Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

JARED W. PERDUE, P.E.
SECRETARY

August 4, 2026

Daniel Holt, PE, PTOE
Director, Project Delivery
Director, Technical Services
FHWA
400 West Washington Street, Suite 4200
Orlando, FL 32801

Re: State Specifications Office
Section: 962
Proposed Specification: **9620202 Structural Steel and Miscellaneous Metal Items (Other Than Aluminum)**

Dear Mr. Holt:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

The changes are proposed by Oliver Chung to update the metal grades or requirements according to the appropriate ASTM standards.

Please review and transmit your comments, if any, within two weeks (10 business days). Comments should be sent via email daniel.strickland@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at (850) 414-4130.

Sincerely,

Signature on File

Daniel Strickland, P.E.
State Specifications Engineer

DS/am
Attachment
cc: Florida Transportation Builders' Assoc.
State Construction Engineer

STRUCTURAL STEEL AND MISCELLANEOUS METAL ITEMS (OTHER THAN ALUMINUM)
(REV 5-18-26)

SUBARTICLE 962-2.2 is deleted and the following substituted:

962-2.2 Impact Requirements: Structural steel subject to tensile stress for primary 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.

Table 962-2
Requirements for Impact Testing Structural Steel

Product	ASTM	Grade	Zone	Minimum Average Energy (ft*lbf)	
				Members Not Requiring FC Practice	Members Requiring FC Practice
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			

Notes:
1. If yield ≥15 ksi above specified grade, test temperature must drop 15°F for each 10 ksi above grade.
2. FC – Fracture Control

ARTICLE 962-7 is deleted and the following substituted:

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. Use the appropriate nuts and washers as stated by this section and the corresponding ASTM bolt standard. Nuts shall have identifying marks meeting ASTM A563. When galvanizing is specified in the contract documents, provide galvanizing in accordance with 962-11.3.2.

Table 962-7 Requirements for High-Strength Steel Fastener Assemblies					
Products	Standard	Grade	Type/ Style	Reportable Properties	Supplementary Requirements
Bolts	ASTM F3125	A325	1, 3 Heavy Hex	Size, Composition, Tensile, Proof Load, Hardness,	None
	ASTM A354*	BC	Heavy Hex	Size, Composition, Hardness, Heat Treatment, Macroetch results	None
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
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
	ASTM A36	36	Any	Yield, Tensile, Elongation, Killed	None
DTI Devices	F959	A325	1	Size, Composition, Compression Load, Hardness	Only use with ASTM F436 washers
			3	Size, Composition, Compression Load, Hardness, Corrosion Resistance Index	
*Requires Engineer approval.					

SUBARTICLE 962-8.2 is deleted and the following substituted:

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.~~ Use the appropriate nuts and washers as stated by this section and the corresponding ASTM bolt standard.

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, A	Hex, Heavy Hex	Size, Composition, Proof Load, Hardness	None
	A194*	2H	Heavy Hex	Size, Composition, Hardness	None
Washers	F436	1, 3	Circular, Beveled, Clipped, Extra Thick	Size, Hardness	None
	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.					

ARTICLE 962-9 is deleted and the following substituted:

962-9 Miscellaneous Structures.

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 electrodes selected from the filler metals for matching strength tables, in accordance with AWS D1.1 Structural Welding Code.

Table 962-10 Requirements for Miscellaneous Structures					
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~~N/A
Chord	A500	B, C	Round Structural	Composition, Yield, Tensile, Elongation	N/A
Plate, Angles & Handhole Frame	A709	50	Plates & Shapes	Composition, Yield, Tensile, Elongation	N/A
	A36	36			N/A
Tapered Tube	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

SUBARTICLE 962-10.2 is deleted and the following substituted:

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.

