NUMBER 7

INLAND STEEL PRODUCTS

INLAND STEEL CO.

B224

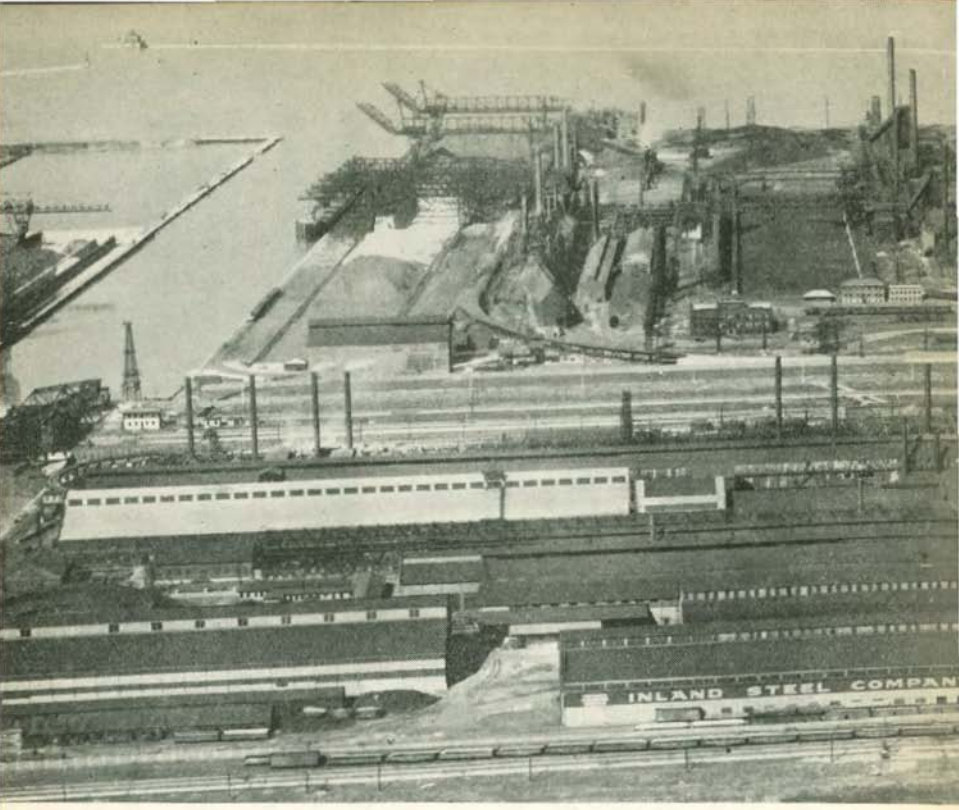
INLAND STEEL PRODUCTS

SEVENTH EDITION

This Book, replacing the sixth edition of the "Inland Products Book," is published to aid you in selecting the best steel for your requirements. As it does not catalog all the details or possible variations of the steel products rolled, we hope you will call on us for additional information and samples whenever needed. Booklets containing base prices, extras and deductions for each product are published and will be sent at your request.

SHEETS - STRIP - TIN PLATE - BARS - PLATES - FLOOR PLATES
STRUCTURALS - PILING - REINFORCING BARS - RAILS AND
TRACK ACCESSORIES - RAIL STEEL

INLAND STEEL CO.
GENERAL OFFICES: 38 SOUTH DEARBORN ST., CHICAGO, ILL.
SALES OFFICES: MILWAUKEE - DETROIT - ST. PAUL - ST. LOUIS - KANSAS CITY - CINCINNATI



MODERN PLANT SPEEDS SERVICE

With Outstanding Advantages in Quality Control

Since the opening of its first mill in 1893 personal interest and dependable service to customers has been among the major aims and achievements of the Inland organization.

Inland's modern equipment and straight line production methods assure prompt handling of orders with highly effective laboratory control over quality and uniformity at every stage of the process. The major part of Inland's present equipment has been installed within the last few years, and gives the customer full advantage of the most modern steel making processes and equipment.

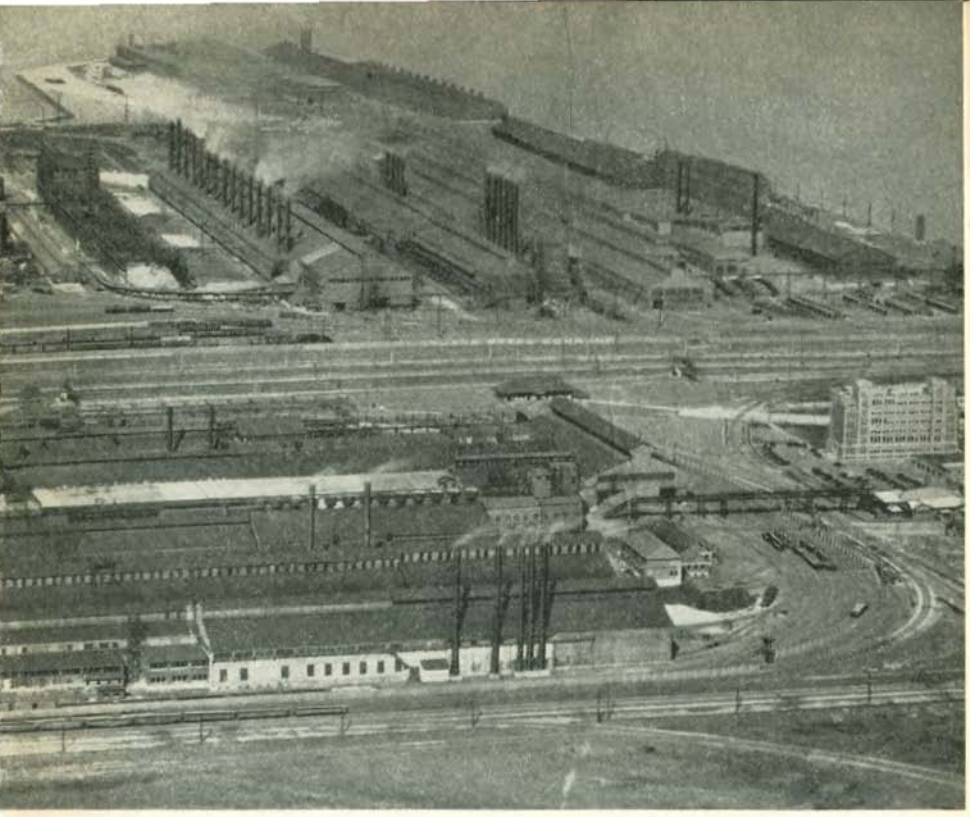
Inland's executive offices are also immediately at hand for prompt, unified control over all schedules and operations, and give a flexibility of service that is continually turned to the customer's advantage.

Uniform High Quality Materials

Ore and coal mines, a large limestone quarry and lake freighters to haul these materials are also operated under Inland ownership. This steady supply of high quality raw materials of unvarying characteristics enable Inland metallurgists to secure highly uniform results.

Service of District Offices

The representatives of each Inland district office are experienced both in the making of steel and in users' problems. These men are in daily touch with general offices and mill and co-operate quickly and intelligently in every customer relationship.



Aerial View of Indiana Harbor Plant

Engineering and Metallurgical Co-operation

Experienced engineers and metallurgists are regularly assigned to aid customers with any problems connected with the use of steel. These services are freely given without expense or obligation. You are invited to make use of them as often as the need or opportunity arises.

Other Inland Literature

Inland Hi-Steel (high strength low alloy). Booklet covers in detail the analysis, characteristics and uses of this weight-reducing, abrasion-and-rust-resisting alloy.

Inland Ledloy (lead bearing, free cutting, open hearth steel). Folder gives facts and figures of value to all who drill, cut or machine steel.

Inland Piling Catalog. Complete data on sections and accessories with illustrations of many important installations.

Inland 4-Way Floor Plate Catalog. Illustrated book on the subjects of floor safety and economy, with tables of sizes, weights, etc.

Inland Copper-Alloy. Booklet on uses of corrosion-resisting Copper-Alloy Steel.

Inland Enameling Iron. A descriptive bulletin on enameling iron sheets including information on analysis, characteristics and applications.

How Steel Is Made. An illustrated booklet, describing the important processes and methods used to make Inland quality steel.

Inland Steel Posts. Folder of specifications of rail steel posts for fences, signs and other uses.

Limestone. Illustrated book on the products and operations of the Inland Lime and Stone Co.

Agricultural Limestone. Pamphlet explaining and illustrating the beneficial effects of agricultural limestone.

Price and extra booklets are also issued on all major products.

INLAND COPPER-ALLOY

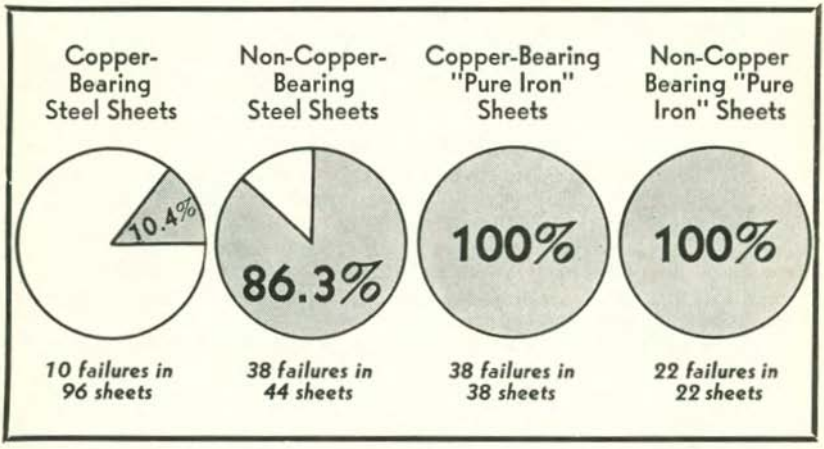
Corrosion Resistant Steel

Years of experience in service applications, as well as thousands of official government, technical society and private tests prove that copper alloyed steel resists atmospheric and most other corrosive conditions much better than ordinary carbon steel, without affecting other physical characteristics such as strength and workability. In most applications, service life many times that of ordinary carbon steel is obtained.

Inland Copper-Alloy is recommended for steel products used in the presence of moisture, whether indoors or out. The longer life of this material has been well established by numerous tests, such as those conducted by the Committee on Corrosion of Iron & Steel of the American Society for Testing Materials, railroads and other consuming organizations. Full data on these tests will be sent on request.

Inland Copper-Alloy can be specified for all rolled steel products at slight extra cost.

Copper-Alloy Steel Proves Superiority in Fort Sheridan Test.



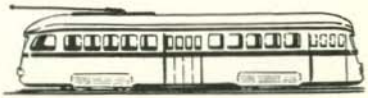
Percentage of Failure Chart showing supremacy of Copper-Alloy Sheets over other types of sheets when subjected to atmospheric corrosion. Test conducted by the A. S. T. M. at Fort Sheridan, Illinois, with 22 gage sheets. Duration of test—11 years.

Inland Copper-Alloy steel is most generally used in the manufacture of roofing, siding, freight cars, contractors and mine equipment and many similar applications subject to moisture and atmospheric corrosion.

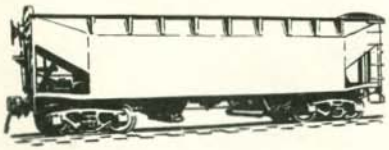
Write for Inland Copper-Alloy Steel Bulletin

INLAND HI-STEEL

Low Alloy, High Strength Steel



Inland Hi-Steel is a low alloy, high strength steel which has a minimum yield point of 55,000 and minimum tensile strength of 70,000 lbs. per sq. in. It was developed to provide a moderately low-cost and easily workable steel that would cut weight without loss of structural strength.



Because of its copper, nickel and phosphorus content its resistance to atmospheric corrosion is 2 to 3 times greater than that of copper bearing mild steel, and about five times greater than plain carbon steel. It has very good resistance to abrasion and remarkable impact values at low temperatures.

Inland Hi-Steel can be readily cut, punched, formed, and worked either hot or cold. It welds readily by gas, electric, arc, spot or resistance welding process, and its properties are not appreciably affected by these processes. Inland Hi-Steel reduces the dead weight and increases the pay load of rolling stock and moving equipment of every kind.

Among the principal users of Inland Hi-Steel are builders of railroad freight and passenger cars, trucks, buses, street cars, cranes, construction, mining equipment, etc.

While available in practically all rolled shapes, its most general uses are in sheets and plates used flat and formed into structural members to secure maximum strength with full benefit of weight reduction.

Chemical Composition

Carbon	0.12% Max.
Manganese	0.50—0.70%
Phosphorus	0.10—0.15%
Sulphur	0.05% Max.
Copper	0.90—1.25%
Nickel	0.45—0.65%

Physical Properties

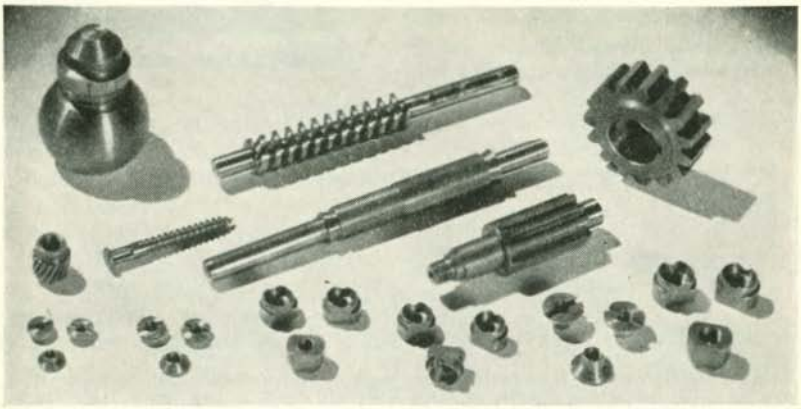
Average Physical Properties of Inland Hi-Steel compared to Structural Grade Carbon Steel in ¼" Plate.

	Inland Hi-Steel	Structural Grade Carbon Steel
Yield Strength	62,000 lbs. sq. inch	37,000 lbs. sq. inch
Ultimate Strength	74,000 lbs. sq. inch	66,000 lbs. sq. inch
% Elongation in 8"	24%	24%
% Reduction in Area	60%	53%
Endurance Limit (Fatigue Strength)	49,000 lbs. sq. inch	33,000 lbs. sq. inch

Write for our Bulletin containing complete information on Inland Hi-Steel.

INLAND LEDLOY

The New Lead-bearing, Fast Machining Open Hearth Steel



Typical Parts Made of Inland Ledloy Steel

Ledloy is the Inland Steel Company's copyrighted name for steel of any composition in which lead has been alloyed, and in which the lead has been uniformly dispersed throughout the steel.

The physical properties of Inland Ledloy are essentially the same as other steels of like analysis produced without the addition of lead. Strength, ductility and resistance to impact are unchanged within the limits of accuracy in testing.

There are no changes in the methods or results obtained by heat treatment or carburizing except for the effects resulting from the slightly smaller grain size. Its welding qualities are comparable with those of ordinary carbon steel.

Inland Ledloy forges the same as other steel of similar analysis. It fills the dies well and gives clean, sharp impressions with flash that is easily trimmed.

Inland Ledloy is produced in all hot rolled forms by the Inland Steel Co., and is cold finished by leading cold drawing concerns. Its advantages apply to all rolled shapes on which extensive machining operations are required.

Examples of Production Savings

Ledloy Plates Save on All Three Operations

A machine shop, making mold frames for the plastics industry, switched from hot rolled silicon killed plates to Ledloy, saving time and money—on all three operations in their production as follows: (1) Planing operation—a 20% heavier cut resulted in a 10% saving in time; (2) Milling operation—a 30% saving due to Ledloy's free-cutting qualities; (3) Drilling operation—speeds increased 15%. A further saving was made possible through the longer use of tools between grinding.

From 11 Seconds with SAE 1120 to 3½ Seconds with Ledloy 1115

An automobile parts manufacturer has reduced normal machining time on an operation from 11 seconds with standard SAE 1120 to 3½ seconds with Inland Ledloy 1115. He reports the finish with this increased speed, "excellent." This test case is opening the way to new economies on many other jobs in this and other automotive shops.

Inland Ledloy 1115 vs SAE-X1112

The following data shows how a screw machine jobbing company saved $41.23 on a typical production run of 50,000 bushings. The operations included form, drill, tap, ream inside and out and cut-off.

	SAE-X1112	Ledloy 1115
Spindle speed	1480 r.p.m.	1900 r.p.m.
O. D. surface speed	244 s.f.m.	311 s.f.m.
Parts per hour	654	838
Cost of material	$163.25	$165.00
Cost of fabrication	$157.76	$114.58
Production cost	$321.01	$279.58

Write for Inland Ledloy Bulletin

BLOOMS, BILLETS, SLABS

Basic Open-Hearth Semi-Finished Steel

We regularly roll high quality semi-finished steel to meet customers' specifications.

Blooms, Billets and Slabs are semi-finished steel products, hot rolled from ingots to approximate cross-sectional dimensions, with rounded corners.

They are cut either to specified weights or to specified lengths.

No invariable rule prevails for distinguishing between the terms blooms and billets, and they are frequently used interchangeably. The chief distinction between blooms and billets is the difference in cross-sectional area. Blooms and billets may be square or rectangular in section; slabs are rectangular. The following size distinctions are in general use:

Blooms: Cross-sectional area greater than 36 square inches.

Billets: Maximum cross-sectional area 36 square inches; minimum cross-sectional dimension, 1½".

Slabs: Minimum thickness, 1½"; the relationship between width and thickness generally produces a cross-sectional area of not less than 16 square inches.

Blooms, billets and slabs are commonly classified as rerolling quality, forging quality and special requirement forging quality.

Rerolling Quality

Squares

4", 5", 5½", 6" to 13", 13⅞", 15⅞", 18" inclusive

Round Cornered Squares

1½", 1⅝", 1¾", 2", 2⅛", 2⅛", 2¼", 2⅜", 2½", 2⅝", 2¾", 3", 3½", 3.71"

Slabs and Blooms

6½" to 14" x 1½" to 13"†
Over 14" to 22" x 2" to 13"
Over 22" to 30" x 3" to 13"
Over 30" to 40" x 3" to 10"
Over 40" to 50" x 3" to 8"

†*Indicates range. Not all intermediate sizes furnished.*

Rerolling Quality blooms, billets and slabs are suitable for hot rolling into products such as ordinary plates, shapes, strip, bars and wire rods.

They have rounded corners and are hot rolled, direct from ingots without reheating, and without surface conditioning, to the nominal or approximate dimensions given above.

Standard metallurgical practice requires specified chemical limits to be not less than those shown in the Manufacturers' Standard for Ladle Analysis. Check analyses, when made, are subject to Manufacturers' Standard Permissible Variations, Procedure I.

The commonly accepted size limitations for this classification are:

Squares: Cross-section not less than 1½" by 1½", with maximum radius for rounded corners of $\frac{3}{16}$" for each inch or fraction thereof of nominal sectional dimensions.

Rectangles other than squares: Minimum cross-sectional area 4½ square inches; minimum thickness 1½".

Information on maximum lengths will be furnished on request.

Forging Quality

Squares

4", 5", 5½", 6" to 13", inclusive

Slabs

6½" to 22" x 2" to 13"
(Minimum area 16 sq. inches)

Over 22" to 30" x 3" to 13"
Over 30" to 40" x 3" to 10"
Over 40" to 50" x 3" to 8"

We regularly furnish Forging Quality blooms, billets and slabs for making forgings, which after machining are free from injurious defects. The material is free from piping and undue segregations, and is selected for surface quality, or, if necessary, is prepared by chipping or other means for the elimination of injurious surface defects. This quality is always recommended when the finished product is to be heat-treated.

Standard metallurgical practice requires specified chemical limits to be not less than those shown in the Manufacturers' Standard for Ladle Analysis. Check analyses, when made, are subject to Manufacturers' Standard Permissible Variations, Procedure II.

The commonly accepted size limitations for this classification are:

Squares: Cross-sectional dimensions not less than 4" x 4".

Rectangles other than squares: Minimum cross-sectional area 15 square inches; minimum thickness 2".

Special Requirement Forging Quality

Forging quality blooms, billets and slabs are classified as Special Requirement Forging Quality when any of the following additional restrictive requirements is specified: (a) amount of discard, (b) segregation limitations based on check analysis, (c) extra restrictive allowances for check analysis as in Procedure III of Manufacturers' Standard Permissible Variations, (d) fracture tests, (e) etch tests, (f) microscopic examinations, (g) guaranteed heat-treatment results.

The size limitations for this classification are the same as those for Forging Quality.

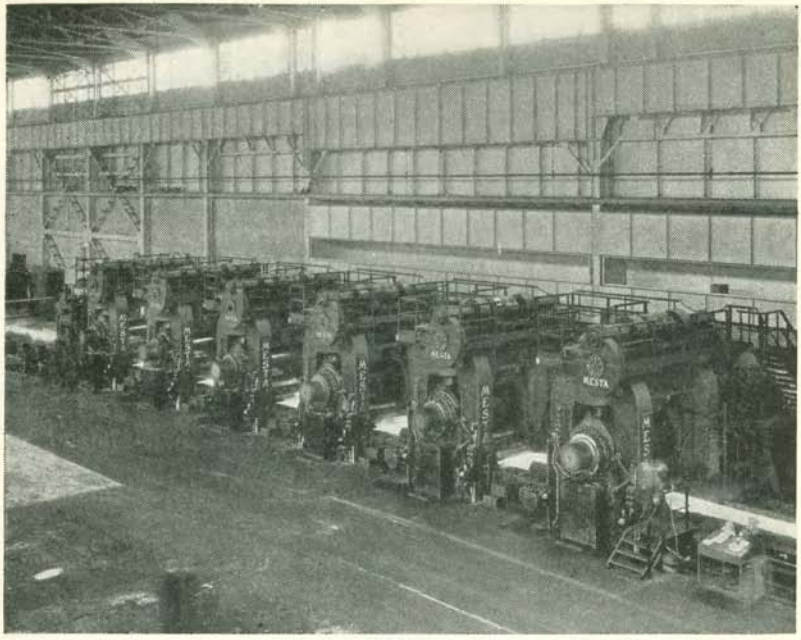
Information as to our maximum lengths will be furnished on request.

Sheet Bars

Sheet bars are a flat semi-finished product with rounded edges. They are hot rolled from ingots without intermediate surface conditioning, and usually without reheating. They are rolled to weight per linear foot, within a range of 7 to 54 pounds. The widths are 8 to 16 inches, but not all weights are rolled in any one width. Sheet bars are produced for rerolling into sheets and black plate.

Skelp, Tube Rounds and Wire Rods

We also roll skelp, tube rounds and certain sizes of wire rods and will be pleased to provide complete information on these products.



76" Continuous Sheet and Strip Mill

SHEET AND STRIP MILL PRODUCTS

"More and better flat rolled steel" — this persistent demand of steel users increases year by year. Many industries find new and growing needs for steel and iron sheets, plates, strip and tin plate.

Inland has more than kept pace by increasing its Flat Rolled production capacity 600% since 1923. A pioneer in modern steelmaking, with its great 76" Continuous Sheet Mill, Inland's facilities have been steadily improved and expanded. A 44" Continuous Sheet and Strip Mill with remarkable speed and accuracy was installed in 1938.

In addition to these increases in capacity, Inland has also made notable advancements in quality control and improvement of finishing operations . . . resulting in strip and sheets that are unsurpassed for workability and fine finish.

This phase of Inland's progress has led to the development of many special kinds of sheets and strip, few of which can be described or included in this general catalog. Such detailed information, however, can be readily obtained from our Metallurgical Department.

Inland engineers welcome the opportunity of assisting the user in the selection of sheets best suited to his purpose. Samples for practical tests are gladly furnished.

Inland Hot Rolled Strip

Gages and Sizes Rolled

Rolled Edges

Thickness	Narrow Widths	Wider Widths
.187" to .249"	⅝" to 4½"	6½" to 12"*
.120" to .249"	⅝" to 4½"	8⅞" to 12"
.109" to .249"	⅝" to 4 "	8⅞" to 12"
.093" to .249"	¾" to 4 "	8⅞" to 12"
.083" to .249"	⅞" to 3 "	8⅞" to 12"
.065" to .249"	1 " to 3 "	8⅞" to 12"
†.041" to .249"		8⅞" to 12"

The above sizes can be supplied in any desired lengths, but strip under 8⅞" wide is not supplied in coils. For concave Spring Steel sizes, see page 24.

*For wider widths, see Hot Rolled Sheets, page 11.

†.041" to .249" thicknesses are furnished in coils.

Slit Edges

Thickness	Width	Maximum Straight Lengths
.249" to .162"	4⅝" to 12"	240"
.161" to .105"	3 " to 12"	216"
.104" to .090"	3 " to 12"	192"
.089" to .041"	1¾" to 12"	192"
.179" to .074"	7¾" to 12"	Coils
.080" to .041"	1¾" to 12"	Coils

Inland Hot Rolled Strip is produced in narrow widths of from ⅝" to 12" inclusive. It is furnished in a wide range of physical properties for many manufacturing purposes. When ordering Inland Hot Rolled Strip, decimal thicknesses or fractions of an inch should be specified.

Inland Cold Rolled Strip

Inland Cold Rolled Strip is of the same quality and surface finish as Inland Cold Rolled Sheets and is furnished in widths up to 12".

Inland produces No. 2 finish (Regular bright finish, suitable for ordinary purposes) and No. 3 edge (Square, produced by slitting, not filed).

All 5 tempers are furnished — hard, half hard, quarter hard, soft and dead soft.

Size Range (Slit Edge)

1¾" to 12" x .078" and lighter. (Up to 230" in straight lengths; or longer lengths in Coils.)

