

LIGHT RAILS

MINE AND INDUSTRIAL STEEL CROSS TIES



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CARNEGIE STEEL COMPANY

SUBSIDIARY OF UNITED



STATES STEEL CORPORATION

PITTSBURGH, PA.

SECOND EDITION

B126

LIGHT RAILS
AND
FASTENINGS

STEEL CROSS TIES

FOR
MINES, QUARRIES, PLANTATIONS
AND
PORTABLE TRACK

CARNEGIE STEEL COMPANY

SUBSIDIARY OF UNITED



STATES STEEL CORPORATION

PITTSBURGH, PA.

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LIGHT RAILS AND FASTENINGS

The RAIL SECTIONS herein enumerated are designed on the lines of those recommended as standard by the American Society of Civil Engineers. For sections 12 to 25 lbs., inclusive, fish bars will be furnished, and angle splice bars for sections 30 to 45 lbs., inclusive.

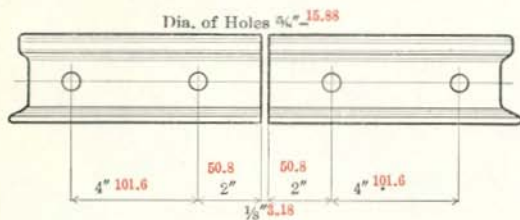
The adaptability of these light rails and their corresponding accessories is practically unlimited. They are used extensively in all Mining Industries, Quarries, Rolling Mills, Logging Plants, Saw Mills, Docks and Warehouses, as well as for Light Portable Railways. Also for Cotton, Coffee and Sugar Plantations and Tram Roads for various purposes.

These rails are kept in stock in considerable quantities, of a standard length of 30 feet, 9.14 meters, with 10% of shorts, in lengths down to 20 feet, 6.1 meters; standard bolt holes as shown on following pages.

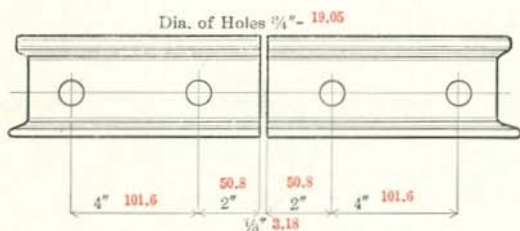
To facilitate quick deliveries, standard lengths and accessories should be specified. Special lengths and special drilling or punching can be furnished when desired. Weights given are only approximate, shipping weights to govern in all cases. The numbers and weights for splice bars, bolts and nuts and spikes, given on the following pages, allow for no excess. All metric dimensions shown on drawings are given in millimeters and weights in kilograms or tonnes.

Standard A. S. C. E. sections from 50 lbs. to 100 lbs. per yard are illustrated on pages 22 and 23 where sections over 45 lbs. per yard are required.

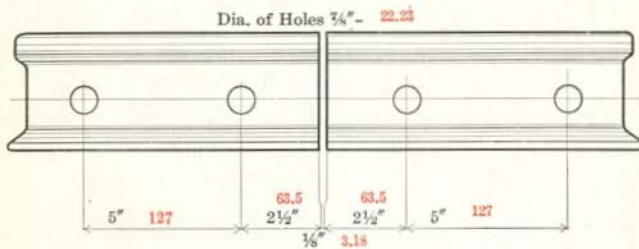
STANDARD RAIL DRILLING



FOR RAILS 1240, 1640, 2040 AND 2540

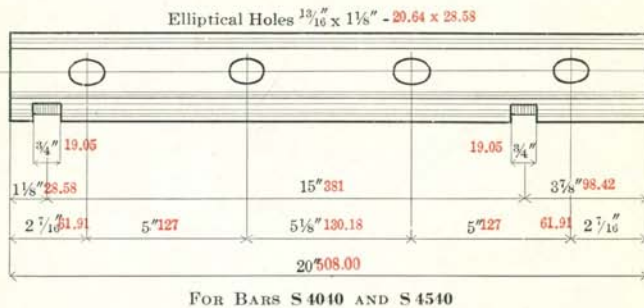
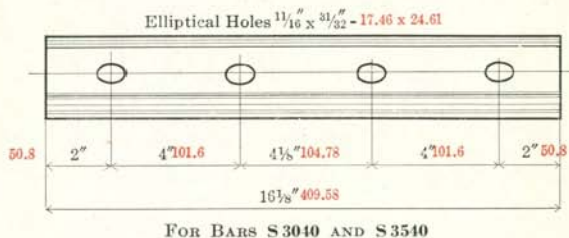
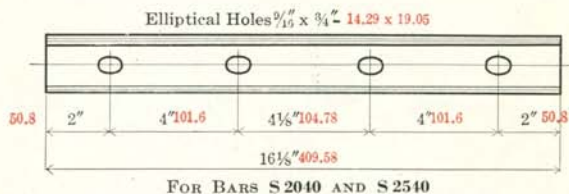
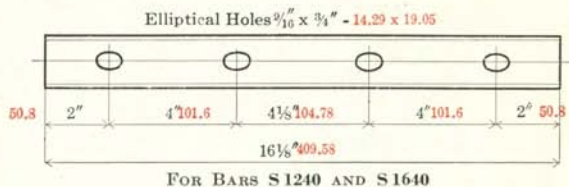


FOR RAILS 3040 AND 3540

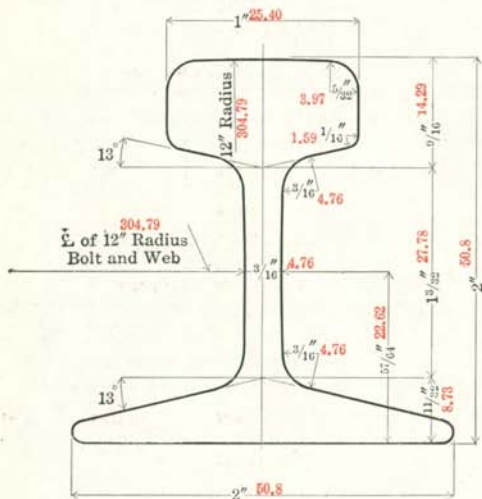


FOR RAILS 4040 AND 4510

STANDARD SPLICE BAR PUNCHING AND NOTCHING



RAIL SECTION 1240



12 lbs. per yard—5.95 kilograms per meter.

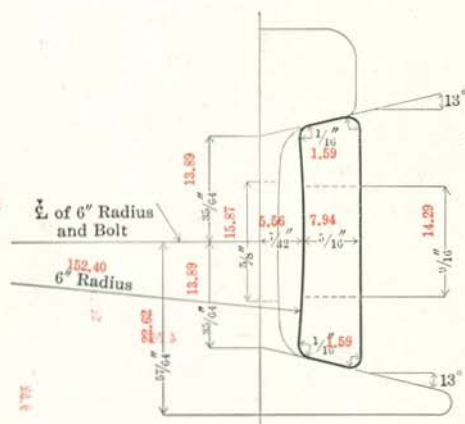
18.86 gross tons per mile of single track.

11.90 tonnes per kilometer of single track.

280 ft. of single track per gross ton.

84.03 meters of single track per tonne.

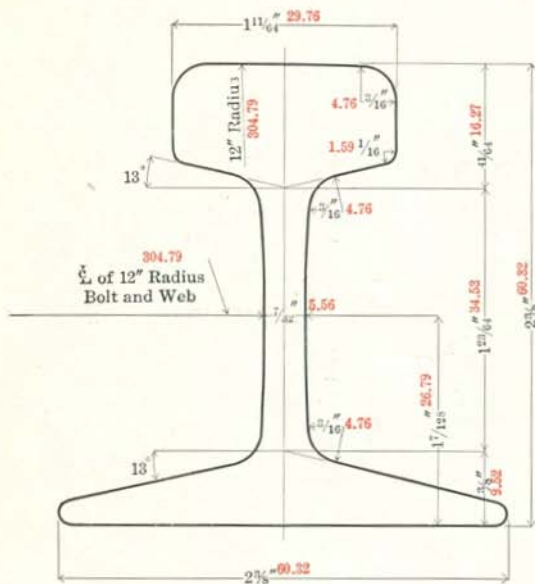
SPLICE BAR SECTION S1240



11.03

Weight of one Bar	1.36 lbs. per ft.	2.00 kg. per meter.
Weight of 16 3/8"-409.58 mm. Bars per pair	3.44 lbs.	1.56 kg.
Weight of four bolts per joint	0.80 lbs.	0.36 kg.
Total weight of each joint	4.24 lbs.	1.92 kg.

RAIL SECTION 1640



16 lbs. per yard—7.94 kilograms per meter.

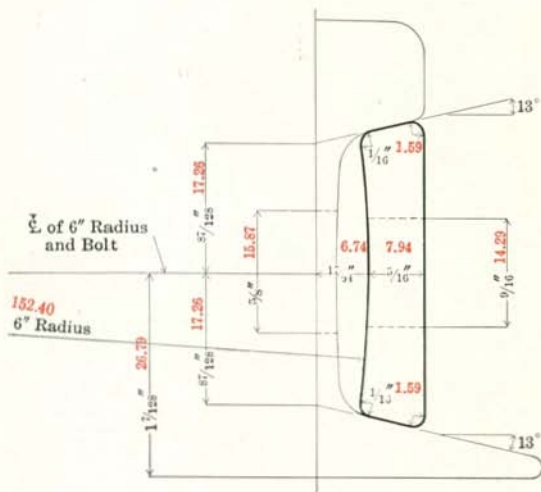
25.14 gross tons per mile of single track.

15.88 tonnes per kilometer of single track.

210 ft. of single track per gross ton.

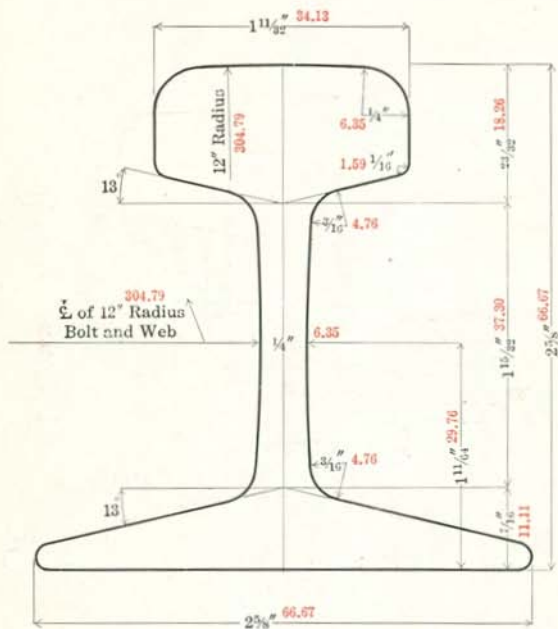
62.97 meters of single track per tonne.

SPLICE BAR SECTION S1640



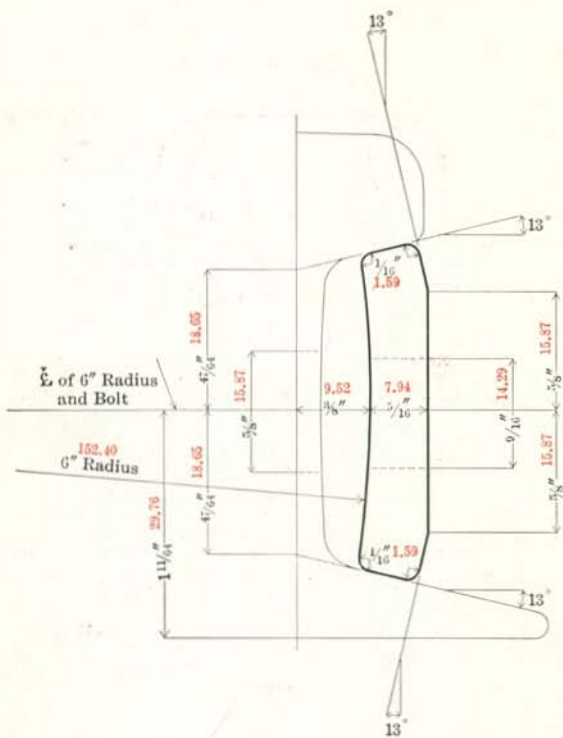
Weight of one bar	1.70 lbs. per ft.	2.52 kg. per meter.
Weight of 16 3/8"-409.58 mm. Bars per pair	4.36 lbs.	1.98 kg.
Weight of four bolts per joint	0.80 lbs.	0.36 kg.
Total weight of each joint	5.16 lbs.	2.34 kg.

RAIL SECTION 2040



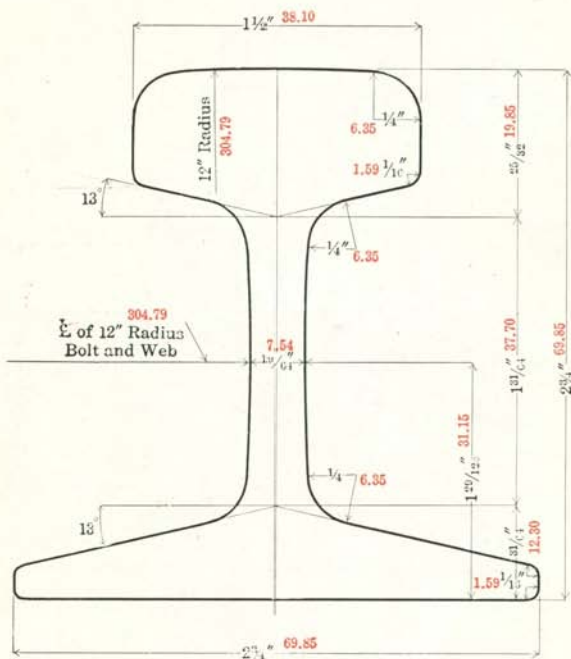
- 20 lbs. per yard—9.92 kilograms per meter.
- 31.43 gross tons per mile of single track.
- 19.84 tonnes per kilometer of single track.
- 168.0 ft. of single track per gross ton.
- 50.4 meters of single track per tonne.