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

SUBARTICLE 962-11.3.2 is deleted and the following substituted:

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 962-15. 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 962-15
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 (not allowed for bridges)
	A354	BC	Heavy Hex	
	A324	BC	Any	
Anchor Rods	F1554	105	All	ASTM B633 SC 3, Type II
	F1554	36, 55	All	ASTM B695 Class 55 ASTM F2329
Nuts	A563	DH, C, A	Hex, Heavy Hex	ASTM B695 Class 55 ASTM F2329 (not allowed for bridges)
Washers	F436	Circular, Beveled, Clipped, Extra Thick	1	ASTM B695 Class 55 ASTM F2329 (not allowed for bridges)
	F844	Round, Miscellaneous	Plain	
DTI Devices	F959	A325	1	ASTM B695 Class 55

SUBARTICLE 962-13.3 is deleted and the following substituted:

962-13.3 Steel Posts for Fence: Meet the requirements of Table 962-18.

Table 962-18 Steel Posts, Beams, and Pipe Tube for Fence					
Product	Fence Type	Standard	Dimensions, Minimum	Requirements	
Line Posts	Type A (Farm)	A702(18 in²)	8’ long	1.33 lb/ft, hot rolled studded; anchor plate attached. Galvanized at the rate of ~~2~~1.7 oz/ft²	
	Type B	ASTM A53 Table 2 (Grade A or B); ASTM F1083, and AASHTO M111	Schedule 40: 1-1/2” nominal dia.	Zinc galvanized at the rate of 1.8 oz/ft2	
		ASTM A53 Table 2 (Grade A or B); ASTM F1083, and AASHTO M111	Schedule 40: 1-1/2” nominal dia., 1.90” OD	Aluminum Coated, Coated at the rate of 0.40 oz/ft2	
		AASHTO M111	1-7/8” x 1-5/8”	Steel H-Beam; Zinc Galvanized at the rate of 1.8 oz/ft2	
		ASTM F1043, and AASHTO M111	Steel C, 1-7/8” x 1-5/8”	AASHTO M111, OR 0.9 oz./ft². zinc-5% aluminum- mischmetal; ASTM F1043 and Standard Index 550-002	
		ASTM A569/A569M, A653/A653M or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design)	Fence Industry 2" OD, 1-1/2” NPS, 1.900” Dec equiv., 0.120” min wall thick. And min wt 2.28 lb/ft;	Resistance welded steel pipe; 50,000 psi min yield strength; ASTM F1043 metric equivalent internal coating Types A, B, C or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15 µg/in² min and the polymer film topcoat shall have a thickness of 0.0003” min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.	
	Type R	A702	50	Carbon, Rail	Tensile or Hardness

Table 962-18 Steel Posts, Beams, and Pipe Tube for Fence					
Product	Fence Type	Standard	Dimensions, Minimum	Requirements	
Approach Posts	Type A (Farm)	-	2-1/2"x 2-1/2"x1/4" angles, 8' long	Fabricated for attaching brace; with necessary hardware. Galvanized at the rate of 2 oz/ft²	
	Type R	A702	50	Carbon, Rail	Tensile or Hardness
Pull, End and Corner Posts	Type A (Farm)	-	2-1/2"x 2-1/2"x1/4" angles, 8' long	Fabricated for attaching brace; with necessary hardware. Galvanized at the rate of 2 oz/ft²	
	Type R	A702	50	Carbon, Rail	Tensile or Hardness
	Type B	ASTM A53 X2 Tables; ASTM F1083, and AASHTO M111	Schedule 40: 2" nominal dia.	Zinc galvanized at the rate of 1.8 oz/ft2	
		ASTM A53 X2 Tables; ASTM F1083, and AASHTO M111	Schedule 40: 2" nominal dia., 2.375" O.D.	Coated at the rate of 0.40 oz/ft2	
		ASTM A569/A569M, A653/A653M or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design)	Fence Industry 2.5" OD, 2" NPS, 2.375" dec equiv, 0.130" min wall thickness and min wt 3.117 lb/ft	Resistance welded steel pipe: 50,000 psi min yield strength; ASTM F1043 metric equivalent internal coating Types A, B, C or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15 µg/in² min and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.	