Inland Hot Rolled Sheets

Gages and Sizes Rolled

SHEETS			COILS	
U.S.S. Gages Incl.	Maximum Width	Maximum Length	U.S.S. Gages Incl.	Widths Incl.
7 to 12	72"	240"	9 to 13	7¾" to 54"
13	68"	192"	14 to 18	1⅝" to 54"
14	66"	192"	19	1⅝" to 36"
15-16	60"	192"		
17-18	12" to 50"	230"		
19	12" to 48"	230"		
20 to 22	12" to 48"	144"		
22 to 24	12" to 48"	144"		
25 to 28	12" to 40"	144"		
25 to 28	Over 40" to 42"	120"		
25 to 28	Over 42" to 44"	96"		

Circular Sheets

U.S.S. Gages	Diameter	U.S.S. Gages	Diameter
7 to 12	12" to 72"	15 and 16	12" to 60"
13	12" to 68"	17 to 22	8" to 50"
14	12" to 66"	22 to 24 incl.	8" to 48"

These sheets have been formerly known as Hot Rolled and Hot Rolled Annealed. In 16 U.S.S. Gage and heavier, they have a smooth hot mill oxide and are preferred by manufacturers of tanks, truck bodies, lockers, farm implements, railroad cars and other products because of their long-standing reputation for smooth surface, gage uniformity and excellent forming quality.

Inland Hot Rolled Sheets, 17 U.S.S. Gage and lighter, are recommended for a wide range of general manufacturing purposes. Box annealing makes them soft and workable. The surface has the usual hot finishing mill oxide.

U.S.S. Gages 17 and 18 are rolled on Inland's continuous hot strip mills which produce a highly finished surface much superior to that of the old-type box annealed sheet. Barrel manufacturers, especially, prefer these gages.

U.S.S. Gage 19 and lighter sheets are rolled on Inland's new-type automatic rolling units which produce a far better surface than the old type "hand mills."

Inland Hot Rolled Pickled Sheets

These sheets are produced in each gage and size by the processes and equipment indicated above, but the hot mill oxide is removed by pickling. After pickling the sheets are thoroughly washed, scrubbed and dried. If they are to be stored, we recommend oiling for protection against surface rust.

Inland Hot Rolled Pickled Sheets are well suited for stamping and drawing operations. The scale is removed, eliminating unnecessary wear on dies and providing a good surface for such work as welding, stamping and punching. These sheets are recommended for better paint and enamel jobs, to eliminate the possibility of scale flaking after the finish is applied.

Inland Hot Rolled Extra Smooth Sheets

These sheets are recommended when slightly smoother surface than that of Inland Hot Rolled Sheets is required. They are especially well suited for lacquering and synthetic enamel finishes.

Inland Hot Rolled Deoxidized Sheets

These sheets have clean, smooth, silvery surfaces. Because of the reduction of the scale which occurs in the deoxidizing process, they often may be substituted for Pickled Sheets when absolute freedom from scale is not required. They are usually specified when the dark oxide or annealing border of Hot Rolled Sheets is objectionable. Surfaces are clean for painting and welding. Common uses are for kitchen cabinets, tool boxes, etc.

Inland Hot Rolled Unannealed Sheets

Inland Hot Rolled Unannealed Sheets are suitable for uses requiring stiffness with little or no forming. For more than a 90-degree bend an annealed sheet is recommended. These are plain hot rolled sheets without further processing, and with the usual hot mill scale.

Inland Electrical Sheets

1. The Field Grade (usually 24 and 26 gage) is a low silicon steel used for small fractional horsepower motors. It is subject to aging and carries no core loss guarantee.
2. Armature Grade. Used for slow and high speed motors. Used for armatures and good quality small motors where high permeability is desired and slightly increased core loss is not objectionable. It is a soft steel with good punching quality and ages only slightly.
3. The "Electrical Grade" may be used for all types of motors and generators although used in the better grade rotating machinery of medium efficiency. This grade is practically non-aging.
4. The Motor Grade (usually 22 to 29 gage) is somewhat stiffer than the above three grades, containing about 2½% Silicon. It is used in higher efficiency motors, generators, and small transformers, etc., requiring lower core loss. This grade is non-aging.
5. The Dynamo Grade (usually 24 to 29 gage) contains about 3¼% Silicon and is used for high efficiency motors, generators and small transformers, etc. It has good punching properties and low core loss. This grade is non-aging.

Guaranteed Maximum Core Losses

Watts per Pound at 60 Cycles and 10,000 Gausses—Epstein Test According to A.S.T.M. Standard Methods

Gage Number	22	23	24	25	26	27	28	29
Gage Thickness, In.	.0310	.0280	.0250	.0220	.0185	.0170	.0155	.0140
Inland Armature	2.50	2.23	1.98	1.75	1.55	1.46	1.38	1.30
Inland Electrical	2.17	1.94	1.70	1.50	1.35	1.29	1.23	1.17
Inland Motor	.....	.....	1.30	1.22	1.14	1.09	1.05	1.01
Inland Dynamo	.....	.....	1.10	1.02	.94	.90	.86	.82

Inland Tack Plate

This sheet, used in the manufacture of tacks, is made of a special analysis and is closely controlled for uniformity of gage.

Inland Blued Stovepipe Stock

This is a hot rolled, blued sheet, made in 25 U.S.S. gage and lighter. It is particularly suitable for stovepipe requirements.

Inland Windmill Stock

These sheets are supplied in black or galvanized finishes. They are unannealed for stiffness and of a special chemistry which Inland has developed for windmill sails to secure the unusual strength and rigidity required. We recommend that Inland Copper-Alloy Steel be specified.

Inland Grain Spout Stock

A special analysis steel, black or galvanized, made in 18 U.S.S. gage and heavier, intended for making Grain Spout sections. The steel is sufficiently high in carbon, to make it more resistant to the abrasion of the grain, which results in longer life. Inland Copper-Alloy in this analysis, is also recommended as an added protection against atmospheric corrosion.

Inland Stretcher Leveled Sheets

Maximum Length 201"

If flatness is important, as in the manufacture of panels, signs, table and desk tops, etc., stretcher leveled sheets are recommended. All kinds of sheets in gages No. 26 and heavier may be furnished stretcher leveled. When ordering stretcher leveled sheets specify if length required is over all or between gripper marks. Gripper marks are approximately one inch in from each end of sheet. When sheets are ordered stretcher leveled and resquared the specified size is furnished, subject to allowable tolerance.

Inland Resquared Sheets

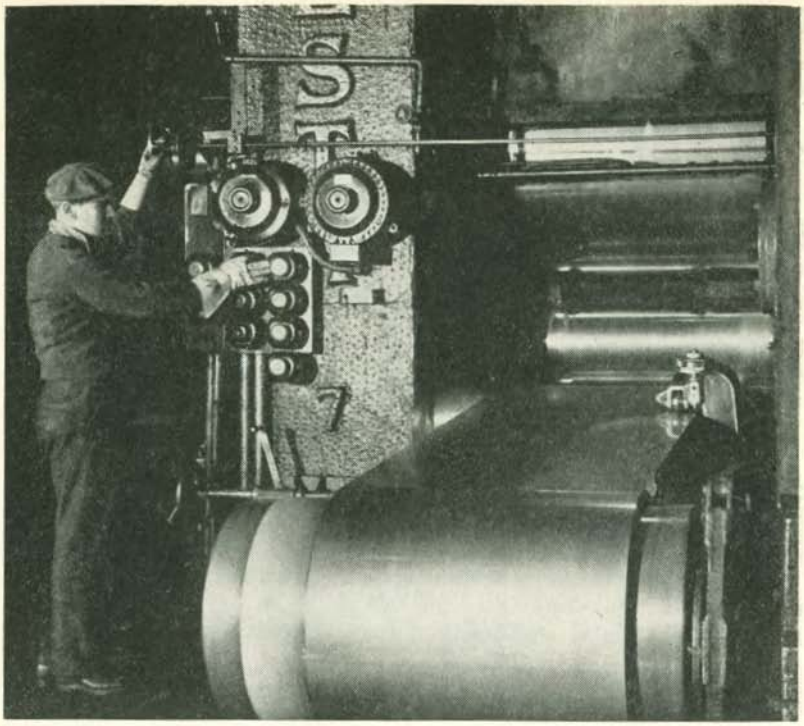
Maximum Length 156"

If accuracy to size is required, or if customer's shearing equipment is limited, resquared sheets should be specified. If gripper marks on stretcher leveled sheets are objectionable resquaring should be specified.

Inland Drawing Quality Sheets

Inland Drawing Quality Sheets are made from carefully selected steel of special chemical analysis and processed under close metallurgical supervision to meet the most exacting individual requirements involving severe drawing operations. They are subjected to rigid inspection and tested in accordance with the highest standards known, thus insuring efficient performance and low cost production.

When specifying Inland Sheets for drawing quality requirements, we recommend that you clearly indicate the method to be used in drawing as well as the ultimate use. This information will enable our metallurgists to give you the exact type of steel that will meet your requirements to the best advantage.



Cold Rolling Sheet Steel

INLAND COLD ROLLED SHEETS

Inland Cold Rolled Sheets are the highest quality, finest finished sheets in their class.

These sheets in the past, have also been referred to as "full pickled, full cold rolled," "furniture stock" and "auto body stock." First, they are hot rolled on Inland's modern continuous strip mills. Next, they are pickled to remove all the scale and then, cold rolled by the very latest type of continuous cold reduction mills. Annealing and final skin rolling complete the process.

Every operation is under the careful supervision of experienced metallurgists and mill operators. These sheets have created a new standard in surface perfection, uniformity to gage and in drawing and forming properties.

The characteristics of Inland Cold Rolled Sheets may be varied in many ways to suit particular manufacturing requirements—extra deep stamping and drawing quality, dull or high finish and other variations are possible. Best results will be secured by consulting Inland metallurgists who will gladly aid you in the selection of the exact quality and finish best suited to your purpose.

Typical uses include—automobile bodies and fenders, radiator cabinets, metal furniture, office equipment, refrigerators, etc.

Inland Cold Rolled Sheets

Gages and Sizes Rolled

U.S.S. Gage	Max. Width	Max. Length
No. 14 to 24	73"	230"
No. 25 to 28	52"	230"
No. 29 and 30	40"	230"

Inland Cold Rolled Coils

Gages and Sizes Rolled

U.S.S. Gage	Widths
14 to 24, incl.	1⅝" to 73", incl.
25 to 30, incl.	1⅝" to 36", incl.

Inland Cold Rolled Sheets are all produced by the most modern cold reduction methods, assuring the manufacturer of automobiles, furniture, refrigerators, cabinets, etc., a most satisfactory sheet for their use.

They meet the most exacting requirements and are used wherever surface perfection is desired. They are particularly suitable for drawing, spinning and severe forming operations.

Inland Cold Rolled Mill Run Sheets

These are the same Inland Cold Rolled Sheets, except they are not given sheet-by-sheet inspection. For average requirements this grade is usually satisfactory.

Inland Enameling Iron Sheets

Gages and Sizes Rolled

U.S.S. Gage	Max. Width	Max. Length
No. 22 and heavier	72"	230"
No. 24	50"	230"

Lighter gages of Enameling Sheets are also rolled. Information on request.

Inland Enameling Iron Sheets represent the very latest development for porcelain enameling purposes. Their most common uses include stoves, refrigerators, table tops, washing machines, tubs, architectural shapes, signs, etc.

They are rolled from commercially pure iron ingots, selected for soundness and of low metalloid content to prevent blisters and warpage during enameling.

Inland's modern cold reduction rolling equipment produces a greater degree of flatness and by an exclusive patented method, Inland imparts to its iron sheets a special textured surface which is of the exact type and degree of dullness to assure "double" tight adherence of base to enamel.

Inland Enameling Iron Sheets are always under constant and exacting control and rigid inspection to make doubly sure of their high quality, accuracy to gage and size. Samples are gladly furnished upon request.

Inland Galvanized Sheet

Inland Galvanized Sheets

Gages and Sizes Rolled

G. S. Gage	Maximum Width	Maximum Length
No. 8	36"	156"
No. 10	48"	156"
No. 12 to 22, incl.	50"	156"
No. 24 to 26, incl.	48"	144"
No. 27-28	44"	144"
No. 29 to 31, incl.	36"	144"

The following kinds of sheets are made in these same sizes.

Through installation of entirely new galvanizing equipment, embodying a number of important improvements in the coating and handling process, Inland has established new standards of quality and uniformity for galvanized sheets.

They are closely inspected for uniform gage, shearing and flatness, and are made in the following grades: Regular Commercial Coated, Extra Heavy-Coated, Tight-Coated and Extra Tight-Coated, Form-Cote, Paint-Tite, and "Seal of Quality."

Inland Galvanized Sheets may be furnished to the standards of the latest specifications, such as the A. S. T. M. Spec. A 93-27, A. A. R. Spec. M-119-34 and Federal Spec. QQ-I-696.

Inland Galvanized (Commercial Coating)

Inland Galvanized Sheets (made from open hearth steel) are unusually clean, brightly spangled, soft and workable. These sheets are highly satisfactory for moderate forming and bending up to a 90° angle.

Inland Galvanized Extra Heavy-Coated Sheets

These sheets have a heavier coating than the Commercial Grade and are not intended for forming operations other than corrugating.

Inland Galvanized Tight-Coated Sheets

This sheet is recommended for forming operations requiring more than a right-angle bend. It does not have the large, lustrous spangle of the heavier coated sheets. However, the softness of the base metal and light, tight coating protect against flaking or peeling.

Inland Galvanized Extra Tight-Coated Sheets

This sheet is produced for especially severe forming requirements, such as double seaming, crimping, etc.

A soft, workable sheet with a very light coating is produced in order to prevent cracking, flaking or peeling. Its appearance is somewhat duller than ordinary commercially coated galvanized sheets.

Inland Galvanized Form-Cote Sheets

Gages and Sizes Rolled

G. S. Gage	Maximum Width	Maximum Length
No. 24	48"	156"
No. 26	48"	120"
No. 27 and 28, incl.	44"	120"
No. 29 to 31, incl.	36"	120"

A beautifully spangled sheet furnished in 24 gage and lighter, offering a combination of good appearance and ability to withstand severe forming applications without flaking or peeling. It is processed to provide excellent adherence of the protective zinc coating to a soft ductile base metal, and is particularly suitable for such exacting requirements as furnace pipe and elbows, air conditioning equipment, etc. This sheet can also be furnished with our Paint-Tite surface finish.

Inland Galvanized Paint-Tite Sheets

A galvanized sheet having a specially treated surface ideal for excellent bond and adherence of paints, enamels, and for lithographing applications. This process eliminates the necessity of etching or weathering the surface of zinc coated sheets preparatory to painting. It can be furnished in 10 gage and lighter.

Inland Galvanized "Seal of Quality" Coating

Inland Steel Co. is licensed by the American Zinc Institute to produce this sheet. It is a heavily coated galvanized sheet (2 oz. coating per sq. ft. of double exposed surface) produced in 28 G. S. gage and heavier, either flat or corrugated. Its principal uses are for roofing and siding. This extra heavy coating assures additional life when exposed to atmospheric corrosion.

Inland Steel Tension-Lap Perfect Drain Roofing Sheets

Inland Perfect Drain Roofing has been recognized as the most weatherproof roofing and siding obtainable. Its long life and impenetrability have been improved by TENSION-LAP. This feature of triple-lapping the ends effectively seals the top and bottom of each sheet against wind driven rain or leakage by capillary attraction. The sheets are held flat under a permanent tension which extends throughout the entire roof. Inland Tension-Lap is water tight, safe against fire, lightning, storm proof and easy to apply. Long life and protection against rust is assured by a base metal of high quality open hearth steel covered by a special process with extra heavy coatings of zinc. Made in 29, 28 and 26 G. S. gages by 24" wide (after forming) in 5 to 12 foot lengths.

Inland Zinc-Alloy Sheets

Gages and Sizes Rolled

G. S. Gage	Maximum Width	Maximum Length
No. 16 to 22, incl.	36"	156"
No. 24 to 26, incl.	36"	144"
No. 28 to 30, incl.	36"	120"

A dull, non-spangled zinc coated sheet manufactured by a special process which retards the crystallization of the zinc coating and develops all zinc-iron alloy layers with no top layer of pure zinc characteristic of ordinary galvanized sheets. It is especially made to withstand severest forming operations without flaking. It has a surface very suitable for paint, lacquer and enamel finishes, without the necessity of using an etching agent in order to make the finish adhere.

Inland Galvanized 2.66" Corrugated Culvert Sheets

Inland produces four grades of culvert stock as follows. Certificates of Analysis and Guarantee are registered with the State Highway Departments of states served by Inland.

Inland Copper-Alloy Steel Sheets

The aggregate of Carbon, Manganese, Phosphorus, Sulphur and Silicon does not exceed .70%; .20% minimum Copper is added.

Inland Copper Iron Sheets

The aggregate of Carbon, Manganese, Phosphorus, Sulphur and Silicon does not exceed .25%; .20% minimum Copper is added.

Inland 999 Pure Iron Copper Bearing Sheets

The aggregate of Carbon, Manganese, Phosphorus, Sulphur and Silicon does not exceed .10%; to which is added .20% minimum Copper.

Inland Pure Iron Sheets

The aggregate of Carbon, Manganese, Phosphorus, Sulphur, Silicon and Copper does not exceed .10%.

Inland Corrugated Sheets

Corrugating develops maximum strength of sheets either black, painted or galvanized, for such applications as roofing, siding, culverts, etc., where rigidity of construction is necessary. Inland Corrugated Sheets, in G. S. gages 10 to 30, are produced on new corrugating rolls with ⅝", 1¼", 2", 2½" (actually measures 2.66") 3" and 5" corrugations.

Methods of Testing Coating Weight

Where a definite weight of coating is specified, the order should stipulate the method of testing which is to be used to determine this weight, that is: a weight test, a triple-spot test or a single-spot test. The weight test consists of a ten-sheet lot of a light gage or a five-sheet lot of 16 gage or heavier. The test lots are weighed after pickling, washing and drying, and again after coating, and the weight of coating calculated from the difference on the basis of the ordered size. The triple-spot test consists of the average of determinations from the three specimens cut from the test sheet as provided.

The minimum single-spot test calls for one of the three specimens of the triple-spot of any sheet selected by the buyer, and the test is made at least two inches from the side, four inches from the end.

Sorting Inland Tin Plate

INLAND COLD REDUCED TIN PLATE

Inland Steel Company was one of the first to install modern equipment for producing Cold Reduced Tin Plate and today is the only mill making their Tin Mill Products exclusively by this method.

Inland's cold reduction process produces a dense smooth-surfaced base metal which assures a uniformly coated plate; and our modern cleaning equipment insures a bright lustrous finish.

Inland Cold Reduced Tin Plate can be supplied to meet the various requirements of tin plate users. Maximum ductility and drawing qualities are furnished for making such articles as plugs, rings and drawn containers, or stiffness and forming quality for making various types of cans.

Inland produces all gages and sizes for commercial use, in the Coke and Charcoal grades.

Base Weights	Max. Width	Max. Length
55 lbs. to 235 lbs.	34"	45"

The above are standard ranges for tin plate and manufacturing terne plate. Inquiries for sizes beyond this range should be submitted for further consideration.

Inland Tin Mill Black Plate, Full Finish

Inland's Cold Reduction method produces a black plate of the finest quality. Its surface is of smooth, glossy finish, fulfilling the most exacting requirements. For lacquering and lithographing, this material is unexcelled.

Inland Tin Mill Black Plate, Full Finish can be furnished in deep drawing and stamping quality.

Gages	Max. Width	Max. Length
No. 38 to 29*	34"	72"

**Rolled in heavier gages and classified as Cold Rolled Sheets, see page 15.*

Inland Tin Mill Black Plate, Pickled and Annealed

This grade of tin mill black plate, known as Enameling Stock, has a surface that is particularly suitable for enameling purposes and is adaptable for the manufacture of hollow ware, cooking utensils, and other deep stamping requirements.

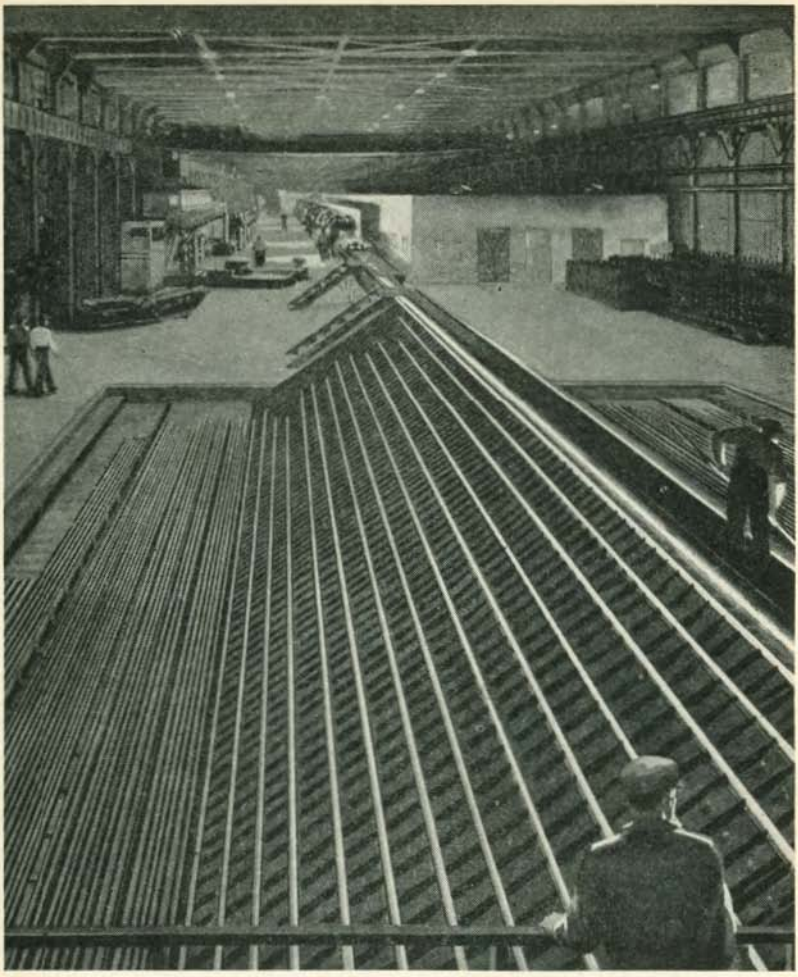
Inland Manufacturing Terne Plate†

Another product of Inland's modern Tin Mills is Inland Terne Plate, which is the same base metal as that used in producing Inland Cold Reduced Tin Plate and Full Finish Black Plate. It is coated with an alloy of Tin and Lead.

Inland can furnish Terne Plate in Manufacturing and 6- and 8-pound grades to meet the most exacting commercial requirements.

Terne Plate is used in the manufacture of metal containers and many other industrial applications.

†*Sold at estimated weight.*



Bars Cooling on Continuous Mill Hot Bed

HOT ROLLED CARBON BARS

New Billet Merchant Steel

For rail steel bars see Rail Steel page 56

Hot Rolled Carbon Bars are produced in any chemical composition within the definition of carbon steel. Bars are rolled to specified dimensions and tolerances, and may be furnished in straight lengths or from 5/16″ to 55/64″ in coils.

Included in this classification are Angles and Small Shapes of less than 3″, Rounds, Squares, Round-Cornered Squares, Ovals and Flats of not less than 0.250″ nominal thickness nor greater than 6″ nominal width; also Automobile and Bumper Bar sections.

Controlled Grain Size

We are regularly producing both fine and coarse McQuaid-Ehn grain size steels in accordance with customer's requirements.

Carbon and Silico-Manganese Spring Steel

We produce regularly, Carbon Spring Steel to S.A.E. Specification 1095 and other specifications, and also Silico-Manganese Spring Steel.

Flat Bars

Sizes Rolled

Weights in pounds per lineal foot are shown for sizes generally used, within the Inland range. All intermediate sizes also are regularly rolled.

Thickness, Inches	WIDTH, INCHES										
	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	1 7/8
1/4	.5313	.6375	.7438	.8500	.9563	1.063	1.169	1.275	1.381	1.488	1.594
5/16	.6641	.7969	.9297	1.063	1.195	1.328	1.461	1.594	1.727	1.859	1.992
3/8	.7969	.9563	1.116	1.275	1.434	1.594	1.753	1.913	2.072	2.231	2.391
7/16	.9297	1.116	1.302	1.488	1.673	1.859	2.045	2.231	2.417	2.603	2.789
1/2	1.063	1.275	1.488	1.7000	1.913	2.125	2.338	2.550	2.763	2.975	3.188
9/16	.....	1.4344	1.673	1.913	2.152	2.391	2.630	2.869	3.108	3.347	3.586
5/8	.....	1.594	1.859	2.125	2.391	2.656	2.922	3.188	3.453	3.719	3.984
11/16	.....	.....	2.045	2.338	2.630	2.922	3.214	3.506	3.798	4.091	4.383
3/4	.....	.....	2.231	2.550	2.869	3.188	3.506	3.825	4.144	4.463	4.781
13/16	.....	.....	.....	2.763	3.108	3.453	3.798	4.144	4.489	4.834	5.180
7/8	.....	.....	.....	2.975	3.347	3.719	4.091	4.463	4.834	5.206	5.578
15/16	.....	.....	.....	.....	3.586	3.984	4.383	4.781	5.180	5.578	5.977
1	.....	.....	.....	.....	3.8250	4.2500	4.675	5.100	5.525	5.950	6.375
1 1/4	.....	.....	.....	.....	.....	.....	.....	6.375	6.906	7.438	7.969

Flat Bars, Continued

Weights in pounds per lineal foot are shown for sizes generally used, within the Inland Range. All intermediate sizes also are regularly rolled.

