

SECTION 01150

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SCOPE

This section describes the methods by which measurement will be made of the quantities for which payment will be made for the project. It is the intention of this Specification that payment will be made for those items listed in the Bid Schedule only. All items of work not specifically listed in the Bid Schedule shall be included in the prices for the various items listed on the bid schedule.

PART 2 - PRODUCTS

2.01 MEASUREMENT AND PAYMENT

Partial payment shall be made for approved materials stored at the project site at the presentation of material invoices in the proper manner.

PART 3 - EXECUTION

3.01 OTHER SECTIONS

- Section 01080 Applicable Codes and Standards
- Section 01090 Abbreviations
- Section 01150 Measurement and Payment
- Section 01220 Progress Meetings
- Section 01300 Submittals
- Section 01620 Transportation and Handling
- Section 01630 Storage and Protection
- Section 01700 Cleaning
- Section 01720 Project Record Documents
- Section 01730 Guarantees and Warranties
- Section 02751 Preparatory Cleaning of Sewers
- Section 02753 Sewer Flow Control
- Section 03110 Concrete Formwork

3.02 SECTION 02120, VIDEO TAPING

Payment for furnishing all labor, material, equipment, and services required for the video taping of easement areas prior to construction with one set of tape(s) presented to the Owner shall be made at the lump sum price bid in the Bid Schedule.

3.03 SECTION 02220, EARTHWORK

A. Measurement and Payment

1. Excavation

- a. No separate measurement or payment will be made for trench earth excavation for sewers and other pipelines, nor for any other appurtenant facilities such as manholes, inlets, outlets, headwalls, collars, saddles, piers, and pipe protection or encasement. Payment for all such excavation shall be included in the unit prices bid per linear foot of the various sizes of pipe laid for the respective trench depths as provided for in the contract Bid Schedule. Trench depths shall be the vertical distance between the ground surface and the invert elevation of the pipe. Where special bedding or cradles are shown on the Drawings or required by the Engineer, no allowances shall be made for extending earth excavation in trenches to the bottom of such bedding or cradles; such costs shall be included in the unit price bid per cubic yard of bedding material or cradle.
- b. The removing of all pavements, pavement foundations, sidewalks, driveways, etc., will be included in the trench excavation for which payment will be made as provided for in Paragraph a. above. No separate payment will be made for these items.
- c. No separate payment shall be made for pumping, bailing, draining, clearing, grubbing, backfilling, borrow excavation, removing vegetable growth, debris, buildings, or waste material nor for the disposal of any materials or similar work. Where sewers or structures are located in, near, or across streambeds or drainage ditches, no separate payment shall be made for diverting the stream flow or drainage and dewatering each section as the work progresses.

2. Sheet piling and Shoring

No measurement or payment will be made for sheet piling and shoring left in place in trenches in accordance with these Specifications.

3. Crushed Rock Backfill Under Pavement

Crushed rock backfill as required by these Specifications and/or shown on the Drawings shall be expressed in linear feet of crushed rock backfill at the applicable depth for each size and type of pipe as shown in the Bid Schedule and shall be measured linearly along the centerline of the trench at the surface level for sewer mains and service lines placed in or across existing paved streets, driveways and parking areas. No separate payment will be made for (48) inches of crushed rock backfill.

4. Crushed Rock Bedding Material

Crushed rock bedding material as required by these Specification and/or shown on the Drawings shall be measured by the cubic yard of bedding required in excess of Class C bedding. Payment for crushed stone or gravel placed as required by the Drawings or Specifications or as directed by the Engineer shall be made for the quantities determined in the manner specified above at the unit price bid per cubic yard of crushed rock bedding material in the Bid Schedule and shall include the cost of removing all subgrade materials regardless of classification to the required or specified bottom of the crushed stone bedding.

5. Rock Excavation

No separate measurement or payment will be made for trench rock excavation for sewers and other pipelines, nor for any other appurtenant facilities such as manholes, inlets, outlets, headwalls, collars, saddles, piers, and pipe protection or encasement. Payment for all such excavation shall be included in the unit prices bid per linear foot of the various sizes of pipe laid for the respective trench depths as provided for in the Bid Schedule for this contract. Where special bedding or cradles are shown on the Drawings or required by the Engineer, no allowance shall be made for extending rock excavation in trenches to the bottom of such bedding or cradle.

