

SECTION 40

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 SCOPE

The work covered by this item shall consist of furnishing, bending, placing and tying all steel reinforcement including reinforcing bars, mesh or fabric, dowels and structural steel shapes embedded in the concrete.

1.02 TESTS AND SHOP DRAWINGS

- A. Prior to placing any steel reinforcement, written evidence that such steel has been tested and is in conformity with these specifications must be in the hands of the Engineer. Certified copies of mill tests may be considered evidence of compliance provided such tests as customarily made under satisfactory conditions by responsible personnel and with adequate equipment. In case of doubt, the Engineer may require additional tests by an independent testing laboratory upon mill samples or upon the finished bars as furnished.
- B. Complete detailed shop drawings, bending diagrams and schedules of the steel to be used shall be submitted by the Contractor to the Engineer for review and approval prior to fabrication of the steel. Only steel meeting specification requirements and fabricated in accordance with approved shop drawings shall be used. A minimum of 6 copies of drawings, diagrams and schedules will be required for approval.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Reinforcing Bars

Reinforcement bars shall conform to the latest requirements of ASTM Standard Specifications, Serial Designation A 615 for Deformed Billet Steel Bars for Concrete Reinforcement. Unless otherwise shown on the plans, all bars #4 and larger shall be Grade 60. All bars #3 and smaller shall be Grade 40. All bars shall be shop fabricated and bent cold. Bars shall be free from

defects and kinks and from bends not indicated on the Drawings or approved bending diagrams.

B. Mesh Reinforcement

Steel mesh reinforcement shall be electrically welded, cold drawn, mild steel fabric conforming to the latest requirements of ASTM Standard Specifications, Serial Designation A 185 for Welded Steel Wire Fabric for Concrete Reinforcement.

PART 3 - EXECUTION

3.01 PLACEMENT

- A. On delivery to the site of the work, the steel reinforcement shall be carefully bundled, tagged and stored so the bars for any position in the work may be readily identified. All reinforcing steel shall be stored on timber mats or other approved material covering the ground.
- B. Before being placed in position all steel reinforcement shall be thoroughly cleaned of oil, mill and rust scale, dirt and other coatings that would tend to destroy or reduce the bond. Where there has been a delay in in depositing concrete after the reinforcement has been placed, the reinforcement shall be reinspected and recleaned if necessary.
- C. Reinforcement shall be accurately positioned and tied at intersections with annealed or similar wire, No., 18 gage or heavier, or suitable approved clips. Reinforcement shall be supported by concrete or metal chairs, stays, spacers, hang or other approved supports which shall have sufficient strength and stability to maintain the reinforcement in place throughout concreting operations.
- D. The minimum distance between parallel bars shall be as shown on the plans.
- E. Unless otherwise noted on the plans, rods shall be lapped not less than 24 diameters where splicing is necessary and splices shall be staggered. In all cases the lapped connection shall be sufficient to transfer the full stress between bars by bond and shear and to develop the full strength of the rods. In slabs, beams and girders, no splices shall be made at points of maximum moment and in no case shall adjacent bars be spliced at the same place.
- F. Supports and ties shall not be exposed at the face of the concrete nor shall they discolor the surface of the finished concrete. Reinforcement which has

been exposed for bonding with future work shall be protected from corrosion by heavy wrappings of burlap saturated with a bituminous material.

- G. Movement of steel reinforcement in place during concrete operations shall be prevented. Any rods which are displaced shall be restored to proper position before they are completely covered.

3.02 MINIMUM COVER AND CLEARANCE

When concrete in footings or other principal structural members is in contact with the ground, reinforcement shall be protected by not less than 3 inches of concrete. If formed concrete surfaces, after removal of the forms, are exposed to the weather, the reinforcement shall be protected with no less than 2 inches of concrete. Unless shown otherwise on the plans, the protective covering of concrete for reinforcement at surfaces not exposed directly to the ground or weather shall be not less than the following:

Slabs	1 inch
Floors, Walkways, Driveways	1-1/2 inches
Walls less than 12 inches thick	1-1/2 inches
Walls 12 inches or more in thickness	2 inches
Beams and girders - Stirrup Steel	1-1/2 inches
Beams and girders - Main Reinforcement	2 inches
Columns	2 inches

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