Thickness, Inches	WIDTH, INCHES										
	2	2 1/8	2 1/4	2 3/8	2 1/2	2 5/8	2 3/4	2 7/8	3	3 1/4	3 1/2
1/4	1.700	1.806	1.913	2.019	2.125	2.231	2.338	2.444	2.550	2.763	2.975
5/16	2.125	2.258	2.391	2.523	2.656	2.789	2.922	3.055	3.188	3.453	3.719
3/8	2.550	2.709	2.869	3.028	3.188	3.347	3.506	3.666	3.825	4.144	4.463
7/16	2.975	3.161	3.347	3.533	3.719	3.905	4.091	4.277	4.463	4.834	5.206
1/2	3.400	3.613	3.825	4.038	4.250	4.463	4.675	4.888	5.100	5.525	5.950
9/16	3.825	4.064	4.303	4.542	4.781	5.020	5.259	5.498	5.738	6.216	6.694
5/8	4.250	4.516	4.781	5.047	5.313	5.578	5.844	6.109	6.375	6.906	7.438
11/16	4.675	4.967	5.259	5.552	5.844	6.136	6.428	6.720	7.013	7.597	8.181
3/4	5.100	5.419	5.738	6.056	6.375	6.694	7.013	7.331	7.650	8.288	8.925
13/16	5.525	5.870	6.216	6.561	6.906	7.252	7.597	7.942	8.288	8.978	9.669
7/8	5.950	6.322	6.694	7.066	7.438	7.809	8.181	8.553	8.925	9.669	10.413
15/16	6.375	6.773	7.172	7.570	7.969	8.367	8.766	9.164	9.563	[illegible]	11.156
1	6.800	7.225	7.650	8.075	8.500	8.925	9.350	9.775	10.200	[illegible]	11.900
1 1/4	8.500	9.031	9.563	10.094	10.625	11.156	11.688	12.219	12.750		14.875
1 1/2	10.200	10.838	11.475	12.113	12.750	13.388	14.025	14.663	15.300	[illegible]	17.850
1 5/8	11.050	11.741	12.431	13.122	13.813	14.503	15.194	15.884	16.575	[illegible]	19.338
1 3/4	11.900	12.644	13.388	14.131	14.875	15.619	16.363	17.106	17.850	[illegible]	20.825
1 7/8	12.750	13.547	14.344	15.141	15.938	16.734	17.531	18.328	19.125	20.719	22.313
2	.....	14.450	15.300	16.150	17.000	17.850	18.700	19.550	20.400	22.100	23.800
2 1/8			16.256	17.159	18.063	18.966	19.869	20.772	21.675	23.481	25.288
2 1/4	.....	.....	.....	18.169	19.125	20.081	21.038	21.994	22.950	24.863	26.775
2 3/8	.....	.....	.....	.....	.....	.....	.....	.....	24.225	26.244	28.263
2 1/2	.....	.....	.....	.....	.....	.....	.....	.....	25.500	27.625	29.750
2 5/8	.....	.....	.....	.....	.....	.....	.....	.....	26.775	29.006	31.238
2 3/4										30.388	32.725
2 7/8	.....	.....	.....	.....	.....	.....	.....	.....	.....	31.769	34.213
3	.....	.....	.....	.....	.....	.....	.....	.....	.....	33.150	35.700
3 1/4											38.675

Flat Bars, Continued

Weights in pounds per lineal foot are shown for sizes generally used, within the Inland Range. All intermediate sizes also are regularly rolled.

Thickness, Inches	WIDTH, INCHES									
	3¾	4	4¼	4½	4¾	5	5¼	5½	5¾	6
¼	3.188	3.400	3.613	3.825	4.038	4.250	4.463	4.675	4.888	5.100
5/16	3.984	4.250	4.516	4.781	5.047	5.313	5.578	5.844	6.109	6.375
⅜	4.781	5.100	5.419	5.738	6.056	6.375	6.694	7.013	7.331	7.650
7/16	5.578	5.950	6.322	6.694	7.066	7.438	7.809	8.181	8.553	8.925
½	6.375	6.800	7.225	7.650	8.075	8.500	8.925	9.350	9.775	10.200
9/16	7.172	7.650	8.128	8.606	9.084	9.563	10.041	10.519	10.997	11.475
⅝	7.969	8.500	9.031	9.563	10.094	10.625	11.156	11.688	12.219	12.750
11/16	8.766	9.350	9.934	10.519	11.103	11.688	12.272	12.856	13.441	14.025
¾	9.563	10.200	10.838	11.475	12.113	12.750	13.388	14.025	14.663	15.300
13/16	10.359	11.050	11.741	12.431	13.122	13.813	14.503	15.194	15.884	16.575
⅞	11.156	11.900	12.644	13.388	14.131	14.875	15.619	16.363	17.106	17.850
15/16	11.953	12.750	13.547	14.344	15.141	15.938	16.734	17.531	18.328	19.125
1	12.750	13.600	14.450	15.300	16.150	17.000	17.850	18.700	19.550	20.400
1¼	15.938	17.000	18.063	19.125	20.188	21.250	22.313	23.375	24.438	25.500
1½	19.125	20.400	21.675	22.950	24.225	25.500	26.775	28.050	29.325	30.600
1⅝	20.719	22.100	23.481	24.863	26.244	27.625	29.006	30.388	31.769	33.150
1¾	22.313	23.800	25.288	26.775	28.263	29.750	31.238	32.725	34.213	35.700
1⅞	23.906	25.500	27.094	28.688	30.281	31.875	33.469	35.063	36.656	38.250
2	25.500	27.200	28.900	30.600	32.300	34.000	35.700	37.400	39.100	40.800
2⅛	27.094	28.900	30.706	32.513	34.319	36.125	37.931	39.738	41.544	43.350
2¼	28.688	30.600	32.513	34.425	36.338	38.250	40.163	42.075	43.988	45.900
2⅜	30.281	32.300	34.319	36.338	38.356	40.375	42.394	44.413	46.431	48.450
2½	31.875	34.000	36.125	38.250	40.375	42.500	44.625	46.750	48.875	51.000
2⅝	33.469	35.700	37.931	40.163	42.394	44.625	46.856	49.088	51.319	53.550
2¾	35.063	37.400	39.738	42.075	44.413	46.750	49.088	51.425	53.763	56.100
2⅞	36.656	39.100	41.544	43.988	46.431	48.875	51.319	53.763	56.206	58.650
3	38.250	40.800	43.350	45.900	48.450	51.000	53.550	56.100	58.650	61.200
3¼	41.438	44.200	46.963	49.725	52.488	55.250	58.013	60.775	63.538	66.300
3½	44.625	47.600	50.575	53.550	56.525	59.500	62.475	65.450	68.425	71.400

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Flat Bars, Round Edge Overall

Sizes Rolled

Over-all Measure

Weights in pounds per lineal foot are shown for sizes generally used within the Inland range. All intermediate sizes also are regularly rolled.

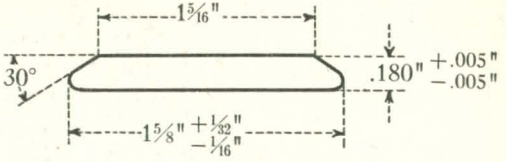
Width Overall, Inches	Thickness, Inches										
	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	1	1 1/8
5/8	.499	.614	.725	8.32	.....	.....	.....	.....	.....	.....	.....
3/4	.605	.747	.884	1.018	1.147	1.259	.....	.....	.....	.....	.....
7/8	.712	.880	1.044	1.204	1.360	1.498	1.659	.....	.....	.....	.....
1	.818	1.013	1.203	1.390	1.572	1.737	1.925	2.114	2.302	.....	.....
1 1/16	.871	1.079	1.283	1.483	1.678	1.856	2.058	2.260	2.462	.....	.....
1 1/8	.924	1.145	1.362	1.575	1.785	1.976	2.191	2.406	2.621	.....	.....
1 3/16	.977	1.212	1.442	1.668	1.891	2.096	2.324	2.552	2.781	.....	.....
1 1/4	1.030	1.278	1.522	1.761	1.997	2.215	2.456	2.698	2.940	.....	.....
1 5/16	1.084	1.345	1.601	1.854	2.103	2.335	2.589	2.844	3.099	.....	.....
1 3/8	1.137	1.411	1.681	1.947	2.210	2.454	2.722	2.990	3.259	.....	.....
1 7/16	1.190	1.477	1.761	2.040	2.316	2.574	2.855	3.136	3.418	.....	.....
1 1/2	1.243	1.544	1.841	2.133	2.422	2.693	2.988	3.282	3.577	.....	.....
1 5/8	1.349	1.677	2.000	2.319	2.635	2.932	3.253	3.575	3.896	.....	.....
1 3/4	1.455	1.809	2.159	2.505	2.847	3.171	3.519	.....	.....	.....	.....
1 7/8	1.562	1.942	2.319	2.691	3.060	.....	.....	.....	.....	.....	.....
2	1.668	2.075	2.478	2.877	3.272	3.649	4.050	.....	.....	.....	.....
3	2.518	3.138	3.753	4.365	4.972	5.562	6.175	6.789	7.402	9.798	10.950
4	3.368	4.200	5.028	5.852	6.672	7.474	8.300	9.126	9.952	13.198	14.775
5	4.218	5.263	6.303	7.340	8.372	9.387	10.425	11.464	12.502	16.598	18.723
5 3/4	.....	.....	.....	.....	.....	.....	.....	13.217	14.415	19.148	21.469
6	5.068	6.325	7.578	8.827	10.072	11.299	12.550	13.801	15.052	19.998	22.425

We also roll round edge overall concave flats in regular spring steel sizes.

To obtain over-all measure for any thickness, add to the face measure the increment given below for corresponding thickness—(to obtain face measure, subtract from the over-all measure).

Thickness, Inches	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1
Increment, Inches	1/8	5/32	3/16	7/32	1/4	5/16	5/16	5/16	5/16	3/8	3/8	3/8	3/8

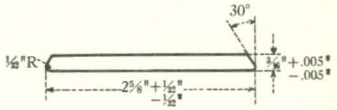
Concave Bevel Edge Flats



Size, Inches A	B	C	Section	Concavity Inches	Area Sq. In.	Weight Lbs. per Ft.
1 5/16	1 5/8	.180	M-149	Max. .009 Min. .004	.27	.918
1 13/16	2 1/4	.238	M-150	Max. .012 Min. .006	.49	1.666
1 13/16	2 1/4	.259	M-151	Max. .012 Min. .006	.53	1.802
1 15/16	2 1/4	.180	M-180	Max. .012 Min. .006	.375	1.275
1 7/16	1 3/4	.180	M-197	Max. .010 Min. .005	.29	.986

Bevel Edge Flats

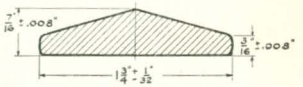
SECTION M-20



Size..... 2 5/8" x 3/16"
Weight, Lbs. per Ft..... 1.63

Double Bevel Flats

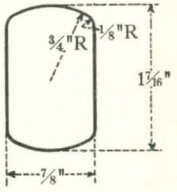
SECTION M-193



Size..... 1 3/4" x 7/16" x 3/16"
Weight, Lbs. per Ft..... 1.86

Round Edge Grate Bar

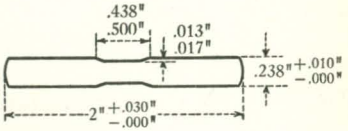
SECTION M-179



Size..... 1 7/16" x 7/8"
Weight, Lbs. per Ft..... 3.98

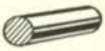
Round Edge Overall Grooved Spring Flats

Width Inches	Thickness Inches	Section	Area Sq. In.	Weight Lbs. per Ft.
2	.238	M-198	.455	1.547
2	.220	M-199	.419	1.424
2	.180	M-200	.339	1.152
2 1/4	.260	M-201	.561	1.907
2 1/4	.238	M-202	.514	1.747
2 1/4	.220	M-203	.474	1.611
2 1/4	.180	M-204	.384	1.305



Rounds

(Intermediate Sizes Also Are Rolled)



Size Inches	Weight Lbs. per Ft.	Area Square Inches
5/16	.261	.0767
3/8	.376	.1105
7/16	.511	.1503
1/2	.668	.1963
9/16	.845	.2485
5/8	1.043	.3068
11/16	1.262	.3712
3/4	1.502	.4418
13/16	1.763	.5185
7/8	2.044	.6013
15/16	2.347	.6903
1	2.670	.7854
1 1/16	3.015	.8866
1 1/8	3.380	.9940
1 3/16	3.766	1.1075
1 1/4	4.172	1.2272
1 5/16	4.600	1.3530
1 3/8	5.049	1.4849
1 7/16	5.518	1.6230
1 1/2	6.008	1.7671
1 9/16	6.519	1.9175
1 5/8	7.051	2.0739
1 11/16	7.604	2.2365
1 3/4	8.178	2.4053
1 13/16	8.773	2.5802
1 7/8	9.388	2.7612
1 15/16	10.024	2.9483
2	10.681	3.1416
2 1/16	11.359	3.3410
2 1/8	12.058	3.5466
2 3/16	12.778	3.7583
2 1/4	13.519	3.9761
2 5/16	14.280	4.2000
2 3/8	15.062	4.4301
2 7/16	15.866	4.6664
2 1/2	16.690	4.9087
2 9/16	17.534	5.1572
2 5/8	18.400	5.4119
2 11/16	19.287	5.6727
2 3/4	20.195	5.9396
2 13/16	21.123	6.2126
2 7/8	22.072	6.4918
2 15/16	23.042	6.7771
3	24.033	7.0686
3 1/16	25.045	7.3662
3 1/8	26.08	7.670
3 1/4	28.21	8.296
3 3/8	30.42	8.946
3 1/2	32.71	9.621
3 3/16	33.89	9.968
3 3/4	37.55	11.045
3 7/8	40.10	11.793
4	42.73	12.566
4 1/16	44.07	12.962
4 1/4	48.23	14.186
4 5/16	49.66	14.607
4 3/8	51.11	15.033
4 13/32	51.84	15.248
4 1/2	54.07	15.904
5	66.76	19.635

Squares

Size Inches	Weight Lbs. per Ft.	Area Square Inches
3/8	.478	.1406
7/16	.651	.1914
1/2	.850	.2500
9/16	1.076	.3164
5/8	1.328	.3906
21/32	1.464	.4307
11/16	1.607	.4727
23/32	1.756	.5166
3/4	1.913	.5625
25/32	2.077	.6104
13/16	2.245	.6602
27/32	2.423	.7119
7/8	2.603	.7656
29/32	2.795	.8213
15/16	2.988	.8789
1	3.400	1.0000
1 1/16	3.838	1.1289
1 1/8	4.303	1.2656
1 3/16	4.795	1.4102
1 1/4	5.313	1.5625
1 5/16	5.857	1.7227
1 3/8	6.428	1.8906
1 7/16	7.026	2.0664
1 1/2	7.650	2.2500
2	13.600	4.0000

Round Cornered Squares

(Sizes Rolled)

Sizes	Area	Weight Lbs. per Ft.
1 15/32 x 1 15/32	2.089	7.103
1 1/2 x 1 1/2	2.182	7.419
1 9/16 x 1 9/16	2.373	8.068
1 5/8 x 1 5/8	2.573	8.748
1 11/16 x 1 11/16	2.780	9.452
1 3/4 x 1 3/4	2.979	10.129
1 13/16 x 1 13/16	3.201	10.883
1 7/8 x 1 7/8	3.395	11.543
2 x 2	3.879	13.189
2 1/8 x 2 1/8	4.395	14.943
2 1/4 x 2 1/4	4.921	16.731
2 1/2 x 2 1/2	6.061	20.607
3 x 3	8.728	29.675

Flats (Nut-Stock)

Complete range of sizes rolled from 5/8x7/64 to 3x2 1/8, including coiled nut stock in commonly used sizes.

Ovals

Sizes	Section	Area Sq. In.	Weight Lbs. per Ft.
5/8 x 5/16	M-156	.136	.464
3/4 x 5/16	M-155	.162	.550
7/8 x 7/16	M-144	.281	.955

Guy Clamp Sections

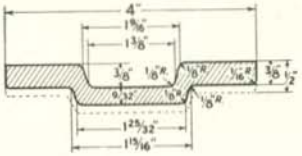
Sizes	Section	Weight Lbs. per Ft.
1 9/16 x 3/8	M-21	1.86
1 9/16 x .359	M-21	1.77
1 21/32 x .359	M-54	1.78
1 21/32 x 3/8	M-54	1.87

Landside Channel

Sizes	Section	Weight Lbs. per Ft.
4 11/16 x 1/2	M-116	7.9
4 7/8 x 19/32	M-115	9.486

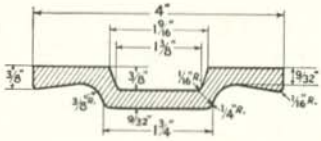
Square Back Grooved Tire

Sizes	Section	Weight Lbs., per Ft.
4 x 9/32 x 3/8	M-153	5.005
4 x 13/32 x 1/2	M-154	6.705

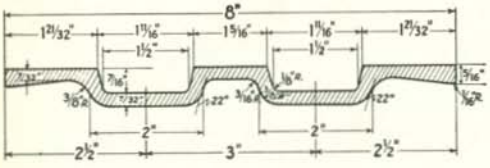


Grooved Tire*

Sizes,	Section	Weight Lbs., per Ft.
3 x 1/4	M-133	2.17
3 x 3/8	M-134	3.45
3 x 1/2	M-135	4.72
3 x 5/16	M-159	2.81
3 x 9/32	M-174	2.49
4 x 3/8	M-131	4.56
4 x 1/2	M-132	6.26
4 x 5/8	M-136	7.96
6 x 3/8	M-128	6.9
6 x 1/2	M-129	9.45
6 x 5/8	M-130	12.00

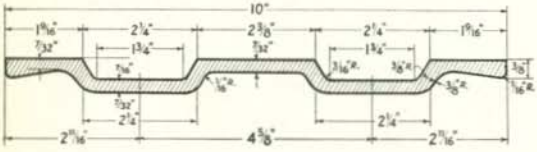


Double Grooved Tire*



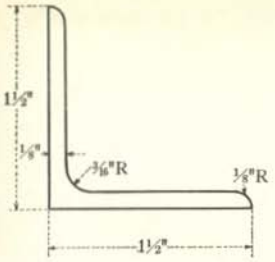
Sizes	Section	Weight Lbs., per Ft.
8 x 5/16 x 7/32	M-163	7.521
8 x 7/16 x 11/32	M-164	10.921
8 x 9/16 x 15/32	M-165	14.321
8 x 3/8 x 9/32	M-228	9.221
8 x 1/2 x 13/32	M-229	12.621
8 x 5/8 x 17/32	M-230	16.021

Double Grooved Tire*



Sizes	Section	Weight Lbs., per Ft.
10 x 3/8	M-124	9.35
10 x 1/2	M-125	13.60
10 x 5/8	M-126	17.85
10 x 3/4	M-127	22.10

**Furnished by special arrangement only.*



Angles, Bar Size

Sizes Rolled

Size, Inches	Thickness, Inches	Weight Lbs. per Foot
5/8 x 5/8	7/64	0.418
5/8 x 5/8	1/8	0.48
3/4 x 3/4	7/64	0.51
3/4 x 3/4	1/8	0.59
3/4 x 3/4	3/16	0.84
7/8 x 7/8	7/64	0.61
7/8 x 7/8	1/8	0.70
7/8 x 7/8	3/16	1.00
1 x 5/8	7/64	0.58
1 x 5/8	1/8	0.64
1 x 5/8	3/16	0.92
1 x 1	7/64	0.71
1 x 1	1/8	0.80
1 x 1	3/16	1.16
1 x 1	1/4	1.49
1 3/8 x 7/8	7/64	0.78
1 3/8 x 7/8	1/8	0.91
1 3/8 x 7/8	3/16	1.32
1 1/8 x 1 1/8	1/8	0.91
1 1/8 x 1 1/8	3/16	1.32
1 1/8 x 1 1/8	1/4	1.90
1 1/4 x 1 1/4	1/8	1.01
1 1/4 x 1 1/4	3/16	1.48
1 1/4 x 1 1/4	1/4	1.92
1 1/4 x 1 1/4	5/16	2.33
1 1/2 x 1 1/2	1/8	1.23
1 1/2 x 1 1/2	3/16	1.80
1 1/2 x 1 1/2	1/4	2.34
1 1/2 x 1 1/2	5/16	2.86
1 1/2 x 1 1/2	3/8	3.35
1 3/4 x 1 3/4	1/8	1.44
1 3/4 x 1 3/4	3/16	2.12
1 3/4 x 1 3/4	1/4	2.77
1 3/4 x 1 3/4	5/16	3.39
1 3/4 x 1 3/4	3/8	3.99
2 x 1 1/2	1/8	1.44
2 x 1 1/2	3/16	2.12
2 x 1 1/2	1/4	2.77
2 x 1 1/2	5/16	3.39
2 x 1 1/2	3/8	3.99
2 x 2	1/8	1.65
2 x 2	3/16	2.44
2 x 2	1/4	3.19
2 x 2	5/16	3.92
2 x 2	3/8	4.70
2 x 2	7/16	5.30
2 1/4 x 2 1/4	1/8	1.86
2 1/4 x 2 1/4	3/16	2.75
2 1/4 x 2 1/4	1/4	3.62
2 1/4 x 2 1/4	5/16	4.50
2 1/4 x 2 1/4	3/8	5.30
2 1/4 x 2 1/4	7/16	6.10
2 1/4 x 2 1/4	1/2	6.80
2 1/2 x 2	3/16	2.75
2 1/2 x 2	1/4	3.62
2 1/2 x 2	5/16	4.50
2 1/2 x 2	3/8	5.30
2 1/2 x 2	7/16	6.10
2 1/2 x 2	1/2	6.80
2 1/2 x 2 1/2	1/8	2.08
2 1/2 x 2 1/2	3/16	3.07
2 1/2 x 2 1/2	1/4	4.10
2 1/2 x 2 1/2	5/16	5.00
2 1/2 x 2 1/2	3/8	5.90
2 1/2 x 2 1/2	7/16	6.80
2 1/2 x 2 1/2	1/2	7.70
2 3/4 x 2 3/4	1/8	2.29
2 3/4 x 2 3/4	3/16	3.39
2 3/4 x 2 3/4	1/4	4.50
2 3/4 x 2 3/4	5/16	5.60
2 3/4 x 2 3/4	3/8	6.60
2 3/4 x 2 3/4	7/16	7.60
2 3/4 x 2 3/4	1/2	8.50

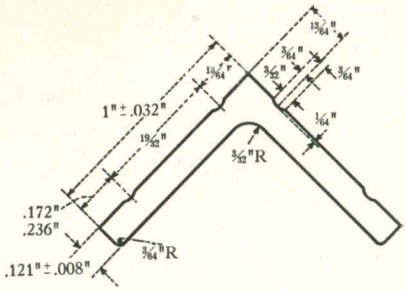
Structural size Angles on Pages 40 and 41.

Special Angles

Fluted Angle

A-313

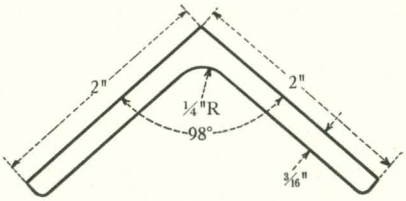
Size	1" x 1"
Thickness	.121"
Area, Sq. In	.224
Weight, Lbs. per Ft	.762



98° Angle

A-298

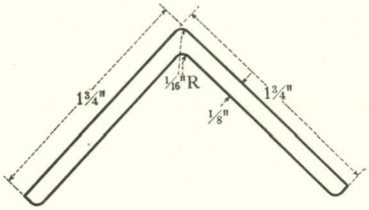
Size	2" x 2"
Thickness	3/16"
Area, Sq. In	.72
Weight, Lbs. per Ft	2.44



Square Root Angles

A-302

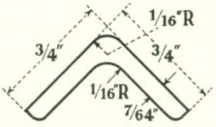
Size, Inches	Thickness, Inches	Weight Lbs. per Ft.
1 3/4 x 1 3/4	1/8	1.428
1 3/4 x 1 3/4	5/32	1.770



Round Back Angles

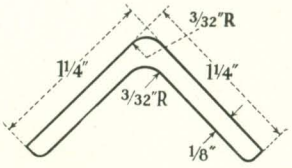
A-300

Size	3/4" x 3/4"
Thickness	7/64"
Area, Sq. In	.152
Weight, Lbs. per Ft	.517



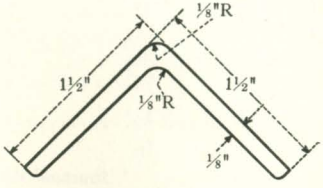
A-299

Size	1 1/4" x 1 1/4"
Thickness	1/8"
Area, Sq. In	.296
Weight, Lbs. per Ft	1.009



A-297

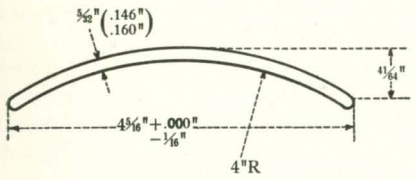
Size	1 1/2" x 1 1/2"
Thickness	1/8"
Area, Sq. In	.358
Weight, Lbs. per Ft	1.217



Bumper Bars

The sections shown below are representative of the various shapes we are able to produce. More detailed information will be gladly furnished on request.

