

*This Procedure was developed for a typical car equipped with a one piece roll formed center sill and may not be applicable to all cars.
Please consult your original drawings or contact FreightCar America, Inc. for details.*

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(Sketch 1-3, WPS 10 & 20-C, AAR Field Manual Rule 57 Figure B)

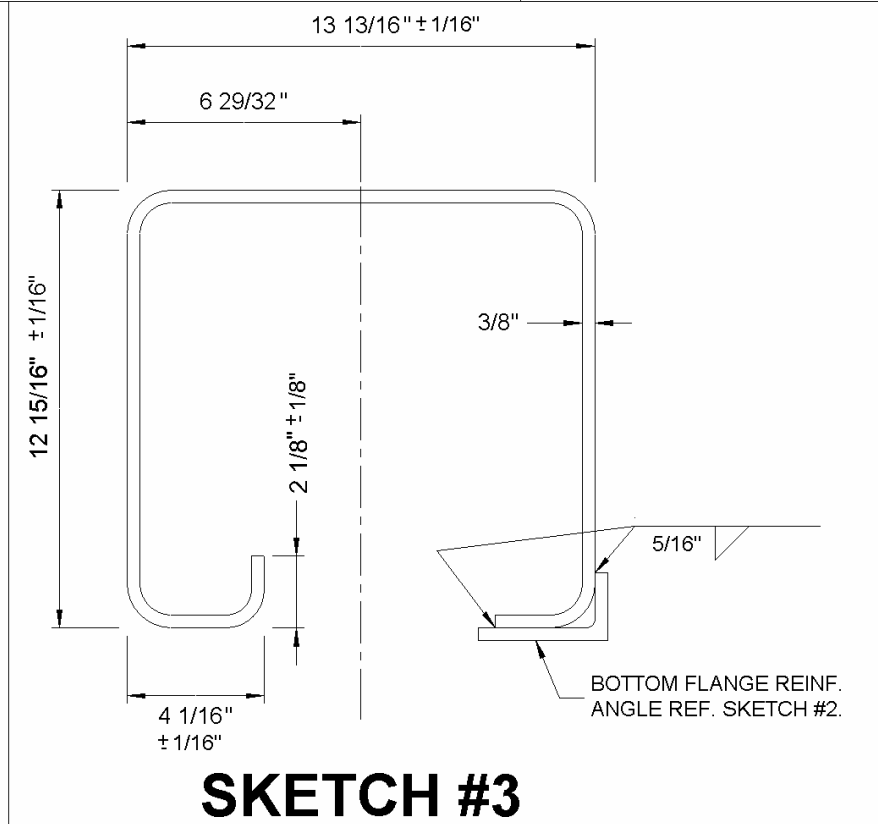
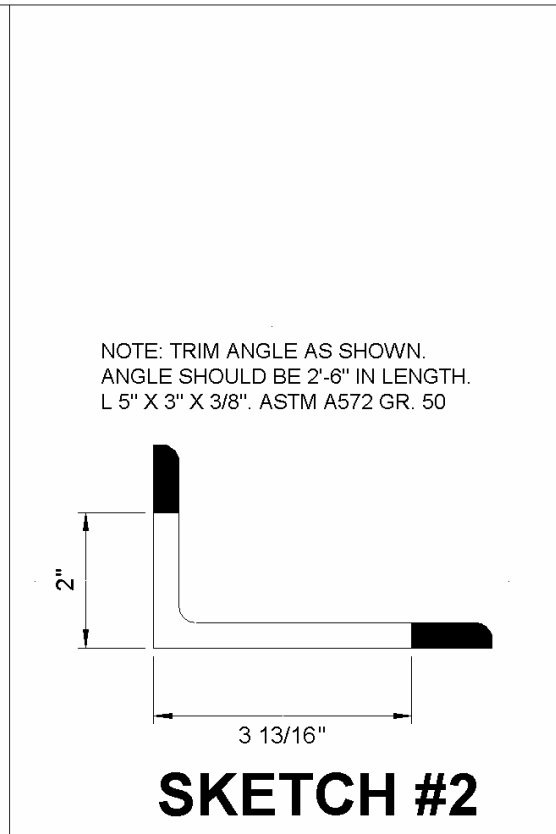
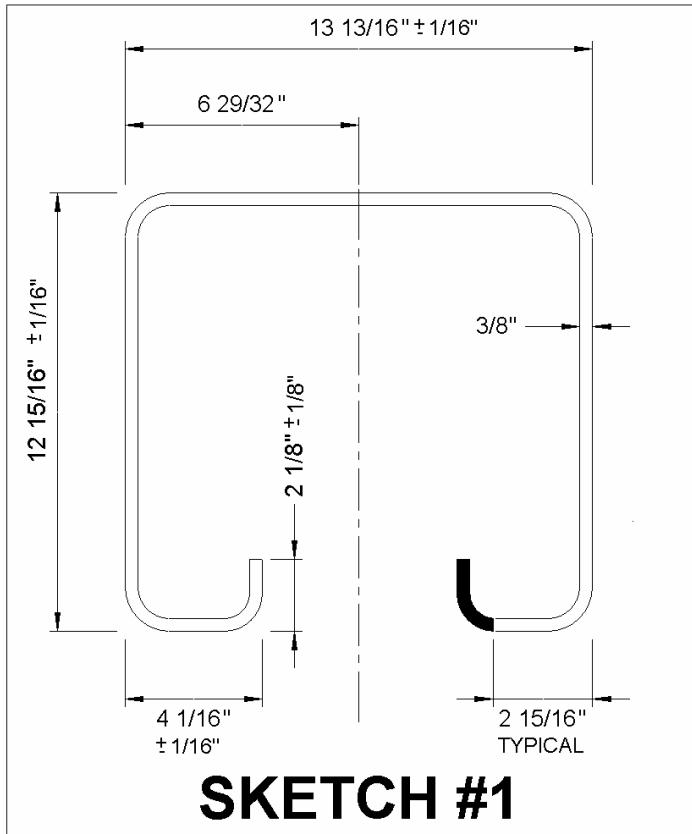
BILL OF MATERIAL

