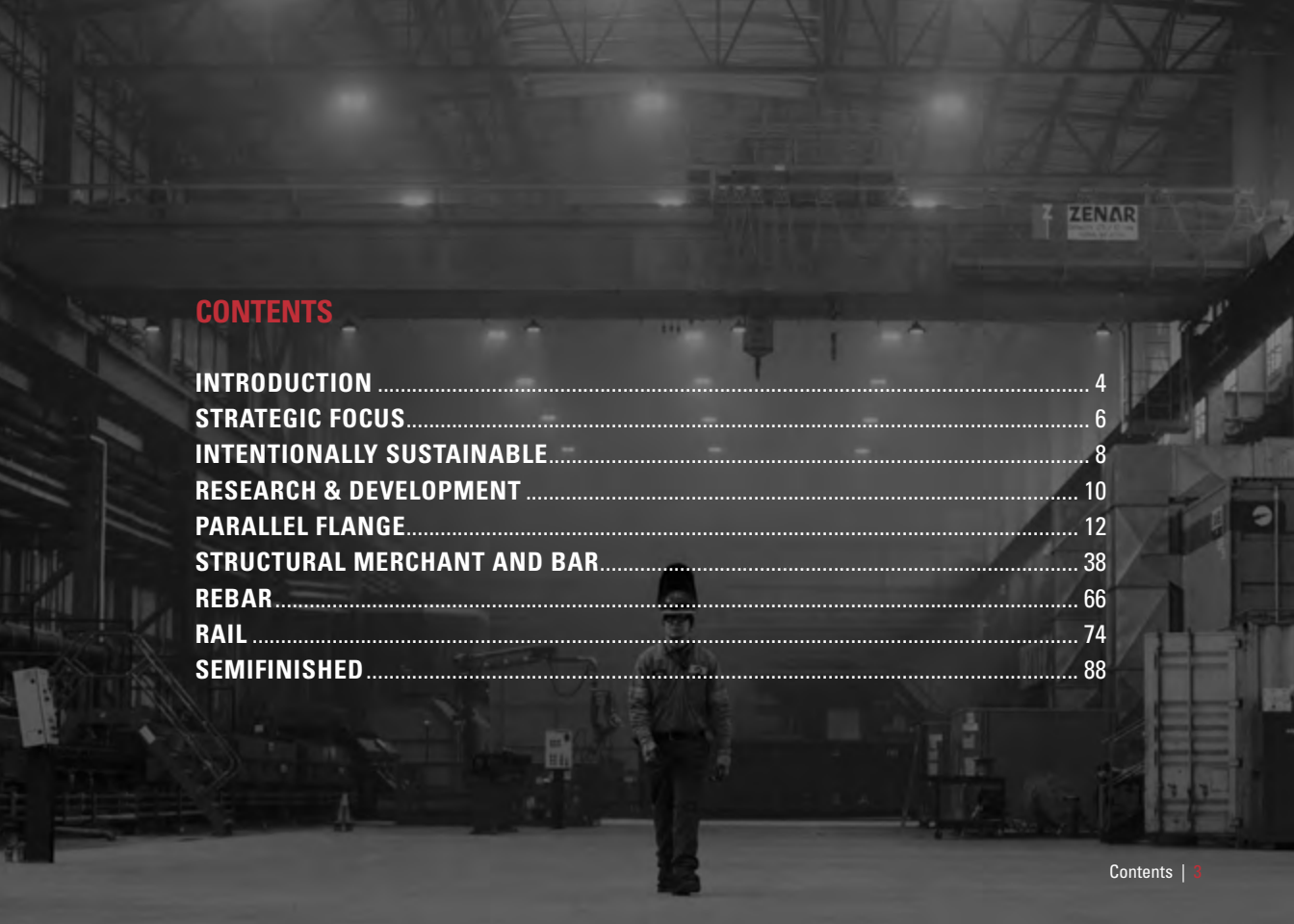
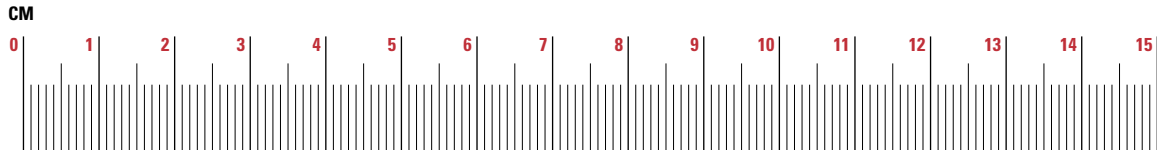
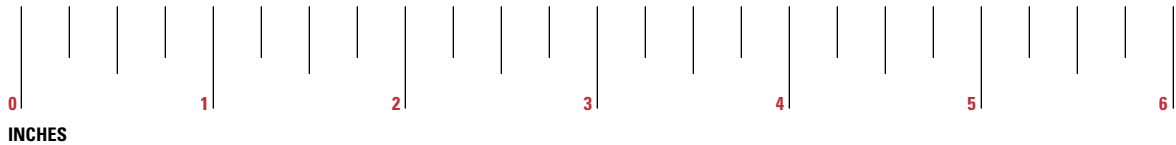


PRODUCT GUIDE





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INTRODUCTION



- Steel Dynamics is the premier source for high-quality steel products melted and manufactured in the USA
- Our steelmaking operations use electric arc furnace (EAF) technology with recycled ferrous scrap as the primary input, which limits our carbon emissions and promotes sustainability
- Our structural products are used in construction applications, including buildings, bridges, and stadiums
- Our rail is used in track by Class I railroads, short lines, commuter lines, and industrial plants
- Structural and Rail Division located in Columbia City, Indiana
- Roanoke Bar Division located in Roanoke, Virginia



STRATEGIC FOCUS

6 CORE PILLARS

SAFETY

CULTURE

CUSTOMER COMMITMENT

GROWTH

INNOVATION

FINANCIAL STRENGTH

INTENTIONALLY SUSTAINABLE



For more information on our commitment to sustainability, scan the code.



As one of the largest metals recycling companies in North America, we operate using a circular manufacturing model. We fuel our own circular economy in the manufacturing process through our three primary operating platforms—steel, metals recycling, and steel fabrication.

Our commitment to all aspects of sustainability is embedded in our founding principles—valuing our teams, our partners, our communities, and our environment. Our steelmaking operations have exclusively used electric arc furnace (EAF) technology with recycled ferrous scrap as the primary input, limiting our carbon emissions.

Our teams' drive to be efficient and focus on EAF steelmaking technology has resulted in our Scope 1 and 2 emissions being among the lowest in the industry—and we are continuing to raise the bar even further for sustainable steelmaking. In 2021, we set a goal for our EAF steel mill operations to be carbon neutral by 2050.

RESEARCH & DEVELOPMENT



Our state-of-the-art Research & Development (R&D) Center, housed at the Structural and Rail Division in Columbia City, Indiana, serves the entire SDI organization. Our advanced capabilities include:

- Sawing and CNC Machining
- Metallographic Grinding, Polishing, and Etching
- Optical Microscopy
- Scanning Electron Microscopy
- Hardness Testing
- Tensile Testing
- Fatigue Testing
- Rolling Contact Testing
- Fracture Toughness Testing
- Jominy Testing
- Thermomechanical Simulation



PARALLEL FLANGE

Parallel Flange Certifications

ISO9001
CERTIFIED



SRD Standards & Grades

ASTM	ABS	CSA G40.21	AASHTO
A36	Grade A	50A (350A)	M270
A572	Grade B	50AT (350AT)	-
A588	Grade AH32	50W (350W)	-
A690	Grade AH36	50WMT (350WMT)	-
A709	-	50WM (345WM)	-
A992	-	-	-

SRD RBD Both SRD and RBD

All structural products are made to ASTM A6 Standard Specification. Standard covers terminology, ordering information, testing information, quality information, nominal dimensions, and permitted variations.

SRD **Tensile Properties**

Grade	Yield Strength (ksi)	Tensile Strength (ksi)	Elongation (%)	Yield to Tensile Ratio
ASTM A992 CSA 50WM CSA 50WMT	Web Test			
	50 min / 70 max	65 min	18 min	0.87 max
	Flange Test			
	50 min / 65 max	65 min	18 min	0.85 max
ASTM A36	36 min	58 min / 80 max	20 min	-
ASTM A572-50	50 min	65 min	18 min	-
ASTM A572-60	60 min	75 min	16 min	-
ASTM A588-B	50 min	70 min	18 min	-
ASTM A690	50 min	70 min	18 min	-
ABS-A	34 min	58 min / 80 max	21 min	-
ABS-B	34 min	58 min / 75 max	21 min	-
ABS-AH32	46 min	64 min / 85 max	21 min	-
ABS-AH36	51 min	71 min / 90 max	21 min	-
CSA 50A	50 min	70 min / 95 max	19 min	-
CSA 50AT	50 min	70 min / 95 max	19 min	-
CSA 50W	50 min	65 min / 95 max	19 min	-
AASHTO M270-345	50 min	65 min	18 min	-

SRD RBD Both SRD and RBD

SRD **Charpy V-Notch (Impact Toughness)**

A709 Non-Fracture Critical (Thickness ≤ 2 in.)			
Grade	Minimum Average Energy (ft-lbf) @ Temp (°F)		
	Zone 1	Zone 2	Zone 3
50T, 50ST, 50WT	15 @ 70	15 @ 40	15 @ 10
A709 Fracture Critical (Thickness ≤ 2 in.)			
Grade	Minimum Average Energy (ft-lbf) @ Temp (°F)		
	Zone 1	Zone 2	Zone 3
50F, 50SF, 50WF	25 @ 70	25 @ 40	25 @ 10

SRD RBD Both SRD and RBD
Charpy capabilities are size dependent, please inquire.

