

**Standard  
Specifications  
for  
Highway Construction**

**NEBRASKA**

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**DEPARTMENT OF TRANSPORTATION**

**2017 Edition**

## **SECTION 707 -- REINFORCEMENT**

### **707.01 -- Description**

1. This work shall consist of furnishing and placing reinforcing steel as required by these Specifications and as shown in the contract.

### **707.02 -- Material Requirements**

1. Reinforcing steel shall conform to the requirements as described in Sections 1020, 1021, 1023, and 1024.

2. Two samples of all reinforcing steel (coated and uncoated) shall be submitted to the Department's Materials and Research Division for testing. The length of each sample shall be 6 linear feet (1.8 m).

### **707.03 -- Construction Methods**

#### **1. Fabrication:**

a. Reinforcing bars shall be shipped in standard bundles, tagged and marked in accordance with the Code of Standard Practice of the Concrete Reinforcing Steel Institute. When reinforcing bars are not shipped from tested and approved stock, the identification of all reinforcing bars (manufacturer, heat number, and size) shall be maintained by the fabricator throughout the fabrication process to assure that the fabricated bars are identified with proper tags for final shipment to the job site.

b. The Contractor shall bend reinforcing bars without the use of heat to the dimensions and shapes shown in the contract, and bars having cracks or splits at the bends shall be rejected.

#### **c. Epoxy Repairs:**

(1) The epoxy coated rebar shall be free of any cracking or debonding. The Contractor may repair epoxy coated reinforcing bars that show any visible evidence of cracking or disbonding of the coating in the bend area with approval of the Engineer.

(2) Epoxy coatings cut, broken, or abraded shall be repaired before rusting of the bar occurs.

(3) All patching shall be done as provided in Section 1021.

d. All reinforcing steel shall be identified and tagged as required in Subsection 1021.03.

#### **2. Protection of Material:**

a. The Contractor shall protect reinforcing steel from damage at all times. When placed in the work, the reinforcing steel shall be free from dirt, paint, grease, oil, rust, or other foreign substances. The Engineer shall be the final judge as to acceptability of the reinforcing material's condition.

b. Reinforcement with any appreciable reduction in section dimensions caused by corrosion will be rejected.

#### **3. Placing and Fastening:**

a. The Contractor shall place all reinforcement in the position shown in the contract, and it shall be held securely in position.

## b. Fastening:

(1) Reinforcing bars shall be tied at all intersections, except when the spacing is less than 1 foot (300 mm) in both direction, in which case alternate intersections shall be tied.

(2) Welds at all points of intersection of the wire in welded steel wire fabric shall be of sufficient strength that they will not be broken during handling and placing.

(3) Tie wire for epoxy coated bars shall be plastic coated. Plastic clips suitable for the purpose may be used.

## c. Positioning and Support:

(1) The Contractor shall position steel reinforcement in concrete walls at the proper clearance from forms by approved chairs, stays, or hangers.

(2) Reinforcing steel in concrete decks and slabs shall be positioned on plastic coated supports or chairs to accurately maintain the specified clearance to the surface of the concrete. Supports shall be spaced at distances not greater than 3 feet for #4 top bars or 4 feet for all other reinforcing.

(3) When wire bar support units are placed in continuous lines, they shall be so placed that the ends of the supporting wires are lapped to lock the last legs of adjoining units. No reinforcing shall be placed more than 2 inches (50 mm) beyond the last leg at the end of any continuous support run.

(4) Reinforcing steel on bar supports shall not be used to support runways for construction equipment. If such runways are used, they shall be supported independently.

(5) Bar support units shall be standard products from a reputable manufacturer of such items. Properly sized supports shall be furnished in sufficient numbers, manufactured to serve their intended purpose, and capable of carrying imposed loads without measurable deflection or displacement of the reinforcing steel. The type and adequacy of supporting units shall be at least equal to that recommended by the Concrete Reinforcing Steel Institute's *Manual of Standard Practice*.

(6) Bar supports which are at exposed concrete surfaces shall be corrosion resistant as described in the Concrete Reinforcing Steel Institute's *Manual of Standard Practice*.

d. Welding or flame cutting on reinforcing steel is prohibited unless specifically authorized by the Engineer.

e. Fiber reinforced concrete support spacers must have at least 4% Polyamide fiber. The flexural strength shall be at least 580 psi (4 MPa) and the compressive strength not less than 9,000 psi (62 MPa). The coefficient of expansion must be the same as for the cast-in-place concrete.

## 4. Splicing:

a. The Contractor shall furnish all reinforcing steel in full lengths, except where splices are indicated in the contract. Splices in adjacent bars shall be staggered.