SPLICE BAR SECTION S 2040



Weight of one bar 1.87 lbs. per ft. 2.78 kg. per meter.
 Weight of $16\frac{1}{4}$ "-409.58 mm. Bars per pair 4.86 lbs.—2.20 kg
 Weight of four bolts per joint 0.83 lbs. 0.38 kg.
 Total weight of each joint 5.69 lbs. 2.58 kg.

RAIL SECTION 2540



25 lbs. per yard—12.40 kilograms per meter.

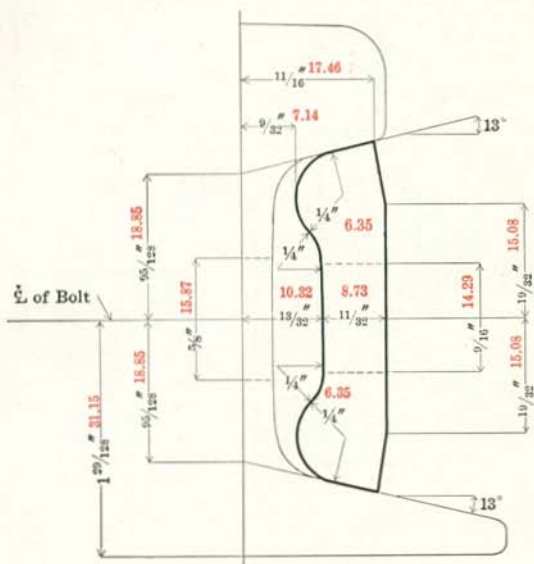
39.29 gross tons per mile of single track.

24.80 tonnes per kilometer of single track.

134.40 ft. of single track per gross ton.

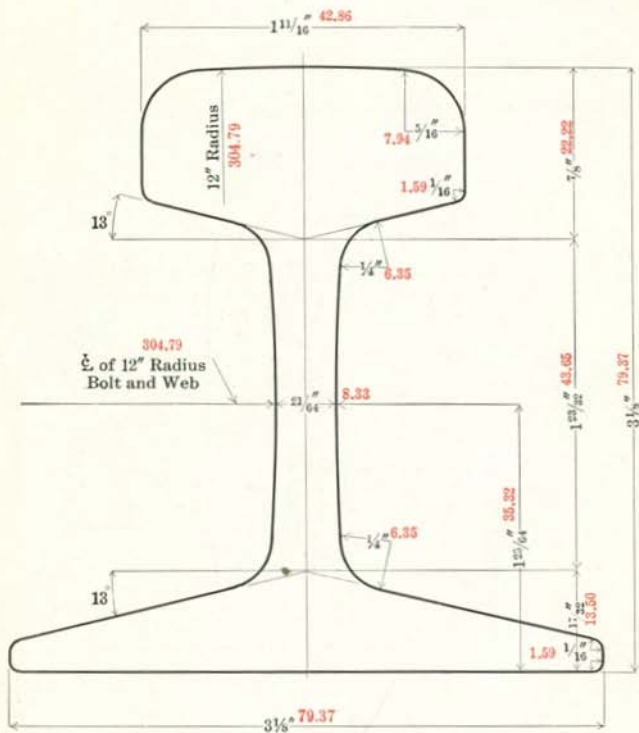
40.32 meters of single track per tonne.

SPLICE BAR SECTION S2540



Weight of one Bar 2.20 lbs. per ft. 3.30 kg. per meter.
 Weight of $16\frac{1}{8}$ "-409.58 mm. Bars per pair 5.70 lbs.—2.58 kg
 Weight of four bolts per joint 0.86 lbs. 0.39 kg.
 Total weight of each joint 6.56 lbs. 2.97 kg.

RAIL SECTION 3040



30 lbs. per yard—14.88 kilograms per meter.

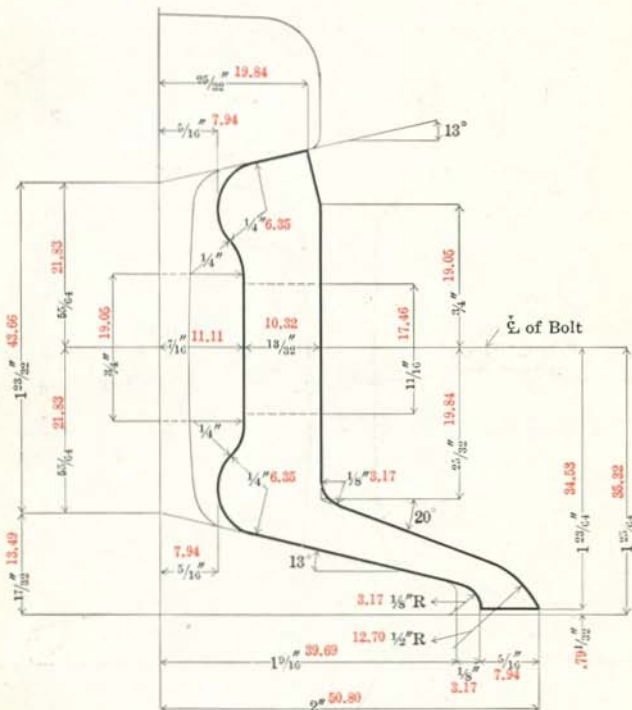
47.14 gross tons per mile of single track.

29.76 tonnes per kilometer of single track.

112 ft. of single track per gross ton.

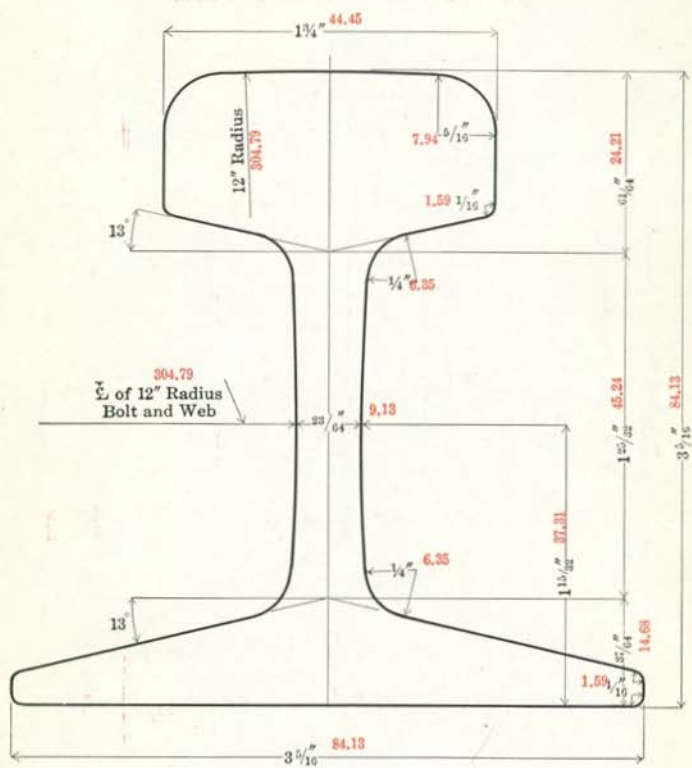
33.60 meters of single track per tonne.

SPLICE BAR SECTION S3040



Weight of one Bar 3.97 lbs. per ft. 5.90 kg. per meter.
 Weight of $16\frac{1}{8}''$ -409.58 mm. Bars per pair 10.45 lbs.—4.74 kg.
 Weight of four bolts per joint 1.60 lbs. 0.73 kg.
 Total weight of each joint 12.05 lbs. 5.47 kg.

RAIL SECTION 3540



35 lbs. per yard—17.36 kilograms per meter.

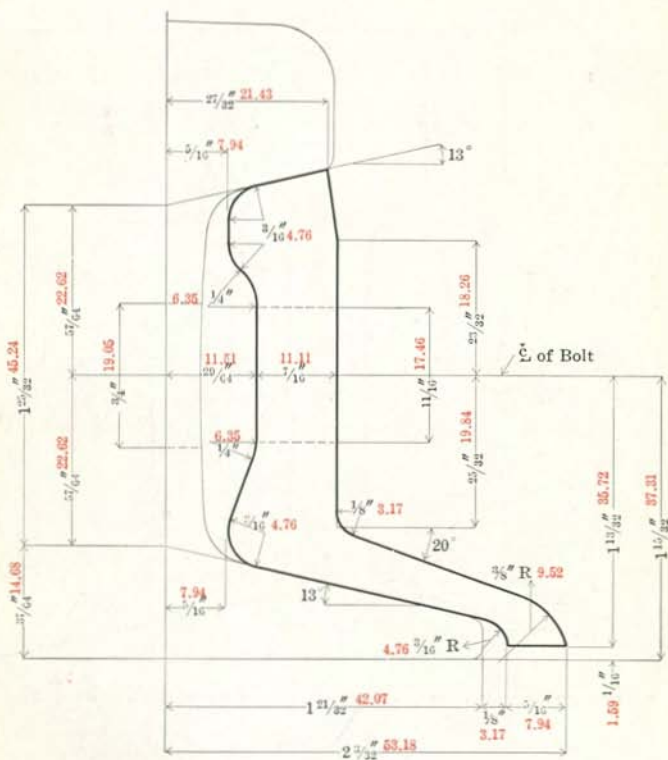
55.00 gross tons per mile of single track.

34.72 tonnes per kilometer of single track.

96.00 ft. of single track per gross ton.

28.8 meters of single track per tonne.

SPLICE BAR SECTION S3540



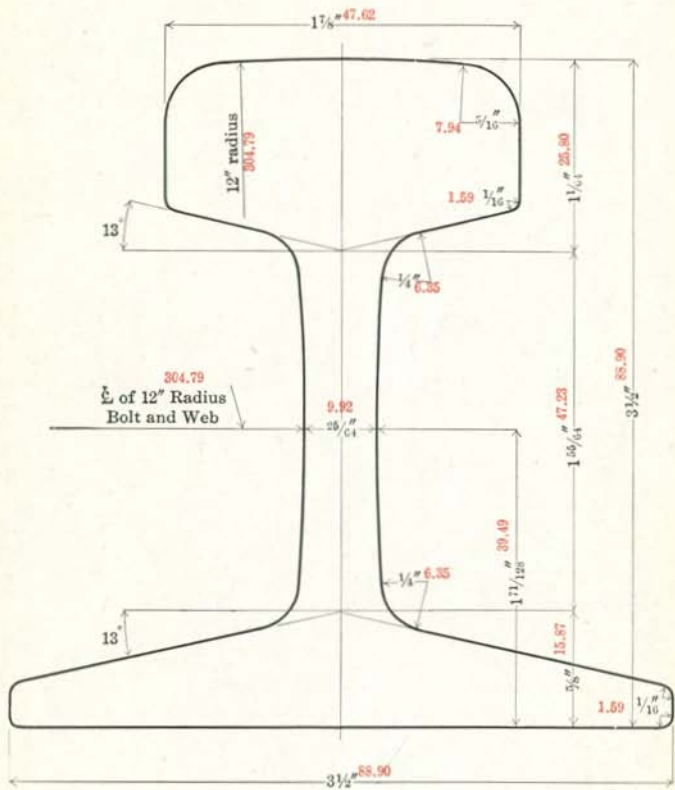
Weight of one Bar 4.58 lbs. per ft. 6.82 kg. per meter.

Weight of $16\frac{3}{8}$ "-409.58 mm. Bars per pair 12.10 lbs.—5.50 kg.

Weight of four bolts per joint 1.60 lbs. 0.73 kg.

Total weight of each joint 13.70 lbs. 6.23 kg.

RAIL SECTION 4040



40 lbs. per yard—19.84 kilograms per meter.

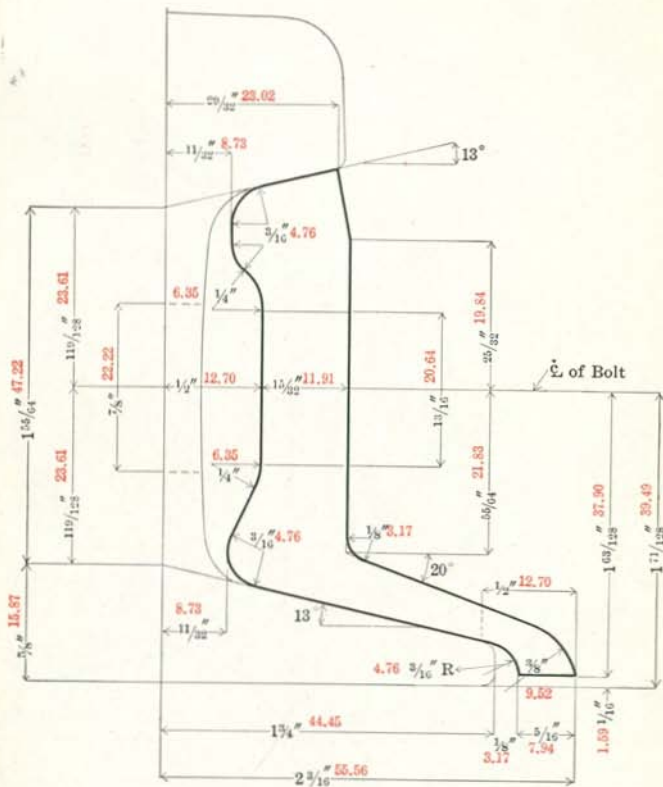
62.86 gross tons per mile of single track.