CSA – Minimum Average Energy of 20 (ft-lbf)		
Category	Standard Test Temperature	
	°C	°F
1	0	32
2	-20	0
3	-30	-20
4	-45	-50
5	To be Specified by Purchaser	

ABS (Thickness ≤ 2 in.)		
Grade	Temp (°F)	Avg Energy (ft-lbf)
ABS AH36	32	25
ABS AH32	32	23
ABS A	-	-
ABS B	32	20

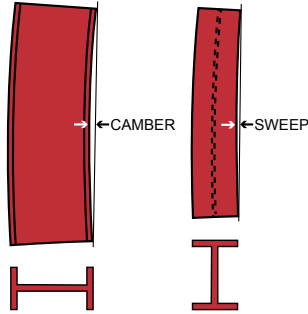
Permitted Variations in Straightness for W and HP BEAMS (per ASTM A6)

	Permitted Variation in Straightness (in.)
Camber and sweep	$1/8 \times (\text{number of feet of total length}/10)^1$
When certain sections² with a flange width approximately equal to depth are specified in the order for use as columns	
Lengths of 45 ft and under	$1/8 \times (\text{number of feet of total length}/10)$ but not over 3/8
Lengths over 45 ft	$3/8 + [1/8 \times ((\text{number of feet of total length} - 45)/10)]$

¹ Sections with a flange width less than 6 in., permitted variation for sweep, in. = $1/8 \times (\text{number of feet of total length}/5)$.

² Applies only to:

- 8-in. deep sections 31 lb/ft and heavier
- 10-in. deep sections 49 lb/ft and heavier
- 12-in. deep sections 65 lb/ft and heavier
- 14-in. deep sections 90 lb/ft and heavier
- 16-in. deep sections 88 lb/ft and heavier
- 18-in. deep sections 135 lb/ft and heavier



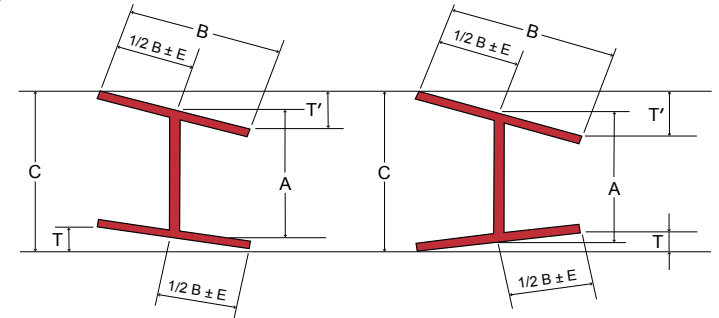
Permitted Variations in Cross Section for W, HP, S, and M BEAMS (per ASTM A6)

Shape	Section Nominal Sizes (in.)	A, Depth (in.)		B, Flange Width (in.)		T+T', Flange Out of Square ² (in.)	E, Web Off Center ³ (in.)	C, Maximum Depth at Any Cross Section Over Theoretical Depth (in.)
		Over	Under	Over	Under			
W and HP	Up to 12, incl	1/8	1/8	1/4	3/16	1/4	3/16	1/4
	Over 12	1/8	1/8	1/4	3/16	5/16	3/16	1/4
S and M	Over 7 to 14, incl	1/8	3/32	5/32	5/32	1/32	3/16	-
	Over 14 to 24, incl	3/16	1/8	3/16	3/16	1/32	3/16	-

¹ T+T' applies when flanges of channels are toed in or out.

² Permitted variation is per inch of flange width for S, M, C, and MC shapes.

³ Permitted variation of 5/16 in. max for sections over 426 lb/ft.



Surface Conditioning of Structural Shapes (Per ASTM A6)

Nominal Thickness	Grind Repair Depth Allowance
Less than 3/8 in.	Up to 1/32 in.
3/8 to 2 in. inclusive	Up to 1/16 in.
Greater than 2 in.	Up to 1/8 in.

Permitted Variations in Cross-Sectional Area and Weight (Per ASTM A6)

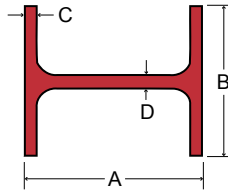
Actual cross-sectional area or weight will have a variation of $\pm 2.5\%$ from nominal, except for shapes with a nominal weight of less than 100 lb/ft, in which the variation range will be -2.5% to $+3.0\%$.

SRD Wide Flange Beams

Product Size (Width, in. x Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
W36 x 256	75.40	37.43	12.215	1.730	0.960
W36 x 232	68.10	37.12	12.120	1.570	0.870
W36 x 210	61.80	36.69	12.180	1.360	0.830
W36 x 194	57.00	36.49	12.115	1.260	0.765
W36 x 182	53.60	36.33	12.075	1.180	0.725
W36 x 170	50.00	36.17	12.030	1.100	0.680
W36 x 160	47.00	36.01	12.000	1.020	0.650
W36 x 150	44.20	35.85	11.975	0.940	0.625
W36 x 135	39.70	35.55	11.950	0.790	0.600
W33 x 169	49.50	33.82	11.500	1.220	0.670
W33 x 152	44.70	33.49	11.565	1.055	0.635
W33 x 141	41.60	33.30	11.535	0.960	0.605
W33 x 130	38.30	33.09	11.510	0.855	0.580
W33 x 118	34.70	32.86	11.480	0.740	0.550
W30 x 148	43.50	30.67	10.480	1.180	0.650
W30 x 132	38.90	30.31	10.545	1.000	0.615

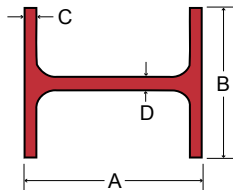
SRD RBD Both SRD and RBD

For all available sizes, visit us at www.stld-cci.com.



SRD Wide Flange Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
W30 × 124	36.50	30.17	10.515	0.930	0.585
W30 × 116	34.20	30.01	10.495	0.850	0.565
W30 × 108	31.70	29.83	10.475	0.760	0.545
W30 × 99	29.10	29.65	10.450	0.670	0.520
W30 × 90	26.40	29.53	10.400	0.610	0.470
W27 × 194	57.00	28.11	14.035	1.340	0.750
W27 × 178	52.30	27.81	14.085	1.190	0.725
W27 × 161	47.40	27.59	14.020	1.080	0.660
W27 × 146	42.90	27.38	13.965	0.975	0.605
W27 × 129	37.80	27.63	10.010	1.100	0.610
W27 × 114	33.50	27.29	10.070	0.930	0.570
W27 × 102	30.00	27.09	10.015	0.830	0.515
W27 × 94	27.70	26.92	9.990	0.745	0.490
W27 × 84	24.80	26.71	9.960	0.640	0.460

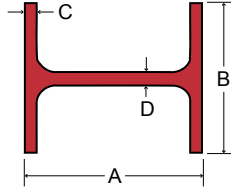


SRD RBD Both SRD and RBD

For all available sizes, visit us at www.stld-cci.com.

SRD Wide Flange Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
W24 × 229	67.20	26.02	13.110	1.730	0.960
W24 × 207	60.70	25.71	13.010	1.570	0.870
W24 × 192	56.30	25.47	12.950	1.460	0.810
W24 × 176	51.70	25.24	12.890	1.340	0.750
W24 × 162	47.70	25.00	12.955	1.220	0.705
W24 × 131	38.50	24.48	12.855	0.960	0.605
W24 × 117	34.40	24.26	12.800	0.850	0.550
W24 × 104	30.60	24.06	12.750	0.750	0.500
W24 × 103	30.30	24.53	9.000	0.980	0.550
W24 × 94	27.70	24.31	9.065	0.875	0.515
W24 × 84	24.70	24.10	9.020	0.770	0.470
W24 × 76	22.40	23.92	8.990	0.680	0.440
W24 × 68	20.10	23.73	8.965	0.585	0.415
W24 × 62	18.20	23.74	7.040	0.590	0.430
W24 × 55	16.20	23.57	7.005	0.505	0.395



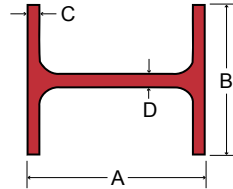
SRD RBD Both SRD and RBD

For all available sizes, visit us at www.stld-cci.com.

SRD

Wide Flange Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
W21 × 275	80.90	24.13	12.890	2.190	1.220
W21 × 248	72.90	23.74	12.775	1.990	1.100
W21 × 223	65.60	23.35	12.675	1.790	1.000
W21 × 201	59.20	23.03	12.575	1.630	0.910
W21 × 182	53.70	22.72	12.500	1.480	0.830
W21 × 166	48.90	22.48	12.420	1.360	0.750
W21 × 147	43.20	22.06	12.510	1.150	0.720
W21 × 132	38.80	21.83	12.440	1.035	0.650
W21 × 122	35.90	21.68	12.390	0.960	0.600
W21 × 111	32.70	21.51	12.340	0.875	0.550
W21 × 101	29.80	21.36	12.290	0.800	0.500
W21 × 93	27.30	21.62	8.420	0.930	0.580
W21 × 83	24.30	21.43	8.355	0.835	0.515
W21 × 73	21.50	21.24	8.295	0.740	0.455
W21 × 68	20.00	21.13	8.270	0.685	0.430



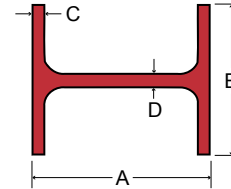
SRD RBD Both SRD and RBD

For all available sizes, visit us at www.stld-cci.com.

SRD

Wide Flange Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
W21 × 62	18.30	20.99	8.240	0.615	0.400
W21 × 57	16.70	21.06	6.555	0.650	0.405
W21 × 55	16.20	20.80	8.220	0.522	0.375
W21 × 50	14.70	20.83	6.530	0.535	0.380
W21 × 48	14.10	20.62	8.140	0.430	0.350
W21 × 44	13.00	20.66	6.500	0.450	0.350
W18 × 234	68.80	21.06	11.650	2.110	1.160
W18 × 211	62.10	20.67	11.555	1.910	1.060
W18 × 192	56.40	20.35	11.455	1.750	0.960
W18 × 175	51.30	20.04	11.375	1.590	0.890
W18 × 158	46.30	19.72	11.300	1.440	0.810
W18 × 143	42.10	19.49	11.220	1.320	0.730
W18 × 130	38.20	19.25	11.160	1.200	0.670
W18 × 119	35.10	18.97	11.265	1.060	0.655
W18 × 106	31.10	18.73	11.200	0.940	0.590



SRD RBD Both SRD and RBD

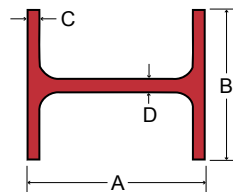
For all available sizes, visit us at www.stld-cci.com.