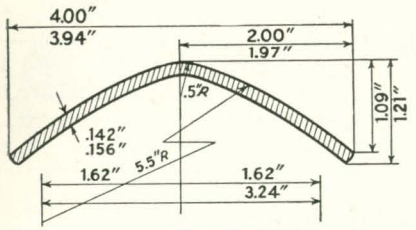
Curved Bumper Bar



Size, Inches	4 5/16 x 5/32
Thickness, Inches	5/32
Area, Sq. Inches	.712
Weight, Lbs. per Ft	2.42

Section M-219

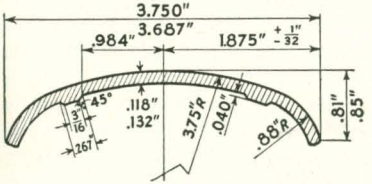
Curved Bumper Bar



Size, Inches	4 x 5/32
Thickness, Inches	5/32
Area, Sq. Inches	.69
Weight, Lbs. per Ft	2.34

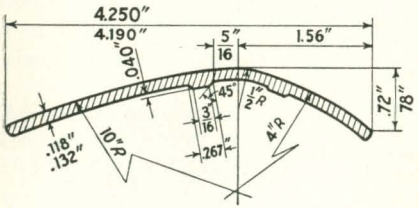
Section M-270

Double-Ribbed Impact Bar



Size, Inches	3 3/4 x 1/8
Thickness, Inches	1/8
Area, Sq. Inches	.55
Weight, Lbs. per Ft	1.87

Section M-295

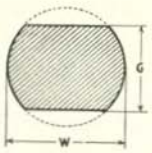


Size, Inches	4 1/4 x 1/8
Thickness, Inches	1/8
Area, Sq. Inches	.59
Weight, Lbs. per Ft	2.006

Section M-272

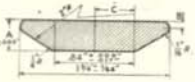
Grommet R. E. O. Flats

Width "W"	Gauge "G"	Section	Area Sq. In.	Weight Lbs. per Ft.
.750	.495	M-273	.3422	1.163
.812	.567	M-240	.4197	1.427
.875	.620	M-276	.4928	1.675
.937	.682	M-223	.581	1.975
1.000	.745	M-274	.6687	2.273
1.125	.745	M-281	.772	2.625



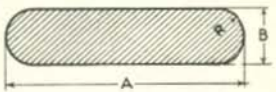
Parabolic Spring Steel Flats

Size Inches	Section	A	B	C	Area Sq. In.	Weight Lbs. per Ft.
1¾ x .231	M-286	.231	.0375	.0104	.344	1.170
1¾ x .251	M-267	.251	.040	.094	.374	1.270
1¾ x .277	M-287	.277	.0425	.198	.409	1.390
1¾ x .298	M-268	.298	.042	.288	.439	1.492



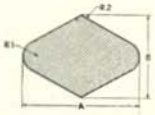
Special Key Round Edge Flats

Width "A" In.	Thickness "B" In.	Radius "R" In.	Section	Area Sq. In.	Weight Lbs. per Ft.
5	1⅛	9/16	M-236	5.353	18.200
5	1¼	⅝	M-237	5.915	20.111
5¾	1½	¾	M-238	8.142	27.683
6	1½	¾	M-239	8.517	28.958



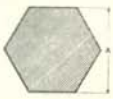
Diamond Bit Stock

Size, Inches A	B	R1	R2	Section	Area Sq. In	Weight Lbs. per Ft.
.690	.500					
.665	.484	5/64	1/32	M-275	.197	.670
.847	.549					
.875	.565	3/32	1/32	M-195	.287	.976



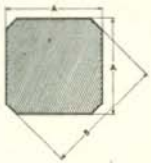
Hexagon

Size "A" Inches	Section	Area Sq. In.	Weight Lbs. per Ft.
11/16	M-234	.409	1.390
13/16	M-235	.571	1.941
.865	M-282	.648	2.203
1½	M-226	1.948	6.623



Mosaic Squares

Size Inches	Section	"A"	"B"	Area Sq. In.	Weight Lbs. per Ft.
3½	M-284	3½	4½	12.05	40.97
3¾	M-283	3¾	4 15/16	13.93	47.36
4⅝	M-285	4⅝	5.9	20.98	71.33



New Billet Steel Rail Steel

CONCRETE REINFORCEMENT BARS

Concrete Reinforcement Bars are described as deformed bars used in tension, compression, temperature and/or shear stresses for concrete reinforcement and may be deformed rounds or squares, or the equivalent in sectional area to the following sizes, which sizes were approved by the United States Department of Commerce Division of Simplified Practice, Recommendation R-26-30, dated September 2, 1930:

Sizes Rolled	Area in Square Inches	Weight Lbs. per Ft.
⅜″ Round	0.11	0.376
½″ Round	0.20	0.668
½″ Square	0.25	0.850
⅝″ Round	0.31	1.043
¾″ Round	0.44	1.502
⅞″ Round	0.60	2.044
1″ Round	0.79	2.670
1″ Square	1.00	3.400
1⅛″ Square	1.27	4.303
1¼″ Square	1.56	5.313

The above weights are used for billing purposes on material ordered to A.S.T.M., and QQ-71a specifications.

Inland Reinforcement Bars are furnished in New Billet Steel and Rail Steel in the standard sizes shown above, conforming to latest standard specifications of the American Society for Testing Materials, and Federal specifications QQ-B-71a.

The Quality Mark of the Concrete Reinforcing Steel Institute appears on our New Billet Bars. Rail Steel Bars bear the Identification Mark of the Rail Steel Bar Association. These Marks together with the Inland Mill Brandings give complete assurance that the material is of the best commercial grade.

Stock reserves are maintained in deformed bars of Intermediate Grade New Billet and Rail Steel from which immediate deliveries can be made when the requirement is urgent.

Additional services such as cutting material to specified lengths and shop bending to detailed dimensions are available when required. Preparation of placing drawings and bar lists will be performed by our experienced engineers upon request. We will be pleased to have your inquiries for complete handling and servicing of jobs including the spirals, accessories and wire mesh.

Inland Structural Steel at Work

STRUCTURAL SHAPES

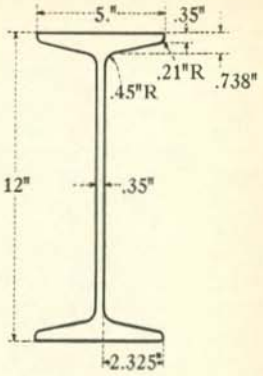
Inland produces a wide range of Standard Structural Shapes and many special sections.

Structural Shapes are generally furnished in steel produced under two specifications: A.S.T.M. A 7-39 for bridges and buildings.

Both specify an ultimate tensile strength of 60,000 lbs. to 72,000 lbs. per square inch; a minimum yield of 33,000 lbs. per square inch; with limitations for phosphorus and sulphur, and with provision for copper, when specified, of not less than .2%.

Structural Shapes may also be ordered to A.S.T.M. specification A 113-39 for locomotives and cars, or in Structural Silicon Steel to A.S.T.M. specification A 94-39, or to other structural specifications.

I-BEAMS

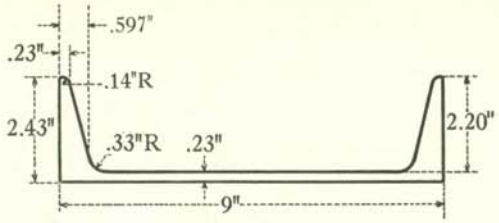


Sizes Rolled

Depth of Beam, Inches	Weight Lbs. per Foot	FLANGE WIDTH Inches and Decimal Parts	FLANGE WIDTH Inches and Fractional Parts	WEB THICKNESS Decimal Parts of Inch	WEB THICKNESS Fractional Parts of Inch
3	5.7	2.330	2 21/64	0.170	11/64
3	6.5	2.411	2 13/32	0.251	1/4
3	7.5	2.509	2 33/64	0.349	11/32
4	7.7	2.660	2 21/32	0.190	3/16
4	8.5	2.723	2 23/32	0.253	1/4
4	9.5	2.796	2 51/64	0.326	21/64
4	10.5	2.870	2 7/8	0.400	13/32
5	10.00	3.000	3	0.210	13/64
5	12.25	3.137	3 9/64	0.347	11/32
5	14.75	3.284	3 9/32	0.494	1/2
6	12.50	3.330	3 21/64	0.230	15/64
6	14.75	3.443	3 7/16	0.343	11/32
6	17.25	3.565	3 9/16	0.465	15/32
7	15.30	3.660	3 21/32	0.250	1/4
7	17.50	3.755	3 3/4	0.345	11/32
7	20.00	3.860	3 55/64	0.450	29/64
8	18.40	4.000	4	0.270	17/64
8	20.50	4.079	4 5/64	0.349	11/32
8	23.00	4.171	4 11/64	0.441	7/16
8	25.50	4.262	4 17/64	0.532	17/32
9	21.8	4.330	4 21/64	0.290	19/64
9	25.0	4.437	4 7/16	0.397	25/64
9	30.0	4.601	4 19/32	0.561	9/16
9	35.0	4.764	4 49/64	0.724	23/32
10	25.40	4.660	4 21/32	0.310	5/16
10	30.00	4.797	4 51/64	0.447	29/64
10	35.00	4.944	4 15/16	0.594	19/32
10	40.00	5.091	5 3/32	0.741	47/64

I-Beams, Cont.

Depth of Beam, Inches	Weight Lbs. per Foot	FLANGE WIDTH		WEB THICKNESS	
		Inches and Decimal Parts	Inches and Fractional Parts	Inch and Decimal Parts	Inch and Fractional Parts
12	31.8	5.000	5	0.35	11/32
12	35.0	5.093	5 3/32	0.436	7/16
12	40.8	5.250	5 1/4	0.460	29/64
12	45.0	5.355	5 23/64	0.565	9/16
12	50.0	5.477	5 31/64	0.687	11/16
12	55.0	5.600	5 19/32	0.810	13/16
15	39.0	5.424	5 27/64	0.334	21/64
15	42.9	5.500	5 1/2	0.410	13/32
15	45.0	5.542	5 35/64	0.452	29/64
15	50.0	5.640	5 41/64	0.550	35/64
15	55.0	5.738	5 47/64	0.648	41/64
15	60.8	6.000	6	0.590	19/32
15	65.0	6.082	6 5/64	0.672	43/64
15	70.0	6.180	6 3/16	0.770	49/64
15	75.0	6.278	6 9/32	0.868	7/8
15	81.3	6.400	6 13/32	0.800	51/64
15	85.0	6.472	6 15/32	0.872	7/8
15	90.0	6.570	6 37/64	0.970	31/32
15	95.0	6.668	6 43/64	1.068	1 1/16
15	100.0	6.767	6 49/64	1.167	1 11/16
18	54.7	6.000	6	0.460	29/64
18	60.0	6.087	6 5/32	0.547	35/64
18	65.0	6.169	6 11/64	0.629	5/8
18	70.0	6.251	6 1/4	0.711	23/32
20	65.4	6.250	6 1/4	0.500	1/2
20	70.0	6.317	6 5/16	0.567	9/16
20	75.0	6.391	6 25/64	0.641	41/64
20	81.4	7.000	7	0.600	19/32
20	85.0	7.053	7 3/64	0.653	21/32
20	90.0	7.126	7 1/8	0.726	23/32
20	95.0	7.200	7 13/64	0.800	51/64
20	100.0	7.273	7 17/64	0.873	7/8
24	79.9	7.000	7	0.500	1/2
24	85.0	7.063	7 1/16	0.563	9/16
24	90.0	7.124	7 1/8	0.624	5/8
24	95.0	7.186	7 3/16	0.686	11/16
24	100.0	7.247	7 1/4	0.747	3/4
24	105.9	7.875	7 7/8	0.625	5/8
24	110.0	7.925	7 59/64	0.675	43/64
24	115.0	7.987	7 63/64	0.737	47/64
24	120.0	8.048	8 1/64	0.798	51/64



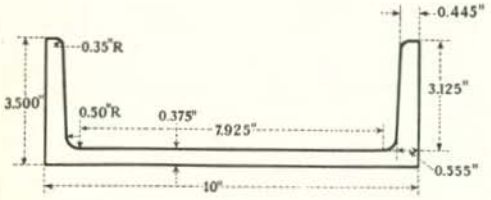
CHANNELS

Sizes Rolled

Depth of Channel, Inches	Weight Lbs. per Ft.	FLANGE WIDTH Inches and Decimal Parts	FLANGE WIDTH Inches and Fractional Parts	WEB THICKNESS Decimal Parts of Inch	WEB THICKNESS Fractional Parts of Inch
3	4.1	1.410	1 13/32	0.170	11/64
3	5.0	1.498	1 1/2	0.258	1/4
3	6.0	1.596	1 19/32	0.356	23/64
4	5.40	1.580	1 37/64	0.180	3/16
4	6.25	1.647	1 41/64	0.247	1/4
4	7.25	1.720	1 23/32	0.320	5/16
5	6.7	1.75	1 3/4	0.19	3/16
5	9.0	1.885	1 57/64	0.325	21/64
5	11.5	2.032	2 1/32	0.472	15/32
6	8.2	1.92	1 59/64	0.20	13/64
6	10.5	2.034	2 1/32	0.314	5/16
6	13.0	2.157	2 5/32	0.437	7/16
6	15.5	2.279	2 9/32	0.559	9/16
7	9.80	2.09	2 3/32	0.21	13/64
7	12.25	2.194	2 3/16	0.314	5/16
7	13.60	2.25	2 1/4	0.36	3/8
7	14.75	2.299	2 19/64	0.419	27/64
7	17.25	2.404	2 13/32	0.524	17/32
7	19.75	2.509	2 33/64	0.629	5/8
8	11.50	2.26	2 17/64	0.22	7/32
8	13.75	2.343	2 11/32	0.303	19/64
8	16.25	2.435	2 7/16	0.395	25/64
8	18.75	2.527	2 17/32	0.487	31/64
8	21.25	2.619	2 5/8	0.579	37/64
9	13.40	2.430	2 7/16	0.23	15/64
9	15.00	2.485	2 31/64	0.285	9/32
9	17.50	2.570	2 37/64	0.37	23/64
9	20.00	2.648	2 41/64	0.448	29/64
9	25.00	2.812	2 13/16	0.612	39/64
10	15.3	2.60	2 19/32	0.24	15/64
10	20.0	2.739	2 47/64	0.379	3/8
10	25.0	2.886	2 57/64	0.526	17/32
10	30.0	3.033	3 1/32	0.673	43/64
10	35.0	3.18	3 3/16	0.82	13/16
12	20.7	2.94	2 15/16	0.28	9/32
12	25.0	3.047	3 3/64	0.387	25/64
12	30.0	3.17	3 11/64	0.51	33/64
12	35.0	3.292	3 19/64	0.632	5/8
12	40.0	3.415	3 27/64	0.755	3/4

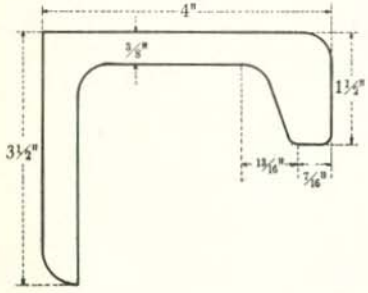
Channels, Cont.

Depth of Channel, Inches	Weight Lbs. per Foot	FLANGE WIDTH Inches and Decimal Parts	FLANGE WIDTH Inches and Fractional Parts	WEB THICKNESS Decimal Parts of Inch	WEB THICKNESS Fractional Parts of Inch
15	33.9	3.400	3 13/32	0.400	13/32
15	35.0	3.422	3 27/64	0.422	27/64
15	40.0	3.520	3 33/64	0.520	33/64
15	45.0	3.618	3 5/8	0.618	5/8
15	50.0	3.716	3 23/32	0.716	23/32
15	55.0	3.814	3 13/16	0.814	13/16



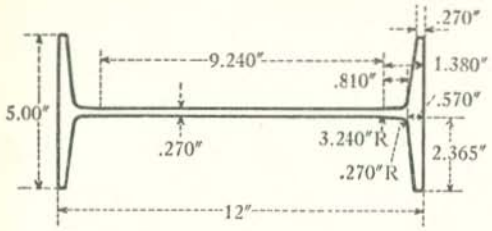
SHIP CHANNELS

Depth of Channel, Inches	Weight Lbs. per Foot	FLANGE WIDTH Inches and Decimal Parts	FLANGE WIDTH Inches and Fractional Parts	WEB THICKNESS Decimal Parts of Inch	WEB THICKNESS Fractional Parts of Inch
6	15.3	3.50	3 1/2	0.35	11/32
6	16.9	3.58	3 37/64	0.43	7/16
6	17.5	3.62	3 5/8	0.47	15/32
6	19.0	3.68	3 11/16	0.53	17/32
7	15.6	3.313	3 5/16	0.313	5/16
7	16.5	3.350	3 11/32	0.350	11/32
7	18.6	3.438	3 7/16	0.438	7/16
7	19.1	3.450	3 29/64	0.350	11/32
7	20.3	3.500	3 1/2	0.400	13/32
7	22.7	3.600	3 19/32	0.500	1/2
7	25.0	3.700	3 45/64	0.600	19/32
10	21.9	3.450	3 29/64	0.325	21/64
10	23.6	3.500	3 1/2	0.375	3/8
10	25.3	3.550	3 35/64	0.425	27/64



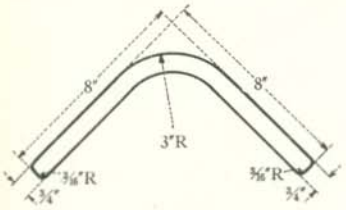
BULB ANGLES

Size, Inches	Thickness, Inches	Weight Lbs. per Ft.
4 x 3 1/2 x 1 1/2	3/8	11.9
4 x 3 1/2 x 1 1/2	1/2	14.3
5 x 3 1/2 x 1 1/2	3/8	13.2
5 x 4 1/2 x 2 1/4	7/16	19.3



SPECIAL I-BEAM

Depth of Beam, Inches	Weight Lbs. per Ft.	FLANGE WIDTH Inches and Decimal Parts	FLANGE WIDTH Inches and Fractional Parts	WEB THICKNESS Decimal Parts of Inch	WEB THICKNESS Fractional Parts of Inch
12	25.0	5.00	5	0.270	17/64

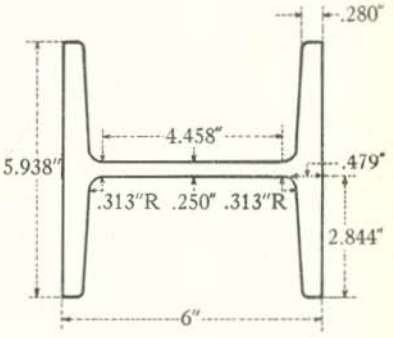


ANGLE
Round Back

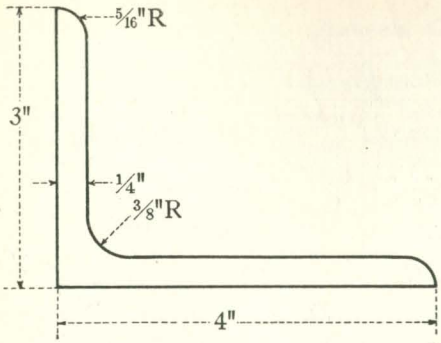
Size Inches	Thickness, Inches	Weight Lbs. per Ft.
8 x 8	3/4	35.7

H-BEAMS

Sections (*) designed for use as Bearing Piles



Depth of Beam, Inches	Weight Lbs. per Ft.	FLANGE WIDTH Inches and Decimal Parts	FLANGE WIDTH Inches and Fractional Parts	WEB THICKNESS Decimal Parts of Inch	WEB THICKNESS Fractional Parts of Inch
6	16.5	4.50	4 1/2	0.281	9/32
6	20.0	5.938	5 15/16	0.250	1/4
6	22.5	6.063	6 1/16	0.375	3/8
6	25.0	5.938	5 15/16	0.313	5/16
6	27.5	6.063	6 1/16	0.438	7/16
8	32.6	7.938	7 15/16	0.313	5/16
*8	33.0	7.953	7 61/64	0.328	21/64
8	34.3	8.000	8	0.375	3/8
*8	36.0	8.063	8 1/16	0.437	7/16
8	37.7	8.125	8 1/8	0.500	1/2



ANGLES

Structural

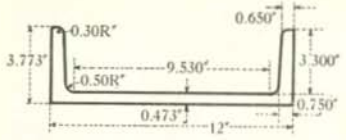
Sizes Rolled

Size, Inches	Thickness, Inches	Weight Lbs. per Foot
Smaller Bar size Angles on Page 29.		
3 x 2	3/16	3.07
3 x 2	1/4	4.1
3 x 2	5/16	5.0
3 x 2	3/8	5.9
3 x 2	7/16	6.8
3 x 2	1/2	7.7
3 x 2 1/2	3/16	3.39
3 x 2 1/2	1/4	4.5
3 x 2 1/2	5/16	5.6
3 x 2 1/2	3/8	6.6
3 x 2 1/2	7/16	7.6
3 x 2 1/2	1/2	8.5
3 x 3	1/8	2.50
3 x 3	3/16	3.71
3 x 3	1/4	4.9
3 x 3	5/16	6.1
3 x 3	3/8	7.2
3 x 3	7/16	8.3
3 x 3	1/2	9.4
3 x 3	9/16	10.4
3 x 3	5/8	11.5
3 1/2 x 2 1/2	3/16	3.8
3 1/2 x 2 1/2	1/4	4.9
3 1/2 x 2 1/2	5/16	6.1
3 1/2 x 2 1/2	3/8	7.2
3 1/2 x 2 1/2	7/16	8.3
3 1/2 x 2 1/2	1/2	9.4
3 1/2 x 2 1/2	9/16	10.4
3 1/2 x 2 1/2	5/8	11.5
3 1/2 x 3	1/4	5.4
3 1/2 x 3	5/16	6.6
3 1/2 x 3	3/8	7.9
3 1/2 x 3	7/16	9.1
3 1/2 x 3	1/2	10.2
3 1/2 x 3	9/16	11.4
3 1/2 x 3	5/8	12.5
3 1/2 x 3 1/2	1/4	5.8
3 1/2 x 3 1/2	5/16	7.2
3 1/2 x 3 1/2	3/8	8.5
3 1/2 x 3 1/2	7/16	9.8
3 1/2 x 3 1/2	1/2	11.1
3 1/2 x 3 1/2	9/16	12.4
3 1/2 x 3 1/2	5/8	13.6
4 x 3	1/4	5.8
4 x 3	5/16	7.2
4 x 3	3/8	8.5
4 x 3	7/16	9.8
4 x 3	1/2	11.1
4 x 3	9/16	12.4
4 x 3	5/8	13.6
4 x 3 1/2	1/4	6.3
4 x 3 1/2	5/16	7.7
4 x 3 1/2	3/8	9.1
4 x 3 1/2	7/16	10.6
4 x 3 1/2	1/2	11.9
4 x 3 1/2	9/16	13.3
4 x 3 1/2	5/8	14.7
4 x 3 1/2	11/16	16.0
4 x 3 1/2	3/4	17.3
4 x 3 1/2	13/16	18.5
4 x 4	1/4	6.6
4 x 4	5/16	8.2
4 x 4	3/8	9.8
4 x 4	7/16	11.3
4 x 4	1/2	12.8
4 x 4	9/16	14.3
4 x 4	5/8	15.7
4 x 4	11/16	17.1
4 x 4	3/4	18.5
4 1/2 x 3	5/16	7.7
4 1/2 x 3	3/8	9.1
4 1/2 x 3	7/16	10.6
4 1/2 x 3	1/2	11.9
4 1/2 x 3	9/16	13.3
4 1/2 x 3	5/8	14.7
4 1/2 x 3	11/16	16.0
4 1/2 x 3	3/4	17.3
4 1/2 x 3	13/16	18.5
5 x 3	5/16	8.2
5 x 3	3/8	9.8
5 x 3	7/16	11.3
5 x 3	1/2	12.8
5 x 3	9/16	14.3
5 x 3	5/8	15.7

Structural Angles, Cont.

