

GROUTING SPECIFICATIONS

1.1 The work covered by these specifications consists of furnishing all labor, equipment, appliances, and materials, and performing all operations in connection with the injection of grout complete in accordance with the drawings, specifications and subject to the terms and conditions of the contract.

1.2 The purpose of this specification is to produce a grout, when injected in place, which will be dense, fill voids, and stabilize the subgrade.

G-2 Materials

2.1 Cement: Type 1 or Type 2 Portland meeting ASTM C-150.

2.2 Water: Water shall be potable. Municipal source. Water will be considered as weighing 8.33 pounds per gallon and 7.5 gallons per cubic foot.

2.3 Fly Ash: Class "C" Fly Ash, meeting ASTM C-618 may be added to the mix at the grout pump operator's discretion to aid in pumpability. If added, the Fly Ash shall not exceed 10% of the weight of the cement

2.4 Other Admixtures: No other admixtures will be used unless approved.

G-3 Mix Design

3.1 Grout Mix: The basic grout mix will be cement and water proportioned in the ratio of 1 cubic foot (one bag or 94 pounds) of cement to 1 cubic foot (7.5 gallons) of water. The mix ratio may be modified by the grout pump operator as required to ensure filling of the voids and/or stabilizing the subgrade.

3.2 Yield: For quantity determination on cubic foot (1 bag or 94 pounds) of cement when proportioned with one cubic foot (7.5 gallons) of water is deemed to yield 1.5 cubic feet of grout.

G-4 Grout Equipment

4.1 Pump: Grout Pump will be of the positive displacement type and will be capable of producing adequate pressure to penetrate the area.

G-5 Injection Ports

5.1 Grout Shafts: Location of grout shafts shall be in areas where voids or unstable subgrade occurs. These shall be a minimum of 1 ¼ - inch diameter and sufficient to receive packers and shut-off-valves.

G-6 State Grouting

6.1 Stages: To minimize the quantity of grout required, grouting will be accomplished in stages. The grout placed in the first stage will be accomplished in stages. The grout placed in the first stage will be observed carefully to ensure that grout is not pumped excessively into channels and of no benefit to the area. A minimum of two stages will be used with a 4-hour minimum time between each stage at any particular location. Additional stages of grouting will be accomplished if required.

G-7 Experience

7.1 Personnel: Before starting the work on the project, the contractor must satisfy the owner that the foreman and grout pump operator have done satisfactory work in similar capacities elsewhere for a sufficient period of time to be fully qualified to properly perform the work in accordance with the requirements of the related specifications.

A. Foreman shall have had at least 4 years experience in similar work.

B. Pump operator shall be qualified having had at least 2 years experience in similar work.