

San Antonio Water System Standard Specifications for Construction

ITEM NO. 301

Reinforcing Steel

301.1 DESCRIPTION: This item shall provide for the furnishing and placing of bar reinforcing steel for use in structures and other concrete items that require reinforcing steel as shown in the contract documents.

301.2 REFERENCED STANDARDS: Reference standards cited in this Specification Item No. 301 refer to the current reference standard published at the time of the latest revision date.

1. San Antonio Water System (SAWS):
 - a. Specifications for Water and Sanitary Sewer Construction
 - b. SAWS Materials Specifications
2. City of San Antonio (COSA) Specifications for Construction
3. American Society for Testing and Materials (ASTM) International:
 - a. ASTM A 615, Grades 60,75, or 80
 - b. ASTM A996, Type A, Grade 60
 - c. ASTM A996, Type R, Grade 60, permitted in concrete pavement only(Furnish ASRM A996, Type R bars as straight bars only and do not bend item. Bend tests are not required.) or
 - d. ASTM A706, Grades 60 or 80
4. Texas Department of Transportation Specification Item 440 Reinforcement for Concrete

301.3 SUBMITTALS: Contractor shall submit manufacturer's product data, instructions recommendations, shop drawings, and certifications. All submittals shall be in accordance with Engineer's requirements and submittals shall be approved prior to delivery.

301.4 MATERIALS: Reinforcing steel shall be grade 60 and all bar reinforcement shall be deformed, conforming to the latest provision of Item No. 440, "Reinforcing Steel" of the TxDOT Standard Specifications or most applicable approved equal provision.

San Antonio Water System Standard Specifications for Construction

Reinforcing steel bars produced outside of the United States are acceptable, if such bar reinforcement conforms to the requirements of the latest provision of the ASTM Specifications for the various designations of bars.

301.5 CONSTRUCTION: Unless otherwise shown on plans the reinforcing steel shall meet the requirements of this Section as set forth below.

1. **BENDING, TOLERANCES AND STORAGE:** Bending, tolerances and storage of reinforcing steel shall conform to the latest provision of Article 440.3.A-C, in Item No. 440, "Reinforcement for Concrete" of the TX-DOT Standard Specifications or most applicable approved equal provision.
2. **SPLICES:** No splicing of bars, except when provided in the contract documents, will be permitted without written approval of the Engineer.
3. **PLACING REINFORCEMENT:** All steel reinforcing shall be accurately placed in the position shown in the contract documents and firmly held during the placement and setting of concrete. All reinforcement shall be free from dust, rust, mill scale, paint, oil, mortar or foreign material. Bars shall be tied at all intersections. Where spacing of bars in each direction is less than 12 inches, only alternate intersections need be tied. Distances from forms shall be maintained by means of stays, precast blocks, ties, hangers, metal chairs or other approved supports. Blocks for holding reinforcing bars from contact with the forms shall be precast concrete blocks of approved shape and dimensions or other equally suitable devices. The use of pebbles, pieces of broken stones or brick, metal pipe and wooden blocks shall not be permitted. Reinforcement in any sections shall be placed and then inspected and approved by the Inspector before the placing of concrete begins.

301.6 MEASUREMENT: The measurement of quantities of bar reinforcing furnished and placed will be based on the calculated weight of the steel actually placed in accordance with the contract documents with no allowance made for added bar lengths or splices, nor for extra steel used when bars larger than those specified are substituted with the permission of the Engineer. Tie wires and supporting devices will not be included in the calculated weights. The calculated weight of bar reinforcement will be determined using the theoretical bar weight set forth in Table No. 1, with no allowance for overrun or under runs:

San Antonio Water System Standard Specifications for Construction

301.7 PAYMENT: Reinforcing Steel measured, as provided above, will be paid for at the contract unit price bid per pound of "Reinforcing Steel," which price shall be full compensation for furnishing, bending, fabricating, welding and placing reinforcement; for all clips, blocks, metal spacers, ties, wire or other materials used for fastening reinforcement in place, and for all tools, labor, equipment and incidentals necessary to complete the work.

1. Payment for reinforcing an item which specifically includes the cost of reinforcement shall be paid for as provided in the specifications for those items.

TABLE 1			
Bar size, number	Nominal diameter, inches	Nominal Area, square inches	Weight, pound per linear foot
2	0.250	0.05	0.167
3	0.375	0.11	0.376
4	0.500	0.20	0.668
5	0.625	0.31	1.043
6	0.750	0.44	1.502
7	0.875	0.60	2.044
8	1.000	0.79	2.670
9	1.128	1.00	3.400
10	1.270	1.27	4.303
11	1.410	1.56	5.313
14	1.693	2.25	7.65
18	2.257	4.00	13.60

-End of Specification-