ORIGINATION FORM
Proposed Revisions to the Specifications
(Please provide all information - incomplete forms will be returned)

Date: 4/28/23

Office: Central Office - Materials

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Article/Subarticle: 962-1; 962-5; 962-7; 962-8; 962-

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Associated Section(s) Revisions: MM 11.1, MM 5.6V1

Will the proposed revision require changes to the following Publications:

Publication	Yes	No	Office Staff Contacted	Date
Standard Plans Index	○	●	Rick Jenkins/Joshua Turley	4/28/23
Traffic Engineering Manual	○	●	Mariano Amicarelli	4/28/23
FDOT Design Manual	○	●	DeWayne Carver	4/28/23
Construction Project Administration Manual	○	●	Patrick Overton	4/28/23
Basis of Estimate/Pay Items	○	●	Ryan Gray	4/28/23
Structures Design Guidelines	○	●	Ben Goldsberry	4/28/23
Approved Product List	○	●	Karen Byram	4/28/23
Materials Manual	○	●	Susan Musselman/Brad Pearson	4/28/23
Maintenance Specs	○	●	Deanna Hutchison	4/28/23

Will this revision necessitate any of the following:

Design Bulletin ☐ **Construction (DCE Memo)** ☐ **Estimates Bulletin** ☐ **Materials Bulletin** ☐

Have all references to internal and external publications in this Section been verified for accuracy? YES

Synopsis: Summarize the changes:

Removed the requirement to be an approved production facility for several categories (oversight by the FDOT audit program). Individual specifications will be updated to reflect national auditing agencies or the use of qualified weld inspectors.

Justification: Why does the existing language need to be changed?

There was a change in the direction of the Materials audit program. These changes required updated language to avoid confusion at the project level. The current language in the specification (materials, certification) should already be suitable to mitigate this change.

Do the changes affect either of the following types of specifications (Hover over type to go to site.):

Special Provisions ☐ **Developmental Specifications** ☐

List Specifications Affected: (ex. SP3270301, Dev330TL, Dev334TL etc.)

Contact the State Specifications Office for assistance completing this form.

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1. Are changes in line with promoting and making meaningful progress on improving safety, enhancing mobility, inspiring innovation, and fostering talent; explain how?

will primarily foster new talent. There are other producers who are potentially qualified to produce material to FDOT standards. This Specification change will allow the Contractor to use more markedly available producers.

2. What financial impact does the change have; project cost, pay item structure, or consultant fees?

There are no anticipated cost changes to the Contract.

3. What impacts does the change have on production or construction schedules?

There should be no negative impact and potentially less delays because more producers will be available to the Contractor to select from and deliver on a project.

4. How does this change improve efficiency or quality?

Improvements to efficiency. More producers are available to the Contractor. The current current language within the Specification should be suitable to mitigate this change.

5. Which FDOT offices does the change impact?

Construction could be positively impacted. The Contractors ability to select from other producers may give projects more flexibility to deliver on time.

6. What is the impact to districts with this change?

Districts should see a faster turnaround time in the Contractors ability to deliver a product on time.

7. Does the change shift risk and to who?

Risk moves slightly to the Contractor as they will be responsible for identifying the producers for several miscellaneous metal products.

8. Provide summary and resolution of any outstanding comments from the districts or industry.

Industry is aware of the potential change. Some are encouraged while others are concerned that they may be challenged by cheaper producers who will cut corners. The inclusion of a qualified welding inspector for final approval will be added to individual specifications as appropriate to mitigate that concern. Comments and Responses are available on the Track the Status of Revisions hyperlink located on the Specifications landing page: https://www.fdot.gov/programmanagement/Specs.shtm

9. What is the communication plan?

SMO will notify all impacted producers about the change taking place in January 2024. SMO will also share with them known companies who work in Florida and provide independent weld inspection services so they can plan to bid and schedule future projects accordingly. If they choose to certify an individual internally (making them more competitive), they will have time to implement that change as well. Florida will have an advantage as the American Welding Society is based here in Florida. Through the established specification revision process (e.g., Internal and Industry Review).