SRD Wide Flange Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
W18 × 97	28.50	18.59	11.145	0.870	0.535
W18 × 86	25.30	18.39	11.090	0.770	0.480
W18 × 76	22.30	18.21	11.035	0.680	0.425
W18 × 71	20.80	18.47	7.635	0.810	0.495
W18 × 65	19.10	18.35	7.590	0.750	0.450
W18 × 60	17.60	18.24	7.555	0.695	0.415
W18 × 55	16.20	18.11	7.530	0.630	0.390
W18 × 50	14.70	17.99	7.495	0.570	0.355
W18 × 46	13.50	18.06	6.060	0.605	0.360
W18 × 40	11.80	17.90	6.015	0.525	0.315
W18 × 35	10.30	17.70	6.000	0.425	0.300
W16 × 100	29.40	16.97	10.425	0.985	0.585
W16 × 89	26.20	16.75	10.365	0.875	0.525
W16 × 77	22.60	16.52	10.295	0.760	0.455
W16 × 67	19.70	16.33	10.235	0.665	0.395

SRD RBD Both SRD and RBD

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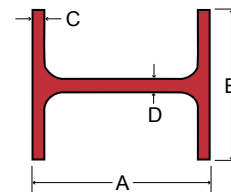


SRD Wide Flange Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
W16 × 57	16.80	16.43	7.120	0.715	0.430
W16 × 50	14.70	16.26	7.070	0.630	0.380
W16 × 45	13.30	16.13	7.035	0.565	0.345
W16 × 40	11.80	16.01	6.995	0.505	0.305
W16 × 36	10.60	15.86	6.985	0.430	0.295
W14 × 283	83.30	16.74	16.110	2.070	1.290
W14 × 257	75.60	16.38	15.995	1.890	1.175
W14 × 233	68.50	16.04	15.890	1.720	1.070
W14 × 211	62.00	15.72	15.800	1.560	0.980
W14 × 193	56.80	15.48	15.710	1.440	0.890
W14 × 176	51.80	15.22	15.650	1.310	0.830

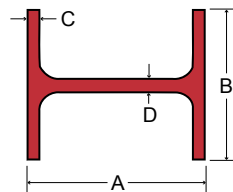
SRD RBD Both SRD and RBD

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SRD Wide Flange Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
W14 × 159	46.70	14.98	15.565	1.190	0.745
W14 × 145	42.70	14.78	15.500	1.090	0.680
W14 × 132	38.80	14.66	14.725	1.030	0.645
W14 × 120	35.30	14.48	14.670	0.940	0.590
W14 × 109	32.00	14.32	14.605	0.860	0.525
W14 × 99	29.10	14.16	14.565	0.780	0.485
W14 × 90	26.50	14.02	14.520	0.710	0.440
W14 × 82	24.10	14.31	10.130	0.855	0.510
W14 × 74	21.80	14.17	10.070	0.785	0.450
W14 × 68	20.00	14.04	10.035	0.720	0.415
W14 × 61	17.90	13.89	9.995	0.645	0.375
W14 × 53	15.60	13.92	8.060	0.660	0.370
W14 × 48	14.10	13.79	8.030	0.595	0.340
W14 × 43	12.60	13.66	7.995	0.530	0.305
W14 × 38	11.20	14.10	6.770	0.515	0.310

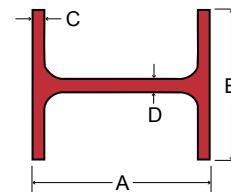


SRD RBD Both SRD and RBD

For all available sizes, visit us at www.stld-cci.com.

SRD Wide Flange Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
W14 × 34	10.00	13.98	6.745	0.455	0.285
W14 × 30	8.85	13.84	6.730	0.385	0.270
W14 × 26	7.69	13.91	5.025	0.420	0.255
W14 × 22	6.49	13.74	5.000	0.335	0.230
W12 × 252	74.10	15.41	13.005	2.250	1.395
W12 × 230	67.70	15.05	12.895	2.070	1.285
W12 × 210	61.80	14.71	12.790	1.900	1.180
W12 × 190	55.80	14.38	12.670	1.735	1.060
W12 × 170	50.00	14.03	12.570	1.560	0.960
W12 × 152	44.70	13.71	12.480	1.400	0.870
W12 × 136	39.90	13.41	12.400	1.250	0.790
W12 × 120	35.30	13.12	12.320	1.105	0.710
W12 × 106	31.20	12.89	12.220	0.990	0.610
W12 × 96	28.20	12.71	12.160	0.900	0.550
W12 × 87	25.60	12.53	12.125	0.810	0.515

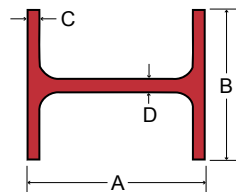


SRD RBD Both SRD and RBD

For all available sizes, visit us at www.stld-cci.com.

SRD Wide Flange Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
W12 × 79	23.20	12.38	12.080	0.735	0.470
W12 × 72	21.10	12.25	12.040	0.670	0.430
W12 × 65	19.10	12.12	12.000	0.605	0.390
W12 × 58	17.00	12.19	10.010	0.640	0.360
W12 × 53	15.60	12.06	9.995	0.575	0.345
W12 × 50	14.70	12.19	8.080	0.640	0.370
W12 × 45	13.20	12.06	8.045	0.575	0.335
W12 × 40	11.80	11.94	8.005	0.515	0.295
W12 × 35	10.30	12.50	6.560	0.520	0.300
W12 × 30	8.79	12.34	6.520	0.440	0.260
W12 × 26	7.65	12.22	6.490	0.380	0.230
W12 × 22	6.48	12.31	4.030	0.425	0.260
W12 × 19	5.57	12.16	4.005	0.350	0.235
W12 × 16	4.71	11.99	3.990	0.265	0.220
W12 × 14	4.16	11.91	3.970	0.225	0.200

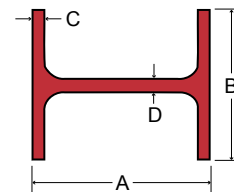


SRD RBD Both SRD and RBD

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SRD Wide Flange Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
W10 × 112	32.90	11.36	10.415	1.250	0.755
W10 × 100	29.40	11.10	10.340	1.120	0.680
W10 × 88	25.90	10.84	10.265	0.990	0.605
W10 × 77	22.60	10.60	10.190	0.870	0.530
W10 × 68	20.00	10.40	10.130	0.770	0.470
W10 × 60	17.60	10.22	10.080	0.680	0.420
W10 × 54	15.80	10.09	10.030	0.615	0.370
W10 × 49	14.40	9.98	10.000	0.560	0.340
W10 × 45	13.30	10.10	8.020	0.620	0.350
W10 × 39	11.50	9.92	7.985	0.530	0.315
W10 × 33	9.71	9.73	7.960	0.435	0.290
W10 × 30	8.84	10.47	5.810	0.510	0.300
W10 × 26	7.61	10.33	5.770	0.440	0.260
W10 × 22	6.49	10.17	5.750	0.360	0.240
W10 × 19	5.62	10.24	4.020	0.395	0.250

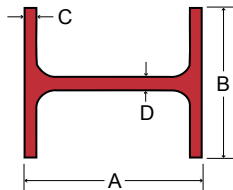


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SRD Wide Flange Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
W10 × 17	4.99	10.11	4.010	0.330	0.240
W10 × 15	4.41	9.99	4.000	0.270	0.230
W10 × 12	3.54	9.87	3.960	0.210	0.190
W8 × 67	19.70	9.00	8.280	0.935	0.570
W8 × 58	17.10	8.75	8.220	0.810	0.510
W8 × 48	14.10	8.50	8.110	0.685	0.400
W8 × 40	11.70	8.25	8.070	0.560	0.360
W8 × 35	10.30	8.12	8.020	0.495	0.310
W8 × 31	9.13	8.00	7.995	0.435	0.285
W8 × 28	8.25	8.06	6.535	0.465	0.285
W8 × 24	7.08	7.93	6.495	0.400	0.245
W8 × 21	6.16	8.28	5.270	0.400	0.250
W8 × 18	5.26	8.14	5.250	0.330	0.230
W8 × 15	4.44	8.11	4.015	0.315	0.245
W8 × 13	3.84	7.99	4.000	0.255	0.230

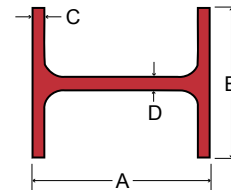


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SRD Wide Flange Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
W8 × 10	2.96	7.89	3.940	0.205	0.170
W6 × 25	7.34	6.38	6.080	0.455	0.320
W6 × 20	5.87	6.20	6.020	0.365	0.260
W6 × 16	4.74	6.28	4.030	0.405	0.260
W6 × 15	4.43	5.99	5.990	0.260	0.230
W6 × 12	3.55	6.03	4.000	0.280	0.230
W6 × 9	2.68	5.90	3.940	0.215	0.170
W6 × 8.5	2.52	5.83	3.940	0.195	0.170
W6 × 7	2.06	5.77	3.940	0.165	0.129
W5 × 19	5.54	5.15	5.030	0.430	0.270
W5 × 16	4.68	5.01	5.000	0.360	0.240

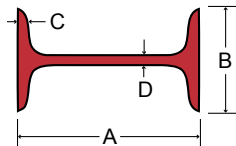


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For all available sizes, visit us at www.stld-cci.com.

SRD Standard Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
S24 × 121	35.60	24.50	8.050	1.090	0.800
S24 × 106	31.20	24.50	7.870	1.090	0.620
S24 × 100	29.30	24.00	7.245	0.870	0.745
S24 × 90	26.50	24.00	7.125	0.870	0.625
S24 × 80	23.50	24.00	7.000	0.870	0.500
S20 × 96	28.20	20.30	7.200	0.920	0.800
S20 × 86	25.30	20.30	7.060	0.920	0.660
S20 × 75	22.00	20.00	6.385	0.795	0.635
S20 × 66	19.40	20.00	6.255	0.795	0.505
S18 × 70	20.60	18.00	6.251	0.691	0.711
S18 × 54.7	16.10	18.00	6.001	0.691	0.461
S15 × 50	14.70	15.00	5.640	0.622	0.550
S15 × 42.9	12.60	15.00	5.501	0.622	0.411



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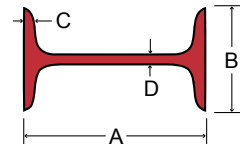
For all available sizes, visit us at www.stld-cci.com.