3.04 SECTION 02242, CLAY OR FLOWABLE MORTAR FILL FOR CUTOFF WALLS

Clay or flowable mortar fill cutoff material as required by these Specifications and/or shown on the Drawings shall be measured by the cubic yard required. Payment for cutoffs placed as required by the Drawings or Specifications or as directed by the Engineer shall be made for the quantities determined in the manner specified above at the unit price bid per cubic yard of cutoff material in the Bid Schedule and shall include the cost of removing all subgrade materials regardless of classification to the required or specified bottom of the bedding.

3.05 SECTION 2270, SLOPE PROTECTION AND EROSION CONTROL

A. Measurement and Payment

1. Measurement and payment for temporary silt fence, baled straw checks, and temporary sediment basins shall be for the materials labor, equipment, etc., for the complete installation of these items included in the unit price bid in the Bid Schedule.
2. No separate payment shall be made for incidental or unlisted erosion control measures nor for cleaning and/or replacement of any measures which become loosened, torn, undermined, or washed out. The cost of this work is to be included in the unit price bid for items under Section 02270.

3.06 SECTION 02485, SEEDING AND MULCHING

A. Measurement and Payment

1. No separate payment will be allowed for seeding and mulching. The payment for all materials, labor, equipment, etc., necessary for the completion of work under this section shall be included in the unit or lump sum prices bid for other items of work.

3.07 SECTION 02560, MANHOLES

A. Measurement and Payment

1. The quantities of standard manholes as shown on the Drawings for which payment shall be allowed shall be the actual number of each type, size, and applicable depth of manhole, 6 feet deep or less, installed by the Contractor and accepted by the Engineer.
2. The depth of standard manholes will be measured from the top of the manhole frame to the invert of the sewer leaving the manhole. The depth of special manholes constructed on top of concrete junction chambers, precast concrete tee manhole bases or curved manhole bases, cast in place, will be measured from the top of the manhole frame to the top of the concrete of the junction chamber, precast concrete tee base or curved manhole base, cast in place.
3. For manholes more than 6 feet in depth, payment will be allowed for extra depth per vertical foot for each foot thereof over 6 feet at the applicable unit price provided for in the Bid Schedule. Fractions of a foot of extra depth shall be accumulated until one extra foot has been constructed and then considered for payment.
4. Payment for precast concrete tee manhole bases shall be the actual number of each size furnished and installed by the Contractor and accepted by the Engineer.

5. Junction Chamber - Payment for furnishing all materials, labor, etc., including unclassified excavation, concrete, reinforcing steel, toe pockets, maintenance of existing sewage flow, required adjustment of existing sewers, topsoil, and seeding, all required to complete the junction chamber as shown on the Drawings and in the applicable Specifications shall be included in the applicable lump sum price bid for junction chambers listed in the Bid Schedule. Payment for pipe sewer will not be allowed through the junction chamber.
6. All other items such as pavement replacement, plugged stubs, etc., shall be paid for under their respective items in the Bid Schedule as elsewhere provided herein.
7. Payment for all manholes as constructed under these Specifications shall be made for the quantities determined in the manner specified above as listed under the applicable pay items in the Bid Schedule. These amounts, so paid, shall constitute full compensation to the Contractor under this item and shall cover the cost of furnishing all labor, materials, tools, plant, equipment, services, and other expenses in connection with the construction of manholes, complete in place, including unclassified excavation, backfill, masonry, all castings, concrete, reinforcing steel, inspection, and test, all as herein specified.
8. Payment for connections to existing manholes by boring and booting shall be made for the actual number furnished and installed regardless of size and accepted by the Engineer.
9. All drop manholes shall be measured and paid for as specified for standard manholes and, in addition, extra payment will be allowed at applicable contract unit price for each drop connection, including excavation, pipe specials, riser pipe, and concrete encasement as provided for in the Bid Schedule.
10. Payment for manhole adjusting rings furnished for future paving shall be made of the actual number furnished by the Contractor and accepted by the Engineer.
11. Payment for curved manhole bases, cast-in-place, shall be made at the applicable bid price for Class A concrete and reinforcing steel shown in the Bid Schedule. Measurements shall be made in accordance with the applicable provisions of these Specifications. No separate payment shall be made for excavation, backfill, or castings required to complete the work.
12. No separate payment will be allowed for manhole vacuum testing. Costs of performing this work shall be included in the unit price bid for manholes.

