



# Quality Rails, On time, Worldwide

Solutions for any railroad,  
transit or industrial requirement.



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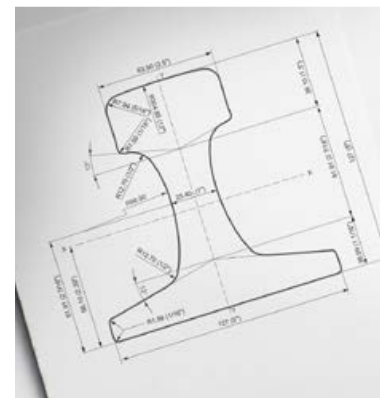
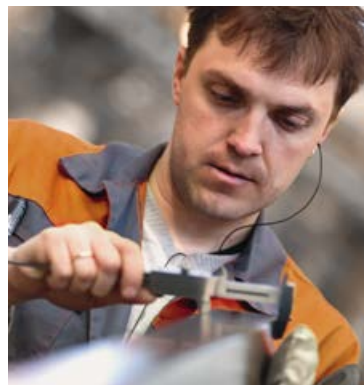
# Introduction

## Supplying rails worldwide

Since 1993, M.F. Wirth Rail Corporation has been dedicated to supplying the highest quality rails for demanding applications. From our offices in Canada and the United States, we proudly represent top rail mills and equipment suppliers from around the world. Although Wirth Rail's business activities are concentrated in the Americas, we regularly ship rail to every continent. Our diverse team is pleased to serve you in the four business languages of the Americas: English, French, Spanish and Portuguese.

## Who buys our products?

- Heavy Haul Railways
- Transit Authorities
- Heavy industry, mines and manufacturers
- Ports and intermodal facilities
- Crane and equipment Manufacturers
- Rail Distributors





# Introduction

## Quality & Excellence

Wirth Rail's products meet or exceed customer requirements and the latest industry standards. Our suppliers are ISO 9001-certified rail mills.

Testing varies with the specifications of each rail type, but our rails are generally subjected to checks for:

- Hardness, Strength & Ductility
- Straightness
- Flatness & Sweep
- Squareness & Symmetry
- End Straightness
- Internal flaws by Ultrasonic Testing
- Surface Defects



## Our Products & Services

Wirth Rail has been growing its portfolio of products and services for more than a quarter century. Rail is the core of our business, supplemented by Hardware, Manufactured solutions and On-time Logistics.

### Rail Types we offer include:

- Transport (American & European)
- Crane (American, European & Specialty)
- Light (American & European)
- Grooved
- Block
- Contact
- Guard

### Hardware:

- Clips
- Splice bars
- Fasteners
- Sole Plates
- Rubber Pad
- Spikes

### Manufactured Solutions:

- Drilling
- Mitre Cutting
- Machining
- Fabrication
- Curving
- Sand Blasting
- Metalizing
- Painting

# Introduction

## On-time Logistics

Wirth Rail has a team of logistics specialists dedicated to ensuring the timely and uneventful deliveries of our products.

### We offer the following transportation options:

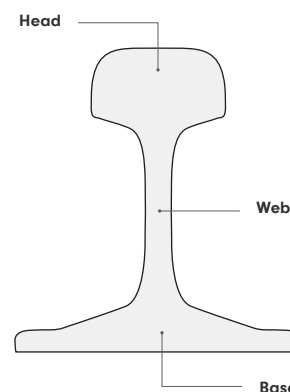
- ISO Ocean Containers
- Break-bulk ship
- Truck
- Railcar

### Using Wirth Rail's logistics services ensures:

- Fast & easy door-to-door transport
- Optimal collaboration with carriers, freight-forwarders & customs brokers
- Competitive Rates
- Customer Convenience

## Rail Nomenclature

Most of the rails sold by Wirth Rail have a head, a web and a flat base. A common name for this general shape is Vignoles. Charles Vignoles was an influential engineer working in the UK in the 1830s and is credited for the first installations of rails with flat bottoms and I-beam configuration. For context, George Stephenson's Rocket, one of the first commercially successful steam locomotives, was constructed in 1829.



Throughout this catalogue the terms strength and hardness are used interchangeably. Rails are graded by surface hardness in North America and by tensile strength in Europe. The interface between a wheel and a rail is the subject of textbooks. For the purpose of this catalogue, a higher grade of rail provides a more durable running surface that can handle greater loads. Often increasing to a higher grade is an economical fix in situations of high wear.

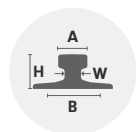
Also used interchangeably in the industry are the terms rail profile and rail section. The term "section" is an abbreviation of cross-section and is common parlance in the United States. The term "profile" is from Latin, and is commonly used in Europe. Regardless of the origin, the two terms mean the same thing for the purpose of this catalogue.

## Summary tables



### Crane Rails | American profiles

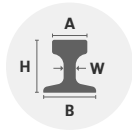
	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>CR104</b> (MRS51)	52.04	104.90	63.50	2 1/2	127.00	5	127.00	5	25.40	1
<b>CR105</b> (MRS52)	52.09	105.00	65.09	2 9/16	131.76	5 3/16	131.76	5 3/16	23.81	15/16
<b>CR135</b> (MRS67)	67.39	135.86	87.31	3 7/16	146.05	5 3/4	131.76	5 3/16	31.75	1 1/4
<b>CR171</b> (MRS85)	85.02	171.40	109.22	4.30	152.40	6	152.40	6	31.75	1 1/4
<b>CR175</b> (MRS87B, TR87)	86.80	175.00	107.95	4 1/4	152.40	6	152.40	6	38.10	1 1/2



### Crane Rails | European profiles

	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>A45</b>	22.10	44.55	45.00	1.77	55.00	2.17	125.00	4.92	24.00	0.94
<b>A55</b>	31.80	64.11	55.00	2.17	65.00	2.56	150.00	5.91	31.00	1.22
<b>A65</b>	43.10	86.89	65.00	2.56	75.00	2.95	175.00	6.89	38.00	1.50
<b>A75</b>	56.20	113.29	75.00	2.95	85.00	3.35	200.00	7.87	45.00	1.77
<b>A100</b>	74.30	149.78	100.00	3.94	95.00	3.74	200.00	7.87	60.00	2.36
<b>A120</b>	100.00	201.59	120.00	4.72	105.00	4.13	220.00	8.66	72.00	2.83
<b>A150</b>	150.30	302.99	150.00	5.91	150.00	5.91	220.00	8.66	80.00	3.15

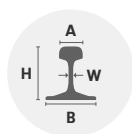
## Summary tables



## Crane Rails | Special profiles

	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>A75s</b>	63.61	128.23	75.00	2.95	85.00	3.35	200.00	7.87	75.00	2.95
<b>MRS73</b>	73.63	148.43	70.00	2.76	157.00	6.18	146.00	5.75	32.00	1.26
<b>MRS86</b>	85.50	172.36	102.00	4.02	102.00	4.02	165.00	6.50	80.30	3.16
<b>MRS87A (PRI85)</b>	86.80	175.00	101.60	4.00	152.40	6.00	152.40	6.00	34.90	1.37
<b>MRS125</b>	125.00	251.99	120.00	4.72	180.00	7.09	180.00	7.09	40.00	1.57
<b>MRS140</b>	139.80	281.82	120.00	4.72	150.00	5.91	220.00	8.66	80.00	3.15
<b>MRS192</b>	192.00	387.05	140.00	5.51	157.20	6.19	229.00	9.02	128.30	5.05
<b>MRS221</b>	221.40	446.32	220.00	8.66	160.00	6.30	220.00	8.66	145.00	5.71
<b>CR73</b>	73.30	147.77	100.00	3.94	135.00	5.31	140.00	5.51	32.00	1.26
<b>CR100</b>	100.20	201.99	120.00	4.72	150.00	5.91	155.00	6.10	39.00	1.54
<b>CR140</b>	139.80	281.82	150.00	5.91	150.00	5.91	200.00	7.87	80.00	3.15
<b>AS86</b>	85.88	173.13	101.60	4.00	152.46	6.00	150.00	5.91	35.00	1.38
<b>SP100</b>	89.05	179.52	100.00	3.94	150.00	5.91	150.00	5.91	38.00	1.50
<b>SP120</b>	118.28	238.44	120.00	4.72	170.00	6.69	170.00	6.69	44.00	1.73

## Summary tables

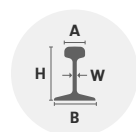


## Light Rails | American profiles

	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>ASCE20</b>	9.92	20.00	34.13	1 11/32	66.67	2 5/8	66.67	2 5/8	6.35	1/4
<b>ASCE25</b>	12.40	25.00	38.10	1 1/2	69.85	2 3/4	69.85	2 3/4	7.54	19/64
<b>ASCE30</b>	14.88	30.00	42.86	1 11/16	79.38	3 1/8	79.38	3 1/8	8.33	21/64
<b>ASCE40</b>	19.84	40.00	47.62	1 7/8	88.90	3 1/2	88.90	3 1/2	9.92	25/64
<b>ASCE45 (JIS22)</b>	22.32	45.00	50.80	2	93.66	3 11/16	93.66	3 11/16	10.72	27/64
<b>ASCE50 (TR25)</b>	24.80	50.00	53.98	2 1/8	98.43	3 7/8	98.43	3 7/8	11.11	7/16
<b>ASCE60</b>	29.76	60.00	60.33	2 3/8	107.95	4 1/4	107.95	4 1/4	12.30	31/64
<b>ASCE75 (JIS37, TR37)</b>	37.20	75.00	62.71	2 15/32	122.24	4 13/16	122.24	4 13/16	13.50	17/32
<b>ASCE80</b>	39.68	80.00	63.50	2 1/2	127.00	5	127.00	5	13.89	35/64
<b>ASCE85</b>	42.30	85.27	65.09	2 9/16	131.76	5 3/16	131.76	5 3/16	14.29	9/16



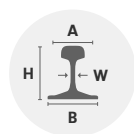
## Summary tables



## Light Rails | European profiles

	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>S7</b>	6.75	13.61	25.00	0.98	65.00	2.56	50.00	1.97	5.00	0.20
<b>S10</b>	10.00	20.16	32.00	1.26	70.00	2.76	58.00	2.28	6.00	0.24
<b>S14</b>	14.00	28.22	38.00	1.50	80.00	3.15	70.00	2.76	9.00	0.35
<b>S18</b>	18.30	36.89	43.00	1.69	93.00	3.66	82.00	3.23	10.00	0.39
<b>S20</b>	19.84	40.00	44.00	1.73	100.00	3.94	82.00	3.23	10.00	0.39
<b>S24</b>	24.43	49.25	53.00	2.09	115.00	4.53	90.00	3.54	10.00	0.39
<b>S30</b>	30.03	60.54	60.30	2.37	108.00	4.25	108.00	4.25	12.30	0.48
<b>S31</b>	31.57	63.64	56.00	2.20	125.00	4.92	106.00	4.17	12.00	0.47
<b>S33 (33E1)</b>	33.47	67.47	58.00	2.28	134.00	5.28	105.00	4.13	11.00	0.43
<b>S41A</b>	41.24	83.14	67.00	2.64	138.00	5.43	125.00	4.92	12.00	0.47
<b>AFNOR26</b>	26.27	52.96	50.00	1.97	110.00	4.33	100.00	3.94	10.00	0.39
<b>AFNOR30</b>	30.15	60.78	58.42	2.30	125.50	4.94	106.00	4.17	11.00	0.43
<b>AFNOR36</b>	36.59	73.76	58.27	2.29	128.00	5.04	115.00	4.53	13.00	0.51
<b>BS35 M</b>	17.40	35.08	42.86	1.69	80.96	3.19	76.20	3.00	9.13	0.36
<b>BS35 R</b>	17.40	35.08	44.45	1.75	85.73	3.38	82.55	3.25	8.33	0.33
<b>BS80 A (39E1)</b>	39.77	80.17	63.50	2.50	133.35	5.25	117.47	4.62	13.10	0.52

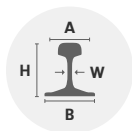
## Summary tables



## Transport Rails | American profiles

	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>90ARA-A (TR45)</b>	44.67	90.05	65.09	2 9/16	142.88	5 5/8	130.18	5 1/8	14.29	9/16
<b>100ARA-A</b>	49.88	100.56	69.85	2 3/4	152.40	6	139.70	5 1/2	14.29	9/16
<b>100ARA-B (100-8)</b>	49.87	100.53	67.47	2 21/32	143.27	5 41/64	130.57	5 9/64	14.29	9/16
<b>100RE (TR50)</b>	50.35	101.50	68.26	2 11/16	152.40	6	136.53	5 3/8	14.29	9/16
<b>115RE (TR57)</b>	56.80	114.50	69.06	2 23/32	168.28	6 5/8	139.70	5 1/2	15.88	5/8
<b>119RE</b>	58.86	118.67	67.47	2 21/32	173.04	6 13/16	139.70	5 1/2	15.88	5/8
<b>132RE</b>	65.33	131.70	76.20	3	180.98	7 1/8	152.40	6	16.67	21/32
<b>133RE</b>	66.10	133.25	76.20	3	179.39	7 1/16	152.40	6	17.46	11/16
<b>136RE (TR68)</b>	67.42	135.91	74.61	2 15/16	185.74	7 5/16	152.40	6	17.46	11/16
<b>141RE</b>	69.80	140.70	77.79	3 1/16	188.91	7 7/16	152.40	6	17.46	11/16
<b>136TW</b>	87.83	177.05	74.61	2 15/16	185.74	7 5/16	152.40	6	42.86	1 11/16

## Summary tables



## Transport Rails | European profiles

	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>45E1</b> (BS90A)	45.11	90.94	66.67	2.62	142.88	5.63	127.00	5.00	13.89	0.55
<b>45E3</b> (RN45)	44.79	90.29	66.00	2.60	142.00	5.59	130.00	5.12	15.00	0.59
<b>46E2</b> (U33)	46.27	93.28	62.00	2.44	145.00	5.71	134.00	5.28	15.00	0.59
<b>49E1</b> (S49)	49.39	99.57	67.00	2.64	149.00	5.87	125.00	4.92	14.00	0.55
<b>49E5</b>	49.13	99.04	67.00	2.64	149.00	5.87	125.00	4.92	14.00	0.55
<b>50E2</b> (50EB-T)	49.97	100.73	72.00	2.83	151.00	5.94	140.00	5.51	15.00	0.59
<b>50E6</b> (U50)	50.90	102.61	65.00	2.56	153.00	6.02	140.00	5.51	15.50	0.61
<b>54E1</b> (UIC54)	54.77	110.41	70.00	2.76	159.00	6.26	140.00	5.51	16.00	0.63
<b>54E2</b> (UIC54E)	53.82	108.50	67.00	2.64	161.00	6.34	125.00	4.92	16.00	0.63
<b>54E3</b> (S54)	54.57	110.01	67.00	2.64	154.00	6.06	125.00	4.92	16.00	0.63
<b>54E4</b>	54.31	109.48	67.00	2.64	154.00	6.06	125.00	4.92	16.00	0.63
<b>54E5</b> (54E1AHC)	54.42	109.71	70.20	2.76	159.00	6.26	140.00	5.51	13.10	0.52
<b>56E1</b> (BS113Lb)	56.30	109.71	69.85	2.75	159.00	6.26	140.00	5.51	20.00	0.79
<b>60E1</b> (UIC60)	60.21	121.38	72.00	2.83	172.00	6.77	150.00	5.91	16.50	0.65
<b>60E2</b>	60.03	121.01	72.00	2.83	172.00	6.77	150.00	5.91	16.50	0.65
<b>MAV48</b>	48.50	97.77	66.80	2.63	148.00	5.83	120.00	4.72	14.00	0.55

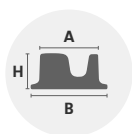
## Summary tables



## Grooved Rails

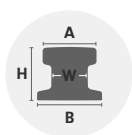
	Weight		Overall Head Width A		Height H		Base width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>51R1</b> (Ri52)	51.37	103.56	113.00	4.45	130.00	5.12	150.00	5.91	12.00	0.47
<b>53R1</b> (Ri53)	52.98	106.80	113.00	4.45	130.00	5.12	150.00	5.91	12.00	0.47
<b>54G1/54R1</b> (41GPU)	54.26	109.38	116.82	4.60	152.50	6.00	141.50	5.57	13.00	0.51
<b>54G2</b> (Ri54G2)	54.55	109.97	116.60	4.59	152.50	6.00	141.50	5.57	13.00	0.51
<b>55G1</b> (35GP)	54.77	110.41	111.82	4.40	152.50	6.00	141.50	5.57	13.00	0.51
<b>55G2</b> (41GP)	55.37	111.62	116.90	4.60	152.50	6.00	141.50	5.57	13.00	0.51
<b>55G3</b> (41GP13)	55.27	111.62	116.82	4.60	152.50	6.00	141.50	5.57	13.00	0.51
<b>55R1</b> (Ri55NK)	55.45	111.78	113.00	4.45	150.00	5.91	150.00	5.91	12.00	0.47
<b>57R1</b> (Ph37)	56.54	113.98	127.00	5.00	182.00	7.17	150.00	5.91	11.00	0.43
<b>59R1</b> (Ri59)	58.97	118.88	113.00	4.45	180.00	7.09	180.00	7.09	12.00	0.47
<b>59R2</b> (Ri59N)	58.14	117.20	113.00	4.45	180.00	7.09	180.00	7.09	12.00	0.47
<b>60R1</b> (Ri60)	60.59	122.14	113.00	4.45	180.00	7.09	180.00	7.09	12.00	0.47
<b>60R2</b> (Ri60N)	59.75	120.45	113.00	4.45	180.00	7.09	180.00	7.09	12.00	0.47
<b>62R1</b> (NP4aM)	62.37	125.73	116.00	4.57	180.00	7.09	180.00	7.09	12.00	0.47
<b>62R2</b> (Np4aS)	61.91	124.80	116.00	4.57	180.00	7.09	180.00	7.09	12.00	0.47
<b>67R1</b> (Ph37α)	66.76	134.58	135.00	5.31	180.00	7.09	180.00	7.09	13.00	0.51
<b>73C1</b> (VKRi60)	72.73	146.62	113.10	4.45	180.00	7.09	180.00	7.09	12.00	0.47

## Summary tables



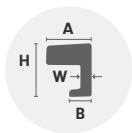
### Block Rails

	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>53K2</b> (MSzTS52)	53.34	107.53	116.00	4.57	70.00	2.76	156.00	6.14	n/a	n/a
<b>57K2</b> (LK1)	57.68	116.28	115.00	4.53	72.00	2.83	156.00	6.14	n/a	n/a
<b>58K2</b> (112 Tram)	58.20	117.51	120.00	4.72	72.00	2.83	156.00	6.14	n/a	n/a



### Contact Rails

	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>150NMC</b> (STR74, TR75)	74.00	149.18	104.80	4 1/8	103.19	4 1/16	123.83	4 7/8	69.85	2 3/4
<b>STR40</b>	40.27	81.18	80.00	3.15	105.00	4.13	80.00	3.15	18.00	0.71
<b>T52</b>	52.31	105.45	101.00	3.98	100.50	3.96	45.00	1.77	45.00	1.77
<b>Guide Bar</b>	44.35	89.41	100.00	3.94	150.00	5.91	25.00	0.98	n/a	n/a



### Guard Rails

	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>33C1</b> (UIC33, U69, RL1-60)	32.99	66.50	80.00	3.15	93.00	3.66	40.00	1.57	20.00	0.79
<b>SBB Radlenker</b>	40.56	81.77	80.00	3.15	104.00	4.09	40.00	1.57	20.00	0.79





# Crane Rails

## AMERICAN PROFILES

Crane Rails are an important subset of the rail industry. Their shapes can be quite different from those of Transport rails and are the result of a long evolution to give the rails specific performance characteristics.

Transverse loads (across the rails) are particularly high in crane applications and have led to rails with wide bases and relatively thick webs. Several profiles have flat heads as well, to better support large wheel loads.

Because each crane project is different, over time, many heavy crane rail profiles (sections) have been developed. American Heavy Crane Rails are the most common in North America, European DIN Rails are found worldwide, and Speciality Crane Rails appear for specific projects.

All Crane rails are produced and tested to stringent metallurgical quality standards. They are offered in multiple grades which improve the rail's load-bearing capabilities while reducing in-service wear rates. The grading of Crane Rails depends on their origins: in North America, Brinell Hardness is used for grading purposes, whereas the European standards focus on Tensile Strength. There is an approximate correlation between the two systems.

## Description

American Crane Rails rails have a long-established tradition among engineers in the Americas and are widely used for industrial crane applications. CR rails range in size from 104 lbs/yard (52.04 kg/m) to 175 lbs/yard (86.80 kg/m), and follow the ASTM A759 specification. An interesting characteristic of the CR rails is that their base widths and overall heights are almost the same.

American Crane Rails profiles are produced in standard lengths of 33, 39, 40, 60, 78 and 80 feet ( $\approx$  10, 12, 18 and 24 meters). Other lengths are also available upon special request. The ends can be finished as needed, either non-drilled (blank) for welding or drilled with 3 holes for joint bars. Square-finished ends are standard with Mitre cuts also available.

## Basic Dimensions

	Weight		Head Width		Height		Base Width		Web	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>CR104</b> (MRS51)	52.04	104.90	63.50	2 1/2	127.00	5	127.00	5	25.40	1
<b>CR105</b> (MRS52)	52.09	105.00	65.09	2 9/16	131.76	5 3/16	131.76	5 3/16	23.81	15/16
<b>CR135</b> (MRS67)	67.39	135.86	87.31	3 7/16	146.05	5 3/4	131.76	5 3/16	31.75	1 1/4
<b>CR171</b> (MRS85)	85.02	171.40	109.22	4.30	152.40	6	152.40	6	31.75	1 1/4
<b>CR175</b> (MRS87B, TR87)	86.80	175.00	107.95	4 1/4	152.40	6	152.40	6	38.10	1 1/2

## Mechanical Properties

Grades	Hardness HB	Tensile Strength (for info. only) MPa
Standard	≥ 260	≥ 880
High Strength*	321 - 388	≥ 1080
R-340 **	≥ 340	≥ 1150
Advanced Head Hardened (AHH) **	≥ 360	≥ 1220

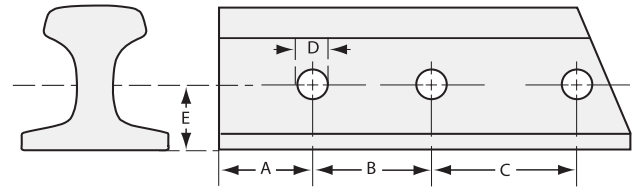
\* High Strength Rails (head-hardened or alloy rails) are produced in accordance with manufacturer's standard practice, as per ASTM A759 Supplementary Requirement S1.

\*\* R-340 and AHH grades are not overseen by ASTM A759 -- they are manufacturer proprietary grades.

## Chemical Composition

Grade	C %	Mn %	Si %	P %	S %	V %	Cr %
Standard	0.67 - 0.84	0.70 - 1.10	0.10 - 0.50	≤ 0.040	≤ 0.050	-	-

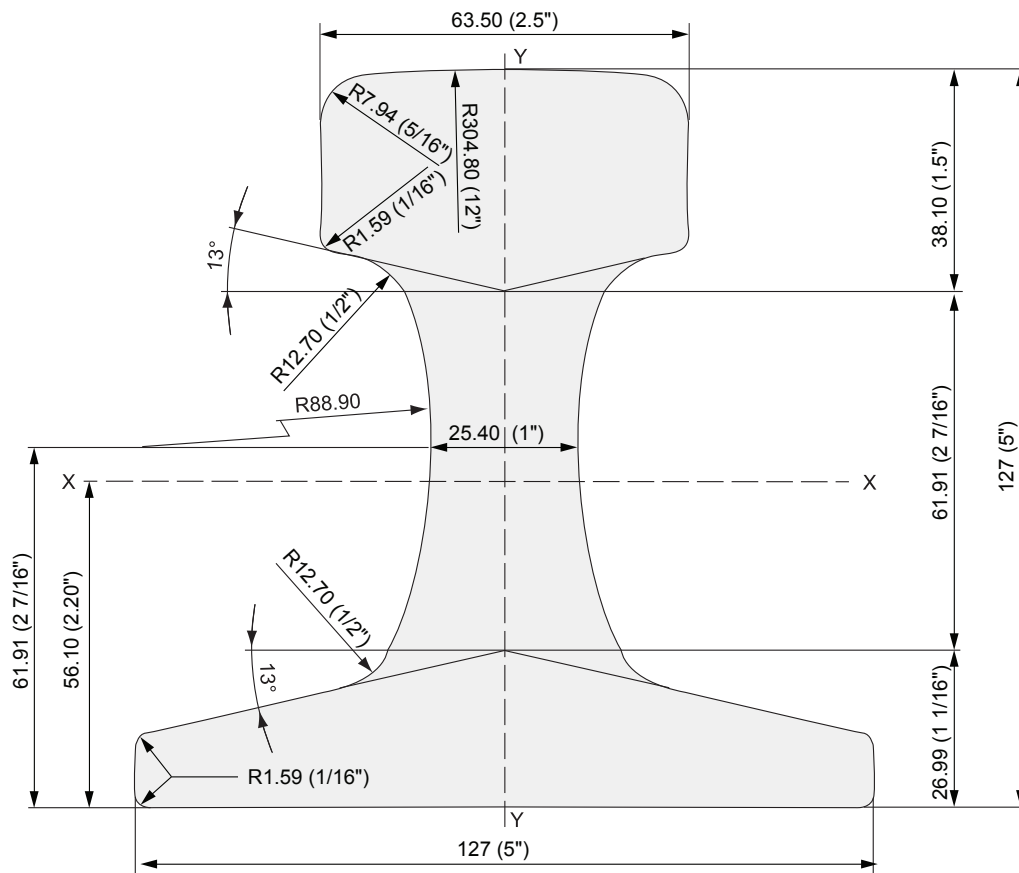
## Drilling Patterns



Rail profile	Spacing						Hole diameter		Elevation	
	A		B		C		D		E	
	mm	in	mm	in	mm	in	mm	in	mm	in
CR104 (MRS51)	101.60	4	127.00	5	152.40	6	26.99	1 1/16	61.91	2 7/16
CR105 (MRS52)	101.60	4	127.00	5	152.40	6	23.81	15/16	55.96	2 13/64
CR135 (MRS67)	101.60	4	127.00	5	152.40	6	30.16	1 3/16	62.71	2 15/32
CR171 (MRS85)	101.60	4	127.00	5	152.40	6	30.16	1 3/16	66.68	2 5/8
CR175 (MRS87B, TR87)	101.60	4	127.00	5	152.40	6	30.16	1 3/16	67.47	2 21/32

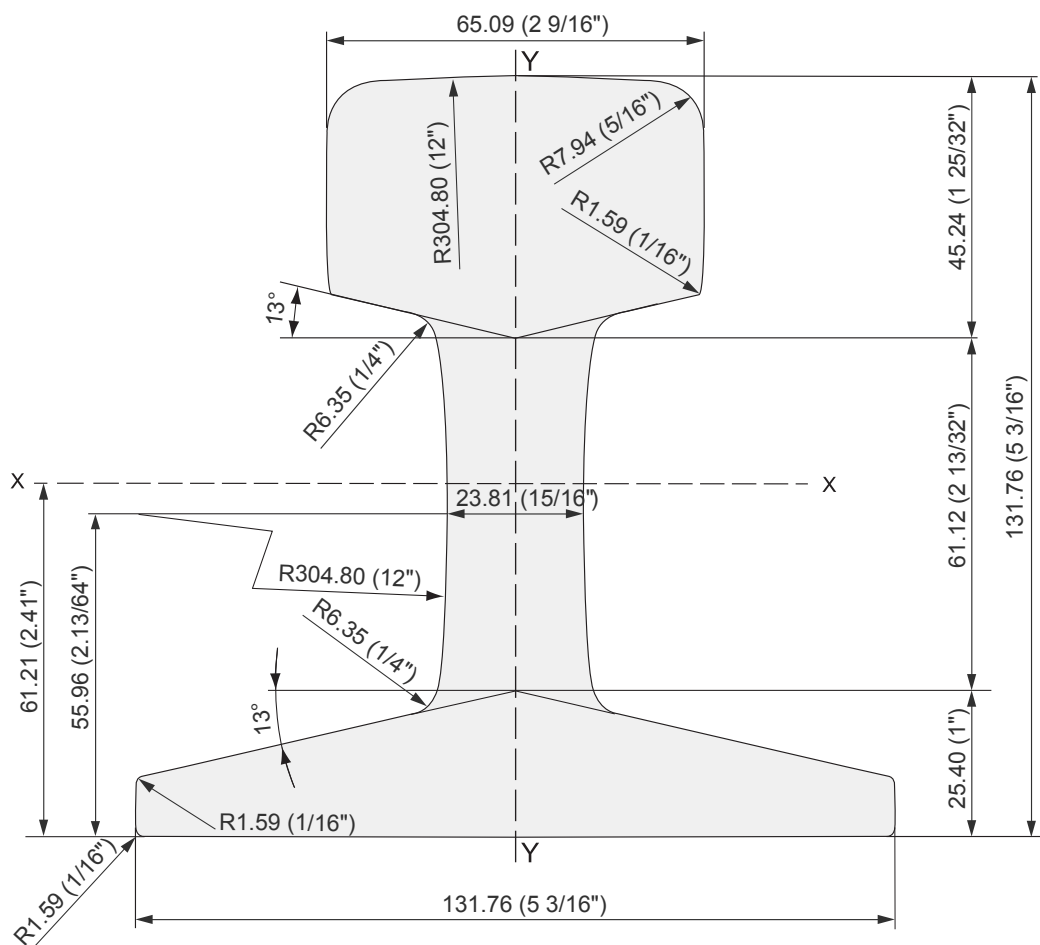
## CR104 (MRS51)

Weight 52.04 kg/m | 104.90 lb/yd



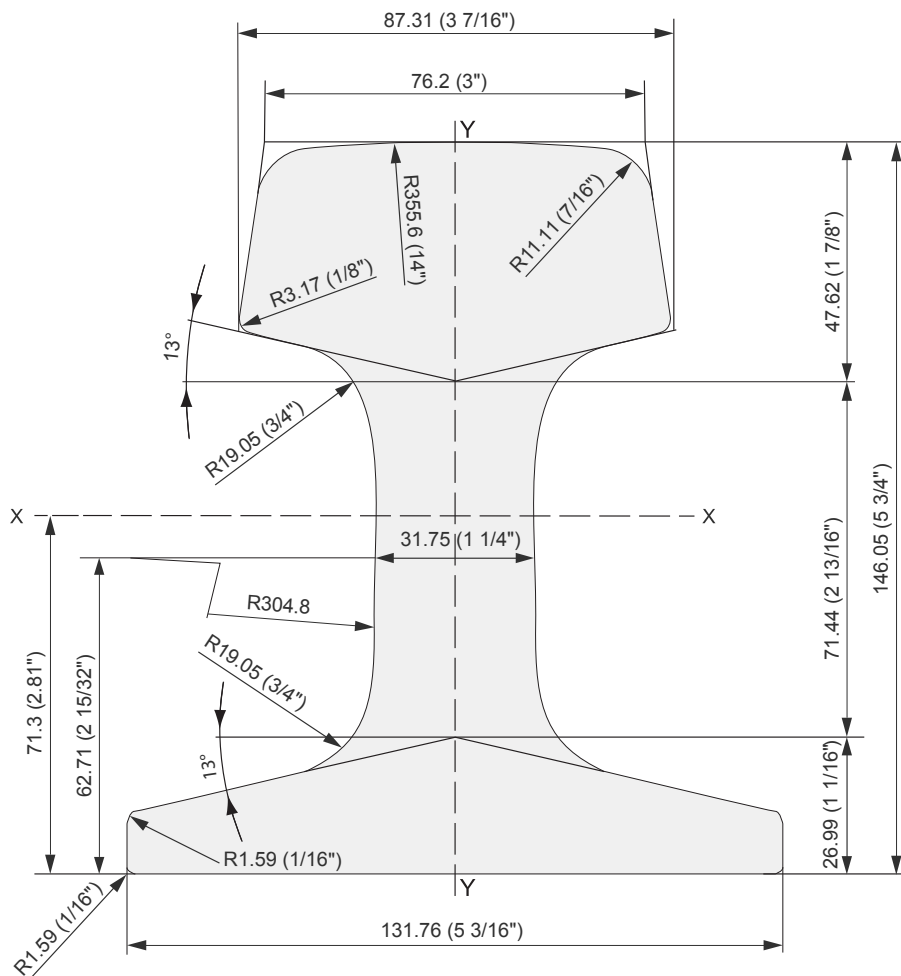
# CR105 (MRS52)