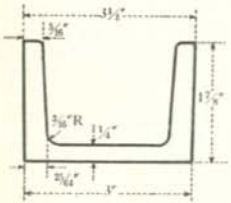
Size, Inches	Thickness, Inches	Weight Lbs. per Foot
5 x 3	11/16	17.1
5 x 3	3/4	18.5
5 x 3	6	19.9
5 x 3½		8.7
5 x 3½	3/8	10.4
5 x 3½	7/16	12.0
5 x 3½	1/2	13.6
5 x 3½	9/16	15.2
5 x 3½	5/8	16.8
5 x 3½	11/16	18.3
5 x 3½	3/4	19.8
5 x 3½	13/16	21.3
5 x 3½	7/8	22.7
5 x 4	5/16	9.3
5 x 4	3/8	11.0
5 x 4	7/16	12.8
5 x 4	1/2	14.5
5 x 4	9/16	16.2
5 x 4	5/8	17.8
5 x 4	11/16	19.5
5 x 4	3/4	21.1
5 x 4	13/16	22.7
5 x 4	7/8	24.2
5 x 5	5/16	10.30
5 x 5	3/8	12.3
5 x 5	7/16	14.3
5 x 5	1/2	16.2
5 x 5	9/16	18.1
5 x 5	5/8	20.0
5 x 5	11/16	21.8
5 x 5	3/4	23.6
5 x 5	13/16	25.4
5 x 5	7/8	27.2
5 x 5	15/16	28.9
5 x 5	I	30.6
6 x 3½	5/16	9.8
6 x 3½	3/8	11.7
6 x 3½	7/16	13.5
6 x 3½	1/2	15.3
6 x 3½	9/16	17.1
6 x 3½	5/8	18.9
6 x 3½	11/16	20.6
6 x 3½	3/4	22.4
6 x 3½	13/16	24.0
6 x 3½	7/8	25.7
6 x 3½	15/16	27.3
6 x 3½	I	28.9
6 x 4	5/16	10.3
6 x 4	3/8	12.3
6 x 4	7/16	14.3
6 x 4	1/2	16.2
6 x 4	9/16	18.1
6 x 4	5/8	20.0
6 x 4	11/16	21.8
6 x 4	3/4	23.6
6 x 4	13/16	25.4
6 x 4	7/8	27.2
6 x 4	15/16	28.9
6 x 4	I	30.6
6 x 6	3/8	14.9
6 x 6	7/16	17.2
6 x 6	1/2	19.6
6 x 6	9/16	21.9
6 x 6	5/8	24.2
6 x 6	11/16	26.5
6 x 6	3/4	28.7
6 x 6	13/16	31.0
6 x 6	7/8	33.1
6 x 6	15/16	35.3
6 x 6	I	37.4
7 x 3½	3/8	13.0
7 x 3½	7/16	15.0
7 x 3½	1/2	17.0
7 x 3½	9/16	19.1
7 x 3½	5/8	21.0
7 x 3½	11/16	23.0
7 x 3½	3/4	24.9
7 x 3½	13/16	26.8
7 x 3½	7/8	28.7
7 x 4	3/8	13.6
7 x 4	1/2	17.9
7 x 4	5/8	22.1
7 x 4	3/4	26.2
7 x 4	7/8	30.2
7 x 4	I	34.0
8 x 6	7/16	20.2
8 x 6	1/2	23.0
8 x 6	9/16	25.7
8 x 6	5/8	28.5
8 x 6	11/16	31.2
8 x 6	3/4	33.8
8 x 6	13/16	36.5
8 x 6	7/8	39.1
8 x 6	15/16	41.7
8 x 6	I	44.2
8 x 6	1 1/8	49.3
8 x 6	1 1/4	54.2
8 x 8	1/2	26.4
8 x 8	9/16	29.6
8 x 8	5/8	32.7
8 x 8	11/16	35.8
8 x 8	3/4	38.9
8 x 8	13/16	42.0
8 x 8	7/8	45.0
8 x 8	15/16	48.1
8 x 8	I	51.0
8 x 8	1 1/16	54.0
8 x 8	1 1/8	56.9

Smaller Bar size Angles on Page 29



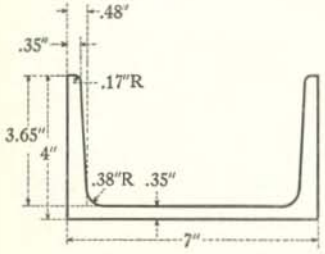
CAR BUILDING CHANNELS

Depth of Channel, Inches	Weight Lbs. per Foot	FLANGE WIDTH Inches and Decimal Parts	FLANGE WIDTH Inches and Fractional Parts	WEB THICKNESS Decimal Parts of Inch	WEB THICKNESS Fractional Parts of Inch
12	35.0	3.767	3 49/64	0.467	15/32
12	40.0	3.890	3 57/64	0.590	19/32
12	44.5	4.000	4	0.700	45/64
12	46.6	4.050	4 1/64	0.750	3/4
12	48.6	4.100	4 1/32	0.800	51/64
12	50.0	4.135	4 1/64	0.835	27/32
13	31.8	4.000	4	0.375	3/8
13	35.0	4.072	4 5/64	0.447	29/64
13	37.0	4.117	4 7/64	0.492	31/64
13	40.0	4.185	4 3/16	0.560	9/16
13	45.0	4.298	4 19/64	0.673	43/64
13	50.0	4.412	4 13/32	0.787	25/32



BRAKE BEAM CHANNELS

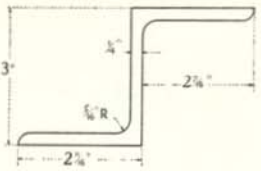
Depth of Channel, Inches	Weight Lbs. per Foot	FLANGE WIDTH Inches and Decimal Parts	FLANGE WIDTH Inches and Fractional Parts	WEB THICKNESS Decimal Parts of Inch	WEB THICKNESS Fractional Parts of Inch
3	6.5	1.875	1 7/8	0.25	1/4
3	7.10	1.938	1 15/16	0.313	5/16
3	9.00	2.125	2 1/8	0.50	1/2
3	10.3	2.25	2 1/4	0.625	5/8



SIDE SILL CHANNEL

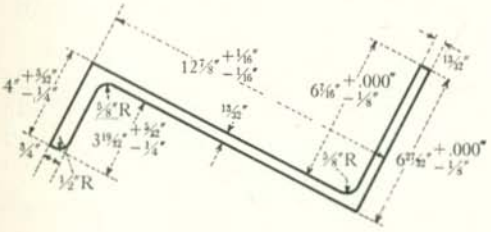
Depth of Channel, Inches	Weight Lbs. per Foot	FLANGE WIDTH Inches and Decimal Parts	FLANGE WIDTH Inches and Fractional Parts	WEB THICKNESS Decimal Parts of Inch	WEB THICKNESS Fractional Parts of Inch
7	18.8	4.	4.	0.35	11/32

Z-BARS
Structural



Width of Flange, Inches	Width of Web, Inches	Width of Flange, Inches	Thickness of Web and Flange, Inches	Weight Lbs. per Foot
2 11/16	3	2 11/16	1/4	6.7
2 3/4	3 1/16	2 3/4	5/16	8.5
2 11/16	3	2 11/16	3/8	9.8
2 3/4	3 1/16	2 3/4	7/16	11.5
3 1/16	4	3 1/16	1/4	8.2
3 1/8	4 1/16	3 1/8	5/16	10.3
3 3/16	4 1/8	3 3/16	3/8	12.5
3 1/16	4	3 1/16	7/16	13.8
3 1/8	4 1/16	3 1/8	1/2	15.9
3 3/16	4 1/8	3 3/16	9/16	18.0
3 1/4	5	3 1/4	5/16	11.6
3 5/16	5 1/16	3 5/16	3/8	14.0
3 3/8	5 1/8	3 3/8	7/16	16.4
3 7/16	5 15/16	3 7/16	5/16	12.9
3 1/2	6	3 1/2	3/8	15.7
3 9/16	6 1/16	3 9/16	7/16	18.4
3 5/8	6 1/8	3 5/8	1/2	21.1
3 11/16	6 3/16	3 11/16	9/16	23.9

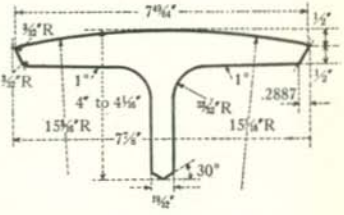
ZEE
CENTER SILL



Size, Inches	Area Sq. In.	Weight Lbs. per Ft.
12 27/32 x 6 13/16 x 3 31/32 x 3/8 and 23/32	9.912	33.70
12 7/8 x 6 27/32 x 4 x 13/32 and 3/4	10.642	36.21
12 15/16 x 6 29/32 x 4 1/16 x 15/32 and 13/16	12.115	41.2

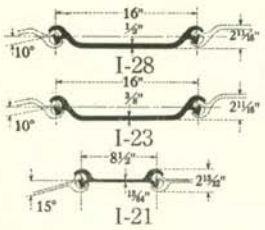
WALL ARMOR TEE

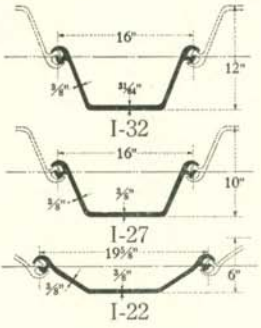
Depth of Beam, inches.....7¾ x 4 x 19/32
Weight Lbs. per Ft.....28.2



INLAND STEEL SHEET PILING

New and Used

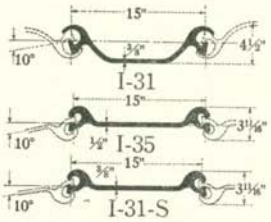




INLAND SECTIONS*

Sections	Weight per Foot	Weight per Sq. Foot Wall	Sec. Modulous	S. M. per Lin. Foot Wall	Interlock Strength lbs. per Inch
I-32	42.7	32.0	20.4	15.3	8,000
I-27	36.0	27.0	14.3	10.7	8,000
I-22	36.0	22.0	8.8	5.4	8,000
I-31	38.8	31.0	8.1	6.5	10,000
I-28	37.3	28.0	3.3	2.5	12,000
I-23	30.7	23.0	3.2	2.4	12,000
I-21	14.9	21.0	1.0	1.4	8,000
I-35	43.8	35.0	3.8	3.1	12,000
I-31-S	38.8	31.0	3.7	3.0	12,000

** Sold at estimated weight*



Inland is a leading producer of steel piling, both for temporary use and permanent installation. The range of Inland sections meets practically all construction requirements.

Special analysis steel provides unusual hardness and tensile strength in excess of 70,000 lbs. per square inch, also resists corrosion. There are numerous records of the re-use of Inland sections as many as 15 times.

The Inland interlock permits free driving, yet remains watertight under pressure.

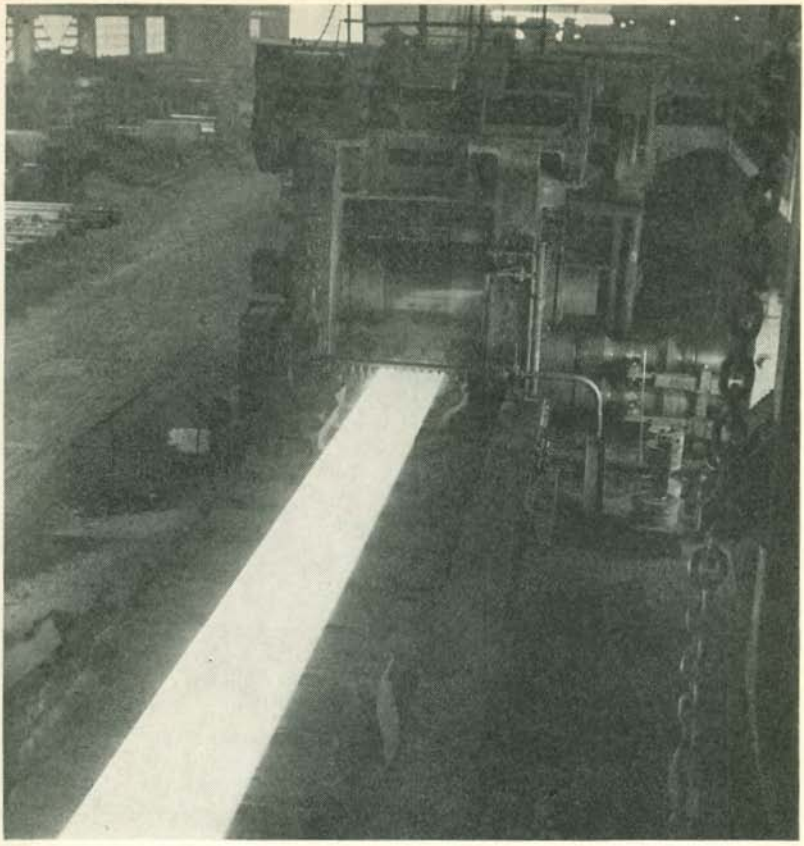
Engineering Service

Inland engineers have had broad experience in working with contractors on piling jobs. Their suggestions and co-operation from the earliest planning stages to the finished job can save much time and money. They have recently developed a Coffer Dam Calculator which greatly reduces the time needed to figure jobs. It will be sent free to interested persons on request.

Rental Service Included

Inland service includes the sale and leasing of both new and used piling.

Write for the Inland Steel Sheet Piling Catalog



Rolling Plates on Continuous Mill

INLAND PLATES

We produce plates to the following A.S.T.M. Specifications:

A 7-39, Structural Steel for Bridges and Buildings
A 10-39, Plates for general purposes

The first two specifications provide for a tensile of 60,000 to 72,000 pounds per square inch; the last specification, 55,000 to 65,000 pounds per square inch.

Provision is made in these specifications for Copper, when specified, of not less than .2%.

We also produce plates of other grades, including Boiler, Firebox and Structural Silicon Steels.

Plate Mill Circles

	Diameters
(Sheared to Size)	
No. 8 U.S.S. Gage	12" to 80"
3/16"	12" to 84"
Heavier than 3/16" to 1/2"	12" to 96"
(Flame Cut to Size)	
3/8" to 2"	12" to 96"

Sheared Plates (Sizes Rolled—Widths and Maximum Length in Inches)

Gage In.	Lbs. per Sq. Ft.	30	36	42	48	54	60	66	72	76	80	84	88	92	94	96
3/16	7.65	....	....	....	1200	600	600	600	600	420	360	300	...	...	...	...
1/4	10.20	1200	1200	1200	1200	1200	1104	1008	924	540	500	480	400	360	360	300
5/16	12.75	1200	1200	1044	960	948	888	792	744	540	500	480	400	360	360	360
3/8	15.30	1140	1140	864	804	792	732	672	612	540	500	500	450	360	360	360
7/16	17.85	984	984	756	684	684	636	576	540	540	500	500	450	360	360	360
1/2	20.40	852	852	648	600	600	600	540	540	540	540	540	450	360	360	360
9/16	22.95	756	756	600	600	600	600	540	540	540	540	480	420	360	360	360
5/8	25.50	684	684	600	600	600	600	540	540	540	480	480	360	360	360	360
3/4	30.60	564	564	540	540	540	540	540	492	468	444	420	360	300	300	300
7/8	35.70	540	540	540	540	500	480	420	360	360	360	360	324	240	240	240
1	40.80	540	540	540	540	492	432	408	360	336	324	300	300	240	240	240
1 1/8	45.90	540	540	400	360	360	360	300	300	240	240	240	240	240	200	Dia.

Gage In.	Lbs. per Sq. Ft.	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	94
1 1/4	51.00	480	480	480	480	450	414	384	360	336	318	300	284	270	258	244	225	220
1 1/2	61.20	480	480	448	408	376	346	320	300	282	264	250	225	224	214	204	196	192
1 3/4	71.40	480	420	384	351	320	296	276	252	240	228	214	204	192	184	176	168	164
2	81.60	420	372	336	306	280	260	240	224	211	198	188	178	168	160	153	147	144
2 1/4	91.80	372	330	300	272	249	231	214	200	188	176	166	158	150	142	136	130	128
2 1/2	102.00	336	300	270	244	225	207	192	180	168	159	150	142	135	128	122	112	108
2 3/4	112.20	306	276	244	222	204	189	176	164	153	144	136	129	122	117	111	106	104
3	122.40	276	248	224	204	186	173	160	150	141	132	125	112	112	107	102	98	94
3 1/4	132.60	258	228	207	188	172	156	148	138	130	122	116	109	104	99	94	...	...
3 1/2	142.80	240	212	192	175	160	148	138	126	120	114	107	102	96	92	88	...	...
3 3/4	153.00	224	198	180	164	150	138	128	120	112	106	100	94	90	85	...	...	...
4	163.20	210	186	168	153	140	130	120	112	105	99	94	89	84	...	...	...	...
4 1/4	173.40	198	174	156	144	132	122	113	106	99	94	88	83	...	...	...	...	...
4 1/2	183.60	186	165	150	136	125	115	107	100	94	88	83	...	...	...	...	...	...
4 3/4	193.80	176	156	142	129	118	109	101	95	89	83	...	...	...	...	...	...	...
5	204.00	168	150	135	122	112	103	96	90	84	...	...	...	...	...	...	...	...
5 1/4	214.20	156	142	129	117	107	99	92	86	...	...	...	...	...	...	...	...	...
5 1/2	224.40	153	138	122	111	102	94	88	...	...	...	...	...	...	...	...	...	...
5 3/4	234.60	144	129	116	105	98	90	84	...	...	...	...	...	...	...	...	...	...
6	244.80	138	120	112	102	94	86	82	...	...	...	...	...	...	...	...	...	...

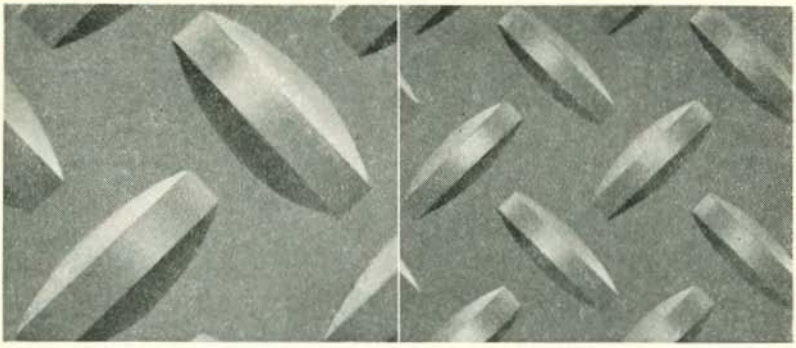
Information on narrower widths furnished on request. For intermediate widths not shown use length of next greater width.

Universal Mill Plates (Sizes Rolled. Lengths shown in feet)

Thickness, Inches	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8
Width, Inches											
6¼	65	65	65	65	65	65	65	65	65	58	58
6½ to 26, incl.	65	65	65	65	65	65	65	65	65	65	65

Thickness, Inches	15/16	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	1 7/8	2
Width, Inches										
6¼	52	52	48	48	40	40	35	35	30	30
6½	65	65	52	52	44	44	36	36	32	32
6¾	65	65	52	52	44	44	36	36	32	32
7	65	65	52	52	52	52	45	45	38	38
7½	65	65	54	54	54	54	45	45	40	40
8	65	65	60	60	60	60	52	52	45	45
9	65	65	60	60	60	60	52	52	45	45
10	65	65	50	50	50	50	43	43	39	39
11	65	65	46	46	46	46	41	41	35	35
12 to 26, incl.	65	65	48	48	48	48	41	41	36	36

We also produce Hot Rolled Strip with universal mill rolled edges in thicknesses less than ¼" to and including 3/16", in widths 7" to 16", inclusive. (See Page 10).



Standard Pattern Actual Size *Light Pattern*

Inland 4-Way Floor Plate

Inland 4-Way Floor Plate is rolled with scientifically designed, curved projections on one side in two sizes of pattern. The 4-Way pattern was originated by Inland, and has the following important advantages:

> 4-WAY SAFETY, the resistance to slip is the same in four directions, the shape of the projections does not allow a heel to be caught; 4-WAY STIFFNESS, the plate is just as rigid lengthwise as it is crosswise; 4-WAY MATCHING, can be cut to match at end and side to give a continuous pattern; 4-WAY DRAINAGE and CLEANING, drains readily in four directions, ***preventing water accumulation and ice formation.***

Inland Floor Plate can be used structurally or as a floor covering. It places the strength and toughness of rolled steel under foot with the economy of long life, without need for repairs even under the most difficult conditions.

In the industrial plant it increases production efficiency. Men and trucks start faster, move faster and stop more quickly and safely. Injuries and liability for slipping and falling accidents are reduced.

Fabrication

Inland 4-Way Steel Floor Plate is used extensively for treads and landings in stair construction. Plates may be cut to size and bent to form nosing and riser.

Inland 4-Way treads with turned down nosing makes an ideal wearing and slip-proof surface for concrete stairs.

Wood treads can be made to last for a long time when protected with the hard-wearing surface of Inland 4-Way steel plate.

Sidewalk doors, hatchway, manhole and sump pit covers, etc., are easily constructed of INLAND 4-Way slip-proof plates.

Inland 4-Way Traffic Plate

They provide an economical way to lengthen the useful life of all bridges, particularly bridges with wooden floors.

Tires get a secure grip on Inland 4-Way Traffic Plates. The projections reinforce the Plate both lengthwise and crosswise, providing 4-Way Stiffness and Safety. Inland 4-Way Traffic Plates give added strength and rigidity to old or new bridges, and greatly reduce vibration and noise.

Specifications as to widths and lengths, punching, fasteners, and laying will be gladly furnished upon request.

Write for the Inland 4-Way Floor Plate Catalog

Sizes Rolled

Standard Floor Plate (1¼" tread)

Gage	Lbs. per Square Foot	WIDTH IN INCHES — MAXIMUM LENGTH IN INCHES						
		36	42	48	54	60	66	72
3/16"	8.70	600	600	600	600	600	600	600
1/4"	11.25	600	600	600	600	600	600	600
5/16"	13.80	600	600	600	600	600	600	600
3/8"	16.35	600	600	600	600	600	600	582
7/16"	18.90	600	600	600	600	600	546	504
1/2"	21.45	600	600	576	570	528	480	444
9/16"	24.00	600	558	516	504	474	432	396
5/8"	26.55	600	504	462	456	432	390	360
3/4"	31.65	552	420	390	384	360	324	300

Light Floor Plate (¾" tread)

Gage	Lbs. per Square Foot	WIDTH IN INCHES — MAXIMUM LENGTH IN INCHES						
		48	50	52	54	60	66	72
No. 16	2.82	193	...	...	...	...	...	...
No. 15	3.132	193	193	...	...	...	...	...
No. 14	3.445	193	193	193	...	...	...	...
No. 13	4.07	600	600	600	600	...	...	...
No. 12	4.695	600	600	600	600	600	...	...
No. 11	5.32	600	600	600	600	600		
3/16"	7.97	600	600	600	600	600	600	...
1/4"	10.52	600	600	600	600	600	600	600
5/16"	13.07	600	600	600	600	600	600	600
3/8"	15.62	600	600	600	600	600	600	600

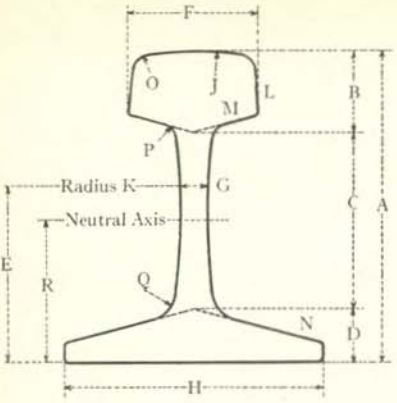
Safe Uniform Load

Lbs. Per Sq. Ft.

Gage	SPAN								
	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	6'-0"
3/16"	333	188	120	84	61	47	...	...	...
1/4"	593	333	213	148	109	83	66	53	...
5/16"	925	520	333	232	170	130	103	83	58
3/8"	1335	750	480	333	245	188	148	120	84
7/16"	1810	1020	655	453	333	255	204	164	113
1/2"	2370	1330	852	592	435	333	264	213	148
9/16"	3000	1690	1080	750	550	423	333	270	187
5/8"	3700	2080	1330	925	680	520	411	333	232
3/4"	5340	3000	1920	1330	980	750	593	480	333
Deflection Coefficient	.035	.066	.095	.149	.250	.265	.338	.415	.595

Thickness of plate is thru body, does not include projections. Loads include weight of plates. f=16,000. Deflections above the under lining will exceed 1/100th of the span. Deflection in inches with maximum safe uniform load = Deflection coefficient divided by Thickness of plate in inches. Deflection in inches with any uniform load within the elastic limit = Deflection coefficient times actual load per sq. ft., all divided by maximum safe load per sq. ft.

FLOOR PLATES 48
RAILS & TRACK ACC'S 50
RAIL STEEL 56
SPEC'S 70
INDEX 77



INLAND RAILS
And Track Accessories

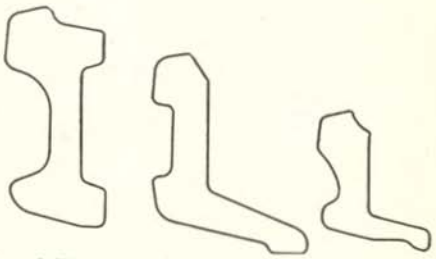
Rails

Inland Steel Co. is equipped to supply Rails of twenty-seven different standard and special sections, from 131 to 80 pounds per yard inclusive. Dimensions and characteristics of these rails are shown in the accompanying table.

The method of controlling the cooling rate of rails followed by Inland has resulted in the elimination of shatter cracks, commonly conceded to be the main cause of that rail defect known as the internal transverse fissure. Inland has for the past several years supplied constantly increasing tonnages of controlled cooled rails until now the output is nearly all so treated.

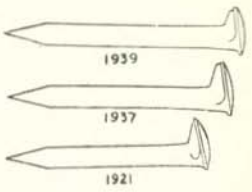
Inland rails are furnished either with or without hardened ends.

Joint Bars



Inland has rolls for producing sixty-four joint bar sections from which twenty-seven other sections are forged for use with rails of 131 to 50 pounds per yard. These cover standard and special designs and are rolled from billet steel.

Track Spikes



Inland manufactures track spikes of the AREA 1921 long head design, the 1937 long head, reinforced throat design and the 1939 short head design, as well as those of special designs. Numbers of track spikes per 200-pound keg are shown in the following table for various sizes, lengths and AREA designs.

Number of Track Spikes Per 200 Lb. Keg.

