

## SECTION 03600

### GROUT

#### PART 1 GENERAL

##### 1.01 SCOPE OF WORK

WORK required under this section consists of mixing, forming, placing and curing. CONTRACTOR shall furnish all cement, aggregate, water, labor, equipment and other materials necessary or convenient to him for completing the WORK described in these Specifications.

##### 1.02 REFERENCES

- A. ACI 530.1 – Specification for Masonry Structures
- B. ASTM C1019 – Test Method for Sampling and Testing Grout
- C. ASTM C476 - Specification for Grout for Masonry
- D. ASTM C531 – Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes
- E. ASTM C1107 – Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
- F. DOT Specification Section 600 – State of Georgia Standard Specifications of Construction of Roads and Bridges (latest edition)

##### 1.03 DELIVERY AND STORAGE

- A. Prevent damage to or contamination of grouting materials during delivery, handling and storage.
- B. Store all grouting materials in undamaged condition with seals and labels intact as packaged by manufacturer.

##### 1.04 QUALITY ASSURANCE

- A. Tests
  - 1. Mix and Control
    - a. Verification and testing of grout mixes shall be work of an independent testing laboratory. Cost of testing shall be paid by CONTRACTOR/DEVELOPER.
    - b. Laboratory services shall be as follows:

Test aggregates for specifications compliance.

B. Strength

Grout shall attain a minimum 28 day compressive strength as listed below. Take one sample and cast two specimens for each 30 cubic yards of grout of fraction thereof being placed.

Test Specimens

- |    |                  |                  |
|----|------------------|------------------|
| 1. | Masonry Grout    | Minimum 2000 psi |
| 2. | Non Shrink Grout | 3000 psi         |

C. Casting of grout specimens shall be as follows:

1. Grout testing shall be in accordance with ASTM C1019.
2. Cost of the testing and laboratory reports shall be paid for by CONTRACTOR/DEVELOPER.

PART 2 PRODUCTS

2.01 MATERIALS

A. Masonry Grout – ASTM C476.

Masonry grout shall conform with ASTM C476.

B. Non Shrink Grout

1. Premixed/Preproportioned Grout

- a. Five Star Brand Non Shrink Grout or approved equal.
- b. Grout shall not contain gypsum, aluminum or iron powders and shall meet the shrinkage requirements of ASTM C-883. Epoxy grout will not be permitted if the substrate is to be exposed to temperatures greater than 140°F.
- c. Minimum time of workability shall be 30 minutes at ambient temperature.
- d. Application shall be in conformance to manufacturer's specifications.

2. Site Proportioned/Mixed Grout (Use shall be approved by OWNER/ENGINEER.)

- a. Site mixed grout shall be of "dry pack" or "earthmoist" consistency with 0-1 inch slump. Grout shall consist of three parts sand to one part portland cement with only enough water added to wet all the material.
- b. All surfaces shall be cleaned of all dirt and oil prior to application.
- c. Prior to placement of grout, the substrate shall be wetted with potable water until saturated without ponding.
- d. Grout shall be applied by packing by hand or with the use of a wooden plunger.

## PART 3 EXECUTION

### 3.01 MIXES

- A. Mix design shall be submitted to ENGINEER for approval. It shall be used in reinforced unit masonry and as shown on Drawings for leveling surfaces.
- B. Masonry Grout shall be used for the following: Leveling surfaces; sloping surfaces; and patching anchor holes or small defective areas of concrete.
- C. Masonry Grout shall be proportioned and mixed in accordance with ASTM C-476 for coarse grout, Table 1.

### 3.02 MIXING

- A. Masonry grout shall be mixed and placed in accordance with ACI 530.1
- B. Mix grout as close to WORK area as possible and transport the mixture quickly and in a manner that does not permit segregation of materials. Do not mix more grout than can be placed within 20 minutes.

### 3.03 PROCEDURES

- A. Installation methods and procedures shall be as recommended by manufacturer and/or as approved by ENGINEER before WORK is begun.
- B. Type of grout and method of installation for Tunneling, Boring and Jacking shall be furnished to ENGINEER for his review and approval prior to use in construction operation.

### 3.04 FORMWORK

- A. DEVELOPER/CONTRACTOR shall build leakproof forms that are strong and securely anchored and shored to withstand grout pressures.

- B. Enough clearance shall be provided between the formwork and the area to be grouted to permit proper placement of grout.

### 3.05 SURFACE PREPARATION FOR GROUT

- A. Remove all defective concrete, laitance, dirt, oil, grease, and other foreign material from concrete surfaces by bush-hammering, chipping or other similar means, until a sound, clean concrete surface is achieved.
- B. Lightly roughen the concrete, but not enough to interfere with the proper placement of grout.
- C. Cover concrete areas with waterproof membrane until ready to grout.
- D. Remove foreign materials from all steel surfaces in contact with grout.
- E. Align, level and maintain final positioning of all components to be grouted.
- F. Take special precautions during extreme weather conditions according to manufacturer's published instructions.
- G. Immediately before grouting, remove waterproof membranes and clean any contaminated surfaces.
- H. Saturate all concrete surfaces with clean water; remove excess water and leave none standing.

### 3.06 PATCHING CONCRETE

- A. Defects in formed concrete surfaces shall be repaired within 24 hours of placement, to the satisfaction of the TOWN, and defective concrete shall be replaced within 48 hours after the adjacent forms have been removed. All concrete, which is honeycombed or otherwise defective, shall be cut out and removed to sound concrete, with edges square cut to avoid feathering.
- B. Except as modified herein, concrete repair work shall conform to Chapter 9 of ACI 301 and shall be performed in a manner that will not interfere with thorough curing of surrounding concrete. All repair work shall be adequately cured.

### 3.07 CURING

Cure exposed grout for 3 days after placing by keeping wet or coating with a curing compound.

END OF SECTION