Table 962-18 Steel Posts, Beams, and Pipe Tube for Fence					
Product	Fence Type	Standard	Dimensions, Minimum	Requirements	
Rail Options	Type B	ASTM A53 X2 Tables, ASTM F1083 and AASHTO M111	Schedule 40- 11 #4" nominal dia.	Zinc galvanized at the rate of 1.8 oz/ft2	
		ASTM A53 AASHTO M111	Schedule 40- 11 #4" nominal dia., 1.660" O.D.	Aluminum Coated, Coated at the rate of 0.40 oz/ft	
		ASTM A569/A569M, ASTM A653/A653M, , or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design)	Fence Industry 15 #8" O.D., 11 #4" NPS, 1.660" dec. equiv., 0.111 min. wall thick. And min. wt. 1.836 lb/ft	Resistance welded steel pipe; 50,000 psi min. yield strength; ASTM F1043 metric equivalent internal coating Types A, B, C, or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15 µg/in² min. and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.	
		ASTM F1043	-	-	-
Pipe, Tube	Type B	A53	A, B	E, F, S	Grade, Finish
	Type R	F1083	Schedule 40	High Strength	Schedule
	Type B	F1043	1C	All	Group, Coating, Type
			1A	High strength	
Braces	Type A (Farm)	-	2"x 2"x 1/4" angles	With necessary hardware and fabricated for attaching to post. Galvanized at the rate of 2 oz/ft²	
Beam	Type R	A36	36	All Shapes	Grade, Killed
		A572	42		
		A992	50		

Table 962-18 Steel Posts, Beams, and Pipe Tube for Fence					
Product	Fence Type	Standard	Dimensions, Minimum	Requirements	
Sheets	-	A1011	36, 45, 50	HSLAS, HSLAS-F, SS	Designation, Style D

SUBARTICLE 962-14.1 is deleted and the following substituted:

962-14.1 Fabrication: Perform all steel fabrication in accordance with the requirements of Section 460.

After fabrication, hot-dip galvanize all non-stainless steel metal surfaces in accordance with Section 962.

Joint systems must be designed in accordance with the latest edition of AASHTO LRFD Bridge Design Specifications. Supply joint systems for which identical full-size specimens have been subjected to full life-cycle fatigue testing.

Except for sliding plates, provide all load bearing structural steel components with a 3/8 inch minimum thickness in any direction. Construct edge rails consisting of a monolithic steel shape with a machined or extruded retainer cavity. Multiple component welded steel shapes to achieve a final member cross section or seal retainer cavity are not permitted. Attach separation beams to individual support bars with a complete joint penetration weld.

Support each separation beam with a dedicated support bar connected by a complete joint penetration welded connection. Use of bolted connections, yokes, or other means to directly attach separation beams to support bars is not permitted. Maintain equal spacing between separation beams at all stages of movement.

Contain support bars with bearings capable of transferring all imposed loads to the structure and allow the support bar to freely move within the limits of the expansion joint.

Fabricate a full length modular joint system as one piece. Only a minimal number of splices in an individual joint may be permitted where a construction joint is specifically required by the Plans, joint segment length exceeds 50 feet, or approved by the Engineer in writing.

When phased construction is permitted, fabricate each segment to exactly fit that portion of superstructure, including sidewalks, under construction in each specific phase. Connect segments with a bolted splice to ensure continuity. Fit segments with temporary seals. Lubricant adhesive is not required for temporary seals. Submit watertight seal details for the splice. Shop inspection will be conducted at the discretion of the Engineer in accordance with Article 5-6.

Fabricate final seal assembly as one single, continuous component. Splicing of seals in the field is not permitted.

Provide lifting devices and devices to maintain the preset opening of the joint at a uniform spacing of not greater than 15 feet along the length of the joint. Provide at least three of these preset opening devices per joint segment. Provide lifting and preset opening

devices that function and then are removed without damaging the modular joint system assemblies or galvanized coating.

Prior to shipment, preset the joint opening in accordance with the joint opening as shown in the Plans at 70°F.

