

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Reinforcing steel bars, wire fabric or rod mats for cast-in -place concrete.
- B. Support chairs, bolsters, bar supports, and spacers for supporting reinforcement.

1.02 REFERENCES

- A. AASHTO M 254: Standard Specification for Corrosion Resistant Coated Dowel Bars.
- B. ACI 301: Specifications for Structural Concrete for Buildings.
- C. ACI 315: Details and Detailing of Concrete Reinforcement.
- D. AASHTO M-32: Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
- E. AASHTO M-55: Standard Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement.
- F. AASHTO M-55: Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- G. ASTM A 706: Standard Specification for Low-Alloy Steel Deformed Bars for Concrete Reinforcement.
- H. AWS D1.1: Structural Welding Code Steel.
- I. AWS D1.4: Structural Welding Code Reinforcing Steel.
- J. CRSI Document: Manual of Standard Practice.

1.03 SUBMITTALS

- A. Shop drawings.
 - 1. Indicate sizes, spacings, locations, and quantities of reinforcing steel, wire fabric, bending and cutting schedules, splicing, stirrup spacing, supporting, and spacing devices.
 - 2. When required by Engineer, prepare shop drawings by an engineer who complies with Utah licensing law and is acceptable to Engineer.

1.04 QUALITY ASSURANCE

- A. Perform concrete reinforcement work in accordance with CRSI Manual of Standard Practice.
- B. Comply with ACI 301.

- C. Welders: AWS D1.1 or AWS D1.4 as applicable.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Reinforcing Steel: In accordance with AASHTO M-31 or ASTM A 706 deformed bars, grade and type as indicated, including supplementary requirements S1, either uncoated or as indicated. When no grade is indicated use 60 grade steel. Use ASTM A 706 steel if welding is indicated or allowed.
- B. Welded Steel Wire Fabric: In accordance with AASHTO M-55 plain type; in flat sheets or coiled rolls either uncoated or as indicated.
- C. Stirrup Steel: In accordance with AASHTO M-32.
- D. Plain Dowel Bars for Expansion Joints: In accordance with AASHTO M-31, Grade 60.
 - 1. Provide metal dowel cap at one end of dowel to permit longitudinal movement of dowel within concrete section. Design caps with 1 end closed.
 - 2. Provide for movement equal to joint width plus ½”.
 - 3. For load transfer bars, paint with 1 coat of lead or tar paint conforming to AASHTO M 254 and coat ½ with grease.

2.02 ACCESSORY MATERIALS

- A. Tie Wire: Minimum 16 gage annealed type or a patented system accepted by Engineer.
- B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete.

2.03 FABRICATION

- A. Fabricate reinforcement in accordance with ACI , providing for the concrete cover specified in Section 03304.
- B. Locate reinforcing splices not indicated on drawings at points of minimum stress. Indicate location of splices on shop drawings.
- C. Weld reinforcing bars in accordance with AWS D1.4.

PART 3 EXECUTION

3.01 PLACING

- A. All reinforcement to be free of loose mill scale, loose or thick rust, dirt, paint, oil or grease.
- B. Place all reinforcement in the exact position indicated. With tie wire tie bars together at alternate intersections.

- C. Maintain the distance from vertical forms and between layers of reinforcement by means of prefabricated chairs, ties, hangers, or other approved devices. Placing and fastening of reinforcement in each section of the Work must be approved by Engineer before concrete is placed.
- D. Overlap sheets of metal mesh one square plus 6" to maintain a uniform strength. Securely fasten at the ends, edges, and support to maintain clearances.
- E. Support reinforcing steel of formed flat slabs with metal chairs, precast concrete blocks or other slab bolsters. Size chairs or bolsters to position the steel in the exact location indicated. Space chairs for supporting the top steel and bolsters for supporting the bottom steel not more than 5 feet on centers in each direction. Plastic or epoxy coat that portion of the metal support in contact with the forms to prevent rust. Tie down deck steel to beams or forms at regular intervals of not more than 5 feet on centers along the beams or forms to prevent movement of the steel during placement of the concrete.

3.02 SPLICING

- A. Furnish all reinforcement in the full lengths indicated unless otherwise permitted. Splicing of bars, except where indicated is not permitted without written approval from Engineer. Stagger splices where possible.
- B. Unless indicated otherwise, overlap reinforcing bars a minimum of 30 diameters to make the splice. In lapped splices, place the bars and wire in such a manner as to maintain the minimum distance for clear spacing to the surface of the concrete.
- C. Do not use lap splices on bars greater in diameter than No. 11 unless approved by Engineer.
- D. Weld reinforcing steel only if indicated or if authorization is made by Engineer in writing. Weld in conformance to AWS D1.4.
- E. Do not bend reinforcement after embedding in hardened concrete, unless permitted by Engineer.
- F. Do not permit reinforcement or other embedded metal items bonded to the concrete, to extend continuously through any expansion joint, except dowels in floors bonded on only one side of joints.

3.03 PLACING EMBEDDED ITEMS

- A. Place all sleeves, inserts, anchors and embedded items prior to concrete placement. Fill voids in embedded items temporarily with readily removable material to prevent entry of concrete.
- B. Give all trades whose work is related to the concrete section ample notice and opportunity to introduce and/or furnish embedded items before concrete placement.

END OF SECTION