Weight 52.09 kg/m | 105.00 lb/yd



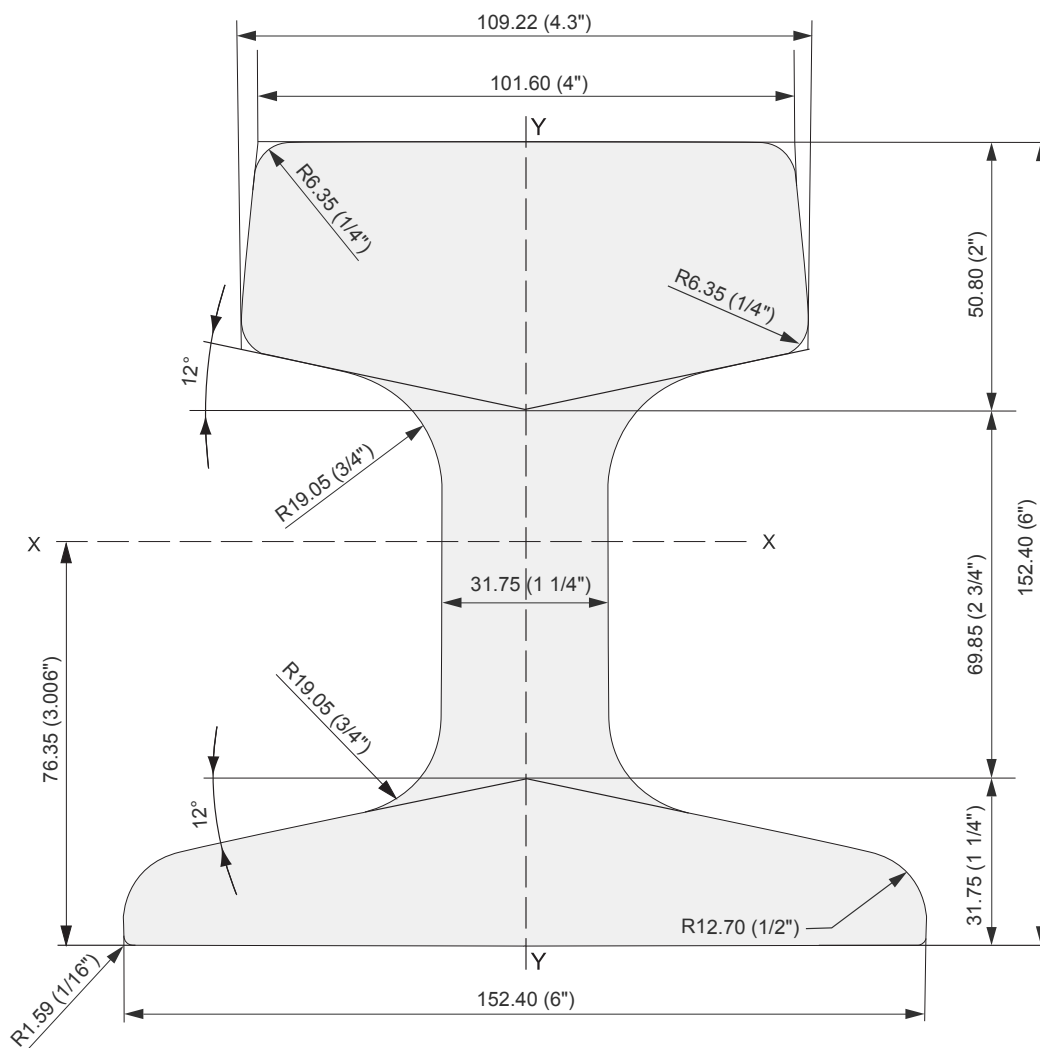


**Weight** 67.39 kg/m | 135.86 lb/yd



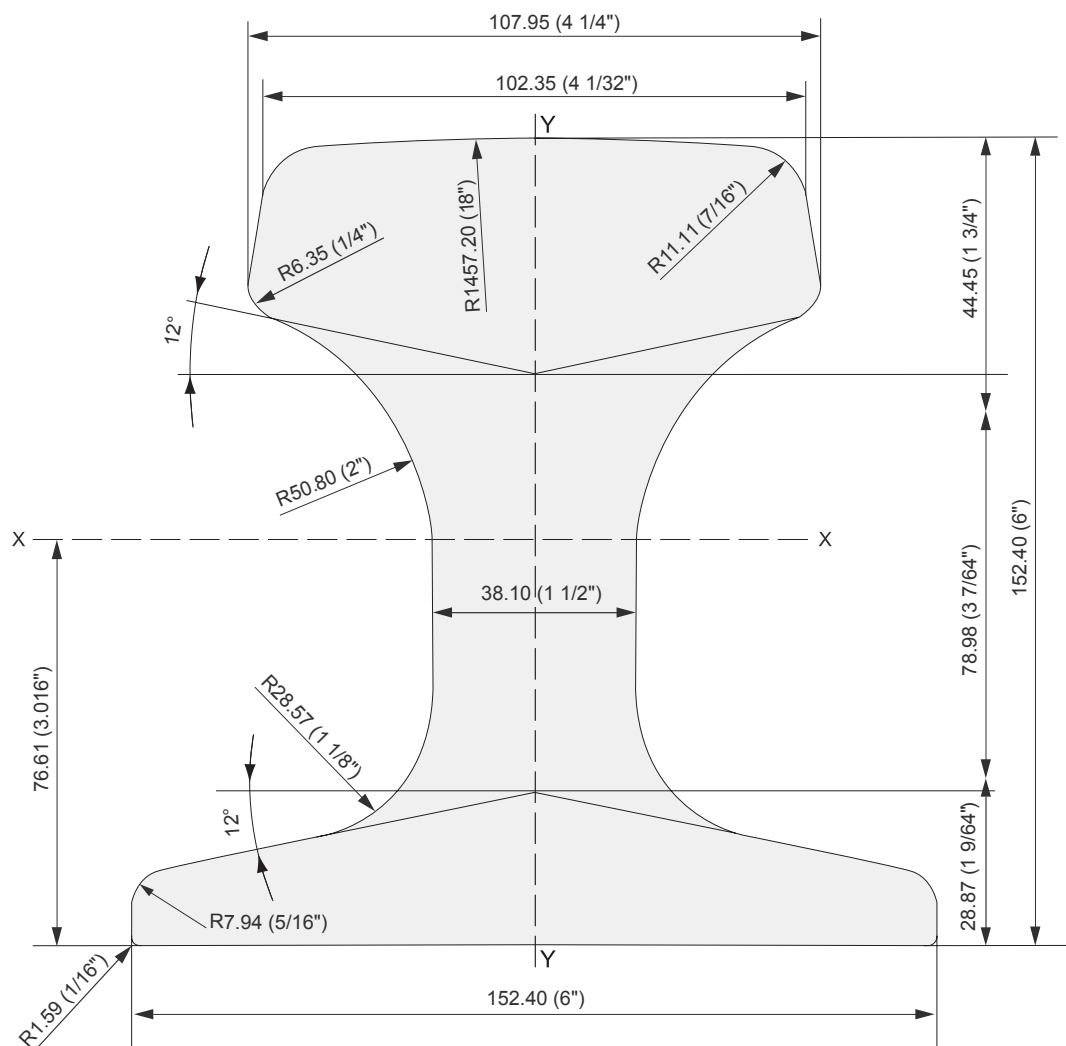
# CR171 (MRS85)

Weight 85.02 kg/m | 171.40 lb/yd



## CR175 (MRS87B, TR87)

Weight 86.80 kg/m | 175.00 lb/yd





# Crane Rails

## EUROPEAN PROFILES (DIN)

Crane Rails are an important subset of the rail industry. Their shapes can be quite different from those of Transport rails and are the result of a long evolution to give the rails specific performance characteristics.

Transverse loads (across the rails) are particularly high in crane applications and have led to rails with wide bases and relatively thick webs. Several profiles have flat heads as well, to better support large wheel loads.

Because each crane project is different, over time, many heavy crane rail profiles have been developed. American Heavy Crane Rails are the most common in North America, European DIN Rails are found worldwide, and Speciality Crane Rails appear for specific projects.

All Crane rails are produced and tested to stringent metallurgical quality standards. They are offered in multiple grades which improve the rail's load-bearing capabilities while reducing in-service wear rates. The grading of Crane Rails depends on their origins: in North America, Brinell Hardness is used for grading purposes, whereas the European standards focus on Tensile Strength. There is an approximate correlation between the two systems.

## Description

A class of short and squat rails was developed in Europe and is described by the DIN 536 Standard. Commonly referred to as "DIN" rails, these are found worldwide and are, by volume, the most widely used crane rails in the world.

DIN rails are offered in a range of sizes, from A45 (22.1 kg/m) to A150 (150 kg/m) and can fulfill the requirements of most crane rail systems. Unlike the names of many other rails, the nomenclature for DIN rails describes the width of the head (for example, A45 has a 45mm wide head).

Each DIN rail profile is characterized by a low center of gravity, a relatively wide and robust head and a very wide web and base. Designed to be installed on beams or foundations that offer continuous support, their lower height can be a boon for installations where overhead clearance is important. Their width and blocky shapes are extremely stable — ideal for crane applications.

The DIN 536 standard defines two steel grades: those with a tensile strength greater than 690 MPa and those greater than 880 MPa. Over time, different mills have come to use different jargon to represent these grades. Wirth Rail's DIN rail supplier, ArcelorMittal, uses the names 70 kg & 90 kg. (aside:  $880 \text{ MPa} = 880 \text{ N/mm}^2 \approx (90 \text{ kg} \times \text{gravitational constant } 9.81 \text{ m/s}^2) / \text{mm}^2$ ).

Two additional grades are found in Europe but are not described in the DIN 536 specification. The steel is alloyed with Chromium and Vanadium to achieve a tensile strength greater than 1080 MPa. ArcelorMittal refers to these by the names 110 CrV and R340 in its literature.

European heavy crane rails are finished in standard lengths of 9, 10, 12, 15 and 18 metres ( $\approx$  30, 33, 39, 49 and 59 ft). Other lengths can be supplied by special request. The stocky shapes of these rails make drilling impractical. Square-finished ends are standard with Mitre cuts also available.

## Basic Dimensions

Profiles	Weight		Head Width		Height		Base Width		Web	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
A45	22.10	44.55	45.00	1.77	55.00	2.17	125.00	4.92	24.00	0.94
A55	31.80	64.11	55.00	2.17	65.00	2.56	150.00	5.91	31.00	1.22
A65	43.10	86.89	65.00	2.56	75.00	2.95	175.00	6.89	38.00	1.50
A75	56.20	113.29	75.00	2.95	85.00	3.35	200.00	7.87	45.00	1.77
A100	74.30	149.78	100.00	3.94	95.00	3.74	200.00	7.87	60.00	2.36
A120	100.00	201.59	120.00	4.72	105.00	4.13	220.00	8.66	72.00	2.83
A150	150.30	302.99	150.00	5.91	150.00	5.91	220.00	8.66	80.00	3.15

## Mechanical Properties

Grade	Tensile Strength MPa	Yield Strength MPa	Elongation %	Hardness (for information only) HB
70 kg (700)	≥ 690	≥ 355	≥ 12	≥ 200
90 kg (900)	≥ 880	≥ 440	≥ 8	≥ 260
110 CrV (1100)	≥ 1080	≥ 640	≥ 7	≥ 320
R340	≥ 1150	≥ 600	≥ 7	≥ 340

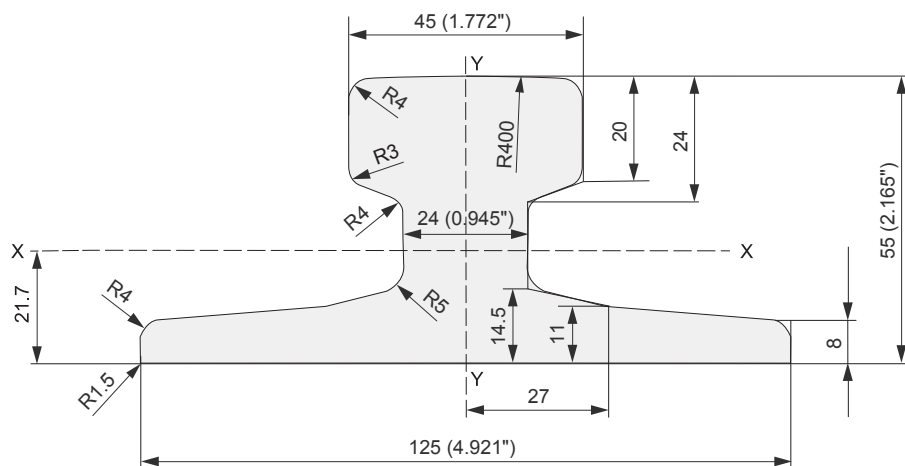
## Chemical Composition

Grade	C %	Mn %	Si %	P %	S %	V %	Cr %
70 kg (700)	0.40 – 0.60	0.80 – 1.20	≤ 0.350	≤ 0.045	≤ 0.045	-	-
90 kg (900)	0.60 – 0.80	0.80 – 1.30	≤ 0.500	≤ 0.045	≤ 0.045	-	-
110 CrV (1100)	0.65 – 0.85	0.90 – 1.30	≤ 0.500	≤ 0.040	≤ 0.040	0.05 – 0.15	0.20 – 0.80
R340	0.80 - 0.95	0.90 - 1.40	≤ 0.500	≤ 0.045	≤ 0.045	0.05 – 0.15	0.20 – 0.80

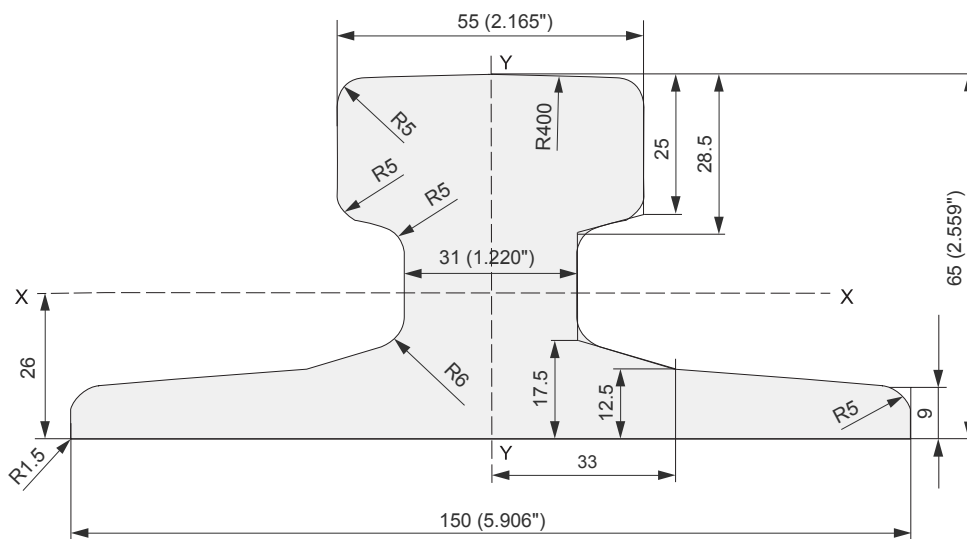


# A45

Weight 22.10 kg/m | 44.55 lb/yd

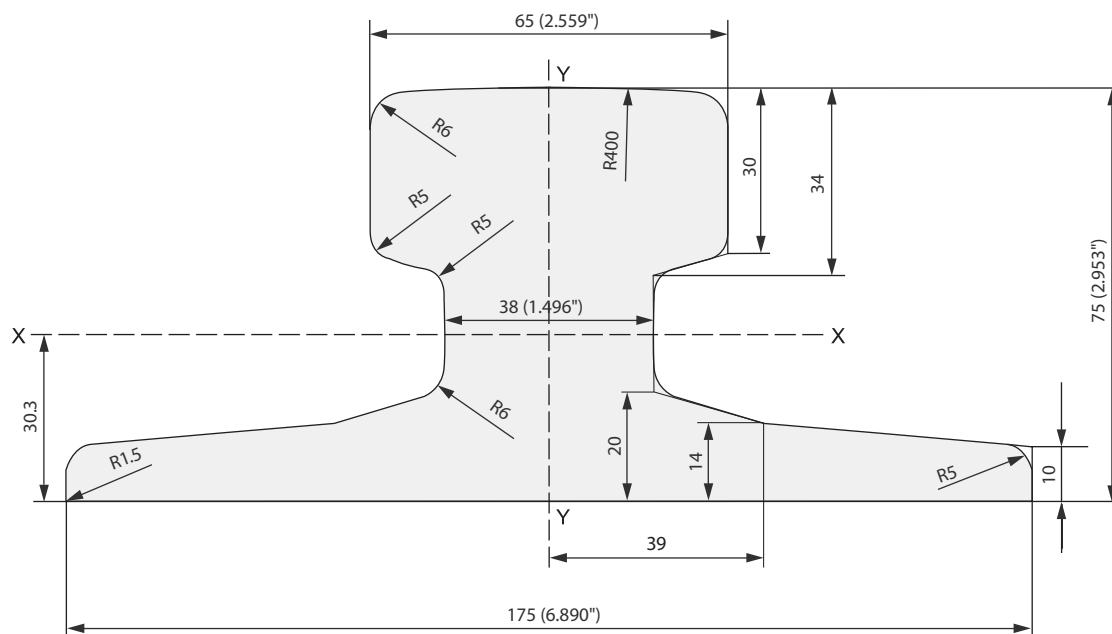


**Weight** 31.80 kg/m | 64.11 lb/yd



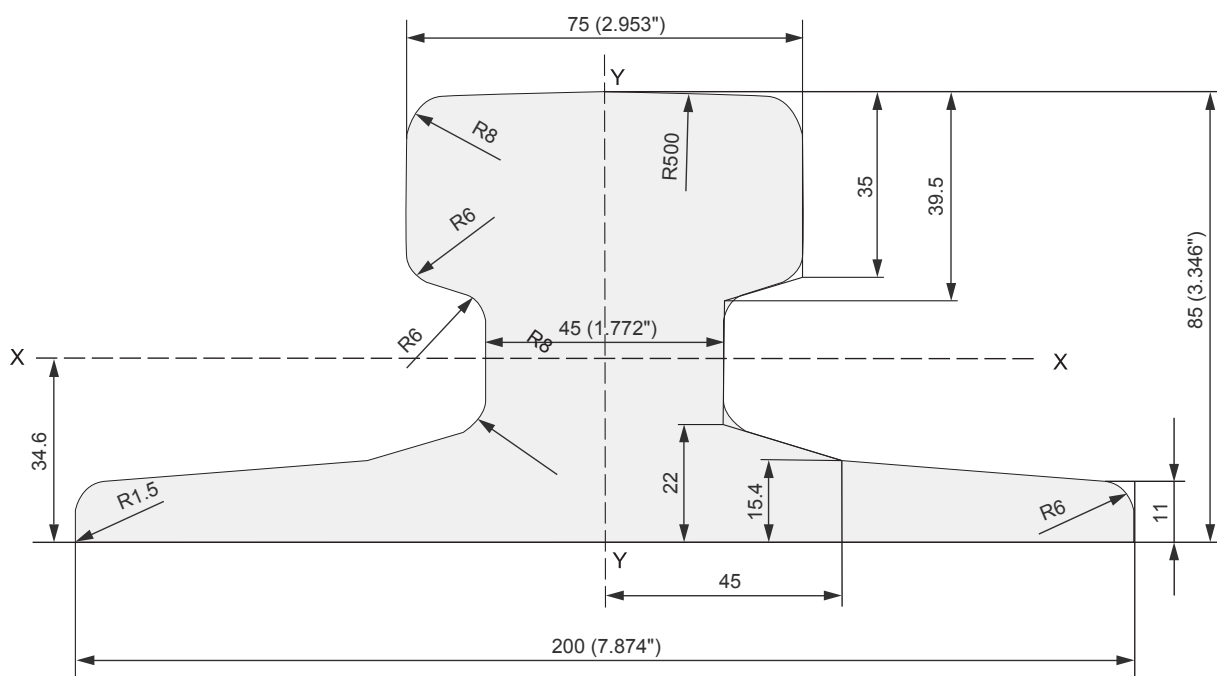
## A65

Weight 43.10 kg/m | 86.89 lb/yd



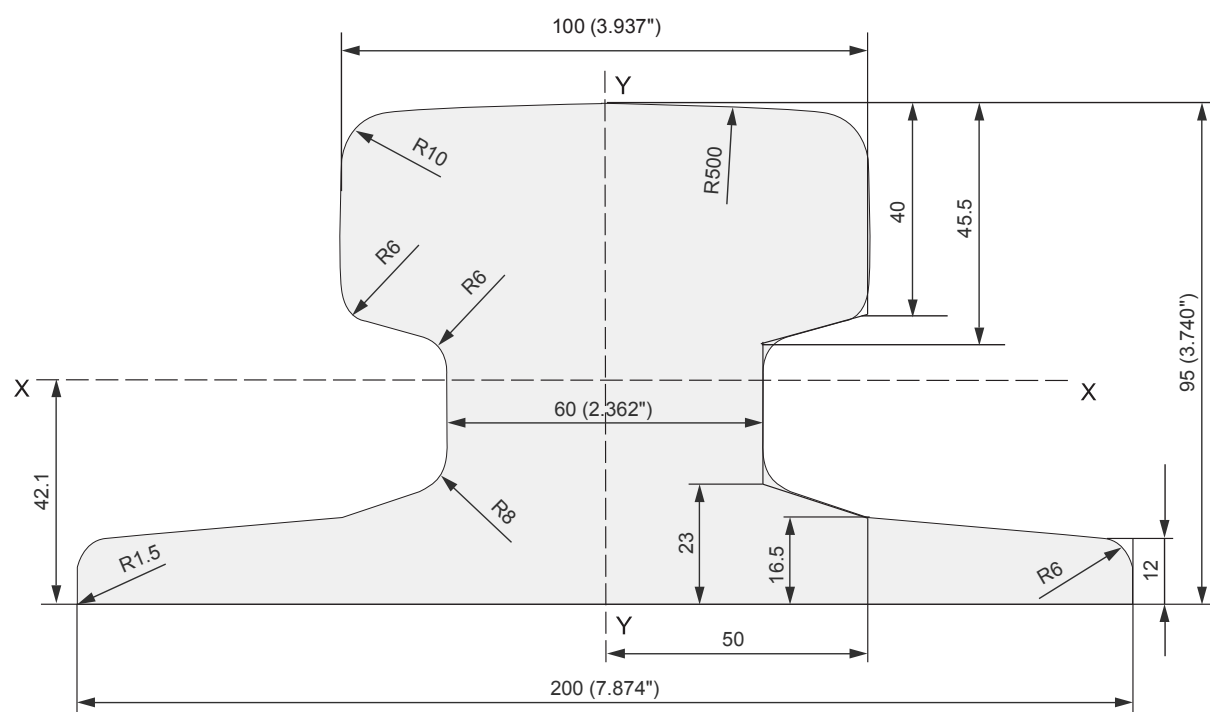
## A75

Weight 56.20 kg/m | 113.29 lb/yd



# A100

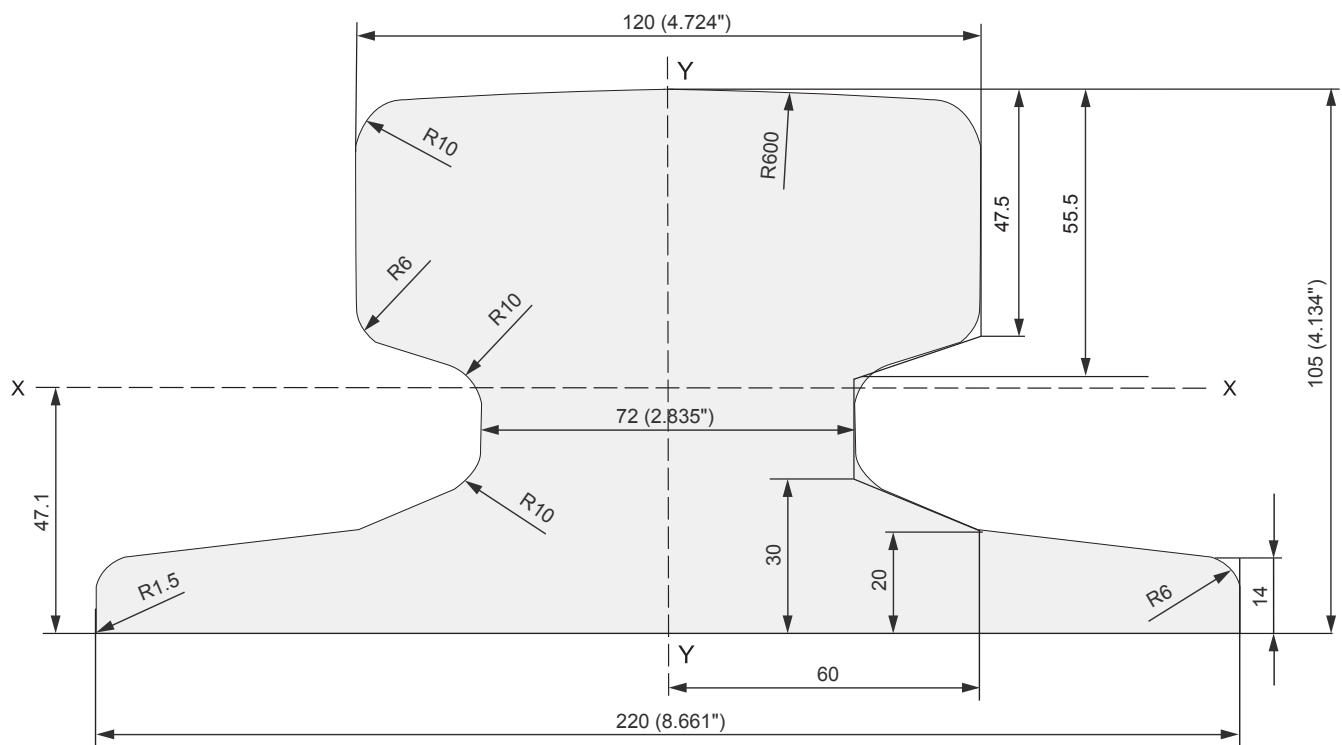
Weight 74.30 kg/m | 149.78 lb/yd





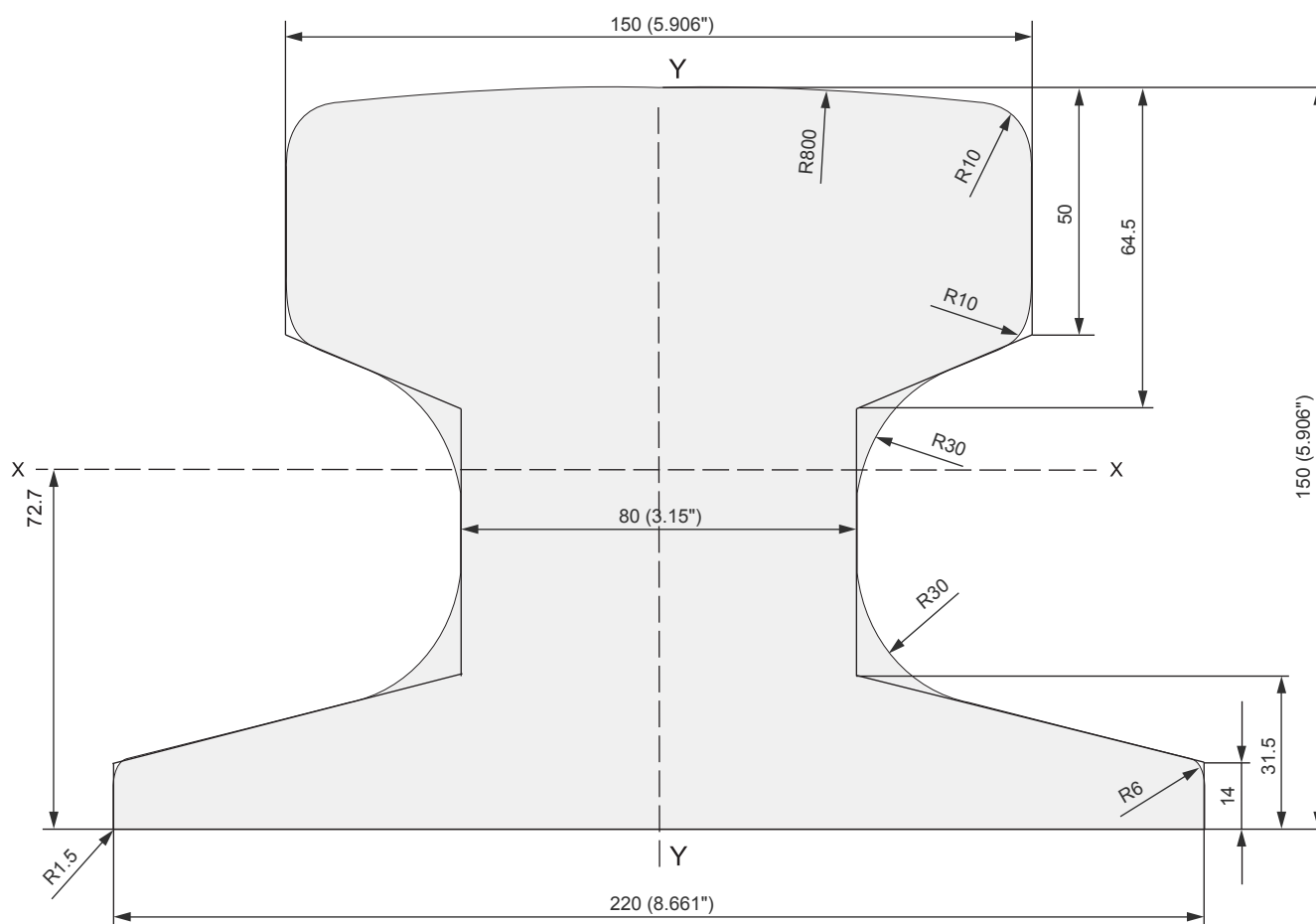
# A120

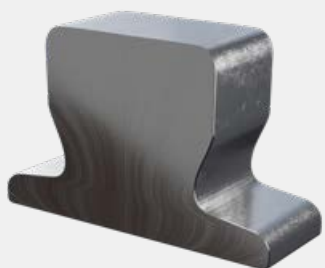
Weight 100.00 kg/m | 201.59 lb/yd



# A150

Weight 150.30 kg/m | 302.99 lb/yd





# Crane Rails

## SPECIAL PROFILES

Crane Rails are an important subset of the rail industry. Their shapes can be quite different from those of Transport rails and are the result of a long evolution to give the rails specific performance characteristics.

Transverse loads (across the rails) are particularly high in crane applications and have led to rails with wide bases and relatively thick webs. Several profiles have flat heads as well, to better support large wheel loads.

Because each crane project is different, over time, many heavy crane rail profiles have been developed. American Heavy Crane Rails are the most common in North America, European DIN Rails are found worldwide, and Speciality Crane Rails appear for specific projects.

All Crane rails are produced and tested to stringent metallurgical quality standards. They are offered in multiple grades which improve the rail's load-bearing capabilities while reducing in-service wear rates. The grading of Crane Rails depends on their origins: in North America, Brinell Hardness is used for grading purposes, whereas the European standards focus on Tensile Strength. There is an approximate correlation between the two systems.

## Description

There is a long history of crane rail development and many profiles were developed for specific applications over a century ago. Having proven to be effective, these are still in demand today for special applications. In addition, new rail profiles have also been developed to meet new needs in industrial and port applications. Wirth Rail distributes a wide range of these 'singular' profiles. Although the producers may have changed, these rails meet or exceed the original mill specifications.

Special Crane Rails are usually produced to Mill specifications. The grades are the same as those found in European Crane rail, with the most common being the 70 kg, 90 kg and the alloy grades 110 CrV and R340.

Special Crane Rails are finished in standard lengths of 9, 10, 12, 15 and 18 metres ( $\approx$  30, 33, 39, 49 and 59 ft), but other lengths can be supplied by special request. Rail ends are prepared with the usual non-drilled (blank), square-finished ends. Mitre cutting and drilling are also available, again by special request. As with the DIN rails, not all profiles can be drilled due to their unusual shapes and webs.

