

APPENDIX V**PAYMENT**

1. **ESTIMATES.** The quantities involved in any drilling and grouting operation are rarely susceptible to accurate estimating. The estimates needed for bidding purposes should be the best approximations possible, but should not be considered more than that. The specifications should make provisions for increasing or decreasing quantities and for eliminating items as warranted during progress of work under the contract. Often-used bid items are discussed in the following paragraphs.

2. **BID ITEMS AND UNITS OF PAYMENT.**

a. **Mobilization and Demobilization.** This is a lump sum item and is compensation for assembling all necessary drilling and grouting equipment on the site and removing it therefrom. Payment for this item does not depend upon the amount of drilling and grouting done. Provisions may be made for partial payment to the contractor after mobilizing the equipment and for payment of the remainder of the item when the work is completed and the equipment removed from the jobsite.

b. **Drilling.** A bid item should be prepared for each type of drilling required, i.e., grout-hole drilling, drilling exploratory holes for core recovery, drilling hardened grout, etc. If more than one size of hole is required, separate items are needed for each size. If unusually deep holes are planned for a part of the job, a separate pay item should be added for this. If stage grouting is done, it may be desirable to provide separate items for each zone of drilling. If part of the holes are vertical and part inclined, separate pay items should be made for each. The size of grout holes and the type of drilling equipment may be left to the option of the contractor if a particular size is not needed. Adequate control of size for grouting purposes can be maintained by specifying that the hole shall be large enough to permit use of packers with grout openings of a specified minimum size. The plans and specifications should indicate clearly the location and extent of the work to be done and should show limiting depths and inclinations of all holes. The responsibility of the contractor for cleaning cuttings and sludge out of grout holes after drilling and for keeping them clean and free from surface pollutants until grouted should be cited. Payment is made by the linear foot of hole drilled. Water and air required for drilling and grouting or any auxiliary operation are not separate pay items. The contractor is expected to recover the cost of furnishing both air and water under one or more of the designated pay items.

c. **Pipe.** Pipe and fittings for use as nipples in grout holes or other use that results in permanent embedment should be paid by the pound.

d. Pressure Testing and Pressure Washing. This item is usually paid for by the hour and includes only pumping or injection time measured to the nearest minute.

e. Furnishing Ingredients for Grout. A separate bid item should be provided for each ingredient used in the grout (except water). Solids are usually measured for payment by the cubic foot or pound, liquids by the cubic foot or gallon. For cement grouting a sack of cement is considered as 1 cu ft. All costs involved in purchasing, handling, transporting, and storing the ingredient as necessary to have it available at the grout plant when needed are included in this item.

f. Connections to Grout Holes. A pay item for connecting the grout lines and header to the hole or packer is often included. Each connection, as discussed below, is considered a unit for payment purposes. The purpose of this item is to compensate the contractor for time and labor required to move the grout lines from one hole to another as needed to begin injection in a new location. Whenever such moves and connections are made in pressure testing or pressure washing, similar payment should be made. Moving a packer in a hole does not require any relocation of the grout lines; therefore, successive sets in the same hole do not require separate payments under this item,

g. Placing Grout. Payment for placing grout comprises compensation for all mixing, pumping, and cleanup costs. Payment can be made either by the cubic foot or other appropriate unit of measurement for each ingredient in the grout, except water, or payment can be made by the hour for pumping time as in pressure testing. If payment is by volume or weight, a separate item should be used for each ingredient. Payment by the hour provides for easy inclusion of periods of ordered short delays. These can be paid for at a specified percentage of the hourly rate for pumping. Ordered long delays of indefinite duration should not be included in this item since the contractor can continue operations at another location during these periods. If the stage-grouting method is to be required, cleaning grout out of holes before it takes a hard set should be a part of this item.

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