SRD Standard Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
S12 × 50	14.70	12.00	5.477	0.659	0.687
S12 × 40.8	12.00	12.00	5.252	0.659	0.462
S12 × 35	10.30	12.00	5.078	0.544	0.428
S12 × 31.8	9.35	12.00	5.000	0.544	0.350

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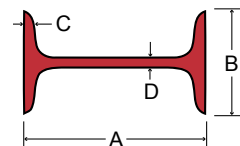
SRD Manufactured Housing Beams

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
M12.5 × 12.4	3.66	12.53	3.750	0.228	0.155
M12 × 11.8	3.47	12.00	3.065	0.225	0.177
M12 × 10.8	3.18	11.97	3.065	0.210	0.160
M12 × 10	2.94	11.97	3.250	0.180	0.149
M10 × 9.0	2.65	10.00	2.690	0.206	0.157
M10 × 8.0	2.35	9.95	2.690	0.182	0.141
M8 × 6.5	1.92	8.00	2.281	0.189	0.135

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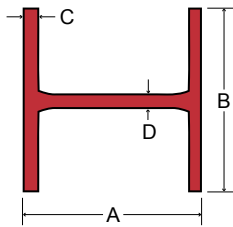
SRD = Structural and Rail Division | RBD = Roanoke Bar Division



SRD

H-Piling


Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
HP16 × 183	53.80	16.50	16.250	1.125	1.125
HP16 × 162	47.70	16.25	16.125	1.000	1.000
HP16 × 141	41.70	16.00	16.000	0.875	0.875
HP16 × 121	35.70	15.75	15.875	0.750	0.750
HP16 × 101	29.80	15.50	15.750	0.625	0.625
HP16 × 88	25.80	15.33	15.665	0.540	0.540
HP14 × 117	34.40	14.21	14.885	0.805	0.805
HP14 × 102	30.00	14.01	14.785	0.705	0.705
HP14 × 89	26.10	13.83	14.695	0.615	0.615
HP14 × 73	21.40	13.61	14.585	0.505	0.505
HP12 × 89	26.20	12.35	12.330	0.720	0.720
HP12 × 74	21.80	12.13	12.215	0.610	0.605
HP12 × 63	18.40	11.94	12.125	0.515	0.515
HP12 × 53	15.50	11.78	12.045	0.435	0.435
HP10 × 57	16.80	9.99	10.225	0.565	0.565
HP10 × 42	12.40	9.70	10.075	0.420	0.415
HP8 × 36	10.60	8.02	8.155	0.445	0.445



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STRUCTURAL MERCHANT AND BAR

Structural Merchant and Bar Certifications



NATIONAL TRANSPORTATION
PRODUCT EVALUATION PROGRAM

NTPEP



SRD & RBD

Standards & Grades

ASTM	ABS	CSA G40.21	AASHTO	SDI
A36	Grade A	44W	M270	SDI-MULTI ¹
A242	Grade B	50A	-	RBD-MULTI ²
A529-50	Grade AH32	50W	-	-
A572-50	Grade AH36	50A (350A)	-	-
A588-A	-	50AT (350AT)	-	-
A588-B	-	50W (350W)	-	-
A709	-	50WM (350WM)	-	-
A992	-	50WMT (350 WMT)	-	-
F1554	-	-	-	-
F1555	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

□ SRD ▨ RBD ■ Both SRD and RBD

All structural products are made to ASTM A6 Standard Specification. Standard covers terminology, ordering information, testing information, quality information, nominal dimensions, and permitted variations.

¹ SDI-MULTI encompasses the following grades for angle products only: A992, A572-50, A529-50, A709-50, M270-50, A36, A709-36, M270-36, CSA300W, CSA345WM, and CSA350W.

² RBD-MULTI encompasses the following grades: A36, CSA44W, A529-50, A709-50, CSA50W, A572-50, A709-36, M270-36, and M270-50.

SRD & RBD **Tensile Properties**

Grade	Yield Strength (ksi)	Tensile Strength (ksi)	Elongation (%)	Yield to Tensile Ratio
ASTM A992 CSA 50WM CSA 50WMT	Web Test			
	50 min / 70 max	65 min	18 min	0.87 max
	Flange Test			
	50 min / 65 max	65 min	18 min	0.85 max
ASTM A36	36 min	58 min / 80 max	20 min	–
ASTM A572-50	50 min	65 min	18 min	–
ASTM A572-60	60 min	75 min	16 min	–
ASTM A588-B	50 min	70 min	18 min	–
ASTM A690	50 min	70 min	18 min	–
A709 GR36	36 min	58 min	20 min	–
A709 GR50	50 min	65 min	18 min	–
A709 GR50W	50 min	70 min	18 min	–
SDI-MULTI ¹	51 min / 65 max	65 min / 80 max	20 min	0.85 max
RBD-MULTI ²	50 min	65 min / 80 max	20 min	–
ABS-A	34 min	58 min / 80 max	21 min	–
ABS-B	34 min	58 min / 75 max	21 min	–
ABS-AH32	46 min	64 min / 85 max	21 min	–
ABS-AH36	51 min	71 min / 90 max	21 min	–
CSA 44W	44 min	65 min / 90 max	20 min	–
CSA 50A	50 min	70 min / 95 max	19 min	–
CSA 50AT	50 min	70 min / 95 max	19 min	–
CSA 50W	50 min	65 min / 95 max	19 min	–
AASHTO M270-345	50 min	65 min	18 min	–

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¹SDI-MULTI encompasses the following grades for angle products only: A992, A572-50, A529-50, A709-50, M270-50, A36, A709-36, M270-36, CSA300W, CSA345WM, and CSA350W.

²RBD-MULTI encompasses the following grades: A36, CSA44W, A529-50, A709-50, CSA50W, A572-50, A709-36, M270-36, and M270-50.

SRD & RBD **Tensile Properties (Rounds)**

Grade	Reduction of Area Min/Max (%)	Yield to Tensile Ratio Min
A615 GR40	–	1.10
A615 GR60	–	1.10
A615 GR75	–	1.10
A615 GR80	–	1.10
A706 GR60	–	1.25
A706 GR80	–	1.25
F1554 GR36	40	–
F1554 GR55	30	–
F1554 GR55(S1)	30	–

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SRD & RBD Charpy V-Notch (Impact Toughness)

A709 Non-Fracture Critical (Thickness ≤ 2 in.)			
Grade	Minimum Average Energy (ft-lbf) @ Temp (°F)		
	Zone 1	Zone 2	Zone 3
50T, 50ST, 50WT	15 @ 70	15 @ 40	15 @ 10
A709 Fracture Critical (Thickness ≤ 2 in.)			
Grade	Minimum Average Energy (ft-lbf) @ Temp (°F)		
	Zone 1	Zone 2	Zone 3
50F, 50SF, 50WF	25 @ 70	25 @ 40	25 @ 10

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Charpy capabilities are size dependent, please inquire.

CSA – Minimum Average Energy of 20 (ft-lbf)		
Category	Standard Test Temperature	
	°C	°F
1	0	32
2	-20	0
3	-30	-20
4	-45	-50
5	To be Specified by Purchaser	

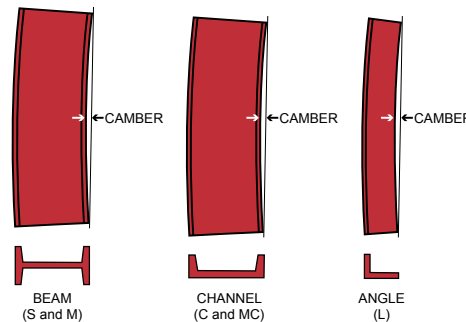
ABS (Thickness ≤ 2 in.)		
Grade	Temp (°F)	Avg Energy (ft-lbf)
ABS AH36	32	25
ABS AH32	32	23
ABS A	–	–
ABS B	32	20

SRD & RBD Permitted Variations in Straightness for S, M, C, MC, and L Shapes (per ASTM A6)

Permitted Variation in Straightness (in.)		
Variable	Nominal Size, ¹ in.	Permitted Variation, in.
	Camber	Under 3"
3" and over		1/8 × (number of feet of total length/5)
Sweep	All	Due to the extreme variations in flexibility of these shapes, permitted variations for sweep are subject to negotiations between the manufacturer and the purchaser for the individual sections involved.

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¹Greatest cross-sectional dimension.



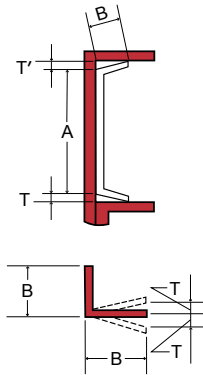
SRD & RBD Permitted Variations in Cross Section for C, MC, and L Shapes (per ASTM A6)

Shape	Section Nominal Sizes (in.)	A, Depth (in.)		B, Flange Width (in.)		T+T', Flange Out of Square ² (in.)
		Over	Under	Over	Under	
C and MC	3 to 7, incl	3/32	1/16	1/8	1/8	1/32
	Over 7 to 14, incl	1/8	3/32	1/8	5/32	1/32
	Over 14	3/16	1/8	1/8	3/16	1/32

¹ T+T' applies when flanges of channels are toed in or out.
² Permitted variation is per inch of flange width for S, M, C, and MC shapes.

Shape	Section Nominal Sizes (in.)	B, Flange Width (in.)		T Out of Square Per Inch of B (in.)
		Over	Under	
L ¹	Over 1 1/2 to 2, incl	3/64	3/64	3/128 ²
	Over 2 to 2 1/2, incl	5/64	5/64	3/128 ²
	Over 2 1/2 to 4, incl	1/8	3/32	3/128 ²
	Over 6 to 8, incl	3/16	1/8	3/128 ²
	Over 8 to 10, incl	1/4	1/4	3/128 ²
	Over 10	1/4	3/8	3/128 ²

Legend: SRD RBD Both SRD and RBD
¹ For unequal leg angles, longer leg determines classification.
² 3/128 in./in. = 1 1/2°.



SRD & RBD Surface Conditioning of Structural Shapes (per ASTM A6)

Nominal Thickness	Grind Repair Depth Allowance
Less than 3/8 in.	Up to 1/32 in.
3/8 to 2 in. inclusive	Up to 1/16 in.
Greater than 2 in.	Up to 1/8 in.

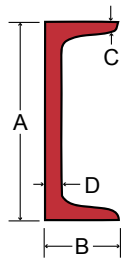
Legend: SRD RBD Both SRD and RBD

Permitted Variations in Cross-Sectional Area and Weight (Per ASTM A6)

Actual cross-sectional area or weight will have a variation of ± 2.5% from nominal, except for shapes with a nominal weight of less than 100 lb/ft, in which the variation range will be -2.5% to +3.0%.