39.68 tonnes per kilometer of single track.

84.00 ft. of single track per gross ton.

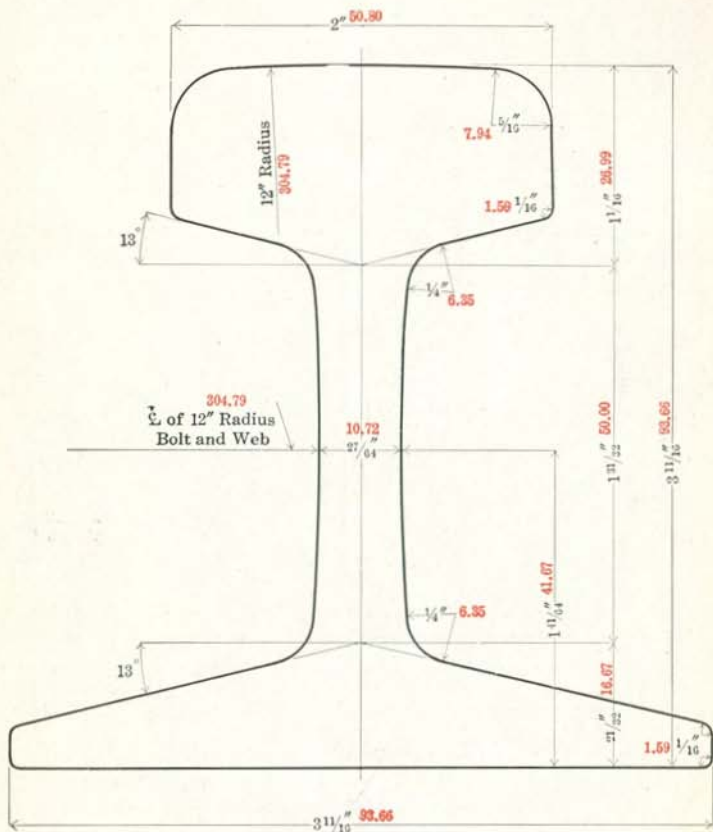
25.20 meters of single track per tonne.

SPLICE BAR SECTION S 4040



Weight of one Bar	5.00 lbs. per ft.	7.40 kg. per meter.
Weight of 20° -508.00 mm. Bars per pair	16.10 lbs.	7.30 kg.
Weight of four bolts per joint	2.66 lbs.	1.21 kg.
Total weight of each joint	18.76 lbs.	8.51 kg.

RAIL SECTION 4540



45 lbs. per yard—22.32 kilograms per meter.

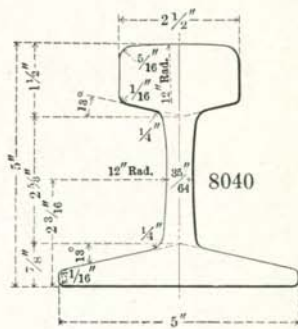
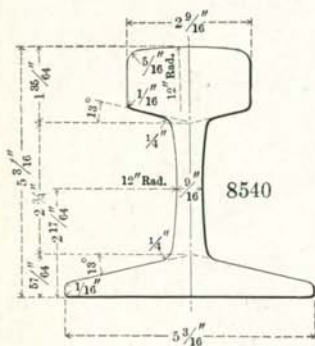
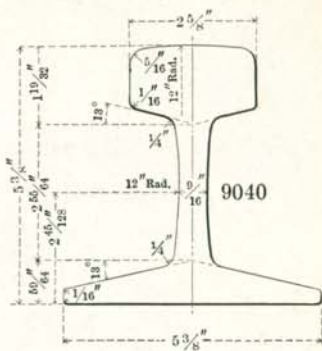
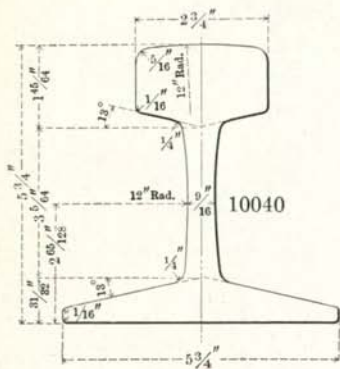
70.71 gross tons per mile of single track.

44.64 tonnes per kilometer of single track.

74.67 ft. of single track per gross ton.

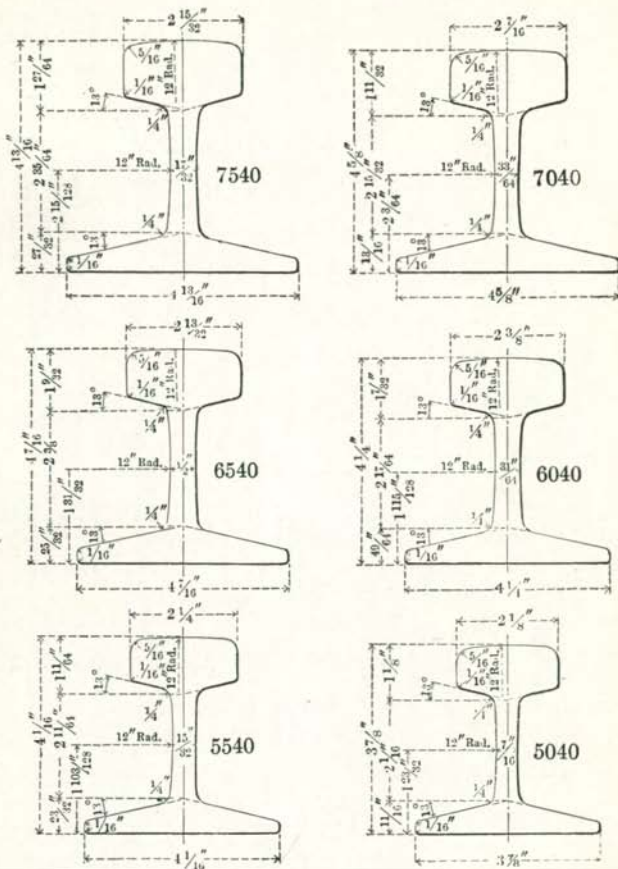
22.40 meters of single track per tonne.

A. S. C. E. RAILS



Section Index	Depth, Inches	Width		Weight per Yard, Pounds	Splice Bars	
		Base, Inches	Head, Inches		Section Index	Weight per Foot, Pounds, Unfinished
10040	5 3/4	5 3/4	2 3/4	100	S 10040	15.8
9040	5 3/8	5 3/8	2 5/8	90	S 9040	13.5
8540	5 9/16	5 9/16	2 9/16	85	S 8540	12.4
8040	5	5	2 1/2	80	S 8040	11.5

A. S. C. E. RAILS—Concluded



Section Index	Depth, Inches	Rails		Weight per Yard, Pounds	Splice Bars	
		Width			Section Index	Weight per Foot, Pounds, Unfinished
		Base, Inches	Head, Inches			
7540	4 $\frac{13}{16}$	4 $\frac{13}{16}$	2 $\frac{15}{32}$	75	S 7540	10.7
7040	4 $\frac{9}{8}$	4 $\frac{9}{8}$	2 $\frac{7}{16}$	70	S 7040	10.0
6540	4 $\frac{7}{16}$	4 $\frac{7}{16}$	2 $\frac{13}{32}$	65	S 6540	9.2
6040	4 $\frac{1}{4}$	4 $\frac{1}{4}$	2 $\frac{3}{8}$	60	S 6040	8.4
5540	4 $\frac{1}{8}$	4 $\frac{1}{8}$	2 $\frac{1}{4}$	55	S 5540	7.5
5040	3 $\frac{7}{8}$	3 $\frac{7}{8}$	2 $\frac{1}{8}$	50	S 5040	6.6

TABLE OF RAILS AND ACCESSORIES

RAIL SECTION			FOR ONE JOINT			FOR 1000 TONS OF RAILS						FOR ONE MILE OF SINGLE TRACK												
Weight per Yard	Height of Rail	Base of Rail	Length of Splice Bar	Size of Bolt	Size of Spike	Weight of One Pair	Number and Weight	Total Weight	Pairs of Splice Bars	Bolts and Nuts	Spikes	Splice Bars	Bolts and Nuts	Spikes	Pairs of Splice Bars	Bolts and Nuts	Spikes	Number	Weight in Gross Tons	Total	Accessories	Rail	Total	
Lbs.	Inch.	Inch.	Inch.	Inch.	Inch.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.		Tons	Tons	Tons	Tons	Tons
4540	45	3 1/2	20	3 1/2	5 1/2 x 5 1/2	18.75	2,72	21.47	5148	20592	149344	43.09	6.25	39.22	88.56	364	1456	10560	3.05	.44	2.77	6.26	70.71	76.97
4040	40	3 1/2	20	3 1/2	5 1/2 x 5 1/2	16.10	2,66	18.76	5791	23164	167962	41.82	6.88	30.60	79.10	364	1456	10560	2.62	.43	1.92	4.97	62.86	67.83
3540	35	3 1/2	20	3 1/2	4 1/2 x 4 1/2	12.10	1,60	13.70	6618	27422	192000	35.79	4.73	31.97	72.49	364	1456	10560	1.97	.26	1.76	3.99	55.00	58.99
3040	30	3 1/2	20	3 1/2	4 1/2 x 4 1/2	10.45	1,69	12.05	7722	30888	224012	36.02	5.51	33.33	74.86	364	1456	10560	1.70	.26	1.57	3.53	47.14	50.67
2540	25	2 3/4	23	2 3/4	4 1/2 x 4 1/2	5.70	.86	6.56	9264	37056	268772	23.37	3.56	40.00	67.13	364	1456	10560	.93	.14	1.57	2.64	39.29	41.93
2040	20	2 3/4	23	2 3/4	3 1/2 x 3 1/2	4.86	.83	5.69	11581	46324	335984	25.12	4.29	48.30	77.71	364	1456	10560	.79	.13	1.52	2.44	31.42	33.87
1640	16	2 3/4	23	2 3/4	3 1/2 x 3 1/2	4.36	.80	5.16	14479	57916	420048	28.18	5.17	31.88	65.23	364	1456	10560	.71	.13	.80	1.64	25.14	26.78
1240	12	2	2	1 1/2	3 1/2 x 3 1/2	3.44	.80	4.24	19300	77200	559916	29.64	6.89	37.24	73.77	364	1456	10560	.56	.13	.70	1.39	18.86	20.25

Above based on 90% furnished 30 ft. and 10% not less than 20 ft. Ties 24 inch centers. 2640 ties per mile. No excess has been allowed.

RAIL SECTION			FOR ONE JOINT			FOR 1000 TONNES OF RAILS						FOR ONE KILOMETER OF SINGLE TRACK													
Weight per Meter	Height of Rail	Base of Rail	Length of Splice Bar	Size of Bolt	Size of Spike	Weight of One Pair	No. and Weight	Total Weight	Pairs of Splice Bars	Bolts and Nuts	Spikes	Splice Bars	Bolts and Nuts	Spikes	Pairs of Splice Bars	Bolts and Nuts	Spikes	Number	Weight in Tonnes	Total	Accessories	Rail	Total		
Kg.	Mm.	Mm.	Mm.	Mm.	Mm.	Kg.	Kg.	Kg.	Kg.	Kg.	Kg.	Kg.	Kg.	Kg.	Kg.	Kg.	Kg.		Tonnes	Tonnes	Tonnes	Tonnes	Tonnes		
4540	22.32	93.66	93.66	508	19x76	140x14.3	8.50	1,23	9.73	8961	35844	149372	76.17	11.02	34.88	127.07	400	1600	6668	3.4	.49	1.78	5.67	44.64	50.31
4040	16.84	88.89	88.89	508	19x73	127x12.7	7.30	1,21	8.51	10081	40324	168044	73.59	12.20	30.09	115.88	400	1600	6668	2.92	.48	1.33	4.63	39.68	44.31
3540	17.36	84.14	84.14	410	16x63	114.3x12.7	5.50	.73	6.23	11521	46984	192052	63.37	8.41	32.46	104.24	400	1600	6668	2.90	.29	1.19	3.20	34.72	38.33
3040	14.88	79.37	79.37	410	16x63	101.6x12.7	4.74	.73	5.47	13441	53764	224060	63.71	9.71	33.83	107.15	400	1600	6668	1.90	.20	1.01	3.20	29.76	32.96
2540	12.40	69.85	69.85	410	12.7x54	101.6x12.7	2.58	.39	2.97	16129	64516	268872	41.61	6.29	40.60	88.50	400	1600	6668	1.03	.16	1.01	2.20	24.80	27.06
2040	9.92	66.67	66.67	410	12.7x50.8	88.9x12.7	2.20	.38	2.58	20161	80644	336688	44.35	7.66	49.07	101.08	400	1600	6668	.88	.15	.97	2.00	19.84	21.84
1640	7.94	69.32	69.32	410	12.7x44.4	88.9x9.5	1.98	.36	2.34	25189	1007564	119900	49.87	9.07	33.59	92.53	400	1600	6668	.79	.14	.53	1.46	15.88	17.34
1240	5.35	50.80	50.80	410	12.7x44.4	76.2x9.5	1.56	.36	1.92	33613	134462	560336	52.44	12.10	39.22	103.76	400	1600	6668	.62	.14	.47	1.23	11.90	13.13

Above table based on furnishing rails 5 meters long. Ties 600 millimeters to centers; 1667 ties per kilometer. No excess has been allowed.