10. What is the schedule for implementation?

January 1, 2024, SMO will alert the producers impacted that we would remain the stewards of the specification language and reassure that SMO will continue to reach out with specification changes in the future. SMO will make it clear that they will no longer be required to be audited by FDOT to be approved. The Standard Specifications e-Book and Workbook are effective July 1st every year.

STRUCTURAL STEEL AND MISCELLANEOUS METAL ITEMS (OTHER THAN ALUMINUM)
(REV 4-28-23)

SECTION 965 is deleted and the following substituted:

962-1 General.

This Section covers the material and fabrication requirements for structural steel and miscellaneous metal components. All steel must be melted and manufactured in the United States and meet Section 6-5.2. All overhead cantilevers, monotubes, trusses and gantries, ~~iron castings, steel gratings, fencing, field splices filler metals,~~ and bridge components (including steel castings, steel forgings, and bearing material) supplied under this Specification shall be from producers currently on the Department's Production Facility Listing. Producers seeking inclusion on the Department's Production Facility Listing must meet the requirements of Section 105. Provide certifications that meet the applicable section and 962-12.

962-2 Structural Steel.

962-2.1 Structural Steel Materials: Provide structural steel for bolted or welded construction that meets the requirements of Table 962-1.1 and 962-1.2 when impact testing is specified. Grade HPS 70W shall not be substituted for Grade HPS 50W. Weathering steel shall not be substituted for non-weathering steel without Engineer approval.

Do not apply heat treatment unless approved by the Engineer. When galvanizing is specified, provide galvanizing in accordance with 962-11.1.

Table 962-1
Structural Steel Materials

Product	ASTM	Grade/Style	Reportable Properties	Supplementary Requirements
Plate	A709	36	Composition, Yield Strength, Tensile Strength, Elongation, Killed	None
		50		
		50S		Carbon Equivalency
		50CR		Heat-treating temperatures
		50W	Composition, Yield Strength, Tensile Strength, Elongation, Killed, Fine Grain	Corrosion Resistance Index
		HPS 50W		Corrosion Resistance Index, Heat Treatment Temperatures
		HPS 70W		

962-2.2Impact Requirements: Structural steel subject to tensile stress for main load-carrying members shall meet the impact requirements listed in Table 962-2. Mill test reports shall identify average impact test values. Provide certifications that meet this section and 962-12.

For non-fracture and fracture critical tension components, provide structural steel in accordance with ASTM A709.

Table 962-2
Requirements for Impact Testing Structural Steel

Product	ASTM	Grade	Zone	Minimum Average Energy (ft*lbf)	
				Non-Fracture Critical	Fracture Critical
Structural Steel	A709	36	1	15 at 70°F	25 at 70°F
		50 50W 50S		15 at 70°F (≤ 2.0”t) 20 at 70°F (> 2.0”t)	25 at 70°F (≤ 2.0”t) 30 at 70°F (> 2.0”t)
		50CR		15 at 70°F	25 at 70°oF
		HPS 50W		20 at 10°F (≤ 2.0”t) 25 at 50°F (> 2.0”t)	30 at 10°F (≤ 2.0”t) 35 at 50°F (> 2.0”t)
		HPS 70W		25 at -10°F	35 at -10°F
Structural Steel Tubing	A500	B, C, D		15 at 70°F	25 at 70°F
	A501	A, B			
	A847	Round, Square, Rectangle, Special			

Note: If yield ≥15 ksi above specified grade, test temperature must drop 15°F for each 10 ksi above grade.

962-3 Steel Castings.

Provide carbon steel and corrosion resistant castings in accordance with this section and Table 962-3.

962-3.1 Carbon Steel Castings: Perform heat treatments by annealing, normalizing, normalizing & tempering, or quenching & tempering after castings have been allowed to cool from the pouring temperature to below the transformation temperature range as regulated by the use of pyrometers. Class 1 castings shall be used if post-weld heat treatment is specified in the contract documents.