## Basic Dimensions

Profiles	Weight		Head Width		Height		Base Width		Web	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>A75s</b>	63.61	128.23	75.00	2.95	85.00	3.35	200.00	7.87	75.00	2.95
<b>MRS73</b>	73.63	148.43	70.00	2.76	157.00	6.18	146.00	5.75	32.00	1.26
<b>MRS86</b>	85.50	172.36	102.00	4.02	102.00	4.02	165.00	6.50	80.30	3.16
<b>MRS87A (PRI85)</b>	86.80	175.00	101.60	4.00	152.40	6.00	152.40	6.00	34.90	1.37
<b>MRS125</b>	125.00	251.99	120.00	4.72	180.00	7.09	180.00	7.09	40.00	1.57
<b>MRS140</b>	139.80	281.82	120.00	4.72	150.00	5.91	220.00	8.66	80.00	3.15
<b>MRS192</b>	192.00	387.05	140.00	5.51	157.20	6.19	229.00	9.02	128.30	5.05
<b>MRS221</b>	221.40	446.32	220.00	8.66	160.00	6.30	220.00	8.66	145.00	5.71
<b>CR73</b>	73.30	147.77	100.00	3.94	135.00	5.31	140.00	5.51	32.00	1.26
<b>CR100</b>	100.20	201.99	120.00	4.72	150.00	5.91	155.00	6.10	39.00	1.54
<b>CR140</b>	139.80	281.82	150.00	5.91	150.00	5.91	200.00	7.87	80.00	3.15
<b>AS86</b>	85.88	173.13	101.60	4.00	152.46	6.00	150.00	5.91	35.00	1.38
<b>SP100</b>	89.05	179.52	100.00	3.94	150.00	5.91	150.00	5.91	38.00	1.50
<b>SP120</b>	118.28	238.44	120.00	4.72	170.00	6.69	170.00	6.69	44.00	1.73

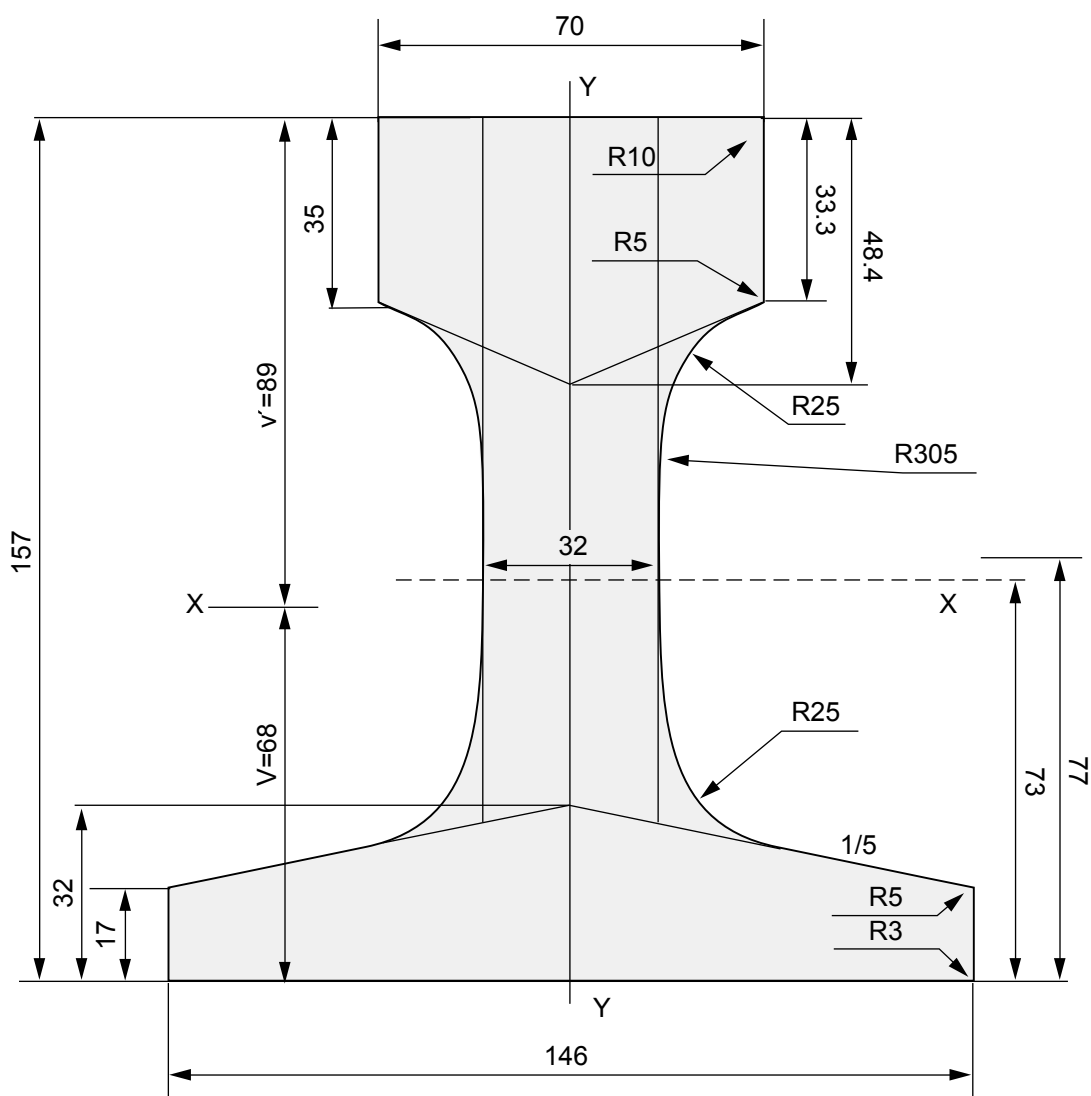
## Mechanical Properties

Grade	Tensile Strength MPa	Yield Strength MPa	Elongation %	Hardness (for information only) HB
70 kg (700)	≥ 690	≥ 355	≥ 12	≥ 200
90 kg (900)	≥ 880	≥ 440	≥ 8	≥ 260
110 CrV (1100)	≥ 1080	≥ 640	≥ 7	≥ 320
R340	≥ 1150	≥ 600	≥ 7	≥ 340

## Chemical Composition

Grade	C %	Mn %	Si %	P %	S %	V %	Cr %
70 kg (700)	0.40 – 0.60	0.80 – 1.20	≤ 0.350	≤ 0.045	≤ 0.045	-	-
90 kg (900)	0.60 – 0.80	0.80 – 1.30	≤ 0.500	≤ 0.045	≤ 0.045	-	-
110 CrV (1100)	0.65 – 0.85	0.90 – 1.30	≤ 0.500	≤ 0.040	≤ 0.040	0.05 – 0.15	0.20 – 0.80
R340	0.80 - 0.95	0.90 - 1.40	≤ 0.500	≤ 0.045	≤ 0.045	0.05 – 0.15	0.20 – 0.80

**Weight** 73.63 kg/m | 148.43 lb/yd

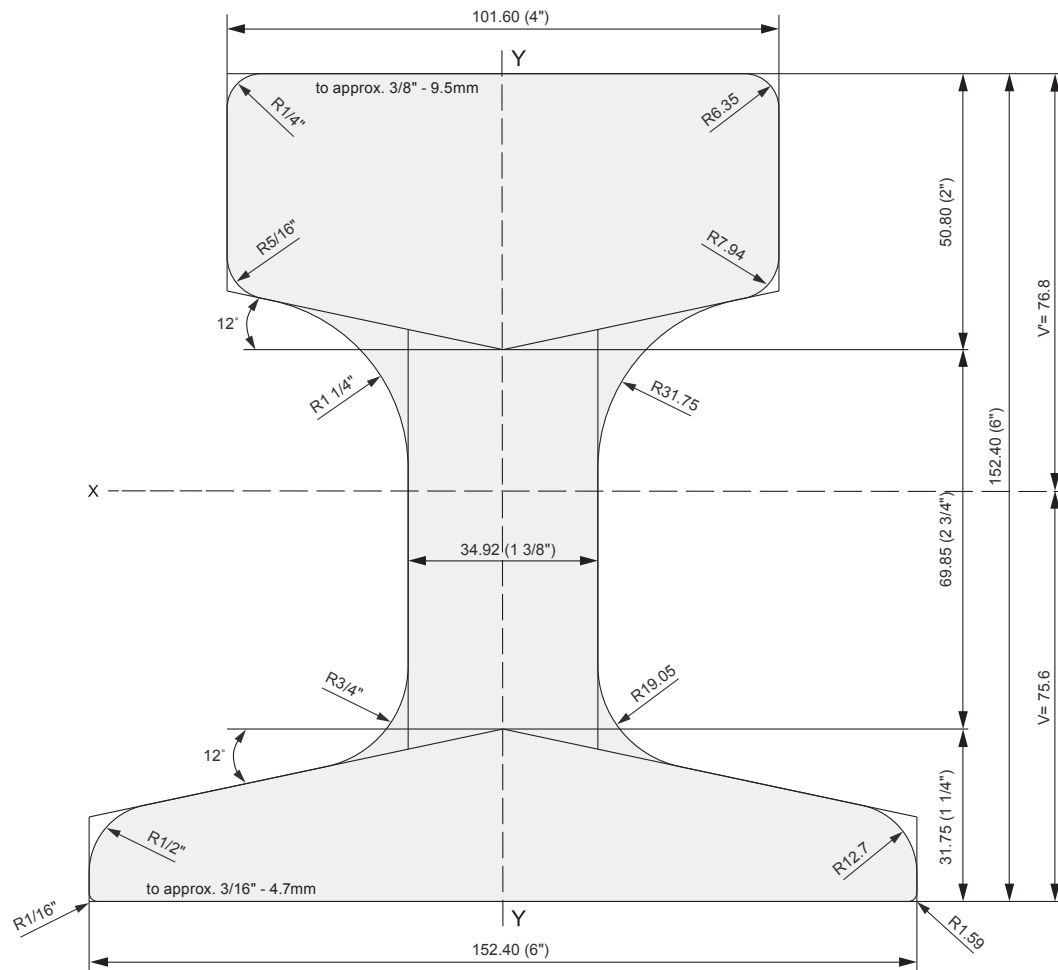


**Weight** 85.50 kg/m | 172.36 lb/yd



# MRS87A (PRI85)

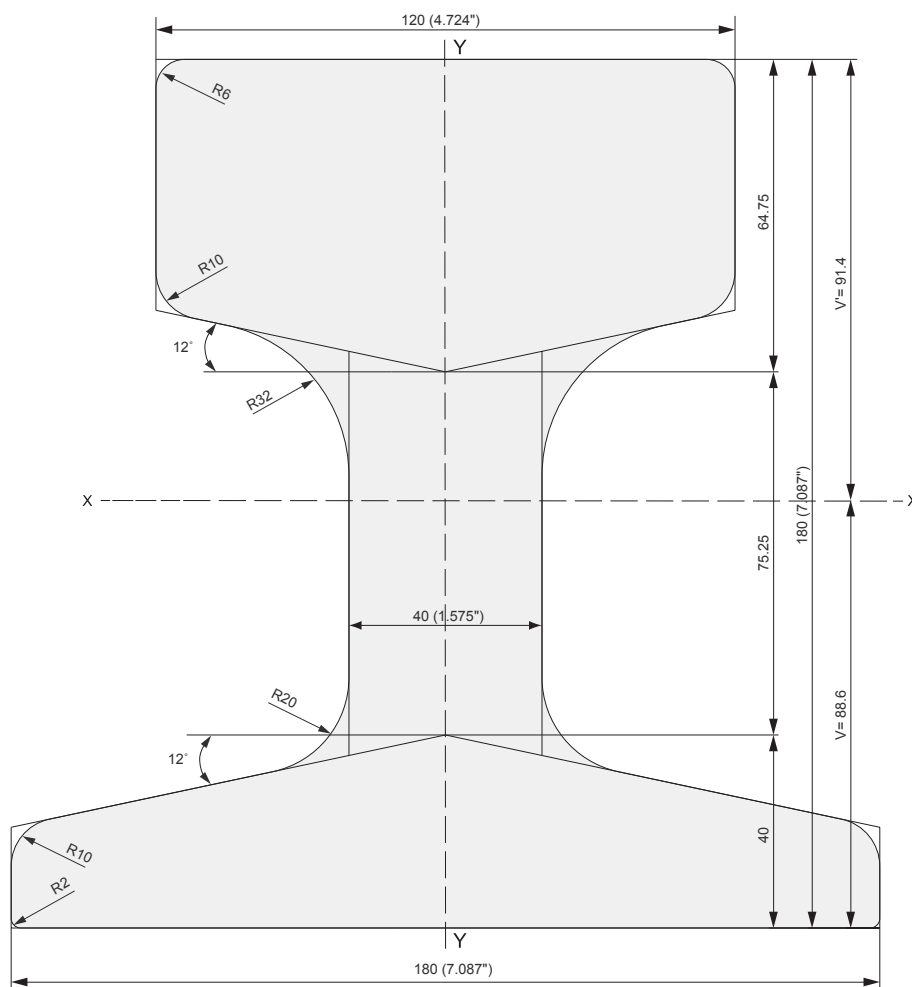
Weight 86.80 kg/m | 175.00 lb/yd





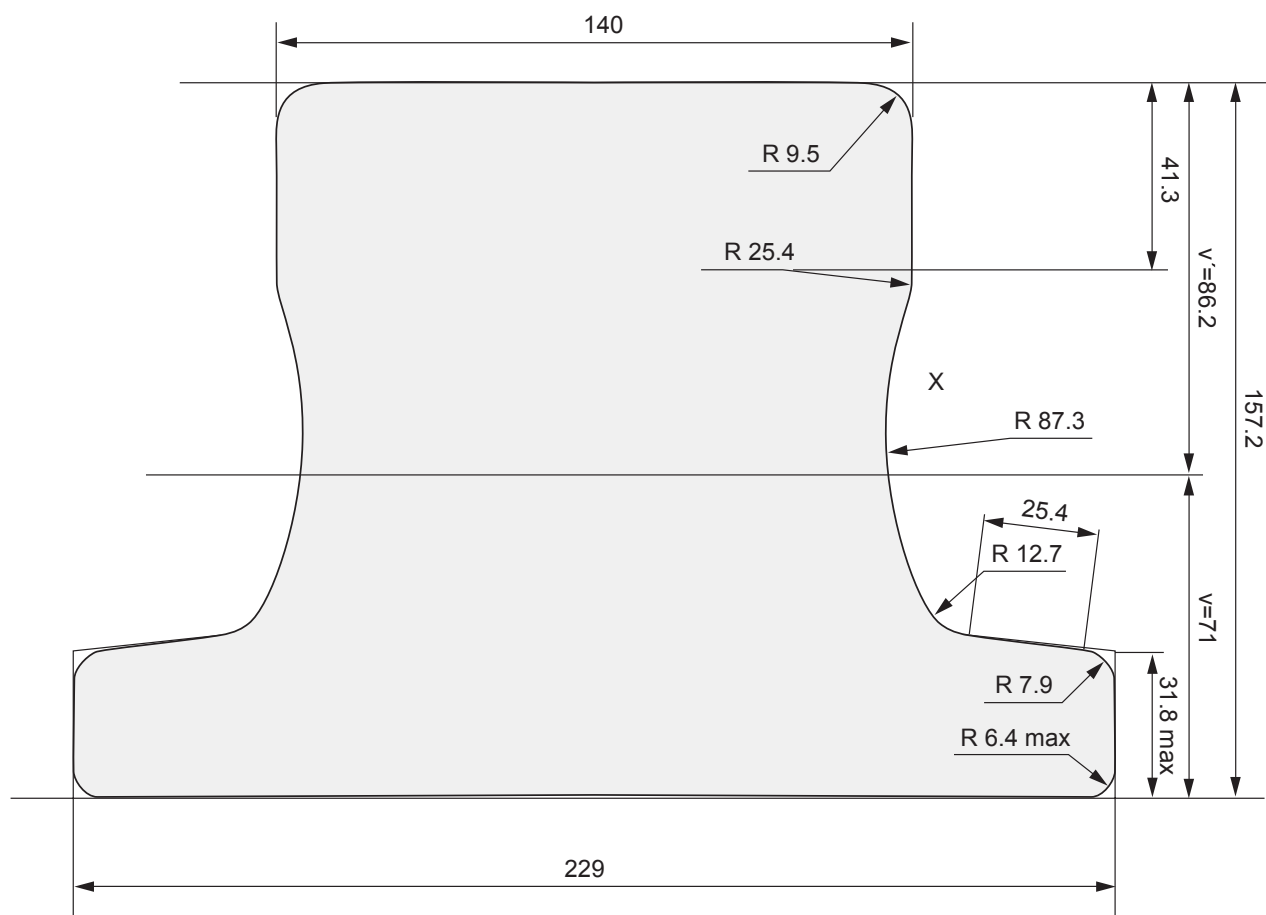
# MRS125

Weight 125.00 kg/m | 251.99 lb/yd



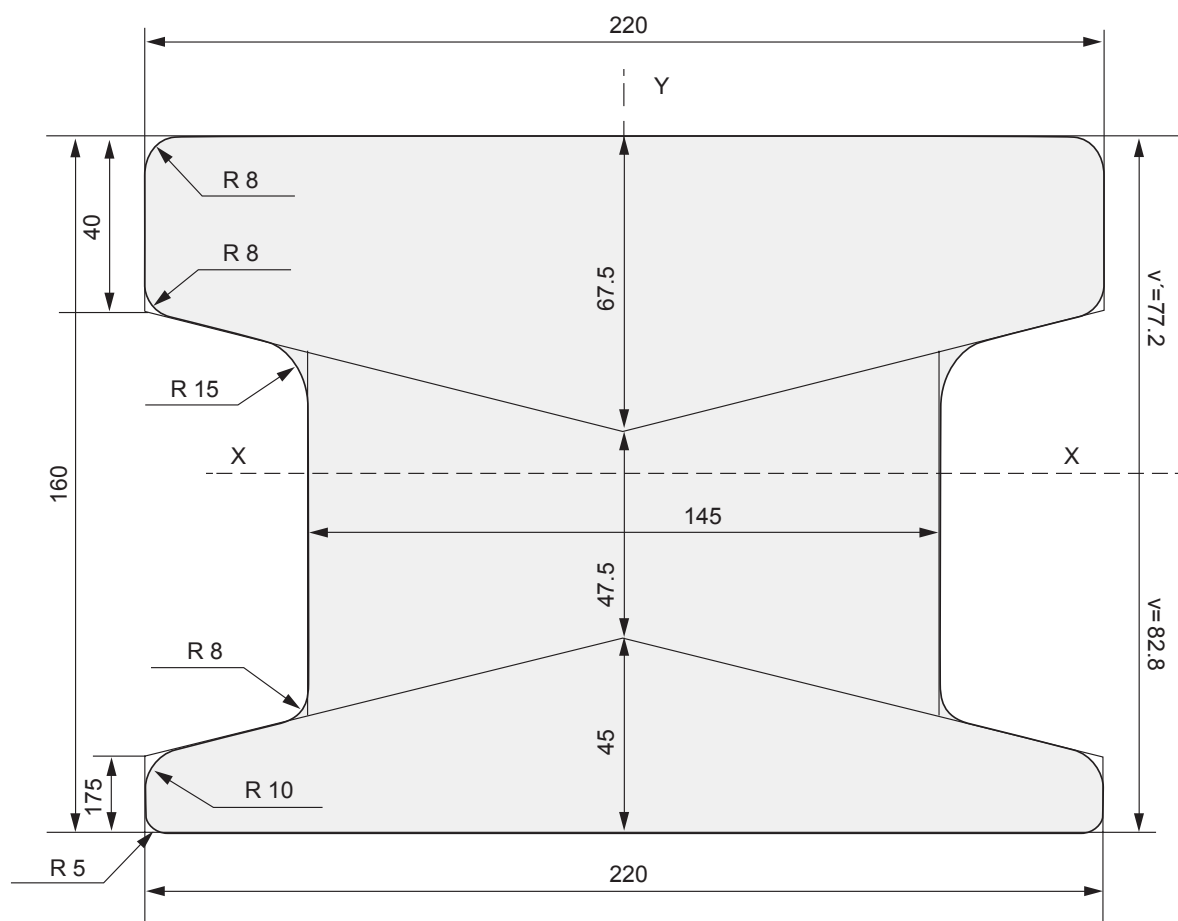
# MRS192

Weight 192.00 kg/m | 387.05 lb/yd

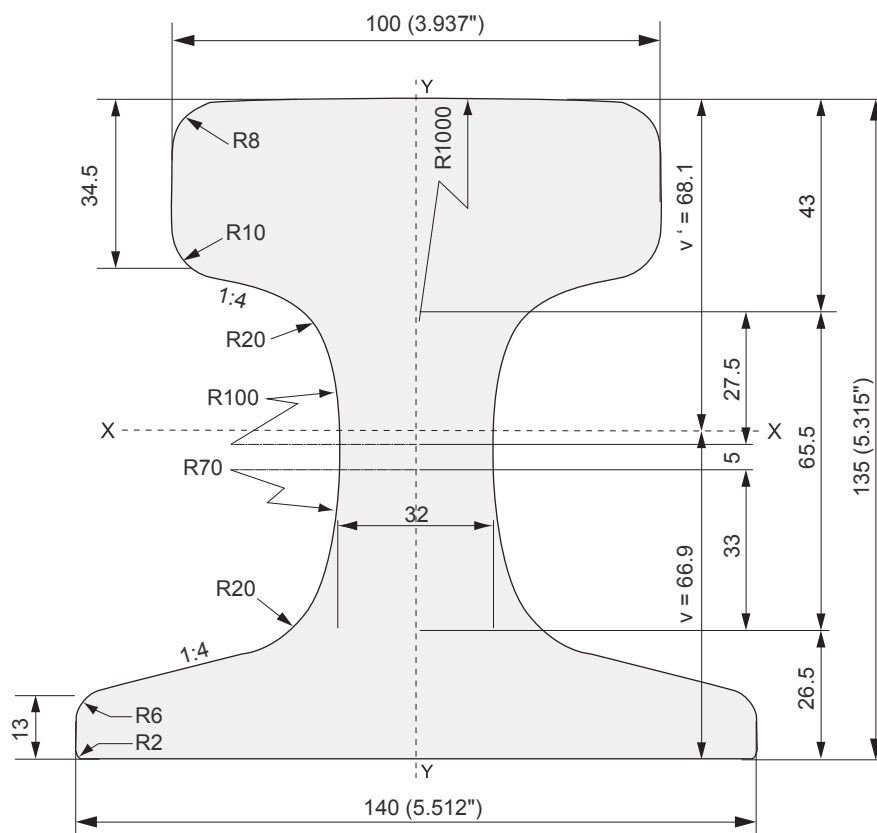


# MRS221

Weight 221.40 kg/m | 446.32 lb/yd

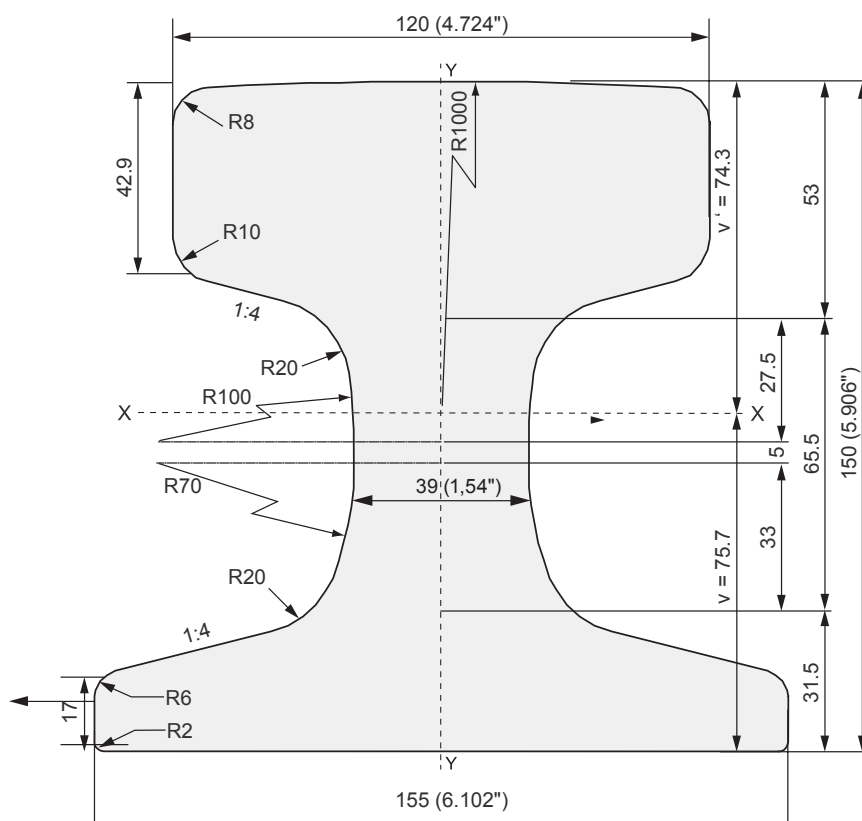


**Weight** 73.30 kg/m | 147.77 lb/yd



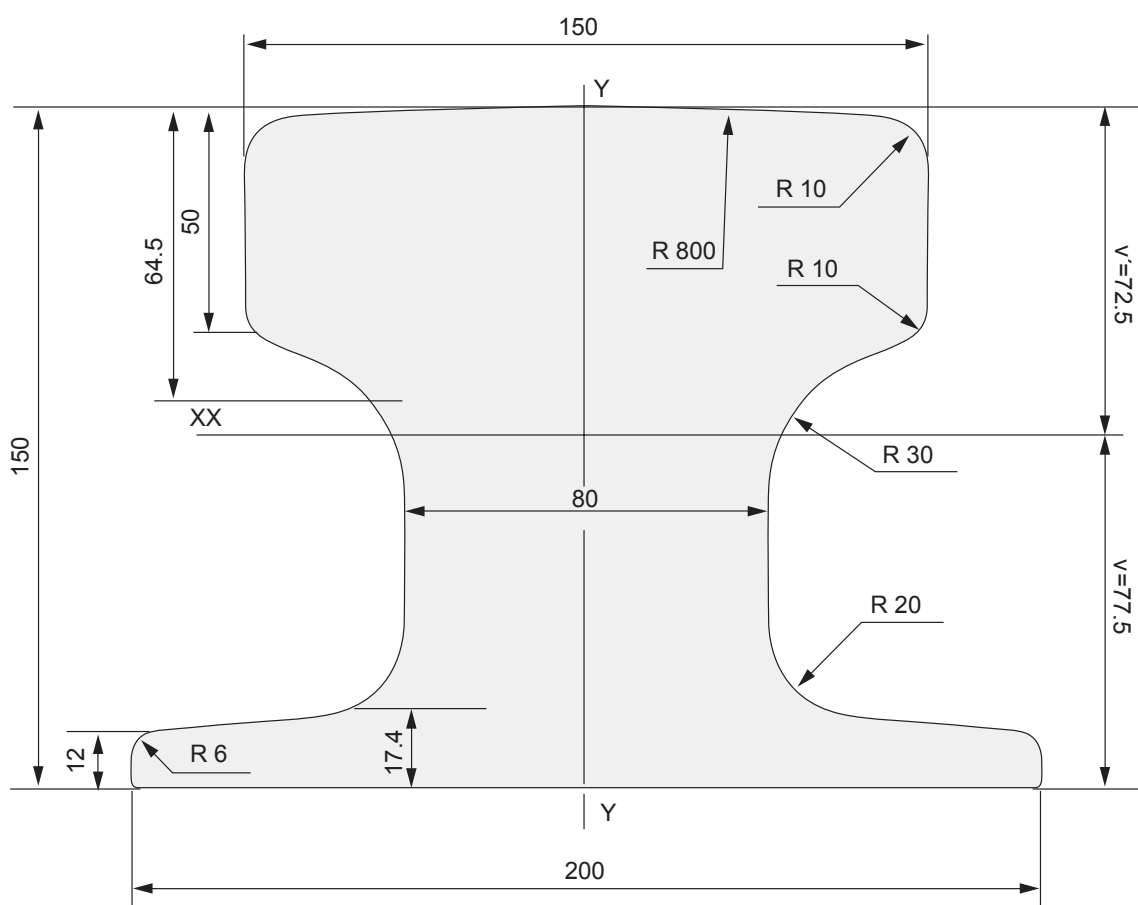
# CR100

Weight 100.20 kg/m | 201.99 lb/yd



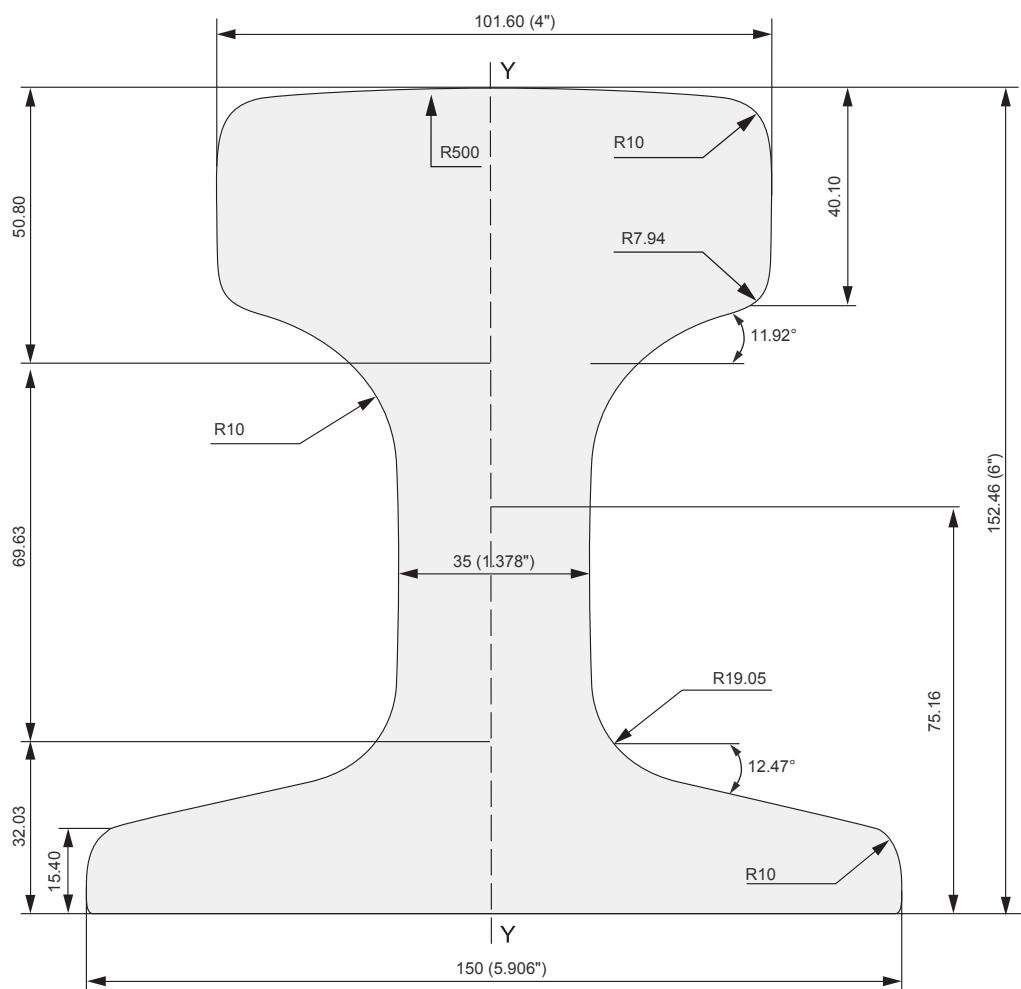
# CR140

Weight 139.80 kg/m | 281.82 lb/yd



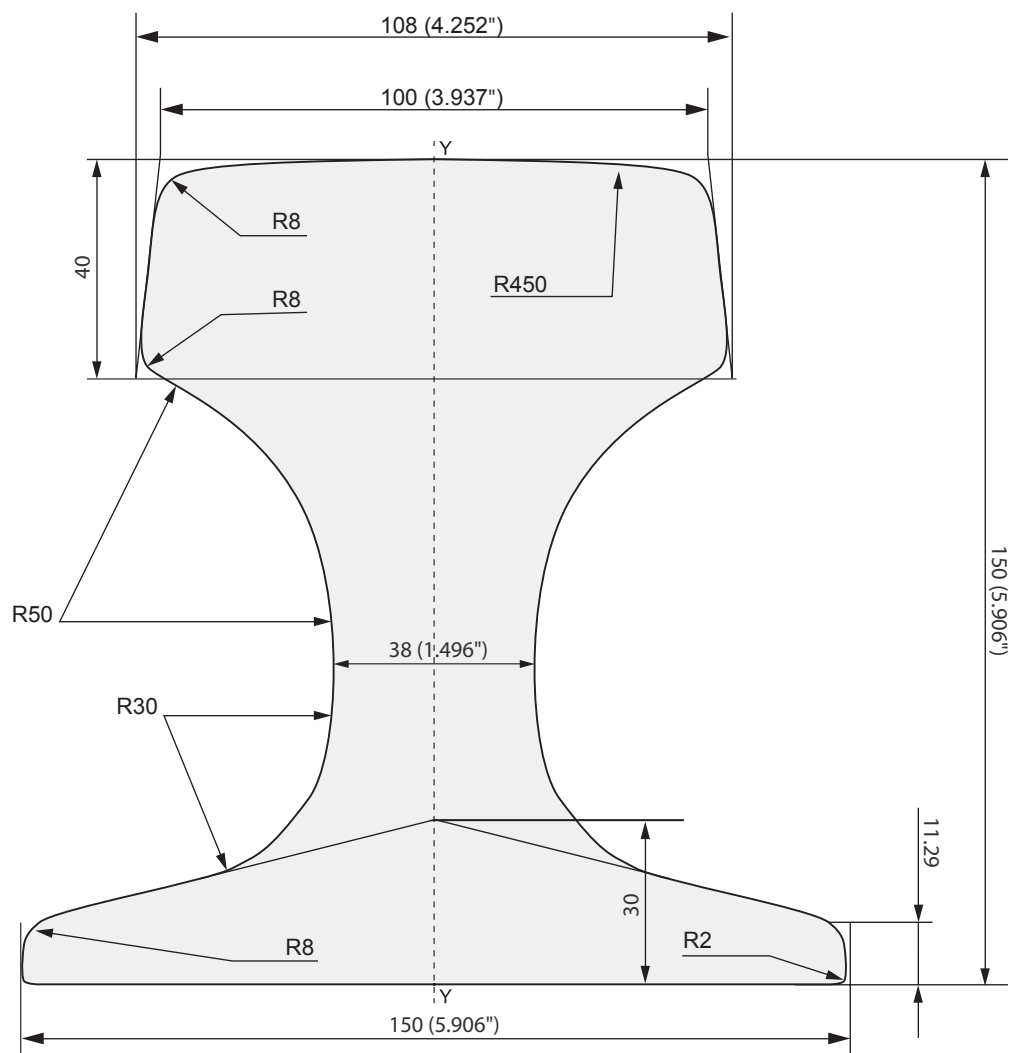
# AS86

Weight 85.88 kg/m | 173.13 lb/yd



## SP100

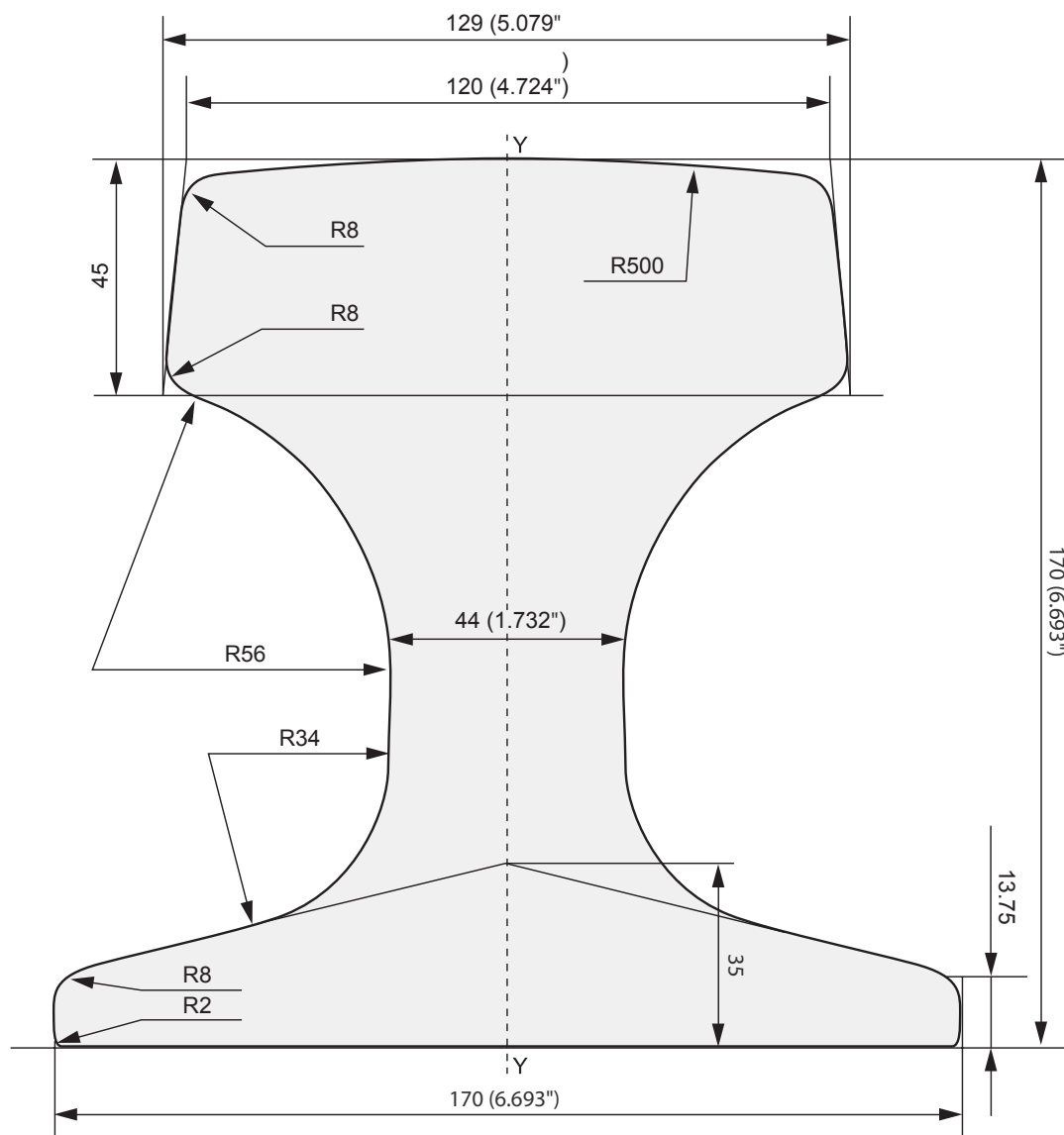
Weight 89.05 kg/m | 179.52 lb/yd





## SP120

Weight 118.28 kg/m | 238.44 lb/yd





# Light Rails

## AMERICAN PROFILES

In the early days of railroading, rolling stock and the loads they carried were much lighter than they were to become. One of the first rails with the familiar "I" shape originated in the UK in 1829. Coincidentally, Stephenson's Rocket locomotive was created in the same year. These rails weigh just 36 lbs/yard (17.9 kg/m) whereas a modern Transport rail might be 136 lbs/yard (67.4 kg/m).