SRD & RBD Channels

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
C15 × 50	14.70	15.00	3.716	0.650	0.716
C15 × 40	11.80	15.00	3.520	0.650	0.520
C15 × 33.9	9.96	15.00	3.400	0.650	0.400
C12 × 30	8.82	12.00	3.170	0.501	0.510
C12 × 25	7.35	12.00	3.047	0.501	0.387
C12 × 20.7	6.09	12.00	2.942	0.501	0.282
C10 × 30	8.82	10.00	3.033	0.436	0.673
C10 × 25	7.35	10.00	2.886	0.436	0.526
C10 × 20	5.88	10.00	2.739	0.436	0.379
C10 × 15.3	4.49	10.00	2.600	0.436	0.240
C8 × 18.75	5.51	8.00	2.527	0.390	0.487
C8 × 13.75	4.04	8.00	2.343	0.390	0.303
C8 × 11.5	3.38	8.00	2.260	0.390	0.220

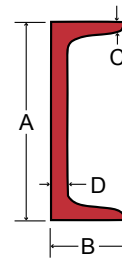


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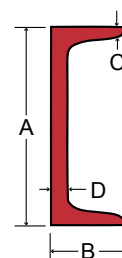
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RBD Channels

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
C4 × 7.25	2.13	4.00	1.721	0.296	0.321
C4 × 5.4	1.59	4.00	1.584	0.296	0.184
C4 × 4.5	1.32	4.00	1.520	0.296	0.125
C3 × 6.0	1.76	3.00	1.596	0.273	0.356
C3 × 5.0	1.47	3.00	1.498	0.273	0.258
C3 × 4.1	1.21	3.00	1.410	0.273	0.170
C3 × 3.5	1.03	3.00	1.372	0.273	0.132


SRD Miscellaneous Channels

Product Size (Width, in. × Weight, lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)	D (in.)
MC12 × 14.3	4.19	12.00	2.125	0.313	0.250
MC12 × 10.6	3.10	12.00	1.500	0.309	0.190
MC10 × 25	7.35	10.00	3.405	0.575	0.380
MC10 × 22	6.45	10.00	3.315	0.575	0.290
MC10 × 8.4	2.46	10.00	1.500	0.280	0.170
MC10 × 6.5	1.91	10.00	1.170	0.202	0.152

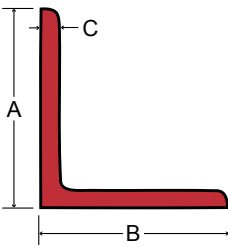


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SRD **Equal Angles**

Product Size and Thickness (in. x in. x in.)	Weight (lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)
L8 x 8 x 1 1/8	56.90	16.70	8.00	8.00	1.125
L8 x 8 x 1	51.00	15.00	8.00	8.00	1.000
L8 x 8 x 7/8	45.00	13.20	8.00	8.00	0.875
L8 x 8 x 3/4	38.90	11.40	8.00	8.00	0.750
L8 x 8 x 5/8	32.70	9.61	8.00	8.00	0.625
L8 x 8 x 9/16	29.60	8.68	8.00	8.00	0.563
L8 x 8 x 1/2	26.40	7.75	8.00	8.00	0.500
L6 x 6 x 1	37.40	11.00	6.00	6.00	1.000
L6 x 6 x 7/8	33.10	9.73	6.00	6.00	0.875
L6 x 6 x 3/4	28.70	8.44	6.00	6.00	0.750
L6 x 6 x 5/8	24.20	7.11	6.00	6.00	0.625
L6 x 6 x 9/16	21.90	6.43	6.00	6.00	0.563
L6 x 6 x 1/2	19.60	5.75	6.00	6.00	0.500
L6 x 6 x 7/16	17.20	5.06	6.00	6.00	0.438
L6 x 6 x 3/8	14.90	4.36	6.00	6.00	0.375
L6 x 6 x 5/16	12.40	3.65	6.00	6.00	0.313

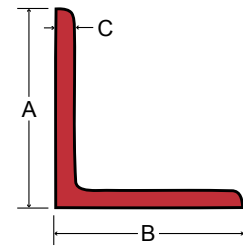


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SRD & RBD **Equal Angles**

Product Size and Thickness (in. x in. x in.)	Weight (lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)
L5 x 5 x 7/8	27.20	7.98	5.00	5.00	0.875
L5 x 5 x 3/4	23.60	6.94	5.00	5.00	0.750
L5 x 5 x 5/8	20.00	5.86	5.00	5.00	0.625
L5 x 5 x 1/2	16.20	4.75	5.00	5.00	0.500
L5 x 5 x 7/16	14.30	4.18	5.00	5.00	0.438
L5 x 5 x 3/8	12.30	3.61	5.00	5.00	0.375
L5 x 5 x 5/16	10.30	3.03	5.00	5.00	0.313
L4 x 4 x 1/2	12.80	3.75	4.00	4.00	0.500
L4 x 4 x 3/8	9.80	2.86	4.00	4.00	0.375
L4 x 4 x 5/16	8.20	2.40	4.00	4.00	0.312
L4 x 4 x 1/4	6.60	1.94	4.00	4.00	0.250
L3 1/2 x 3 1/2 x 3/8	8.50	2.48	3.50	3.50	0.375
L3 1/2 x 3 1/2 x 5/16	7.13	2.09	3.50	3.50	0.313
L3 1/2 x 3 1/2 x 1/4	5.80	1.69	3.50	3.50	0.250

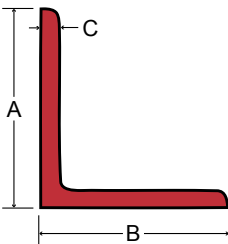


SRD RBD Both SRD and RBD

For all available sizes, visit us at www.stld-cci.com or www.roanokesteel.com.

RBD Equal Angles

Product Size and Thickness (in. x in. x in.)	Weight (lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)
L3 x 3 x 1/2	9.40	2.75	3.00	3.00	0.500
L3 x 3 x 3/8	7.20	2.11	3.00	3.00	0.375
L3 x 3 x 5/16	6.10	1.78	3.00	3.00	0.313
L3 x 3 x 1/4	4.90	1.44	3.00	3.00	0.250
L3 x 3 x 3/16	3.72	1.09	3.00	3.00	0.188
L2 1/2 x 2 1/2 x 1/2	7.70	2.25	2.50	2.50	0.500
L2 1/2 x 2 1/2 x 3/8	5.90	1.73	2.50	2.50	0.375
L2 1/2 x 2 1/2 x 5/16	5.00	1.46	2.50	2.50	0.313
L2 1/2 x 2 1/2 x 1/4	4.10	1.19	2.50	2.50	0.250
L2 1/2 x 2 1/2 x 3/16	3.08	0.90	2.50	2.50	0.188
L2 x 2 x 3/8	4.64	1.36	2.00	2.00	0.375
L2 x 2 x 5/16	3.93	1.15	2.00	2.00	0.312
L2 x 2 x 1/4	3.20	0.94	2.00	2.00	0.250
L2 x 2 x 3/16	2.44	0.72	2.00	2.00	0.188
L2 x 2 x 1/8	1.65	0.48	2.00	2.00	0.125

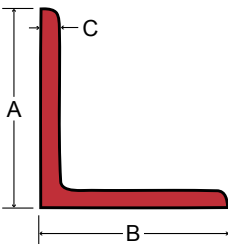


SRD RBD Both SRD and RBD

For all available sizes, visit us at www.roanokesteel.com.

RBD Equal Angles

Product Size and Thickness (in. x in. x in.)	Weight (lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)
L1 3/4 x 1 3/4 x 1/4	2.77	0.81	1.75	1.75	0.250
L1 3/4 x 1 3/4 x 3/16	2.12	0.62	1.75	1.75	0.188
L1 3/4 x 1 3/4 x 1/8	1.44	0.42	1.75	1.75	0.125
L1 1/2 x 1 1/2 x 1/4	2.34	0.69	1.50	1.50	0.250
L1 1/2 x 1 1/2 x 3/16	1.80	0.53	1.50	1.50	0.188
L1 1/2 x 1 1/2 x 1/8	1.23	0.36	1.50	1.50	0.125

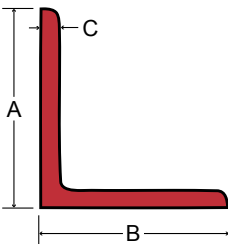


SRD RBD Both SRD and RBD

For all available sizes, visit us at www.roanokesteel.com.

RBD Equal Angles

Product Size and Thickness (in. x in. x in.)	Weight (lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)
L1 1/4 x 1 1/4 x 1/4	1.92	0.56	1.25	1.25	0.250
L1 1/4 x 1 1/4 x 3/16	1.48	0.43	1.25	1.25	0.188
L1 1/4 x 1 1/4 x 1/8	1.01	0.30	1.25	1.25	0.125
L1 x 1 x 1/4	1.49	0.44	1.00	1.00	0.250
L1 x 1 x 3/16	1.16	0.34	1.00	1.00	0.188
L1 x 1 x 1/8	0.80	0.23	1.00	1.00	0.125

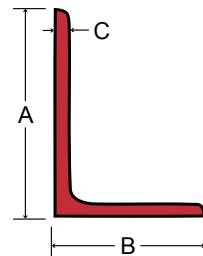


SRD RBD Both SRD and RBD

For all available sizes, visit us at www.roanokesteel.com.

SRD Unequal Angles

Product Size and Thickness (in. x in. x in.)	Weight (lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)
L8 x 6 x 1	44.20	13.00	8.00	6.00	1.000
L8 x 6 x 7/8	39.10	11.50	8.00	6.00	0.875
L8 x 4 x 1	37.40	11.00	8.00	4.00	1.000
L8 x 6 x 3/4	33.80	9.94	8.00	6.00	0.750
L8 x 4 x 7/8	33.10	9.73	8.00	4.00	0.875
L8 x 4 x 3/4	28.70	8.44	8.00	4.00	0.750
L8 x 6 x 5/8	28.50	8.36	8.00	6.00	0.625
L8 x 6 x 9/16	25.70	7.56	8.00	6.00	0.563
L8 x 4 x 5/8	24.20	7.11	8.00	4.00	0.625
L8 x 6 x 1/2	23.00	6.75	8.00	6.00	0.500
L8 x 4 x 9/16	21.90	6.43	8.00	4.00	0.563
L8 x 6 x 7/16	20.20	5.93	8.00	6.00	0.438
L8 x 4 x 1/2	19.60	5.75	8.00	4.00	0.500
L8 x 4 x 7/16	17.20	5.06	8.00	4.00	0.438
L7 x 4 x 7/16	15.70	4.62	7.00	4.00	0.438



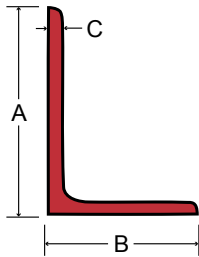
SRD RBD Both SRD and RBD

For all available sizes, visit us at www.stld-cci.com.