3.08 SECTION 02607, NEW AND REPLACEMENT PAVING AND SIDEWALKS

A. Measurement

1. Paving

- a. The quantities of the various types of paving for which payment will be made shall be expressed in linear feet of street occupied by the main sewer and shall be measured along the centerline of the street from the point of entry to the exit point or by the contract price per ton as shown in the bid schedule. When the paving is to be replaced for trench width only, separate payment will be made for replacing paving over service lines extending from the edge of the main sewer line paving to the edge of pavement. If the street is to be repaved full street width, the Contractor shall satisfy himself as to the average width of the street. Payment will be allowed only one way through street intersections when full width of street is paved. No separate payment will be made for raising manholes to finished grade of pavement using brick and/or precast concrete rings.
 - b. In streets having Type 1 cement concrete paving, and Type 5, Double Bituminous surface treatment, the quantity of paving shall be expressed as linear feet of sewer line trench as measured along the centerline of the main sewer lines and service lateral lines.
 - c. The quantity of paving replacement in asphalt drives and parking lots for which payment will be allowed shall be measured by the ton, accepted, and placed as indicated by the Engineer.
2. The quantity of sidewalks for which payment will be made shall be expressed in square feet and shall be obtained from surface measurements.
 3. The quantity of asphaltic concrete curbs for which payment will be made shall be expressed in linear feet of asphaltic concrete curb.
 4. The quantity of portland cement concrete curbs for which payment will be made shall be expressed in cubic yards of Class A Concrete, as specified under Section 03310, "Cast-In-Place Concrete," of these Specifications.
 5. The quantities of portland cement concrete paving in driveways for which payment will be made shall be expressed in square feet and shall be determined from surface measurements.

B. Payment

1. Payment for each type of pavement, sidewalk, asphalt curb, and crushed stone backfill furnished and installed under these Specifications shall be made for the quantities determined in the manner specified above at the applicable contract unit prices stated in the Bid Schedule. This amount, so paid, shall be compensation in full for furnishing all labor, materials, tools, plant equipment, services and other work in connection with or incidental to the construction of the roadway pavement.
2. When full width paving is required, no separate payment shall be allowed for extending paving into existing paved driveways in order to provide a smooth transition from the full width paved street to the existing driveway grade. The work shall be completed to the satisfaction of the Engineer with no separate payment being allowed.
3. No separate payment will be allowed for replacing or repairing unpaved, crushed stone, gravel or chert street surfaces, driveways or parking areas as specified in this section.
4. Payment for concrete curbs installed under these Specifications shall be made at the applicable unit price per cubic yard of concrete under Section 03310 of these Specifications.
5. No separate payment will be made for street cleanup, maintenance, preparation for paving, or raising manholes to finished grade of final pavement. The cost of this work is to be included in the unit price bid for crushed rock backfill in the base bid.

3.09 SECTION 03240, CAST-IN-PLACE CONCRETE REINFORCEMENT

A. Measurement and Payment

1. Except for reinforcing steel specified to be included in structures or facilities paid for per lump sum or per structure as set forth in the Bid Schedule, payment for reinforcing steel placed in connection with the work shall be made at the unit price per pound of reinforcing steel placed in accordance with the Drawings or as directed by the Engineer as bid in the Bid Schedule.
2. Determination of quantities will be made by the Engineer and shall be expressed in pounds of calculated weights as determined from Standard Handbook Bar Listings. No allowance shall be made for weight of clips, ties, spacers, or other fastening devices.

3.10 SECTION 03310, CAST-IN-PLACE CONCRETE

A. Measurement

1. The volumes of each class of concrete for which payment will be allowed shall be expressed in cubic yards as computed from the dimensions of the neat lines shown on the Drawings. Where concrete masonry for which specific dimensions are not given on the Drawings has been placed under the direction of the Engineer, the volume shall be determined by the Engineer from field measurements.
2. The volumes allowed for payment shall include only the items of concrete placed in accordance with these Specifications and accepted by the Engineer. No deductions will be made for pipe or conduit runs three inches or under or for individual cavities or embedded pieces less than one cubic foot each or for reinforcement.

B. Payment

Except for sidewalks, paving, and concrete for manholes, railroad and highway crossings, etc., payment for which is provided elsewhere for these items of work, payment for Class A and Class B concrete shall be made for the quantities placed at the unit prices bid per cubic yard under Section 03310 in the Bid Schedule. These amounts, so paid, shall cover the cost of furnishing all labor, materials, equipment, tools, plant services, and other expenses in connection with or incidental to the concrete work.

