

**2016**

Road and Bridge  
Specifications



**VDOT** Virginia Department  
of Transportation

405.07

**405.07—Measurement and Payment**

Prestressed concrete piles will be paid for in accordance with Section 403.08.

Prestressed concrete structural units that are to be incorporated in the completed structure will be measured in units of each for the unit specified and will be paid for at the contract unit price per each.

These prices shall include manufacturing, fabricating, and furnishing units, mortar seals on ends of units; structural and reinforcing steel for connecting units to struts and diaphragms; reinforcing, structural, and prestressing steel embedded in units, including dowels in place and bearing pads or bearing devices; post-tensioning fittings, strands, and rods, grouting, joint fillers and sealers, waterproofing applied to structural units at the prestressing plant; testing and documentation, hauling, handling, storage, and treatment.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Prestressed concrete (Shape, beam, description of cross section, and length)	Each
Prestressed concrete slab (Width, depth, and length)	Each

**SECTION 406—REINFORCING STEEL**

**406.01—Description**

This work shall consist of furnishing; coating, if required, and placing reinforcing steel or wire mesh used in concrete operations, except prestressed strands and wires, in accordance with these specifications and in conformity to the lines and details shown on the plans.

**406.02—Materials**

- (a) **Steel used for reinforcement** shall conform to Section 223. Except for spiral bars, bars more than 1/4 inch in diameter shall be deformed bars.
- (b) **Welded wire fabric** shall conform to Section 223.
- (c) **Bar mat reinforcement** shall conform to Section 223.
- (d) **Corrosion resistant steel used for reinforcement** shall conform to Section 223.

**406.03—Procedures**

- (a) **Order Lists and Bending Diagrams:** Copies of order lists and bending diagrams shall be furnished to the Engineer when required or requested.

Reinforcement in bridge deck slabs and slab spans shall be supported by either stainless steel or plastic coated steel bar supports. Bar supports shall be spaced as recommended by CRSI but not more than 4 feet apart transversely or longitudinally. Precast concrete supports, galvanized bar supports, plastic/composite bar supports, or epoxy coated bar supports will not be permitted. The lower mat of steel reinforcement shall be supported by a bolster block or individual chair bar supports and the upper mat can be supported by either individual high chair bar supports or continuous bar supports placed between the upper and lower mats. When the upper mat is supported by continuous bar supports placed between the upper and lower mats, all the bar supports shall be spaced as recommended by CRSI but not more than 3 feet apart transversely or longitudinally. Bar supports shall be firmly stabilized so as not to displace under construction activities. Reinforcing bar supports (standees) may be used for the top mat of steel of simple slab spans provided they hold the reinforcing steel to the requirements specified herein and are firmly tied to the lower mat to prevent slippage. The use of standees will not be permitted for the top mat of steel on any continuous slab spans.

Metal bar supports shall be fabricated from one of the following: (1) stainless steel wire conforming to ASTM A493, or (2) cold-drawn wire protected by plastic coating conforming to CRSI standards, or other protective coating as approved by the Engineer.

In reinforced concrete sections other than bridge slabs, the specified clear distance from the face of concrete to any reinforcing bar and the specified spacing between bars shall be maintained by means of approved types of stays, ties, hangers, or other supports. The use of pieces of gravel, stone, brick, concrete, metal pipe, or wooden blocks will not be permitted as supports or spacers for reinforcing steel. The use of precast concrete block supports will be permitted provided blocks are furnished in correct thicknesses and are shaped or tied to prevent slippage from beneath reinforcing bars. The clear distance between bars shall be at least 1 1/2 times the specified maximum size of coarse aggregate but not less than 1 1/2 inches. Before concrete is placed, the Engineer will inspect reinforcing steel and determine approval for proper position and the adequacy of the method for maintaining position.

- (e) **Splicing and Lapping:** Reinforcement shall be furnished in full lengths as indicated on the plans. Except where shown on the plans, splicing bars will not be permitted without the written approval of the Engineer. Splices shall be as far apart as possible.

In lapped splices, bars shall be placed in contact and wired together. Lap lengths shall be as indicated on the plans. When reinforcing bars cannot be fabricated with the lengths shown on the plans, the bars may be lapped at no additional cost to the Department. Lap lengths shall be in accordance with the AASHTO LRFD Bridge Design Specifications.

Mechanical butt splicing will be permitted at locations shown on the plans. The mechanical connection shall develop in tension or compression, as required, 125 percent of the specified yield strength of the bar. The total slip of the bar within the splice sleeve of the connector after loading in tension to 30.0 ksi and relaxing to 3.0 ksi shall not exceed the following measured displacements between the gage points clear of the splice sleeve:

For bar sizes up to No. 14:	0.01 inch
For No. 18 bars:	0.03 inch

For corrosion resistant reinforcing bars, mechanical butt splicers shall be of the same material as the bars being spliced except for stainless clad bars for which the splicers shall be stainless steel.