SRD **Unequal Angles**

Product Size and Thickness (in. x in. x in.)	Weight (lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)
L7 x 4 x 3/4	26.20	7.69	7.00	4.00	0.750
L7 x 4 x 5/8	22.10	6.48	7.00	4.00	0.625
L7 x 4 x 1/2	17.90	5.25	7.00	4.00	0.500
L7 x 4 x 3/8	13.60	3.98	7.00	4.00	0.375
L6 x 4 x 7/8	27.20	7.98	6.00	4.00	0.875
L6 x 4 x 3/4	23.60	6.94	6.00	4.00	0.750
L6 x 4 x 5/8	20.00	5.86	6.00	4.00	0.625
L6 x 4 x 9/16	18.10	5.31	6.00	4.00	0.563
L6 x 4 x 1/2	16.20	4.75	6.00	4.00	0.500
L6 x 4 x 7/16	14.30	4.18	6.00	4.00	0.438
L6 x 4 x 3/8	12.30	3.61	6.00	4.00	0.375
L6 x 4 x 5/16	10.30	3.03	6.00	4.00	0.313
L6 x 3 1/2 x 1/2	15.30	4.50	6.00	3.50	0.500
L6 x 3 1/2 x 3/8	11.70	3.42	6.00	3.50	0.375
L6 x 3 1/2 x 5/16	9.80	2.87	6.00	3.50	0.313

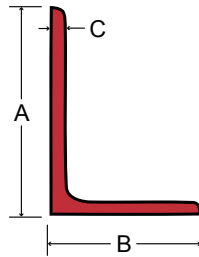
SRD RBD Both SRD and RBD
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SRD & RBD **Unequal Angles**

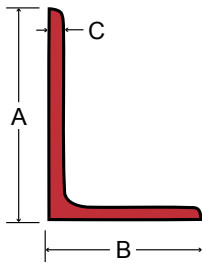
Product Size and Thickness (in. x in. x in.)	Weight (lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)
L5 x 3 1/2 x 3/4	19.80	5.81	5.00	3.50	0.750
L5 x 3 1/2 x 5/8	16.80	4.95	5.00	3.50	0.625
L5 x 3 1/2 x 1/2	13.60	4.00	5.00	3.50	0.500
L5 x 3 1/2 x 3/8	10.40	3.05	5.00	3.50	0.375
L5 x 3 1/2 x 5/16	8.70	2.56	5.00	3.50	0.313
L5 x 3 1/2 x 1/4	7.00	2.06	5.00	3.50	0.250
L5 x 3 x 1/2	12.80	3.75	5.00	3.00	0.500
L5 x 3 x 7/16	11.30	3.31	5.00	3.00	0.438
L5 x 3 x 3/8	9.80	2.86	5.00	3.00	0.375
L5 x 3 x 5/16	8.20	2.40	5.00	3.00	0.313
L5 x 3 x 1/4	6.60	1.94	5.00	3.00	0.250
L4 x 3 1/2 x 3/8	9.10	2.67	4.00	3.50	0.375
L4 x 3 1/2 x 5/16	7.70	2.25	4.00	3.50	0.313
L4 x 3 1/2 x 1/4	6.20	1.81	4.00	3.50	0.250

SRD RBD Both SRD and RBD
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RBD Unequal Angles

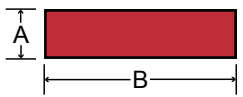
Product Size and Thickness (in. x in. x in.)	Weight (lbs/ft)	Area (in. ²)	A (in.)	B (in.)	C (in.)
L4 x 3 x 3/8	8.50	2.48	4.00	3.00	0.375
L4 x 3 x 5/16	7.13	2.09	4.00	3.00	0.313
L4 x 3 x 1/4	5.76	1.69	4.00	3.00	0.250
L3 1/2 x 3 x 3/8	7.83	2.30	3.50	3.00	0.375
L3 1/2 x 3 x 5/16	6.59	1.93	3.50	3.00	0.313
L3 1/2 x 3 x 1/4	5.33	1.56	3.50	3.00	0.250
L3 x 2 1/2 x 1/4	4.48	1.31	3.00	2.50	0.250
L3 x 2 x 3/8	5.91	1.73	3.00	2.00	0.375
L3 x 2 x 5/16	5.00	1.46	3.00	2.00	0.313
L3 x 2 x 1/4	4.05	1.19	3.00	2.00	0.250
L3 x 2 x 3/16	3.08	0.90	3.00	2.00	0.188
L2 1/2 x 2 x 3/8	5.28	1.55	2.50	2.00	0.375
L2 1/2 x 2 x 1/4	3.62	1.06	2.50	2.00	0.250
L2 1/2 x 2 x 3/16	2.76	0.81	2.50	2.00	0.188
L2 x 1 1/2 x 1/4	2.77	0.81	2.00	1.50	0.250
L2 x 1 1/2 x 3/16	2.12	0.62	2.00	1.50	0.188
L2 x 1 1/2 x 1/8	1.44	0.42	2.00	1.50	0.125



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 For all available sizes, visit us at www.roanokesteel.com.

RBD Flats

Product Size and Thickness (in. x in.)	A (in.)	B (in.)
FL 1 x 6	1.00	6.00
FL 1 x 5	1.00	5.00
FL 1 x 4	1.00	4.00
FL 1 x 3 1/2	1.00	3.50
FL 1 x 3	1.00	3.00
FL 1 x 2 1/2	1.00	2.50
FL 1 x 2	1.00	2.00
FL 3/4 x 6	0.75	6.00
FL 3/4 x 5	0.75	5.00
FL 3/4 x 4	0.75	4.00
FL 3/4 x 3 1/2	0.75	3.50
FL 3/4 x 3	0.75	3.00
FL 3/4 x 2 1/2	0.75	2.50
FL 3/4 x 2	0.75	2.00

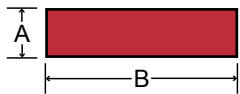


SRD RBD Both SRD and RBD
 For all available sizes, visit us at www.roanokesteel.com.

SRD = Structural and Rail Division | RBD = Roanoke Bar Division

RBD **Flats**

Product Size and Thickness (in. x in.)	A (in.)	B (in.)
FL 3/4 x 1 3/4	0.75	1.75
FL 3/4 x 1 1/2	0.75	1.50
FL 3/4 x 1 1/4	0.75	1.25
FL 5/8 x 6	0.63	6.00
FL 5/8 x 5 1/2	0.63	5.50
FL 5/8 x 5	0.63	5.00
FL 5/8 x 4	0.63	4.00
FL 5/8 x 3	0.63	3.00
FL 5/8 x 2 1/2	0.63	2.50
FL 5/8 x 2	0.63	2.00
FL 5/8 x 1 1/2	0.63	1.50



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RBD **Flats**

Product Size and Thickness (in. x in.)	A (in.)	B (in.)
FL 1/2 x 6	0.50	6.00
FL 1/2 x 5 1/2	0.50	5.50
FL 1/2 x 5	0.50	5.00
FL 1/2 x 4 1/2	0.50	4.50
FL 1/2 x 4	0.50	4.00
FL 1/2 x 3 1/2	0.50	3.50
FL 1/2 x 3	0.50	3.00
FL 1/2 x 2 1/2	0.50	2.50
FL 1/2 x 2	0.50	2.00
FL 1/2 x 1 3/4	0.50	1.75
FL 1/2 x 1 1/2	0.50	1.50



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RBD **Flats**

Product Size and Thickness (in. x in.)	A (in.)	B (in.)
FL 1/2 x 1 1/4	0.50	1.25
FL 1/2 x 1	0.50	1.00
FL 3/8 x 6	0.38	6.00
FL 3/8 x 5 1/2	0.38	5.50
FL 3/8 x 5	0.38	5.00
FL 3/8 x 4 1/2	0.38	4.50
FL 3/8 x 4	0.38	4.00
FL 3/8 x 3 1/2	0.38	3.50
FL 3/8 x 3	0.38	3.00
FL 3/8 x 2 1/2	0.38	2.50
FL 3/8 x 2 1/4	0.38	2.25
FL 3/8 x 2	0.38	2.00
FL 3/8 x 1 3/4	0.38	1.75
FL 3/8 x 1 1/2	0.38	1.50



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RBD **Flats**

Product Size and Thickness (in. x in.)	A (in.)	B (in.)
FL 3/8 x 1 3/8	0.38	1.38
FL 3/8 x 1 1/4	0.38	1.25
FL 3/8 x 1	0.38	1.00
FL 5/16 x 6	0.31	6.00
FL 5/16 x 5 1/2	0.31	5.50
FL 5/16 x 5	0.31	5.00
FL 5/16 x 4	0.31	4.00
FL 5/16 x 3	0.31	3.00
FL 5/16 x 2	0.31	2.00



SRD RBD Both SRD and RBD

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RBD Flats

Product Size and Thickness (in. x in.)	A (in.)	B (in.)
FL 5/16 x 1 1/2	0.31	1.50
FL 5/16 x 1 1/4	0.31	1.25
FL 5/16 x 1	0.31	1.00
FL 1/4 x 6	0.25	6.00
FL 1/4 x 5 1/2	0.25	5.50
FL 1/4 x 5	0.25	5.00
FL 1/4 x 4 1/2	0.25	4.50
FL 1/4 x 4	0.25	4.00
FL 1/4 x 3 1/2	0.25	3.50
FL 1/4 x 3	0.25	3.00
FL 1/4 x 2 1/2	0.25	2.50
FL 1/4 x 2 1/4	0.25	2.25
FL 1/4 x 2	0.25	2.00
FL 1/4 x 1 3/4	0.25	1.75

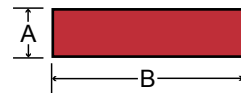


SRD RBD Both SRD and RBD

For all available sizes, visit us at www.roanokesteel.com.