3.11 SECTION 02752, TELEVISION INSPECTION OF SEWERS

A. Measurement

The quantities of Television Inspection of PVC pipe sewers for which payment will be made shall be expressed in linear feet of pipe of various sizes as shown in the bid schedule and shall be the horizontal length of pipe inspected by closed circuit television viewed by pulling a Radial View Television camera through the pipe and measured along the centerline of the sewer with no deductions made for manholes.

B. Payment

Payment for Television inspection of PVC pipe by pulling a closed circuit television camera through each section shall be made for the quantities determined in A above at the contract price per linear feet as listed in the Bid Schedule. Payment will be made for testing a pipe one time only. Cost for any repeat testing of the same pipe is to be included in the price submitted in the Bid Schedule.

3.12 SECTION 15062, DUCTILE IRON PIPING AND DUCTILE AND CAST IRON FITTINGS

A. Measurement

1. The quantities of ductile iron pipe sewers, except those installed in casing pipes for railroad or highway crossings, including unclassified excavation, for which payment will be made under this item shall be expressed in linear feet for each size and type of pipe and applicable depth as shown in the Bid Schedule and shall be the horizontal length of ductile iron sewer installed complete in place as measured along the centerline of the sewer with no deductions made for tee connections or manholes. The applicable vertical depth shall be measured from the original ground surface to the invert of the sewer and shall be as shown in the Bid Schedule.
2. The quantities of ductile iron pipe sewers installed in casing pipes for railroad or highway crossing for which payment will be made under this item shall be expressed in linear feet for each size and type of pipe as shown in the Bid Schedule and shall be the horizontal length of ductile iron sewer installed complete in place as measured along the centerline of the sewer with no deductions made for manholes.
3. The weight of cast iron or ductile iron fittings for which payment will be made under this section shall be the number of pounds of fittings furnished and placed, jointed and tested, in accordance with these Specifications. The total weight of all fittings shall be the catalog weights as published for each type furnished and placed. No payment will be allowed for weights of jointing compound, bolts, nuts, washers or gaskets which shall be considered an incidental part of the fitting and included in the unit price bid per pound for fittings.

B. Payment

1. No separate payment shall be made for connections to existing sewers and to manholes or inlets. The cost of this work shall be included in the unit price bid for other items of work done under Section 15062 of the Bid Schedule.
2. No separate payment shall be made for furnishing and installing cast iron plugs. The cost of this item shall be included in the unit prices bid for other items of work done under Item 15062 of the Bid Schedule.
3. No separate payment shall be made for any borrow excavation, clearing, or backfill. the cost of these items shall be included in the unit prices bid for pipe sewers under Item 15062 and as provided for in the Bid Schedule.
4. Payment for ductile iron pipe sewers constructed under these Specifications shall be made for the quantities determined in the manner specified above at the contract price per linear foot or otherwise, as applicable, for each of the applicable pipe sizes and types listed under Section 15062 in the Bid Schedule.
5. Payment so made shall constitute full compensation to the Contractor for the material, common excavation, rock excavation, Class C bedding, backfill, installation, including all labor, materials, tools, equipment, testing, and services necessary to complete the work as specified herein.

3.13 SECTION 15064-B, POLYVINYL CHLORIDE SEWER AND SERVICE PIPE

A. Measurement

1. The quantities of pipe sewers and service lines, including unclassified excavation, for which payment will be allowed shall be expressed in linear feet for each size and type of pipe and applicable depth as shown in the Bid Schedule and shall be the horizontal length of sewer installed complete in place as measured along the centerline of the sewer with no deductions made for tee connections or manholes. The applicable vertical depth shall be measured from the original ground surface to the invert of the sewer and shall be as shown in the Bid Schedule and plugged stubs and Fernco Couplings for which payment will be allowed shall be the actual number of each size and type furnished and installed by the Contractor.
2. Reinforcing steel, rock excavation, concrete, pipe protection and/or encasement, crushed rock, gravel, or other approved bedding materials, and Class C bedding, leakage testing, and other sections of work not specifically listed in the Bid Schedule shall not be separately measured and paid for but costs for same shall be included in the unit price or lump sum price bid for other sections of work.