Prior to installation, place the center beam/support bar assembly on a flat surface to verify the support bars lay in a single plane, with no part of the bottom of any support bar exceeding 0.25 inches off the surface. The subassembly may be straightened. No more than three attempts may be made to heat-straighten the subassembly.

Polish stainless steel sliding surfaces to an 8 μ-inch mirror finish.

STRUCTURAL STEEL AND MISCELLANEOUS METAL ITEMS (OTHER THAN ALUMINUM)
(REV 5-18-26)

SUBARTICLE 962-2.2 is deleted and the following substituted:

962-2.2 Impact Requirements: Structural steel subject to tensile stress for primary 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.

Table 962-2
Requirements for Impact Testing Structural Steel

Product	ASTM	Grade	Zone	Minimum Average Energy (ft*lbf)	
				Members Not Requiring FC Practice	Members Requiring FC Practice
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					
	A501	A, B		15 at 70°F	25 at 70°F
	A847	Round, Square, Rectangle, Special			

Notes:
1. If yield ≥15 ksi above specified grade, test temperature must drop 15°F for each 10 ksi above grade.
2. FC – Fracture Control

ARTICLE 962-7 is deleted and the following substituted:

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. Use the appropriate nuts and washers as stated by this section and the corresponding ASTM bolt standard. Nuts shall have identifying marks meeting ASTM A563. When galvanizing is specified in the contract documents, provide galvanizing in accordance with 962-11.3.2.

Table 962-7 Requirements for High-Strength Steel Fastener Assemblies					
Products	Standard	Grade	Type/ Style	Reportable Properties	Supplementary Requirements
Bolts	ASTM F3125	A325	1, 3 Heavy Hex	Size, Composition, Tensile, Proof Load, Hardness,	None
	ASTM A354*	BC	Heavy Hex	Size, Composition, Hardness, Heat Treatment, Macroetch results	None
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
Washers	F436	Circular, Beveled, Clipped, Extra Thick	1, 3	Size, Hardness	None
	F844	Round, Miscella neous	Plain	Size	None
	ASTM A709	36, 50	Any	Yield, Tensile, Elongation, Killed	None
	ASTM A36	36	Any	Yield, Tensile, Elongation, Killed	None
DTI Devices	F959	A325	1	Size, Composition, Compression Load, Hardness	Only use with ASTM F436 washers
			3	Size, Composition, Compression Load, Hardness, Corrosion Resistance Index	
*Requires Engineer approval.					

SUBARTICLE 962-8.2 is deleted and the following substituted:

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. Use the appropriate nuts and washers as stated by this section and the corresponding ASTM bolt standard.

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, A	Hex, Heavy Hex	Size, Composition, Proof Load, Hardness	None
	A194*	2H	Heavy Hex	Size, Composition, Hardness	None
Washers	F436	1, 3	Circular, Beveled, Clipped, Extra Thick	Size, Hardness	None
	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.					

ARTICLE 962-9 is deleted and the following substituted:

962-9 Miscellaneous Structures.

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 electrodes selected from the filler metals for matching strength tables, in accordance with AWS D1.1 Structural Welding Code.

Table 962-10 Requirements for Miscellaneous Structures					
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	N/A
Chord	A500	B, C	Round Structural	Composition, Yield, Tensile, Elongation	N/A
Plate, Angles & Handhole Frame	A709	50	Plates & Shapes	Composition, Yield, Tensile, Elongation	N/A
	A36	36			N/A
Tapered Tube	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

SUBARTICLE 962-10.2 is deleted and the following substituted:

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.

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

SUBARTICLE 962-11.3.2 is deleted and the following substituted:

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 962-15. 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 962-15 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 (not allowed for bridges)
	A354	BC	Heavy Hex	
	A324	BC	Any	
Anchor Rods	F1554	105	All	ASTM B633 SC 3, Type II
	F1554	36, 55	All	ASTM B695 Class 55 ASTM F2329
Nuts	A563	DH, C, A	Hex, Heavy Hex	ASTM B695 Class 55 ASTM F2329 (not allowed for bridges)
Washers	F436	Circular, Beveled, Clipped, Extra Thick	1	ASTM B695 Class 55 ASTM F2329 (not allowed for bridges)
	F844	Round, Miscellaneous	Plain	
DTI Devices	F959	A325	1	ASTM B695 Class 55

SUBARTICLE 962-13.3 is deleted and the following substituted:

962-13.3 Steel Posts for Fence: Meet the requirements of Table 962-18.