RBD Flats

Product Size and Thickness (in. x in.)	A (in.)	B (in.)
FL 1/4 x 1 1/2	0.25	1.50
FL 1/4 x 1 1/4	0.25	1.25
FL 1/4 x 1	0.25	1.00

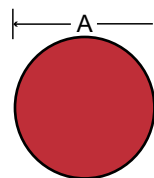


SRD RBD Both SRD and RBD

For all available sizes, visit us at www.roanokesteel.com.

SRD & RBD Rounds

Product Size and Diameter (in.)	A (in.)	Product Size and Diameter (in.)	A (in.)	Product Size and Diameter (in.)	A (in.)
RD 1 1/2	1.50	RD 27/32	0.84	RD 9/16	0.56
RD 1 1/4	1.25	RD 13/16	0.81	RD 17/32	0.53
RD 1 1/8	1.13	RD 25/32	0.78	RD 1/2	0.50
RD 1 1/16	1.06	RD 3/4	0.75	RD 15/32	0.47
RD 1	1.00	RD 23/32	0.72	RD 7/16	0.44
RD 31/32	0.97	RD 11/16	0.69	RD 13/32	0.41
RD 15/16	0.94	RD 21/32	0.66	RD 3/8	0.38
RD 29/32	0.91	RD 5/8	0.63		
RD 7/8	0.88	RD 19/32	0.59		



SRD RBD Both SRD and RBD

For all available sizes, visit us at www.stld-cci.com or www.roanokesteel.com.



REBAR

- Largest independent rebar supplier in the Midwest
- SDI produces coiled rebar and straight rebar in several grades that vary in yield and tensile strength
- Compact spooled coils provide change-out downtime reduction, which improves production rate, yield, and safety
- Twist-free spooled coils create more efficient fabrication and lower handling-related reject rates
- Tangle-free decoiling and decreased downtime increase production rates compared to loose coils

Rebar Certifications

ISO9001
CERTIFIED

AASHTO
THE VOICE OF TRANSPORTATION

NATIONAL TRANSPORTATION
PRODUCT EVALUATION PROGRAM

NTPEP

SRD

Rebar

Grades

Bar Designation Number (size): 3 to 8

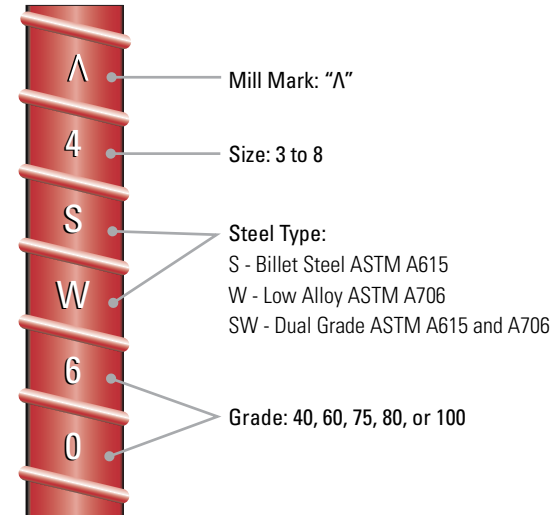
Specifications	Grade
ASTM A615	40 to 100
ASTM A706	60, 80

For all available sizes, visit us at www.stld-cci.com.

Spools and Lengths

Offering compact spooled coils weighing up to 5.5 tons, depending on bar size. Cut-to-length options also available.

Markings



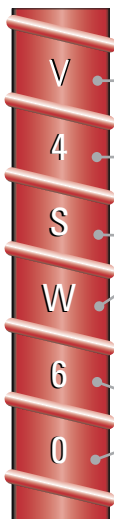
Grades

Bar Designation Number (size): 4 to 11

Specifications	Grade
ASTM A615	40 to 80
ASTM A706	60, 80

For all available sizes, visit us at www.roanokesteel.com.**Lengths**

Cut-to-length options available from 20 feet to 60 feet.

Markings

V — Mill Mark: "V"

4 — Size: 4 to 11

S — Steel Type:
S - Billet Steel ASTM A615
W - Low Alloy ASTM A706
SW - Dual Grade ASTM A615 and A706

6, 0 — Grade: 40, 60, 75, or 80

	A615				
	Grade 40	Grade 60	Grade 75	Grade 80	Grade 100
Tensile strength, min, psi	60 000 ¹	80 000 ¹	100 000 ¹	105 000 ¹	115 000 ¹
Yield strength, min, psi	40 000	60 000	75 000	80 000	100 000
Bar Designation No.	Elongation in 8 in. min, %				
3	11	9	7	7	7
4, 5	12	9	7	7	7
6	12	9	7	7	7
7, 8	—	8	7	7	7
9, 10, 11	—	7	6	6	6

¹ Actual tensile strength shall not be less than 1.10 times the actual yield strength.

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	A706	
	Grade 60	Grade 80
Tensile strength, min, psi	80 000 ¹	100 000 ¹
Yield strength, min, psi	60 000	80 000
Yield strength, max, psi	78 000	98 000
Bar Designation No.	Elongation in 8 in. min, %	
3	14	12
4, 5, 6	14	12
7, 8	12	12
9, 10, 11	12	12

¹ Tensile strength shall not be less than 1.25 times the actual yield strength.

SRD & RBD **Bend Test Requirements**

A615					
Bar Designation No.	Pin Diameter for 180° Bend Tests				
	Grade 40	Grade 60	Grade 75	Grade 80	Grade 100
3	3 1/2d ¹	3 1/2d	5d	5d	5d
4, 5	3 1/2d	3 1/2d	5d	5d	5d
6	5d	5d	5d	5d	5d
7, 8	–	5d	5d	5d	5d
9, 10, 11	–	7d	7d	7d	7d

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¹d = nominal diameter of specimen.

A706		
Bar Designation No.	Pin Diameter for 180° Bend Tests	
	Grade 60	Grade 80
3	3d ¹	3 1/2d
4, 5	3d	3 1/2d
6, 7, 8	4d	5d
9, 10, 11	6d	7d

¹d = nominal diameter of specimen.

SRD & RBD **Bar Designation Numbers, Nominal Weights, Nominal Dimensions, and Deformation Requirements**

A615 and A706							
Bar Designation No.	Nominal Weight, lb/ft	Nominal Dimensions ¹			Deformation Requirements, in.		
		Diameter, in.	Cross-Sectional Area, in. ²	Perimeter, in.	Maximum Average Spacing	Minimum Average Spacing	Maximum Gap (Chord of 12.5% of Nominal Perimeter)
3	0.376	0.375	0.11	1.178	0.262	0.015	0.143
4	0.668	0.500	0.20	1.571	0.350	0.020	0.191
5	1.043	0.625	0.31	1.963	0.437	0.028	0.239
6	1.502	0.750	0.44	2.356	0.525	0.038	0.286
7	2.044	0.875	0.60	2.749	0.612	0.044	0.334
8	2.670	1.000	0.79	3.142	0.700	0.050	0.383
9	3.400	1.128	1.00	3.544	0.790	0.056	0.431
10	4.303	1.270	1.27	3.990	0.889	0.064	0.487
11	5.313	1.410	1.560	4.430	0.987	0.071	0.540

SRD RBD Both SRD and RBD

¹The nominal dimensions of a deformed bar are equivalent to those of a plain round bar having the same weight per foot as the deformed bar.

RAIL

- Provide rail to Class I railroads, short lines, commuter lines, and industrial plants
- Standard and premium rail grades in 320-foot as-rolled lengths
- Universal rolling, hot side profiling, and in-line surface inspection ensure rails have superior dimensional consistency and surface finish
- Utilizing 320-foot rail, our on-site, fixed-weld plant allows us to deliver Continuous Welded Rail (CWR) up to 1,650 feet in length with up to 79% fewer welds compared to traditional 80-foot welding operations

Rail Certifications



SRD

Standards & Grades

Standards

American Railway Engineering Maintenance-of-Way Association (AREMA), Chapter 4 Rail, Part 1, 2, 3. Please inquire regarding railroad-specific specification compliance.

Grades

Grade Name	Grade Code
Standard Strength	SS
Intermediate Strength	IS
Head Hardened	HH
Hypereutectoid Premium	HP

SRD
 RBD
 Both SRD and RBD

Markings

Branding

136 = Section Weight (lbs/yd)
 RE = Section Type
 SDI = Manufacturer Code
 USA = Country of Manufacture
 2022 = Year of Manufacture
 1 = Month of Manufacture

Stamping

A123456 = Heat Number
 P = Rail Letter
 1 = Strand Number
 02 = Cut Number
 HH = Grade Code



SRD = Structural and Rail Division | RBD = Roanoke Bar Division

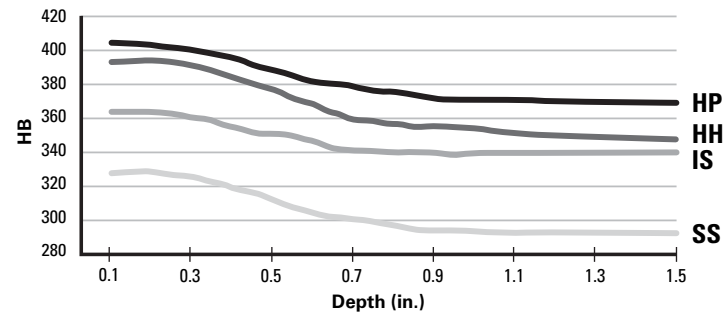
Element (w.t.%)	SS Standard Strength	IS Intermediate Strength	HH Head Hardened	HP Hypereutectoid Premium
Carbon	0.74 - 0.86	0.74 - 0.86	0.74 - 0.86	0.92 - 1.04
Manganese	0.75 - 1.25	0.75 - 1.25	0.75 - 1.25	0.50 - 1.00
Phosphorous	0.020 max	0.020 max	0.020 max	0.020 max
Sulfur	0.020 max	0.020 max	0.020 max	0.020 max
Silicon	0.10 - 0.60	0.10 - 0.60	0.10 - 0.60	0.10 - 0.60
Nickel	0.25 max	0.25 max	0.25 max	0.25 max
Chromium	0.30 max	0.30 max	0.30 max	0.30 max
Molybdenum	0.060 max	0.060 max	0.060 max	0.060 max
Vanadium	0.010 max	0.010 max	0.010 max	0.010 max
Aluminum	0.010 max	0.010 max	0.010 max	0.010 max

SRD RBD Both SRD and RBD

Property	SS Standard Strength	IS Intermediate Strength	HH Head Hardened	HP Hypereutectoid Premium
Yield Strength (ksi)	100	125	145	145
Ultimate Tensile Strength (ksi)	155	175	190	200
Elongation (%)	12.5	12.0	11.5	10.0
Surface Hardness (HB)	330	365	390	405
Fracture Toughness K_{Ic} (MPa-√m)	33	33	34	36

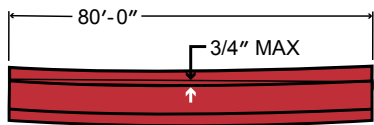
SRD RBD Both SRD and RBD

Centerline Hardness (Typical)

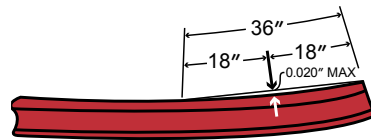


SRD = Structural and Rail Division | RBD = Roanoke Bar Division

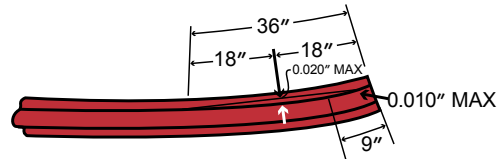
Tolerances for Inspection of Rail



Side elevation of rail uniform upsweep tolerance.



