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NUMBER 8

# INLAND STEEL PRODUCTS

Descriptions and Sizes Rolled



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INLAND STEEL COMPANY

# **INLAND STEEL Products**

**DESCRIPTIONS AND SIZES ROLLED**

**EIGHTH EDITION**

► This book presents the products of the steel works of the Inland Steel Company, which rank high among the world's finest and most modern steel plants. It is a simplified catalogue, planned to give you all basic data possible on Inland Steel Products in a form that makes it easy to locate any needed information quickly. As it is impractical to cover all the details or possible variations of the steel products manufactured by Inland, we hope you will call on us for additional information and samples whenever needed. Booklets showing base prices, extras and deductions for each product will be sent at your request.

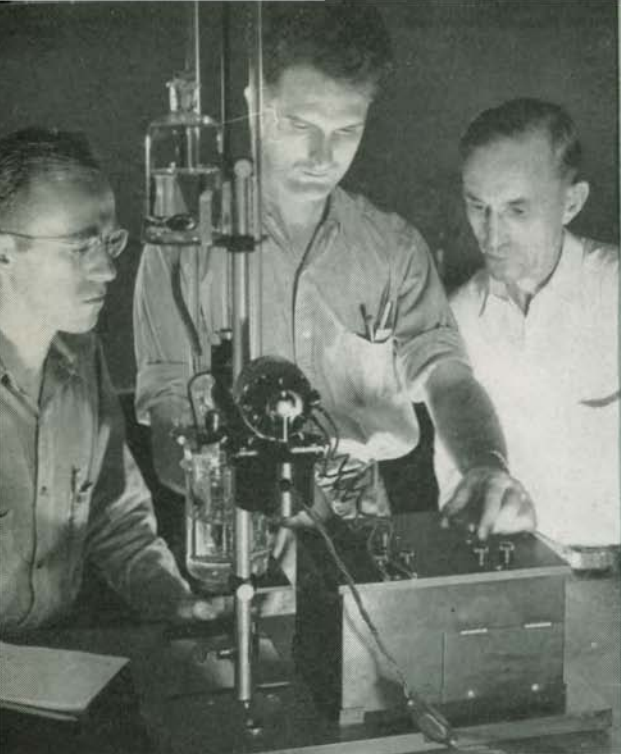
**Sheets — Strip — Tin Plate — Bars — Plates — Floor Plates — Structural Shapes — Sheet Piling — Reinforcing Bars — Rail and Track Accessories — Rail Steel — Special Purpose Open Hearth Steels.**

**INLAND STEEL COMPANY**  
**38 So. Dearborn St., Chicago 3, Ill.**

**DETROIT • INDIANAPOLIS • KANSAS CITY • MILWAUKEE  
NEW YORK • ST. LOUIS • ST. PAUL**

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B225



The Inland Steel laboratories, which are responsible for some of the most far-reaching advances in modern steel making, work in closest liaison with the operating departments in maintaining control over the chemical and physical properties of Inland Steel products. As many as 60,000 chemical tests a month are run by Inland's main laboratory for the operating departments in the routine production of steel.

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SHEETS  
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STEEL  
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SHEETS  
Enam.  
18

SHEETS  
Galv.  
20

TIN  
PLATE  
24

BARS  
28

REINF.  
BARS  
45

STRUCT.  
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48

PILING  
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PLATES  
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RAILS &  
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ACC'S  
68

RAIL  
STEEL  
74

SPECIAL  
STEELS  
86

SPEC'S  
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COMP.  
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CONSIDER  
THESE  
INLAND STEEL  
ADVANTAGES



► The Inland Steel Company has an enviable record of satisfying and holding its customers. Evidence of this is contained in the company's remarkable growth and in the fact that steel production at Inland has averaged higher in relation to capacity than that of any other American steel company since the beginning of the century, according to available records. Here are some salient reasons for this continued customer loyalty today:

