

ITEM 555.2501 10 M - GROUTING

DESCRIPTION:

This work shall consist of furnishing and placing grout in amounts sufficient to fill any voids at the locations indicated on the plans or where directed by the Engineer. The Contractor shall furnish equipment capable of placement of the grout under pressure. Prior to the delivery of the equipment at the site, the Contractor shall furnish the Engineer for approval, the Specifications for the equipment including pumping pressure, delivery rates and data on the anticipated pressure drops for piping schemes adequate to deliver the grout to the point of installation.

MATERIALS:

Materials for the grout shall comply with the following Subsections of Section 700, Materials:

- 701-01 Portland Cement, Type 1 or 2
- 703-03 Mortar Sand
- 703-08 Mineral Filler
- 712-01 Water

The grout shall be approximately proportioned as follows, with the approval of the Engineer, to produce the desired consistency for pumping.

2 - Bags of Portland Cement
0.03 - m³ of Mineral Filler
0.14 - m³ of Sand by Weight

Grouting Agent - In accordance with manufactures recommendations. Water content as required for a workable mix, suitable for pumping.

Grout Pipe - In accordance with manufactures recommendations.

Equipment for grouting - The equipment shall be adequate to furnish a continuous supply of grout at a pressure of 276 kPa at the delivery nozzle. The equipment shall also have a gauge that registers pressure at delivery nozzles. The delivery nozzle shall be capable of passing through the grout pipe or of utilizing the grout pipe for delivery of grout.

CONSTRUCTION DETAILS:

The Contractor shall furnish and install, by suitable methods, grout pipe at locations shown on the plans or where directed by the Engineer. The method of installation shall be approved by the Engineer, but pre-boring or pre-drilling of holes larger than the outside diameter of the grout pipe shall not be permitted. The grout pipe shall be of a diameter compatible with the installation of the grout as recommended by the Manufacturer of the equipment used for placing the grout mixtures and approved by the Engineer. After or concurrent with the withdrawal of the grout pipe, the holes shall be filled with grout.

Actual weight and loose volumes shall be determined by the Contractor based on the sources of materials submitted. The amount of water added to the mix may be varied with the approval of the Engineer in order to make a more workable mix. If the sand is damp, a correction must be made for the moisture content of the sand. Grout shall be placed by a grout pumping system. Grouting pressure shall be as approved by the Engineer. The Engineer may also direct that the consistency of the grout be changed by reducing or increasing the amount of water. The Contractor shall be responsible for supplying an acceptable water source.

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Once the action of placing grout is commenced, it must be carried through to the other end without interruption. All grouting shall be done slowly and at a uniform rate to permit the grout to fill all voids. Under no condition shall the rate of pumping be increased suddenly.

In no case shall grout be used after such time as appreciable stiffening, as determined by the Engineer, has occurred. Grout that cannot be placed, for any reason, within a 1½ hour period after mixing, shall be wasted.

Equipment which in actual operation prove inadequate, in the judgment of the Engineer, to satisfactorily complete the work shall be immediately removed from the job site and replaced at no additional cost to the State. All connections involved shall be tight and shall not leak at the necessary working pressure.

METHOD OF MEASUREMENT:

The quantity of the grout filling shall be paid for by the number of bags of cement incorporated in the work.

BASIS OF PAYMENT:

Payment will be made for the bags of cement in the mix pumped into place even though some of it will be for delivery purposes and not necessarily incorporated in the work. Mechanical breakdowns of equipment shall be the Contractor's responsibility and the cost of material required to refill the discharge system shall be borne by the Contractor. The price bid per bag of cement shall include the cost of furnishing all labor, equipment and materials necessary to complete the work, including furnishing a water source and installing grout pipe.