Per Location

- (1) 00000-000 Roll Formed Center Sill Section
- (2 pcs) 5"x3"x3/8" – 2'-6" Angle ASTM A572 GR. 50
- (2 pcs) 3/8"x8" (*) x2'-0" AAR Rule 57 Reinforcement Plates ASTM A572
GR.50
- (1 pcs) 3/8"x10"x1'-8" AAR Rule 57 Reinforcement Plates ASTM A572
GR.50

* see note 7

- 1). Cut away the upturned flanges for a distance of 1'-1" from each end of the center sill sections being spliced. See Sketch No. 1. End corners should be cut to a radius. This radius should be 1/2" min.
- 2). Bevel each end of the sill sections to be spliced to form a 60 degree "V" groove with a 1/8" root opening.
- 3). Apply a full penetration weld to connect the two sections of center sill. Follow Welding Procedure WPS No.10.
- 4). Grind the welds flush with the outside of the center sill.
- 5). Trim a 5" x 3" x 3/8" angle, 2'-6" long, as shown Sketch No.2. This is the reinforcing angle for the bottom flanges of the Center Sill.
- 6). Apply bottom flange reinforcing plates as shown in Sketch No. 3.
- 7). Apply the AAR Patch Plates as shown in Rule 57 of the Field Manual to the webs and the top of the center sill. It should be noted that the web reinforcing plates are to be 8" wide as opposed to 9" as shown in the manual. Otherwise everything else is the same as is presented in Rule 57.
- 8). Fillet welding of the AAR Patch Plates to the center sill should be done using Welding Procedure WPS 20-C.