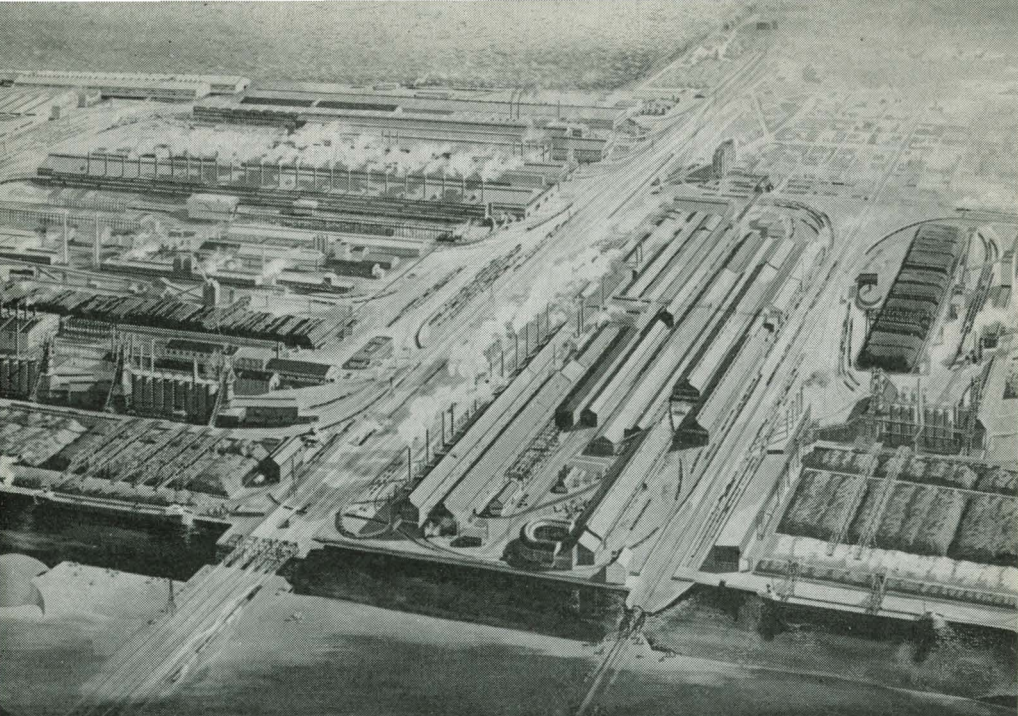
**Products That Meet Your Requirements**—The modern Inland Steel works are models of their kind for the quality production of steel to meet the many special requirements of industry.

**Strategic Location at America's Transportation Hub**—The Inland Steel works are linked with the major industrial centers of this country by mainline railroads and by the economical water transportation provided by the Mississippi River and Great Lakes systems of waterways. Also, ocean freighters may load at the Inland mills for direct shipment throughout the world.

**High Quality Materials**—A steady flow of raw materials of unvarying high quality is assured by the fact that Inland has its own mines and quarries, and its own fleet of big lake freighters for transporting raw materials.

**Close Customer Relations**—It is a long-established Inland policy for the company's top





**View of the Inland Steel works at Indiana Harbor, one of the largest and most modern of the world's steel plants.**

executives, the men who make decisions, to keep a close and friendly interest in the problems of Inland customers.

**Engineering Cooperation**—Inland customers have had hundreds of production problems solved for them, and have often benefited from savings both in steel costs and production costs through help given them by Inland metallurgists and engineers.

**Leader in Steel Research**—The Inland Metallurgical Laboratories have been responsible for some of the most important advances in modern steel making.

**Invaluable Experience**—For more than a half century, Inland has worked closely with leading American industries in developing steels adapted to new and changing fabrication techniques; the company has a backlog of experience in meeting the production and material problems of industry that is invaluable to its customers.