SIZE	LENGTH									
	6½"			6"			5½"		5"	
	DESIGN									
	1939	1937	1921	1939	1937	1921	1937	1921	1937	1921
⅝	236	230	233	246	240	243	253	256	...	...
9/16	...	...	...	...	293	296	315	318	343	346

RAILS (Sizes Rolled)

SECTION	DIMENSIONS															CHARACTERISTICS								WGT.
	HEIGHT—Inches					WIDTH Inches			RADII Inches		SLOPES			CORNERS AND FILLETS			ELEMENTS				AREAS				
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	I	Sh	Sb	HEAD	WEB	BASE	TOTAL	PER YD.
13128 AREA	7 1/8	1 3/4	4 3/16	1 3/16	4 1/4	3	2 1/2	6	14	(10) (23)	1:40	1:4	1:4	(1) ‡ (3/8)	1/2	3/4	3.2	88.5	22.6	27.6	(4.49) (35.0)	(3.46) (27.0)	(4.87) (38.0)	(12.82) (100.0)	130.8
Former										(10)				(1) ‡							(4.54)	(3.46)	(4.86)	(12.86)	
13125 AREA	7 1/8	1 3/4	4 3/16	1 3/16	4 1/4	3	2 1/2	6	24	(23)	1:40	1:4	1:4	(3/4)	1/2	3/4	3.22	88.86	22.75	27.60	(35. 3)	(26. 9)	(37. 8)	(100. 0)	131.17
13031 .PS..... (AREA)	6 5/8	.2....	3 13/32	.1 7/32	.3 1/4	3....	1 1/16	.5 1/2	12.	.16.	Vert.	18°	.14°	.7/16	.1/2	.3/4	3 3/32	.72.8	.20.6	.23.5	(5. 0) .(39. 4)	(2. 8) .(22. 0)	(4. 9) .(38. 6)	(12. 7) .(100. 0)	.129.9
13027 HF†	6 15/16	2 1/2	3 11/16	1 7/32	3 3/8	2 27/32	2 1/2	6	14	14	16:1	1:4	1:4	3/8	1/2	3/4	3.08	81.16	21.03	26.35	(4 63) (36. 4)	(3.02) (23. 8)	(5.06) (39. 8)	(12.71) (100. 0)	129.64
Former																					(4.63)	(3.02)	(5.06)	(12.71)	
13025 .AREA.	6 3/4	.1 27/32	.3 11/16	.1 7/32	.3 3/8	2 15/16	.2 1/2	.6...	14.	.14.	1:16	.4:1	.4:1	.3/8	.1/2	.3/4	3 1/2	.77	4	.20.8	.25.6	.(36. 4)	.(23. 8)	.(39. 8)	.(100. 0)	.129.64
12722 NYC	7	1 11/16	4 5/32	1 5/32	3 7/8	3	2 1/2	6 1/4	14	18 (10)	16:1	4:1	4:1	5/16 (1) ‡‡	1/2	3/4	3.1	83.7	21.5	27.0	(4.38) (35. 1)	(3.14) (25. 1)	(4.96) (39. 8)	(12.48) (100. 0)	127.3
11228 .AREA. (AREA)	6 5/8	.1 11/16	.3 13/16	.1 3/8	.3 3/4	2 23/32	.1 9/32	.5 1/2	14.	(23) (10)	1:40	.4:1	.4:1	(3/8)	.3/8	.5/8	3.0	.65.5	.18.1	.21 8	(3.95) (35. 9)	(2.77) (25. 1)	(4.29) (39. 0)	(11.01) (100. 0)	.112.3
11227 HF††	6 3/4	1 13/16	3 13/16	1 3/8	3 3/4	2 11/16	1 9/32	5 1/2	14	(23) (10)	1:40	4:1	4:1	3/8 (1) ‡‡	3/8	5/8	3.02	68.1	18.3	22.5	(3.89) (35. 5)	(2.77) (25. 3)	(4.29) (39. 2)	(10.95) (100. 0)	111.69
Former																					(3.96)	(2.77)	(4.29)	(11.02)	
11225 .AREA.	6 5/8	.1 11/16	.3 13/16	.1 3/8	.3 3/4	2 23/32	.1 9/32	.5 1/2	24.	.(23)	1:40	.4:1	.4:1	(1/4)	.3/8	.5/8	2.98	.65.8	.18.1	.22.1	.(35. 9)	.(25. 1)	.(39. 0)	.(100. 0)	.112.40
11036 GN (AREA)	6 1/2	1 5/8	3 3/4	1 3/8	3 1/4	2 3/4	1 9/32	5 1/2	14	14	1:16	1:4	1:4	3/8	1/2	5/8	2.91	62.41	17.37	21.46	(3.82) (35.14)	(2.75) (25.30)	(4.30) (39.56)	(10.87) (100.00)	110.86
11027 .HF††† Former	6 7/16	.1 29/32	.3 13/32	.1 3/8	.3 3/8	2 11/16	.1 9/32	.5 1/2	14.	.14.	1:16.	.4:1	.4:1	.3/8	.3/8	.5/8	2.88	.60.28	.16.93	.20.90	(4.07) (37.51)	(2.49) (22.95)	(4.29) (39.54)	(10.85) (100.00)	.110.67
																					(4.04)	(2.49)	(4.29)	(10.82)	
11025 AREA	6 1/4	1 25/32	3 13/32	1 3/8	3 3/8	2 25/32	1 9/32	5 1/2	14	14	16:1	4:1	4:1	3/8	3/8	5/8	2 53/64	57.0	16.7	20.1	(37. 4)	(22. 0)	(39. 6)	(100. 0)	110.36
10955 .Crane.# NYC	5 7/16	.1 29/64	.2 51/64	.1 1/2	.2 53/64	2 3/4	.1 5/16	.5 1/2	12.	.14.	16:1	.13°	.13°	.7/16	.7/16	.5/8	2.45	.38.75	.13.08	.15.81	(3.79) .(35.29)	(3.03) .(28.21)	(3.92) .(36.50)	(10.74) .(100.00)	.109.55
10524 Dudley	6	1 5/8	3 13/32	31/32	3 1/8	3	5/8	5 1/2	14	14	1/16:1	4:1	4:1	5/16	1/2	3/4	2.88	49.86	15.96	17.30	(4.20) (40. 9)	(2.46) (24 0)	(3.60) (25. 1)	(10.26) (100. 0)	104.4

†"Head Free"—Slope 61°—Corners 1/4".
††"Head Free"—Slope 58°—Corners 3/8" and 1/4". Vertical distance to upper corner 11/16".
†††"Head Free"—Slope 55° 30'—Corners 1/4".
#Crane Rail Section 69.46 lbs. on Page 55.

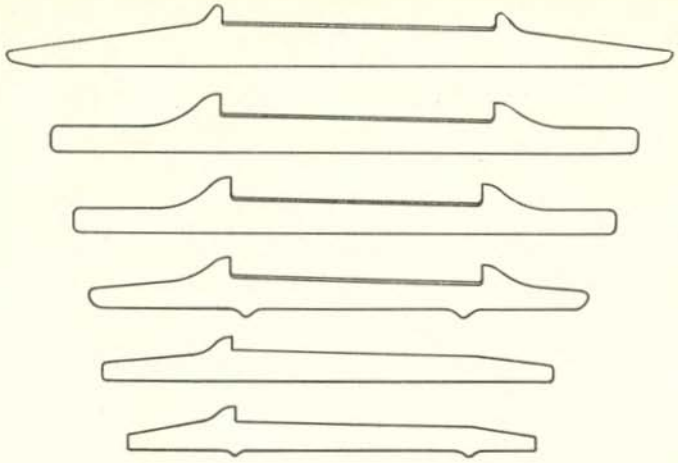
‡Horizontal distance between 1" radii 1 13/16".
‡‡Horizontal distance between 1" radii 1 19/32".

(Continued on Following Page)

RAILS—Continued

SECTION	DIMENSIONS														CHARACTERISTICS									
	HEIGHT—Inches					WIDTH Inches			RADII Inches		SLOPES			CORNERS AND FILLETS			ELEMENTS				AREAS				WGT.
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	I	Sh	Sb	HEAD	WEB	BASE	TOTAL	PER YD.
10035.C&NW.	5 43/64	1 33/64	2 61/64	1 9/64	2 29/128	2 5/16	9/16	5 5/64	12	12	*	13°	13°	3/8	5/16	5/16	2.53	42.20	13.31	16.68				(100. 0)	100.30
10031 PS	5 11/16	1 13/16	2 33/64	1 3/32	2 31/64	2 43/64	9/16	5	10	10	**	15°	13°	7/16	5/16	5/16	2.63	41.9	13.71	15.91	(4.09) (41. 0)	(1.85) (18. 6)	(4.03) (40. 4)	(9.97) (100. 0)	101.7
10030.ARA-B.	5 41/64	1 43/64	2 33/64	1 3/64	2 63/128	2 21/32	9/16	5 5/64	12	12	*	13°	13°	3/8	5/16	5/16	2.63	41.30	13.72	15.70	(3.95) (40. 2)	(1.89) (19. 2)	(4.00) (40. 6)	(9.85) (100 0)	100
10025 AREA	6	1 31/32	3 3/32	1 1/16	2 31/32	2 11/16	9/16	5 3/8	14	14	16:1	4:1	4:1	3/8	3/8	3/8	2.75	49.0	15.1	17.8	(3.80) (38. 2)	(2.25) (22. 6)	(3.90) (39. 2)	(9.95) (100. 0)	101.49
10020.ARA-A.	6	1 9/16	3 3/8	1 1/16	2 13/16	2 3/4	9/16	5 1/2	14	14	1/16:1	4:1	4:1	3/8	3/8	3/8	2.75	48.94	15.04	17.80	(3.63) (36. 9)	(2.30) (23. 4)	(3.91) (39. 7)	(9.84) (100. 0)	100.37
9040 ASCE	5 3/8	1 19/32	2 33/64	39/64	2 45/128	2 3/8	9/16	5 3/8	12	12	Vert.	13°	13°	5/16	1/4	1/4	2.55	34.39	12.17	13.49	(3.71) (42)	(1.85) (21)	(3.26) (37)	(8.82) (100)	90
9024 GN	5 3/8	1 15/32	2 7/8	1 1/32	2 33/64	2 3/8	9/16	5	12	14	1/16:1	13°	13°	7/16	7/16	5/8	2.41	34.15	11.50	14.19	(3.26) (36. 6)	(1.94) (21. 8)	(3.71) (41. 6)	(8.91) (100. 0)	90.88
9021.SF.	5 3/8	1 13/32	3 5/32	1	2 29/32	2 5/16	9/16	5 5/16	14	14	1/16:1	4:1	4:1	3/8	3/8	3/8	2.55	37.02	12.02	14.52	(3.16) (36.11)	(2.10) (24.00)	(3.49) (39.89)	(8.75) (100.00)	89.25
9020 ARA-A	5 3/8	1 15/32	3 5/32	1	2 29/32	2 5/16	9/16	5 3/8	14	14	16:1	4:1	4:1	3/8	3/8	3/8	2.54	38.70	12.56	15.24	(3.19) (36. 2)	(2.12) (24. 0)	(3.51) (39. 8)	(8.82) (100. 0)	89.96
8540.ASCE.	5 5/16	1 33/64	2 3/4	57/64	2 17/64	2 5/16	9/16	5 5/16	12	12	Vert.	13°	13°	5/16	3/4	3/4	2.47	30.07	11.06	12.18	(3.50) (42)	(1.75) (21)	(3.08) (37)	(8.33) (100. 0)	85
8524.CP.	5 1/8	1 7/16	2 11/16	1	2 11/32	2 1/2	9/16	5	8	8	***	4:1	4:1	3/4	3/8	3/8	2.30	29.49	10.43	12.83				(8.34) (100. 0)	85.07
8521 KCS	5 3/8	1 29/64	2 15/16	63/64	2 33/64	2 17/32	17/32	4 3/8	14	12	1/16:1	4:1	4:1	3/8	3/8	3/8	2.43	34.00	11.50	13.99	(3.14) (37. 7)	(1.85) (22. 2)	(3.35) (40. 1)	(8.34) (100. 0)	85
8040.ASCE.	5	1 1/2	2 3/8	7/8	2 3/16	2 1/2	35/64	5	12	12	Vert.	13°	13°	5/16	3/4	3/4	2.38	26.38	10.07	11.08	(3.30) (42. 0)	(1.65) (21. 0)	(2.91) (37. 0)	(7.86) (100. 0)	80.71

*3/64" in height of side of head.
**11/128" in height of side of head.
***1/8" in height of side of head.



Tie Plates

Inland Tie Plates are produced in fifty-seven different sections, ranging from 14¾ to 8½ inches in length.

These sections can be furnished with several degrees of cant, to suit the base width of different rails, of various lengths, and types of bottom, with either rolled crown or pressed camber, single or double shoulder, and ends inclined or flat for use with "hold-down" spikes, as desired.

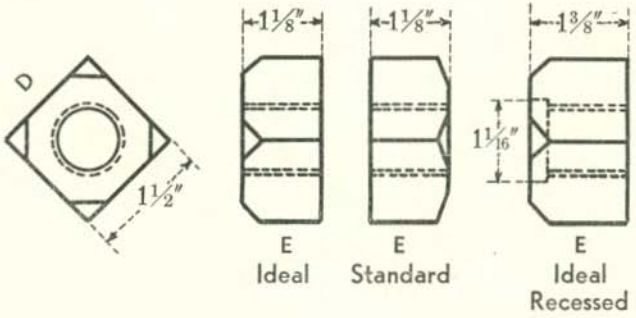
Tie Plates are rolled from either medium steel or hard-grade steel, hot worked.

Track Bolts and Nuts

Inland Track Bolts have rolled threads. Sizes for both quenched and cold rolled bolts range in diameter from 1⅛" to ⅝" and from 6½" to 2½" in length. Accompanying tables show dimensions together with numbers of bolts with nuts contained in a 200-lb. keg. Other sizes can be furnished.

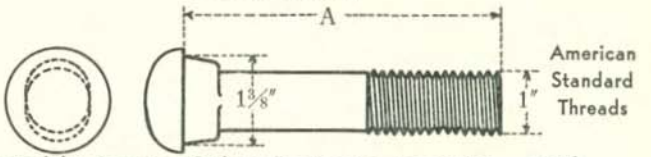
Nuts are furnished in either low or high carbon steel, and nuts may be supplied separately, if required.

Dimensions shown are for nuts used with AREA 1 inch track bolt shown at top of page 54.



RAIL STEEL 56
SPEC'S 70
INDEX 77

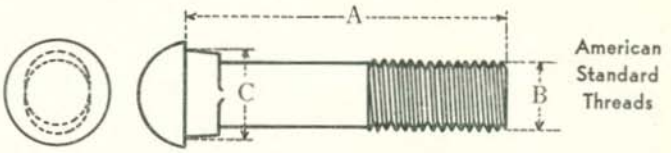
Track Bolts



(Adopted by American Railway Engineering Association — 1934)

Number of Track Bolts with Nuts per 200 Lb. Keg

Length A	Ideal	Standard	Ideal Rec's'd	Length A	Ideal	Standard	Ideal Rec's'd	Length A	Ideal	Standard	Ideal Rec's'd
6¾	97	95	93	6	105	103	100	5¼	113	111	107
6½	100	98	95	5¾	107	105	102	5	116	114	110
6¼	102	100	97	5½	110	108	105	4¾	120	118	113



Quenched

Number of Track Bolts with Nuts per 200 Lb. Keg

BOLT B	BOLT C	NUT D	NUT E	NUT Kind	LENGTH OF BOLT "A" 6½	6¼	6	5¾	5½	5¼	5	4¾	4½	4¼	4	3¾	3½	3¼	3
			1⅜	Ideal	70	71	73	75	76	78	79	...	...	...	...	...	...	...	...
1⅜	1 17/32	1 15/16	1⅜	St'd	70	71	72	74	75	77	78	...	...	...	...	...	...	...	...
			1½	Rec'd	68	69	70	72	73	75	76								
			1¼	Ideal	85	87	89	91	94	96	98	...	...	...	...	...	...	...	...
1 1/16	1⅜	1⅜	1¼	St'd	83	85	87	89	91	94	96	...	...	...	...	...	...	...	...
			1⅜	Rec'd	82	84	86	88	90	92	94								
			1¼	Ideal	91	93	95	97	99	102	104	107	110	113	116	...	...	...	...
1	1⅜	1⅜	1¼	St'd	90	92	94	96	99	101	103	106	109	112	115	...	...	...	...
			1⅜	Rec'd	89	90	92	95	97	99	101	104	106	109	112				
			1⅜	Ideal	..	..	..	..	119	123	126	129	133	137	141	...	...	...	...
15/16	1 7/32	1⅜	1⅜	St'd	..	..	..	..	119	123	126	129	133	137	141	...	...	...	...
			1¼	Rec'd					115	118	121	124	128	131	135				
			1⅜	Ideal	..	..	..	..	134	137	141	145	149	153	157	162	167	172	177
⅞	1 7/32	1 7/16	1⅜	St'd	..	..	..	..	133	136	139	144	147	151	156	160	165	170	175
			1¼	Rec'd					129	132	135	139	143	146	150	154	159	164	168
			1	Ideal	..	..	..	..	...	...	...	...	178	183	188	194	201	208	215
13/16	1 1/16	1⅜	1	St'd	..	..	..	..	...	...	...	...	177	182	187	193	199	207	215
			1⅜	Rec'd									170	175	179	184	190	197	203
			1	Ideal	..	..	..	..	...	...	...	...	213	219	226	234	241	250	258
¾	1 1/16	1¼	1	St'd	..	..	..	..	...	...	...	...	213	219	226	234	241	250	258
			1⅜	Rec'd									203	209	215	221	228	235	243

Cold Rolled

Number of Track Bolts with Nuts per 200 Lb. Keg

BOLT B	BOLT C	NUT D	NUT E	NUT Kind	LENGTH OF BOLT "A" 6	5¾	5½	5¼	5	4¾	4½	4¼	4	3¾	3½	3¼	3
				Ideal...	101	104	107	109	113	116	119	122	126	...	...	...	...
1	1⅜	1⅜	1	St'd	102	105	107	110	113	116	119	123	127				
				Ideal...	...	...	125	128	132	136	140	144	149	155	159	...	...
15/16	1 7/32	1½	15/16	St'd			124	128	131	135	139	144	148	153	158		
				Ideal...	...	...	143	148	152	157	163	167	172	178	183	...	...
⅞	1 7/32	1 7/16	⅞	St'd			146	149	153	158	163	168	173	179	184		
				Ideal...	...	...	168	173	178	184	190	196	201	208	216	...	...
13/16	1 1/16	1⅜	13/16	St'd			169	174	179	184	190	197	202	209	217		
				Ideal...	...	...	...	...	220	227	235	243	251	260	269	279	290
¾	1 1/16	1¼	¾	St'd					220	227	235	243	251	260	269	279	290

Quantities of Rails and Fastenings per One Mile of Single Track

(39 Ft. Rails)

RAILS				† Joint Bars — (Prs.)	TRACK BOLTS††			TIE PLATES		TRACK SPIKES†††				
SECTION		Weight	Gross Tons		Number	Sizes, Inches	Kegs (200 Lbs.)	24 Ties per 39 Ft. Rail	22 Ties per 39 Ft. Rail	Sizes, Inches	24 Ties Per 39 Ft. Rail 3249 Ties Per Mile		22 Ties Per 39 Ft. Rail 2978 Ties Per Mile	
											Pieces	Kegs	Pieces	Kegs
13125	RE	131.2	206.17	278	1112	1x6¼	11.1	6498	5956	5/8x6	12,996	54.2	11,912	49.6
13025	RE	129.6	203.66	278	1112	1x5¾	10.7	"	"	"	"	"	"	"
12722	NYC	127.3	200.04	278	1112	15/16x4¾	8.5	"	"	"	"	"	"	"
11228	RE....	112.3	176.47	278	1112	1x6..	10.9	"	"	"	"	"	"	"
11025	RE	110.4	173.48	278	1112	1x5½	10.4	"	"	"	"	"	"	"
10524	Dudley	104.7	164.53	278	1112	15/16x4¾	8.5	"	"	"	"	"	"	"
10025	RE	101.5	159.50	278	1112	1x5½	10.4	"	"	"	"	"	"	"
10020	RA-A..	100.4	157.77	278	1112	1x5½	10.4	"	"	5/8x6..	"	54.2	"	49.6
9020	RA-A	90.0	141.43	278	1112	1x5¼	10.3	"	"	9/16x5½	"	41.1	"	37.7
8540	ASCE	85.0	133.57	278	1112	15/16x4¾	8.5	"	"	9/16x5½	"	41.1	"	37.7
8040	ASCE	80.2	126.03	278	1112	15/16x4½	8.3	"	"	9/16x5½	"	41.1	"	37.7

†Assuming 89% 39 ft. long and 11% 32 ft. long.
††Assuming 4 track bolts per joint.
†††Assuming 4 track spikes per tie.

Mileage and Quantities of Rail Fastenings per 1,000 Gross Tons of Rails

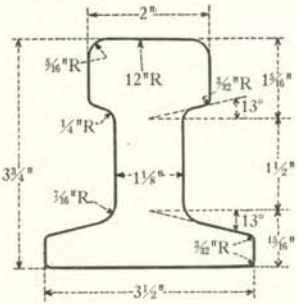
(39 Ft. Rails)

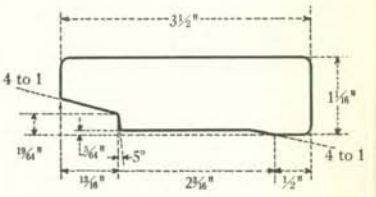
RAILS				† Joint Bars — (Prs.)	TRACK BOLTS††			TIE PLATES		TRACK SPIKES†††				
SECTION		Weight	Length (Track Miles)		Number	Sizes, (Inches)	Kegs (200 Lbs.)	24 Ties per 39 Ft. Rail	22 Ties per 39 Ft. Rail	Sizes, (Inches)	24 Ties Per 39 Ft. Rail 3249 Ties Per Mile		22 Ties Per 39 Ft. Rail 2978 Ties Per Mile	
											Pieces	Kegs	Pieces	Kegs
13125	RE	131.2	4.85	1348	5392	1x6¼	53.8	31515	28887	5/8x6	63031	263	57773	240
13025	RE	129.6	4.91	1365	5460	1x5¾	52.5	31905	29244	"	63810	266	58488	243
12722	NYC	127.3	5.00	1390	5560	15/16x4¾	42.5	32490	29780	"	64980	271	59560	248
11228	RE....	112.3	5.67	1576	6304	1x6..	61.8	36844	33771	"	73687	307	67541	281
11025	RE	110.4	5.76	1601	6404	1x5½	49 8	37428	34307	"	74857	312	68613	286
10524	Dudley	104.7	6.08	1690	6760	15/16x4¾	51.7	39508	36212	"	79016	329	72425	302
10025	RE	101.5	6.27	1743	6972	1x5½	65.2	40742	37344	"	81485	339	74688	311
10020	RA-A..	100.4	6.34	1763	7052	1x5½	66.0	41197	37761	5/8x6..	82395	344	75522	314
9020	RA-A	90.0	7.07	1965	7860	1x5¼	72.8	45941	42109	9/16x5½	91882	291	84218	266
8540	ASCE	85.0	7.49	2082	8328	15/16x4¾	63.7	48670	44610	9/16x5½	97340	308	89221	282
8040	ASCE	80.2	7.93	2205	8820	15/16x4½	65.8	51529	47231	9/16x5½	103058	326	94462	299

†Assuming 89% 39 ft. long and 11% 32 ft. long.
††Assuming 4 track bolts per joint.
†††Assuming 4 track spikes per tie.

Crane Rail M-158

Size . 3¾"x3½"x1⅛"
Area, Sq. In...6.81
Lbs. per Yd...69.46





Rail Clip M-120

Size.....3½"x1 1/16"
Lbs. per Ft.....10.83

RAIL STEEL 56
SPEC'S 70
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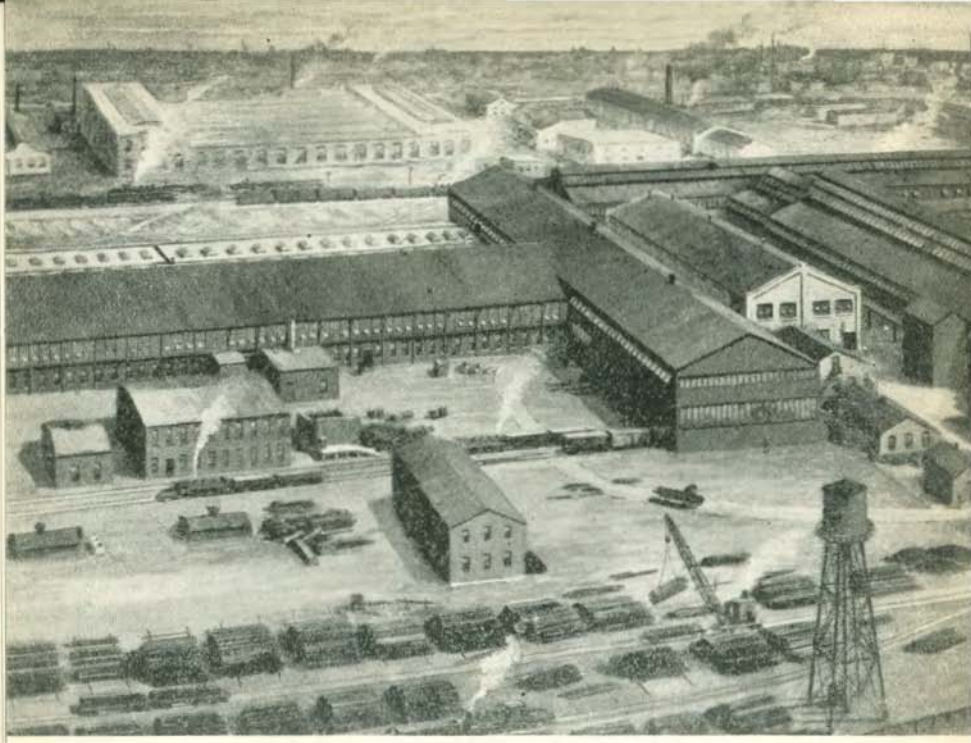


RAIL STEEL BARS AND SHAPES

Rail Steel is the established trade and technical term used to identify the products rolled from standard section tee rails. Rail Steel bars and shapes are more economically priced than like sections made from new billet steel.

Inland's Chicago Heights plant has been engaged in the production of Rail Steel for almost a half century. You are invited to consult with Inland engineers regarding its applications to your products.

Properties of Rail Steel

High-tensile strength and toughness are two fundamental characteristics of Rail Steel.

Uniformity, another important characteristic, results from the rigid inspection and classification of selected rails, followed by closely controlled reheating and additional rolling which brings about further grain refinement. This uniformity is confirmed in published reports of investigations by the National Research Council.