CARNEGIE STEEL CROSS TIES
FOR
MINES, QUARRIES, PLANTATIONS
AND
PORTABLE TRACK

CARNEGIE STEEL MINE TIES

Carnegie Steel Company offers six standard sections of Steel Ties, with the various types of fastenings illustrated, for mine and industrial use. The widespread and increased demand for Steel Ties confirms their many advantages, all of which give substantial economies to the operator. The fastenings shown on the various sections are best suited for average conditions. Suggestions or recommendations regarding particular designs to meet exceptional conditions, will be furnished upon receipt of essential information.

ADVANTAGES OF STEEL MINE TIES

Saves Headroom. In shallow seams of coal, where headroom is of vital importance, Carnegie Steel Mine Ties offer an effective solution.

Carnegie sections M-19-A and M-26-A are recommended for room-work. Not only is headroom saved, but much time and labor to the miner is saved by their lightness, one-piece construction and simplicity of design. For haulage in the mine and in main entries, where a heavier tie is required, Carnegie sections M-18, M-20, M-27 or M-27-A depending upon the service required, are recommended.

Saves Time and Labor. The one-piece construction of Carnegie Ties assures the quickest track laying possible. The rail is securely locked by a clip attached to the tie. There are no loose bolts or nuts to lose, and no special tools are required. Carnegie Ties, with square head rivets used to fasten the inside clips, permit the use of a jumper or extension rail, by which the track can be brought up to the face of the coal.

Saves Money. It has been found that Copper added to the steel greatly increases its life by retarding corrosion. Carnegie Steel Company has been furnishing Mine Ties, manufactured from copper-bearing steel. The ordinary Steel Mine Tie outwears wooden ties several times, as the

latter soon become useless through decay and repeated spikings. With the addition of copper, Carnegie Ties are giving a much longer period of usefulness.

Aside from their economy in actual cost, the ease with which Carnegie Ties are handled, has proven to be a decided time and money-saving factor. Good ties are not apt to be left behind or wasted when they can be moved so easily. Steel Ties have a scrap value when they are no longer serviceable as ties. The miners themselves prefer steel ties as an aid in securing increased output.

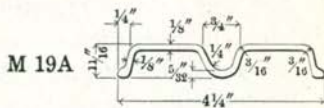
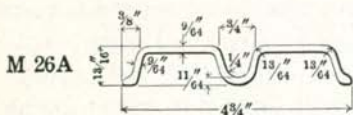
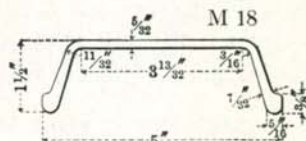
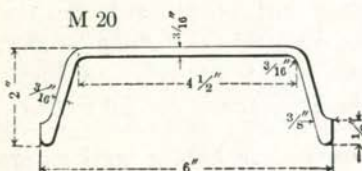
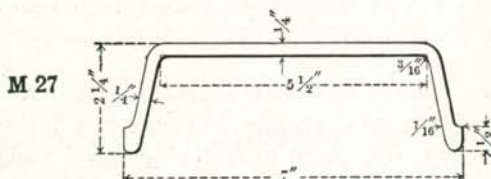
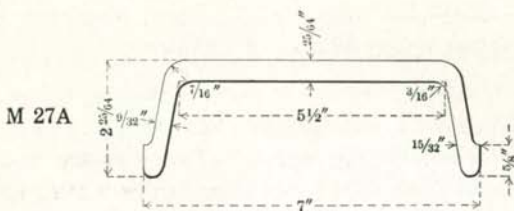
Design. Due to sectional design and an improved distribution of metal, Carnegie Ties will not buckle under proper service. The type of fastenings used makes it improbable that the track gauge will spread. The channel and groove effect, with wide bearing surface, prevents the ties from sinking into soft bottoms, and resists crushing on hard bottoms. Riveted clips make the tie entirely one piece, eliminating loose parts and the necessity of special tools.

Carnegie Ties are easily handled. The lighter sections are shipped from the mill in bundles of five. This facilitates storage and saves time, only one man being needed to place the ties in position. The rail is securely locked to the proper gauge by turning the two inside clips into position, and indentations in the tie prevent these clips from slipping.

The design of the larger channel sections makes them suited for industrial, plantation and standard-gauge track. Variations, such as crimping the ends, or the use of special clips, are resorted to when special conditions are to be met.

The heavier channel sections, M-18, M-20, M-27 and M-27-A with drop-forged clips, are used for main entry and main track, with 25-lb. to 75-lb. rail sections. With the ends bent down as illustrated, these sections are extensively used for laying permanent track in foreign countries.

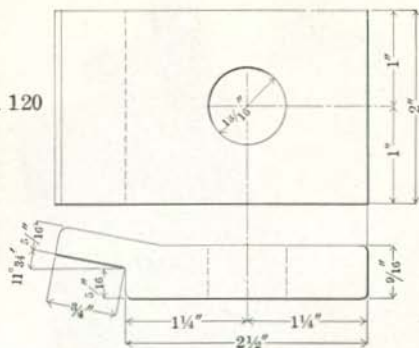
CROSS TIE SECTIONS



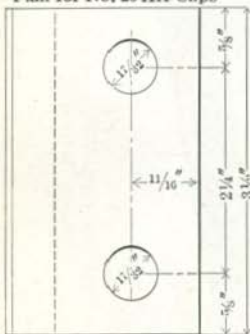
Section Index	Depth Inches	Width Inches	Web Thickness Inches	Weight per Foot Pounds	Area In. ²	Horizontal Axis 1-1		
						Moment of Inertia In. ⁴	Section Modulus In. ³	Neutral Axis from Base In.
M-27-A	2 25/64	7	2 5/64	12.4	3.65	1.63	0.93	1.75
M-27	2 1/4	7	1/4	9.0	2.62	1.28	0.79	1.62
M-20	2	6	3/16	6.0	1.72	0.71	0.51	1.41
M-18	1 1/2	5	5/32	4.2	1.21	0.31	0.31	1.00
M-26-A	1 3/16	4 3/4	9/64	3.25	0.954	0.068	0.136	0.50
M-19-A	1 1/16	4 1/4	3/8	2.50	0.735	0.034	0.077	0.44

RAIL CLIPS

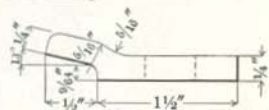
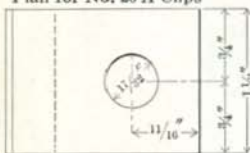
No. 120



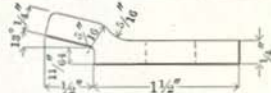
Plan for No. 26 AA Clips



Plan for No. 26 A Clips



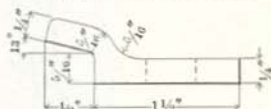
No. 26 AA 1 and No. 26 A 1



No. 26 AA 2 and No. 26 A 2



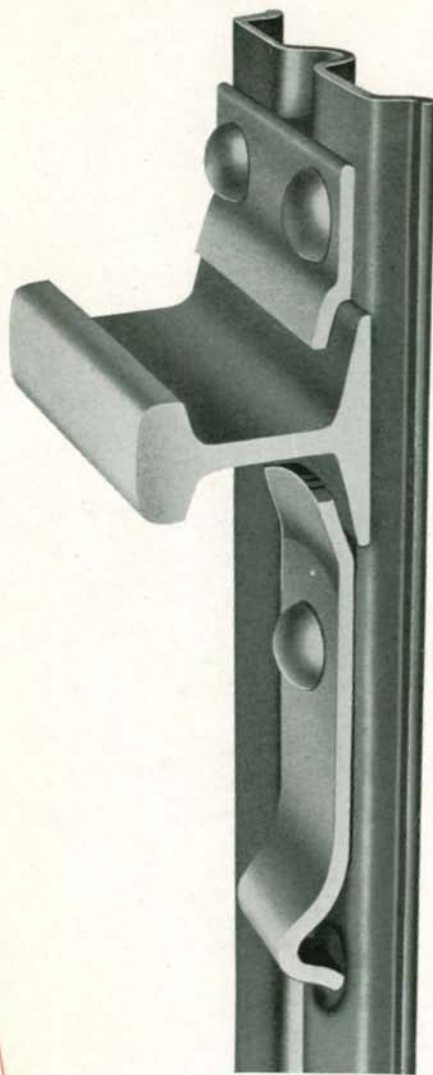
No. 26 AA 3 and No. 26 A 3



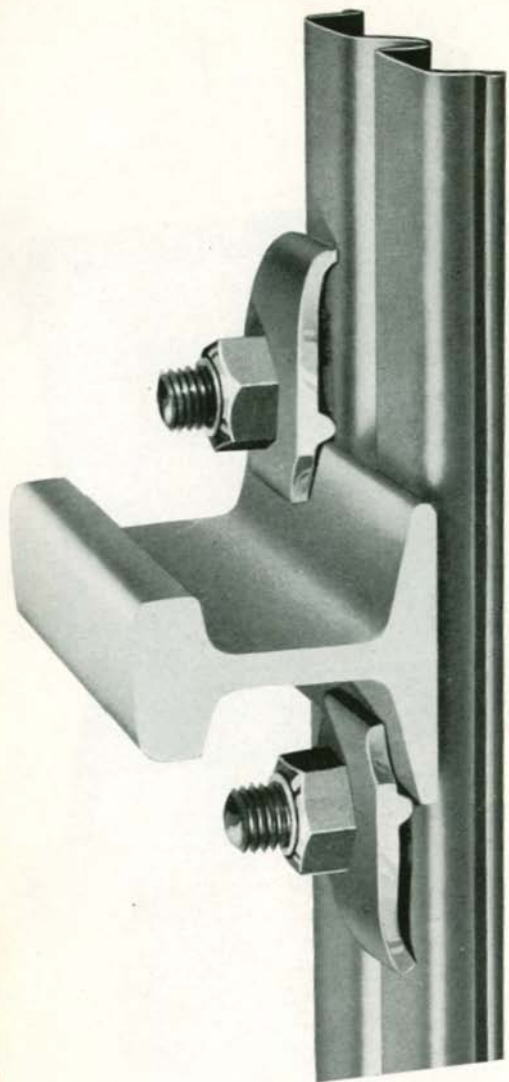
No. 26 AA 4 and No. 26 A 4

Clip Number	Weight per Foot, Pounds	Finished Weight, Pounds	Fastening for	
			Tie Sections	Rail Sections
120	5.6	0.81	M 18, M 20, M 27, M 27 A	50 to 25 lb. A. S. C. E. and A. R. A.
26 AA 1	1.75	0.48	M 18 A, M 26 A	20 to 12 lb. A. S. C. E.
26 AA 2	1.80	0.49	M 18, M 19 A, M 26 A	30 and 25 lb. A. S. C. E.
26 AA 3	1.85	0.50	M 18, M 19 A, M 23, M 26 A	45 to 35 lb. A. S. C. E. and 20 to 12 lb. A. R. A.
26 AA 4	1.91	0.52	M 18, M 19 A, M 23, M 26 A	45 to 25 lb. A. R. A.