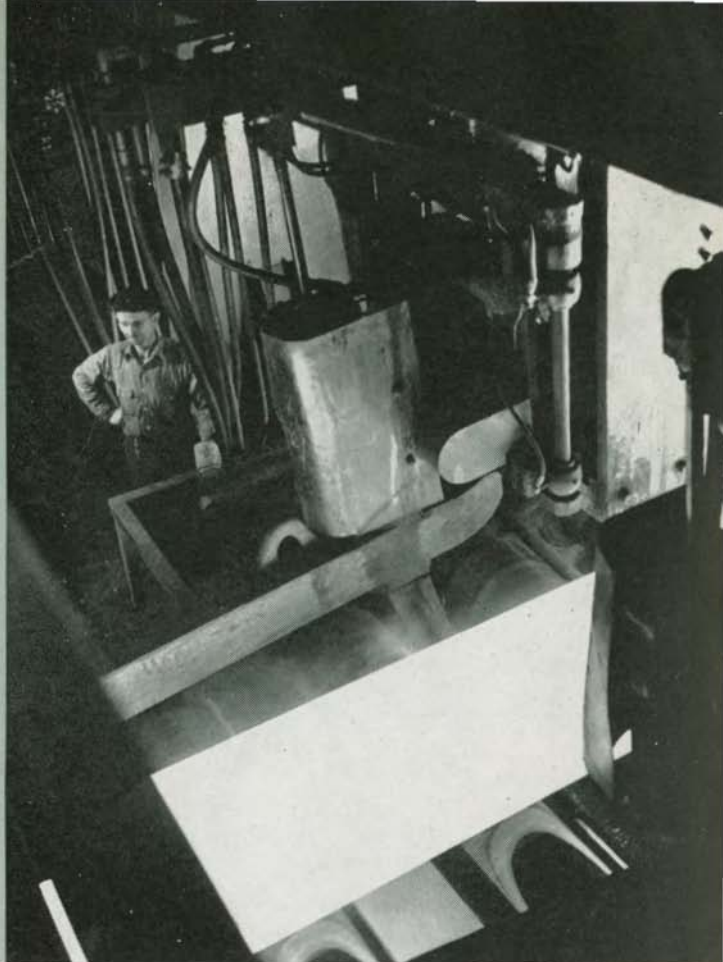
**Laboratory Supervision of Steel Production**—Precision control of the chemical and physical properties of steel is maintained by laboratory supervision of all stages of the manufacturing process.

**Prompt Action**—A completely integrated and independent steel company, with its general offices only twenty miles from its main producing works, Inland acts with great dispatch in furnishing information to its customers and in translating information into action when applicable.

**Reliability**—Inland prides itself on its splendid record of performance against promise. Every effort is made throughout the entire organization to make good in respect to meeting delivery schedules and technical specifications.

SHEETS Hot Roll.	12
SHEETS Cold Roll.	15
STEEL STRIP	16
SHEETS Enam.	18
SHEETS Galv.	20
TIN PLATE	24
BARS	28
REINF. BARS	45
STRUCT. SHAPES	48
PILING	57
PLATES	60
FLOOR PLATES	63
RAILS & TRACK ACC'S	68
RAIL STEEL	74
SPECIAL STEELS	86
SPEC'S	96
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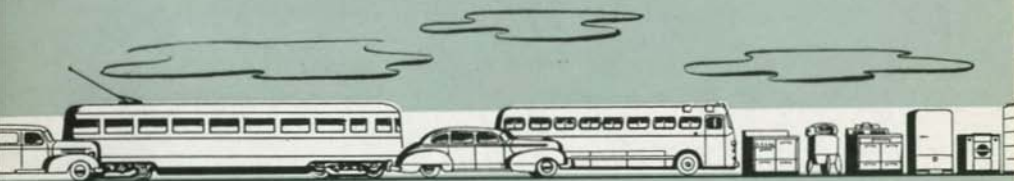
The most powerful steel mill rolling units are the big blooming mills which reduce ingots to blooms. Scene shows ingot being rolled on our 46-Inch Blooming Mill.



Hot sawing steel rails to length — 28-Inch Mill at Plant No. 2, Indiana Harbor.