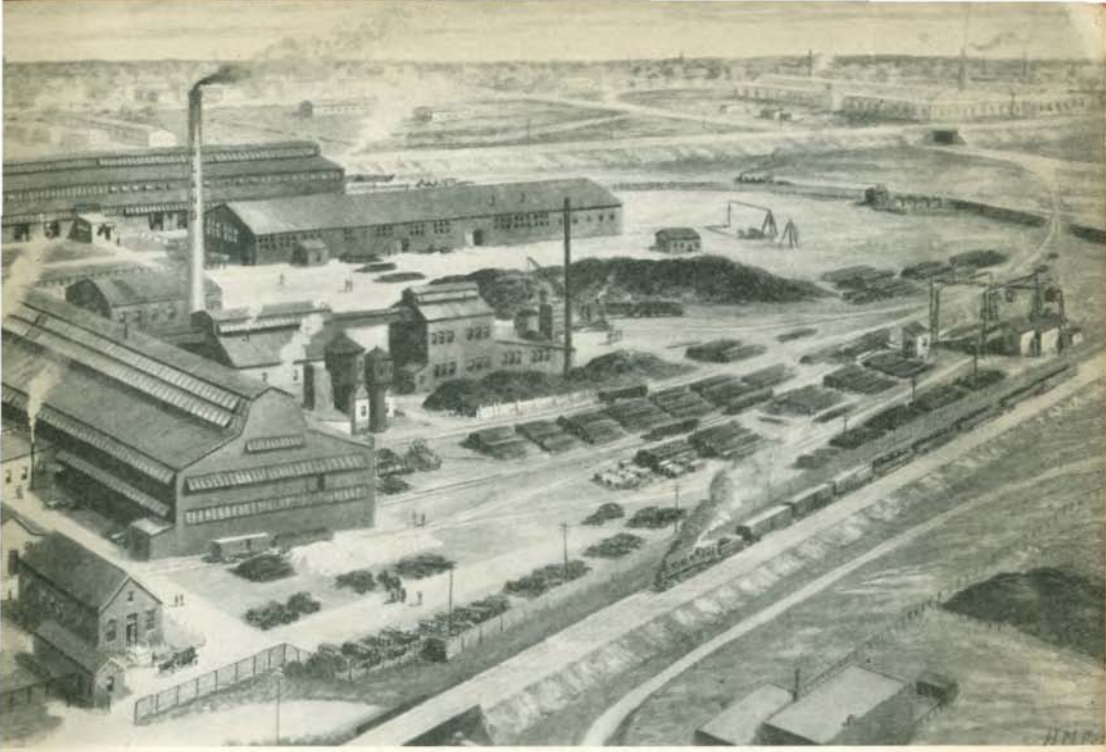
For purposes of design in either construction or industrial uses, the following minimum tensile properties are standard:

Elastic Limit	50,000 lbs. per sq. in.
Tensile Strength	80,000 lbs. per sq. in.
Modulus of Elasticity	30,000,000

These properties may be applied to practical and economical advantage wherever maximum strength and minimum weight are a factor.

Industrial Uses of Rail Steel

Inland Rail Steel merchant sections for industrial purposes include angles, tees, flats, channels, rounds, squares, diamonds, triangles, U-bars, and many special sections especially adapted to industrial fabrication.



The Inland Chicago Heights Plant featuring Rail Steel Products

These sections are widely used in the manufacture of agricultural implements, barn equipment, tools, beds, furniture, lockers, gates, playground equipment, conveying systems, towers, etc.

Fabrication

Fabrication of Rail Steel requires only minor adjustments from methods used for milder grades. When punching, shearing, machining or performing other operations, allowance should be made for its greater elastic limit and higher tensile strength. Wherever cold bending, cold forming or other difficult fabricating operations are required, special Processed Rail Steel can be furnished. Inland engineers are available for consultation on proper methods and economical processes.

Rail Steel Reinforcement Bars

Rail Steel Concrete Reinforcement Bars are used throughout the United States and Canada. One of the earliest established reinforcing materials in the country, its records of use include a good share of the largest and finest examples of this type of construction — among them the Chicago Post Office, largest Federal building outside of Washington, and the Merchandise Mart in Chicago, one of the largest buildings in the world.

Design economy and maximum safety factor are important advantages of high-tensile strength Rail Steel. Engineering standards permit the use of Rail Steel at maximum allowable working stresses, in some cases 25% greater than for mild steel. See Index for concrete reinforcement bars, sizes, lengths, etc.

Specifications

Standard Specifications covering quality of Rail Steel Reinforcement Bars are A.S.T.M. A 16-35 (non-Federal work) and Federal Spec. QQ-B-71a (Federal work).

American Standards Association has designated the A.S.T.M. specification for Rail Steel as an "American Standard," a recognition given only to established materials.

Rounds

Sizes Rolled

Size, Inches	Wt. Lbs. per Ft.
3/8	.376
7/16	.511
1/2	.668
9/16	.845
5/8	1.043
11/16	1.262
3/4	1.502
13/16	1.763
7/8	2.044
15/16	2.347
1	2.670
1 1/16	3.015
1 1/8	3.380
1 3/16	3.766
1 1/4	4.172

Squares

Sizes Rolled

Size, Inches	Wt. Lbs. per Ft.
3/8	.478
1/2	.850
9/16	1.076
5/8	1.328
3/4	1.913
7/8	2.603
1	3.400
1 1/8	4.303
1 1/4	5.313

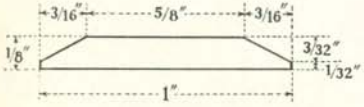
Flats and Bands

Weights are shown in lbs. per lineal ft. for sizes rolled.

Width Inches	12 B.W.G.	THICKNESS 1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4
3/4			.478	.637								
7/8		.372	.558	.744	.93	1.12	1.30	1.49				
1	.372	.425	.638	.850	1.06	1.28	1.49	1.70	1.91	2.13	2.34	2.55
1 1/8		.478	.717	.956	1.20	1.43	1.68	1.92	2.15	2.39	2.63	2.87
1 1/4		.531	.797	1.063	1.33	1.59	1.86	2.13	2.39	2.66	2.92	3.19
1 3/8		.584	.877	1.169	1.46	1.76	2.05	2.34	2.63	2.92	3.22	3.51
1 1/2		.638	.956	1.275	1.59	1.91	2.23	2.55	2.87	3.19	3.51	3.83
1 5/8		.691	1.036	1.381	1.73	2.08	2.42	2.77	3.11	3.46	3.80	4.15
1 3/4		.744	1.116	1.488	1.86	2.23	2.60	2.98	3.35	3.72	4.09	4.46
2		.850	1.275	1.700	2.13	2.55	2.98	3.40	3.83	4.25	4.68	5.10
2 1/4		.956	1.434	1.913	2.39	2.87	3.35	3.83	4.30	4.78	5.26	5.74
2 1/2			1.594	2.125	2.66	3.19	3.72	4.25				
2 3/4			1.753	2.338	2.92	3.51	4.09	4.68				
3			1.913	2.550	3.19	3.83	4.46	5.10				
3 1/4			2.072	2.763	3.45	4.14	4.83	5.53				
3 1/2			2.231	2.975	3.72	4.46	5.21	5.95				
3 3/4			2.391	3.188	3.98	4.78						
4			2.550	3.400	4.25	5.10						

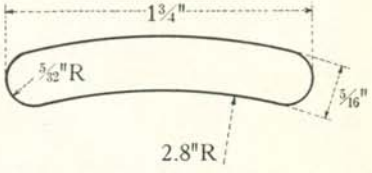
NOTE:—We roll intermediate sizes as well as those sizes for which weights are shown.

Bevel Edge Band



1 x 1/8—Weight per Ft.. .365

Convex Flat



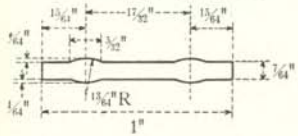
1 3/4 x 5/16—Weight per Ft.....1.750

Angles
(Sizes Rolled)

WIDTH, INCHES	THICKNESS, INCHES								
	7/64	No. 11 B.W.G.	1/8	9/64	5/32	3/16	1/4	5/16	3/8
Equal Legs									
3/4 x 3/4	.52	.56	.59	.65	.72	.84	....	....	....
7/8 x 7/8	.61	.67	.70	.77	.85	1.00	....	....	....
1 x 1	.70	.77	.80	.89	.98	1.16	1.49	....	....
1 1/4 x 1 1/4	.89	.97	1.01	1.13	1.25	1.48	1.92	2.33	....
1 1/2 x 1 1/2	1.08	1.18	1.23	1.37	1.52	1.80	2.34	2.86	3.35
1 3/4 x 1 3/4	1.26	1.38	1.44	1.61	1.78	2.12	2.77	3.39	3.99
2 x 2	....	....	1.65	1.85	2.04	2.44	3.19	3.92	4.70
2 1/4 x 2 1/4	....	....	1.86	2.09	2.31	2.75	3.62	*4.50	*5.30
2 1/2 x 2 1/2			2.08	2.32	2.57	3.07	4.10	*5.00	*5.90
Unequal Legs									
1 x 5/8	.56	.62	.64	.71	.78	.92	....	....	....
1 3/8 x 3/8	.80	.87	.91	1.01	1.11	1.32	....	....	....
1 3/8 x 1 1/8	.89	.97	1.01	1.13	1.25	1.48	1.92	2.33	....
1 1/2 x 1	.89	.97	1.01	1.13	1.25	1.48	1.92	2.33	....
1 1/2 x 1 1/4	.97	1.07	1.12	1.25	1.38	1.64	2.13	2.59	....
1 3/4 x 1 1/2	1.17	1.28	1.33	1.49	1.65	1.96	2.55	3.12	3.66
2 x 1	1.08	1.18	1.23	1.37	1.52	1.80	2.34	2.86	3.35
2 x 1 3/8	1.22	1.33	1.38	1.55	1.71	2.04	2.66	3.26	3.83
2 x 1 1/2	1.26	1.38	1.44	1.61	1.78	2.12	2.77	3.39	3.99
2 1/2 x 2	....	....	1.86	2.09	2.31	2.75	3.62	*4.50	*5.30
3 x 1 1/2			1.86	2.09	2.31	2.75	3.62	*4.50	*5.30

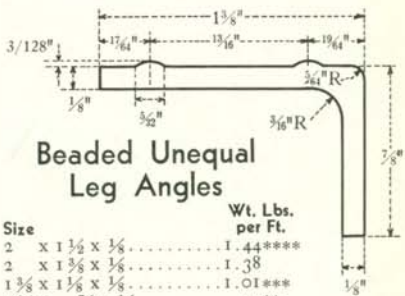
*Legs will vary in length.
Round Back can be furnished in all sizes.
Inside radius on all angles 3/16". Outside radius on Round Back angles 5/32".

Ornamental Angles and Bands



Beaded Bands

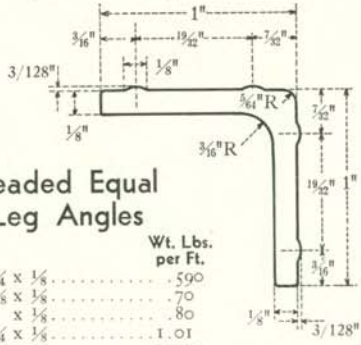
Size	Wt. Lbs. per Ft.
1 x No. 12	.380
1 x 1/8	.425



Beaded Unequal Leg Angles

Size	Wt. Lbs. per Ft.
2 x 1 1/2 x 1/8	1.44****
2 x 1 3/8 x 1/8	1.38
1 3/8 x 1 1/8 x 1/8	1.01***
1 3/4 x 7/8 x 1/8	.91**

With the exceptions noted below, all angles have 2 beads on both legs.



Beaded Equal Leg Angles

Size	Wt. Lbs. per Ft.
3/4 x 3/4 x 1/8	.590
7/8 x 7/8 x 1/8	.70
1 x 1 x 1/8	.80
1 1/4 x 1 1/4 x 1/8	1.01
1 1/2 x 1 1/2 x 1/8	1.23

**2 beads on long leg only.
***Either 2 beads on both legs or 2 beads on long legs only.
****4 beads on long leg and 3 beads on short leg.

All sizes of ornamental angles also supplied to No. 11 B.W.G.

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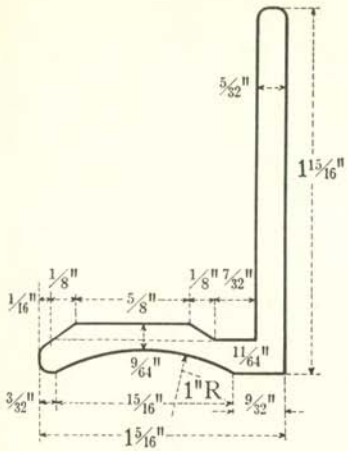


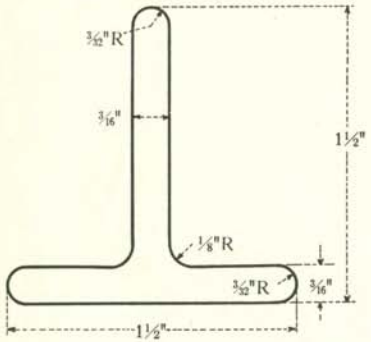
Lock Angle

Concave Base

Size	Wt. Lbs. per Ft.
1 15/16 x 1 5/16 x 5/32	1.685

Flat Base

Size	Wt. Lbs. per Ft.
1 15/16 x 1 5/16 x 5/32	1.685

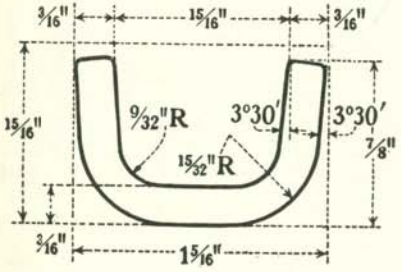


Tees

Size	Wt. Lbs. per Ft.
1 1/2 x 1 1/2 x 3/16	1.800
1 3/4 x 1 3/4 x 1/4	2.770
1 1/2 x 1 1/4 x 9/64	1.250
1 3/8 x 1 3/8 x 9/64	1.250
1 1/2 x 1 1/2 x 9/64	1.330

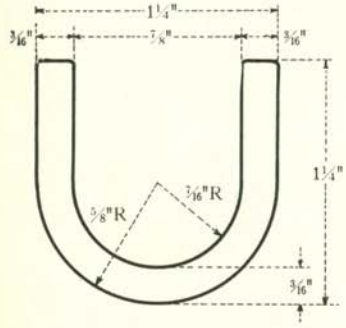
Special Tee

Size	Wt. Lbs. per Ft.
1 1/2 x 1 1/2 x 9/64	1.350



U - Harrow Bar

Size	Wt. Lbs. per Ft.
1 5/16 x 7/8 x 3/16 x 3/16	1.500
1 5/16 x 7/8 x 1/4 x 3/16	1.750
1 5/16 x 15/16 x 1/4 x 1/4	2.000

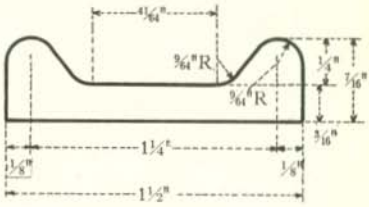


U-Stanchion Bar

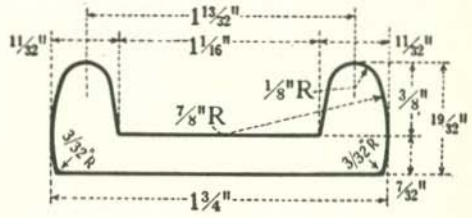
Size	Wt. Lbs. per Ft.
1 1/4 x 1 1/4 x 3/16	1.860

Channels

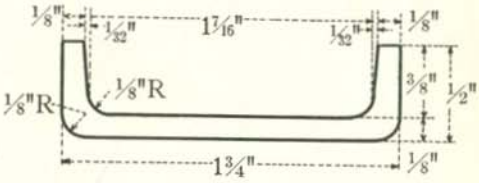
Size	Wt. Lbs. per Ft.
1 1/2 x 7/16 x 3/16	1.39
1 1/2 x 1/2 x 1/4	1.71
2 x 9/16 x 3/16	1.88
2 x 5/8 x 1/4	2.30
2 x 11/16 x 5/16	2.72



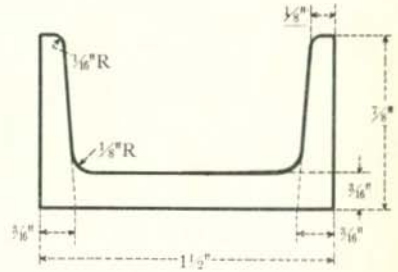
Size	Wt. Lbs. per Ft.
1 3/4 x 19/32 x 7/32	2.000
1 3/4 x 5/8 x 1/4	2.250
1 3/4 x 11/16 x 5/16	2.650



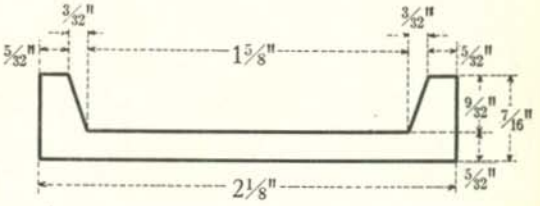
Size	Wt. Lbs. per Ft.
1 3/4 x 1/2 x 1/8	1.150
1 7/8 x 1/2 x 1/8	1.200



Size	Wt. Lbs. per Ft.
1 1/2 x 7/8 x 3/16 x 1/8	1.6704



Size	Wt. Lbs per Ft.
2 1/8 x 7/16 x 5/32	1.600



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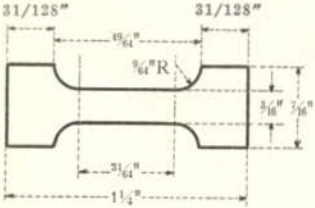
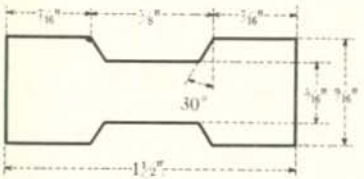
Channeled Flats

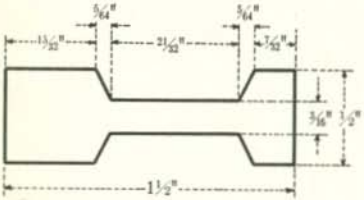


Size	Wt. Lbs. per Ft.
1 1/4 x 7/16 x 3/16	1.250
1 1/4 x 1/2 x 1/4	1.500
1 1/4 x 9/16 x 5/16	1.760
1 1/4 x 5/8 x 3/8	2.030
1 1/2 x 7/16 x 3/16	1.500
1 1/2 x 1/2 x 1/4	1.850
1 1/2 x 9/16 x 5/16	2.150
1 1/2 x 5/8 x 3/8	2.460
1 3/4 x 7/16 x 3/16	1.730
1 3/4 x 1/2 x 1/4	2.120
1 3/4 x 9/16 x 5/16	2.500
1 3/4 x 5/8 x 3/8	2.860
2 x 1/2 x 1/4	2.390
2 x 9/16 x 5/16	2.810
2 x 5/8 x 3/8	3.240

Cultivator Beams

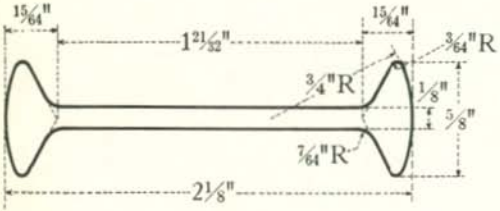


Size	Wt. Lbs. per Ft.
1 1/2 x 9/16 x 5/16	2.398



Size	Wt. Lbs. per Ft.
1 1/2 x 1/2 x 3/16	1.800
1 1/2 x 9/16 x 1/4	2.100
1 1/2 x 5/8 x 5/16	2.500

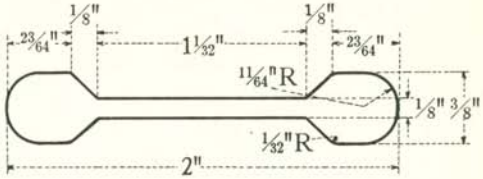
Special Harrow I Bars



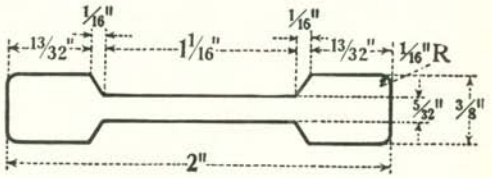
Size	Wt. Lbs. per Ft.
2 1/8 x 5/8 x 1/8	1.500
2 1/8 x 11/16 x 3/16	1.900
2 1/8 x 3/4 x 1/4	2.300

Litter Carrier Track

Size	Wt. Lbs. per Ft.
2 x 3/8 x 1/8	1.500

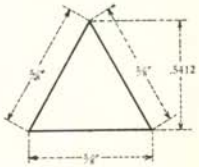


Size	Wt. Lbs. per Ft.
2 x 3/8 x 5/32	1.70

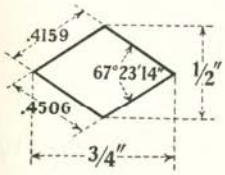


Triangle Bars

Size	Wt. Lbs. per Ft.
5/8	.580
3/4	.830



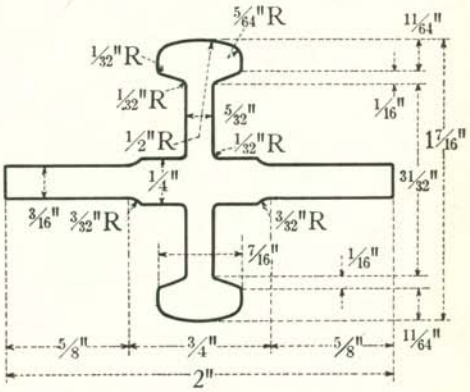
Diamonds



Size	Wt. Lbs. per Ft.
3/4 x 1/2	.690
7/8 x 5/8	1.020
7/8 x 3/4	1.120

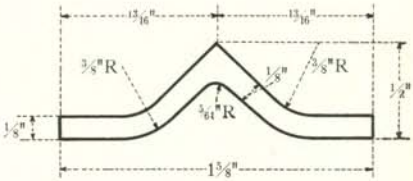
Double-Bead

Size	Wt. Lbs. per Ft.
2 x 1 7/16	2.250



Butterfly Angles

Size	Wt. Lbs. per Ft.
1 5/8 x 1/2 x 1/8	.800
1 5/8 x 17/32 x 5/32	.980
1 5/8 x 9/16 x 3/16	1.160



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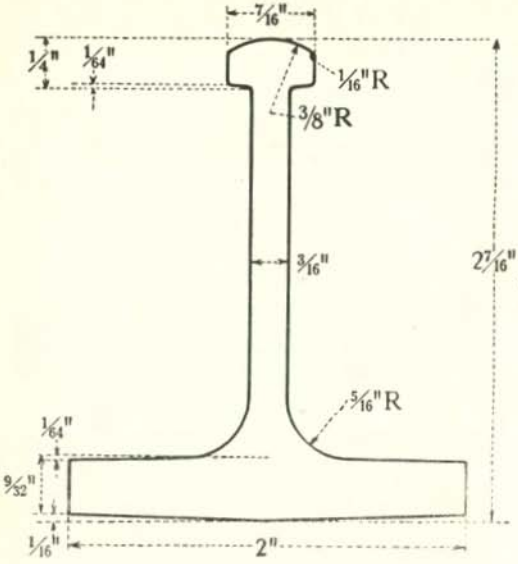
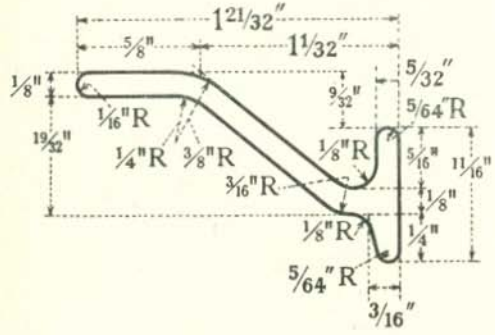


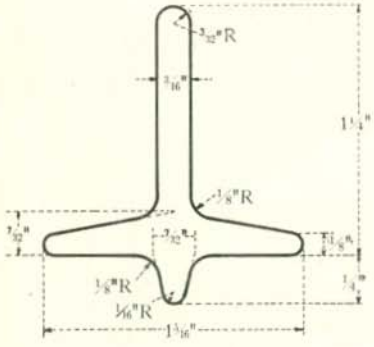
Mono-Track

Size	Wt. Lbs. per Ft.
2 x 2 7/16	3.67



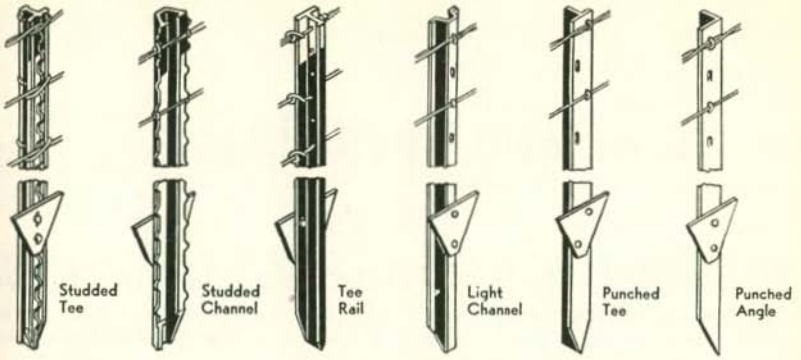
Double Flange Hay Carrier Track

Size	Wt. Lbs per Ft.
1 21/32 x 11/16 x 1/8	1.119



Stanchion Tee

Size	Wt. Lbs. per Ft.
1 5/16 x 1 1/2	1.530



Fence Posts

Studded Tee Studded Channel—Tee Rail 1.33 Lbs. per Ft.		Punched Tee 1.25 Lbs. per Ft.		Light Channel Punched Angle 1.12 Lbs. per Ft.	
LENGTH (Ft.)	*Wt. Lbs. Per Post	LENGTH (Ft.)	*Wt. Lbs. per Post	LENGTH (Ft.)	*Wt. Lbs. per Post
5	7.32	5	6.92	5	6.20
5	7.99	5½	7.55	5½	6.76
6	8.65	6	8.17	6	7.32
6½	9.32	6½	8.80	6½	7.88
7	9.98	7	9.42	7	8.44
7½	10.65	7½	10.05	7½	9.00
8	11.31	8	10.67	8	9.56

**Weight of finished post with anchor plate.*
Fence posts are billed on weights shown above.

Inland Fence Posts for farm and industrial fencing, snow fences, sign posts and highway markers take advantage of the resiliency, strength and toughness as well as the economy of Inland Rail Steel.

They are easily driven into the ground without the labor and expense of digging post holes. With an Inland Post Driver one man can put in 200 or more posts per day without additional help.

The appearance and durability of Inland Posts are greatly enhanced by application of a baked on prime coat in addition to a high quality finish coat, which is also oven baked.

Inland Posts are finished with pure metallic aluminum paint with red top except the Tee Rail Post which is coated with red enamel and aluminum top. Alternate finishes of red or green enamel are also supplied on all except the Tee Rail Posts.