Over time, lightweight rails have been superseded by larger & heavier rails for transportation purposes. Mining was an early adopter, and lightweight rails found other uses: light crane systems, assembly lines, automated warehouse retrieval systems, hanger doors, amusement parks and even car washes, to name only a few. As this shift took place, Light Rail formed a class distinct from Transportation Rail. Different countries have developed their own standards and the rails themselves evolved with different shapes, sizes and specifications. European and American standards dominate the Light Rail market.

## Description

In the interest of standardization, the American Society of Civil Engineers (or ASCE) developed a set of rail profiles in 1893. These rails all have a height equal to the width of their bases, and share the same proportions of steel weight in the head, web & foot.

The ASCE rails quickly spread all over the world with production taking place in mills far from the USA. With many producers of the same products, it was not uncommon for each Mill to follow its own standards and naming conventions. For example, ASCE45 is known as JIS22 under the Japanese Industrial Standards. Similarly, the Brazilian TR25 is the same as the ASCE50 rail. The TR is from the Portuguese 'trilho' or rail.

American Light Rails are produced under the dimensional tolerances and mechanical properties defined in the ASTM A1/00 technical specification.

American Light Rails are produced in standard lengths of 20, 30, 33, 39, 40, 60, 78 and 80 feet ( $\approx$  6, 9, 10, 12, 18 and 24 meters). Other lengths are also available upon special request. The ends can be finished as needed, either non-drilled (blank) for welding or drilled with 2 holes for joint bars.

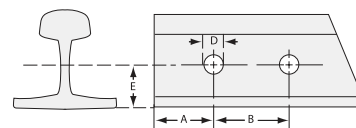
## Basic Dimensions

Profiles	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
ASCE20	9.92	20.00	34.13	1 11/32	66.67	2 5/8	66.67	2 5/8	6.35	1/4
ASCE25	12.40	25.00	38.10	1 1/2	69.85	2 3/4	69.85	2 3/4	7.54	19/64
ASCE30	14.88	30.00	42.86	1 11/16	79.38	3 1/8	79.38	3 1/8	8.33	21/64
ASCE40	19.84	40.00	47.62	1 7/8	88.90	3 1/2	88.90	3 1/2	9.92	25/64
ASCE45 (JIS22)	22.32	45.00	50.80	2	93.66	3 11/16	93.66	3 11/16	10.72	27/64
ASCE50 (TR25)	24.80	50.00	53.98	2 1/8	98.43	3 7/8	98.43	3 7/8	11.11	7/16
ASCE60	29.76	60.00	60.33	2 3/8	107.95	4 1/4	107.95	4 1/4	12.30	31/64
ASCE75 (JIS37, TR37)	37.20	75.00	62.71	2 15/32	122.24	4 13/16	122.24	4 13/16	13.50	17/32
ASCE80	39.68	80.00	63.50	2 1/2	127.00	5	127.00	5	13.89	35/64
ASCE85	42.30	85.27	65.09	2 9/16	131.76	5 3/16	131.76	5 3/16	14.29	9/16

## Mechanical Properties

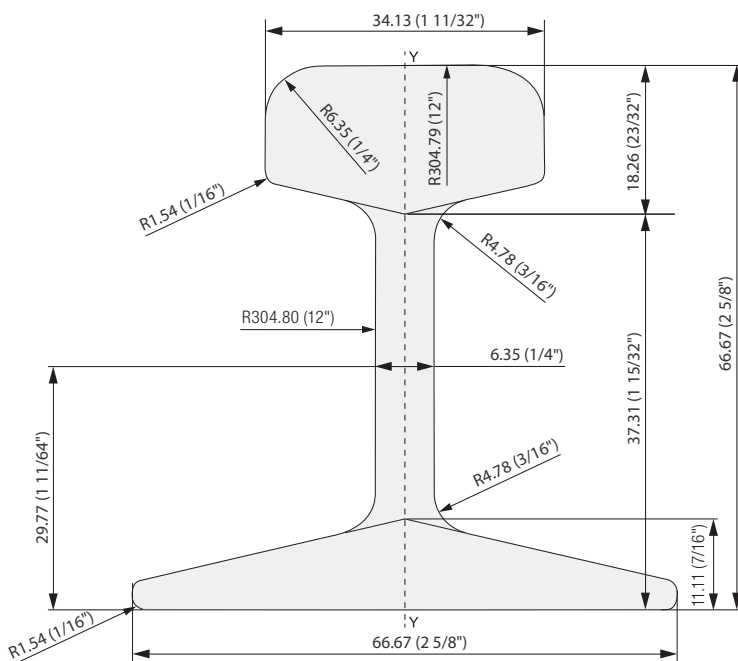
Profiles	Grades available				
	≥ 155 HB	≥ 201 HB	≥ 260 HB	≥ 285 HB	≥ 320 HB
ASCE20	✓				
ASCE25, ASCE30, ASCE40, ASCE45, ASCE50		✓			
ASCE60, ASCE75		✓	✓		✓
ASCE80		✓	✓	✓	✓
ASCE85				✓	✓

## Drilling



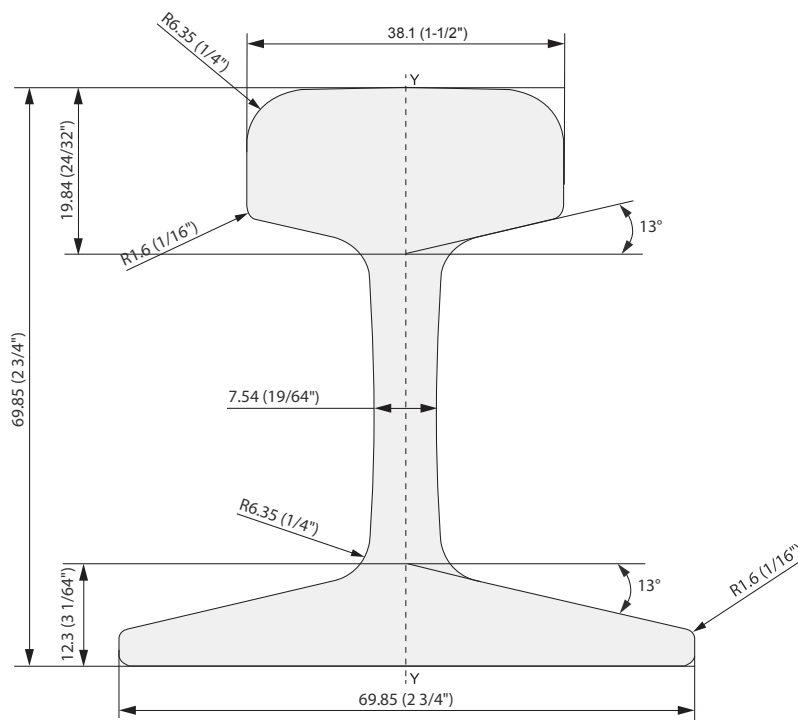
Rail profile	Spacing				Hole diameter		Elevation	
	A		B		D		E	
	mm	in	mm	in	mm	in	mm	in
ASCE20	50.80	2	101.60	4	15.88	5/8	29.80	1 11/64
ASCE25	50.80	2	101.60	4	15.88	5/8	31.35	1 15/64
ASCE30	50.80	2	101.60	4	19.05	3/4	35.32	1 25/64
ASCE40	63.50	2 1/2	127.00	5	22.23	7/8	39.69	1 9/16
ASCE45 (JIS22)	63.50	2 1/2	127.00	5	22.20	7/8	41.67	1 41/64
ASCE50 (TR25)	63.50	2 1/2	127.00	5	22.20	7/8	43.66	1 23/32
ASCE60	63.50	2 1/2	127.00	5	23.81	15/16	48.42	1 29/32
ASCE75 (JIS37,TR37)	66.68	2 5/8	139.70	5 1/2	25.40	1	53.78	2 15/128
ASCE80	63.50	2 1/2	127.00	5	25.40	1	55.56	2 3/16
ASCE85	63.50	2 1/2	127.00	5	28.58	1 1/8	57.55	2 17/64

**Weight** 9.92 kg/m | 20.00 lb/yd



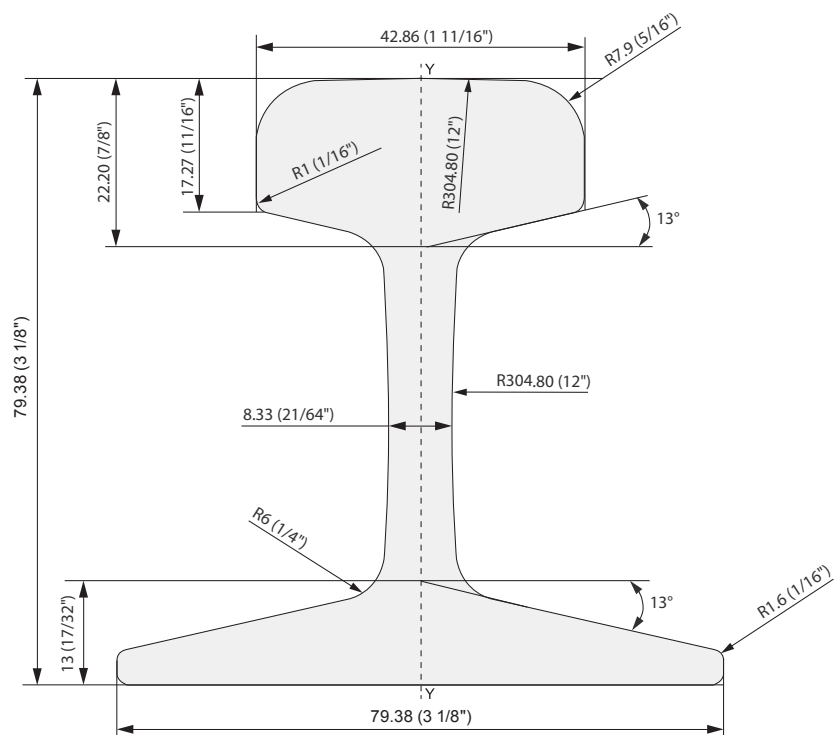
## ASCE25

Weight 12.40 kg/m | 25.00 lb/yd



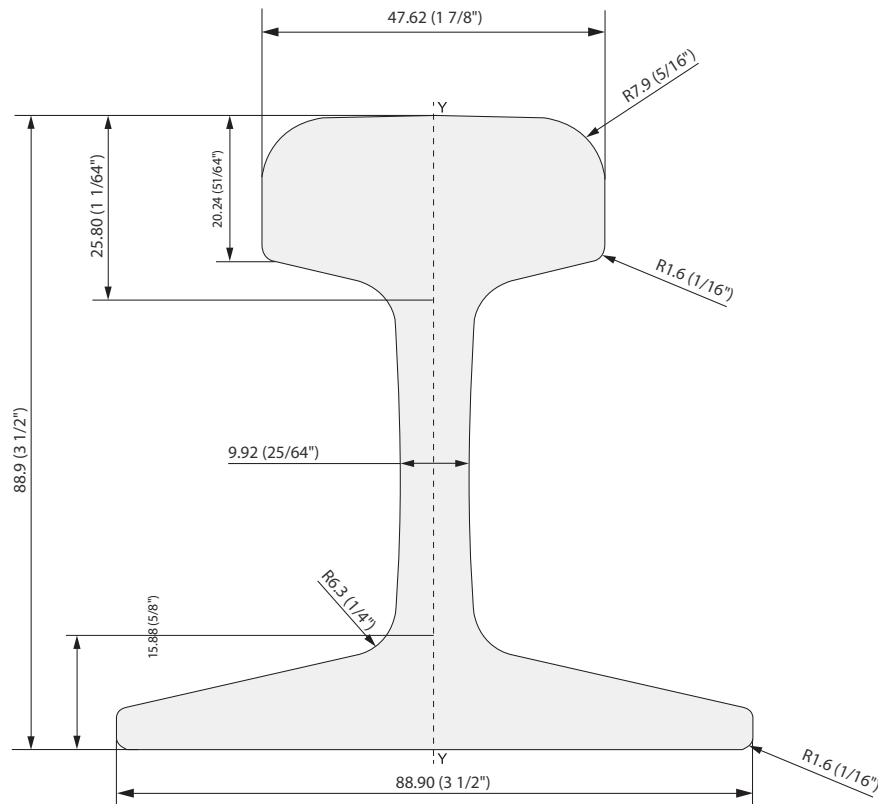
## ASCE30

Weight 14.88 kg/m | 30.00 lb/yd



## ASCE40

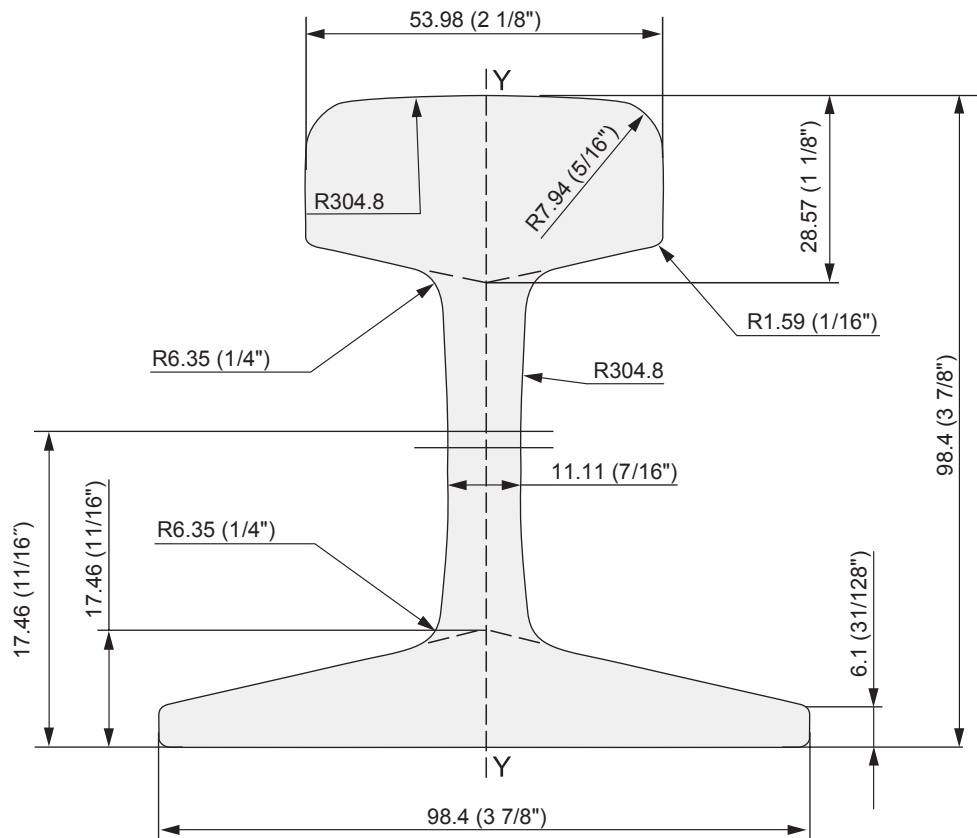
Weight 19.84 kg/m | 40.00 lb/yd





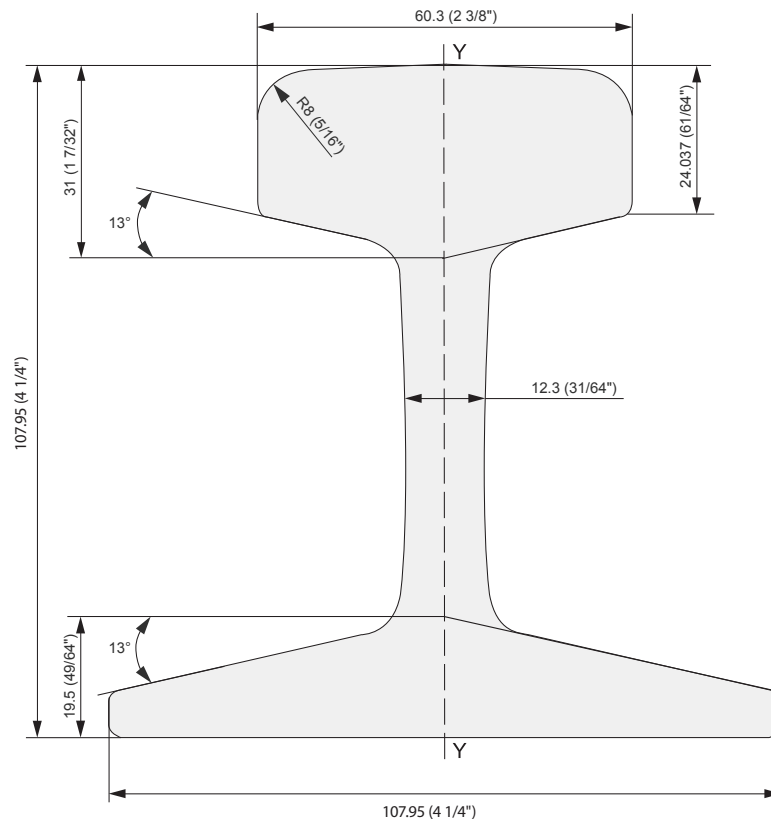
## ASCE50 (TR25)

Weight 24.80 kg/m | 50.00 lb/yd



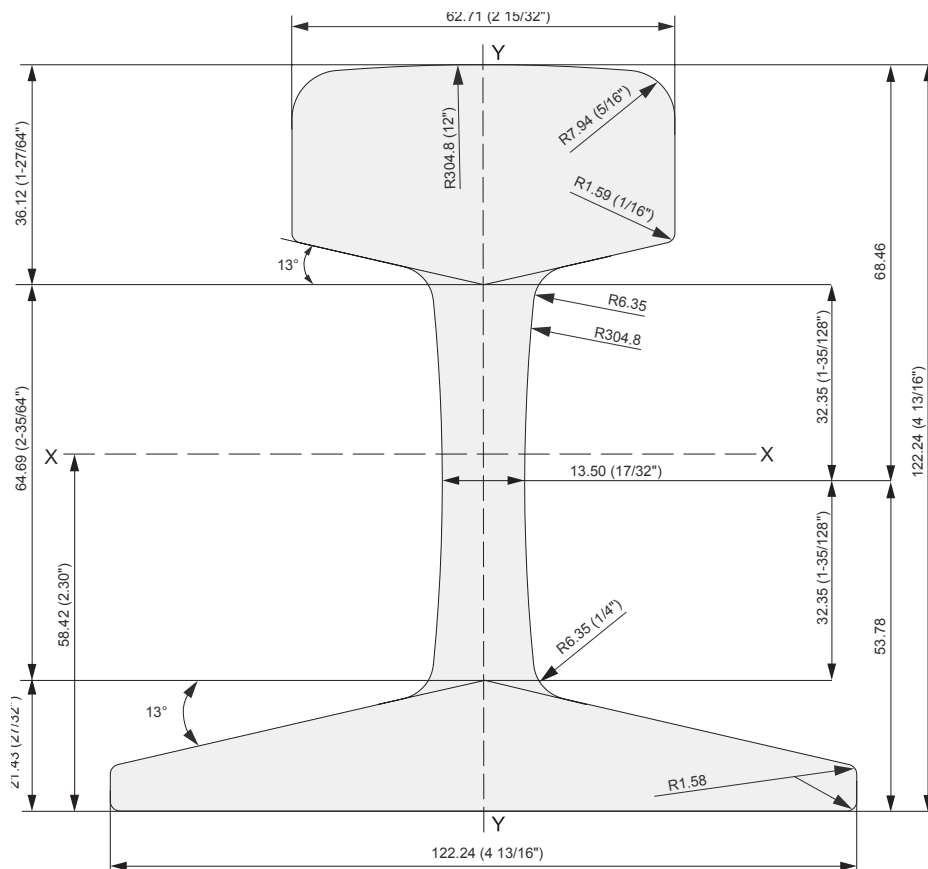
## ASCE60

Weight 29.76 kg/m | 60.00 lb/yd



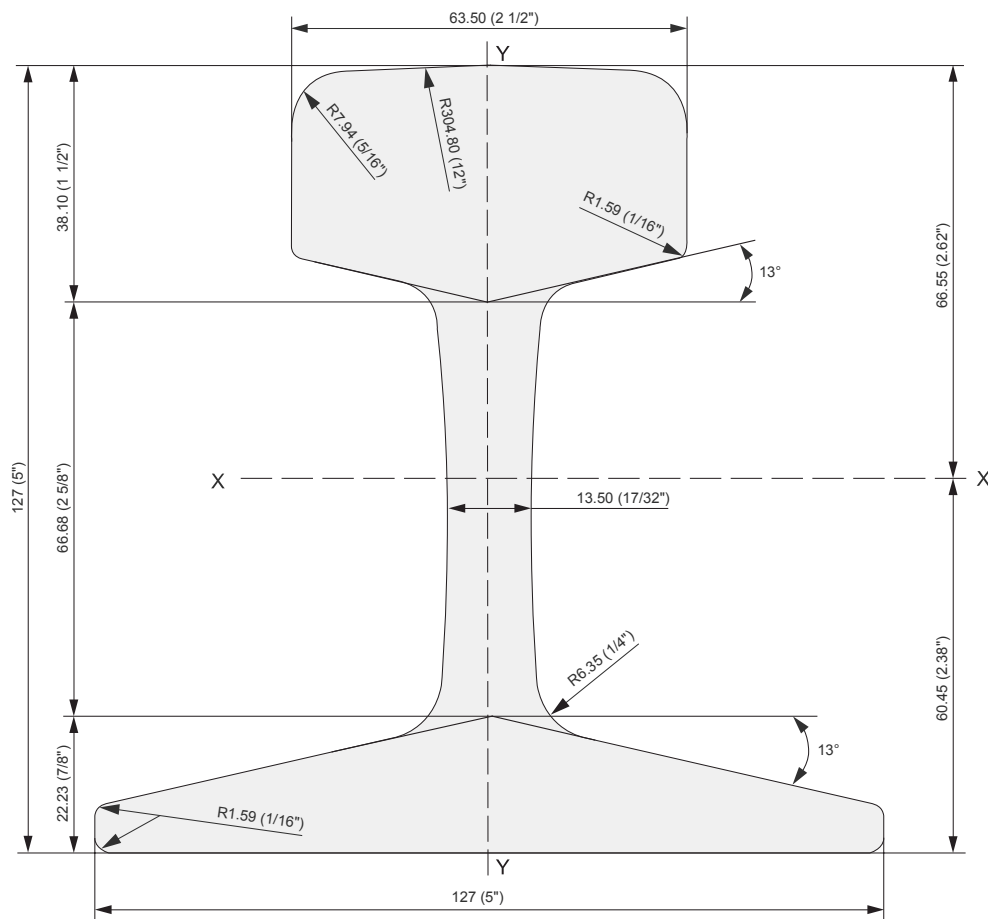
# ASCE75 (JIS37, TR37)

Weight 37.20 kg/m | 75.00 lb/yd



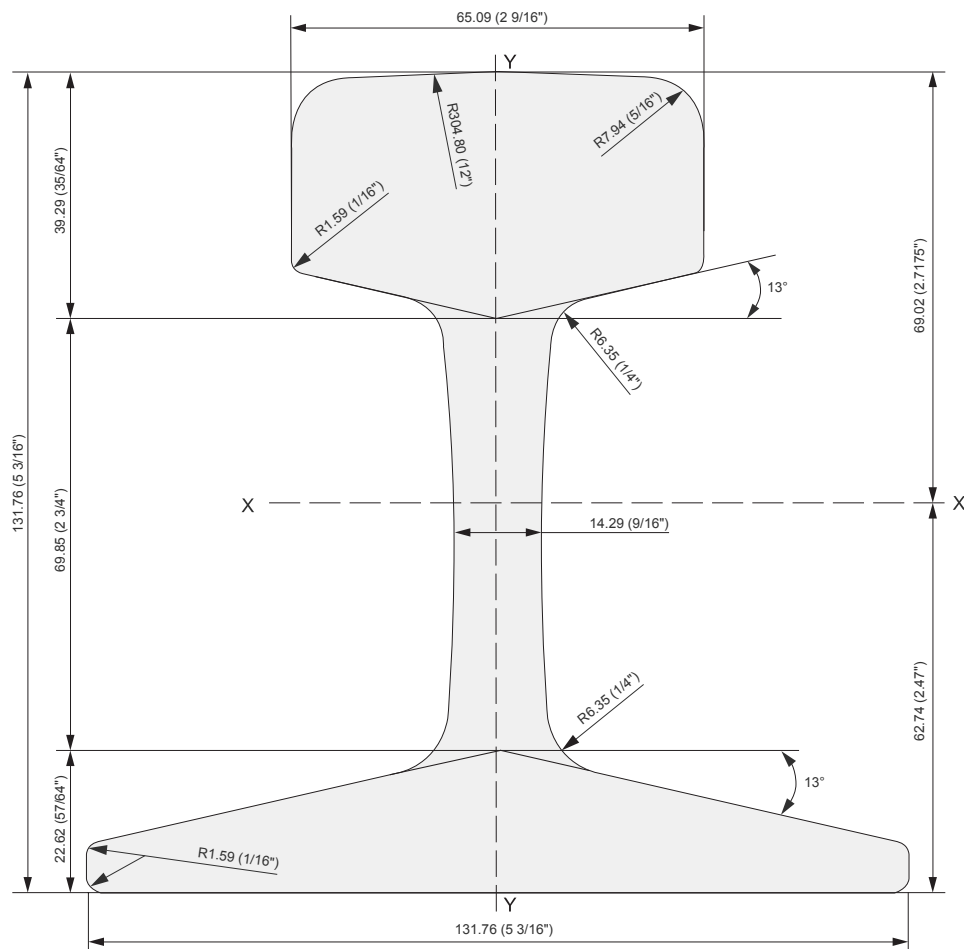
# ASCE80

Weight 39.68 kg/m | 80.00 lb/yd



## ASCE85

Weight 42.30 kg/m | 85.27 lb/yd





# Light Rails

## EUROPEAN PROFILES

In the early days of railroading, rolling stock and the loads they carried were much lighter than they were to become. One of the first rails with the familiar "I" shape originated in the UK in 1829. Coincidentally, Stephenson's Rocket locomotive was created in the same year. These rails weigh just 36 lbs/yard (17.9 kg/m) whereas a modern Transport rail might be 136 lbs/yard (67.4 kg/m).

Over time, lightweight rails have been superseded by larger & heavier rails for transportation purposes. Mining was an early adopter, and lightweight rails found other uses: light crane systems, assembly lines, automated warehouse retrieval systems, hanger doors, amusement parks and even car washes, to name only a few. As this shift took place, Light Rail formed a class distinct from Transportation Rail. Different countries have developed their own standards and the rails themselves evolved with different shapes, sizes and specifications. European and American standards dominate the Light Rail market.

## Description

European Light Rails are offered in many sizes and shapes. Over the years, rail production has jumped between countries, but the products remain unchanged. The "S" rails were a German creation. Similarly "BS" rails were created in the UK, "UNI" rails were first produced in Italy, and "AFNOR" rails were originally French products. Today, you may find these rails produced in countries such as Luxembourg, Poland and Spain.

European Light Rails are finished in standard lengths of 6, 9, 10, 12 and 18 metres ( $\approx$  20, 30, 33, 39, and 59 ft), but other lengths can be supplied by special request. Drilled ends are the norm, with non-drilled (blank) ends supplied by special request.