# STEEL SHEETS AND STRIP



SHEETS  
Hot Roll.  
12

SHEETS  
Cold Roll.  
15

STEEL  
STRIP  
16

SHEETS  
Enam.  
18

SHEETS  
Galv.  
20

TIN  
PLATE  
24

BAR  
28

REINF.  
BAR  
45

STRUCT.  
SHAPES  
48

PILING  
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PLATES  
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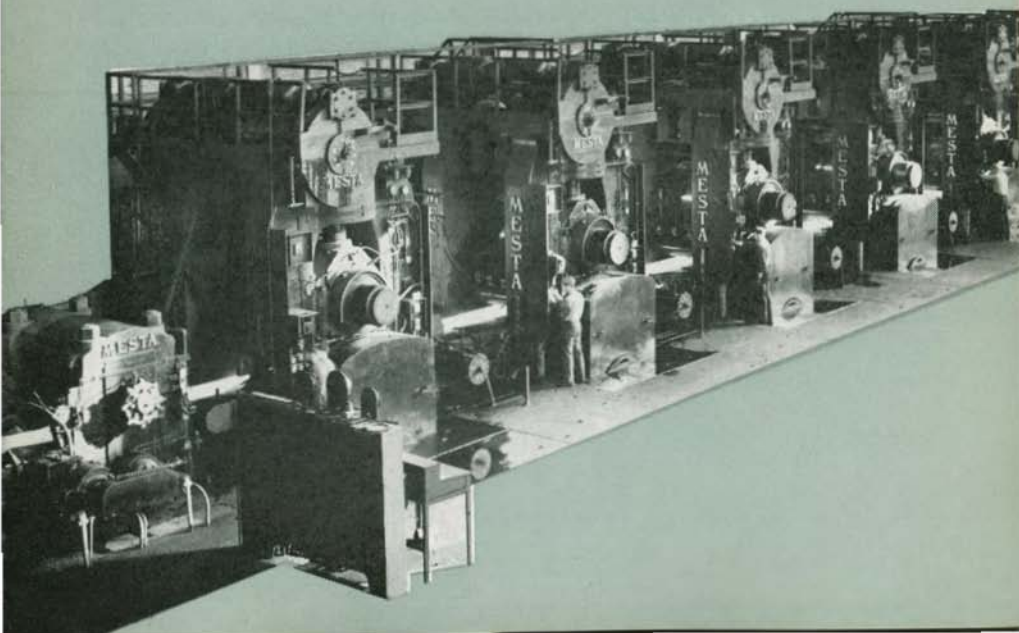
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ACC'S  
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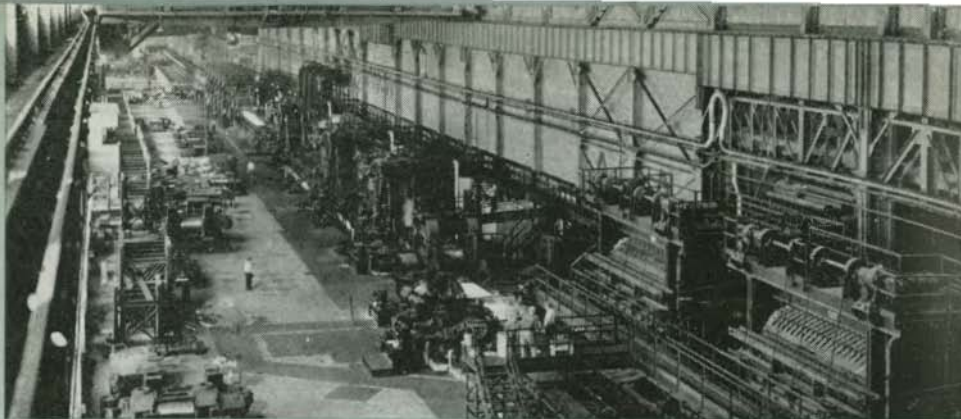
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STEEL  
74

SPECIAL  
STEELS  
86

SPEC'S  
96

CHEM.  
COMP.  
99





*A Continuous Sheet Mill at the Indiana Harbor Works of the Inland Steel Company.*

## **Giving Greater Utility and Workability To STEEL SHEETS AND STRIP**

► The Inland Steel Company pioneered many developments in steel-making which have contributed to the tremendous increase in the range of articles fabricated from sheets and strip. We have continued through research and manufacturing improvements to give ever-greater utility and workability to these Inland products.

### **The Finest Production Facilities**

Our facilities for producing sheets and strip include some of the largest and finest continuous rolling mills built to date. Contributing to the quality of the finished product are production refinements involving open hearth practice, teeming, removal of scale during hot rolling, reheating, pickling, cold reduction, temper rolling, etc. Modern annealing and normalizing furnaces make the control of the mechanical properties through heat treatment an exact science.