Inland Drivers, Puller and additional wire fasteners are available at slight extra cost. (Wire fasteners free with each Studded Tee, Channel Post or Tee Rail Section post.)

Angle End, Gate and Corner Posts

Length of Post and Brace	Wt. End and Gate Posts	Weight Corner Posts
84″	51 lbs.	73 lbs.
92″	56 "	80 "
108″	66 "	94 "

Road Marker, Sign and Snow Fence Posts

Special Channel Sections—1.33, 1.5, 1.8, 2.00, 2.25 and 2.60 lbs. per foot. Tee Section—1.33 lbs. per foot. With or without anchor plates, and punched to specification. Finished in red or aluminum paint. Galvanizing is recommended for additional protection.

Steel Post folder will be sent on request.

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INLAND BY PRODUCTS

Pig Iron

Pig Iron is the product resulting from the reduction of iron ore in the blast furnace. It is classified and graded according to its intended uses.

Inland produces pig iron largely for its own use in the manufacture of Steel. However, Merchant Pig Iron is also occasionally offered for sale.

Basic Pig Iron is used in making steel by the basic open hearth process. It has a low silicon limit and a higher phosphorus content than is permissible in Bessemer iron. The standard analyses for basic iron are as follows:

Silicon not over 1.50%	Phosphorus not over 0.40%
Sulphur not over 0.05%	Manganese not under 1.25%

Foundry Pig Iron is made for remelting to produce a wide variety of iron castings, such as (1) light, thin castings, including stove plate, radiator castings, plumbing supplies and hardware specialties; (2) miscellaneous light and heavy castings that are to be machined; (3) heavy castings not to be machined; (4) chilled castings; and (5) castings requiring density of grain and dependable strength for steam and hydraulic cylinders and similar uses.

The silicon, phosphorus and manganese limits of Foundry Pig Iron are modified to meet the special requirements of these various products and uses.

The standard compositions of Northern Foundry Pig Iron are:

Silicon 1.75% to 2.25%	Phosphorus 0.30 to 0.70%
Sulphur not over 0.05%	Manganese 0.50 to 1.00%

Grades of foundry pig iron are also made with silicon contents down to 0.50% minimum and up to 6.00% maximum. In such irons the silicon content can be held within any desired range of twenty-five points.

Malleable Pig Iron is used mainly for malleable iron castings. It is also used, however, for gray iron castings when a lower phosphorus content than can be obtained in Foundry Pig Iron is desired.

The standard chemical limits of the grades used for Malleable castings are:

Silicon 1.25 to 2.25%	Phosphorus 0.10% to 0.20%
Sulphur not over 0.05%	Manganese 0.50 to 1.00%

Other grades under this classification are available within the following limits: Silicon down to 0.50% minimum and up to 5.00% maximum within ranges of twenty-five points; Phosphorus to 0.30% maximum; and Manganese to 2.00% maximum.

Pig Iron is sold by gross tons (2,240 Lbs.) in carload lots.

Chemical By-Products from Coke

(Sold Only in Carload Quantities)

Ammonium Sulphate

Used principally as an ingredient in almost all fertilizers and in the manufacture of ammonia, candles and fireproof textiles.

Benzol C_6H_6

Used in the manufacture of paint, varnish, lacquer, synthetic drugs, perfumes, organic chemicals, indigo dyes, dry cleaning preparations, paint and varnish removers, solvent for celluloid and rubber, and also for enriching gasoline.

Carbolate

Containing Phenol (C_6H_5OH) — Cresols ($CH_3C_6H_4OH$) and Xylenols [$(CH_3)_2C_6H_3OH$]. These acids are used in the manufacture of insecticides, disinfectants, fumigants, printing inks, paint and varnish removers, leather preservatives, and as a solvent and preservative for glue and adhesive, softening and reclaiming rubber, and as a basis in making synthetic resins.

Creosote Oil and Creosote Coal Tar Solutions

Used principally in the wood preserving industries in treating poles and railroad ties. They are also used quite extensively in the manufacture of roofing and waterproof materials, and by insecticide manufacturers.

Crude Solvent Naphtha

Used principally in the manufacture of paint, varnish and synthetic resin.

Naphthalene (Crude)

Used, when further refined, in the manufacture of celluloid plastics, resins, lacquers, varnishes, wood and hide preservatives, general disinfectants, as a mothproofing agent and as a crude for dyes.

Solvent Naphtha

(Mainly a Mixture of Ortho-Xylene, Meta-Xylene and Para-Xylene, $[C_6H_4(CH_3)_2]$

Used in the manufacture of rubber solvents, linoleum, oilcloth and as a general solvent in the manufacture of paint, varnish and enamels.

Coal Tar

Used in the manufacture of roofing compounds, papers and also various tar products such as protective paints and varnishes, wood preservatives, coal tar pitches, insulating compositions, pipe coatings, road making and construction work.

Toluol

$(CH_3C_6H_5)$

Used in the manufacture of intermediates, organic chemicals, explosives, stains and enamels, and as a solvent for rubber, varnishes and resin.

Xylol

$(C_6H_4)(CH_3)_2$

Used in the manufacture of dye stuffs, intermediates, organic chemicals and as a solvent in making rubber, cement, lacquer and varnishes.

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Inland Limestone

Inland Lime and Stone Company operates one of the largest stone plants in the country.

Primarily it serves the steel industry, supplying flux for the blast furnaces and open hearths.

To a very important degree, however, it also serves the construction industry, supplying aggregate accurately sized to specification. Inland Limestone is also used extensively by other industries, such as cement, lime, alkalies, calcium carbide, paper, soil fertilizer, foundries, etc.

Quarrying Limestone

Unusual Purity and Structure

Inland limestone is unexcelled anywhere in the Great Lakes region for chemical purity and physical hardness. A specimen analysis is as follows:

$CaCO_3$	$MgCO_3$	SiO_2	R_2O	Sulphur	Phosphorus
96.73	2.37	.55	.32	.02	.01

This high degree of chemical purity meets the most exacting requirements of the metallurgical and chemical industries.
Similarly the hard and dense structure and sharp fracture surfaces pass the most rigid tests of highway and construction engineers.

Clean and Accurately Sized

The quarry and crushing plant of Inland Lime and Stone Company are completely mechanized and electrified, and represent the last word in modern engineering. All sizes of stone are produced from finely graded stone sand to large blocks. Each grade is produced to uniform size, and the smaller sizes are all washed free of fines.

Location and Availability

Port Inland lies in the Upper Peninsula of Michigan on the northern shore of Lake Michigan, east of Manistique. Shipments are made both by rail and by water. The products are available on short notice in about twenty ports on the Great Lakes.

Inland Breakwater Stone

Inland Dolomite, produced in the same locality, is an extremely massive, hard, crystalline stone of bluish or mottled appearance. It has numerous chemical and metallurgical uses, and in large blocks is used for shoreline protection and revetment work. Write for Limestone booklet.

Docks stocked with aggregate are as follows: Detroit, Muskegon, St. Joseph, Sault Ste. Marie, Ludington, Manistee, Manistique, Marquette, Milwaukee, Montague, Munising, Port Huron, South Haven.

TRADE CUSTOMS AND PRACTICES

Fabrication of steel into finished products involves many hazards, some of which arise through inherent characteristics of the material while others are due to methods of handling. It is in the avoidance of such difficulties that Inland's policy and facilities for close co-operation with the customer become so valuable. The following practices have been developed to meet some of the most commonly encountered problems. They have resulted from long experience and painstaking analysis of the positions and interests of both parties.

Labor Charges

If it is found that any material is not suitable for the purposes intended, the purchaser should discontinue using it and notify us at once. Labor costs involved in the use of such material are not the responsibility of the Inland Steel Co. If after investigation we find the material defective, it then becomes a matter of negotiation to dispose of the unfabricated material and to salvage whatever value may exist in the material used.

Steel Ordered for Specified Purpose

When steel is ordered without the purpose being shown on the order, the buyer is responsible for its adaptability to the particular use, provided the material is up to standard for the grade ordered. When ordered for a definite requirement and then applied to a different purpose the buyer is also responsible, provided the material is satisfactory for the purpose for which it was originally bought. If, however, we authorize such change in the usage we are responsible.

Car Loading

Loading rules published by the Mechanical Division of the Association of American Railroads are followed unless otherwise ordered.

If other methods than those approved by the railroads are ordered, no responsibility for damage enroute is assumed by the railroads.

When the buyer specifies methods of bracing at variance with our ordinary practice, the buyer assumes the extra cost, if any.

Permissible Variation in Shipments

On quantities under 10 tons of a size, it is commonly understood that the mill is privileged to ship 10% over or under the quantity ordered; on more than 10 tons, the permissible variation is 5%.

Weight to Govern

Because of the possibility of error in counting pieces, the determining factor in settlement of invoices is weight of the material.

Weight Difference

Custom recognizes variations between weighings of ½ of 1%, which may be due to differences among scales, location or personal equation.

Returned Material

When material rejected by the buyer is returned to the mill no allowance is made to the buyer for labor of reloading and bracing. Such expense is considered proper co-operation between the buyer and supplier.

Rejected Material

When material is rejected by the buyer it is recognized practice for him to notify the seller immediately and to hold the material until the seller advises what disposition should be made of it.

Base Prices, Terms, etc.

Base prices, terms and conditions of sale are shown in our price books. Extras and deductions are shown in booklets which are issued from time to time.

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A. S. T. M. SPECIFICATIONS

(Copies of Complete Specifications Will Be Sent on Request)

The American Society for Testing Materials has issued a large number of specifications which have been adopted as standard. These specifications are the result of the work done by numerous committees on which both the users and the manufacturers were represented, and they may therefore be considered suitable for use in ordering the various grades of steel considered within their scope.

The correct titles, together with brief abstracts of the commonly used specifications, follow:

Steel for Bridges and Buildings

A.S.T.M. designation A 7-39 covers three classes of steel: a steel having a tensile of 60,000 to 72,000 pounds per square inch, with a minimum yield of 33,000 pounds per square inch, specified for Plates, Shapes and Bars (excepting Rolled Base Plates); a steel having a tensile strength of 67,000 to 82,000 pounds per square inch, with a minimum yield of 36,000 pounds per square inch, for Unannealed Eyebar Flats; and a steel specified to a Carbon range of .20 to .35 for Rolled Base Plates over 2" in thickness for bearing purposes. Physical tests are not required for these Base Plates. A maximum limit of .04% is specified for Phosphorus, and a maximum limit of .05% for Sulphur.

Provision is made for ordering "Copper Steel" when desired.

Mild Steel Plates

A.S.T.M. designation A 10-39. This specification is intended for general plate construction and provides for a tensile range of 55,000 to 65,000 pounds per square inch, with a minimum yield point of one-half the tensile strength, but in no case less than 30,000 pounds. The maximum Phosphorus permitted is .04% in Basic Steel and .06% in Acid Open Hearth Steel, while the Sulphur content is limited to .05% on ladle analysis. Copper, when specified, is to be not less than .20%. Flat Rolled Steel $\frac{5}{16}$" and under in thickness, need not be subjected to tension tests.

Steel Plates of Structural Quality for Forge Welding

A. S. T. M. Designation A 78-39

This specification covers steel plate of structural quality for forge welding and fusion welding. There are two grades specified, Grade "A" with a minimum tensile of 45,000 pounds per square inch, and Grade "B" with a minimum tensile of 50,000 pounds per square inch.

Low Tensile Strength Carbon Steel Plates of Flange and Firebox Qualities

A. S. T. M. Designation A 89-39

This specification covers two grades each of steel plate of flange and firebox qualities for forge welding and fusion welding. A minimum tensile of 45,000 pounds is specified for Grade "A" in both flange and firebox qualities; a minimum tensile of 50,000 pounds is specified for Grade "B" in both flange and firebox qualities.

Structural Silicon Steel

A. S. T. M. Designation A 94-39

This specification covers a special high-strength structural steel intended primarily for use as main stress-carrying material of structural members; material ordered to this specification must meet a tensile range requirement of 80,000 to 95,000 lbs. per square inch with a minimum yield point of 45,000 lbs. per square inch. The carbon content is limited to .44% while the silicon content must not be under .18%.

Structural Steel for Locomotives and Cars

A. S. T. M. Designation A 113-39

This is the standard specification for car material, three divisions, based on tensile strength requirements, being shown: the tensile strength range for structural steel for cars is 50,000 to 65,000 lbs. while that for structural steel for locomotives is 55,000 to 65,000 lbs. per square inch. Plates for cold pressing are shown with a tensile range of 48,000 to 58,000 lbs. per square inch. The title indicates the principal use for steel ordered to this specification; however, where lower tensile strength steel is desired than that covered by two preceding specifications, this specification affords a means of obtaining it within definite standards.

Structural Rivet Steel

A. S. T. M. Designation A 141-39

This specification is in effect a revision of and replaces the requirements for structural rivet steel which formerly appeared in the standard specifications for Structural Steel for Bridges (A 7-39), and Structural Steel for Locomotives and Cars (A 113-39).

This specification provides for a rivet steel with a tensile strength range of 52,000 to 62,000 pounds per square inch. The steel may be made by either the Open Hearth or Electric furnace process.

The only chemical limitations are those for Phosphorus and Sulphur, with a provision for copper content, when specified, of not less than .20%.

Carbon Steel Plates for Stationary Boilers and Other Pressure Vessels

A. S. T. M. Designation A 70-39

The title of the specification is sufficiently indicative of its use, and is in exact conformity with the A.S.M.E. Boiler Code requirements, the tensile range of both flange and firebox steel being 55,000 to 65,000 lbs. per square inch; however, the phosphorus and sulphur limits for firebox steel are somewhat lower than for boiler flange steel.

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Billet Steel Bars for Concrete Reinforcement

A.S.T.M. designation A 15-39. This specification is the generally accepted standard for this class of material and covers deformed and cold-twisted bars of three grades, namely, structural steel, intermediate and hard. Open Hearth, Electric Furnace and Bessemer steel are permitted by this specification, the phosphorus being the only element shown in the specification subject to limitation. The tensile requirement for the structural grade is 55,000 lbs. to 70,000 lbs.; for the intermediate grade, 70,000 to 90,000 lbs. per square inch, while the hard grade must conform to a minimum tensile requirement of 80,000 lbs. per square inch.

Rail Steel Bars for Concrete Reinforcement

A.S.T.M. designation A 16-35. This specification is generally accepted as standard for this class of material, and covers both plain and deformed bars. Specification requires that bars be rolled from standard section Tee Rails, and permits no substitution of other materials such as those known by the terms "rerolled," "rail-steel equivalent," and "rail-steel quality." The minimum tensile is 80,000 pounds per square inch; the minimum yield point 50,000 pounds per square inch.

Commercial Quality Hot Rolled Bar Steels

A.S.T.M. designation A 107-39. This specification covers hot rolled carbon steel bars produced in accordance with good mill practice for general commercial purposes. The sections covered are rounds, squares, and hexagons of all sizes, and flats not over 6 inches wide. The purchaser is required to designate the grade desired, either by its grade designation or its complete chemical limits; the carbon ranges shown in this specification run from .05 to .80, the range being ten points up to a minimum of .50 carbon, at which point the range becomes fifteen points.

Carbon Steel Bars for Springs

A.S.T.M. designation A 14-39. This specification covers two grades of carbon steel bars to be used for the manufacture of railway springs, determined by the carbon ranges specified in Section 3. The choice of the grade of bar to be used for the manufacture of any spring will depend on the design of the spring and the stresses and service for which it is intended. The purposes for which these grades are frequently used are as follows:

Grade A for elliptical and helical springs, the carbon range being .90 to 1.10.

Grade B for helical springs, the carbon range being .95 to 1.15.

Carbon Steel Bars for Vehicle and General Purpose Springs

A.S.T.M. designation A 58-27. These specifications cover two grades of carbon steel bars to be used for the manufacture of vehicle and general purpose springs, determined by the carbon ranges specified in Section 3. The choice of the grade of bar to be used for the manufacture of any spring will depend on the design of the spring and the stresses and service for which it is intended. Grade A of above specification provides for a carbon range as .85 to 1.05, while grade B shows the carbon range as .90 to 1.05; the manganese range for both grades is .25 to .50.

A. A. R. SPECIFICATIONS

The Association of American Railroads, through its mechanical division, has issued a number of specifications covering materials specified by railroads when making purchases. Among the most commonly used are the following:

Blooms, Billets and Slabs for Forgings

A. A. R. Specification M-105-34. This specification covers billets to Class A, Carbon steel, Class B, Carbon-Vanadium steel and Class C, low carbon Nickel steel. The Carbon steels are divided into three grades as follows:

Class A—Carbon Steel

Grade 1—Carbon .05 to .15 per cent, for welding and case hardening. Requires Forging Quality steel.

Grade 2—Carbon .15 to .25 per cent, for case hardening when subsequently heat-treated and for miscellaneous purposes. Requires Forging Quality steel.

Grade 3—Carbon .40 to .55 per cent, for axles, shafts, connecting rods and similar forgings. This grade specifies a minimum Silicon of .15 per cent, and a check analysis segregation test. Requires "Special Requirement Quality" steel.

Structural Rivet Steel and Structural Rivets

A. A. R. Specification M-109-36. This specification covers steel bars for the manufacture of structural rivets and finished structural steel rivets for locomotive tanks and underframes, passenger and freight equipment cars. The specification details covering the bars are essentially the same as American Society for Testing Materials' specification A 141-39, specifying a tensile strength of 52,000 to 62,000 lbs. per square inch, except that on $\frac{7}{8}$" diameter and smaller the tensile strength may be 45,000 lbs. minimum. The only chemical limits specified are those for Phosphorus and Sulphur, with a provision for Copper content, when specified, of not less than .20 per cent.

Steel Bars, Carbon, for Railway Springs

A. A. R. Specification M-112-34. This specification covers Carbon steel bars to be used for the manufacture of railway springs and provides for the following chemical limits:

Carbon	.90 to 1.05	Phosphorus Max.	.05
Manganese	.25 to .50	Sulphur Max.	.05
		Silicon Min.	.15

Steel, Structural Shapes, Plates and Bars

A. A. R. Specification M-116-37. This specification covers Structural Steel Shapes, Plates (except Boiler and Firebox Plates), and Bars intended primarily for use in locomotive and car construction. There are two grades shown in specification: namely, "Structural Steel," tensile 50,000 to 65,000 lbs. per square inch; and "Plates for Cold Pressing," tensile strength 48,000 to 58,000 lbs. per square inch.

S. A. E. SPECIFICATIONS

Open Hearth Carbon and Silico-Manganese Steels

Chemical Compositions

Carbon Steels

SAE No.	Carbon Range	Manganese Range	Phosphorus Maximum	Sulphur Maximum
1010	.05– .15	.30– .60	.045	.055
1015	.10– .20	.30– .60	.045	.055
X1015	.10– .20	.70–1.00	.045	.055
1020	.15– .25	.30– .60	.045	.055
X1020	.15– .25	.70–1.00	.045	.055
1025	.20– .30	.30– .60	.045	.055
X1025	.20– .30	.70–1.00	.045	.055
1030	.25– .35	.60– .90	.045	.055
1035	.30– .40	.60– .90	.045	.055
1040	.35– .45	.60– .90	.045	.055
X1040	.35– .45	.40– .70	.045	.055
1045	.40– .50	.60– .90	.045	.055
X1045	.40– .50	.40– .70	.045	.055
1050	.45– .55	.60– .90	.045	.055
X1050	.45– .55	.40– .70	.045	.055
1055	.50– .60	.60– .90	.040	.055
X1055	.50– .60	.90–1.20	.040	.055
1060	.55– .70	60– .90	.040	.055
1065	.60– .75	.60– .90	.040	.055
X1065	.60– .75	.90–1.20	.040	.055
1070	.65– .80	.60– .90	.040	.055
1075	.70– .85	.60– .90	.040	.055
1080	.75– .90	.60– .90	.040	.055
1085	.80– .95	.60– .90	.040	.055
1090	.85–1.00	.60– .90	.040	.055
1095	.90–1.05	.25– .50	.040	.055

Free Cutting Steels

SAE No.	Carbon Range	Manganese Range	Phosphorus Maximum	Sulphur Range
1112	.08– .16	.60– .90	.09– .13	.10 –.20
1115	.10– .20	.70–1.00	.045 max.	.075–.15
1120	.15– .25	.60– .90	.045 max	.075–.15
X1314	.10– .20	1.00–1.30	.045 max.	.075–.15
X1315	.10– .20	1.30–1.60	.045 max	.075–.15
X1330	.25– .35	1.35–1.65	.045 max.	.075–.15
X1335	.30– .40	1.35–1.65	.045 max.	.075–.15
X1340	.35– .45	1.35–1.65	.045 max	.075–.15

Silico-Manganese Steels

SAE No.	Carbon Range	Manganese Range	Phosphorus Max.	Sulphur Max.	Silicon Range
9255	.50–.60	.60–.90	.040	.050	1.80–2.20
9260	.55–.65	.60–.90	.040	.050	1.80–2.20

We regularly produce steel to all of the above specifications.

SHEET AND PLATE GAGES

Galvanized Sheet Gage		Number of Gage	United States Standard Gage for Sheet and Plate Iron and Steel	
Weight per Square Foot in Ounces	Weight per Square Foot in Lbs.		Weight per Sq. Ft. in Lbs. Avoirdupois	Approximate Thickness in Decimal Parts of an Inch*
.....	.....	2	10.451	.2499
.....	.....	3	10.0	.2391
.....	.....	4	9.375	.2242
.....	.....	5	8.75	.2092
.....	.....	6	8.125	.1943
.....	.....	7	7.50	.1793
112.5	7.031	8	6.875	.1644
102.5	6.406	9	6.25	.1494
92.5	5.781	10	5.625	.1345
82.5	5.156	11	5.0	.1196
72.5	4.531	12	4.375	.1046
62.5	3.906	13	3.75	.0897
52.5	3.281	14	3.125	.0747
47.5	2.969	15	2.8125	.0673
42.5	2.656	16	2.50	.0598
38.5	2.406	17	2.25	.0538
34.5	2.156	18	2.00	.0478
30.5	1.906	19	1.75	.0418
26.5	1.656	20	1.50	.0359
24.5	1.531	21	1.375	.0329
22.5	1.406	22	1.25	.0299
20.5	1.281	23	1.125	.0269
18.5	1.156	24	1.00	.0239
16.5	1.031	25	.875	.0209
14.5	.906	26	.75	.0179
13.5	.844	27	.6875	.0164
12.5	.781	28	.625	.0149
11.5	.719	29	.5625	.0135
10.5	.656	30	.50	.0120
9.5	.594	31	.4375	.0114

The United States Standard Gage

This gage, established by Congressional Enactment in 1893, was based on wrought iron. The various weights per square foot were indicated by gage numbers. The weight is the factor considered when material is ordered to this gage. The thicknesses shown in the table are only approximate.

NOTE: *These approximate thicknesses are figured on the basis of rolled sheets weighing 41.82 lbs. per sq. ft. per inch thick which allows for normal excess cross-sectional and dimensional area.

Decimal Equivalents

Fractions of an Inch in Decimals

1/64	.015625	21/64	.328125	41/64	.640625
1/32	.03125	11/32	.34375	21/32	.65625
3/64	.046875	23/64	.359375	43/64	.671875
1/16	.0625	3/8	.375	11/16	.6875
5/64	.078125	25/64	.390625	45/64	.703125
3/32	.09375	13/32	.40625	23/32	.71875
7/64	.109375	27/64	.421875	47/64	.734375
1/8	.125	7/16	.4375	3/4	.75
9/64	.140625	29/64	.453125	49/64	.765625
5/32	.15625	15/32	.46875	25/32	.78125
11/64	.171875	31/64	.484375	51/64	.796875
3/16	.1875	1/2	.5	13/16	.8125
13/64	.203125	33/64	.515625	53/64	.828125
7/32	.21875	17/32	.53125	27/32	.84375
15/64	.234375	35/64	.546875	55/64	.859375
1/4	.25	9/16	.5625	7/8	.875
17/64	.265625	37/64	.578125	57/64	.890625
9/32	.28125	19/32	.59375	29/32	.90625
19/64	.296875	39/64	.609375	59/64	.921875
5/16	.3125	5/8	.625	15/16	.9375
				61/64	.953125
				31/32	.96875
				63/64	.984375

Standard Classification of Flat Rolled Carbon Steel

HOT ROLLED

Width, Inches	Thickness, Inch						
	.2500 or thicker	.2499 to .1875	.1874 to .0568	.0567 to .0344	.0343 to .0255	.0254 to .0142	.0141 or thinner
Up to 3½, inc.	Bar	Strip	Strip	Strip	Strip	Sheet	Sheet
Over 3½ to 6, inc.	Bar	Strip	Strip	Strip	Sheet	Sheet	Sheet
Over 6 to 12, inc.	Plate	Strip	Strip	Sheet	Sheet	Sheet	Sheet
Over 12 to 32, inc.	Plate	Sheet	Sheet	Sheet	Sheet	Sheet	T.M.Black
Over 32 to 48, inc.	Plate	Sheet	Sheet	Sheet	Sheet	Sheet	Sheet
Over 48	Plate	Plate	Sheet	Sheet	Sheet	Sheet	.....

COLD ROLLED

Width, Inches	Thickness, Inch	
	.2499 to .0142	.0141 or .thinner
Up to 12, inc.	Strip	Strip
Over 12 to 24, inc.	Strip (1)	Strip (1)
Over 12 to 24, inc.	Sheet (2)	T.M.Black (2)
Over 24 to 32, inc.	Sheet	T.M.Black
Over 32	Sheet	Sheet

(1) If special edge or finish, or temper as in A.S.T.M. Spec. A-109.
(2) If no special edge, finish, or temper.

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INLAND STEEL COMPANY

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KANSAS CITY OFFICE

1004 Commerce Trust Bldg. — Phone: Victor 5506

MILWAUKEE OFFICE

Bankers Bldg. — Phone: Daly 4921

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804 Natl. Bk. of Commerce Bldg. — Phones: Main 3185, Main 3186

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