Table 962-18 Steel Posts, Beams, and Pipe Tube for Fence				
Product	Fence Type	Standard	Dimensions, Minimum	Requirements
Line Posts	Type A (Farm)	A702(18 in^2)	8’ long	1.33 lb/ft, hot rolled studded; anchor plate attached. Galvanized at the rate of 1.7 oz/ft^2

Table 962-18 Steel Posts, Beams, and Pipe Tube for Fence					
Product	Fence Type	Standard	Dimensions, Minimum	Requirements	
	Type B	ASTM A53 Table 2 (Grade A or B); ASTM F1083, and AASHTO M111	Schedule 40: 1-1/2" nominal dia.	Zinc galvanized at the rate of 1.8 oz/ft2	
		ASTM A53 Table 2 (Grade A or B); ASTM F1083, and AASHTO M111	Schedule 40: 1-1/2" nominal dia., 1.90" OD	Aluminum Coated, Coated at the rate of 0.40 oz/ft2	
		AASHTO M111	1-7/8" x 1-5/8"	Steel H-Beam; Zinc Galvanized at the rate of 1.8 oz/ft2	
		ASTM F1043, and AASHTO M111	Steel C, 1-7/8" x 1-5/8"	AASHTO M111, OR 0.9 oz./ft². zinc-5% aluminum- mischmetal; ASTM F1043 and Standard Index 550-002	
		ASTM A569/A569M, A653/A653M or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design)	Fence Industry 2" OD, 1-1/2" NPS, 1.900" Dec equiv., 0.120" min wall thick. And min wt 2.28 lb/ft;	Resistance welded steel pipe; 50,000 psi min yield strength; ASTM F1043 metric equivalent internal coating Types A, B, C or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15 µg/in² min and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.	
	Type R	A702	50	Carbon, Rail	Tensile or Hardness
Approach Posts	Type A (Farm)	-	2-1/2"x 2-1/2"x1/4" angles, 8' long	Fabricated for attaching brace; with necessary hardware. Galvanized at the rate of 2 oz/ft²	

Table 962-18 Steel Posts, Beams, and Pipe Tube for Fence					
Product	Fence Type	Standard	Dimensions, Minimum	Requirements	
	Type R	A702	50	Carbon, Rail	Tensile or Hardness
Pull, End and Corner Posts	Type A (Farm)	-	2-1/2"x 2-1/2"x1/4" angles, 8' long	Fabricated for attaching brace; with necessary hardware. Galvanized at the rate of 2 oz/ft²	
	Type R	A702	50	Carbon, Rail	Tensile or Hardness
	Type B	ASTM A53 X2 Tables; ASTM F1083, and AASHTO M111	Schedule 40: 2" nominal dia.	Zinc galvanized at the rate of 1.8 oz/ft2	
		ASTM A53 X2 Tables; ASTM F1083, and AASHTO M111	Schedule 40: 2" nominal dia., 2.375" O.D.	Coated at the rate of 0.40 oz/ft2	
		ASTM A569/A569M, A653/A653M or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design)	Fence Industry 2.5" OD, 2" NPS, 2.375" dec equiv, 0.130" min wall thickness and min wt 3.117 lb/ft	Resistance welded steel pipe: 50,000 psi min yield strength; ASTM F1043 metric equivalent internal coating Types A, B, C or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15 µg/in² min and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.	
Rail Options	Type B	ASTM A53 X2 Tables, ASTM F1083 and AASHTO M111	Schedule 40- 11 #4" nominal dia.	Zinc galvanized at the rate of 1.8 oz/ft2	

