

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 Summary

A. This Section includes steel reinforcement bars, ties, welded wire fabric, bolsters, chair supports, and accessories.

B. Related Work Specified Elsewhere

Concrete FormworkSection 03100
Concrete.....Section 03300
Concrete Curb, Gutter, Sidewalk, and DrivewaysSection 03310

1.2 Quality Assurance

A. Reference Standards and Specifications

1. American Concrete Institute (ACI)

ACI 301 - Specifications for Structural Concrete for Buildings.

ACI SP-66 - Detailing Manual.

ACI 318 - Building Code Requirements for Reinforced Concrete.

2. American Society for Testing and Materials (ASTM)

ASTM A82 - Steel Wire, Plain, for Concrete Reinforcement.

ASTM A185 - Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement.

ASTM A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

ASTM A706/A706M – Low-Alloy Steel. Deformed and Plain Bars for Concrete Reinforcement.

3. American Welding Society (AWS)

A5.5 – Low-Alloy Steel Covered Arc Welding Electrodes.

B2.2 – Standard for Welding Procedure and Performance Qualification.

D1.4 – Structural Welding Code – Reinforcing Steel.

4. Concrete Reinforcing Steel Institute (CRSI)

Manual of Standard Practice.

1.3 Submittals

A. Submit as specified in Section 1330.

B. Include, but not limited to, the following:

1. Complete bar schedule, bar details, and erection drawings to conform to ACI SP-66.
2. Drawing with each type of bent bar marked with identification mark. Straight bars shall have mark number or be identified by size and length.
3. Erection drawings shall be clear, easily legible, and to a minimum scale of:
 - a. 1/4 inch = 1 foot.
 - b. 1/8 inch = 1 foot if bars in each face are shown in separate views.
4. Size and location of all openings.
5. Concrete protective cover.
6. Grade of steel.
7. Lap splice lengths.
8. Mechanical splice product specification and data.

1.4 Delivery, Storage and Handling

- A.** Store steel reinforcement blocked-up off the ground and in orderly stacks.
- B.** Store only bars with the same identifying label in the same stack.

1.5 Testing

- A.** Perform at the mill for each heat.
- B.** Submit certified test results to Engineer upon request.

PART 2 - MATERIALS

2.1 Reinforcement Bars, Ties, and Stirrups

A. Materials

- 1.** Conform to ASTM A615, Grade 60, except as otherwise specified.

B. Fabrication of Bars

- 1.** Fabricate with cold bends conforming to the recommended dimensions shown in ACI 318.
- 2.** Fabricate bars according to the tolerances given in ACI 301, Chapter 5.
- 3.** Field fabrication will not be allowed.
- 4.** Attach metal or plastic tags with identifying mark or length corresponding to mark number or length on Drawing. Straight bars shall have mark number or size and length. Bent bars shall have mark number.
- 5.** **CONTRACTOR** may, at his option, continue steel reinforcement through openings in walls and slabs, then field-cut the opening so that there will be the required concrete cover between ends of bars and edge of opening.

2.2 Welded Wire Fabric

- A.** Conform to ASTM A185 using bright basic wire conforming to ASTM A82.
- B.** Wire sizes W 1.4 and smaller shall be galvanized.

2.3 Bolsters, Chairs, and Accessories

- A.** Conform to ACI SP-66 and the CRSI Manual of Standard Practice.
- B.** Provide all spacers, bolsters, chairs, ties, and other devices necessary to properly space, place, support, and fasten steel reinforcement in place during the concrete placement.
- C.** Metal accessories shall be plastic-coated where legs will be exposed in finished concrete surfaces.
- D.** Do not use rocks, broken bricks, wood blocks, or concrete fragments for support of steel reinforcement.

2.4 Precast Concrete Block Bar Supports

- A.** May be used only for bar supports in slabs on ground.
- B.** Blocks shall be made with a minimum of nine sacks of cement per cubic yard and have a minimum compressive strength of 6,000 psi in 28 days.
- C.** Each block shall have a minimum of 9 square inches of bearing area. Space as required by the particular condition of weight, bearing surface, and rigidity of the steel reinforcement.

PART 3 - EXECUTION

3.1 Placement of Steel Reinforcement

- A.** Place in accordance with Chapter 5 of ACI 301, Chapters 7 and 12 of ACI 318, and the CRSI Manual of Standard Practice.
- B.** Tie securely with 16-gauge or larger annealed iron wire.
- C.** Place to maintain concrete cover to conform to Chapter 5 of ACI 301 and Chapter 7 of ACI 318, unless otherwise indicated.

- D. Splice steel to conform to Chapter 12 of ACI 318.
 - 1. Unless otherwise indicated, lap splices shall be Class B as defined by ACI 318.
 - 2. **Mechanical Splices**
 - a. Lerten mechanical splices shall be used where indicated.
 - b. The Lerten mechanical splices shall develop in tension and compression at least 125% of the yield strength (F_y) of the bar spliced.
 - 3. Any additional Contractor-proposed splice shall be approved by the Engineer for location and splice length.
- E. Lap welded wire fabric in accordance with Section 12.19 of ACI 318, but not less than the length of one mesh plus 2 inches.

PART 4 - MEASUREMENT AND PAYMENT – Not Applicable

****END OF SECTION****