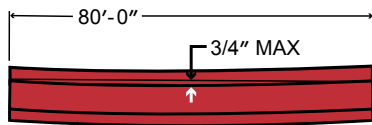
Side elevation of rail uniform upsweep tolerance at rail ends.



Top view of rail lateral (horizontal) line of tolerance at rail ends.



Top view of rail lateral (horizontal) line of tolerance at rail ends.



Top view of uniform lateral sidesweep tolerance.

Description	AREMA Tolerances (in.)			
	Running Rail		Trackwork Rail	
	Plus	Minus	Plus	Minus
Rail height (measured within one foot from end)	0.030	0.015	0.030	0.015
Rail head width (measured within one foot from end)	0.025	0.025	0.015	0.015
Web thickness	0.040	0.020	0.040	0.020
Fishing template standout	0.060	0.000	0.030	0.000
Head asymmetry with respect to base	0.050	0.050	0.030	0.030
Base width	0.040	0.040	0.030	0.030
Flange height	0.025	0.015	0.015	0.015

SRD RBD Both SRD and RBD

Base concavity shall not exceed 0.010 inch. Convexity is not permitted.

No variation will be allowed in dimensions affecting the fit of the joint bars, except that the fishing template may stand out not to exceed 0.060 inch laterally.

All four corners of the rail base shall have the radii according to the AREMA section drawing $\pm 1/32$ inch. Any disputes shall be analyzed on an Optical Comparator.

The section of the rails to be used in AREMA trackwork shall conform to the design specified by the purchaser, subject to the tolerances listed under trackwork rail above.

Head radius to be within ± 2 inches.

SRD **Surface Condition**

Condition	Formation (°F)	Length (In.)	Width (in.)	Depth (in.)
Hot Marks	≥700 max	–	0.062 ¹	0.020
Cold Scratches (Transverse)	<700 max	–	–	0.010
Cold Scratches (Longitudinal)	<700 max	36	–	0.010

SRD RBD Both SRD and RBD

¹ Applies to guide marks in head.

Protrusions

1. Rails with protrusion of excess metal extending from the surface of the rail, such as could be caused by a hole in the roll or a roll parting in the web, shall be rejected if the protrusion affects the fit of the joint bar or causes the fishing template to stand out more than 1/16 inch laterally.
2. Rails with any protrusion in the web greater than 1/16 inch high and greater than 1/2 square inch in area shall be rejected.
3. No protrusion of excess metal shall be allowed on the head or the base of the rail.

Surface Conditioning

1. Surface imperfections may be corrected only by grinding and only with the purchaser's approval.
2. If the purchaser agrees to surface conditioning, a plan containing a specific description of the work to be performed must be furnished by the manufacturer to the purchaser for approval. The plan must ensure that no metallurgical damage is done to the rail.

SRD **Stick Lengths**

Offering hot-rolled, finished rails up to 320 feet from which standard stick rail lengths are cut.

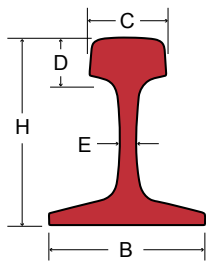
STANDARD LENGTHS:	80 ft	39 ft
Permissible Short Lengths:	78	36
	74	33
	70	30
	66	
	60	
	39	

LENGTH TOLERANCES:	Length > 40	Length ≤ 40
Undrilled	-0, +6 in.	-0, +4 in.
Drilled one end	-0, +6 in.	-0, +4 in.
Drilled both ends	± 7/8 in.	± 7/16 in.

Section	Specifications	Nominal Dimensions					Nominal Area	Nominal Mass per Unit Length
		H	B	C	D	E		
AREMA Standard		in.					in. ²	lbs/yd
115 RE	AREMA	6.625	5.5	2.71875	1.6875	0.625	11.2171	114.3757
119 RE	AREMA	6.8125	5.5	2.65625	1.875	0.625	11.6378	118.6657
132 RE	AREMA	7.125	6	3	1.75	0.65625	12.8332	130.7972
136 RE	AREMA	7.3125	6	2.9375	1.9375	0.6875	13.3262	135.8826
141 RE	AREMA	7.4375	6	3.1875	2.15625	0.6875	13.7972	140.7002
European Standard		mm					cm ²	kg/m
60E1	EN	172	150	72	51	16.5	76.70	60.21
Legacy		in.					in. ²	lbs/yd
100-8	ARA	5.640625	5.140625	2.65625	1.703125	0.5625	9.7527	99.4658
122 CB	CHESSIE	6.78125	6	2.9375	1.9375	0.65625	12.01	122.5

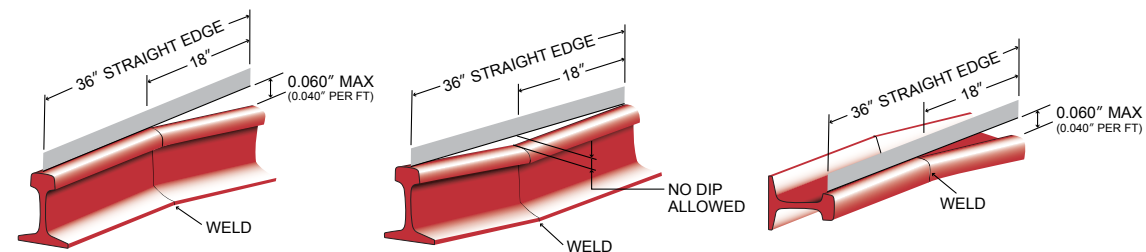
SRD RBD Both SRD and RBD

For all available sizes, visit us at www.stld-cci.com.



AREMA Maximum Alignment Tolerances (in.)						
Vertical Offset in Head	Vertical Offset in Base	Combined Vertical Offset and Crown Camber	Dip Camber	Horizontal Offset in Head	Horizontal Offset in Base	Combined Horizontal Offset and Kink
0.060	0.125	0.060	0.000	0.040	0.125	0.060

SRD RBD Both SRD and RBD



Weld misalignment tolerance in vertical plane.

Weld misalignment tolerance in vertical plane.

Weld misalignment tolerance in horizontal plane.

SRD**Weld Finish****AREMA Tolerances (in.)**

Top of Rail Head	Side of Rail Head	Underside of Base	Web Zone
± 0.005	± 0.010	0.010 max	0.125 max

SRD
 RBD
 Both SRD and RBD

Weld Hardness

Hardness within the weld shall be within ±30 HB of the parent rail head hardness except at the decarburized centerline and at the spheroidized edge of the heat-affected zone.

SRD**Bend Testing Requirements****AREMA Minimum Slow Bend Test Requirements**

Grades	SS	IS	HH	HP
Modulus of Rupture (ksi)	120.00	120.00	125.00	125.00
Deflection (in.)	1.00	1.00	0.75	0.75

SRD
 RBD
 Both SRD and RBD

Welded Lengths

Offering strings manufactured to custom lengths with a maximum length of 1,650 feet.





SEMIFINISHED

- Steel produced via Electric Arc Furnace (EAF) melting process and Ladle Metallurgical Furnace (LMF) refining process
- Billets are cast using continuous casting technology and are torch cut at 90° to the desired length
- Special-bar-quality (SBQ) – SRD only and Merchant-bar-quality (MBQ) – RBD only
- SRD steelmaking abilities: hydrogen and nitrogen control via Vacuum Tank Degasser (VTD), mold Electromagnetic Stirring (EMS), and fully shrouded transfer operations
- AISI grades inclusive of but not limited to: Carbon Steel (10XX and 15XX Series), Chromium Molybdenum Steel (41XX Series), Chromium Steel (50XX and 51XX Series), Nickel Chromium Molybdenum Steel (86XX Series)

Semifinished Certifications

ISO9001
CERTIFIED

SRD & RBD

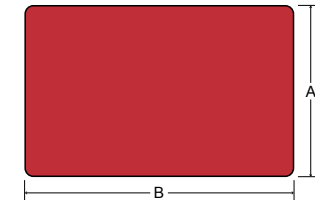
Continuous Cast Semifinished Specifications

Capable of producing a wide range of chemistries and test requirements, please inquire.

Size (in. x in.)	A (in.)	B (in.)	Length Range ¹ (in.)	Nominal Weight (lb/ft)
4 x 4	4.00	4.00	180-366	54.50
4.5 x 4.5	4.50	4.50	180-366	68.90
4 x 6	4.00	6.00	180-366	81.80
4.75 x 6.375	4.75	6.38	180-366	102.00
6 x 6	6.00	6.00	180-366	123.00
7 x 7	7.00	7.00	216-575	167.00
8 x 8	8.00	8.00	216-575	217.00
8 x 10	8.00	10.00	216-575	264.00
10 x 14	10.00	14.00	216-575	478.00

SRD RBD Both SRD and RBD

¹ Lengths are flexible, please inquire.



Rhomboidity: $R = \frac{(D2-D1)}{((D2+D1)/2)} \times 100 \leq 4$, where D1 and D2 are the measured diagonals.

Squareness: Adjacent faces should be at $90^\circ \pm 3^\circ$

Straightness: Allowances are 1" in 10', or 3" in 30'

Cut Length: Allowances are 0" under, 1" over per 10' of length

Twist: Allowance is a maximum of 10° of twist over the length of the billet



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