## Basic Dimensions

Profiles	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>S7</b>	6.75	13.61	25.00	0.98	65.00	2.56	50.00	1.97	5.00	0.20
<b>S10</b>	10.00	20.16	32.00	1.26	70.00	2.76	58.00	2.28	6.00	0.24
<b>S14</b>	14.00	28.22	38.00	1.50	80.00	3.15	70.00	2.76	9.00	0.35
<b>S18</b>	18.30	36.89	43.00	1.69	93.00	3.66	82.00	3.23	10.00	0.39
<b>S20</b>	19.84	40.00	44.00	1.73	100.00	3.94	82.00	3.23	10.00	0.39
<b>S24</b>	24.43	49.25	53.00	2.09	115.00	4.53	90.00	3.54	10.00	0.39
<b>S30</b>	30.03	60.54	60.30	2.37	108.00	4.25	108.00	4.25	12.30	0.48
<b>S31</b>	31.57	63.64	56.00	2.20	125.00	4.92	106.00	4.17	12.00	0.47
<b>S33 (33E1)</b>	33.47	67.47	58.00	2.28	134.00	5.28	105.00	4.13	11.00	0.43
<b>S41A</b>	41.24	83.14	67.00	2.64	138.00	5.43	125.00	4.92	12.00	0.47
<b>AFNOR26</b>	26.27	52.96	50.00	1.97	110.00	4.33	100.00	3.94	10.00	0.39
<b>AFNOR30</b>	30.15	60.78	58.42	2.30	125.50	4.94	106.00	4.17	11.00	0.43
<b>AFNOR36</b>	36.59	73.76	58.27	2.29	128.00	5.04	115.00	4.53	13.00	0.51
<b>BS35 M</b>	17.40	35.08	42.86	1.69	80.96	3.19	76.20	3.00	9.13	0.36
<b>BS35 R</b>	17.40	35.08	44.45	1.75	85.73	3.38	82.55	3.25	8.33	0.33
<b>BS80 A (39E1)</b>	39.77	80.17	63.50	2.50	133.35	5.25	117.47	4.62	13.10	0.52

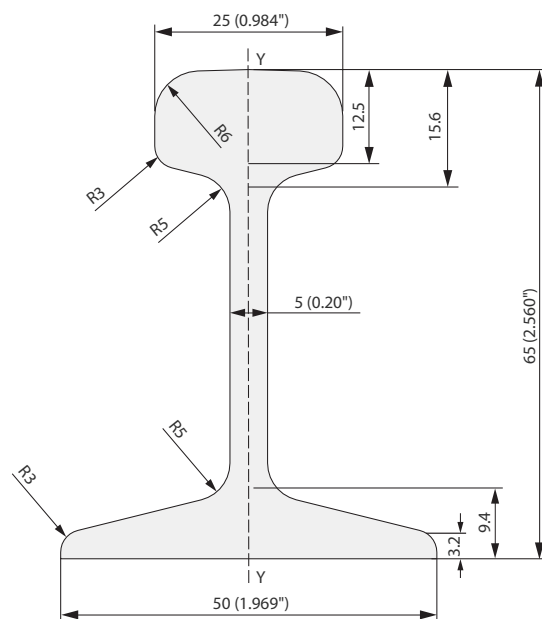
## Mechanical Properties

Profiles	Grades available (shown by Tensile Strength)			
	≥ 540 MPa	≥ 680 MPa	≥ 880 MPa	≥ 1080 MPa
S7, S10	✓			
S14, S18, S20, S24		✓		
S30, S31, S33, S39		✓	✓	
BS35M, BS35R		✓		
AFNOR26, AFNOR30, AFNOR36			✓	
S41A		✓	✓	✓
BS80A			✓	



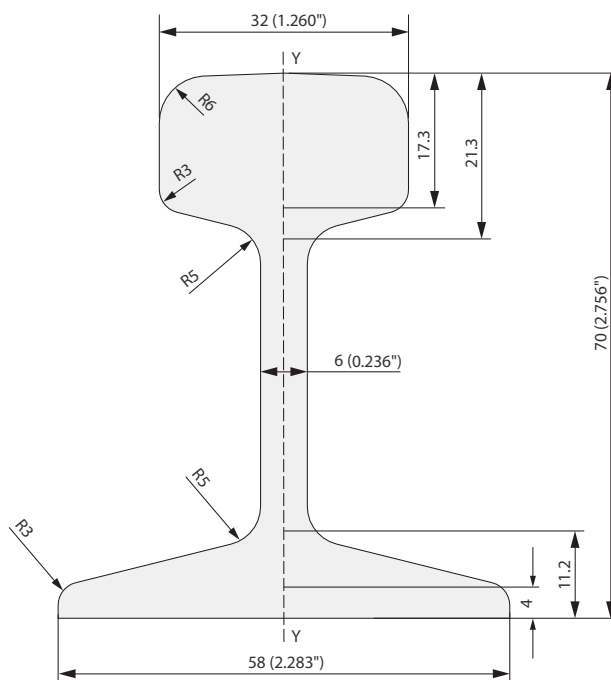
## S7

Weight 6.75 kg/m | 13.61 lb/yd



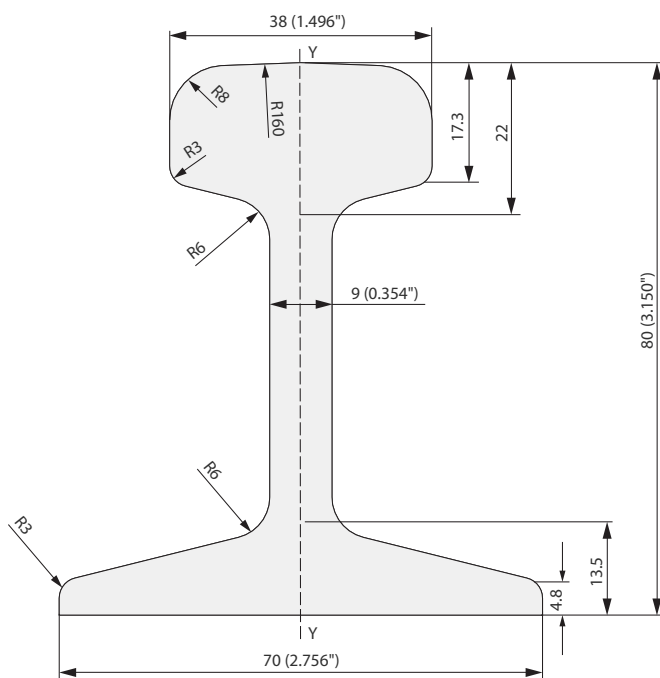
# S10

Weight 10.00 kg/m | 20.16 lb/yd



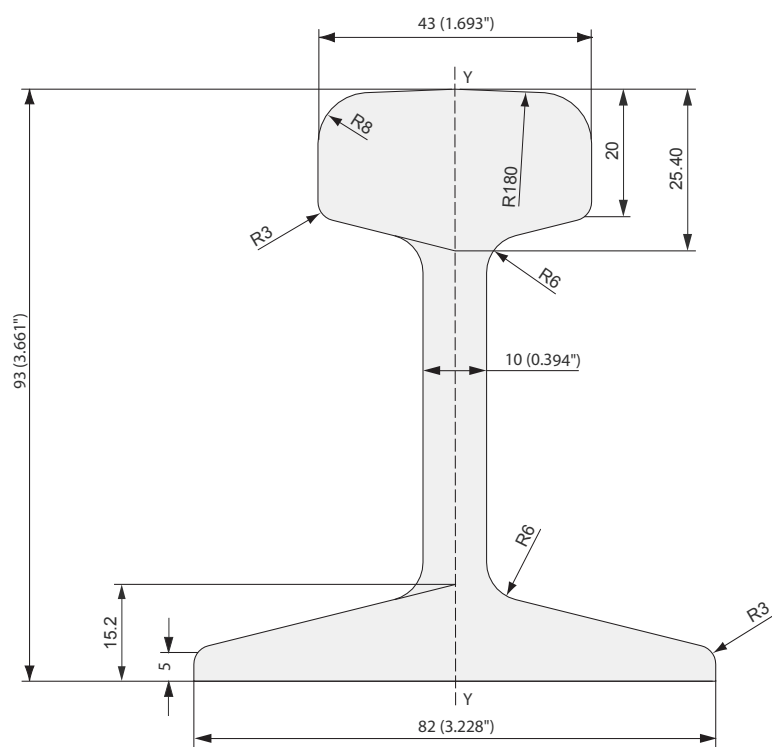
# S14

Weight 14.00 kg/m | 28.22 lb/yd



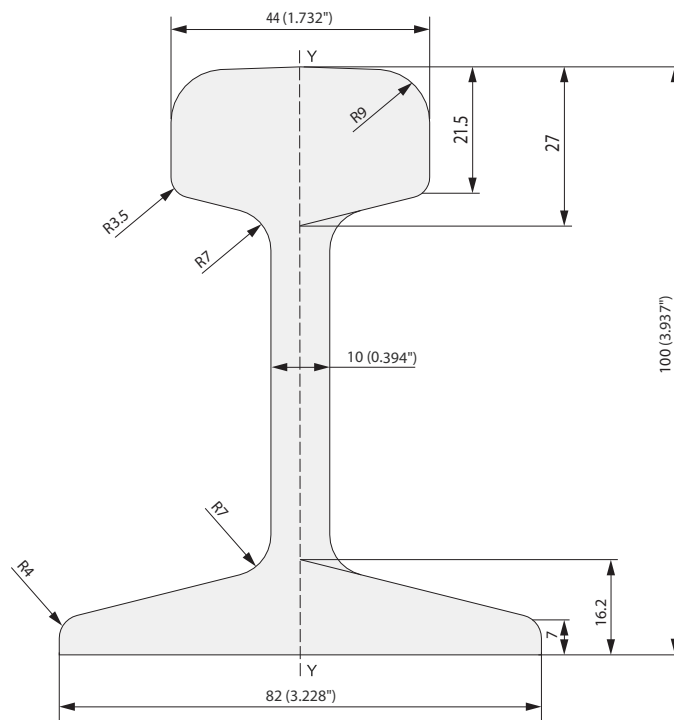
# S18

Weight 18.30 kg/m | 36.89 lb/yd



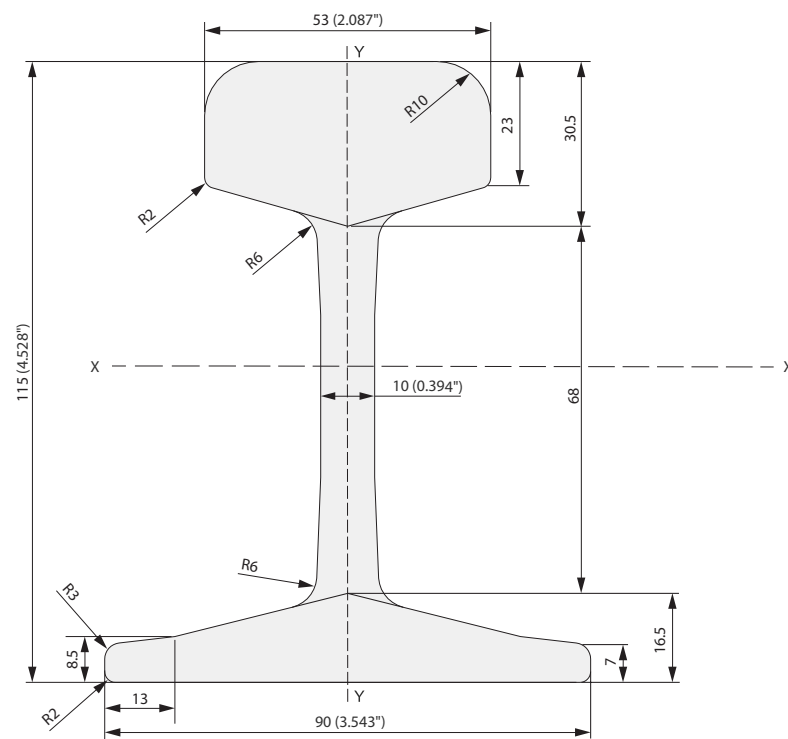
## S20

Weight 19.84 kg/m | 40.00 lb/yd



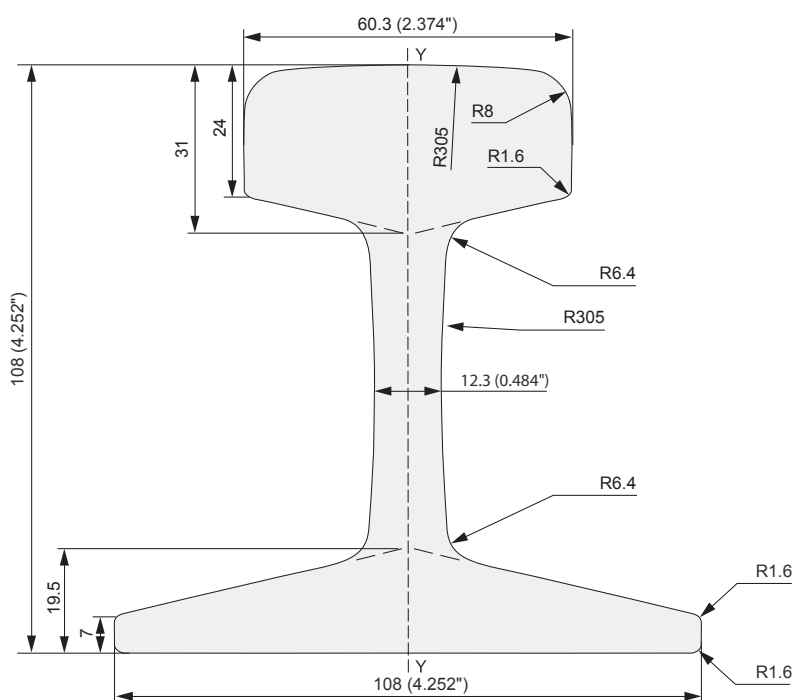
**S24**

**Weight** 24.43 kg/m | 49.25 lb/yd



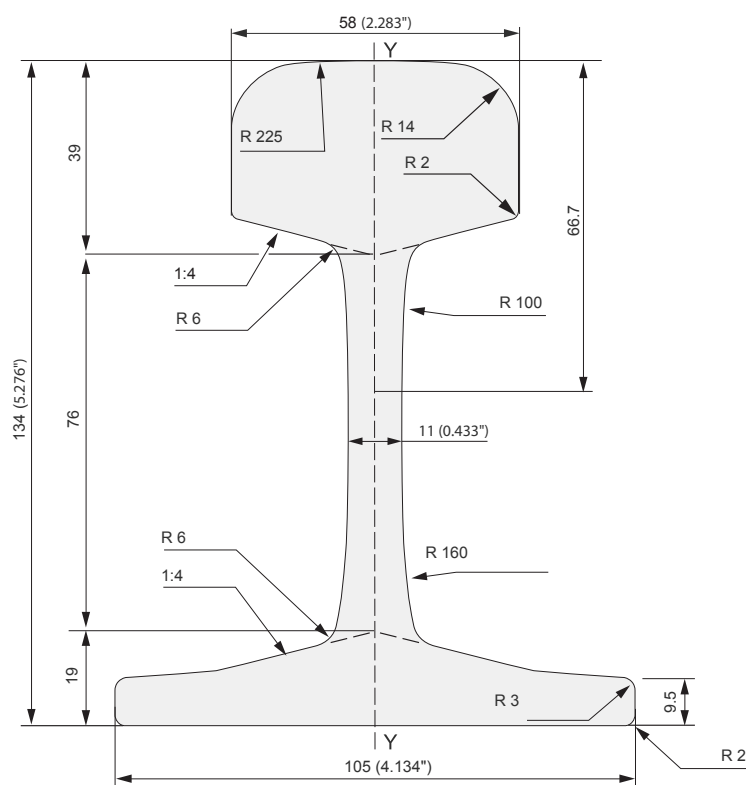
## S30

Weight 30.03 kg/m | 60.54 lb/yd



## S33 (33E1)

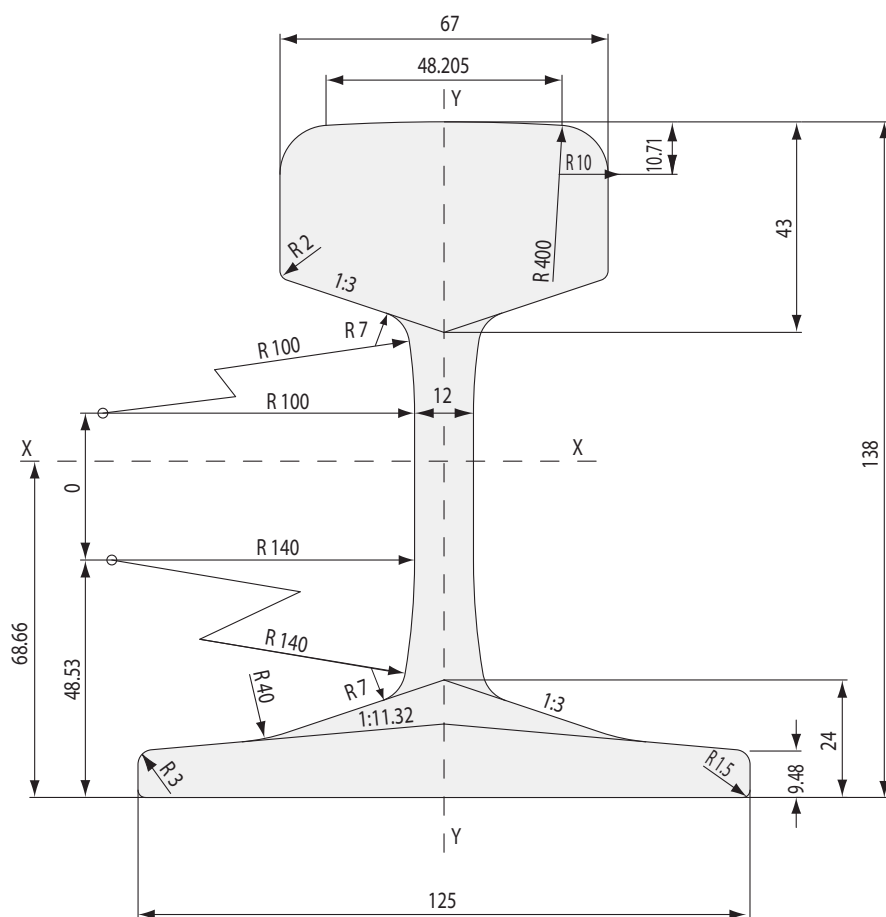
Weight 33.47 kg/m | 67.47 lb/yd





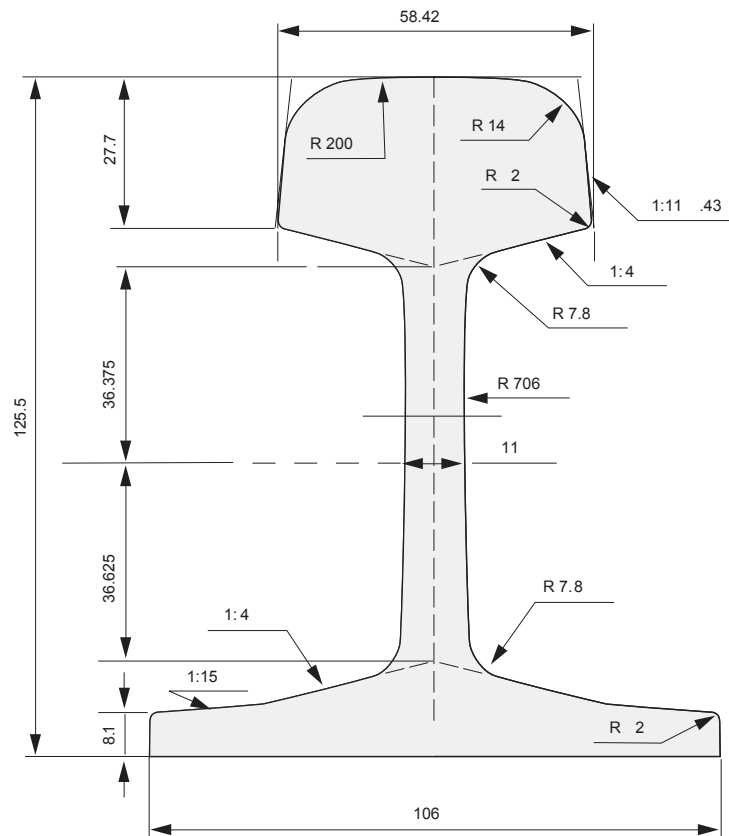
# S41A

Weight 41.24 kg/m | 83.14 lb/yd



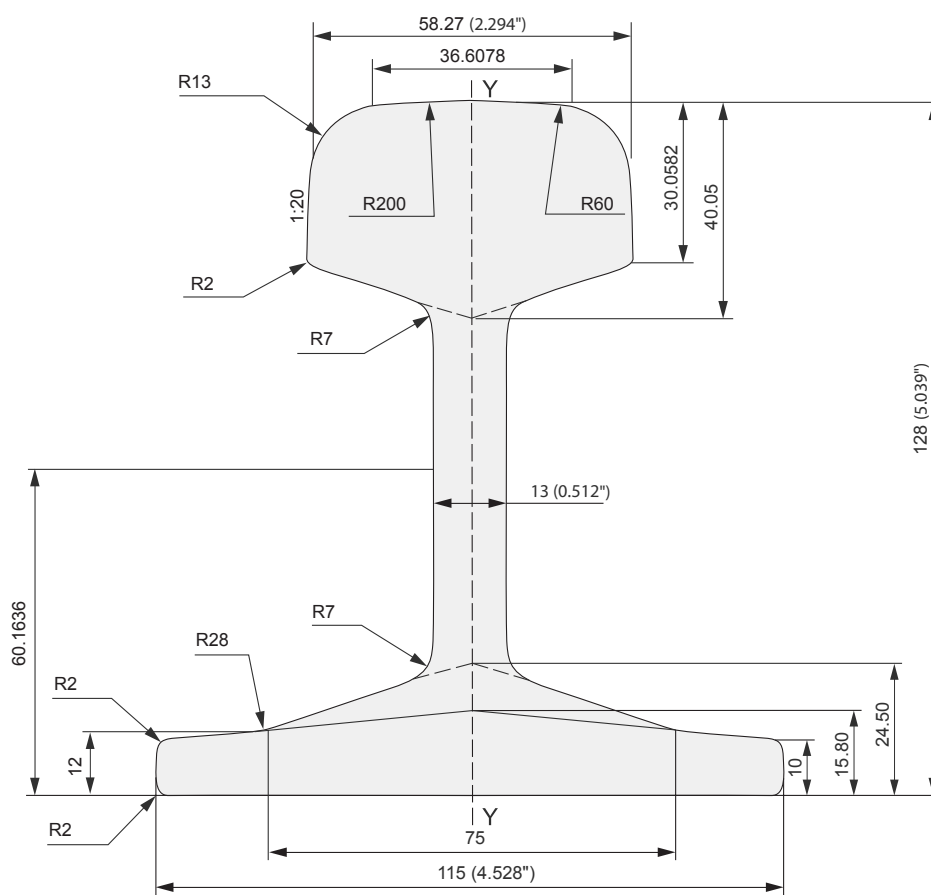
# AFNOR 30

Weight 30.15 kg/m | 60.78 lb/yd



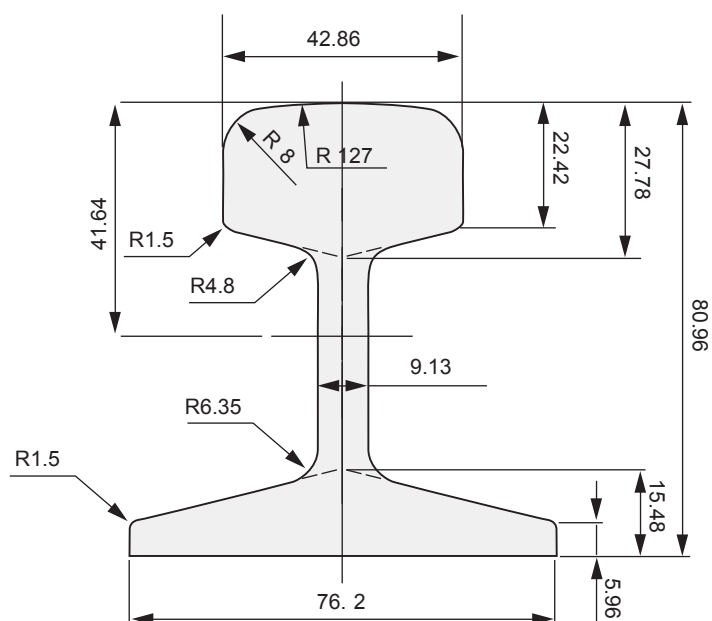
## AFNOR 36

Weight 36.59 kg/m | 73.76 lb/yd



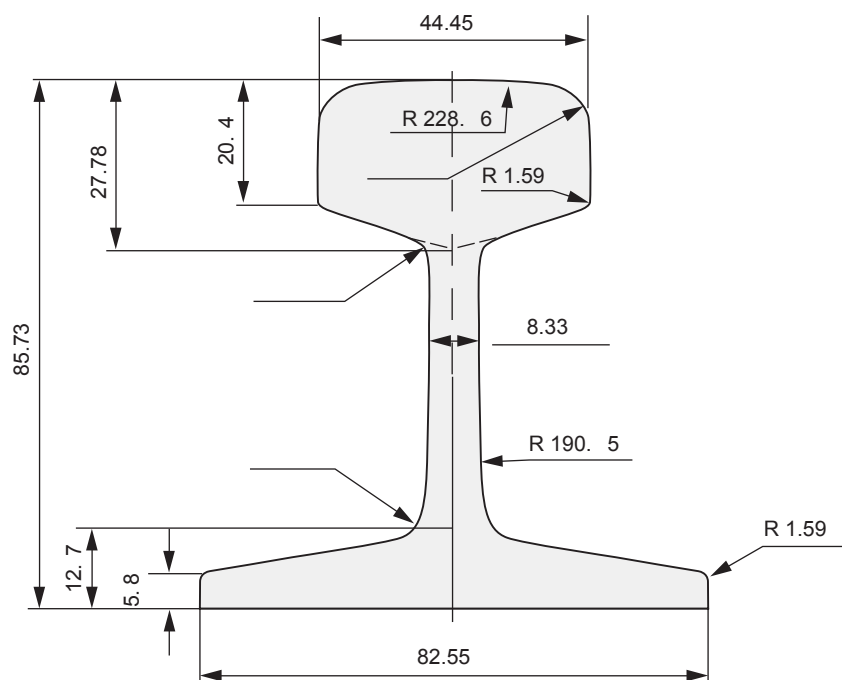
## BS35 M

Weight 17.40 kg/m | 35.08 lb/yd



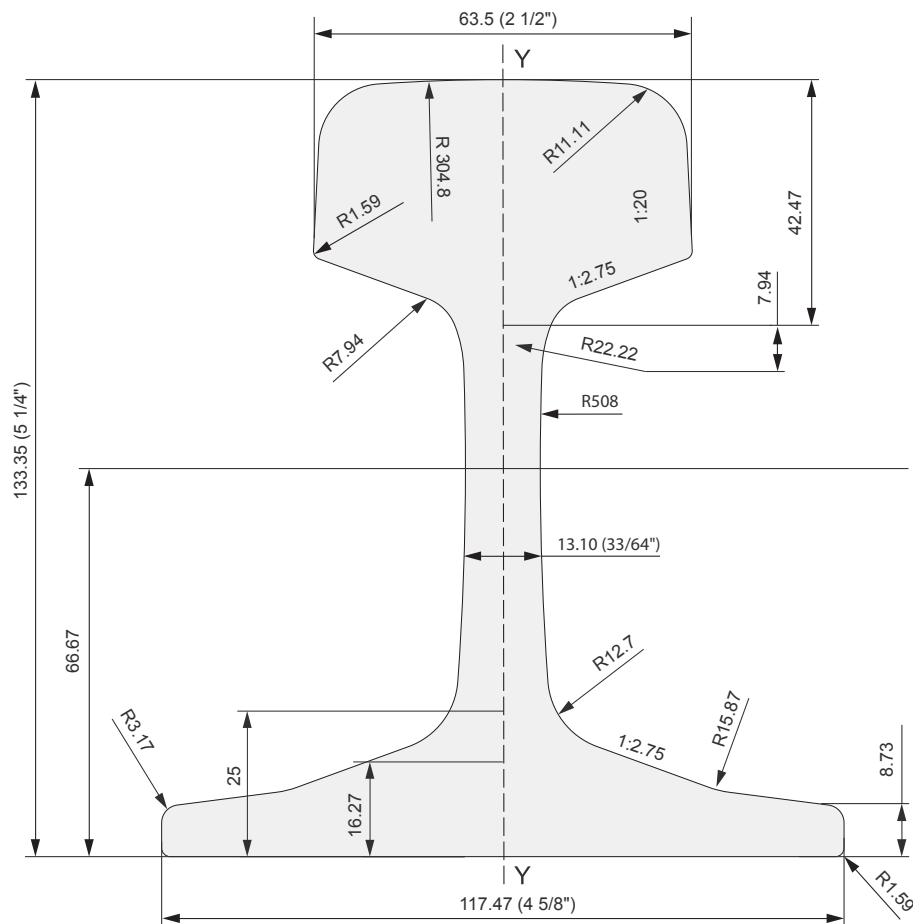
## BS35 R

Weight 17.40 kg/m | 35.08 lb/yd



## BS80 A (39E1)

Weight 39.77 kg/m | 80.17 lb/yd





# Transport Rails

## AMERICAN PROFILES

Transport Rails are the most familiar rails produced. They are used by freight, passenger and public-transit railways to move goods and people long distances.

The installation of Transport Rails is usually on tie-and-ballast foundations. This has encouraged rail shapes with tall profiles to better transfer wheel loads from tie-to-tie. Transport rails are all relatively heavy sections, greater than 90 lbs/yard (44.64 kg/m).

Transport Rails are connected to one another by welding and/or by jointed connections. Rails can be furnished with either drilled or non-drilled (blank) ends as required.

## Description

Many American organizations have contributed to the design of Transport rails. Not all of these organizations still exist but their names live on in the rails which they developed.

**These organizations include:**

- **ASTM** – American Society for Testing and Materials
- **AREMA** – American Railway Engineering and Maintenance-of-Way Association
- **AREA** – American Railway Engineering Association (now part of AREMA)
- **ARA** – American Railway Association (now part of AREMA)
  - **ARA-A** – higher grade rail for high speeds applications
  - **ARA-B** – lower grade rail for heavy loads at low speeds

For railway and industrial applications, rail sections weighing in the range 60 lbs/yard (29.76 kg/m) to 114 lbs/yard (56.55 kg/m) are typically governed by the ASTM A1 specification. Transport rails weighing more than 114 lbs/yard (56.55 kg/m) follow AREMA specifications. Wirth Rail offers American Transport rail profiles in a number of different grades to suit different applications. There are many grades available, but those defined by AREMA and ASTM are the most common. In general, relative to other rail types, American Transport Rails tend to be very hard to reduce in-service wear.

Various lengths are available, with the most common being 39, 40 and 80 feet and 12, 18 and 24 metres.

