

## SECTION 03302 - CONCRETE STRUCTURES

### PART 1 – GENERAL

#### 1.1 DESCRIPTION

- A. The WORK under this Section includes providing all labor, materials, tools, and equipment necessary for furnishing and installing minor concrete structures, removal and disposal of the existing structure to be replaced by the proposed structure, and all backfill and grading, in accordance with these Specifications and in reasonably close conformity with the lines, grades, details, and locations shown on the Drawings or established by the ENGINEER.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Portland Cement shall conform to the requirements of AASHTO M 85.
- B. Aggregate shall be clean, durable, uniformly graded sand and gravel, or crushed stone, 100 percent passing a 1 1/2 inch sieve and containing not more than five percent passing a U.S. No. 200 sieve.
- C. Air-entraining admixtures shall conform to the requirement of AASHTO M 154.
- D. Water shall be obtained from the CBJ potable water system, unless otherwise permitted in writing by the ENGINEER.
- E. Curing materials shall conform to the requirements of AASHTO M 182, AASHTO M 171, or AASHTO M 148, as appropriate, except that AASHTO M 148 is modified to prohibit the use of compounds utilizing linseed oil.
- F. Reinforcing Steel shall conform to the requirements of AASHTO M 31.
- G. Welded Wire Fabric shall conform to the requirements of AASHTO M 55.
- H. Joint Fillers shall be of the type specified in the contract, and shall conform to the appropriate following requirements:
  - 1. Poured filler - AASHTO M 173 or AASHTO M 282 as specified
  - 2. Preformed filler - AASHTO M 213
  - 3. Hot-poured sealant - ASTM D 3405
  - 4. Hot-poured elastomeric type sealant - ASTM D 3406

#### 2.2 COMPOSITION OF CONCRETE

- A. Portland cement concrete will ordinarily be accepted on the basis of certification.
- B. The concrete shall contain three to six percent of entrained air, as determined by AASHTO T 152. Concrete shall have a slump of not more than four inches as determined by AASHTO T 119.

## SECTION 03302 - CONCRETE STRUCTURES

- C. Concrete shall contain not less than 611 pounds of cement and not more than 300 pounds of water per cubic yard.
- D. The concrete shall develop a minimum compressive strength of 3,000 psi in 28 days.
- E. The concrete shall be subject to acceptance or rejection by visual inspection at the job site. Re-tempering concrete will not be permitted.
- F. The CONTRACTOR shall submit for approval the following:
  - 1. The type and sources of aggregates and cement.
  - 2. Scale weights of each aggregate proposed as pounds per cubic yard of concrete.
  - 3. Quantity of water proposed as pounds per cubic yard of concrete.
  - 4. Quantity of cement proposed as pounds per cubic yard of concrete.
  - 5. Air content.
  - 6. Slump.
- G. When a commercial supplier is used, the CONTRACTOR shall furnish a certification with each truckload of concrete certifying that the material and mix proportions used are in conformance with the approved mixture.
- H. Concrete complying with Section 03301 – Structural Concrete will be acceptable as an approved mixture with appropriate certification.
- I. The ENGINEER may make and test cylinders for strength determinations.

### 2.3 FORMS

- A. Forms shall be designed and constructed to be removed without injuring the concrete. They shall be free of bulge and warp, and constructed so the finished concrete will be of the form and dimensions shown on the Drawings, and true to line and grade. Forms for concrete containing a retarding admixture shall be designed for a lateral pressure equal to that exerted by a fluid weighing 150 pounds per cubic foot.

## PART 3 - EXECUTION

### 3.1 PLACING CONCRETE

- A. Concrete shall be placed to avoid segregation of materials and shall be consolidated with mechanical vibrators in accordance with Section 03301 – Structural Concrete.
- B. When concrete is placed by the pumping method or by tremie operations, the use of aluminum pipe or conduit for transporting the concrete will not be permitted.
- C. The intervals between delivery of batches for a single pour shall not exceed 30 minutes.
- D. When placing concrete at or below an atmospheric temperature of 35°F. the CONTRACTOR shall comply with the applicable requirements of Section 03301 – Structural Concrete.

## **SECTION 03302 - CONCRETE STRUCTURES**

### **3.2 FINISHING CONCRETE SURFACES**

- A. All concrete surfaces shall be finished in accordance with the requirements of Section 03301 – Structural Concrete, except "Concrete International Corporation" Ashford formula shall be used as a curing compound.

### **3.3 CURING CONCRETE**

- A. All concrete will be cured a minimum of seven days, or, if high early strength cement is used, a minimum of three days. The concrete shall be cured in accordance with Section 03301 – Structural Concrete.

**END OF SECTION**