

THE AMERICAN RAILWAY ENGINEERING AND MAINTENANCE
OF WAY ASSOCIATION

Committee: 4 (Rail), **Subcommittee:** 6 (Joint Bars, Insulated Joints, Track Bolts, Spring Washers)

Letter Ballot Number: 04-21-02

Assignment: None

Explanation of Ballot:

This ballot was a result of general review of Section 3.2. It was concluded that Figure 4-3-6 Joint Bar and Assembly for 140RE should be removed as it is no longer a contemporary rail section.

Reason: Updating of Manual Section to reflect current practices.

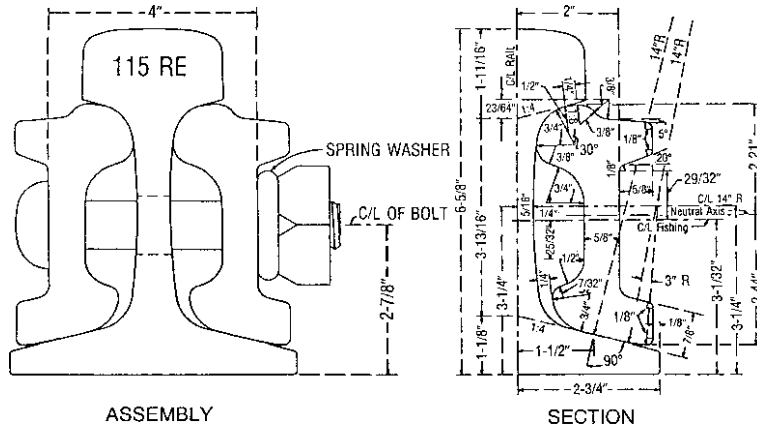
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SECTION 3.2 JOINT BARS AND ASSEMBLIES

For joint bars and assemblies refer to [Figure 4-3-1](#) through [Figure 4-3-7](#), [Figure 4-3-6](#).

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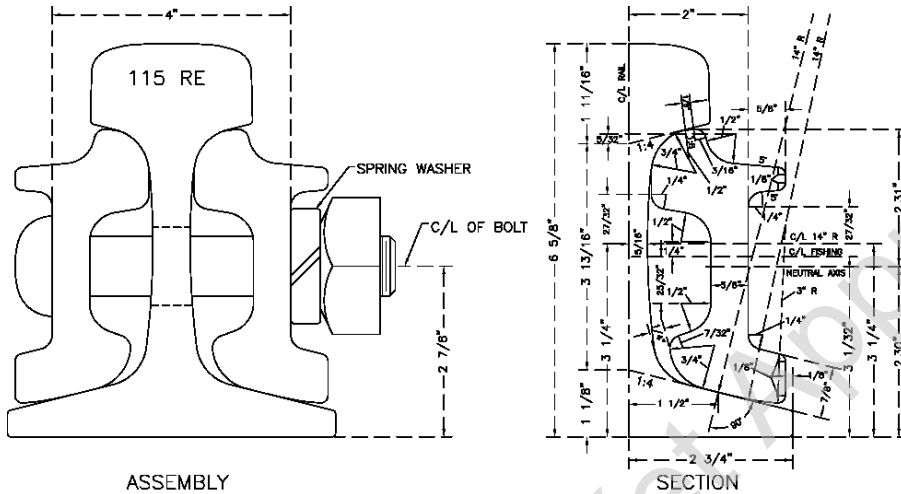
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Physical Properties	One Bar	Two Bars
Moment of inertia in. ⁴	11.67	23.34
Section } Above n. a. in. ³	5.27	10.54
Modulus } Below n. a. in. ³	4.77	9.54
Area sq. in.	5.35	10.70
Net weight, 24-in. length, lb.	35.28	70.56
Net weight, 36-in. length, lb.	53.45	106.90