The finished weights for Clips 26 A 1, 2, 3, and 4 are 0.20, 0.21, 0.22 and 0.23 lb., respectively



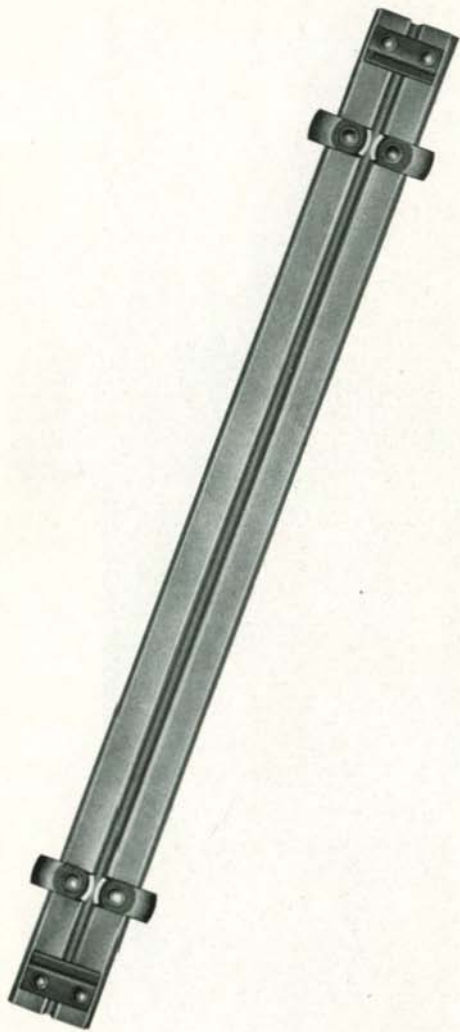
GENERAL ARRANGEMENT M19A TIE WITH No. 26 AND No. 26AA-1 CLIPS
ROOM WORK



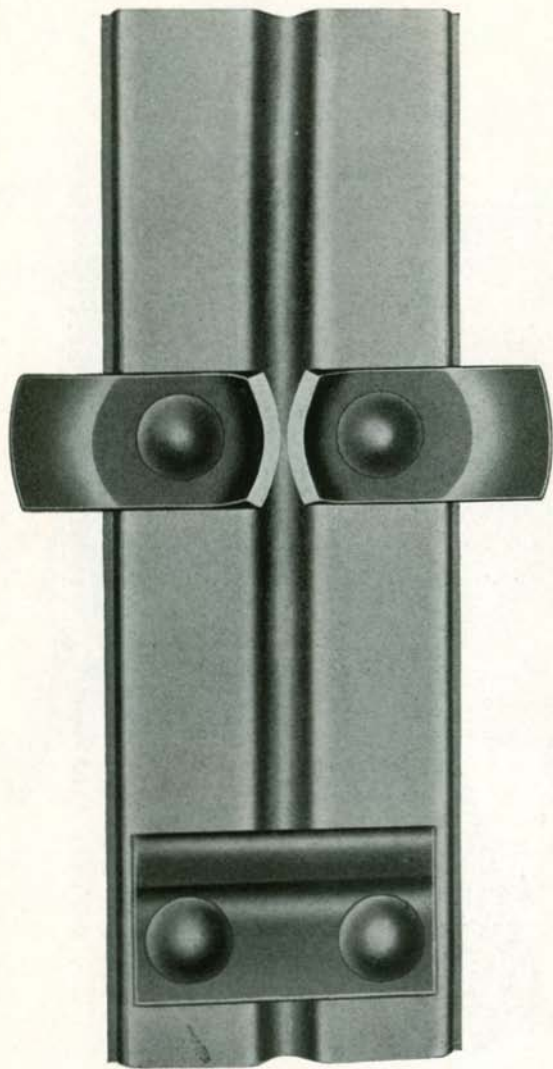
GENERAL ARRANGEMENT M19A TIE WITH No. 18 CLIP AND BOLT.
PORTABLE TRACK



END VIEW OF M19A TIE
SHOWING DOUBLE-RIVETED No. 26AA CLIP



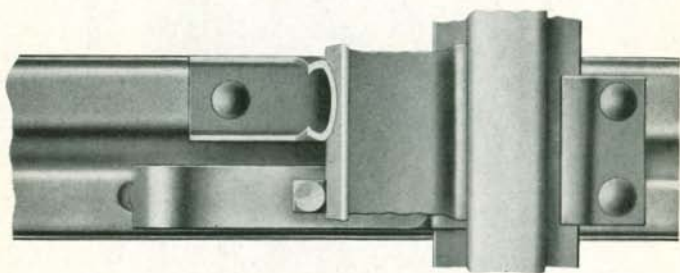
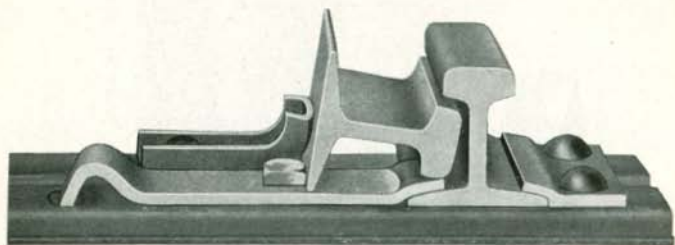
GENERAL ARRANGEMENT M 19 A WITH No. 26 K AND No. 26 A CLIPS
FULL LENGTH TIE



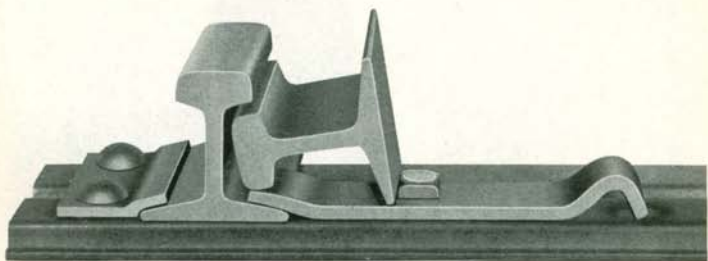
GENERAL ARRANGEMENT M 19 A WITH No. 26 AA-3 CLIP AND TWO No. 26 K CLIPS
BEFORE ATTACHING THE RAIL



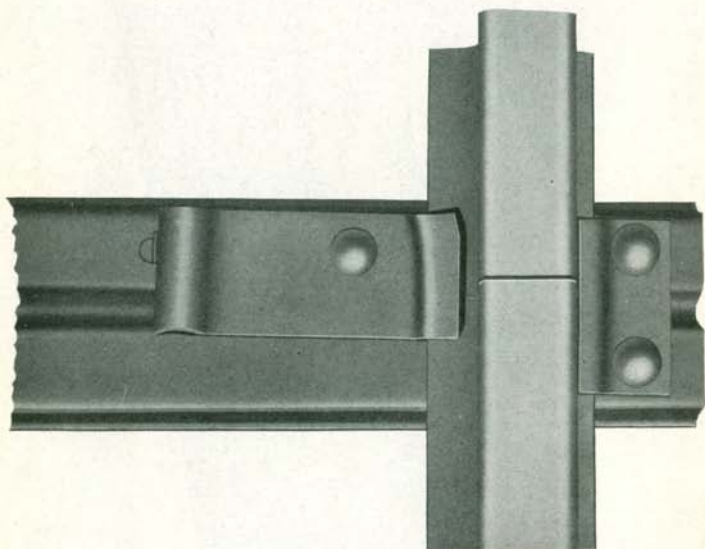
GENERAL ARRANGEMENT M 19 A WITH No. 26 AA-3 CLIP AND TWO No. 26 K CLIPS
AFTER ATTACHING THE RAIL



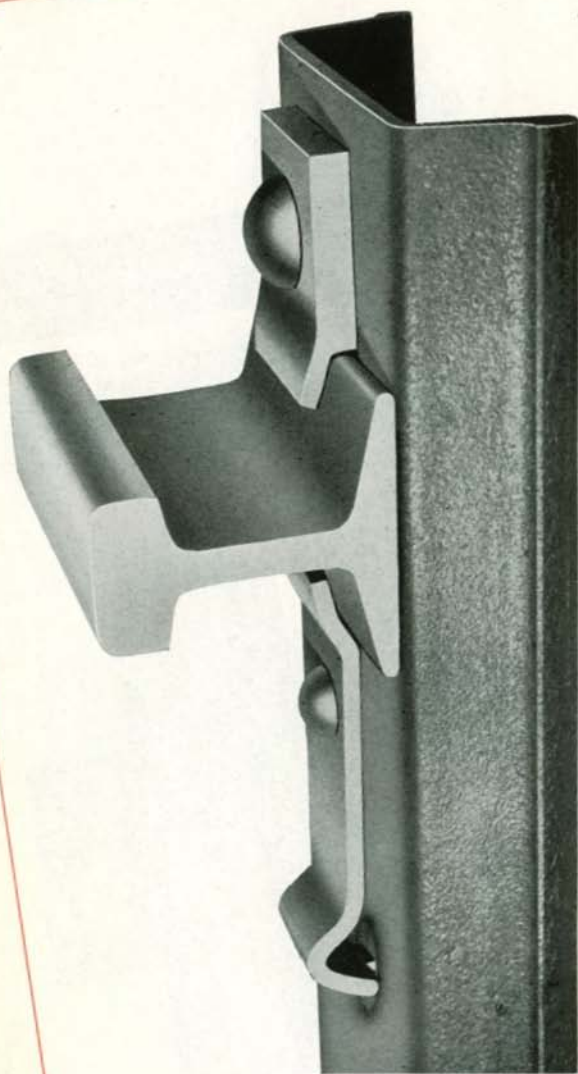
GENERAL ARRANGEMENT OF ROOM TIE
COMPLETE WITH SPECIAL CLIPS FOR USE WITH SLIDE RAIL



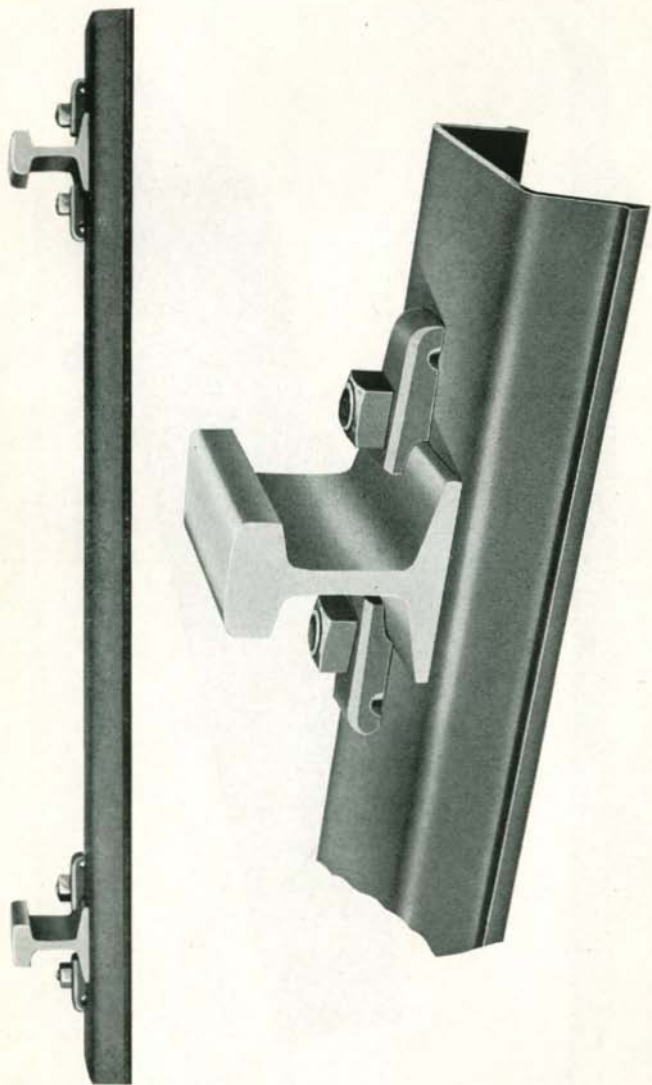
GENERAL ARRANGEMENT M19A WITH No. 26 CLIP
EQUIPPED WITH SQUARE HEAD RIVET FOR BALLING THE RAIL



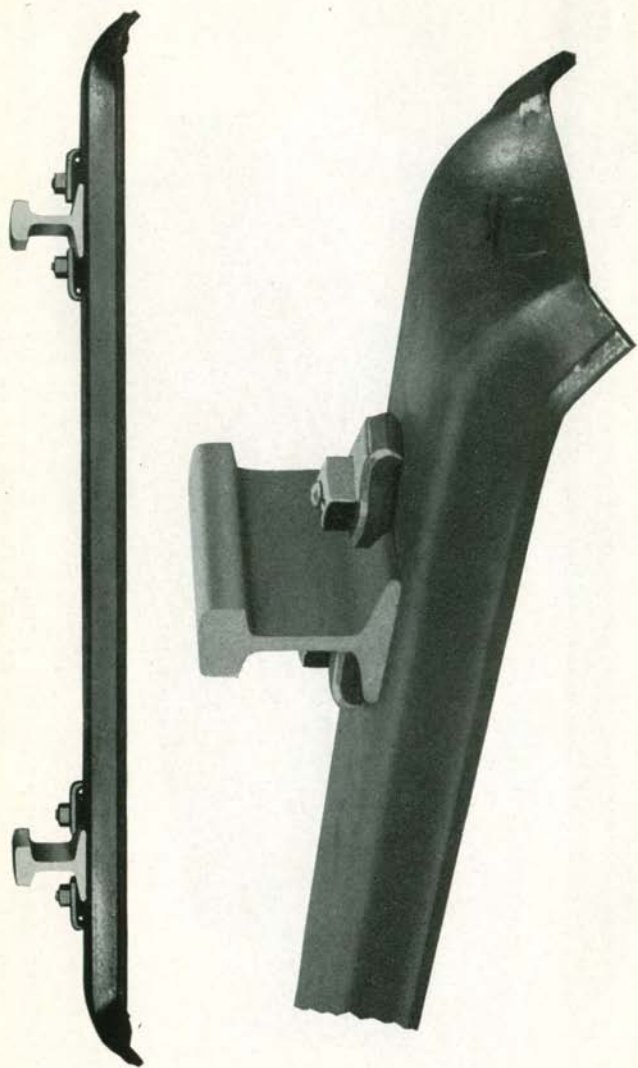
GENERAL ARRANGEMENT M26A TIE WITH No. 26 J JOINT CLIP



GENERAL ARRANGEMENT M 20 TIE WITH No. 120 CLIP OUTSIDE AND No. 26 CLIP INSIDE



GENERAL ARRANGEMENT M 27 TIE WITH 60 LB. A. S. C. E. RAIL AND No. 23 CLIPS AND BOLTS.
MAIN ENTRY AND HAULAGE TRACKS



GENERAL ARRANGEMENT M 27 TIE WITH No. 23 CLIPS AND BOLTS
BENT ENDS

INFORMATION REQUIRED ON STEEL TIE ORDERS

To save delay and facilitate the execution of steel tie orders, the following information must be supplied:

1. Section of Tie.
2. Type of Fastenings.
3. Track Gauge.
4. Section of Rail (weight and type).

The lengths of Mine Tie sections M-19-A and M-26-A are standardized, depending on the track gauge and rail section, and may be determined by adding to the gauge, the width of the head of the rail, plus the width of the base, plus $4\frac{5}{8}$ inches. When ordering it is only necessary to give the track gauge and rail section; suitable lengths will be furnished.