3. The quantities of connecting risers for which payment will be allowed shall be expressed in linear feet of pipe and bends and shall be the vertical length of riser installed in place as measured along the centerline of the riser from the centerline elevation of the sewer line to the top of the riser connection as shown on the Drawings. No separate payment will be made for bends, concrete or plastic film markers used in this construction, payment therefor being included in the linear feet of riser pipe paid for in this category.
4. The quantities of deflection testing of PVC pipe sewers for which payment will be made shall be expressed in linear feet of pipe regardless of size for all PVC pipe 8 inches or greater in diameter as shown in the Bid Schedule and shall be the horizontal length of pipe deflection tested by pulling a mandrel through it as measured along the centerline of the sewer with no deductions made for manholes.

B. Payment

1. Payment for pipe sewers, service lines, tees, risers, plugged stubs, and connections to existing sewers constructed under these specifications shall be made for the quantities determined in the manner specified above at the contract price per linear foot or per each, as applicable, for each of the applicable pipe and special sizes and types listed in the contract pay items in the Bid Schedule.
 2. Payment for concrete and bedding material furnished and placed under this Specification shall be made for the quantities determined in the manner specified above at the contract price per cubic yard and as listed under the applicable items of the Bid Schedule as specified.
 3. No separate payment shall be made for furnishing and installing stoppers. The cost of this item shall be included in the unit prices bid for other items of work done in the Bid Schedule.
 4. No separate payment shall be made for furnishing and installing adapters, bends, increasers and tees, plastic film markers, cleanouts, and other fittings and accessories in the building service lines. The cost of these shall be included in the unit prices bid for service lines in the Bid Schedule.
2. The quantities of tee connections and plugged stubs and Fernco Couplings for which payment will be allowed shall be the actual number of each size and type furnished and installed by the Contractor.
 3. Reinforcing steel, rock excavation, concrete, pipe protection and/or encasement, crushed rock, gravel, or other approved bedding materials, and Class C bedding, leakage testing, and other sections of work not specifically listed in the Bid Schedule shall not be separately measured and paid for but costs for same shall be included in the unit price or lump sum price bid for other sections of work.

4. The quantities of connecting risers for which payment will be allowed shall be expressed in linear feet of pipe and bends and shall be the vertical length of riser installed in place as measured along the centerline of the riser from the centerline elevation of the sewer line to the top of the riser connection as shown on the Drawings. No separate payment will be made for bends, concrete or plastic film markers used in this construction, payment therefor being included in the linear feet of riser pipe paid for in this category.
5. The quantities of deflection testing of PVC pipe sewers for which payment will be made shall be expressed in linear feet of pipe regardless of size for all PVC pipe 8 inches or greater in diameter as shown in the Bid Schedule and shall be the horizontal length of pipe deflection tested by pulling a mandrel through it as measured along the centerline of the sewer with no deductions made for manholes.

B. Payment

1. Payment for pipe sewers, service lines, tees, risers, plugged stubs, and connections to existing sewers constructed under these specifications shall be made for the quantities determined in the manner specified above at the contract price per linear foot or per each, as applicable, for each of the applicable pipe and special sizes and types listed in the contract pay items in the Bid Schedule.
2. Payment for concrete and bedding material furnished and placed under this Specification shall be made for the quantities determined in the manner specified above at the contract price per cubic yard and as listed under the applicable items of the Bid Schedule as specified.
3. No separate payment shall be made for furnishing and installing stoppers. The cost of this item shall be included in the unit prices bid for other items of work done in the Bid Schedule.
4. No separate payment shall be made for furnishing and installing adapters, bends, increasers and tees, plastic film markers, cleanouts, and other fittings and accessories in the building service lines. The cost of these shall be included in the unit prices bid for service lines in the Bid Schedule.
5. No separate payment shall be made for connections to existing sewers and to manholes, or inlets unless called for on the plans. The cost of this work shall be included in the unit price bid for other items of work.
6. No separate payment shall be made for any unclassified or borrow excavation, clearing, or backfill in connection with sewer line construction. The cost of these items shall be included in the unit price bid for pipe sewers.
7. These amounts shall cover the cost of furnishing all materials, tools, labor, plant, equipment, services, and other expense in connection with common and rock trench excavation and furnishing and installing all items of work herein specified and when so paid, shall constitute full compensation to the Contractor.

8. Payment for deflection testing of PVC pipe by pulling a mandrel as specified through it shall be made for the quantities determined in the manner specified above at the contract price per linear foot as listed in the Bid Schedule.
9. No separate payment shall be allowed for pressure testing of PVC pipe. Costs for this shall be included in the unit price bid in the Bid Schedule for PVC pipe.

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