Figure 4-3-1. Joint Bar Assembly for 115 RE and 119 RE Rail (115 RE shown)¹

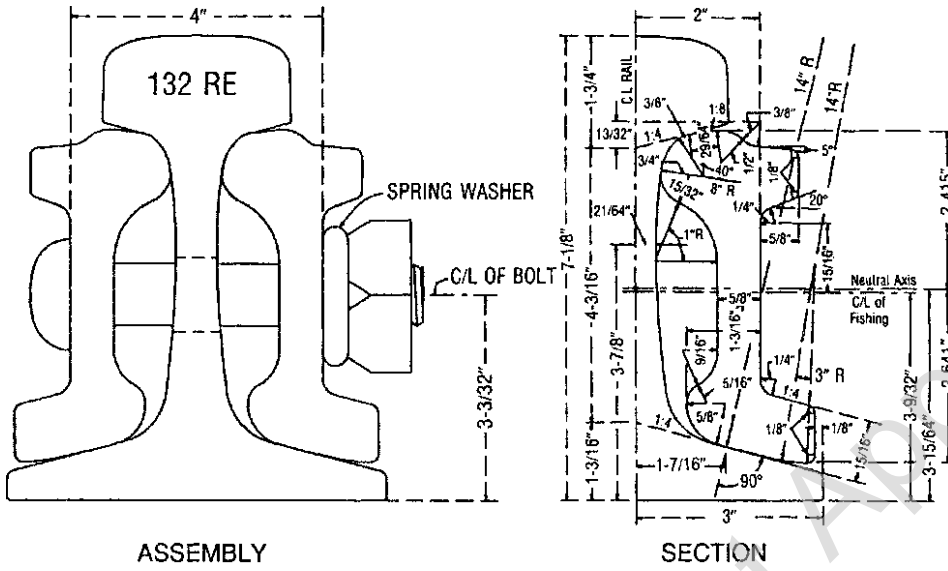
¹ References, Vol. 48, 1947, pp. 661, 908; Vol. 54, 1953, pp. 1178, 1414; Vol. 63, 1962, pp. 500, 768; Vol. 92, 1991, p. 49.



Physical Properties	One Bar	Two Bars
Moment of inertia in. ⁴	10.24	20.48
Section } Above n. a. in. ³	4.44	8.88
Modulus } Below n. a. in. ³	4.45	8.90
Area sq. in.	5.12	10.24
Net weight, 24-in. length lb.	34.8	69.6
Net weight, 36-in. length lb.	52.2	104.4
 Mechanical Properties		
Tensile Strength	125,000 PSI minimum	
Yield Point	88,000 PSI minimum	
Elongation in 2" Gage Length	12% minimum	
Reduction of Area	25% minimum	

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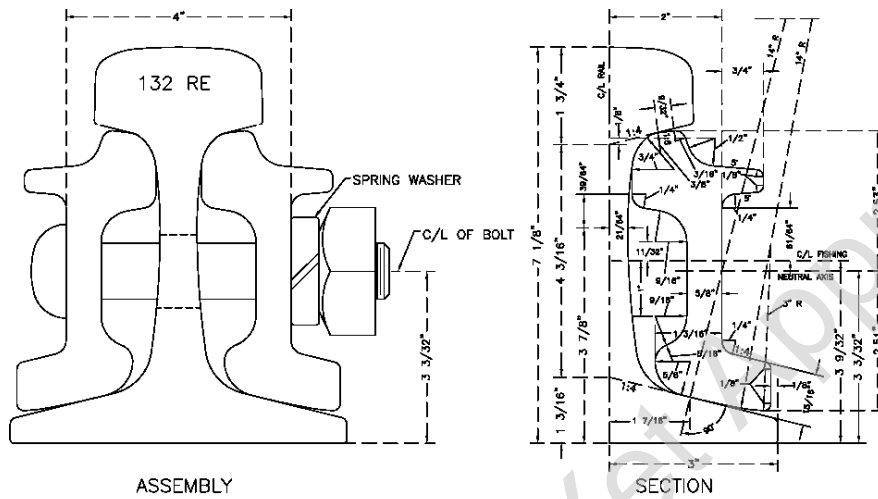
Figure 4-3-2. Joint Bar Assembly for 115 RE and 119 RE Rail (115 RE shown) With Increased Wheel Flange Clearance



Physical Properties	One Bar	Two Bars
Moment of inertia in. ⁴	16.14	32.28
Section } Above n. a. in. ³	6.68	13.36
	Below n. a. in. ³	6.11
Area sq. in.	5.89	11.78
Net weight, 24-in. length, lb.	38.95	77.90
Net weight, 36-in. length, lb.	58.95	117.90

Figure 4-3-3. Joint Bar and Assembly for 132 RE, 136 RE and 141 RE Rail (132 RE Shown)¹

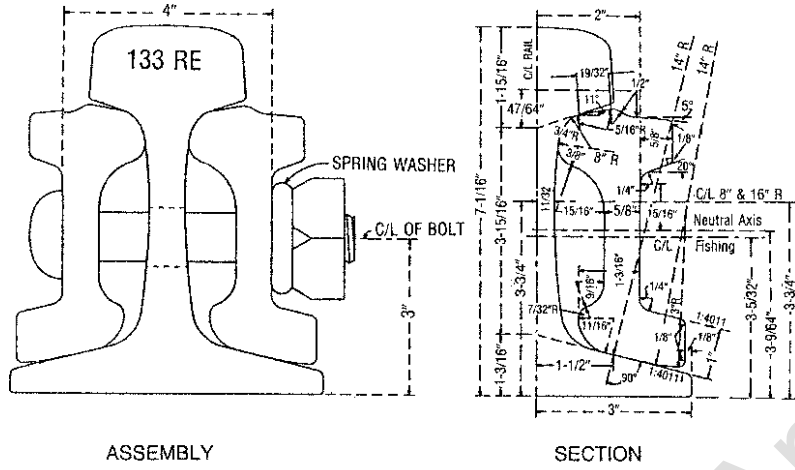
¹References, Vol. 48, 1947, pp. 661, 908; vol. 54, 1953, pp. 1178, 1414; vol. 63, 1962, pp. 500, 768; Vol. 92, 1991, p. 49.