## Basic Dimensions

Profiles	Weight		Head Width		Height		Base Width		Web	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>90ARA-A</b> (TR45)	44.67	90.05	65.09	2 9/16	142.88	5 5/8	130.18	5 1/8	14.29	9/16
<b>100ARA-A</b>	49.88	100.56	69.85	2 3/4	152.40	6	139.70	5 1/2	14.29	9/16
<b>100ARA-B</b> (100-8)	49.87	100.53	67.47	2 21/32	143.27	5 41/64	130.57	5 9/64	14.29	9/16
<b>100RE</b> (TR50)	50.35	101.50	68.26	2 11/16	152.40	6	136.53	5 3/8	14.29	9/16
<b>115RE</b> (TR57)	56.80	114.50	69.06	2 23/32	168.28	6 5/8	139.70	5 1/2	15.88	5/8
<b>119RE</b>	58.86	118.67	67.47	2 21/32	173.04	6 13/16	139.70	5 1/2	15.88	5/8
<b>132RE</b>	65.33	131.70	76.20	3	180.98	7 1/8	152.40	6	16.67	21/32
<b>133RE</b>	66.10	133.25	76.20	3	179.39	7 1/16	152.40	6	17.46	11/16
<b>136RE</b> (TR68)	67.42	135.91	74.61	2 15/16	185.74	7 5/16	152.40	6	17.46	11/16
<b>141RE</b>	69.80	140.70	77.79	3 1/16	188.91	7 7/16	152.40	6	17.46	11/16
<b>136TW</b>	87.83	177.05	74.61	2 15/16	185.74	7 5/16	152.40	6	42.86	1 11/16

## Mechanical Properties

Spec	Steel Grade	Hardness HB	Tensile Strength ksi	Yield Strength ksi	Elongation %
<b>AREMA</b> (with Carbon Steel chemistry)	Standard Strength (SS)	≥ 310	≥ 142.5	≥ 74.0	≥ 10
	Intermediate Strength (IS)	≥ 350	≥ 155.0	≥ 105.0	≥ 10
	High Strength / Head Hardened (HH)	≥ 370	≥ 171.0	≥ 120.0	≥ 10
<b>AREMA</b> (with Low Alloy Steel chemistry)	Standard Strength (LA)	≥ 310	≥ 142.5	≥ 74.0	≥ 10
	Intermediate Strength (IH)	≥ 325	≥ 147.0	≥ 80.0	≥ 8
	High Strength / Head Hardened (LH)	≥ 370	≥ 171.0	≥ 120.0	≥ 10

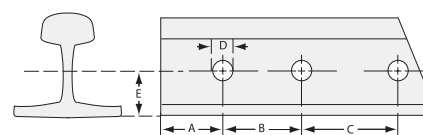


## Chemical Composition

AREMA provides two possible steel chemistries: Carbon Steel or Low Alloy Steel

AREMA 2019	C %	Mn %	P %	S %	Si %	Ni %	Cr %	Mb %	V %	Al %
<b>Carbon Steel</b>	0.74 - 0.86	0.75 - 1.25	≤ 0.020	≤ 0.020	0.10 - 0.60	≤ 0.25	≤ 0.30	≤ 0.060	≤ 0.010	≤ 0.010
<b>Low Alloy Steel</b> (for Std Strength)	0.72 - 0.82	0.80 - 1.10	≤ 0.020	≤ 0.020	0.10 - 0.50	≤ 0.15	0.25 - 0.40	≤ 0.050	≤ 0.010	≤ 0.005
<b>Low Alloy Steel</b> (for Int. & High Strength)	0.72 - 0.82	0.70 - 1.25	≤ 0.020	≤ 0.020	0.10 - 1.00	≤ 0.15	0.40 - 0.70	≤ 0.050	≤ 0.010	≤ 0.005

## Drilling

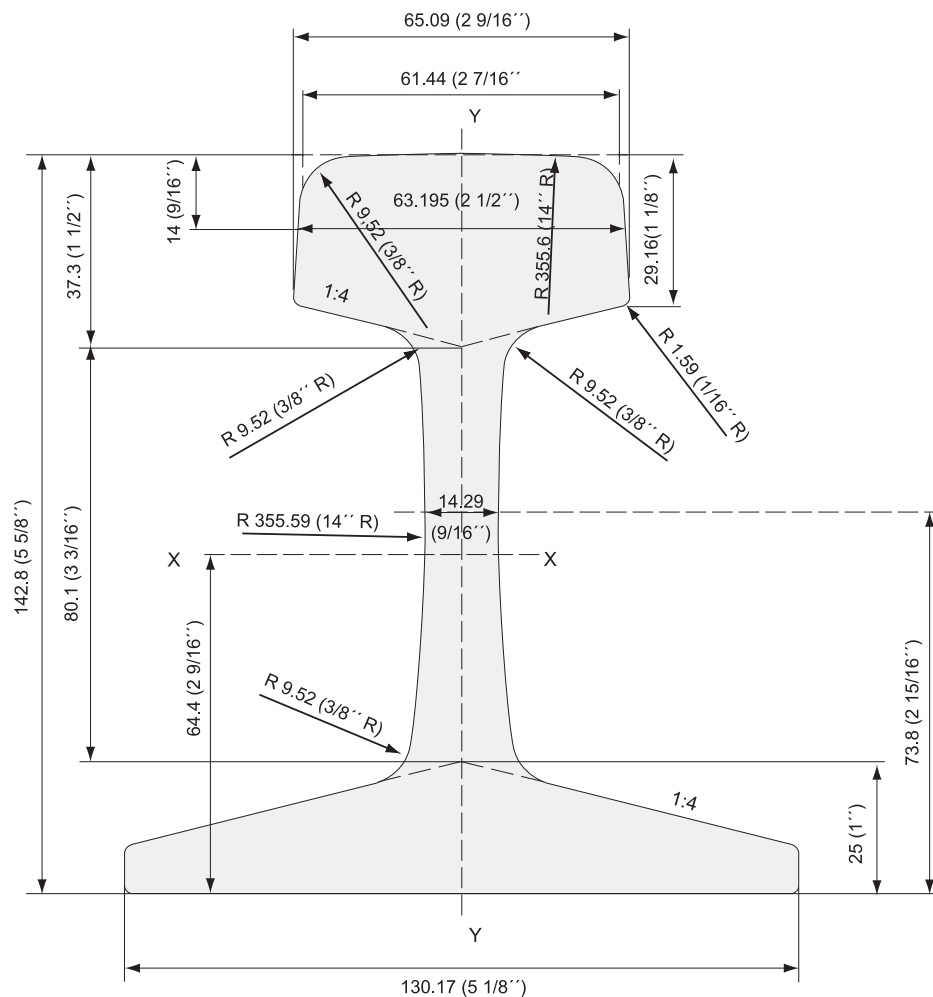


These are the standard drilling dimensions for the various American Transport rails. Drilling can also be customized as needed.

Rail profile	Spacing						Hole diameter		Elevation	
	A		B		C		D		E	
	mm	in	mm	in	mm	in	mm	in	mm	in
90ARA-A (TR45)	68.26	2 11/16	139.70	5 1/2	-	-	28.58	1 1/8	65.48	2 37/64
100ARA-A	68.26	2 11/16	139.70	5 1/2	-	-	30.16	1 3/16	69.85	2 3/4
100ARA-B (100-8)	67.47	2 21/32	184.15	7 1/4	139.70	5 1/2	28.58	1 1/8	63.70	2 65/128
100RE (TR50)	68.26	2 11/16	139.70	5 1/2	-	-	28.58	1 1/8	68.66	2 45/64
115RE (TR57)	88.90	3 1/2	152.40	6	152.40	6	28.58	1 1/8	73.03	2 7/8
119RE	88.90	3 1/2	152.40	6	152.40	6	28.58	1 1/8	73.03	2 7/8
132RE	88.90	3 1/2	152.40	6	152.40	6	31.75	1 1/4	78.58	3 3/32
133RE	88.90	3 1/2	152.40	6	152.40	6	28.58	1 1/8	76.20	3
136RE (TR68)	88.90	3 1/2	152.40	6	152.40	6	31.75	1 1/4	78.58	3 3/32

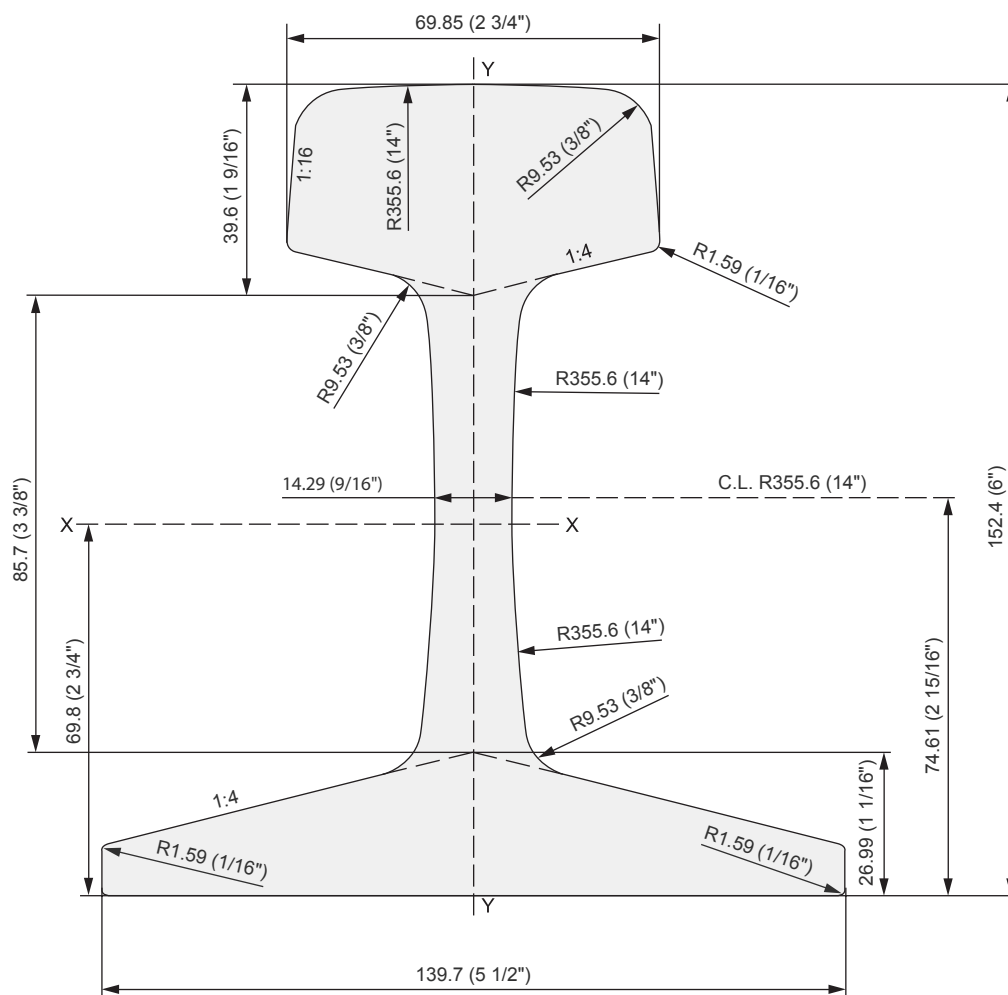
## 90ARA-A (TR45)

Weight 44.67 kg/m | 90.05 lb/yd



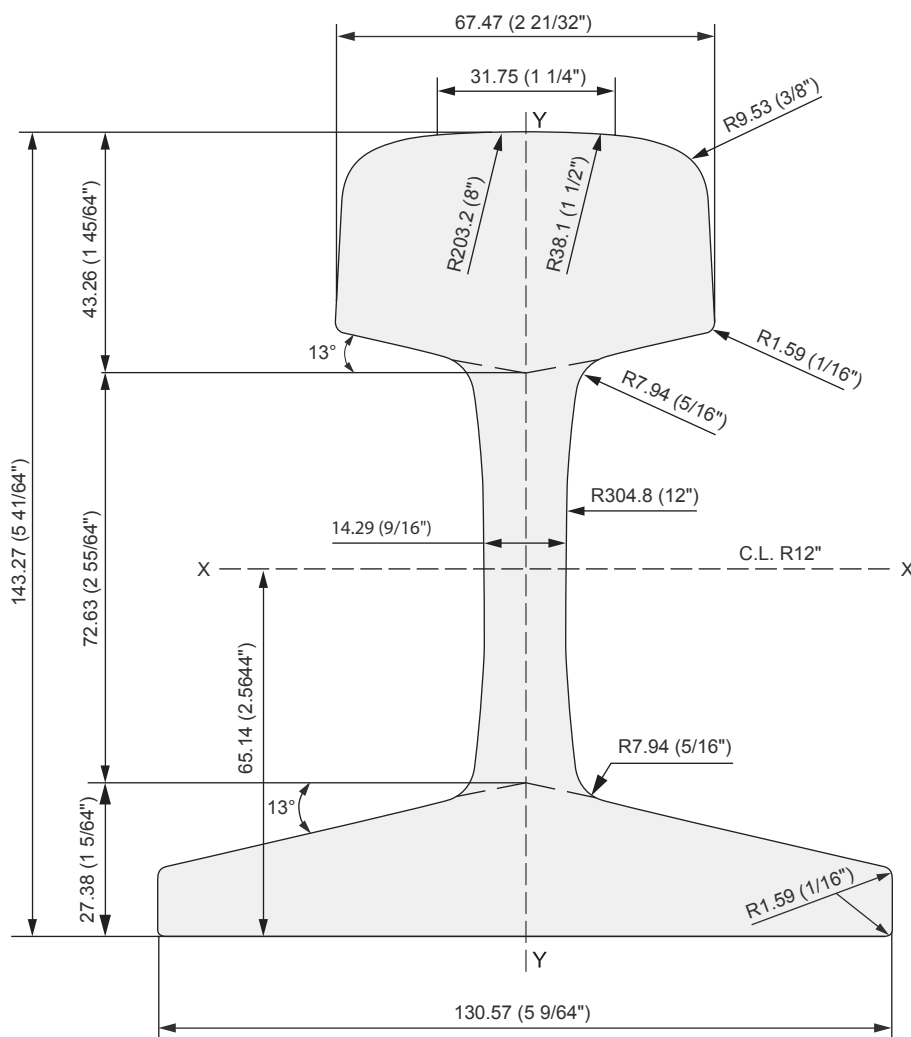
# 100ARA-A

Weight 49.88 kg/m | 100.56 lb/yd



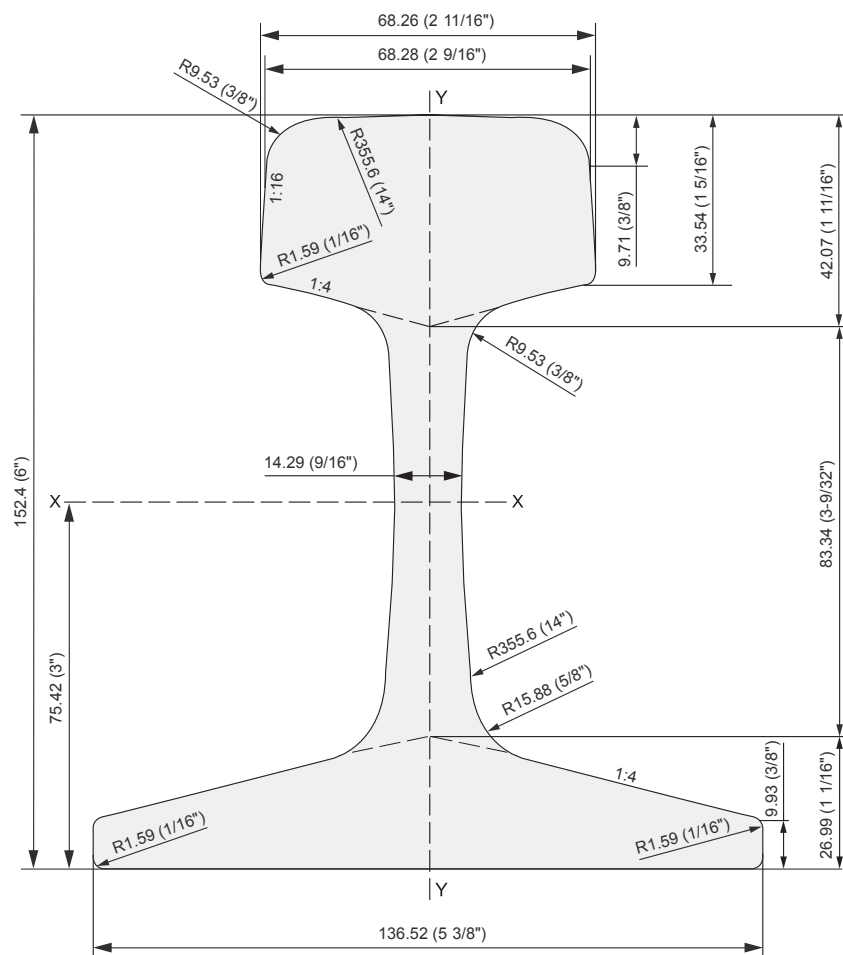
# 100ARA-B (100-8)

Weight 49.87 kg/m | 100.53 lb/yd



# 100RE (TR50)

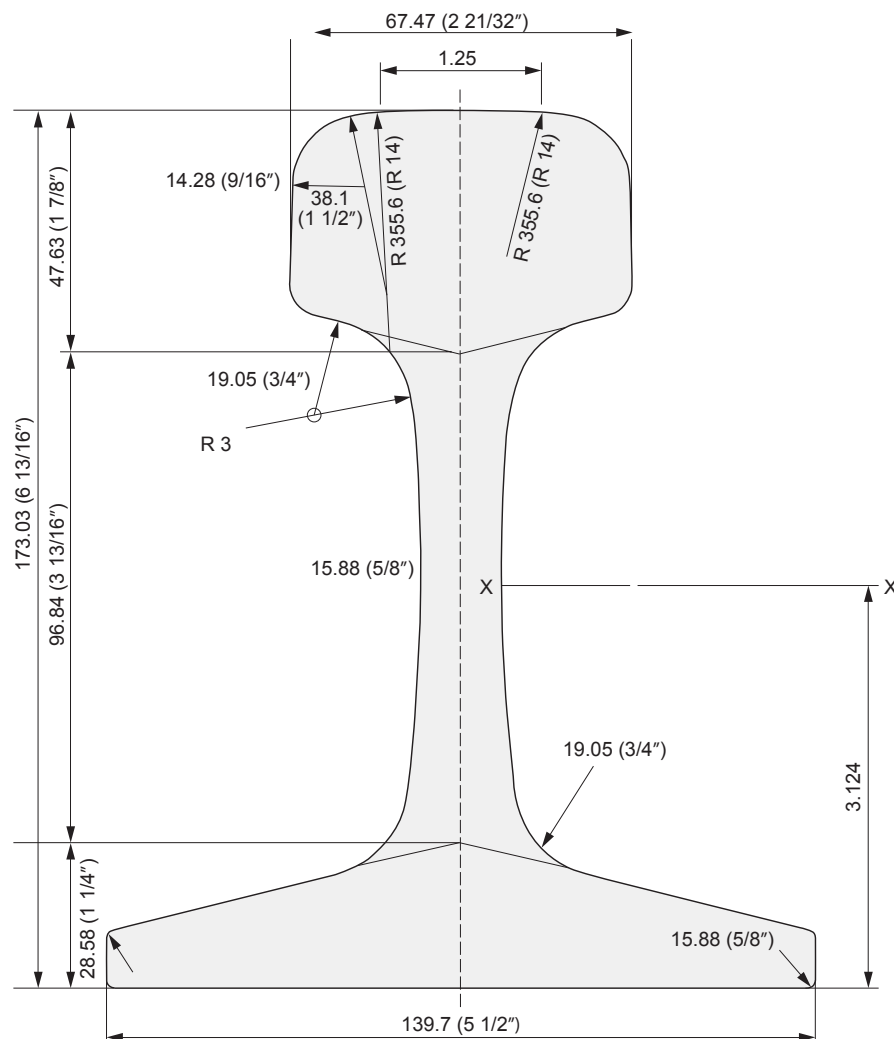
Weight 50.35 kg/m | 101.50 lb/yd





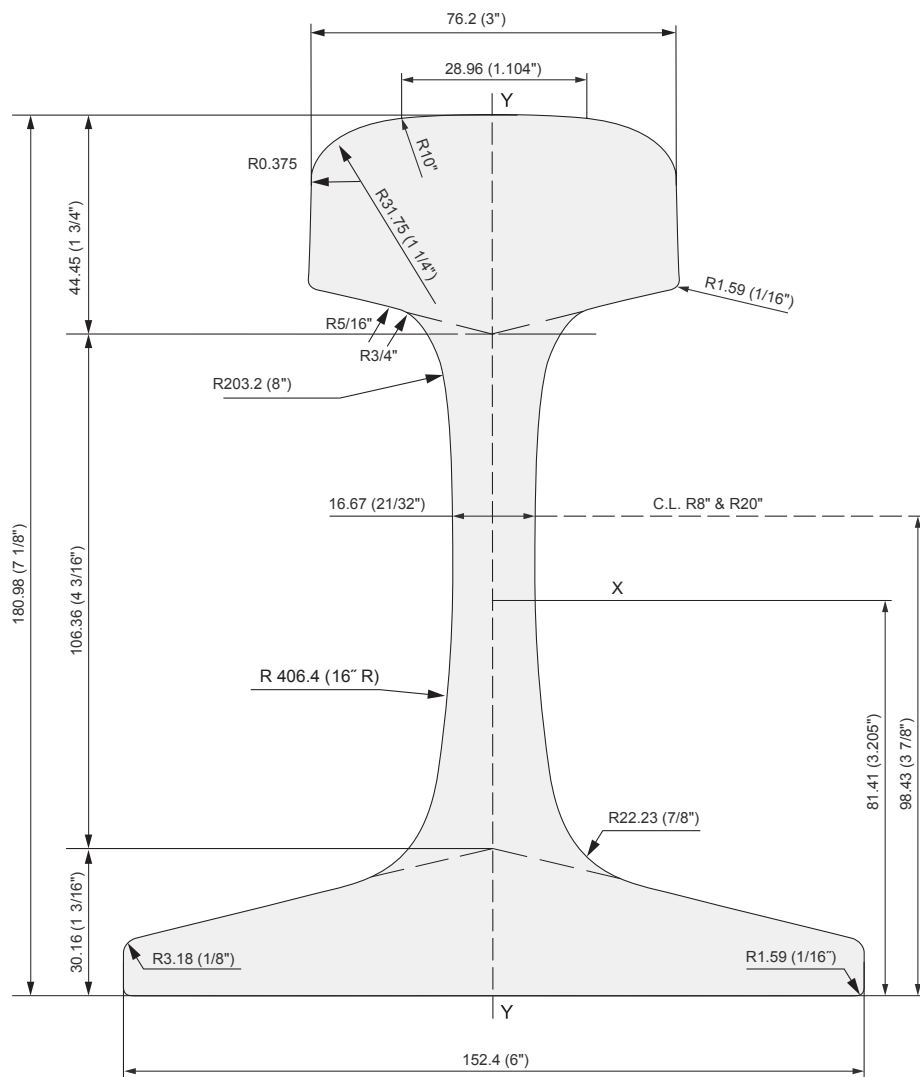
# 119RE

Weight 58.86 kg/m | 118.67 lb/yd



# 132RE

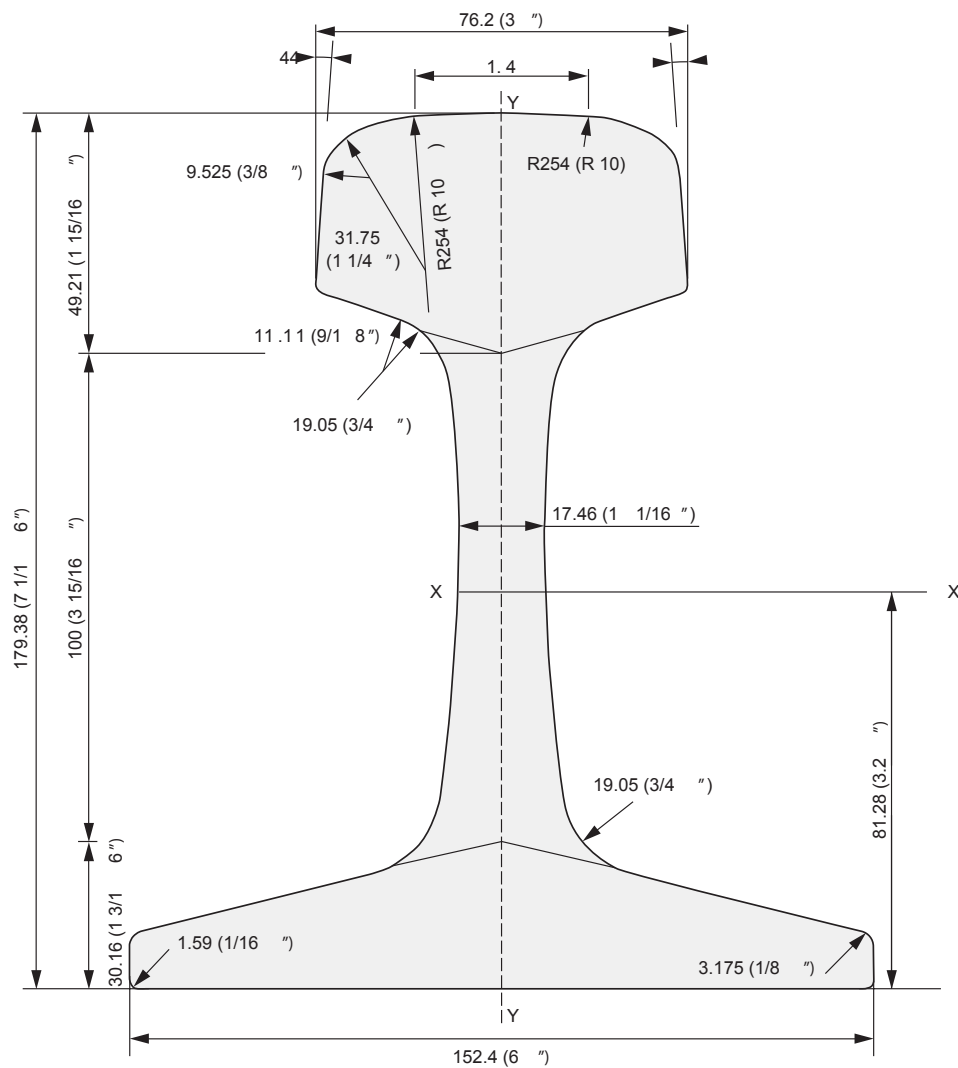
Weight 65.33 kg/m | 131.70 lb/yd





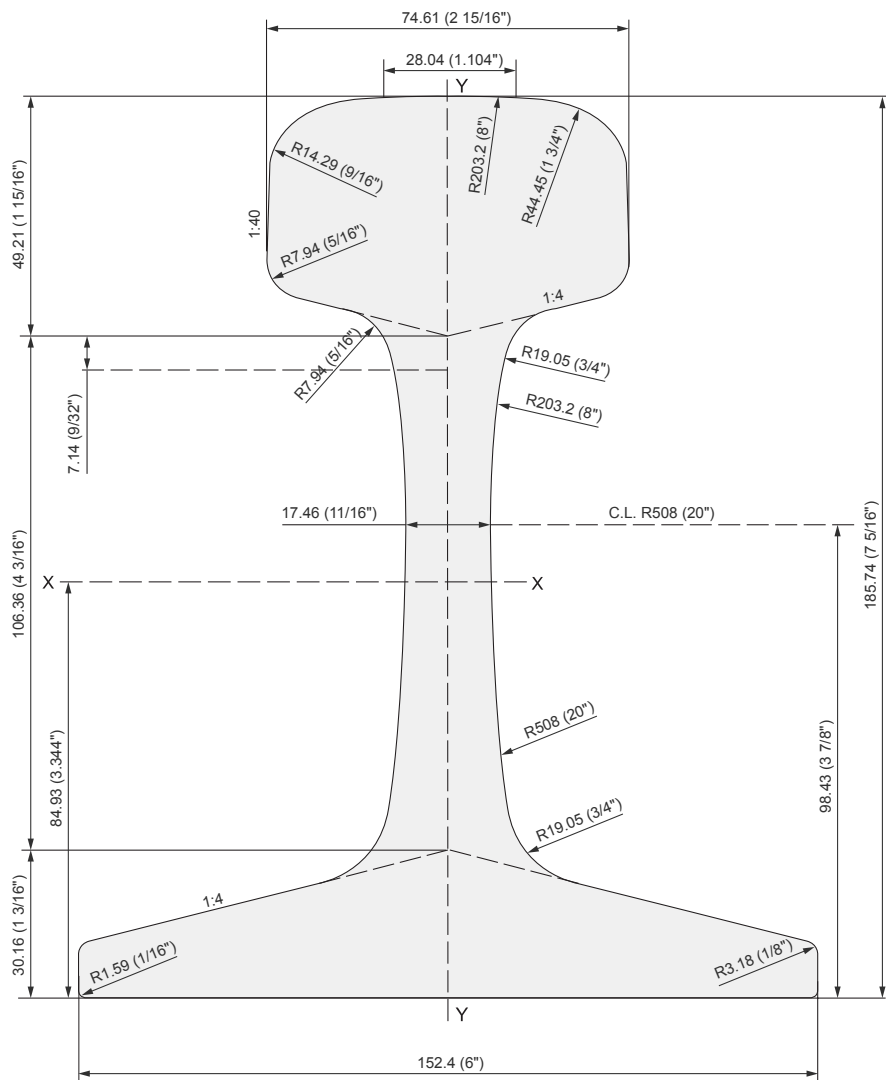
## 133RE

Weight 66.10 kg/m | 133.25 lb/yd



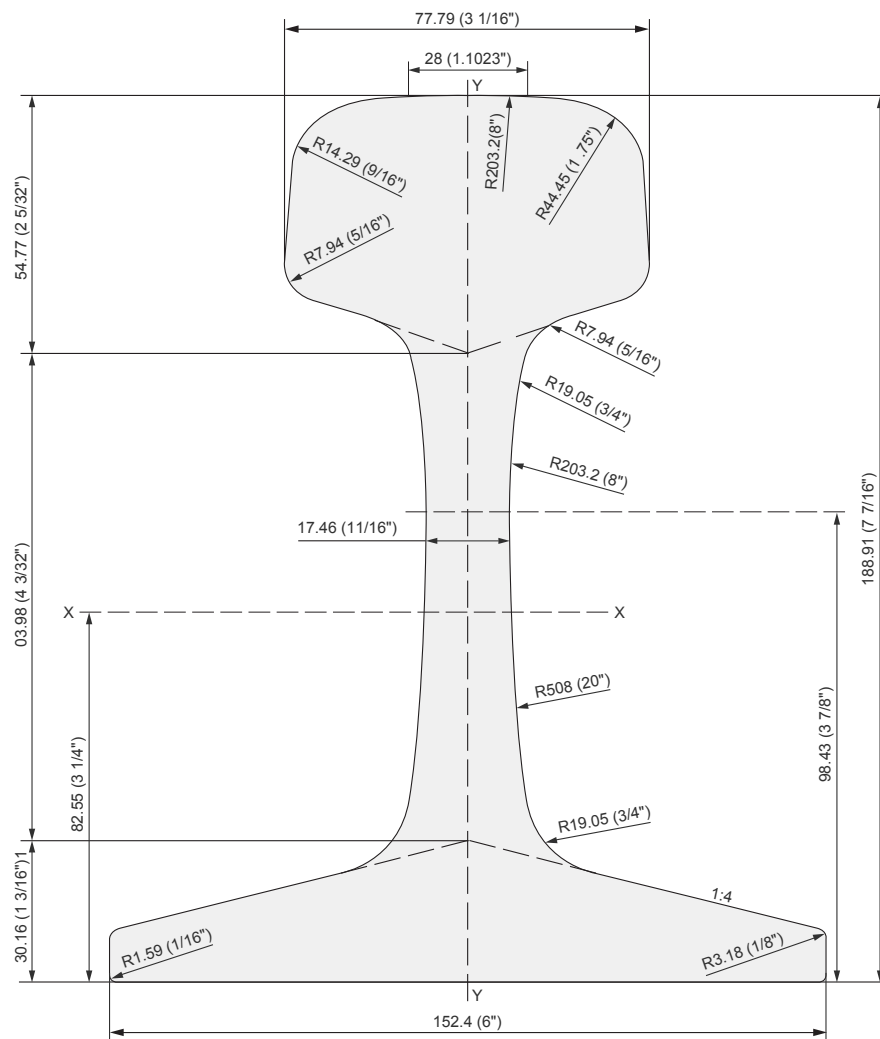
# 136RE (TR68)

Weight 67.42 kg/m | 135.91 lb/yd



# 141RE

Weight 69.80 kg/m | 140.70 lb/yd





# Transport Rails

## EUROPEAN PROFILES

Transport Rails are the most familiar rails produced. They are used by freight, passenger and public-transit railways to move goods and people long distances.

The installation of Transport Rails is usually on tie-and-ballast foundations. This has encouraged rail shapes with tall profiles to better transfer wheel loads from tie-to-tie. Transport rails are all relatively heavy sections, greater than 90 lbs/yard (44.64 kg/m).

Transport Rails are connected to one another by welding and/or by jointed connections. Rails can be furnished with either drilled or non-drilled (blank) ends as required.

## Description

Similar to the American profiles, European Transport rails are relatively tall, with thin webs, to handle vertical loads. They have a long history in Europe and in other parts of the world to which they were exported.

European Transport rails are produced in accordance with the latest European specification EN 13674-1. This standard was developed with the participation of various European countries in order to have one current and uniform European specification for rails which are produced by many Mills in many countries.

Various lengths are available, with the most common being 12, 18, 24 and 36 metres ( $\approx$  39, 59, 79 and 118 ft).

