

1 Use either corrugated polyethylene, corrugated steel or corrugated aluminum alloy for the
2 temporary drainage pipe. Do not use perforated pipe. Provide temporary pipe of sufficient
3 length for complete drainage away from the roadway embankment.

4 Backfill the approach slabs as soon as practical to prevent erosion adjacent to the slab.

5 **422-4 MEASUREMENT AND PAYMENT**

6 The price and payment below will be full compensation for all items required to construct
7 bridge approach slabs including, but not limited to, those items contained in Article 422-1.

8 *Bridge Approach Slabs, Sta. ____* will be paid at the contract lump sum price.

9 Grooving bridge approach slabs will be paid at the contract unit price per square foot for
10 *Grooving Bridge Decks* as provided in Article 420-21.

11 Payment will be made under:

Pay Item	Pay Unit
Bridge Approach Slabs, Sta. ____	Lump Sum

12

SECTION 425

13

FABRICATING AND PLACING REINFORCEMENT

14

425-1 DESCRIPTION

15 Furnish, fabricate and place steel reinforcement other than wire reinforcement, including all
16 related materials such as tie wire, separators, wire bar supports, mechanical butt splices for
17 reinforcing steel, and other material for fastening the reinforcing steel in place; galvanize
18 and/or coat where required; and fabricate, cut, bend, place and splice the reinforcement in
19 conformity with the shape and dimensions shown in the plans and as specified in these
20 *Standard Specifications*. Provide epoxy coated reinforcing steel where indicated in the plans.

21

425-2 MATERIALS

22

Refer to Division 10.

Item	Section
Epoxy Coated Reinforcing Steel	1070-7
Epoxy Coated Spiral Column Reinforcing Steel	1070-8
Mechanical Butt Splices for Reinforcing Steel	1070-9
Reinforcing Wire	1070-3
Spiral Column Reinforcing Steel	1070-8
Steel Bar Reinforcement	1070-2
Wire Bar Supports	1070-4
Wire Reinforcement	1070-3

23

425-3 PROTECTION OF MATERIALS

24

25 Protect steel reinforcement at all times from damage and make sure it is free from dirt, dust,
26 loose mill scale, loose rust, paint, oil or other foreign materials at the time of placement in the
work.

27

28 Store epoxy coated reinforcing steel bars at the project site at least one foot above the ground
29 on wooden or padded supports placed 10 ft apart, and completely cover with an opaque cloth,
30 canvas or woven fiber reinforced polyethylene white tarp. Do not use solid plastic sheeting.
31 Cover the bars such that adequate ventilation is provided to prevent condensation from
32 forming on the material during storage, and completely protect the bars from direct sunlight.
Do not allow water to pond under the epoxy coated reinforcing steel.

33

34 Store epoxy coated bars as close as possible to their final location in the structure to prevent
coating damage from unnecessary handling.

Section 425

1 Do not store epoxy coated bars at the project site from one construction season until the
2 following construction season unless stored in a waterproof enclosure.

3 **425-4 PLACING AND FASTENING**

4 Accurately place reinforcement as shown in the plans and secure firmly in position by wiring
5 at intersections and using metal bar supports, precast mortar blocks or other approved devices
6 of sufficient strength and location to resist distortion.

7 Tie reinforcing bars at all intersections except where spacing is less than one foot in both the
8 longitudinal and transverse directions, in which case tie at alternate intersections, as an option.
9 Securely tie each intersection of vertical reinforcing steel and spiral reinforcement for drilled
10 piers. Use plastic or epoxy coated spiral spacers with epoxy coated spiral column reinforcing
11 steel.

12 Provide wire bar supports for reinforcing steel in accordance with Article 1070-4 of the
13 proper height to provide the distance from the forms and the proper spacing between rows of
14 steel as indicated in the plans. When required by the plans, epoxy coat bar supports in
15 accordance with Article 1070-7. Provide rust-proofed supporting legs for wire bar supports
16 that rest on the forms as provided in Article 1070-4. When providing rust proofing by plastic
17 protection, make sure that the dipped plastic coating or premolded plastic tips are intact on
18 each bar support leg while concrete is placed.