Table 962-18 Steel Posts, Beams, and Pipe Tube for Fence					
Product	Fence Type	Standard	Dimensions, Minimum	Requirements	
		ASTM A53 AASHTO M111	Schedule 40- 11 #4" nominal dia., 1.660" O.D.	Aluminum Coated, Coated at the rate of 0.40 oz/ft	
		ASTM A569/A569M, ASTM A653/A653M, , or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design)	Fence Industry 15 #8" O.D., 11 #4" NPS, 1.660" dec. equiv., 0.111 min. wall thick. And min. wt. 1.836 lb/ft	Resistance welded steel pipe; 50,000 psi min. yield strength; ASTM F1043 metric equivalent internal coating Types A, B, C, or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15 µg/in² min. and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.	
		ASTM F1043	-	-	-
Pipe, Tube	Type B	A53	A, B	E, F, S	Grade, Finish
	Type R	F1083	Schedule 40	High Strength	Schedule
	Type B	F1043	1C	All	Group, Coating, Type
			1A	High strength	
Braces	Type A (Farm)	-	2"x 2"x 1/4" angles	With necessary hardware and fabricated for attaching to post. Galvanized at the rate of 2 oz/ft²	
Beam	Type R	A36	36	All Shapes	Grade, Killed
		A572	42		
		A992	50		
Sheets	-	A1011	36, 45, 50	HSLAS, HSLAS-F, SS	Designation, Style D

SUBARTICLE 962-14.1 is deleted and the following substituted:

962-14.1 Fabrication: Perform all steel fabrication in accordance with the requirements of Section 460.

After fabrication, hot-dip galvanize all non-stainless steel metal surfaces in accordance with Section 962.

Joint systems must be designed in accordance with the latest edition of AASHTO LRFD Bridge Design Specifications. Supply joint systems for which identical full-size specimens have been subjected to full life-cycle fatigue testing.

Except for sliding plates, provide all load bearing structural steel components with a 3/8 inch minimum thickness in any direction. Construct edge rails consisting of a monolithic steel shape with a machined or extruded retainer cavity. Multiple component welded steel shapes to achieve a final member cross section or seal retainer cavity are not permitted. Attach separation beams to individual support bars with a complete joint penetration weld.

Support each separation beam with a dedicated support bar connected by a complete joint penetration welded connection. Use of bolted connections, yokes, or other means to directly attach separation beams to support bars is not permitted. Maintain equal spacing between separation beams at all stages of movement.

Contain support bars with bearings capable of transferring all imposed loads to the structure and allow the support bar to freely move within the limits of the expansion joint.

Fabricate a full length modular joint system as one piece. Only a minimal number of splices in an individual joint may be permitted where a construction joint is specifically required by the Plans, joint segment length exceeds 50 feet, or approved by the Engineer in writing.

When phased construction is permitted, fabricate each segment to exactly fit that portion of superstructure, including sidewalks, under construction in each specific phase. Connect segments with a bolted splice to ensure continuity. Fit segments with temporary seals. Lubricant adhesive is not required for temporary seals. Submit watertight seal details for the splice. Shop inspection will be conducted at the discretion of the Engineer in accordance with Article 5-6.

Fabricate final seal assembly as one single, continuous component. Splicing of seals in the field is not permitted.

Provide lifting devices and devices to maintain the preset opening of the joint at a uniform spacing of not greater than 15 feet along the length of the joint. Provide at least three of these preset opening devices per joint segment. Provide lifting and preset opening devices that function and then are removed without damaging the modular joint system assemblies or galvanized coating.

Prior to shipment, preset the joint opening in accordance with the joint opening as shown in the Plans at 70°F.

Prior to installation, place the center beam/support bar assembly on a flat surface to verify the support bars lay in a single plane, with no part of the bottom of any support bar exceeding 0.25 inches off the surface. The subassembly may be straightened. No more than three attempts may be made to heat-straighten the subassembly.

Polish stainless steel sliding surfaces to an 8 μ-inch mirror finish.