962-3.2 Corrosion Resistant Steel Castings:

Perform heat treatments by air cooling and tempering; or annealing as defined in ASTM A743 Table 1.

Table 962-3
Requirements for Steel Castings

Product	Standard	Grade	Class	Reportable Properties	Supplementary Requirements
Carbon Steel	ASTM A27	65-35, 70-36	1, 2	Composition, Tensile, Class	None
	ASTM A743	CA 15M	All		S11, S12

Corrosion Resistant Steel	AASHTO M 163			Composition, Heat Treatment	

962-4 Steel Forgings.

Provide carbon steel and alloy steel forgings from which pins, rollers, trunnions, shafts, gears, or other forged parts are fabricated in accordance with this section and Table 962-4.

The manufacturer may elect to choose from any of the class specific heat treatments identified in the Table 962-4, provided that the controlling cross-sectional thickness meets mechanical property test requirements. Retreatment by re-austenitizing a lot is allowed up to three times when the mechanical properties have not been met. Re-testing of the mechanical properties is required on any lot subject to retreatment.

Table 962-4
Requirements for Steel Forgings

Product	Standard	Class	Reportable Properties	Supplementary Requirements
Steel Forgings	ASTM A668 AASHTO M 102	C, D, F, G	Composition, Tensile, Yield, Elongation, Hardness	S7

962-5 Iron Castings.

Provide iron castings that conform to the requirements of this section and Table 962-5. When galvanizing is specified in the contract, galvanize in accordance with 962-11. ~~Use producers listed on the Department's Production Facility Listing for galvanizing.~~

962-5.1 Gray Iron Castings: Provide gray iron castings that conform to the requirements of this section and Table 962-4. AASHTO HL-93 load testing may be substituted for tensile testing when specified in the contract documents. When Alternative G castings are specified, provide a composition that precludes the possibility of embrittlement during the normal thermal cycle of hot-dip galvanizing.

962-5.2 Ductile Iron Castings: Perform full ferritizing anneal to remove carbides or stabilized pearlite. AASHTO HL-93 load testing may be substituted for tensile testing when specified in the contract documents.

962-5.3 Malleable Iron Castings: Perform heat treatments in the same production furnace and in the same cycles as the castings they represent. Produce a microstructure consisting of temper carbon nodules distributed through a ferritic matrix and free of excessive pearlite, massive carbides, and primary graphite. When critical sections of the production castings differ appreciably from that of the central portion, the time cycle for tempering may be altered from that of the production lot in order to obtain similar microstructures, or hardness, or both.

When Alternative G castings are specified, provide a composition that precludes the possibility of embrittlement during the normal thermal cycle of hot-dip galvanizing, or provide heat treatment that immunizes the casting against embrittlement during the normal thermal cycle of hot-dip galvanizing.

Table 962-5 Requirements for Iron Castings				
Product	Standard	Grade/Class	Reportable Properties	Supplementary Requirements
Gray Iron Traffic Service	AASHTO M 105 & AASHTO M 306	35B	Tensile*	None
Gray Iron Machinery	AASHTO M 105	30	Tensile	None
Ductile Iron	ASTM A536	60-40-18	Tensile*, Yield, Elongation, Heat Treatment	Additional Tensile test for castings > 1,000 lbs.
Malleable Iron	ASTM A47	30518 [24118]	Tensile, Yield, Elongation, Heat Treatment	None
*AASHTO HL-93 may be substituted for tensile testing of vaned gratings, when specified in the contract.				

962-6 Bolts, Nuts and Washers Not Designated as High-Strength.

Provide bolts, nuts, and washers not designated as high strength meeting the requirements listed in this Section and Table 962-6. When galvanizing is specified in the contract documents, provide galvanizing in accordance with 962-11.3.1.

