

## DIVISION 3 - CONCRETE

### SECTION 03300 – CONCRETE

#### PART 1 - GENERAL

##### 1.01 SECTION INCLUDES:

###### A. Work:

1. All formwork, reinforcing mesh and steel.
2. All Concrete placement and finishing.
3. Furnish and install anchors, bolts, straps, plates, and sleeves to be embedded in concrete. Install other embedded items furnished by other sections.

##### 1.02 TEST:

###### A. Compressive Strength: During the progress of the work compressive strength tests of concrete shall be made in accordance with ASTM C39. 6-inch x 12-inch cylinders shall be taken by the Contractor in whatever quantity he deems fit and/or necessary from any concrete pour.

1. The Contractor will make and identify all test cylinders. The Contractor shall provide the equipment, such as a shovel and a wheelbarrow to make and move the cylinders, and shall also provide the labor and equipment to deliver the cylinders to the testing laboratory.
2. Compressive strength test shall be performed on one cylinder at age 7 days. Compressive strength test of the remaining cylinders shall be done at age 28 days.
3. Cost of testing will be borne by the Contractor. A copy of all test results shall be provided to the Owner and Engineer.

###### B. Concrete Mix Design: All concrete mix designs shall be submitted to the Engineer for review. No mix shall be used without the project Engineer's approval.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS:

- A. Concrete: Ready-mixed or mixed-in-transit concrete in accordance with ASTM C-94.
- B. Reinforcement Bars: ASTM 615, Grade 60.

- C. Wire Fabric: ASTM A-185, 6x6, W1.4 x W1.4 WWF, galvanized.
- D. Portland Cement shall conform to the requirement of ASTM C150, Type I, for all concrete work.
- E. Concrete Aggregates:
  - 1. Fine Aggregates shall be calcareous or basalt sands, or a combination thereof. They shall meet the grading requirements of ASTM C33.
  - 2. Coarse Aggregate shall be crushed close-grained, blue lava rock. All slab mixes shall be designed with one-inch aggregate.
- F. Design Mix: ACI Standard 318-89  
  
Use as little water as possible to minimize concrete shrinkage. Maximum water/cement ratio shall be 0.55. Minimum 28 day strength as noted on structural drawings.
- G. Crack Filler: Euclid Euco 700 semi-rigid epoxy joint filler.

### PART 3 - EXECUTION

#### 3.01 INSPECTION:

- A. Verify that surfaces to receive cushion fill are suitable for this work.
- B. Commencement of work will indicate acceptance of surface as being suitable.

#### 3.02 PREPARATION:

- A. Erect batterboards.
- B. Layout grades to finishes indicated.
- C. Formwork in accordance with ACI 347.

#### 3.03 PLACEMENT:

- A. All concrete slabs shall be poured using the power screed method. All mechanical and electrical stub-outs shall be held below the finish slab level so concrete screeding and proceedings are uninterrupted.
- B. Place reinforcing in compliance with CRSI 63 "Recommended Practice for Placing Reinforcing Bars".

- C. Deposit continuously. Provide cold joints and sawed joints only as indicated on drawings.
- D. Deposit near to or in its final location to avoid segregation due to excessive handling.

#### 3.04 FINISHING OF SLABS:

- A. Finish A – Scratch Finish: After the concrete has been placed, struck off, consolidated and leveled, the surfaces shall be roughened with stiff brushes or rakes (cross-scratched) before set.
- B. Finish B – Light Trowelled Finish: After the concrete has been placed, struck off, consolidated and leveled, the concrete shall not be worked further until ready for floating. Floating shall begin when the water sheen has disappeared and/or when the mix has stiffened sufficiently to permit the proper operation of a power-driven float. The surface shall then be consolidated with power-drive floats of the impact type except in thin sections. Hand floating with wood or cork-faced floats shall be used in locations inaccessible to the power-driven machine. The slab shall then be steel trowelled to a uniform, smooth texture.
- C. Finish C – Trowelled Finish: The surface shall be finished first with impact power floats, as specified above for Finish B, then with power trowels and finally with steel hand trowels. The first trowelling after power floating shall be done by a power trowel and shall produce a smooth surface which is relatively free of defects but which may still contain some trowel marks.

Additional trowelling shall be done by hand after the surface has hardened sufficiently. The final trowelling shall be done to a point when a ringing sound is produced as the trowel is moved over the surface. The finished surface shall be free of any trowel marks and shall be uniform in texture and appearance. On surfaces intended to support floor coverings, any defects of sufficient magnitude to show through the floor covering shall be removed by grinding.

#### 3.05 CURING AND PROTECTION:

- A. Cure by one of the following methods:
  - 1. Water cure by mechanical sprinklers and keep surface continuously wet.
  - 2. Curing compounds compatible with applied finish and adhesives.

#### 3.06 CLEANING:

- A. Remove all excess concrete from premises.
- B. Clean adjacent surfaces marred by this work.

END OF SECTION