Table of lengths and weights of Mine Tie sections M-19-A and M-26-A, for various rail sections and track gauges, are given on following pages.

TABLE I
 TABLE OF LENGTHS AND WEIGHTS OF M-19-A UNDER A. S. C. E. RAILS
 Exclusive of Fastenings

Rail Section	Length, In. Weight, Lbs.	Gauge, Inches									
		20	24	30	32	36	40	42	44	48	56½
1240	Length Weight	27½ 5.76	31½ 6.59	37½ 7.84	39½ 8.26	43½ 9.09	47½ 9.92	49½ 10.34	51½ 10.76	55½ 11.59	64½ 13.36
1640	Length Weight	28½ 5.86	32½ 6.69	38½ 7.94	40½ 8.36	44½ 9.20	48½ 10.02	50½ 10.44	52½ 10.86	56½ 11.69	64½ 13.47
2040	Length Weight	28½ 5.95	32½ 6.78	38½ 8.03	40½ 8.45	44½ 9.29	48½ 10.10	50½ 10.52	52½ 10.94	56½ 11.77	65½ 13.54
2540	Length Weight	28½ 6.02	32½ 6.85	38½ 8.10	40½ 8.52	44½ 9.35	48½ 10.18	50½ 10.60	52½ 11.02	56½ 11.84	65½ 13.62
3040	Length Weight	29½ 6.13	33½ 6.97	39½ 8.22	41½ 8.63	45½ 9.47	49½ 10.30	51½ 10.72	53½ 11.13	57½ 11.97	65½ 13.74
3540	Length Weight	29½ 6.19	33½ 7.02	39½ 8.27	41½ 8.69	45½ 9.52	49½ 10.35	51½ 10.77	53½ 11.19	57½ 12.02	66½ 13.79
4040	Length Weight	30 6.25	34 7.08	40 8.33	42 8.75	46 9.58	50 10.41	52 10.83	54 11.25	58 12.08	66½ 13.85
4540	Length Weight	30½ 6.32	34½ 7.15	40½ 8.40	42½ 8.82	46½ 9.65	50½ 10.48	52½ 10.90	54½ 11.32	58½ 12.15	66½ 13.92

Weight per Tie of 2-No. 26 and 2-No. 26 AA-1 clips and 6 rivets = 3.08 lbs.
 " " " " " " " " " " " " " " " " " "
 "
 "

TABLE 2

TABLE OF LENGTHS AND WEIGHTS OF M-26-A UNDER A. S. C. E. RAILS
Exclusive of Fastenings

Rail Section	Length, In. Weight, Lbs.	Gauge, Inches										
		20	24	30	32	36	40	42	44	48	56 1/2	
1240	Length Weight	27 3/8 7.48	31 1/8 8.56	37 3/8 10.19	39 3/8 10.73	43 3/8 11.81	47 3/8 12.89	49 3/8 13.43	51 3/8 13.97	55 3/8 15.05	64 1/8 17.36	
1640	Length Weight	28 1/4 7.60	32 1/4 8.68	38 1/4 10.30	40 1/4 10.84	44 1/4 11.92	48 1/4 13.00	50 1/4 13.54	52 1/4 14.08	56 1/4 15.16	64 3/4 17.46	
2040	Length Weight	28 1/2 7.72	32 1/2 8.80	38 1/2 10.42	40 1/2 10.95	44 1/2 12.03	48 1/2 13.11	50 1/2 13.65	52 1/2 14.19	56 1/2 15.27	65 1/2 17.57	
2540	Length Weight	28 3/8 7.82	32 3/8 8.90	38 3/8 10.52	40 3/8 11.06	44 3/8 12.14	48 3/8 13.23	50 3/8 13.78	52 3/8 14.32	56 3/8 15.40	65 3/8 17.70	
3040	Length Weight	29 1/8 7.97	33 1/8 9.05	39 1/8 10.68	41 1/8 11.22	45 1/8 12.30	49 1/8 13.39	51 1/8 13.93	53 1/8 14.47	57 1/8 15.55	65 1/2 17.85	
3540	Length Weight	29 1/2 8.04	33 1/2 9.12	39 1/2 10.75	41 1/2 11.29	45 1/2 12.37	49 1/2 13.45	51 1/2 13.99	53 1/2 14.54	57 1/2 15.61	66 3/8 17.92	
4040	Length Weight	30 8.13	34 9.21	40 10.83	42 11.37	46 12.45	50 13.53	52 14.07	54 14.61	58 15.71	66 1/2 18.01	
4540	Length Weight	30 1/2 8.21	34 1/2 9.29	40 1/2 10.91	42 1/2 11.45	46 1/2 12.53	50 1/2 13.61	52 1/2 14.15	54 1/2 14.69	58 1/2 15.77	66 3/4 18.09	

For weights of standard fastenings, see Table 1.

Weight per Tie of 2-No. 26 J and 2-No. 26 AA-1 clips and 6 rivets = 3.88 lbs.

" = 3.90 "

" = 3.92 "

TABLE 3

TABLE OF LENGTHS AND WEIGHTS OF M-19-A UNDER A. R. A. RAILS
Exclusive of Fastenings

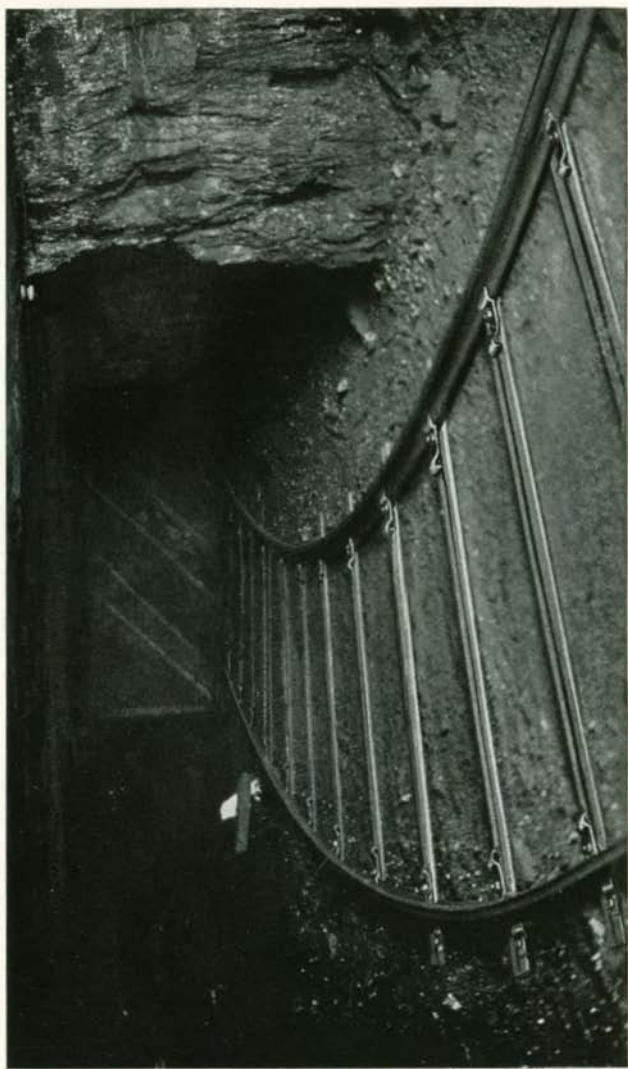
Rail Section	Length, In. Weight, Lbs.	Gauge, Inches									
		20	24	30	32	36	40	42	44	48	56 ¹ / ₂
1230	Length	27 ¹ / ₄	31 ¹ / ₄	37 ¹ / ₄	39 ¹ / ₄	43 ¹ / ₄	47 ¹ / ₄	49 ¹ / ₄	51 ¹ / ₄	55 ¹ / ₄	63 ³ / ₄
	Weight	5.68	6.51	7.76	8.18	9.01	9.84	10.26	10.68	11.51	13.28
1630	Length	27 ¹ / ₁₆	31 ¹ / ₁₆	37 ¹ / ₁₆	39 ¹ / ₁₆	43 ¹ / ₁₆	47 ¹ / ₁₆	49 ¹ / ₁₆	51 ¹ / ₁₆	55 ¹ / ₁₆	64 ¹ / ₁₆
	Weight	5.77	6.60	7.85	8.27	9.10	9.94	10.35	10.77	11.60	13.37
2030	Length	28 ¹ / ₂	32 ¹ / ₂	38 ¹ / ₂	40 ¹ / ₂	44 ¹ / ₂	48 ¹ / ₂	50 ¹ / ₂	52 ¹ / ₂	56 ¹ / ₂	64 ¹ / ₂
	Weight	5.85	6.68	7.93	8.35	9.18	10.01	10.43	10.85	11.68	13.45
2530	Length	28 ⁹ / ₁₆	32 ⁹ / ₁₆	38 ⁹ / ₁₆	40 ⁹ / ₁₆	44 ⁹ / ₁₆	48 ⁹ / ₁₆	50 ⁹ / ₁₆	52 ⁹ / ₁₆	56 ⁹ / ₁₆	65 ¹ / ₁₆
	Weight	5.95	6.78	8.03	8.45	9.28	10.12	10.53	10.95	11.78	13.55
3030	Length	28 ⁷ / ₃₂	32 ⁷ / ₃₂	38 ⁷ / ₃₂	40 ⁷ / ₃₂	44 ⁷ / ₃₂	48 ⁷ / ₃₂	50 ⁷ / ₃₂	52 ⁷ / ₃₂	56 ⁷ / ₃₂	65 ¹ / ₃₂
	Weight	6.02	6.85	8.10	8.52	9.35	10.18	10.60	11.02	11.85	13.62
3530	Length	29 ³ / ₃₂	33 ³ / ₃₂	39 ³ / ₃₂	41 ³ / ₃₂	45 ³ / ₃₂	49 ³ / ₃₂	51 ³ / ₃₂	53 ³ / ₃₂	57 ³ / ₃₂	65 ³ / ₃₂
	Weight	6.10	6.93	8.18	8.60	9.43	10.26	10.68	11.10	11.93	13.70
4030	Length	29 ⁹ / ₁₆	33 ⁹ / ₁₆	39 ⁹ / ₁₆	41 ⁹ / ₁₆	45 ⁹ / ₁₆	49 ⁹ / ₁₆	51 ⁹ / ₁₆	53 ⁹ / ₁₆	57 ⁹ / ₁₆	66 ¹ / ₁₆
	Weight	6.16	6.99	8.24	8.66	9.49	10.32	10.74	11.16	11.99	13.76
4530	Length	29 ¹ / ₁₆	33 ¹ / ₁₆	39 ¹ / ₁₆	41 ¹ / ₁₆	45 ¹ / ₁₆	49 ¹ / ₁₆	51 ¹ / ₁₆	53 ¹ / ₁₆	57 ¹ / ₁₆	66 ¹ / ₁₆
	Weight	6.24	7.07	8.32	8.74	9.57	10.40	10.82	11.24	12.07	13.84

Weight per Tie of 2-No. 26 and 2-No. 26 AA-3 clips and 6 rivets = 3.12 lbs.
 " " " " " " " " 26 AA-4 " " " " = 3.16 " "
 " " " " " " " " 26 AA-3 " " " " = 3.92 " "
 " " " " " " " " 26 AA-4 " " " " = 3.96 " "

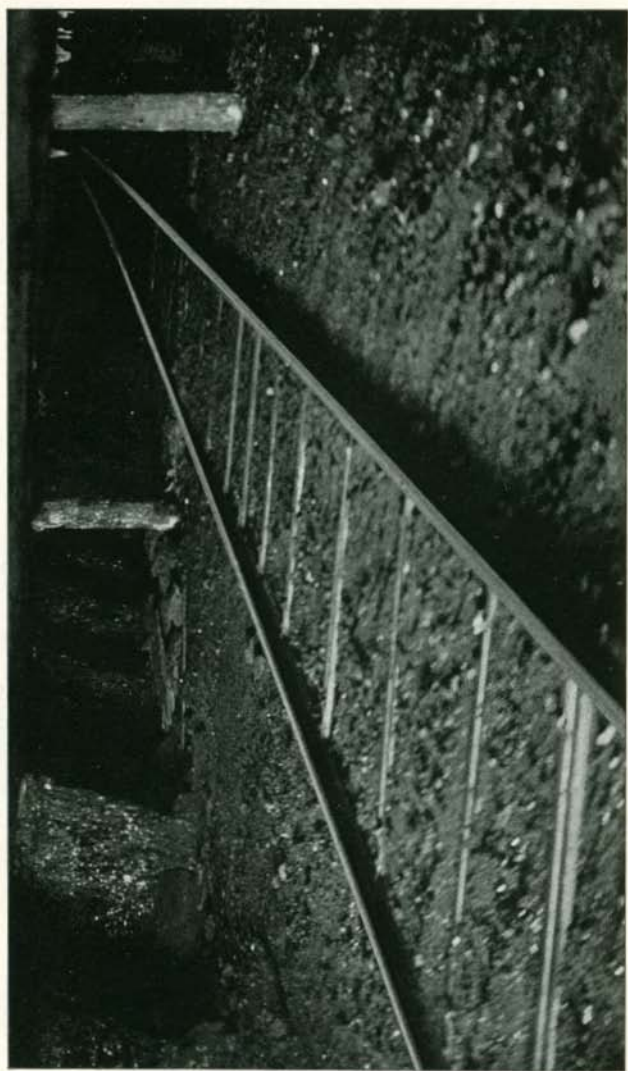
TABLE 4
TABLE OF LENGTHS AND WEIGHTS OF M-26-A UNDER A. R. A. RAILS
Exclusive of Fastenings