All Inland sheets and strip are rolled from open hearth steel made from raw materials carefully selected for their purity and containing elements helpful to the ductility and uniformity of the finished product. Laboratory control of the composition and physical properties starts at the Inland ore mines, where resident chemists make analyses of the ore, and continues under the supervision of works metallurgists through every stage of production.

### **Sheets for Every Purpose**

Our sheet and strip products include: hot and cold rolled sheets and strip in a great variety of finishes and physical and chemical properties—galvanized sheets in grades for every purpose—Ti-Namel steel sheets—enameling iron sheets—Copper-Alloy (corrosion resistant) sheets—Hi-Steel sheets offering a high strength to weight ratio in combination with excellent corrosion resistance and workability (see section on Hi-Steel)—electrical sheets—hot rolled deoxidized sheets—and special grades such as Drawing Quality steel sheets.

Descriptions of Inland sheet and strip products, and other information necessary for ordering, will be found in the following pages.

## ***Insure More Satisfactory Production With*** **DRAWING QUALITY SHEETS AND STRIP**

Inland Sheets and Strip in virtually all gages and dimensions may be ordered in "Drawing Quality." This means they are manufactured and processed to meet the most exacting individual requirements involving severe drawing. Rigid inspection and testing give additional insurance of a material that will contribute to efficient performance and low-cost production. They are commonly found to provide the most economical solution to fabrication problems causing unsatisfactory production and a high rejection rate. Also, see Fully Aluminum Killed Steel on page 16 when ordering sheets and strip to meet severe fabricating requirements.

When specifying Inland Sheets or Strip 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 control the chemical composition and physical characteristics of the steel in ways most advantageous to you.

## **SPECIAL PROCESSING**

### **Stretcher Levelling**

When flatness is important as in the manufacture of panels, signs, table and desk tops, etc., stretcher leveled sheets are recommended. All types of sheets in gages No. 24 and heavier up to 72 inches wide and 193 inches long may be furnished stretcher leveled. When ordering, please specify if length required is over all or between gripper marks. Gripper marks are approximately one inch in from each end of sheet. If sheets are ordered stretcher leveled and resquared, the specified size is furnished, subject to allowable tolerance.

### **Resquaring**

If closer than standard size tolerances are required, resquaring should be specified. We are equipped to resquare all grades of sheets up to and including a maximum length of 156 inches.

## **Expert Help in Meeting Your Sheet and Strip Requirements**

Inland specialists on the manufacture and fabrication of sheets and strip will be glad to help you obtain the material best suited to your particular needs. With adequate information about the article to be fabricated and user's production set-up, these Inland specialists are in a position to guide our operating departments in manufacturing and processing steel for your individual fabrication and service requirements. Their assistance is of greatest value in helping customers obtain steel that can be fabricated with maximum ease and economy.

Samples of Inland Steel Sheets and Strip are available for shop tests.

SHEETS  
Hot Roll.  
12

SHEETS  
Cold Roll.  
15

STEEL  
STRIP  
16

SHEETS  
Enam.  
18

SHEETS  
Galv.  
20

TIN  
PLATE  
24

BARs  
28

REINF.  
BARs  
45

STRUCT.  
SHAPES  
48

PILING  
57

PLATES  
60

FLOOR  
PLATES  
63

RAILS &  
TRACK  
ACC'S  
68

RAIL  
STEEL  
74

SPECIAL  
STEELS  
86

SPEC'S  
96

HEM.  
COMP.  
99

# INLAND HOT ROLLED SHEETS

## A Low-Priced Product With Unusual Workability

Although they are among the lowest priced of all materials available to industry, Inland Hot Rolled Sheets have won a wide reputation for over all quality and for workability in forming operations. They are used extensively for such purposes as tanks, barrels, pails, various types of farm implements, saws, discs, cabinets, shelves, truck bodies, lockers and railroad cars.

The excellent workability of Inland Hot Rolled Sheets comes in part from the fact that they are reduced to gage on modern mills that impart an exceptional surface for sheets of their type. The sheets are produced with a relatively light, tight oxide which permits use with minimum hazard to tools. As in the case of all other Inland Steel products, there is close metallurgical control over the analysis and physical properties of Inland Hot Rolled Sheets at every stage of their manufacture.

