

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL:

1.01 SECTION INCLUDES

- A. This section includes furnishing all materials, equipment, transportation and facilities, and performing all labor necessary for preparation and submittal of shop drawings, and furnishing and placing reinforcing steel.

1.02 SUBMITTALS:

- A. Shop Drawings.
 - 1. Prepare in accordance with CRSI Manual of Standard Practice (MSP-2-01) and ACI Detailing Manual (SP-66) latest revision:
 - a. Bending lists.
 - b. Placing drawings.
 - 2. Shop drawings showing weld splice, Cadweld splice, and/or mechanical threaded splice where required or where proposed.
 - 3. Welded Wire Fabric. Furnish detailed shop drawings if proposed to use minimum yield strength of 75 ksi in lieu of ASTM A615 reinforcing bars, or 60 ksi panels meeting ASTM A185 or A497 and ACI 318, latest revisions.
- B. Quality Control Submittals.
 - 1. Mechanical Threaded Connections.
 - a. Provide verification that device threads have been checked and meet all requirements for thread quality, in accordance with manufacturer's published methods.
 - 2. Mill Test Reports. Certified copies, evidencing compliance with the requirements of these Specifications, shall be delivered to the OWNER with all deliveries of reinforcing steel.

1.03 DELIVERY, STORAGE, AND HANDLING:

Unloading, storing and handling bars on the job shall meet CRSI publication "Placing Reinforcing Bars", and the following:

- A. Deliver steel with suitable hauling and handling equipment.
- B. Tag steel for easy identification.
- C. Store to prevent contact with the ground.

PART 2 PRODUCTS:

2.01 DEFORMED BILLET-STEEL REINFORCING BARS:

- A. Meet ASTM A615, Grade 60, including Supplemental Requirements S1 where welding is not required, or meet ASTM A706, Grade 60, including Supplemental Requirements for reinforcing to be welded.
- B. Stirrups and Column Ties. Grade 40 bars.

2.02 SPLICES AND MECHANICAL CONNECTIONS:

- A. Metal Sleeve. If used for splice, provide with cast filler metal, capable of developing in tension or compression 100 percent of specified minimum tensile strength of the bar, as manufactured by:
 - 1. Erico Products, Inc., Cleveland, OH, Cadweld T-Series.
 - 2. Or equal.
- B. Mechanical Threaded Connections. Metal coupling sleeve for use on splicing reinforcing in secondary members or in areas of low stress with internal threads which engage threaded ends of bars to be spliced, and develops in tension or compression 125 percent of the specified yield strength of the bar, as manufacture by:
 - 1. Erico Products, Inc., Cleveland, OH, Lenton Reinforcing Steel Couplers.
 - 2. Richmond Screw Anchor Co., Inc., Fort Worth, TX, Richmond DB-SAE Dowel Bar Splicers.

2.03 WELDED WIRE FABRIC FOR SINGLE LAYER REINFORCED SLAB ON GRADE APPLICATIONS:

- A. Wide spaced standard, flat sheets, structural welded wire fabric, with same steel area as bars shown.

- B. Minimum yield strength of 75 ksi may be provided in lieu of ASTM A615 reinforcing bars, or 60 ksi, provided panels meet ASTM A185 or A497 and ACI 318, latest revisions, and if approved on submittal as specified.
- C. Manufacturer:
 - 1. Davis Walker Corp.
 - 2. Or equal.

2.04 ACCESSORIES:

- A. Tie Wire.
 - 1. 16-gauge, black, soft-annealed wire where tie wire is not closer than 1 inch from surface of wall after tying in place.
 - 2. Provide nylon-, epoxy-, or plastic-coated tie wire to fasten non-coated reinforcing steel, unless tie wire is bent to maintain a minimum of 1 inch from surface of wall.
- B. Bar Support and Spacers.
 - 1. Precast concrete bar supports, cementitious fiber-reinforced bar supports, or all-plastic bar supports and side form spacers meeting the requirements of the CRSI 1988 Supplement to Manual of Standard Practice, 24th Edition, 1986. Other types of supports or spacers shall not be used.
 - 2. In Beams, Columns, Walls, and Slabs Exposed to View After Stripping. Small rectangular concrete blocks made up of same color and same strength as concrete being placed around them or all-plastic bar supports and side form spacers.
 - 3. Coat wire projecting from precast concrete bar supports with dielectric material, epoxy, or plastic.
 - 4. Provide precast concrete supports for reinforcing in concrete placed on grade.