Rail Section	Length, In. Weight, Lbs.	Gauge, Inches										
		20	24	30	32	36	40	42	44	48	56½	
1230	Length	27 ¹¹ / ₁₆	31 ¹¹ / ₁₆	37 ¹¹ / ₁₆	39 ¹¹ / ₁₆	43 ¹¹ / ₁₆	47 ¹¹ / ₁₆	49 ¹¹ / ₁₆	51 ¹¹ / ₁₆	55 ¹¹ / ₁₆	63 ¹¹ / ₁₆	
	Weight	7.39	8.46	10.06	10.60	11.71	12.80	13.34	13.88	14.96	17.13	
1630	Length	27 ¹¹ / ₁₆	31 ¹¹ / ₁₆	37 ¹¹ / ₁₆	39 ¹¹ / ₁₆	43 ¹¹ / ₁₆	47 ¹¹ / ₁₆	49 ¹¹ / ₁₆	51 ¹¹ / ₁₆	55 ¹¹ / ₁₆		
	Weight	7.50	8.58	10.20	10.74	11.82	12.91	13.45	13.99	15.07	17.38	
2030	Length	28 ³ / ₁₆	32 ³ / ₁₆	38 ³ / ₁₆	40 ³ / ₁₆	44 ³ / ₁₆	48 ³ / ₁₆	50 ³ / ₁₆	52 ³ / ₁₆	56 ³ / ₁₆		
	Weight	7.60	8.68	10.30	10.84	11.92	13.00	13.54	14.08	15.16	17.48	
2530	Length	28 ⁹ / ₁₆	32 ⁹ / ₁₆	38 ⁹ / ₁₆	40 ⁹ / ₁₆	44 ⁹ / ₁₆	48 ⁹ / ₁₆	50 ⁹ / ₁₆	52 ⁹ / ₁₆	56 ⁹ / ₁₆		
	Weight	7.73	8.82	10.44	10.98	12.06	13.14	13.69	14.23	15.31	17.62	
3030	Length	28 ³ / ₁₆	32 ³ / ₁₆	38 ³ / ₁₆	40 ³ / ₁₆	44 ³ / ₁₆	48 ³ / ₁₆	50 ³ / ₁₆	52 ³ / ₁₆	56 ³ / ₁₆		
	Weight	7.82	8.91	10.53	11.07	12.15	13.23	13.78	14.32	15.40	17.70	
3530	Length	29 ³ / ₁₆	33 ³ / ₁₆	39 ³ / ₁₆	41 ³ / ₁₆	45 ³ / ₁₆	49 ³ / ₁₆	51 ³ / ₁₆	53 ³ / ₁₆	57 ³ / ₁₆		
	Weight	7.92	9.01	10.63	11.17	12.25	13.33	13.88	14.42	15.50	17.80	
4030	Length	29 ⁹ / ₁₆	33 ⁹ / ₁₆	39 ⁹ / ₁₆	41 ⁹ / ₁₆	45 ⁹ / ₁₆	49 ⁹ / ₁₆	51 ⁹ / ₁₆	53 ⁹ / ₁₆	57 ⁹ / ₁₆		
	Weight	8.00	9.09	10.71	11.25	12.33	13.41	13.96	14.50	15.58	17.89	
4530	Length	29 ¹⁵ / ₁₆	33 ¹⁵ / ₁₆	39 ¹⁵ / ₁₆	41 ¹⁵ / ₁₆	45 ¹⁵ / ₁₆	49 ¹⁵ / ₁₆	51 ¹⁵ / ₁₆	53 ¹⁵ / ₁₆	57 ¹⁵ / ₁₆		
	Weight	8.10	9.19	11.81	11.35	12.44	13.52	14.06	14.60	15.68	17.99	

For weights of fastenings, see Table 3

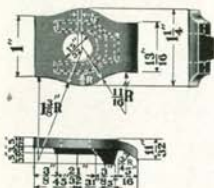


TRACK LAID WITH CARNEGIE STEEL TIES

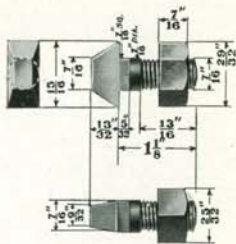


TRACK LAID WITH CARNEGIE STEEL TIES

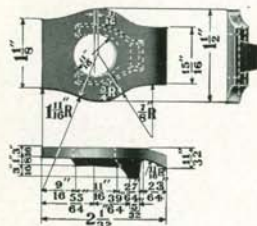
DROP FORGED RAIL CLIPS



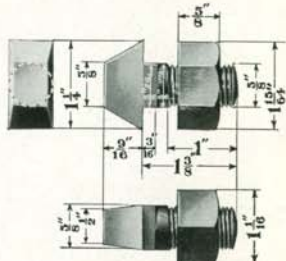
RAIL CLIP N^o 7



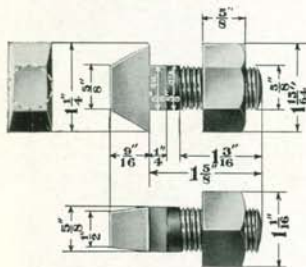
BOLT FOR N^o 7 CLIP



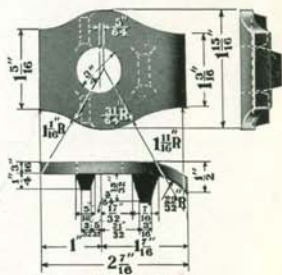
RAIL CLIP N^o 10



BOLT FOR N^o 10 CLIP



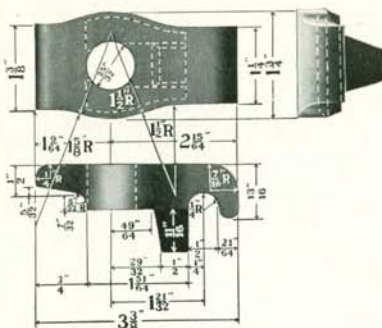
BOLT FOR N^o 18 CLIP



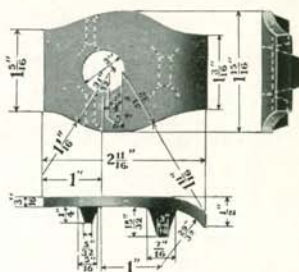
RAIL CLIP N^o 18

Clip Number	Finished Weight, Pounds		Fastenings for	
	Clip Only	Clip Bolt Nut	Tie Sections	Rail Sections
7	0.10	0.21	M 19 A	8 to 14 lb. A. S. C. E.
10	0.13	0.48	M 19 A, M 26 A	16 to 20 lb. A. S. C. E.
18	0.21	0.58	M 19 A, M 26 A, M 18, M 20	25 to 40 lb. A. S. C. E.

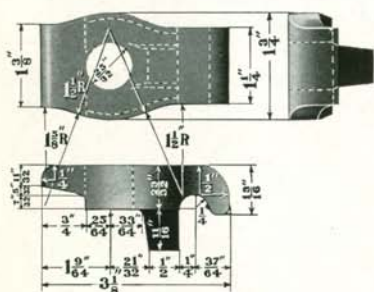
DROP FORGED RAIL CLIPS



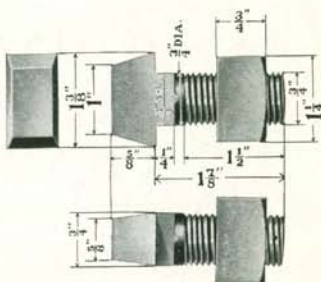
RAIL CLIP No 23B



RAIL CLIP No 18 A



RAIL CLIP No 23



BOLT For No 23 CLIP

Clip Number	Finished Weight, Pounds		Fastenings for	
	Clip Only	Clip Bolt Nut	Tie Sections	Rail Sections
18 A	0.31	0.68	M 19 A, M 26 A, M 18, M 20	25 to 40 lb. A. S. C. E.
23	0.70	1.26	M 20, M 27, M 27 A	45 to 75 lb. A. S. C. E.
23 B	0.80	1.36	M 20, M 27, M 27 A	45 to 75 lb. A. S. C. E.

NOTE:—Ties punched for Clip No. 23 B outside and No. 23 inside, or punched for Clip No. 18 A outside and No. 18 inside will make a variation of 1/2" in gage by reversing the clips on both rails.

MAIN ENTRIES

COMPARISON OF COSTS BETWEEN STEEL TIES AND WOOD TIES

In some mines having dry roadways, the average life of the wood tie on main haulage is 24 months. The life of a steel tie has not been definitely determined but may last from 13 to 15 years. The following calculations have been based on only a ten-year life. It has been found necessary to place wood ties 18" center to center. Steel Ties have been tried on 24", 30" and 36" centers, and 30" center to center has been found the most satisfactory. Estimate below is for 100 feet of track, 38" gauge:—

67	5' x 6' x 5½-ft. Wood Ties @ 28c.....	\$ 18.76	
4	Renewals within ten-year period.....	75.04	
	Cost of laying original track.....	25.00	
	Cost of labor replacing ties four times @ \$50.00 per replacement.....	200.00	
	Spikes.....	16.14	
		\$334.94	
40	M-27 Steel Ties with No. 23 clips and bolts, (life ten years) @ \$1.64.....	\$ 65.60	
	Cost of laying.....	25.00	90.60
		\$244.34	
	Net saving per 100-ft. of entry in ten years...		\$244.34

The above figures are subject to local and market conditions.

WEIGHT OF CLIPS AND BOLTS FOR STEEL TIES

Clip No.	Weight per Foot Pounds	Weight per Clin Finished Pounds	Size of Bolt Required Inches	Weight of Bolt and Nut Pounds	Total Wt. of One Fastening Pounds	Steel Tie Section Required	Size of Bolt Hole in Tie Inches	Rails to Which Fastenings Apply
7	0.10	0.10	$\frac{3}{16} \times 1\frac{1}{2}$	11 Hex. Nut	0.21	M-19 A, M-26 A,	$\frac{13}{16} \times \frac{1}{2}$ Rect.	12 lb. A. S. C. E.
10	0.13	0.13	$\frac{3}{8} \times 1\frac{3}{8}$	35 "	0.48	M-19 A, M-26 A,	$\frac{13}{16} \times \frac{13}{16}$ "	16 to 20 lb. A. S. C. E.
18	0.21	0.21	$\frac{3}{8} \times 1\frac{1}{2}$	37 "	0.58	M-26 A, M-18, M-20	$\frac{13}{32} \times \frac{13}{16}$ "	25 to 40 lb. A. S. C. E.
18-A	0.31	0.31	$\frac{3}{8} \times 1\frac{1}{2}$	37 "	0.68	M-26 A, M-18, M-20	$\frac{17}{64} \times \frac{13}{16}$ "	25 to 40 lb. A. S. C. E.
23	0.70	0.70	$\frac{3}{4} \times 1\frac{7}{8}$	56 Sq. Nut	1.26	M-20, M-27, M-27 A	$\frac{19}{16} \times \frac{13}{16}$ "	45 to 75 lb. A. S. C. E.
23-B	0.80	0.80	$\frac{3}{4} \times 1\frac{7}{8}$	56 "	1.36	M-20, M-27, M-27 A	$\frac{13}{16} \times \frac{13}{16}$ "	45 to 75 lb. A. S. C. E.
26	0.70	0.70	$\frac{1}{2} \times 1\frac{1}{4}$ Rivet	12 Rivet	0.82	M-18, M-20 M-19 A, M-26 A,	$\frac{17}{32} \times \frac{19}{32}$ Oval	12 to 45 lb. A. S. C. E. 12 to 45 lb. A. R. A.
26-J	1.10	1.10	$\frac{1}{2} \times 1\frac{1}{4}$ Rivet	12 "	1.22	M-18, M-20 M-19 A, M-26 A	$\frac{17}{32} \times \frac{19}{32}$ "	12 to 45 lb. A. S. C. E. 12 to 45 lb. A. R. A.
26-K	0.40	0.40	$\frac{1}{2} \times 1\frac{1}{4}$ Rivet	12 "	0.52	M-18, M-20 M-19 A, M-26 A	$\frac{17}{32}$ Round	12 to 45 lb. A. S. C. E. 12 to 45 lb. A. R. A.
26 AA-1	1.75	0.48	$\frac{1}{2} \times 1\frac{1}{4}$ Rivet	24 "	0.72	M-19 A, M-26 A	$\frac{17}{32} \times \frac{19}{32}$ Oval	12 to 20 lb. A. S. C. E.
26 AA-2	1.80	0.49	$\frac{1}{2} \times 1\frac{1}{4}$ Rivet	24 "	0.73	M-18, M-19 A, M-26 A	$\frac{17}{32} \times \frac{19}{32}$ "	25 to 30 lb. A. S. C. E.
26 AA-3	1.85	0.50	$\frac{1}{2} \times 1\frac{1}{4}$ Rivet	24 "	0.74	M-18, M-20 M-19 A, M-26 A	$\frac{17}{32} \times \frac{19}{32}$ "	35 to 45 lb. A. S. C. E. 12 to 20 lb. A. R. A.
26 AA-4	1.91	0.52	$\frac{1}{2} \times 1\frac{1}{4}$ Rivet	24 "	0.76	M-18, M-20 M-19 A, M-26 A	$\frac{17}{32} \times \frac{19}{32}$ "	25 to 45 lb. A. R. A.
120	5.6	0.81	$\frac{3}{4} \times 2\frac{1}{2}$ Rivet	44 "	1.25	M-18, M-20, M-27 M-27 A	$\frac{13}{16}$ Round	25 to 50 lb. A. S. C. E. 25 to 50 lb. A. R. A.

