

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The *Standard Specifications* currently don't provide requirements for maximum spacing of support devices or spacers used to support reinforcing bars. The Department has recently observed honeycombing on the underside of reinforced concrete slabs, and ground penetrating radar, GPR, results indicating top cover thickness which varied significantly from plan. These are indications that the spacing of support devices may have been too large, resulting in displacement of the reinforcing bars during the placement of concrete.

PROPOSED SOLUTION: Revise section 703 to provide an upper limit on the spacing of support devices, and explicitly allow bent reinforcing bars to be used as support devices.

APPLICABLE STANDARD SPECIFICATIONS: 703.06, 703.08

APPLICABLE STANDARD DRAWING: N/A

APPLICABLE DESIGN MANUAL CHAPTER: 405 (will be updated upon approval of specification change)

APPLICABLE SECTION OF GIFE: 5.12 (no changes anticipated)

APPLICABLE RECURRING SPECIAL PROVISION OR PLAN DETAILS: N/A

PAY ITEMS AFFECTED: N/A

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc committee including Mike Nelson, Andrew Pinkstaff, and Jim Reilman.

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE:
All contracts that include 703 pay items

IMPACT ANALYSIS (attach report):

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Date: April 5, 2024

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? No

Will approval of this item affect the Qualified Products List (QPL)? No

Will this proposal improve:

Construction costs? No

Construction time? No

Customer satisfaction? No

Congestion/travel time? No

Ride quality? No

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

For motorists? No

For construction workers? No

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? Yes

Will this change provide the contractor more flexibility? Yes

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? No

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO 2024 STANDARD SPECIFICATIONS

SECTION 703 – REINFORCING BARS

703.06 Placing and Fastening

703.08 Basis of Payment

(Note: Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 703, BEGIN LINE 52, DELETE AND INSERT AS FOLLOWS:

703.06 Placing and Fastening

Reinforcing bars shall not be ordered for piers or bents to be founded on soil or rock until the foundation conditions have been investigated. The bottom elevations of such footings will then be determined. Written permission will then be given to order such reinforcing bars. Sufficient excavation and all necessary soundings shall be made as directed so that exact bottom elevations of footings may be determined.

All dimensions shown on the plans for spacing of reinforcing bars apply to centers of bars unless otherwise noted. All bars shall be accurately placed and, during placing of the concrete, held firmly in the position as shown on the plans. Distances from the forms shall be maintained by means of chairs, ties, hangers, or other approved support devices. All reinforcing bars shall be wired rigidly or fastened securely at sufficient intervals to hold the bars in place. ~~Welding of reinforcing bars shall not be performed.~~ Epoxy coated reinforcing bars shall be tied with epoxy coated or plastic coated tie wire. ~~Chairs and supports holding upper layers of reinforcing bars shall support the transverse bars.~~ The upper layer and lower layer of reinforcing bars in RCBA's and bridge floors shall be tied or fastened at a minimum of every other intersection of the longitudinal and transverse bars to prevent an upward or a lateral movement of a bar from the planned position.

Layers of reinforcing bars shall be separated by ~~spacers~~ *support devices in accordance with 910.01(b)11 or epoxy coated reinforcing bars. Epoxy coated reinforcing bars used to separate and support layers of reinforcing bars shall be shop bent to the dimensions required to secure the layers of reinforcing bars in the positions shown on the plans. The size and spacing of support devices or epoxy coated reinforcing bars used as supports shall be such that the plan reinforcing bars are not displaced by the weight of concrete, upper layers of reinforcing bars, or construction loads, but in no case shall the spacing exceed 3 ft in any direction.* Reinforcing bars shall be separated from horizontal surfaces by being suspended or supported on approved ~~chairs and spacers~~ *support devices* capable of supporting the designed loads. Supports and spacers shall be of such shape as to be easily encased in concrete. That portion which is in contact with the forms shall be non-corrosive and non-staining material. They shall be of an approved type. ~~Vertical stirrups shall always pass around main tension members and shall be securely attached thereto.~~ The use of pebbles, pieces of broken stone or bricks, metal pipe, wooden blocks, and similar devices for holding bars in position will not be allowed.

SECTION 703, BEGIN LINE 132, DELETE AND INSERT AS FOLLOWS:

703.08 Basis of Payment

The accepted quantities of reinforcing bars will be paid for at the contract price per pound, complete in place.

REVISION TO 2024 STANDARD SPECIFICATIONS

SECTION 703 – REINFORCING BARS
703.06 Placing and Fastening
703.08 Basis of Payment

If the substitution of reinforcing bars larger than those specified is allowed, payment will be made for only that weight which would be required if the specified bars had been used.

If the use of reinforcing bar lengths shorter than those shown on the plans is allowed for convenience in transporting or placing the bars, payment will be based on the weight of the lengths shown on the plans.

Payment for threaded tie bar assemblies will be at the contract unit price per each, complete in place. If epoxy coating is specified, payment for the assemblies will be at the contract unit price per each for threaded tie bar assembly, epoxy coated.

Payment will be made under:

| Pay Item | Pay Unit Symbol |
|--|------------------------|
| Reinforcing Bars | LBS |
| Reinforcing Bars, Epoxy Coated..... | LBS |
| Threaded Tie Bar Assembly..... | EACH |
| Threaded Tie Bar Assembly, Epoxy Coated..... | EACH |

The cost of ~~metal chairs~~ *support devices or epoxy coated reinforcing bars used as supports*, spacers, clips, wire, or other mechanical means used for fastening or holding reinforcement in place, and laps shall be included in the cost of reinforcing bars. The cost of coating materials and repair of damaged or removed coating materials on reinforcing bars and on metal chairs, spacers, clips, or other mechanical means used for fastening or holding reinforcement in place, and laps shall be included in the cost of epoxy coated reinforcing bars. If threaded tie bar assemblies are used in lieu of spliced reinforcing bars as shown on the plans, the cost of such assemblies shall be included in the cost of reinforcing bars.

If WWR is required, the cost of furnishing and placing shall be included in the cost of the concrete in which it is placed.