19 Precast blocks, of approved shape and dimensions, for holding vertical reinforcement in
20 position from 1:2 mortar or concrete of the same mix used in the member being cast. Cure
21 precast blocks in accordance with Article 420-15 for the water method or the polyethylene
22 sheeting method. To hold vertical bars in position, use precast blocks which have embedded
23 wires extending from the block a sufficient distance to tie to the bar.

24 Roll wire reinforcement flat before placing concrete, unless otherwise shown in the plans.
25 Hold wire reinforcement firmly in place against vertical and transverse movement by
26 acceptable means.

27 Weld reinforcing steel in accordance with the American Welding Society's *Reinforcing Steel*
28 *Welding Code AWS D1.4* and only where required in the contract. Obtain written approval for
29 additional welding. Do not use tack welds unless approved.

30 Exercise extreme care when transporting, handling, placing and tying epoxy coated
31 reinforcing steel to prevent damage to the coating.

32 Immediately before placing epoxy coated reinforcing steel bars in the forms, visually inspect
33 each bar for coating damage. Ensure that all coating damaged by any cause is satisfactorily
34 repaired, including hairline cracks and that each bar, including bar ends, is completely
35 encapsulated in epoxy coating or patching material at the time of concrete placement. Make
36 coating repairs as described in Subarticle 1070-7(K) with material specified in
37 Subarticle 1070-7(C). Do not coat more than 5% of surface area on each bar with patching
38 material including patching due to damage to the coating by the coater, fabricator, transporter
39 or contractor. The patching limits do not include holiday repairs, overspray and coated ends
40 of bars.

41 Do not expose epoxy coated reinforcing steel to the weather for more than 30 days after
42 placing in the forms. If the concrete is not placed within 30 days, cover the epoxy coated
43 reinforcing steel as required by Article 425-3.

44 Do not place reinforcement while placing concrete in the member involved.

45 Place, allow inspection and obtain approval for reinforcement in any member before placing
46 concrete.

1 **425-5 SPLICING**

2 **(A) General**

3 Furnish all reinforcement in the full lengths indicated in the plans.

4 Do not splice bars without written approval except where shown in the plans.

5 Provide splice lengths as shown in the plans.

6 Overlap sheets of wire reinforcement with each other sufficiently to maintain a uniform
7 strength and securely fastened to each other at the ends and edges. Lap at least the
8 dimension of one wire reinforcement.

9 **(B) Mechanical Butt Splices**

10 Provide mechanical butt slices for reinforcing steel in accordance with Article 1070-9
11 when called for in the plans.

12 Splice the bars in accordance with the manufacturer's recommendations using the
13 manufacturer's required accessories as approved by the Engineer. Use mechanical butt
14 splices only where specified in the plans. Any additional splices require approval.

15 **425-6 MEASUREMENT AND PAYMENT**

16 *Reinforcing Steel or Epoxy Coated Reinforcing Steel* will be measured and paid as the number
17 of pounds of steel bar reinforcement, reinforcing wire and plain rods shown in the plans as
18 being necessary to complete the work. Where the plans are revised, the quantity to be paid is
19 the quantity shown on the revised plans. Where directed to deviate from the plans; changing
20 the quantities of steel bar reinforcement, reinforcing wire and plain rods necessary to
21 complete the project; the quantity shown in the plans is increased or decreased by the
22 theoretical computed weight of reinforcing steel added or subtracted by the change.

23 *Spiral Column Reinforcing Steel or Epoxy Coated Spiral Column Reinforcing Steel* will be
24 measured and paid as the number of pounds of spiral column reinforcing shown in the plans
25 as being necessary to complete the work. Where the plans are revised, the quantity to be paid
26 is the quantity shown on the revised plans. Where directed to deviate from the plans;
27 changing the quantities of steel bar reinforcement, reinforcing wire and plain rods necessary
28 to complete the project; the quantity shown in the plans is increased or decreased by the
29 theoretical computed weight of spiral column reinforcing steel added or subtracted by the
30 change.