## Mechanical Properties

Grade	Tensile Strength MPa	Elongation %	Hardness HB
R200	$\geq 680$	$\geq 14$	200 - 240
R260	$\geq 880$	$\geq 10$	260 - 300
R350HT	$\geq 1,175$	$\geq 9$	350 - 390
R350LHT	$\geq 1,175$	$\geq 9$	350 - 390

## Basic Dimensions

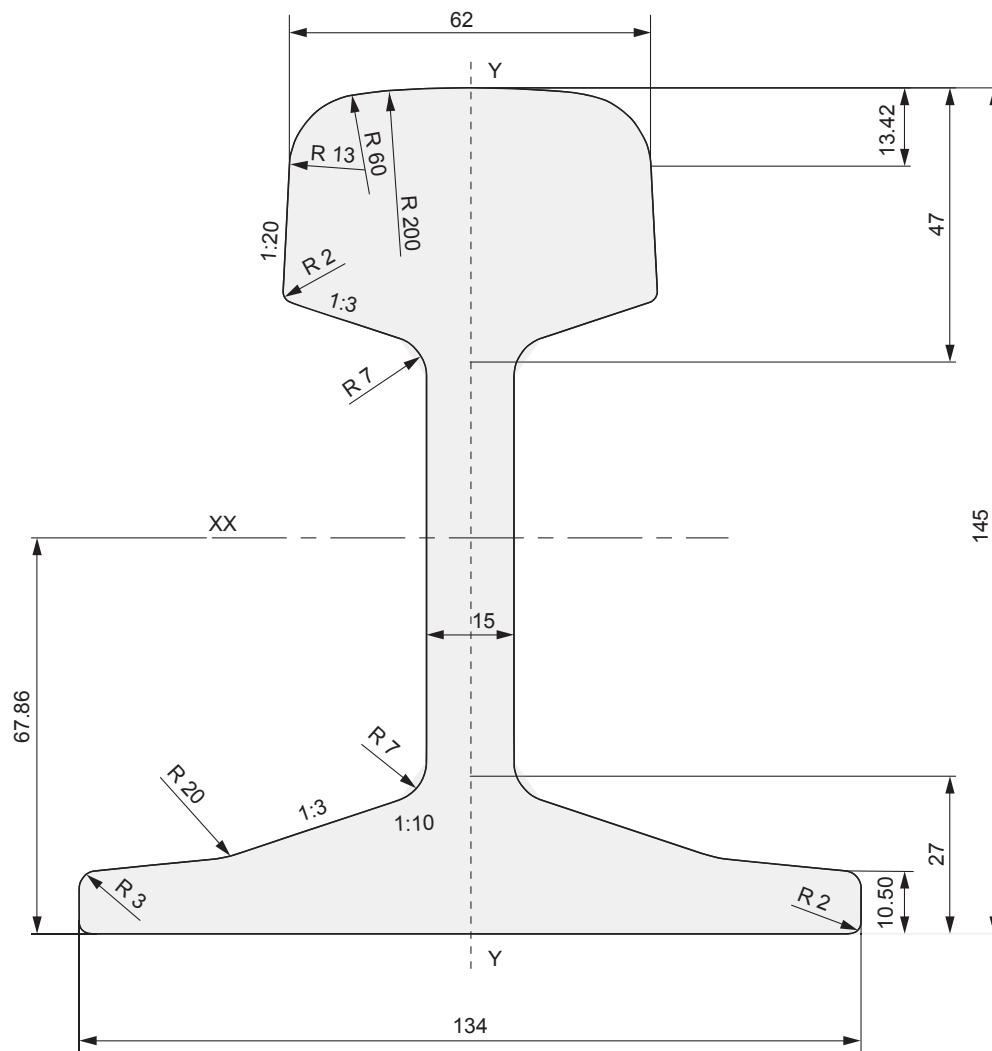
Profiles	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
45E1 (BS90A)	45.11	90.94	66.67	2.62	142.88	5.63	127.00	5.00	13.89	0.55
45E3 (RN45)	44.79	90.29	66.00	2.60	142.00	5.59	130.00	5.12	15.00	0.59
46E2 (U33)	46.27	93.28	62.00	2.44	145.00	5.71	134.00	5.28	15.00	0.59
49E1 (S49)	49.39	99.57	67.00	2.64	149.00	5.87	125.00	4.92	14.00	0.55
49E5	49.13	99.04	67.00	2.64	149.00	5.87	125.00	4.92	14.00	0.55
50E2 (50EB-T)	49.97	100.73	72.00	2.83	151.00	5.94	140.00	5.51	15.00	0.59
50E6 (U50)	50.90	102.61	65.00	2.56	153.00	6.02	140.00	5.51	15.50	0.61
54E1 (UIC54)	54.77	110.41	70.00	2.76	159.00	6.26	140.00	5.51	16.00	0.63
54E2 (UIC54E)	53.82	108.50	67.00	2.64	161.00	6.34	125.00	4.92	16.00	0.63
54E3 (S54)	54.57	110.01	67.00	2.64	154.00	6.06	125.00	4.92	16.00	0.63
54E4	54.31	109.48	67.00	2.64	154.00	6.06	125.00	4.92	16.00	0.63
54E5 (54E1AHC)	54.42	109.71	70.20	2.76	159.00	6.26	140.00	5.51	16.00	0.63
56E1 (BS113Lb)	56.30	113.50	69.85	2.75	158.75	6.25	140.00	5.51	20.00	0.79
60E1 (UIC60)	60.21	121.38	72.00	2.83	172.00	6.77	150.00	5.91	16.50	0.65
60E2	60.03	121.01	72.00	2.83	172.00	6.77	150.00	5.91	16.50	0.65
MAV48	48.50	97.77	66.80	2.63	148.00	5.83	120.00	4.72	14.00	0.55

## Chemical Composition

Grade	C %	Mn %	Si %	P %	S %	Al %	V %	Cr %
R200	0.40 - 0.60	0.70 - 1.20	0.15 - 0.58	≤ 0.035	≤ 0.035	≤ 0.004	≤ 0.030	≤ 0.15
R260	0.62 - 0.80	0.70 - 1.20	0.15 - 0.58	≤ 0.025	≤ 0.025	≤ 0.004	≤ 0.030	≤ 0.15
R350HT	0.72 - 0.80	0.70 - 1.20	0.15 - 0.58	≤ 0.020	≤ 0.025	≤ 0.004	≤ 0.030	≤ 0.15
R350LHT	0.72 - 0.80	0.70 - 1.20	0.15 - 0.58	≤ 0.020	≤ 0.025	≤ 0.004	≤ 0.030	≤ 0.30

## 46E2 (U33)

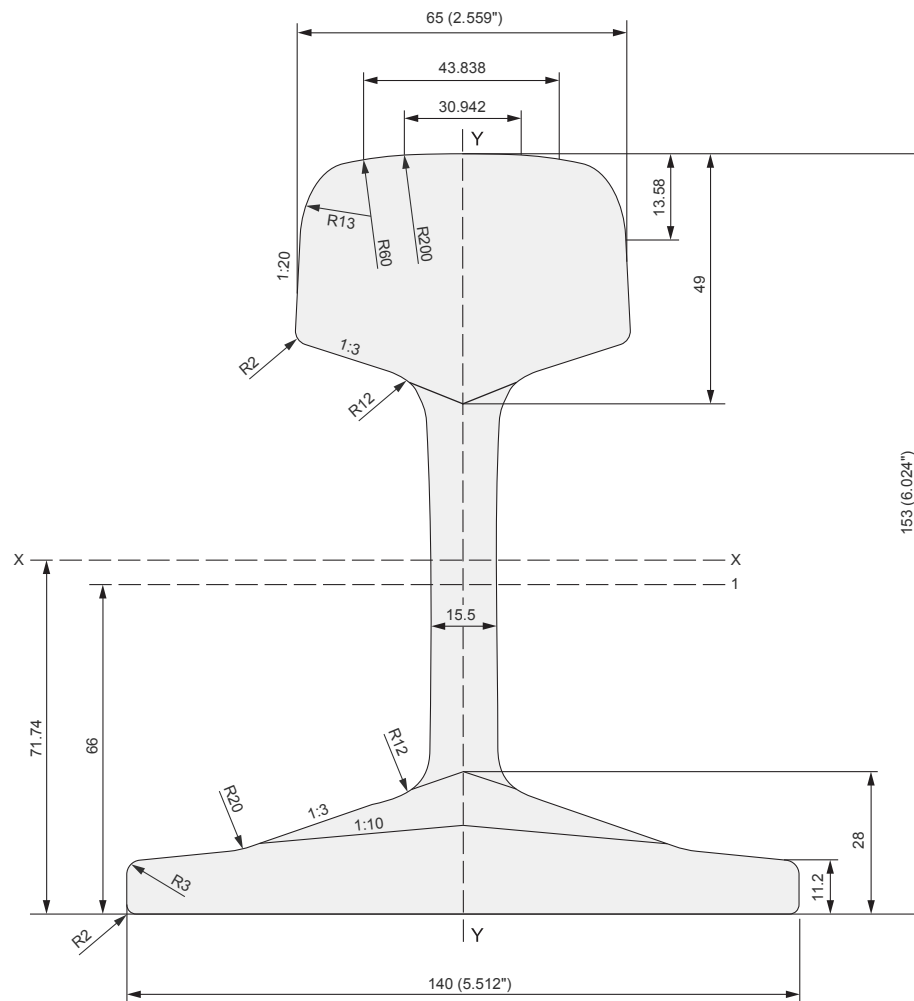
Weight 46.27 kg/m | 93.28 lb/yd





## 50E6 (U50)

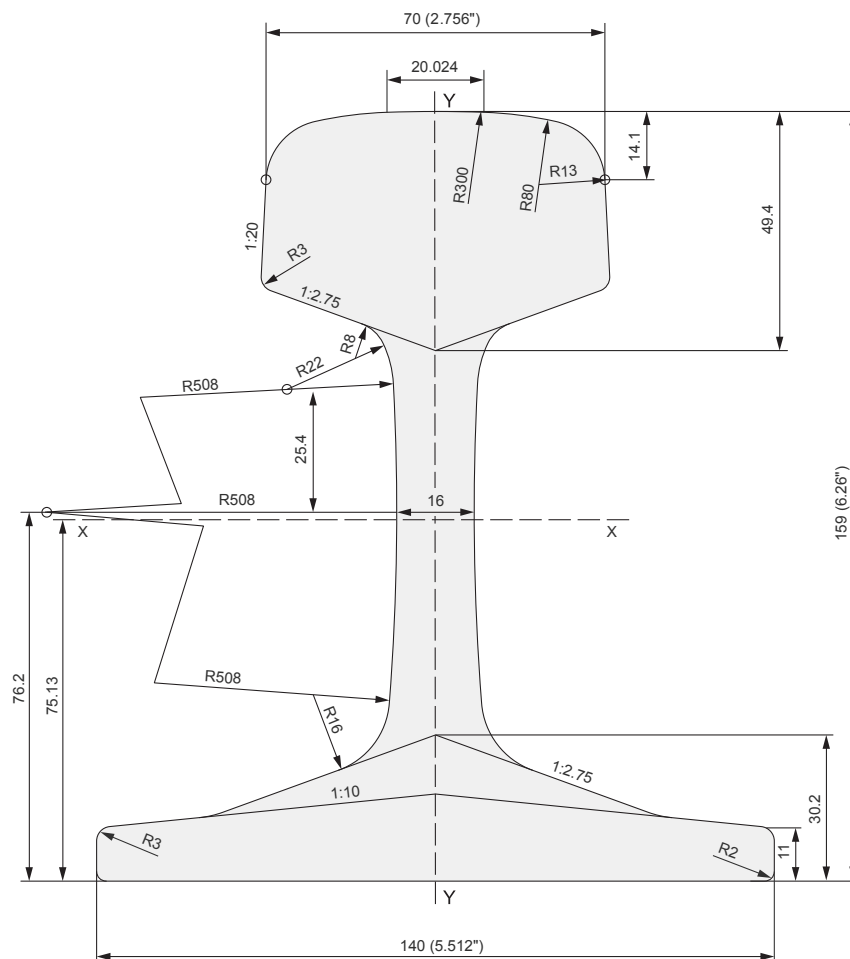
Weight 50.90 kg/m | 102.61 lb/yd



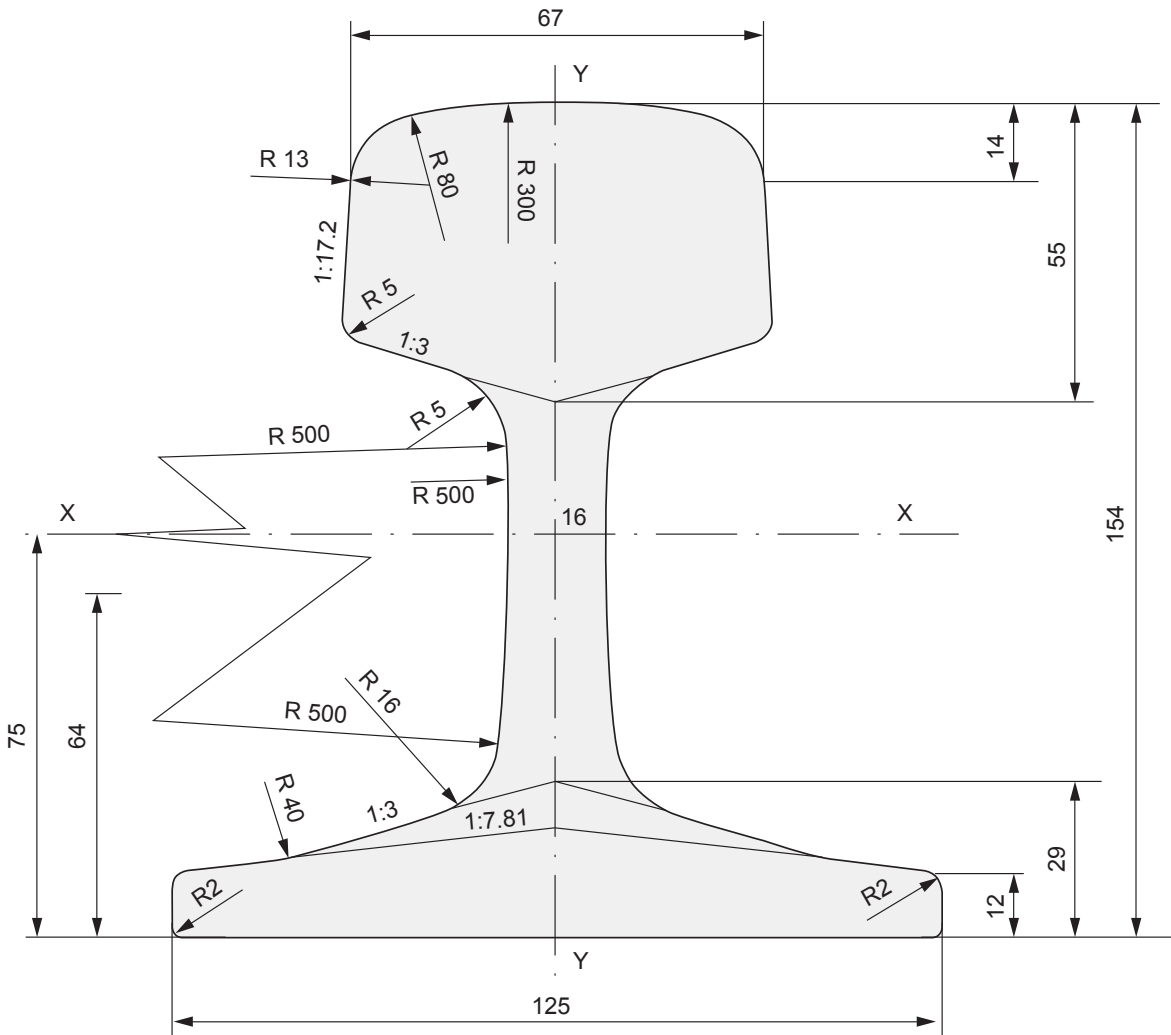


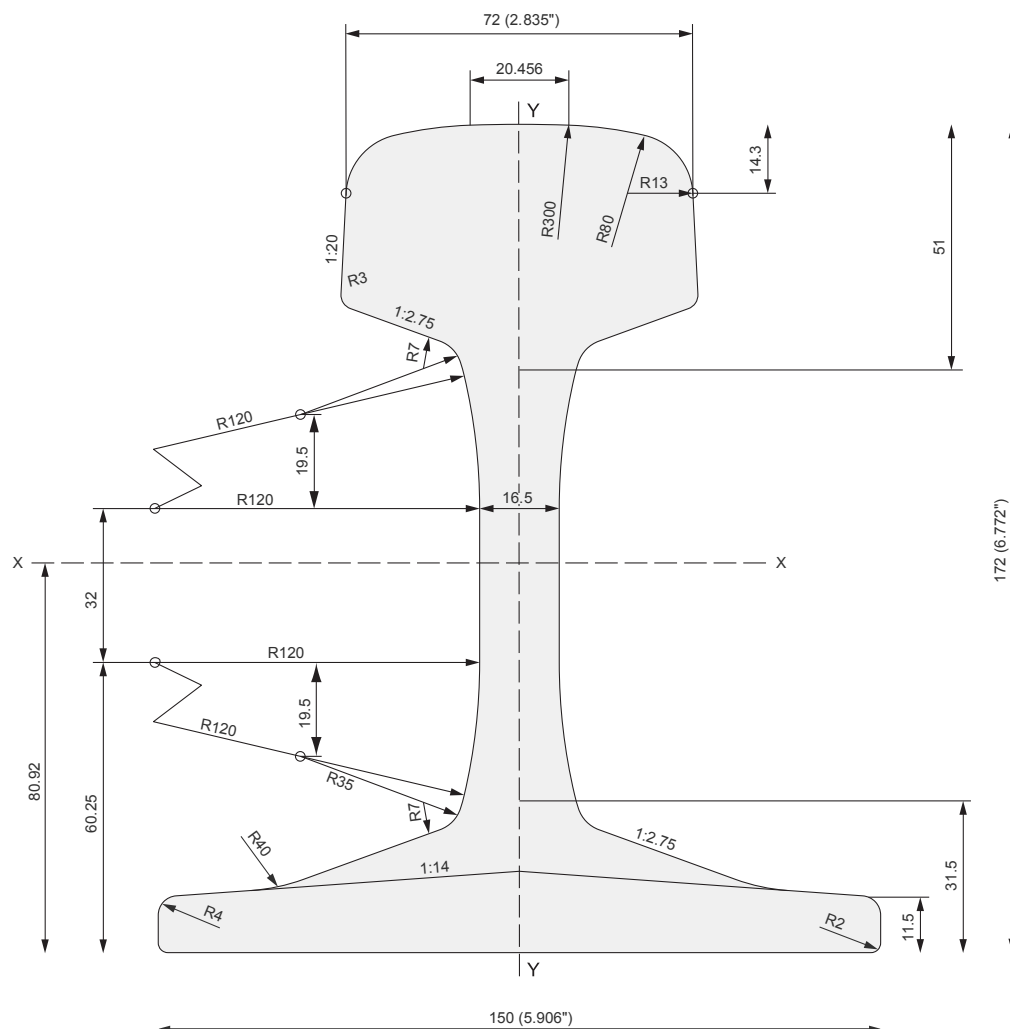
# 54E1 (UIC54)

Weight 54.77 kg/m | 110.41 lb/yd



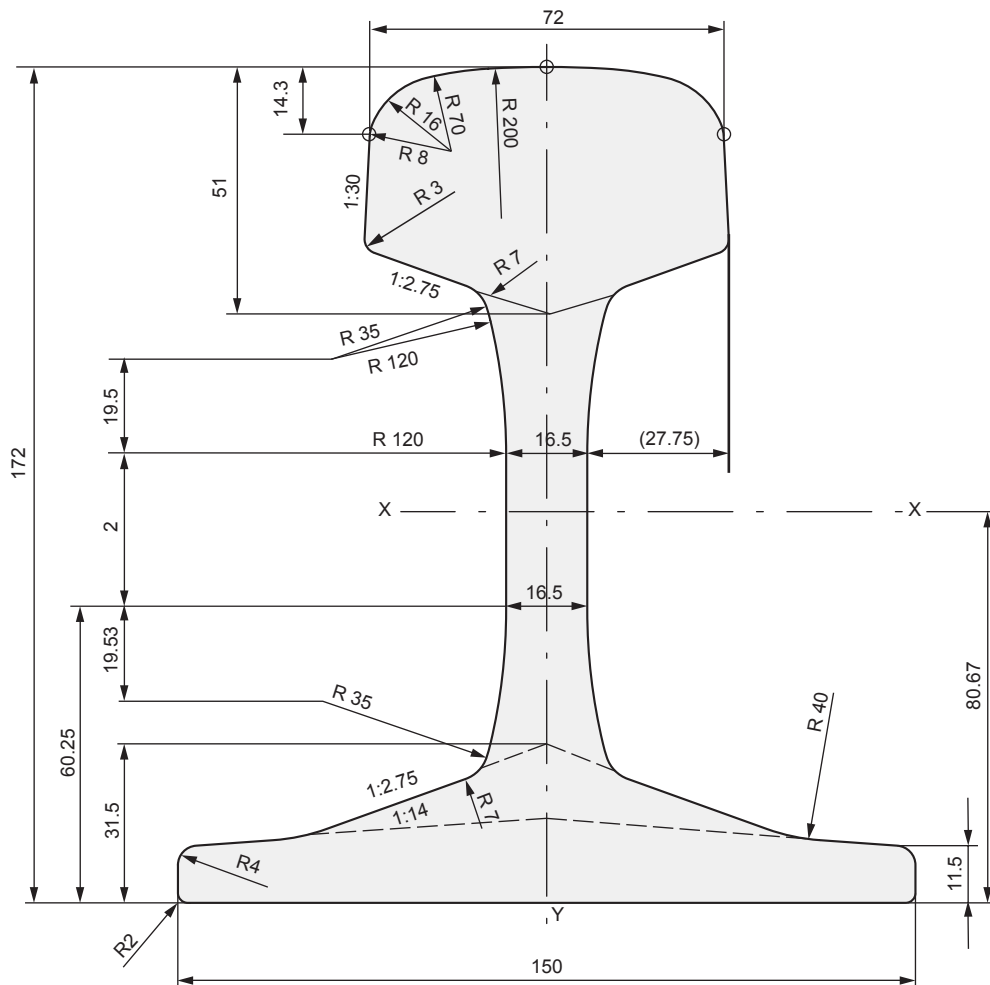
**Weight** 54.57 kg/m | 110.01 lb/yd





## 60E2

Weight 60.03 kg/m | 121.01 lb/yd



## Grooved Rails



# Grooved Rails

When rails are required for service in paved or grassed locations, grooved rails provide an excellent solution.

Grooved Rails were invented by Alphonse Loubat in 1852 for use in the Tram systems being introduced in New York and Paris at that time. In these cities, the new trains had to share the streets with carts and pedestrians. Tripping and trapping were safety concerns and so the best solution was to embed the rails in the street so that their running surfaces were at street level. Since wheel flanges were still necessary, a solution was required to protect the flanges while keeping the flange slot as narrow as possible. This was to protect horses and humans from tripping and prevent feet and narrow cart wheels from being trapped between the rails and the road surface.

The best solution was to roll a tough steel groove into the head of the rail. This allowed the road surface to abut the rail, while not interfering with the train wheels. These rails all share a bifurcated head, with a running surface on one side and a guard on the other. The guard carries no weight and serves only to maintain a minimum groove for the wheel flanges as they roll along.

## Description

Grooved rails are often referred to as tram, groove, grooved, girder or block rails. This family of rails is noted for two typical designs. The taller girder type rail with the familiar "I" shape, and a more compact block design that incorporates the head and foot into a "block" of steel, eliminating the web. The groove is common to both.

The main difference between the two designs is that block rails have a shallow profile (depth), offering reduced excavation for installation. This is especially helpful when considering relocation of utilities in heavy urban environments.

As a very old style of rail, many Grooved rail profiles and grades have been developed over the years. The designs described in this catalogue are available for new projects or replacement.

# Grooved Rails

## Basic dimensions

	Weight		Overall Head Width A		Height H		Base width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>51R1</b> (Ri52)	51.37	103.56	113.00	4.45	130.00	5.12	150.00	5.91	12.00	0.47
<b>53R1</b> (Ri53)	52.98	106.80	113.00	4.45	130.00	5.12	150.00	5.91	12.00	0.47
<b>54G1/54R1</b> (41GPU)	54.26	109.38	116.82	4.60	152.50	6.00	141.50	5.57	13.00	0.51
<b>54G2</b> (Ri54G2)	54.55	109.97	116.60	4.59	152.50	6.00	141.50	5.57	13.00	0.51
<b>55G1</b> (35GP)	54.77	110.41	111.82	4.40	152.50	6.00	141.50	5.57	13.00	0.51
<b>55G2</b> (41GP)	55.37	111.62	116.90	4.60	152.50	6.00	141.50	5.57	13.00	0.51
<b>55G3</b> (41GP13)	55.27	111.62	116.82	4.60	152.50	6.00	141.50	5.57	13.00	0.51
<b>55R1</b> (Ri55NK)	55.45	111.78	113.00	4.45	150.00	5.91	150.00	5.91	12.00	0.47
<b>57R1</b> (Ph37)	56.54	113.98	127.00	5.00	182.00	7.17	150.00	5.91	11.00	0.43
<b>59R1</b> (Ri59)	58.97	118.88	113.00	4.45	180.00	7.09	180.00	7.09	12.00	0.47
<b>59R2</b> (Ri59N)	58.14	117.20	113.00	4.45	180.00	7.09	180.00	7.09	12.00	0.47
<b>60R1</b> (Ri60)	60.59	122.14	113.00	4.45	180.00	7.09	180.00	7.09	12.00	0.47
<b>60R2</b> (Ri60N)	59.75	120.45	113.00	4.45	180.00	7.09	180.00	7.09	12.00	0.47
<b>62R1</b> (NP4aM)	62.37	125.73	116.00	4.57	180.00	7.09	180.00	7.09	12.00	0.47
<b>62R2</b> (Np4aS)	61.91	124.80	116.00	4.57	180.00	7.09	180.00	7.09	12.00	0.47
<b>67R1</b> (Ph37α)	66.76	134.58	135.00	5.31	180.00	7.09	180.00	7.09	13.00	0.51
<b>73C1</b> (VKRi60)	72.73	146.62	113.10	4.45	180.00	7.09	180.00	7.09	12.00	0.47

# Grooved Rails

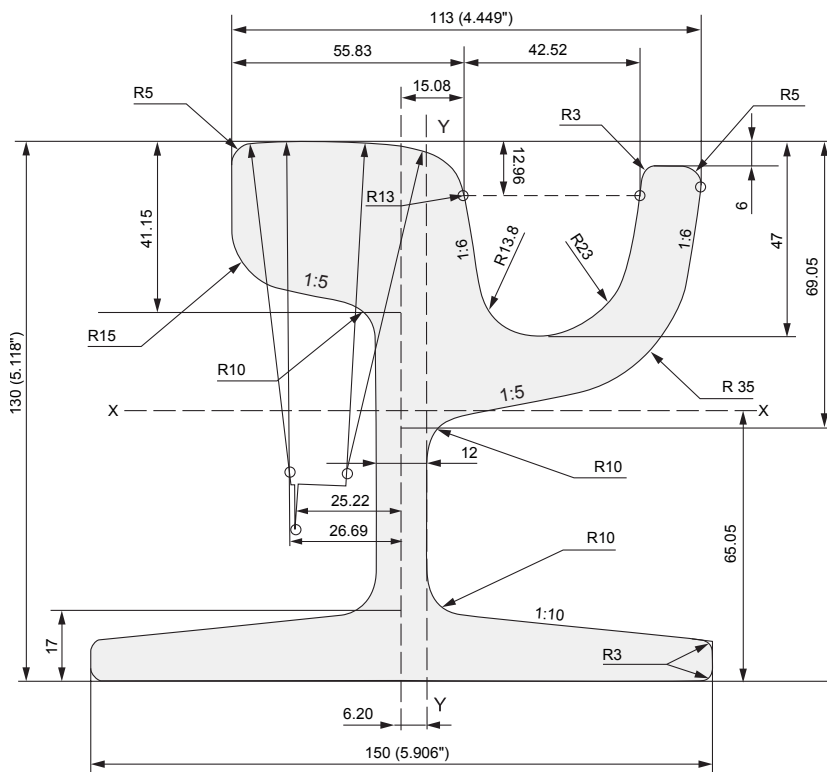
## Mechanical Properties

Grade	Tensile Strength MPa	Elongation %	Hardness HB
R200	≥ 680	≥ 14	200 - 240
R200V	≥ 690	≥ 15	200 - 240
R260	≥ 880	≥ 10	260 - 300
R260V	≥ 890	≥ 11	260 - 300
R290V	≥ 960	≥ 10	290 - 330

## Chemical Composition

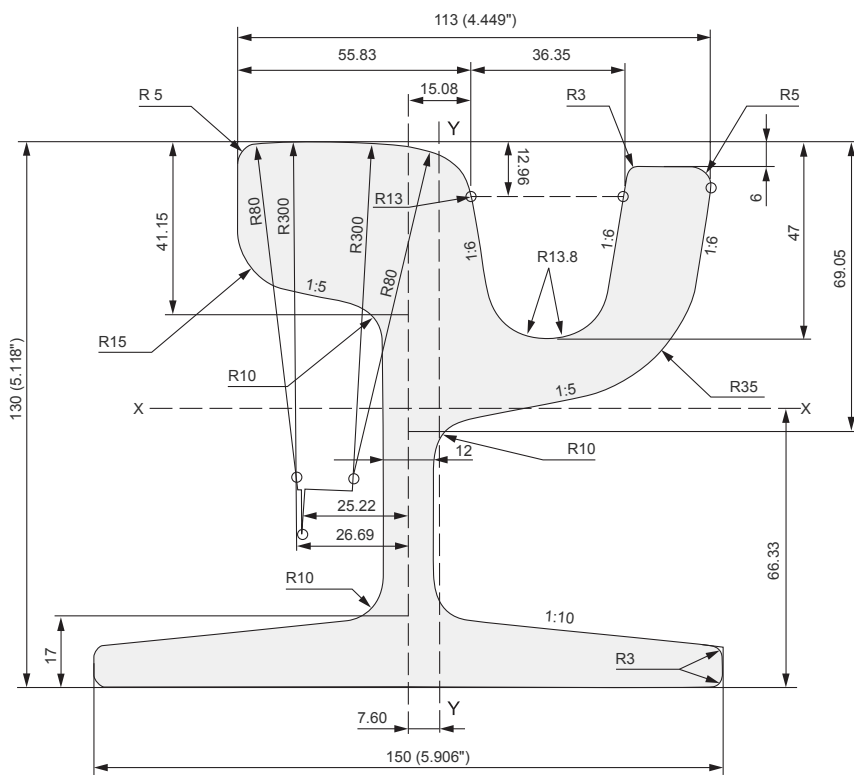
Grade	C %	Si %	Mn %	P %	S %	Cr %	V %
R200	0.40 - 0.60	0.15 - 0.58	0.70 - 1.20	≤ 0.035	≤ 0.035	≤ 0.15	-
R200V	0.30 - 0.48	0.15 - 0.58	0.70 - 1.20	≤ 0.035	≤ 0.035	≤ 0.15	0.08 - 0.20
R260	0.62 - 0.80	0.15 - 0.58	0.70 - 1.20	≤ 0.025	≤ 0.025	≤ 0.15	-
R260V	0.45 - 0.58	0.15 - 0.58	0.70 - 1.20	≤ 0.025	≤ 0.025	≤ 0.15	0.08 - 0.20
R290V	0.45 - 0.58	0.15 - 0.58	1.00 - 1.25	≤ 0.025	≤ 0.025	≤ 0.15	0.08 - 0.20