Welding Procedure Specification, AWS D 15.1

Welding Process: FCAW 1/2" V-GROOVE

Type: SEMI-AUTOMATIC

Prepared by:		Date:		Approved by:		Date:		
JOINT DESIGN				PREHEAT				
Type: SINGLE V-GROOVE		Backing: YES		Preheat Temp. Min: 32° F		Max: N/A		
Single or Double Weld: SINGLE				Interpass Temp. Min: N/A				
Backing Material: ASTM-935				ELECTRICAL CHARACTERISTICS				
Root Opening-R. 1/8"				Transfer Mode: GLOBULAR				
Land-L: 1/16"		Radius(J-U): N/A		Current: DCEP				
Groove Angle-A Side 1: 90°		Side 2: N/A		Other: N/A				
Back Gouging: N/A		Method: N/A		TECHNIQUE/OTHER				
BASE METALS				<input checked="" type="checkbox"/> Stringer or				
Metal Specification: ASTM-935 TO ASTM-935				<input checked="" type="checkbox"/> Weave Beads				
Type or Grade: 70				<input checked="" type="checkbox"/> Multipass or				
Group: 2				<input type="checkbox"/> Single Pass per Side				
Thickness Groove: 3/8"		Fillet: N/A		<input checked="" type="checkbox"/> Single or				
Diameter (Pipe): N/A				<input type="checkbox"/> Multiple Electrodes				
FILLER METAL				Number of Multiple Electrodes When Used: N/A				
Classification: E90T-1				Electrode Spacing				
Specification No.: A5.29				Longitudinal N/A				
SHIELDING				Lateral: N/A				
Gas: CO 2		Composition: 100%		Angle: 90				
Flow Rate: 45-55 CFH		Gas Cup Size: 5/8"		Contact Tube to Work Distance: 3/4"				
Electrode-Flux (Class): N/A				Peening: N/A				
Flux: N/A				Initial Cleaning:				
POSITION				Brush/grind to remove heavy rust/mill scale. weld using split layer technique.				
Position of Groove or Fillet: 1-G				Interpass Cleaning:				
Vertical Progression: N/A				Chip slag and wire brush.				
POSTWELD HEAT TREATMENT				Temperature Range: N/A				
				Time: N/A				
Pass or Weld Layer(s)	Process	Filler Metals		Current		Volts	Travel Speed (IPM)	Joint Details
		Class	Dia.	Type & Polarity	Amps or Wire Feed Speed			
ALL	FCAW	E90T-1	5/64"	DCEP	AMPS	27-31	15-20	
			3/32"		325-450			
		5/64"	IPM	27-31	15-20			
		3/32"	160-295			27-34	15-20	
			166-278					



WPS No: 20-C
 Rev: ORIG
 PQR: 173-C
 Date: 12/20/97

Welding Procedure Specification, AWS D 15.1

Welding Process: FCAW 1/4" TO 3/8" FILLET Type: SEMI-AUTOMATIC

Prepared by:		Date:		Approved by:		Date:		
JOINT DESIGN				PREHEAT				
Type: T-JOINT OR LAP JOINT				Preheat Temp. Min: 32° F				
Single or Double Weld: SINGLE		Backing: N/A		Interpass Temp. Min: N/A		Max: N/A		
Backing Material: N/A				ELECTRICAL CHARACTERISTICS				
Root Opening-R. 0-1/16"				Transfer Mode: GLOBULAR				
Land-L: N/A		Radius(J-U): N/A		Current: DCEP				
Groove Angle-A Side 1: N/A		Side 2: N/A		Other: N/A				
Back Gouging: N/A Method: N/A				TECHNIQUE/OTHER				
BASE METALS				<input checked="" type="checkbox"/> Stringer or <input type="checkbox"/> Weave Beads <input checked="" type="checkbox"/> Multipass or <input type="checkbox"/> Single Pass per Side <input checked="" type="checkbox"/> Single or <input type="checkbox"/> Multiple Electrodes				
Metal Specification: ASTM-935 TO A-572				Number of Multiple Electrodes When Used: N/A				
Type or Grade: GRADE 70 TO 50				Electrode Spacing				
Group: 2				Longitudinal N/A				
Thickness Groove: N/A		Fillet: 1/4" TO 3/8"		Lateral: N/A				
Diameter (Pipe): N/A				Angle: N/A				
FILLER METAL				Contact Tube to Work Distance: 3/8"-3/4"				
Classification: E71T-1				Peening: N/A				
Specification No.: A5.20				Initial Cleaning:				
SHIELDING				Brush/grind to remove heavy rust/mill scale.				
Gas: CO 2		Composition: 100%		If base metal <32 F preheat to 70 F min				
Flow Rate: 35-45 CFH		Gas Cup Size: 5/8"		Interpass Cleaning:				
Electrode-Flux (Class): N/A				Chip slag and wire brush.				
Flux: N/A				Welding 2 nd pass. Remove slag from all welds				
POSITION				POSTWELD HEAT TREATMENT				
Position of Groove or Fillet: OH				Temperature Range: N/A				
Vertical Progression: N/A				Time: N/A				
Pass or Weld Layer(s)	Process	Filler Metals		Current		Volts	Travel Speed (IPM)	Joint Details
		Class	Dia.	Type & Polarity	Amps or Wire Feed Speed			
ALL	FCAW	E71T-1	1/16"	DCEP	AMPS 180-220 IPM 104-160	24-26	5-10	

RULE 57

FIGURE B