Because of the quality of these steel sheets and the great range of dimensions in which they are produced, users have found Inland an unusually dependable source of supply.

### **Inland Hot Rolled Pickled Sheets**

Produced in the same gages as Inland Hot Rolled Sheets, Inland Hot Rolled Pickled Sheets have a wider range of possible applications because of the clean, scale-free surface resulting from pickling.

The absence of the hard, abrasive oxide reduces wear on dies and is particularly an advantage in drawing and stamping operations. The removal of the scale also gives an improved surface for welding, painting and punching. All types of paint can be expected to give much longer service when applied to the scale-free surface. Typical uses include: automotive parts, household appliances, beer barrels, toys, etc.

Pickled sheets should be ordered oiled for protection against rust when they are to be stored.

### **Inland Hot Rolled Deoxidized Sheets**

These sheets have a smooth, silvery surface. Because of the reduction of the scale occurring in the deoxidizing process, they may be often 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 and a material lower in price than pickled sheets is required. The deoxidized surface is suitable for painting and welding. Best results are obtained in 20 gage and lighter. Common uses are kitchen cabinets, lockers, toolboxes, etc.

### **Inland Hot Rolled Unannealed Sheets**

These sheets, which are ordinarily used in 20 gage and lighter, are suitable for uses requiring stiffness with little or no forming.

# INLAND HOT ROLLED SHEETS

## Gages and Sizes Rolled

### SHEETS

Thickness	Maximum Width	Maximum Length
.1868 to .0972" incl. (7-12 ga.)	72"	240"
.0971 to .0822" incl. (13 ga.)	68"	192"
.0821 to .0710" incl. (14 ga.)	66"	192"
.0709 to .0568" incl. (15-16 ga.)	60"	192"
.0567 to .0449" incl. (17-18 ga.)	36"	156"
.0448 to .0389" incl. (19 ga.)	33"	156"
.0388 to .0225" incl. (20-24 ga.)	48"	144"
.0224 to .0142" incl. (25-28 ga.)	40"	144"
.0224 to .0142" incl. (25-28 ga.)	42"	120"
.0224 to .0142" incl. (25-28 ga.)	44"	96"
.0141 to .0113" incl. (29-30 ga.)	36"	144"

### COILS

Thickness	Width
.1569 to .0568" incl. (9-16 ga.)	Over 12" to 54" incl.
.0567 to .0449" incl. (17-18 ga.)	Over 12" to 36" incl.
.0448 to .0389" incl. (19 ga.)	Over 12" to 33" incl.

### CIRCLES

Thickness	Diameter
2499 to 3/16" incl.	Over 12" to 48" incl.
Under 3/16" to .0972" incl.	Over 12" to 72" incl.
.0971 to .0822" incl.	Over 12" to 68" incl.
.0821 to .0710" incl.	Over 12" to 66" incl.
.0709 to .0568" incl.	Over 12" to 60" incl.
.0567 to .0449" incl.	Over 12" to 50" incl.
.0448 to .0225" incl.	Over 12" to 48" incl.

SHEETS  
Hot Roll.  
12

SHEETS  
Cold Roll.  
15

STEEL  
STRIP  
16

SHEETS  
Enam.  
18

SHEETS  
Galv.  
20

TIN  
PLATE  
24

BAR  
28

REINF.  
BARS  
45

STRUCT.  
SHAPES  
48

PILING  
57

PLATES  
60

FLOOR  
PLATES  
63

RAILS &  
TRACK  
ACC'S  
68

RAIL  
STEEL  
74

SPECIAL  
STEELS  
86

SPEC'S  
96

CHEM.  
COMP.  
99

# INLAND ELECTRICAL SHEETS

- 1 **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** is used for armatures and good quality fractional horsepower 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 less than the field grade.
- 3 **Electrical Grade** may be used for all types of motors and generators, although its usual application is in the better grade rotating machinery of medium efficiency. This grade is practically non-aging.
- 4 **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 **Dynamo Grade** (usually 24 to 29 gage) contains about 3¼% silicon and is used for high efficiency motors, generators and small transformers, etc. It is a non-aging grade, with good punching properties and an especially low core loss.