CARNEGIE STEEL COMPANY

PRODUCTS

BLAST FURNACE PRODUCTS

Basic Pig Iron
Bessemer Pig Iron
Ferro-Manganese

Ballast Slag
Bank Slag
Concrete Slag

Crushed Slag
Granulated Slag
Sand Slag

ROLLING MILL PRODUCTS

Structural Products

C B Sections
Standard Beams
H Beams
Channels
Ship Building Channels
Car Building Sections
Bulb Angles
Angles
Tees
Elevator Tees
Conductor Tees
Zees
Cross Tie Sections
Carnegie Steel Sheet Piling
Miscellaneous Sections

Semi-Finished Products

Ingots
Blooms
Billets
Slabs
Sheet Bars

Plate Products

Sheared Plates—
Rectangular
Circular
Sketch
Universal-Mill Plates
Base Plates for Columns and
Machinery
Floor Plates
Skelp

Bar Products

Agricultural Sections
Angles
Automobile Body Sections
Automobile Bumper Sections
Automobile Rim Sections
Barrel Sections
Bevel Sections
Cam Sections
Can Ring Sections
Casement Sections
Channels
Concrete Reinforcement Bars
Cooperage Steel
Crescents
Flat Discs for Automobile Parts
Flat Rolled Steel
Flats under $\frac{1}{4}$ "
Grooved Flats
Half Ovals
Half Rounds
Hame Sections
Hexagons

Hoop and Band Steel
Key Sections
Locking Bar Sections
Magneto Sections
Neck Yoke Sections
Nut Sections
Ovals
Pipe Coupling Sections
Pole Cap Sections
Pole Sections
Round Cornered Squares
Round Edge Flats
Rounds
Scarfed Skelp
Skelp
Special Sections of Various Kinds
Spring Steel Sections
Square Edge Flats
Squares
Tees
Window Sash Sections
Zees

CARNEGIE STEEL COMPANY

PRODUCTS

ROLLING MILL PRODUCTS—Concluded

Wrought and Forged Steel Products

Axles—
Untreated
Annealed
Quenched and Tempered
Electric Railway Car
Steam Railroad Car
Locomotive Driving
Locomotive Trailing
Tender
Mine Car
Industrial Car
Armature Shafts—Carbon
Wheels—
Rim Toughened
Solid Wrought, Carbon Steel
Electric Railway
Steam Railroad
Industrial Car
Mine Locomotive
Industrial Locomotive
Crane Track
Miscellaneous Circular Sections
Fly Wheel Blanks for Trucks
Brake Drums for Trucks

Railroad Track Products

Standard Rails
Heavy Rails, 50 pounds and over
Light Rails, under 50 pounds
Miscellaneous Rails
G E O Track Material
Angle Splice Bars
Fish Plates
Tie Plates
Riser Plates
Frog Fillers
Reinforcing Bars
Screw Spikes
Track Spikes
Track Bolts
Cross Ties for Railroads
Cross Ties for Mine Track
Cross Ties for Portable Track

Fabricated Products

Steel Mine Timbers
Gangway Sets and Mine Props
Carnegie Steel Sheet Piling

GRADES

Open-Hearth Bessemer Open-Hearth Alloy
U S S Stainless and Heat Resisting Steels

COKE AND COKE BY-PRODUCTS

Blast Furnace Coke	Domestic or Nut Coke
Foundry Coke	Coke Breeze
Benzol—	Ammoniacal Liquor
Industrial Pure	Ammonium Sulphate
Industrial 90%	Crude Naphthalene
Motor	Tar
Toluol, Industrial	Creosote Oil
Xylol, Industrial	Cresylic Acid
Naphtha—	Phenol
Industrial Refined Light	Cresol
Industrial Crude Heavy	By-Product Coke Oven Gas
Industrial High Test	

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES OF
UNITED STATES STEEL CORPORATION

AMERICAN BRIDGE COMPANY

General Offices: 71 Broadway, New York, N. Y.

STEEL STRUCTURES OF ALL CLASSES

Bridges	Poles
Buildings	Towers
Columns	Turntables
Girders	Sub-Stations
Roof Trusses	Heroult Electric Furnaces
Barges	

AMERICAN SHEET AND TIN PLATE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

SHEET AND TIN MILL PRODUCTS FOR ALL PURPOSES

Black Sheets—	Galvanized Sheets—
Box Annealed	American Zinc Coated
Blue Annealed	Apollo Best Bloom
Metal Furniture	Apollo-Keystone
Vitreous Enameling	Corrugated
Special	Formed Roofing and Siding Products
Electrical Sheets	Bright Tin Plates—
Automobile Sheets	American Cokes
Full Finished Sheets	American Charcoals
U S S Stainless and	Terne Plates—
Heat Resisting Steel Sheets	American Ternes
Blued Sheets—	American Old Style Ternes
Keystone-Wellsville Polished	U. S. Eagle Ternes
Blued Stove Pipe Stock	Fire Door Ternes
—Long Terne Sheets	Keystone Long and Short Ternes
American Galvannealed Sheets	Tin Mill Black

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES OF
UNITED STATES STEEL CORPORATION

AMERICAN STEEL AND WIRE COMPANY

General Offices: 208 South La Salle Street, Chicago, Ill.

WIRE AND WIRE PRODUCTS

Aerial Tramways	Odd-Shaped Wire	Telegraph Wire
Bale Ties	Piano Wire	Telephone Wire
Barbed Wire	Plain Wire	Trolley Wire
Cold Rolled Strip Steel	Rail Bonds	Welding Wire
Concrete Reinforcement	Screw Stock	Wire Fence
Electrical Wire	Spikes	Wire Rope
Flat Wire	Springs	Wire for Manufacturing
Hoops	Steel Gates	U S S Stainless and
Nails	Steel Posts	Heat Resisting Steels
Netting	Tacks	

THE CANADIAN BRIDGE COMPANY, LTD.

General Offices: Walkerville, Ontario, Canada

STEEL STRUCTURES OF ALL CLASSES

Railway Bridges	Oil Storage Tanks
Highway Bridges	Poles, Galvanized
Ferry Aprons	Radio Masts, Galvanized
Mill Buildings	Towers, Galvanized
Office Buildings	Turntables

CANADIAN STEEL CORPORATION, LTD.

General Offices: Ojibway, Ontario, Canada

WIRE AND WIRE PRODUCTS

Bale Ties	Wire Hoops	Sheets, Galvanized—
Barbed Wire	Wire for Various Purposes	Apollo
Galvanized Wire	Chain Link Protective Fence	Apollo-Keystone
Plain Wire	Chain Link Protective Gates	Tin Plates--
Spring Wire	Steel Gates and Posts	Coke
Welding Wire	Concrete Reinforcement	Charcoal
Wire Fence	Staples	

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES OF
UNITED STATES STEEL CORPORATION

CYCLONE FENCE COMPANY

General Offices: Waukegan, Ill.

ORNAMENTAL AND PROTECTIVE FENCE

Chain Link Protective Fence	Chain Link Conveyor Belting
Chain Link Road Guard	Screen Cloth
Ornamental Iron Fence	Woven Wire Partitions
Ornamental Lawn Fence	

FEDERAL SHIPBUILDING AND DRY DOCK COMPANY

General Offices: Lincoln Highway, Kearny, N. J.

SHIPS AND STEEL FABRICATION

Builders and Repairers of—

Merchant Ships	Heavy Machine Work
Barges, Dredges, Lighters	Steel Fabrication

ILLINOIS STEEL COMPANY

General Offices: 208 South La Salle Street, Chicago, Ill.

ROLLED STEEL AND FORGED STEEL PRODUCTS

CB Sections	Flats under 1/4"	Spikes
Structural Shapes	Billets	Screw Spikes
Special Light Beams	Rails	Bolts
Plates	Splice Bars	Axles
Bars	Tie Plates	Wheels
U S S Stainless and Heat Resisting Steels		
Shapes	Bars	Special Sections
Plates		Semi-Finished Products

THE LORAIN STEEL COMPANY

General Offices: 545 Central Ave., Johnstown, Pa.

MINING COMPANY SPECIALTIES

Steel and Composite Mine Cars	Switches
Sectional Coal Conveyors	Switch Stands
Portable Face Conveyors	Track Layouts for Tipples
Collapsible Mine Post Jacks	Steel and Iron Castings
Frogs—	Drop Forgings
Cast Manganese Steel	Carriage Bolts
Cast Iron	Machine Bolts
Riveted Plate or	Track Bolts
Built-up Construction	

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES OF
UNITED STATES STEEL CORPORATION

NATIONAL TUBE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

NATIONAL WELDED AND NATIONAL-SHELBY

SEAMLESS STEEL TUBULAR PRODUCTS, SIZES FROM 1/8" TO 96" DIAMETER

Standard Pipe	Talbot Lined Pipe
Copper Steel Pipe	Cement Lined Pipe
Line Pipe, Casing, Tubing	Trolley Poles, Line Poles
Drive Pipe	Cylinders, Seamless Couplings
Rotary Drill Pipe	Rotary Rolled Pipe
Hammer-weld Pipe	Electric Welded Pipe
Boiler Tubes	U S S Stainless and
Seamless Mechanical Tubing	Heat Resisting Steels—
Special Dipped and Coated Pipe	Pipes and Tubes

OIL WELL SUPPLY COMPANY

General Offices: Clark Building, Pittsburgh, Pa.

OIL FIELD DRILLING AND PUMPING EQUIPMENT

"OILWELL", "IMPERIAL", "WILSON-SNYDER" AND "ERIE BALL" PRODUCTS

Drop Forgings	Swaged Nipples and Bull Plugs
Steel and Iron Castings	Special Fittings
Erie Ball Steam Engines	Wilson-Snyder Pumping Machinery

TENNESSEE COAL, IRON AND RAILROAD COMPANY

General Offices: Brown-Marx Building, Birmingham, Ala.

ROLLED STEEL, CAST AND HEAVY FORGED STEEL PRODUCTS

Structural Shapes	Steel Castings	Pig Iron
Plates	Rails	Sheets—
Bars	Rail Accessories	Black
Flats	Axles	Blue Annealed
Cotton Ties	Forgings	Galvanized

UNIVERSAL ATLAS CEMENT COMPANY

General Offices: 208 South La Salle St., Chicago, Ill.

Atlas Portland Cement	Atlas Lumnite Cement
Universal Portland Cement	Atlas White Portland Cement
Atlas Waterproofed White Portland Cement	

CARNEGIE STEEL COMPANY

PUBLICATIONS

- Pocket Companion
- Carnegie Shape Book
- Rails and Angle Bars
- Railway Steel Cross Ties
- Light Rails—Mine and Industrial Steel Cross Ties
- GEO Track Construction
- Wrought Steel Wheels and other Circular Sections
- Forged Steel Axles
- Standard Specifications
- Carnegie Steel Sheet Piling
- Steel Weights and Measures
- The Making, Shaping and Treating of Steel
- Methods of Chemical Analysis of Various Products, etc.
- U S S Stainless and Heat Resisting Alloy Steels

CARNEGIE STEEL COMPANY

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

OFFICES

GENERAL OFFICES:

Pittsburgh, Carnegie Building, 434 Fifth Avenue.

DISTRICT OFFICES:

Birmingham, Brown-Marx Building, 2000 First Avenue, North,
Boston, Statler Office Building, 20 Providence Street,
Buffalo, The Marine Trust Co. Building, 233-239 Main Street,
Chicago, 208 South La Salle Street,
Cincinnati, Union Trust Building, Fourth and Walnut Streets,
Cleveland, Rockefeller Building, 614 Superior Avenue, N. W.,
Denver, First National Bank Building, 17th and Stout Streets,
Detroit, Buhl Building, 535 Griswold Street,
New Orleans, Maison Blanche, 921 Canal Street,
New York, Empire Building, 71 Broadway,
Philadelphia, Widener Building, Chestnut and Juniper Streets,
Pittsburgh, Carnegie Building, 434 Fifth Avenue,
St. Louis, Mississippi Valley Trust Building, 506 Olive Street,
St. Paul, Merchants National Bank Building, Fourth & Robert Sts.,
Washington, Wilkins Building, 1512 H Street, N. W.

EXPORT DISTRIBUTORS:

UNITED STATES STEEL PRODUCTS CO.

New York, Hudson Terminal Building, 30 Church Street.

PACIFIC COAST DISTRIBUTORS:

COLUMBIA STEEL CO.

San Francisco, Russ Building, 235 Montgomery Street,
Los Angeles, 2087 East Slauson Avenue,
Portland, 777 Nicolai Street,
Seattle, Fourth Avenue South and Connecticut Street,
Honolulu, T. H., Castle and Cook Building.