31 The quantity of reinforcing steel or spiral column reinforcing steel shown in the plans is
32 an estimate based on the theoretical computed weight of the steel necessary to complete the
33 work and will be used for pay purposes. No revision in this pay quantity nor any adjustment
34 in the contract unit price for *Reinforcing Steel* or *Spiral Column Reinforcing Steel* will be
35 made except where revisions in the plans affect the quantity of reinforcing steel or spiral
36 column reinforcing steel necessary to complete the work or where an error has been found in
37 the estimate of steel shown in the plans.

38 If the elevation of the top of a footing or the tip of a drilled pier is raised by a distance not
39 exceeding 3 ft, and the reinforcing steel or spiral column reinforcing steel for the substructure
40 unit has been fabricated before the elevation was raised, no decrease in the quantity of steel to
41 be paid will be made from the theoretical weight of steel shown in the plans for the original
42 substructure unit. Under the above circumstances the provisions of Article 109-6 will not
43 apply as the steel not used in the work shall remain the property of the Contractor and
44 payment for such steel will be made as provided above. No separate payment will be made
45 for the cost of cutting off reinforcing steel or spiral column reinforcing steel as payment at the
46 contract unit price per pound for the item of Reinforcing Steel or Spiral Column Reinforcing
47 Steel will be full compensation for cutting the steel.

Section 430

1 There will be no direct payment for reinforcing steel when the basis of payment or
2 compensation clause applicable to a particular section of the Specifications states that
3 payment at the contract unit or lump sum prices for the work covered by such section will be
4 full compensation for furnishing and placing reinforcing steel.

5 No separate payment will be made for the work of furnishing and placing wire reinforcement
6 as payment at the contract unit price for the item or items covering the structure containing
7 the wire reinforcement will be full compensation for such work.

8 These prices and payments will be full compensation for all items required to fabricate and
9 place reinforcement.

10 Payment will be made under:

Pay Item	Pay Unit
Reinforcing Steel	Pound
Epoxy Coated Reinforcing Steel	Pound
Spiral Column Reinforcing Steel	Pound
Epoxy Coated Spiral Column Reinforcing Steel	Pound

SECTION 430 ERECTING PRESTRESSED CONCRETE MEMBERS

14 430-1 DESCRIPTION

15 Furnish and erect precast-prestressed concrete bridge members other than piling. Furnish,
16 galvanize, place and paint, as applicable, bearing components, anchor bolts, washers, nuts,
17 structural and reinforcing steel, miscellaneous hardware, paint, bearing assemblies and all
18 other materials; handle, transport and store materials; furnish erection drawings; paint; set
19 bearings and anchorage; grout and erect and install the bridge members and all other items
20 necessary to complete the erection in accordance with the contract.

21 When used in this section, the term *prestressed concrete* refers to precast, pretensioned,
22 prestressed concrete.

23 430-2 MATERIALS

24 Refer to Division 10.

Item	Section
Bearing Plate Assemblies	1072-3
Elastomeric Bearings	1079-2
Organic Zinc Repair Paint	1080-9
Plain Steel Bars, Threaded Ends	1074-3
Precast-Prestressed Members	1078
Reinforcing Steel	1070
Structural Steel	1072

25 430-3 HANDLING AND STORAGE

26 Take special care in handling, transporting and storing prestressed members. Members
27 damaged while handled or transported will be rejected unless repaired to the satisfaction of
28 the Engineer.

29 Handle members at the bearings or at pick-up points designated in the plans unless using other
30 methods approved in writing.

31 Transport prestressed concrete bridge girders in a horizontal upright position. Locate points
32 of support and directions with respect to the girder approximately the same during
33 transportation and storage as when the member is in the final position within the structure.