

Payment will be made under:

Item No.	Pay Item	Pay Unit
7151XXX	<i>(size)</i> Steel Structural Plate Pipe <i>(thickness)</i>	Linear Foot
7152000	Steel Structural Plate Pipe-Arch	Linear Foot
7153000	Steel Structural Plate-Arch	Linear Foot
7154000	Corrugated Aluminum Alloy Structural Plate Pipe	Linear Foot
7155XXX	<i>(size)</i> Corr. Alum. Alloy Struc. Plate Pipe-Arch <i>(thickness)</i>	Linear Foot
7156000	Corrugated Alum. Alloy Structural Plate-Arch	Linear Foot

SECTION 716

SEWERS

716.01 Description. This work shall consist of furnishing sewer pipe of the kind, size, and dimensions indicated on the plans and installing them in conformity with the plans and these specifications, true to lines and grades given by the Engineer. This work shall include the furnishing and installing of necessary tee, wye, elbow and bend joints, and making connections to existing or new structures, including drilling and chipping, as may be necessary to complete the work.

MATERIALS

716.02 Reinforced Concrete Sewer Pipe. Reinforced concrete sewer pipe shall conform to the requirements of Sub-section **714.03** and shall be of the class indicated on the plans or in the special provisions.

716.03 Non-reinforced Concrete Sewer Pipe. Except for

the aggregate and portland cement, non-reinforced concrete sewer pipe shall conform to the requirements of AASHTO M 86 and shall be standard strength unless otherwise specified. The aggregate and portland cement shall meet the requirements specified in Subsection **714.03**.

716.04 Vitrified Clay Sewer Pipe. Vitrified clay sewer pipe shall conform to the requirements of AASHTO M 65. The pipe shall be standard strength except when otherwise specified on the plans or in the special provisions.

716.05 Cast Iron Soil Pipe. Cast iron pipe and fittings shall conform to the requirements of ASTM A 74. Dimensions, weights, and markings shall conform to the requirements of ANSI A 40.1.

CONSTRUCTION REQUIREMENTS

716.06 Trench and Bed for Pipe. The trench and bed for the pipe shall be constructed as specified in Subsection **714.10** and in accordance with the additional requirements as hereinafter provided.

The walls of the excavation shall be supported to meet OSHA standards. All existing improvements, either on public or private property, will be fully protected from damage that could result from sliding or settlement of the ground adjacent to the excavation.

716.07 Pipe Laying. When the new facilities interfere with the existing flow of sewage, the Contractor shall provide, unless otherwise specified, satisfactory bypass facilities without any additional compensation.

The pipe shall be installed without break in grade from structure to structure with the bell or groove ends upstream. When bell and spigot pipes are used, bell holes shall be dug in the pipe subgrade to accommodate the bells. The holes shall be deep enough to insure that the bells do not bear on the bottom of the hole, but they shall not be excessively wide

in the longitudinal direction of the sewer. When the pipes are installed, the barrel of each pipe shall be in contact with the quadrant shaped bedding throughout its full length exclusive of the bell. Whenever the work ceases for any reason, the end of the pipe shall be securely closed with a tight fitting plug or cover.

When pipe connects with structures, the exposed ends shall be placed or cut off flush with the interior face of the structure. Satisfactory connections shall be made.

Any pipe that is not in good alignment, shows any undue settlement, or is damaged shall be taken up and re-installed without any additional compensation.

716.08 Joints. The joints of asbestos cement and cast iron soil pipe shall be sealed with materials recommended by the pipe manufacturer and approved by the Engineer. The joint shall be constructed in such manner that a watertight joint will result. The method of connection shall be approved by the Engineer.

Unless otherwise directed by the Engineer, the joints of concrete or clay pipe shall be made with rubber gaskets and/or other materials recommended by the pipe manufacturer and approved by the Engineer. When the rubber gasket method is used, the gasket shall be a continuous rubber ring that fits snugly in the annular space between the beveled surface of the tongue and the groove ends of the pipes to form a flexible watertight seal under all conditions of service. The gaskets shall have smooth surfaces free from all imperfections.

716.09 Backfilling. Backfilling shall conform to the provisions specified in Subsection **714.13**.

716.10 Placing Sewer Under Railroads and Other Transportation Facilities. The provisions of Subsection **714.17** shall apply.

716.11 Method of Measurement. The linear feet of sewer pipe measured for payment shall be the net length of each size and kind of sewer pipe, complete in place, and accepted. The net length shall be obtained by multiplying the nominal length of the pipe sections by the number of sections used. The maximum length of pipe sections approved for payment shall not exceed the total required if only 4-foot sections of pipe had been used.

The excavation of unyielding, unstable, or otherwise unsuitable material necessary to obtain a satisfactory foundation for pipe as outlined in Subsection **714.10** shall be measured as provided in Subsection **203.15**. The unusable excavated material shall be disposed of in the manner as outlined in Subsection **203.12**. The measurement of excavation, except for unusable material as set forth above, will not be made.

716.12 Basis of Payment. Sewer pipe, measured as provided in Subsection **716.11**, will be paid for at the contract unit price for the respective items, which price and payment shall be full compensation for furnishing, hauling and placing all pipe sections and materials, excavation and backfilling new or existing trench, removal of existing pipe to be replaced, making pipe joints, connecting to new or existing structures, disposal of surplus materials and for all labor, equipment, tools and incidentals necessary to complete the work.

The excavation of unstable or unyielding material, measured as set forth in Subsection **716.11**, will be paid for at the contract unit price per cubic yard for Unclassified Excavation in accordance with Subsection **203.16**.

Payment for each item will include all direct and indirect costs and expenses necessary to complete the work.

Payment will be made under:

Item No.	Pay Item	Pay Unit
71610X0	(<i>dia.</i>)" Reinforced Concrete Sewer Pipe	Linear Foot
71620X0	(<i>dia.</i>)" Non-reinforced Concrete Sewer Pipe	Linear Foot
7163X00	(<i>dia.</i>)" Vitrified Clay Sewer Pipe	Linear Foot
7165X00	(<i>dia.</i>)" Cast Iron Soil Pipe	Linear Foot

SECTION 717

RE-LAID PIPE CULVERTS

717.01 Description. This work shall consist of removing, cleaning out and re-laying of existing pipe culverts, including the hauling and relaying of pipe culverts removed in accordance with the provisions of Subsection **202.04**. Pipe shall be re-laid at such places as are designated on the plans or by the Engineer, in accordance with these specifications and to the lines and grades given by the Engineer.

CONSTRUCTION REQUIREMENTS

717.02 General. The existing pipe culverts shall be carefully removed and all work done in re-laying such culverts shall be performed in accordance with the requirements of Section **714** for placing new pipe.

The Contractor shall exercise care and use the proper equipment to remove sewer pipe. Pipe that is damaged due to negligence or improper removal procedures shall be replaced with new pipe at the Contractor's expense.

Mortar or preformed gasket material shall be thoroughly removed from joints of pipe sections that are to be re-laid.