**Weight** 51.37 kg/m | 103.56 lb/yd

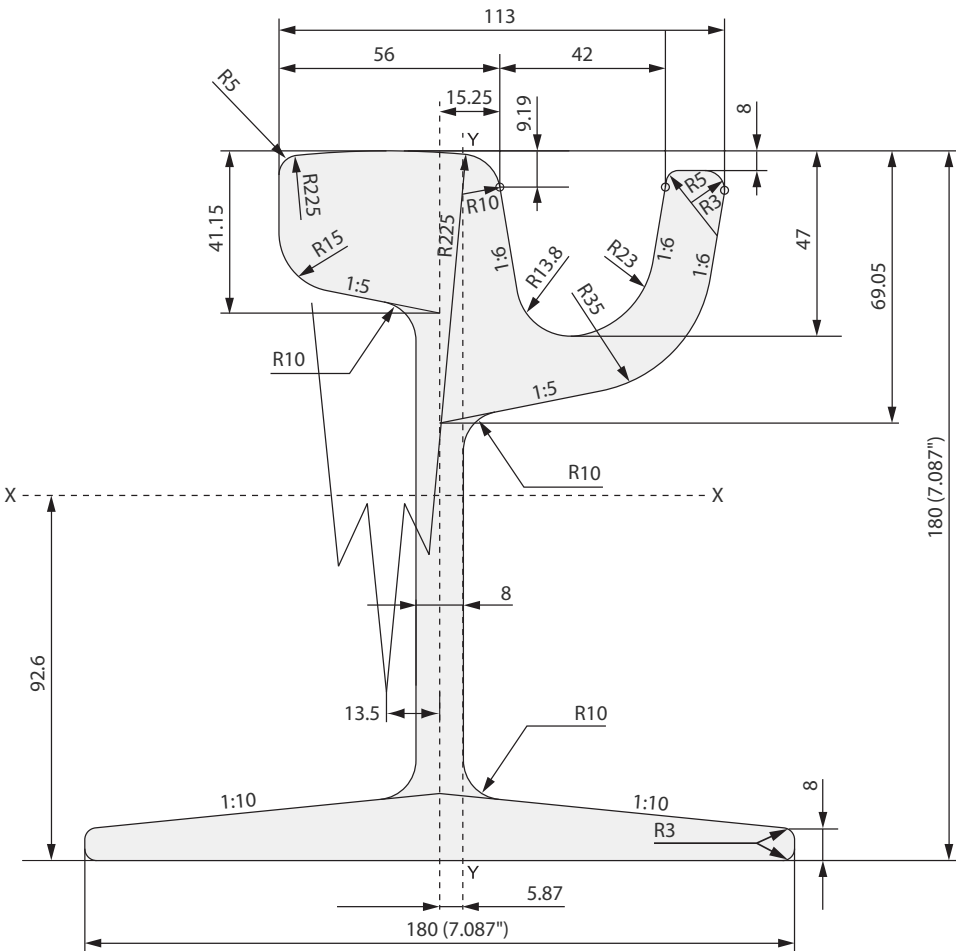




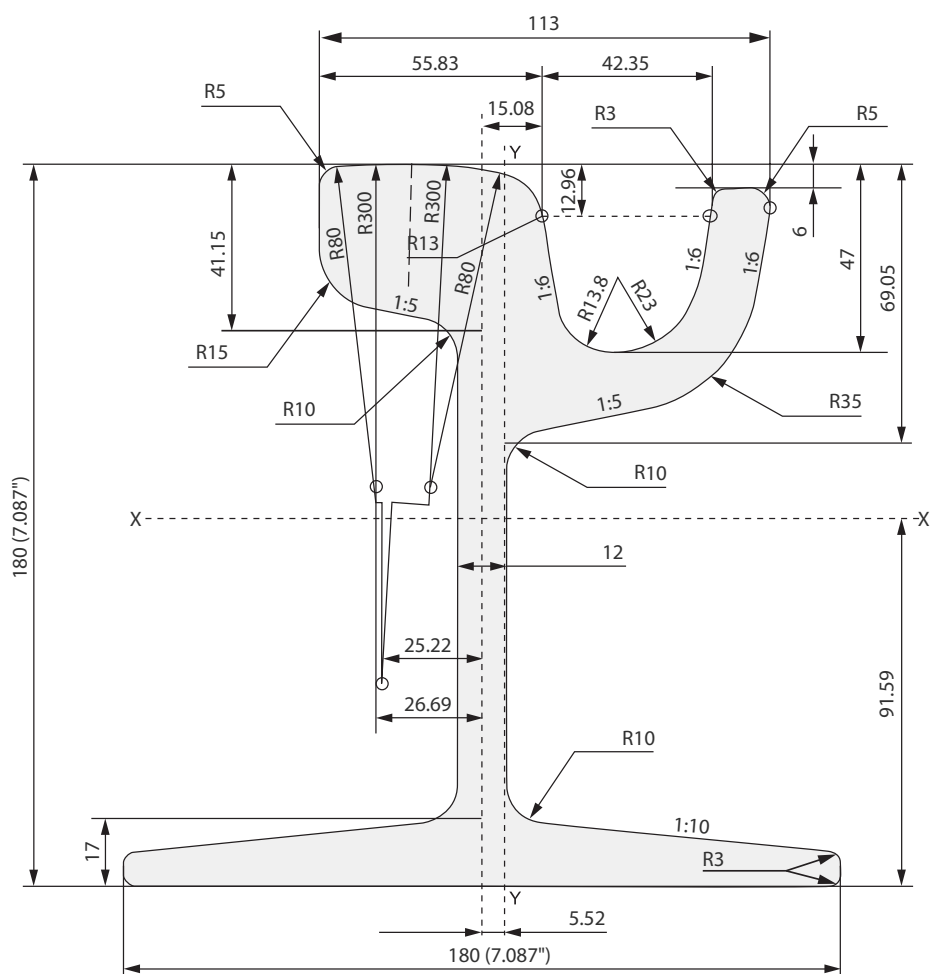
**Weight** 52.98 kg/m | 106.80 lb/yd



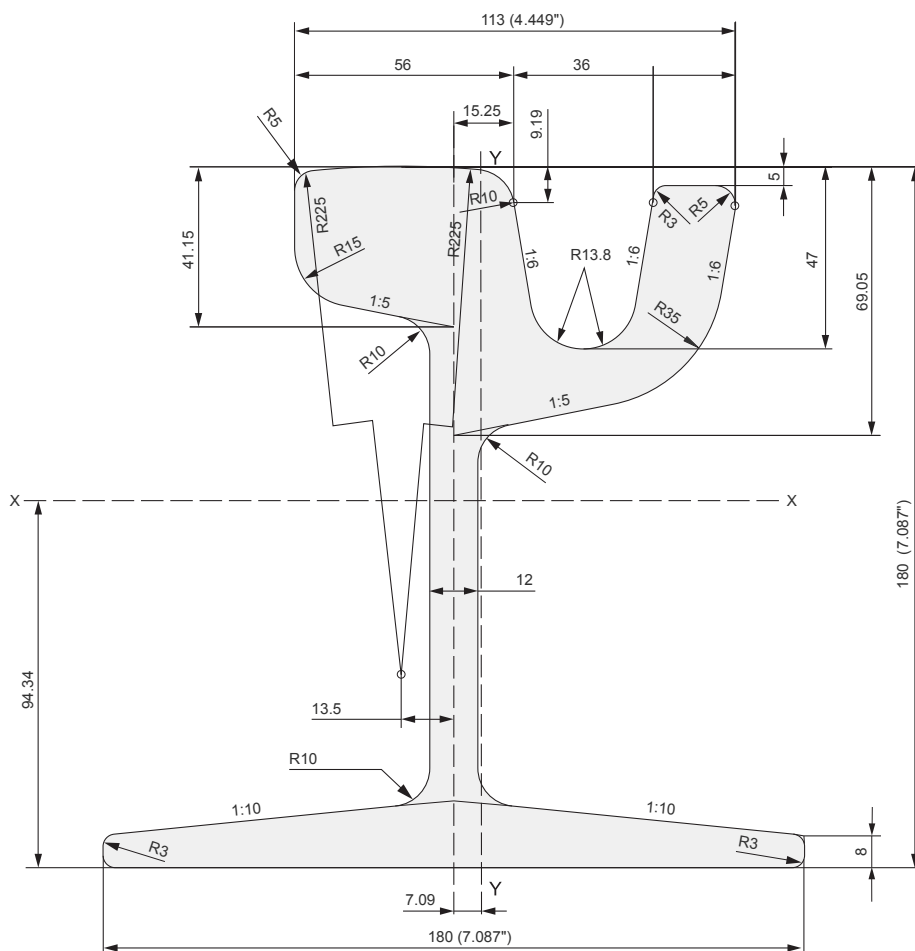
**Weight** 58.97 kg/m | 118.88 lb/yd



**Weight** 58.14 kg/m | 117.20 lb/yd



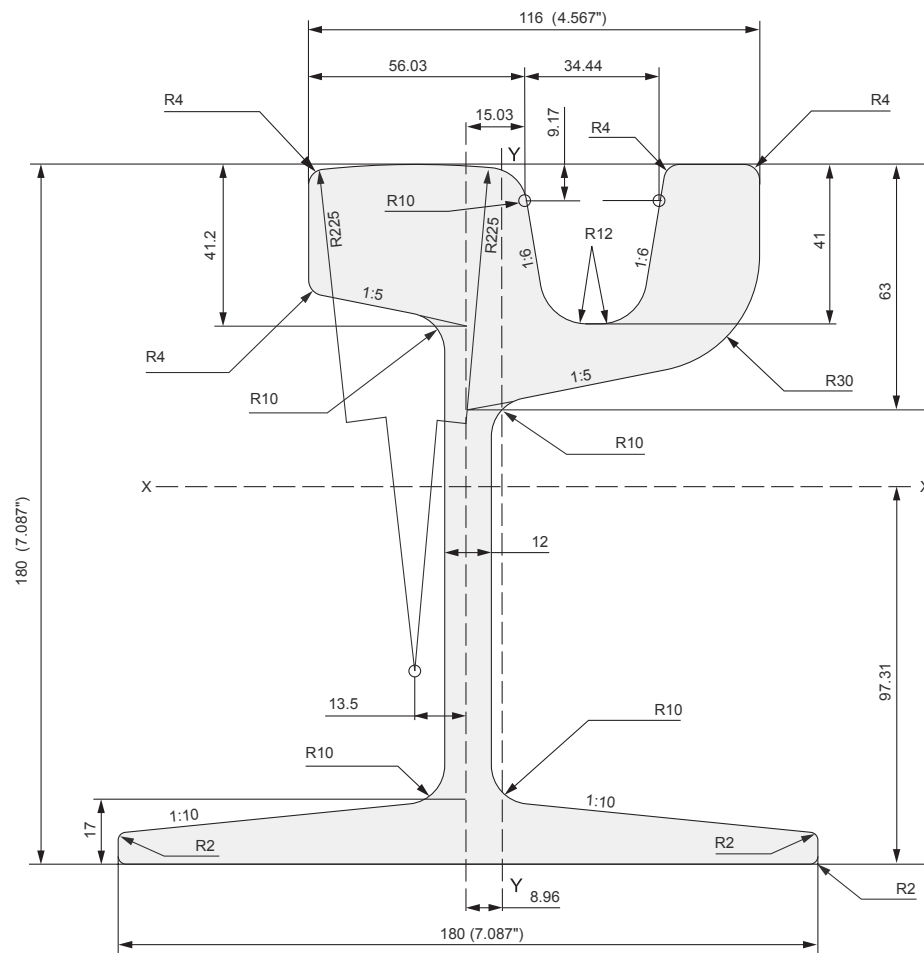
**Weight** 60.59 kg/m | 122.14 lb/yd



## Grooved Rails

### 62R1 (NP4aM)

Weight 62.37 kg/m | 125.73 lb/yd



## Block Rails



## Block Rails

When rails are required for service in paved or grassed locations, grooved rails provide an excellent solution.

Grooved Rails were invented by Alphonse Loubat in 1852 for use in the Tram systems being introduced in New York and Paris at that time. In these cities, the new trains had to share the streets with carts and pedestrians. Tripping and trapping were safety concerns and so the best solution was to embed the rails in the street so that their running surfaces were at street level. Since wheel flanges were still necessary, a solution was required to protect the flanges while keeping the flange slot as narrow as possible. This was to protect horses and humans from tripping and prevent feet and narrow cart wheels from being trapped between the rails and the road surface.

The best solution was to roll a tough steel groove into the head of the rail. This allowed the road surface to abut the rail, while not interfering with the train wheels. These rails all share a bifurcated head, with a running surface on one side and a guard on the other. The guard carries no weight and serves only to maintain a minimum groove for the wheel flanges as they roll along.

## Description

Grooved rails are often referred to as tram, groove, grooved, girder or block rails. This family of rails is noted for two typical designs. The taller girder type rail with the familiar "I" shape, and a more compact block design that incorporates the head and foot into a "block" of steel, eliminating the web. The groove is common to both.

The main difference between the two designs is that block rails have a shallow profile (depth), offering reduced excavation for installation. This is especially helpful when considering relocation of utilities in heavy urban environments.

As a very old style of rail, many Grooved rail profiles and grades have been developed over the years. The designs described in this catalogue are available for new projects or replacement.

# Block Rails

## Basic Dimensions

	Weight		Overall Head Width A		Height H		Base width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>53K2</b> (MSzTS52)	53.34	107.53	116.00	4.57	70.00	2.76	156.00	6.14	n/a	n/a
<b>57K2</b> (LK1)	57.68	116.28	115.00	4.53	72.00	2.83	156.00	6.14	n/a	n/a
<b>58K2</b> (112 Tram)	58.20	117.51	120.00	4.72	72.00	2.83	156.00	6.14	n/a	n/a

## Mechanical Properties

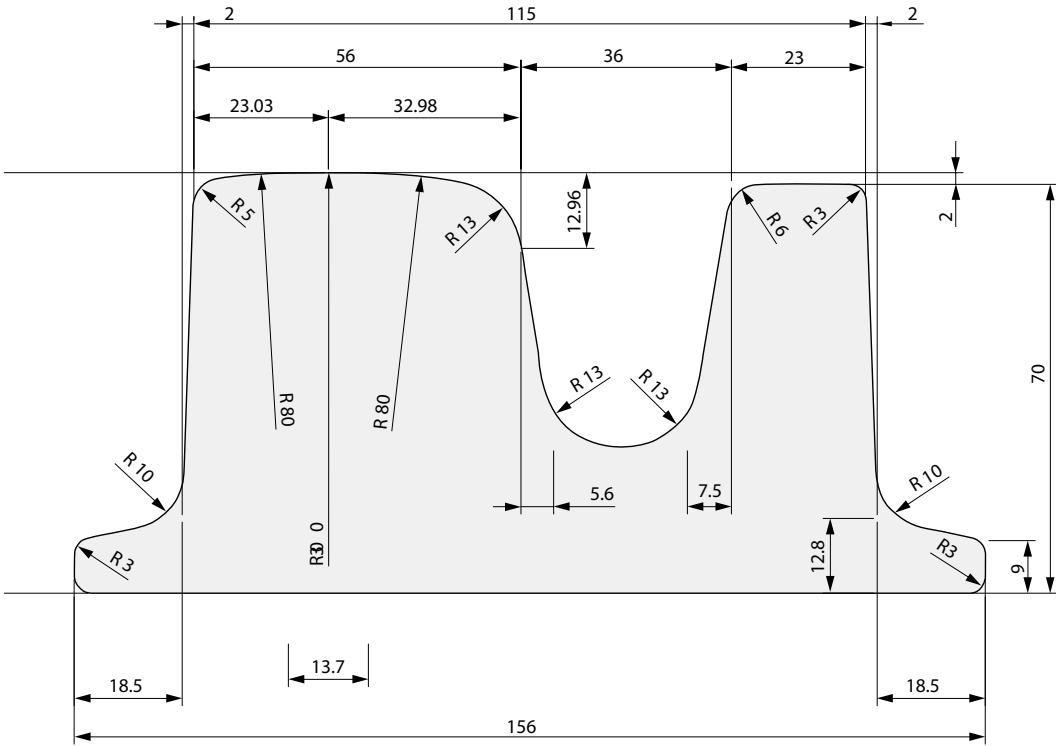
Grade	Tensile Strength MPa	Elongation %	Hardness HB
<b>R200</b>	≥ 680	≥ 14	200 - 240
<b>R200V</b>	≥ 690	≥ 15	200 - 240
<b>R220G1</b>	≥ 780	≥ 12	220 - 260
<b>R260</b>	≥ 880	≥ 10	260 - 300
<b>R260V</b>	≥ 890	≥ 11	260 - 300
<b>R290V</b>	≥ 960	≥ 10	290 - 330
<b>R320V</b>	≥ 1080	≥ 9	320 - 360
<b>B1000</b>	≥ 1080	≥ 9	320 - 360

## Chemical Composition

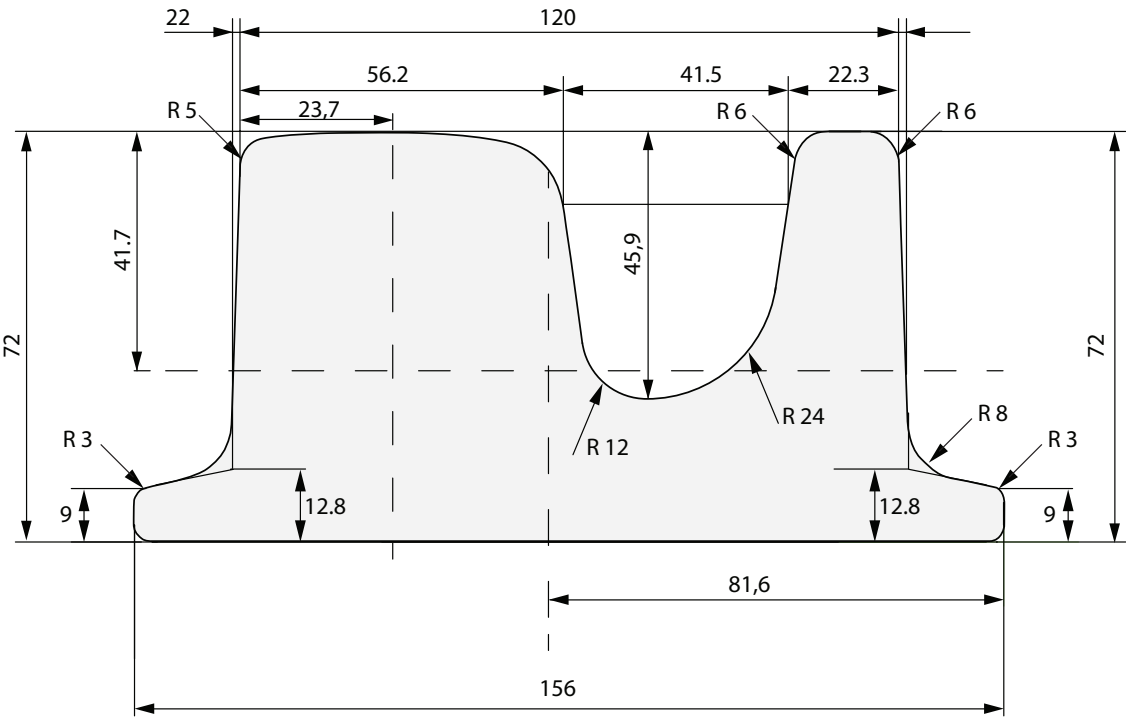
Grade	C %	Si %	Mn %	P %	S %	Cr %	V %
<b>R200</b>	0.40 - 0.60	0.15 - 0.58	0.70 - 1.20	≤ 0.035	≤ 0.035	≤ 0.15	-
<b>R200V</b>	0.30 - 0.48	0.15 - 0.58	0.70 - 1.20	≤ 0.035	≤ 0.035	≤ 0.15	0.08 - 0.20
<b>R220G1</b>	0.50 - 0.65	0.15 - 0.58	1.00 - 1.25	≤ 0.025	≤ 0.025	≤ 0.15	-
<b>R260</b>	0.62 - 0.80	0.15 - 0.58	0.70 - 1.20	≤ 0.025	≤ 0.025	≤ 0.15	-
<b>R260V</b>	0.45 - 0.58	0.15 - 0.58	0.70 - 1.20	≤ 0.025	≤ 0.025	≤ 0.15	0.08 - 0.20
<b>R290V</b>	0.45 - 0.58	0.15 - 0.58	1.00 - 1.25	≤ 0.025	≤ 0.025	≤ 0.15	0.08 - 0.20
<b>R320V</b>	0.65 - 0.85	0.15 - 0.58	0.90 - 1.30	≤ 0.020	≤ 0.025	0.20 - 0.80	0.05 - 0.15
<b>B1000</b>	0.65 - 0.85	0.15 - 0.58	0.90 - 1.30	≤ 0.020	≤ 0.025	0.20 - 0.80	0.05 - 0.15



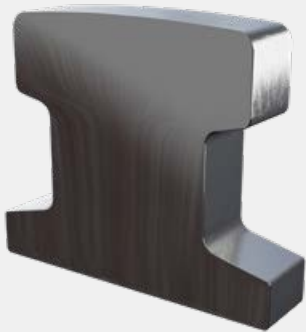
**Weight** 57.68 kg/m | 116.28 lb/yd



**Weight** 58.20 kg/m | 117.51 lb/yd



## Contact Rails



# Contact Rails

Contact rail is also referred to as 'third rail' and is used to transfer electricity to the train or tram. In addition it can also serve as a guide bar to limit the lateral movement of the railcars.

Contact rails are made of low carbon steel and produced according to each transit authority's specifications. Low carbon steel is used in this application because it has about one third of the electrical resistance relative to the hard steel used for running rail.

## Basic Dimensions

Profiles	Weight		Head Width A		Height H		Base Width B		Web W	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
150NMC (STR74, TR75)	74.00	149.18	104.80	4 1/8	103.19	4 1/16	123.83	4 7/8	69.85	2 3/4
STR40	40.27	81.18	80.00	3.15	105.00	4.13	80.00	3.15	18.00	0.71
T52	52.31	105.45	101.00	3.98	100.50	3.96	45.00	1.77	45.00	1.77
Guide Bar	44.35	89.41	100.00	3.94	150.00	5.91	25.00	0.98	n/a	n/a

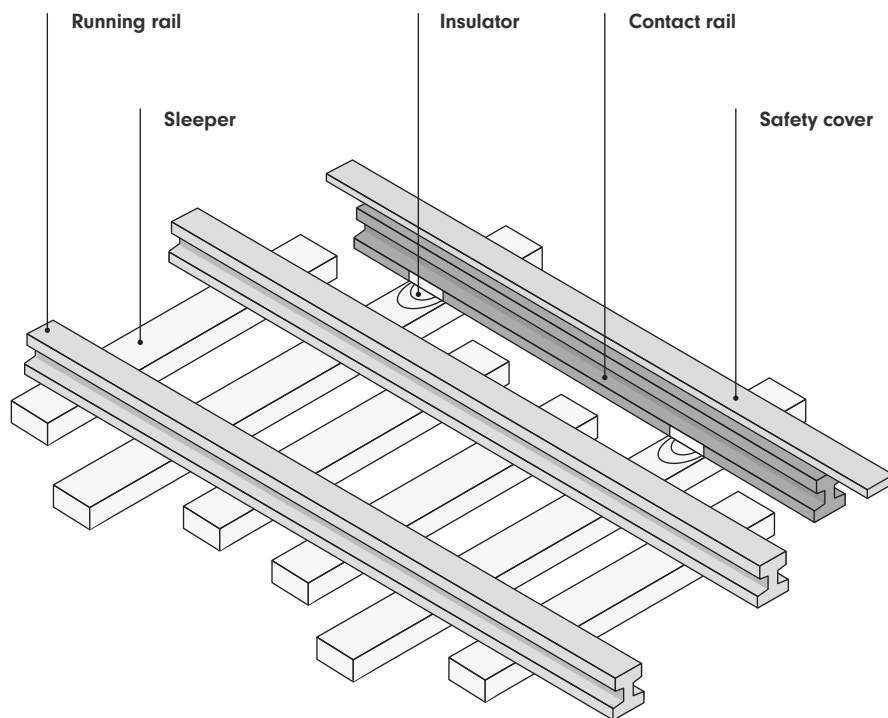
# Contact Rails

## Technical Parameters

The main technical parameters of the 150NMC rail used by subways in the Americas are as follow:

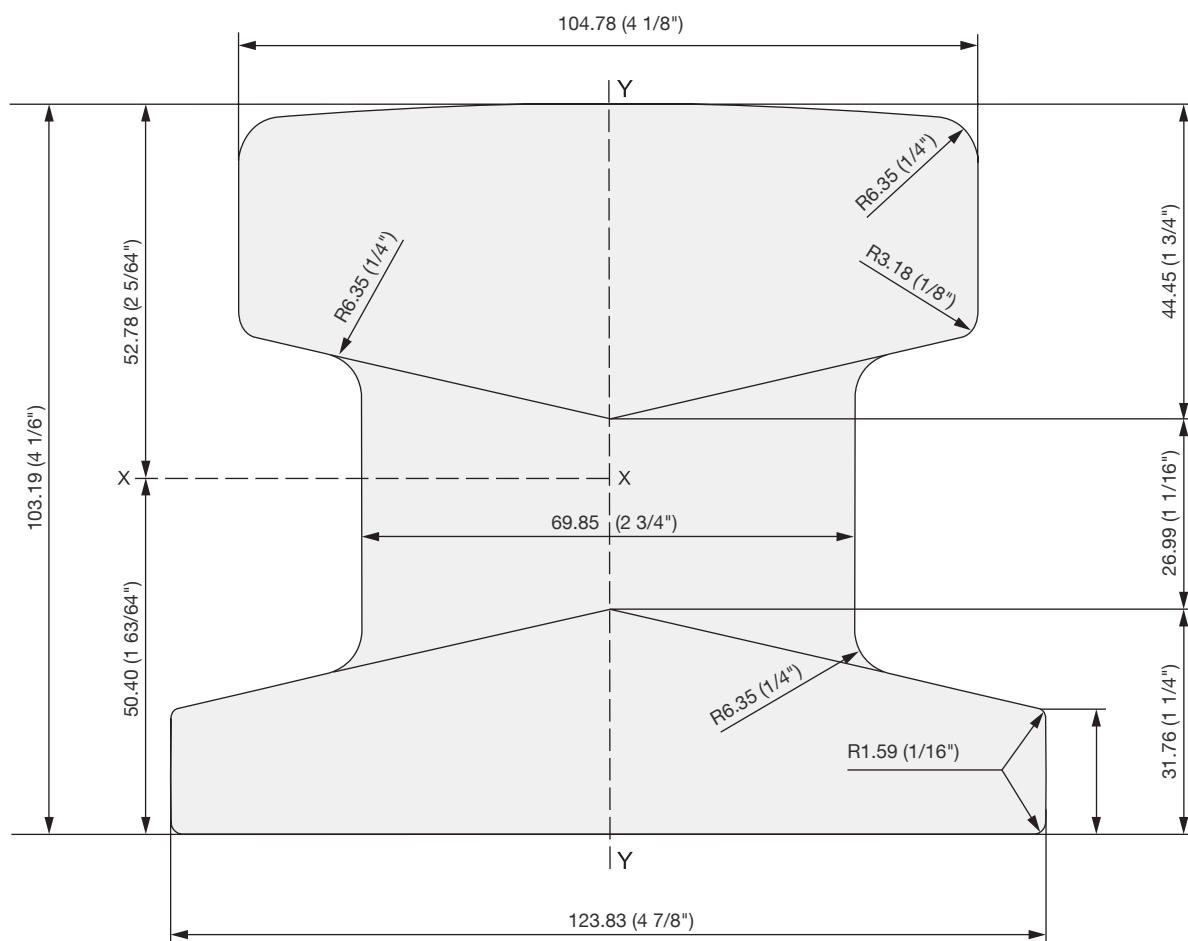
Profiles	Electrical resistivity (at 20° C)	Hardness (HB)
150NMC (STR74, TR75)	< 11.90 $\mu\Omega$ -cm	$\geq 70$

## Example of Installation



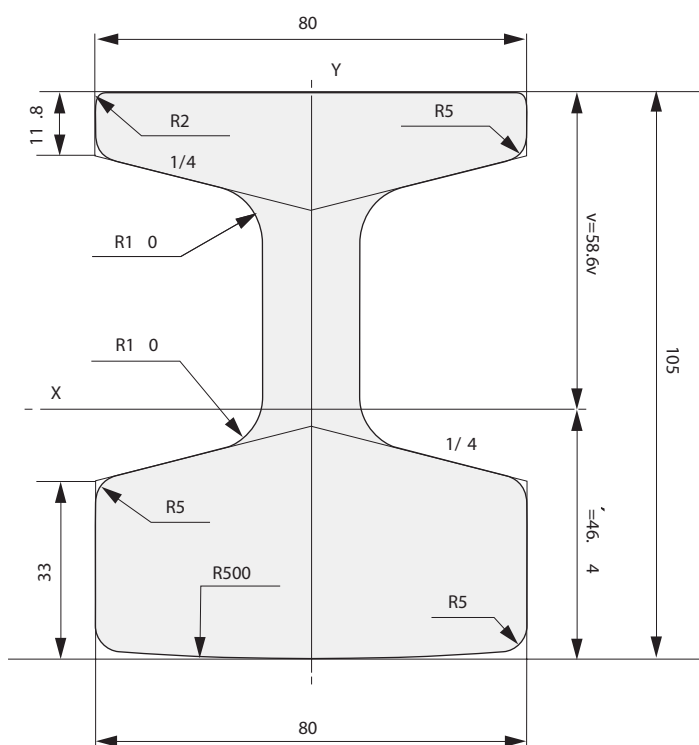
## 150NMC (STR74, TR75)

Weight 74 kg/m | 149.16 lb/yd



## STR40

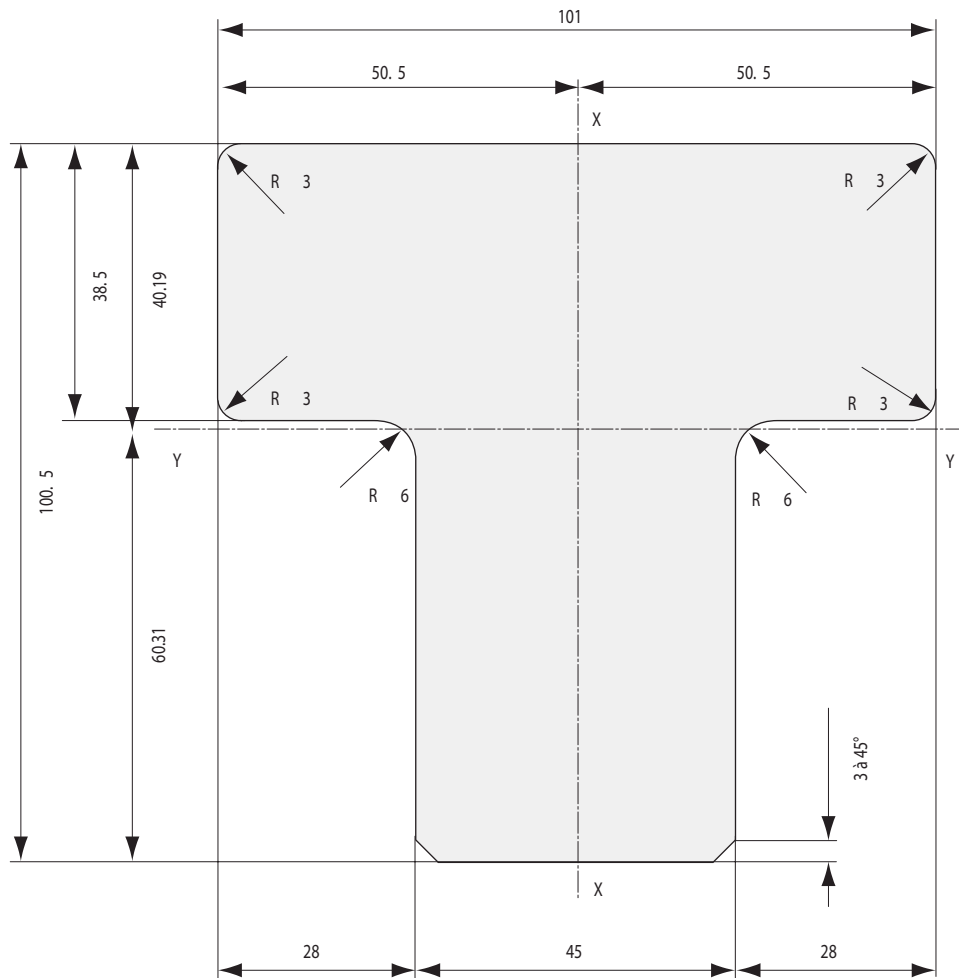
Weight 40.27 kg/m | 81.18 lb/yd



## Contact Rails

# T52

Weight 52.31 kg/m | 105.45 lb/yd



## Guard Rails



# Guard Rails

Guard rail, also known as restraining rail or check rail, is used to reduce curve wear, and prevent wheels from changing its direction by holding them in correct alignment. They are used in special trackwork, in sharp curves and in areas with restrictive clearance such as bridges and tunnels.

The 33C1 rail, which is also referred to as the UIC33 or U69 or RL-160, can be used as a guard rail to protect frog points or as a restraining rail. This rail profile is produced according to the European specification EN 13674 and can be supplied in four different steel grades.

## Basic Dimensions

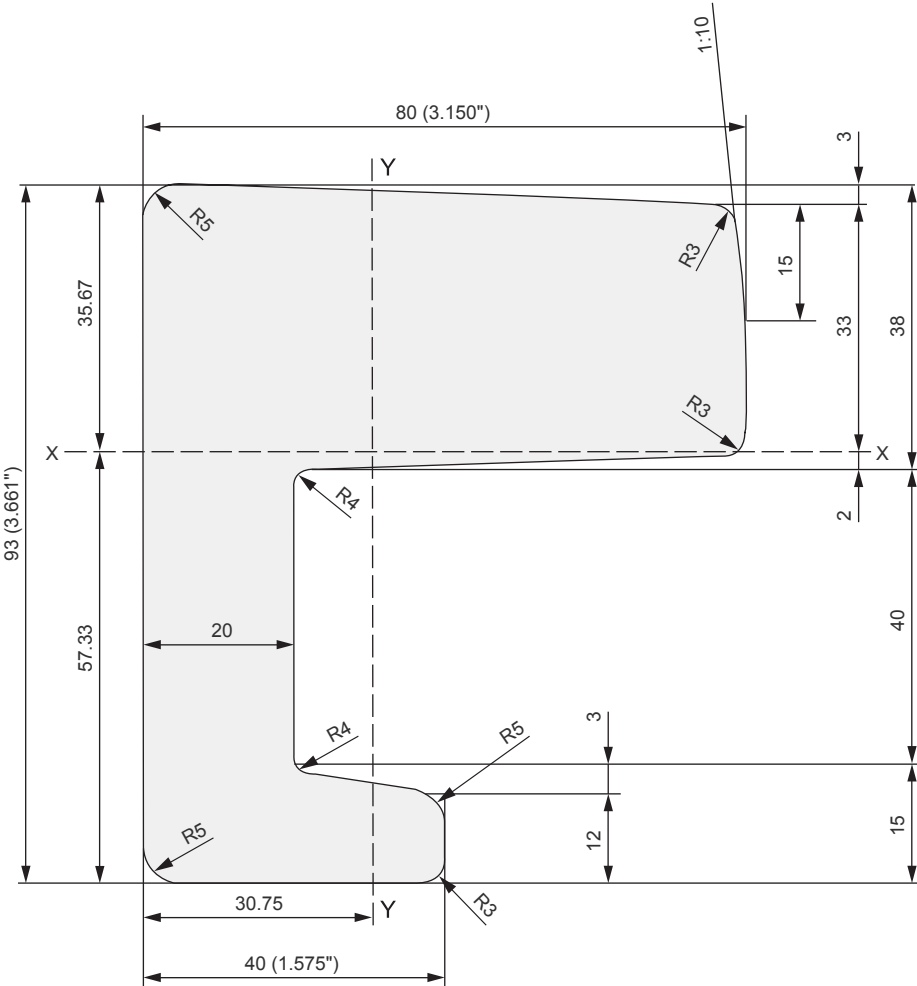
Profiles	Weight		Head Width		Height		Base Width		Web	
	kg/m	lb/yd	mm	in	mm	in	mm	in	mm	in
<b>33C1</b> (UIC33, U69, RL1-60)	32.99	66.50	80.00	3.15	93.00	3.66	40.00	1.57	20.00	0.79
<b>SBB</b> Radlenker	40.56	81.77	80.00	3.15	104.00	4.09	40.00	1.57	20.00	0.79



## Mechanical Properties

Grade	Tensile Strength MPa	Elongation %	Hardness HB
R200	≥ 680	≥ 14	200 - 240
R260	≥ 880	≥ 10	260 - 300
R320Cr	≥ 1080	≥ 9	320 - 360
R350	≥ 1120	≥ 8	350 - 390

**Weight** 32.99 kg/m | 66.50 lb/yd





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