Use double nuts, when ordinary rough or machine bolts are specified in the Contract Documents. Bolted assemblies shall be made of similar coating composition. When weathering material is used, provide the entire assembly in weathering steel. Bolts meeting the requirements of ASTM A193, washers meeting the requirements of ASTM F844 and nuts meeting the requirements of ASTM A194 or AASHTO M292 may be used with the Engineer's approval.

Table 962-6 Bolts, Nuts, and Washers Not Designated as High-Strength				
Product	Standard	Grade	Style	Reportable Properties
Bolts	ASTM A307	A, B	Heavy Hex, Threaded Rod	Size, Composition, Hardness, Tensile
	ASTM A449	1, 3	Hex, Threaded Stud	Size, Composition, Tensile, Proof Load, Hardness
	ASTM F593	Group 2 316 or 316L	Condition A CW1 or SH1	Alloy, Group, Condition
	ASTM A193*	B7, B16	Any	Size, Composition, Hardness, Heat

Table 962-6 Bolts, Nuts, and Washers Not Designated as High-Strength				
Product	Standard	Grade	Style	Reportable Properties
				Treatment, Macroetch results
Nuts	ASTM A563	A	Hex	Size, Composition, Proof Load, Hardness
		C, C3, DH, DH3	Heavy Hex	
	ASTM F594	Group 2 316 or 316L	CW	Alloy, Group, Condition
	ASTM A194*	2, 2H	Hex, Heavy Hex	Composition, Hardness, Proof Load
	AASHTO M 292*	2, 2H	Hex, Heavy Hex	Size, Composition, Hardness, Heat Treatment, Macroetch results
Washers	ASTM F436	1, 3	Circular, Beveled, Clipped, Extra Thick	Size, Hardness
	N/A	316 or 316L	Any	Alloy, Size
	ASTM F844*	Plain	Round, Miscellaneous	Size
	ASTM A36	All	N/A	Killed, Thickness
Shims	ASTM A1011	Any	Any	None
	ASTM A109	Any	Any	None
	ASTM B36	Brass	Any	None

962-7 High-Strength Bolts, Nuts, Washers and Direct-Tension-Indicator (DTI) Devices.

Provide high-strength bolts, nuts, washers and DTI devices in accordance with this Section and Table 962-7. High-strength bolts shall have identifying marks meeting ASTM F3125 Table 2 and ASTM A563. High-strength bolted assemblies shall be made of similar coating composition. When galvanizing is specified in the contract documents, provide galvanizing in accordance with 962-11.3.2. Bolts meeting the requirements of ASTM F3125 Grade A490, washers meeting the requirements of ASTM F844, and nuts meeting the requirements of ASTM A194 or AASHTO M 292 may be used with the Engineer’s approval.

Table 962-7 Requirements for High-Strength Steel Fastener Assemblies					
Products	Standard	Grade	Type/ Style	Reportable Properties	Supplementary Requirements
Bolts	ASTM F3125	A325	Heavy Hex	Size, Composition, Tensile, Proof Load, Hardness,	None
		A490*		Size, Composition, Tensile, Proof Load, Hardness, Magnetic Particle, Carburization/ Decarburization	
	ASTM A193	B7, B16	Any	Size, Composition, Hardness, Heat Treatment, Macroetch results	S5
Nuts	ASTM A563	DH, DH3	Heavy Hex	Size, Composition, Proof Load, Hardness	S1, S2 min. 89 HRB or 180 HB
	ASTM A194*	2H	Heavy Hex	Size, Composition, Hardness	Max HRC32
	AASHTO M 292*	2H	Heavy Hex	Size, Composition, Hardness, Heat Treatment, Macroetch results	Max HRC32
Washers	F436	Circular, Beveled, Clipped, Extra Thick	1, 3	Size, Hardness	None
	F844*	Round, Miscellaneous	Plain	Size	None
	ASTM A709	36, 50	Any	Yield, Tensile, Elongation, Killed	None
DTI Devices	F959	A325	1	Size, Composition, Compression Load, Hardness	None
			3	Size, Composition, Compression Load, Hardness, Corrosion Resistance Index	
*Requires Engineer Approval.					