Physical Properties	One Bar	Two Bars
Moment of inertia in. ⁴	14.04	28.08
Section } Above n. a. in. ³	5.55	11.10
Modulus } Below n. a. in. ³	5.60	11.20
Area sq. in.	5.64	11.28
Net weight, 24-in. length lb.	38.4	76.8
Net weight, 36-in. length lb.	57.6	115.2
Mechanical Properties		
Tensile Strength	125,000 PSI minimum	
Yield Point	88,000 PSI minimum	
Elongation in 2" Gage Length	12% minimum	
Reduction of Area	25% minimum	

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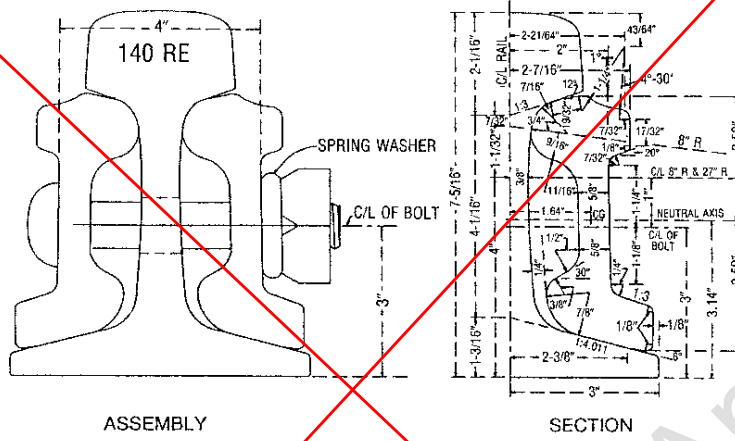
Figure 4-3-4. Joint Bar Assembly for 132-6-41 RE Rail (132 RE shown) With Increased Wheel Flange Clearance



Physical Properties	One Bar	Two Bars
Moment of inertia in. ⁴	15.13	30.26
Section } Above n. a. in. ³	6.41	12.82
Modulus } Below n. a. in. ³	5.9	11.8
Area sq. in.	5.83	11.66
Net weight, 24-in. length, lb.	38.56	77.12
Net weight, 36-in. length, lb.	61.66	123.32

Figure 4-3-5. Joint Bar and Assembly for 133 RE Rail[†]

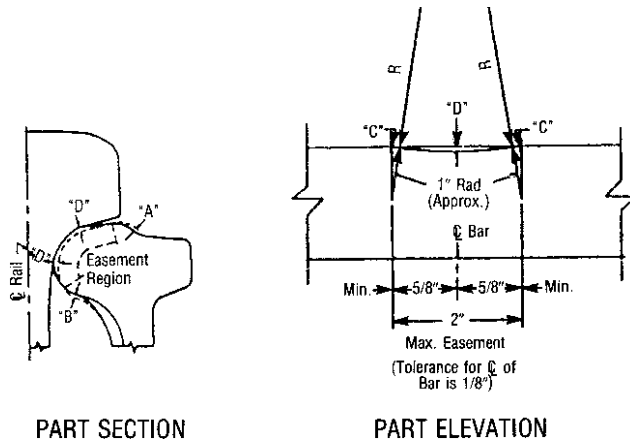
[†]References, Vol. 92, 1991, p. 49.



Physical Properties	One Bar	Two Bars
Moment of inertia in. ⁴	15.94	31.9
Section } Above n. a. in. ³	6.30	12.6
Modulus } Below n. a. in. ³	6.15	12.3
Area sq. in.	5.98	11.96
Net weight, 24-in. length, lb.	39.9	79.8
Net weight, 36-in. length, lb.	59.9	119.7

Figure 4-3-6. Joint Bar and Assembly for 140 RE Rail¹

¹References, Vol. 57, 1956, pp. 784, 1088; Vol. 63, 1962, pp. 500, 768; Vol. 92, 1991, p. 49.



NOTES

1. "D" 1/32" min. for Rail Sections 119 lb. and less; and 3/64" min. for Rail Sections over 119 lb.
2. Maximum displacement of "A" and "B" is 3/32".
3. Deformation due to flow of material at points "C" may be in addition to easement width.

HEAD FREE JOINT BAR

Figure 4-3-7. Figure 4-3-6. Recommended Head Easement for Joint Bars¹

¹ References, Vol. 54, 1953, pp. 1178, 1414; Vol. 60, 1959, pp. 874, 1166; Vol. 63, 1962, pp. 500, 768; Vol. 92, 1991, p. 49.