PART 3 EXECUTION:

3.01 GENERAL:

- A. Meet requirement in a manual titled, "Placing Reinforcing Bars", published by Concrete Reinforcing Steel Institute (CRSI).

- B. Bend all bars cold.
- C. Notify OWNER when reinforcing is ready for inspection and allow sufficient time for this inspection prior to placing concrete.

3.02 PLACING REINFORCING STEEL:

- A. Clean metal reinforcement of any loose mill scale, oil, earth, and other contaminants.
- B. Bundle or space bars as approved on shop drawings, instead of bending where construction access through reinforcing is necessary.
- C. Install in accordance with approved shop drawings.
- D. Protection, Spacing and Positioning. Conform with reviewed placing drawings, design drawings, and current edition of the ACI Standard Building Code Requirements for Reinforced Concrete (ACI 318).
- E. Location Tolerances. Meet current edition of "Placing Reinforcing Bars", published by Concrete Reinforcing Steel Institute and the Details and Notes on the Drawings.
- F. Splicing.
 - 1. As shown and as specified in current edition of ACI 318.
 - 2. Use lap splices unless otherwise shown or permitted in writing by OWNER.
 - 3. Welded Splices. Accomplish by full penetration groove welds as specified to develop at least 125 percent of specified yield strength of the bar.
 - 4. As an alternative, perform splices using metal sleeve as specified.
 - 5. Stagger splices in adjacent bars.
- G. Tying Deformed Reinforcing Bars.
 - 1. Meet current edition of "Placing Reinforcing Bars", published by Concrete Reinforcing Steel Institute and the Details and Notes on the Drawings.
 - 2. Tie every other intersection on mats made up of #3-#4-#5-#6 in such a manner to hold bars at required spacing.

3. All non-coated tie wire shall be bent to prevent the tie wire from being closer than 1 inch from the surface of the concrete. Wire that is found to be close after the pour shall be chipped out to a depth of 3/4 inch, cut off, and the hole patched.

H. Reinforcement Around Openings.

1. Place an equivalent area of steel around pipe or opening and extend on each side sufficiently to develop bond in each bar.
2. Refer to Details on Drawings for bar extension length of each side of opening.
3. Where welded wire fabric is used, provide extra reinforcing using fabric or deformed bars.

I. Welding Requirement.

1. Do not perform any welding unless required submittal is approved as specified.
2. Meet ASTM A706. Do not weld other bars.

3.03 PLACING WELDED WIRE FABRIC:

- A. Extend fabric to within 2 inches of edges of slab, and lap splices at least 1-1/2 courses of fabric or minimum 8 inches.
- B. Tie laps and splices securely at ends and at least every 24 inches with 16-gauge black annealed steel wire.
- C. Place welded wire fabric on concrete blocks at proper distance above bottom of slab and rigidly support equal to that furnished for typical deformed bar reinforced steel.
- D. Meet current ACI 318 and current Manual of Standard Practice, Welded Wire Fabric, by the Wire Reinforcement Institute regarding placement, bends, laps and other requirements.
- E. Do not use fabric that has been rolled. Install flat sheets only.

3.04 FIELD BENDING:

- A. Straightening and Re-bending. Do not straighten or re-bend metal reinforcement. Field bending of reinforcing steel bars is not permitted.

- B. Unless permitted by OWNER, do not cut reinforcing bars in the field.

3.05 MECHANICAL SPLICES AND CONNECTIONS:

- A. Use only in areas specifically approved in writing by the OWNER.
- B. Install as required by manufacturer.
- C. Carefully inspect each splice and verify that each component meets manufacturer's requirements.
- D. Maintain minimum edge distance and concrete cover.

END OF SECTION