962-8 Anchor Rods and Bridge Bearing Materials.

962-8.1 Bearing and Masonry Plate: Meet the requirements of Table 962-8. Masonry plates and bearings shall be welded in accordance with AASHTO/AWS D1.5 Bridge Welding Code. When galvanizing is specified meet the requirements of 962-11.1. ~~Use producers listed on the Department's Production Facility Listing for galvanizing.~~

Table 962-8
Requirements for Bearings and Masonry Plate

Product	ASTM	Grade	Style	Reportable Properties	Supplementary Requirements
Plate	A709	50W	All	Yield, Tensile, Elongation, Killed, Fine Grain	Corrosion Resistance Index
Laminates	A240	316	Gage 16	Yield, Tensile, Elongation, Hardness	None
	A1011	36	HSLAS, Class 1	Designation, Style	None
	A36	All	All	Yield, Tensile, Elongation, Killed	None

962-8.2 Anchor Rods and Bearing Hardware: Provide anchor rods and other bearing hardware in accordance with this section and Table 962-9. All fastening components shall be made of similar composition. When galvanizing is specified in the contract documents, provide galvanizing in accordance with Section 962-11.3.1. Anchor rods meeting the requirements of ASTM A307, washers meeting the requirements of ASTM F844, and nuts meeting the requirements of ASTM A194 may be used with the Engineer's approval.

Table 962-9
Requirements for Anchor Rods and Bearing Hardware

Product	ASTM	Grade	Style	Reportable Properties	Supplementary Requirements
Bolts	F1554	36	Threaded Rod	Lot, Size, Tensile	None
		55		Lot, Size, Tensile, Carbon Equivalency	S1
		105		Lot, Size, Tensile, Carbon Equivalency	S3
	A307*	A, B	Threaded Rod	Size, Composition, Hardness, Tensile	S1
Nuts	A563	DH	Heavy Hex	Size, Composition, Proof Load, Hardness	None
	A194*	2H	Heavy Hex	Size, Composition, Hardness	None
Washers	F436	1, 3	Circular, Beveled,	Size, Hardness	None

Table 962-9 Requirements for Anchor Rods and Bearing Hardware					
Product	ASTM	Grade	Style	Reportable Properties	Supplementary Requirements
			Clipped, Extra Thick		
	F844*	Plain	Round, Miscellaneous	Size	None
Plate	A36	All	All	Yield, Tensile, Elongation, Killed	None
Shim	A653	All	Min. G30	Grade	None
	A1008 A36	All	A153, F2329	None	None
*Requires Engineers Approval.					

962-9 Overhead Signs.

Provide overhead sign materials in accordance with this section Table 962-2, and Table 962-10. When galvanizing is specified, meet the requirements of 962-11.1. Produce welds using E7018 electrode, in accordance with AWS D1.1 Structural welding Code.

Table 962-10 Requirements for Overhead Signs					
Product	Standard	Grade	Type/ Style	Reportable Properties	Supplementary Requirements
Upright Pipe	API 5L	X42R, X42N, X42M, X46N, X46M, X52N, X52M, X56N, X56M, X60N, X60M, X65M, X70M	PSL2	Killed, Fine Grain, Tensile, CVN Test	N/A
	A500	B, C	Round Structural	Composition, Yield, Tensile, Elongation	UT Seam Weld, (per API 5L) CVN Test per 962-2
Chords	A500	B, C	Round Structural	Composition, Yield, Tensile, Elongation	N/A
Plate, Angles &	A709	50	Plates & Shapes	Composition, Yield, Tensile, Elongation	N/A
	A36	36			Yield > 50ksi

Table 962-10 Requirements for Overhead Signs					
Product	Standard	Grade	Type/ Style	Reportable Properties	Supplementary Requirements
Handhole Frame					
Poles	A1011	50, 55, 60, 65	Any	Designation, Grade	N/A
	A572	50, 55, 60, 65	1, 2, 3, 5	Composition, Tensile, Type, Killed	N/A
	A595	A, B	Any	Composition, Tensile, Type, Killed	N/A

962-10 Miscellaneous Metal Items.

