Reconnect Exist Sewer Service." This price is full compensation for connecting a New Water, Wastewater, or Reclaimed Water Service to an existing, comparable type of private service, complete in place, according to the size of new service and size of existing private service, and for furnishing and installing all necessary materials, such as cleanouts, pipe, couplings, and fittings, and including excavation and backfill. When a pay item is not included in the Contract for service pipe this pipe will be considered subsidiary to "Adjusting Structures."