

Special Provision to Item 447

Structural Bolting



Item 447, "Structural Bolting" of the Standard Specifications is amended with respect to the clause cited below. No other clauses or requirements of this Item are waived or changed.

Article 447.2.2., "Bolt Assemblies." The first paragraph is replaced by the following:

Bolt Assemblies. Provide ASTM F3125 bolts and nuts and washers meeting the type, grade, and finish requirements in Table 1, unless otherwise shown in the plans.

Article 447.2.2., "Bolt Assemblies." The second paragraph is replaced by the following:

Use Grade A325 or Grade A490 Type 3 plain (uncoated) bolts for weathering steel as indicated and Grade A325 Type 1 galvanized bolts for coated steel, unless otherwise shown on the plans.

Article 447.2.2., "Bolt Assemblies." Table 1 is replaced by the following:

Table 1
ASTM Type, Finish, and Grade for Structural Bolts, Nuts, and Washers

	Bolt ¹ Grade	Bolt Type	Bolt Finish	ASTM A563 Nut Grade and Finish	ASTM F436 Washer Type and Finish
Heavy-Hex Bolts ¹	A325	1	Galvanized	DH, ² galvanized and lubricated	1; galvanized
	A325	3	Plain	C3 and DH3; plain	3; plain
	A490	3	Plain	DH3; plain	3; plain
Tension-Control Bolts ¹	F1852	1	Galvanized	DH, ² galvanized and lubricated	1; galvanized
	F1852	3	Plain	C3 and DH3; plain	3; plain
	F2280	3	Plain	DH3; plain	3; plain

1. ASTM F3125 High Strength Structural Bolts
2. ASTM A194 Heavy Hex Grade 2H nuts may be substituted.

Article 447.2.6., "Fitup Bolts and Erection Pins." The first paragraph is replaced by the following:

Fitup Bolts and Erection Pins. Provide heavy-hex fitup bolts of the same diameter as the connection bolts. Do not use washer-type indicating devices for fitups. Do not reuse galvanized bolts or Grade A490 bolts that have been used as fitup bolts. Provide a sufficient number of erection or drift pins, 1/32 in. larger than the bolt diameter.

Article 447.4.3., "General." The second sentence of the third paragraph is replaced by the following:

Install hardened washers under both the nut and bolt head of Grade A490 bolts when the outer plies being fastened have a yield strength less than 40 ksi.

Article 447.4.3., “General.” Table 2 is replaced by the following:

**Table 2
Bolt Tension**

Nominal Bolt Size, in.	Minimum Tension (kips)	
	Grade A325 Bolts	Grade A490 Bolts
½	12	15
5/8	19	24
¾	28	35
7/8	39	49
1	51	64
1-1/8	56	80
1-1/4	71	102
1-3/8	85	121
1-1/2	103	148

Article 447.4.5.2., “Install Bolts.” The second paragraph is replaced by the following:

Fully tighten a minimum number of bolts as directed until the plies are in full contact if snugging does not bring the plies of the joint into full contact. Mark these bolts as fitup bolts. Use a non-galvanized Grade A325 bolt of the same diameter as a fitup bolt in connections requiring the use of galvanized Grade A325 bolts. Re-snug all remaining bolts.

Article 447.4.5.3., “Tension Bolts.” The first paragraph is replaced by the following:

Tension Bolts. Loosen all fitup bolts after tensioning all the other bolts in the connection. Ungalvanized Grade A325 bolts used as fitup bolts may be reused in a connection using this type of bolt. Replace all galvanized bolts and Grade A490 bolts used as fitup bolts. Tension these remaining untensioned bolts in accordance with this paragraph. Ensure the element not turned by the wrench (bolt head or nut) does not rotate.

Article 447.4.5.4., “Bolt Reuse.” The first paragraph is replaced by the following:

Bolt Reuse. Do not reuse Grade A490 or galvanized Grade A325 bolts. Ungalvanized Grade A325 bolts may be reused one time if the threads have not been damaged. Re-tensioning previously tensioned bolts loosened by the tensioning of adjacent bolts is not considered to be reuse.