962-10.1 General: Unless otherwise specified in the contract documents, provide miscellaneous metal components in accordance with this section and Table 962-11, Table 962-12, Table 962-13, or Table 962-14. Structural tubing subject to tensile stresses, as defined in Section 460, shall meet Table 962-2.2 for tension components, Zone 1. Welding shall be done in accordance with the most current AWS D1.1 structural welding code. When galvanizing is specified in the contract documents, provide galvanizing in accordance with the contract documents.

Requirements for concrete reinforcement are contained in Section 931.

Requirements for steel guardrail are contained in Section 967.

Table 962-11 Requirements for Miscellaneous Metals				
Product	Standard	Grade	Type/ Style	Reportable Properties
Steel Sheet Piling	A328	All	Cold Rolled, Heat Treated	Composition, Tensile, Killed
	A572	42, 50, 55, 60, 65	1, 2, 3, 5	Composition, Tensile, Size, Killed
	A690	All	All	Composition, Tensile, Killed
Steel Pipe Piling	A252	3	All	Composition, Tensile, Size
	API 5L	X46, X52, X56, X60, X65, X70	PSL1	Tensile
			PSL2	Killed, Fine Grain, Tensile
Structural Tubing	A500	Round	B, C	Composition, Tensile, Flattening Test, Impact (Zone 1), Size
		Shaped		Composition, Tensile, Impact (Zone 1), Size
	A501	Square, Round, Rectangular, Special	A, B	Composition, Tensile, Impact (Zone 1), Size

Table 962-11 Requirements for Miscellaneous Metals				
Product	Standard	Grade	Type/ Style	Reportable Properties
	A847	Round	Welded, Seamless	Composition, Tensile, Flattening, Impact (Zone 1), Size
		Square, Rectangle, Special	Welded, Seamless	Composition, Tensile, Impact (Zone 1), Size
Pipe Railing	A53	A, B	E, S	Composition, Mechanical Testing (Tensile, Bend, Flattening), Size

962-10.2 Field Splice Filler Materials: Provide field splice filler materials in accordance with the contract documents. If unspecified and less than 3/16 inches thick filler splice materials in accordance with this section and Table 962-12. Filler plates may also meet the appropriate grades specified in 962-2. When galvanized plate is specified, galvanize material in accordance with 962-11~~use producers listed on the Department's Production Facility Listing for galvanizing~~.

Table 962-12 Requirements for Field Splice Filler Materials				
Product	Standard	Grade	Type/ Style	Reportable Properties
Filler Sheet	A1011	50	HSLAS, Class 1	Designation, Grade

962-10.3 Fencing Material: Provide fencing materials in accordance with this Section and Table 962-13. When galvanizing is specified, provide galvanizing in accordance with the contract documents. ~~Use producers listed on the Department's Production Facility Listing for Coated Steel Fencing.~~.

Table 962-13 Material Requirements for Fencing				
Product	Standard	Grade / Type	Style	Reportable Properties
Fabric	A116	60	No. 9	Breaking Strength, Coating Weight
		175	No. 12-1/2	
	A584	175	No. 12-1/2	
	M181	1, 2, 4	No. 9	
	A392	All	No. 9	
	A491	All	No. 9	
	F668	All	No. 9	
Posts	A702	50	Carbon, Rail	Tensile or Hardness
Pipe, Tube	A53	A, B	E, F, S	Grade, Finish

Table 962-13 Material Requirements for Fencing				
Product	Standard	Grade / Type	Style	Reportable Properties
	F1083	Schedule 40	High Strength	Schedule
	F1043	1C	All	Group, Coating, Type
		1A	High strength	
Beam	A36	36	All Shapes	Grade, Killed
	A572	42		
	A992	50		
Sheets	A1011	36, 45, 50	HSLAS, HSLAS-F, SS	Designation, Style

962-10.4 Steel Grates: Provide steel grating in accordance with this section and Table 962-14. When vaned gratings are specified, AASHTO HL-93 load testing may be substituted for tensile testing when specified in the contract documents. When Alternate G is specified, provide galvanizing in accordance with 962-11.1.

~~Use producers listed on the Department's Production Facility Listing for galvanizing.~~

Table 962-14 Requirements for Steel Grating				
Product	Standard	Grade	Type/ Style	Reportable Properties
Steel Grating	A242	50	1	Composition, Tensile*, Killed
	A572		1, 2, 3, 5	Composition, Tensile*, Size, Killed
	A588		A, B, K	Composition, Tensile*, Fine Grain
	A1011	Any	SS, HSLAS, HSLAS-F	Designation, Style
* AASHTO HL-93 may be substituted for tensile testing for vaned gratings when specified.				

962-11 Galvanizing.

962-11.1 Plates, Structural Shapes, Bars, and Strip: When galvanizing is specified in the Contract Documents for ferrous metal products, provide galvanizing in accordance with the requirements of ASTM A123 or AASHTO M111. Zinc composition shall meet "Intermediate Grade" in accordance with ASTM B6 and Table 962-15. ~~Use galvanizers listed on the Department's Production Facility Listing for hot-dip galvanizing.~~

Table 962-15 Requirements for Galvanizing Bath Composition			
Product	Zinc (Zn)	Lead (Pb)	Tin (Sn)

Galvanizing Bath	≥ 99.00%	≤ 0.50%	≤ 0.10%

962-11.2 Castings: When Alternative G castings are specified in the contract documents, provide galvanizing in accordance with the requirements of ASTM A123 or AASHTO M111. Zinc composition shall meet 962-11.1.

962-11.3 Fasteners and Hardware:

962-11.3.1 Fasteners and Hardware Designated Not High-Strength: When zinc coating is required in the contract documents provide galvanizing of steel or malleable iron in accordance with the requirements of ASTM A153.

962-11.3.2 Fasteners and Hardware Designated as High-Strength: When zinc coating is required in the Contract Documents, provide galvanizing in accordance with Table 962-16. Coating of ASTM F3125, A490 bolts is prohibited. Bake all hot dipped or electroplated bolt, rod, or bar with a tensile strength greater than or equal to 150 ksi to remove any residual hydrogen.

Table 962-16
Coating Requirements for Fastener and Hardware Designated as High-Strength

Product	ASTM	Grade	Type/Style	Coating Finish
Bolts	F3125	A325	1	ASTM B695, Class 55 ASTM F2329
		A490	All	Do Not Galvanize
Anchor Rods	F3125	A325	1	ASTM B633 SC 3, Type II
		A490	All	Do Not Galvanize
	F1554	105	All	ASTM B633 SC 3, Type II
Anchor Rods	F1554	36, 55	All	ASTM B695 Class 55 ASTM F2329
Nuts	A563	A, C, D, C3, DH, DH3	Hex, Heavy Hex	
	A194	1, 2	All	
Washers	F436	Circular, Beveled, Clipped, Extra Thick	1	
	F844	Round, Miscellaneous	A	
DTI Devices	F959	A325	1	

962-12 Certifications and Verification.

962-12.1 General: Provide certifications for steel directly from the Mill. Mill certifications shall show compliance to the specification and include the reportable properties and supplementary requirements from the applicable sections listed above.

When secondary processing, or testing has occurred, in addition to the mill certificate, provide a certified mill analysis signed by a quality control representative that show compliance with and the test results of the applicable sections listed above.

When material meeting “Buy America” is specified, the mill certification or certified mill analysis shall identify that the included material meets the Source of Supply-Steel requirements in Section 6.