## GUARANTEED MAXIMUM CORE LOSSES

Watts per Pound at 60 Cycles and 10,000 Gauss-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 steel and is closely controlled for uniformity of gage.

### Inland Windmill Stock

These sheets are supplied in black or galvanized finishes. They are made to a special chemistry which Inland has developed to secure the unusual strength and rigidity required for windmill sails. We recommend the specification of the stock in Inland Copper-Alloy grade for increased resistance to atmospheric corrosion.

### 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 made to a special chemistry that makes it especially resistant to the abrasion of the grain and this results in longer life. Inland Copper-Alloy steel in this analysis is recommended as an added protection against atmospheric corrosion.





*Box Annealing at the Inland Steel Company—Sealed material is shown being rolled into annealing furnace.*

## INLAND COLD ROLLED SHEETS

**Consistently Give Superior Results in Operations Requiring Great Workability**

► Few products of the steel industry provide a better illustration of the great advances that have been made in steel making than Inland Cold Rolled Sheets. They can be manufactured to meet the special requirements of different fabricating processes in combinations of finishes and mechanical properties that are virtually without limit. They consistently give superior results in operations requiring great workability . . . in deep drawing numerous types of shapes . . . in spinning, bulging, ironing, embossing and the most intricate bending or forming operations. They are among the easiest of materials to weld. Preparation of their clean, even surfaces for the application of the finish is simple and inexpensive.

### Radical Processing Improvements

A reduction of as much as 60 per cent or more in the thickness of these sheets during cold rolling contributes to the control of their properties in annealing and also results in gage uniformity and an excellent surface. Cold reduction requires preliminary pickling and the finish processing includes heat treatments and skin rolling. Radical improvements in processing these sheets for superior workability have resulted from an Inland-developed method for texturing their surface.

### Ordering Cold Rolled Sheets

Inland Cold Rolled Sheets are manufactured flat or in coils in 13 gage or lighter. They are available in surfaces with varying degrees of luster. Tempers and chemistry may be specified within standard limits, but because of the variations possible in manufacturing them for different requirements, best results are secured by relying on Inland metallurgists to aid in the selection of the exact quality and finish best suited to your purpose.

SHEETS  
Cold Roll.  
15

STEEL  
STRIP  
16

SHEETS  
Enam.  
18

SHEETS  
Galv.  
20

TIN  
PLATE  
24

BARS  
28

REINF.  
BARS  
45

STRUCT.  
SHAPES  
48

PILING  
57

PLATES  
60

FLOOR  
PLATES  
63

RAILS &  
TRACK  
ACC'S  
68

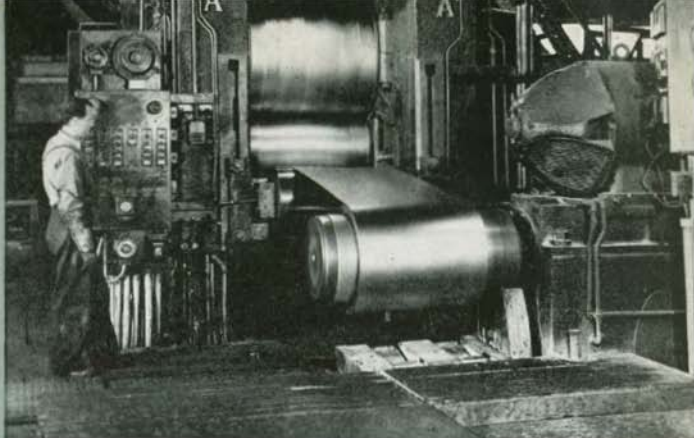
RAIL  
STEEL  
74

SPECIAL  
STEELS  
86

SPEC'S  
96

HEM.  
OMP.  
99

Sheets being coiled as they leave a Cold Reduction Mill.



### INLAND COLD ROLLED SHEETS Gages and Sizes Rolled

Thickness	Maximum Width	Maximum Length (Approx.)
.0971" to .0822" incl. (13 ga.).....	62"	230"
.0821" to .0225" incl. (14-24 ga.).....	72"	230"
.0224" to .0142" incl. (25-28 ga.).....	52"	144"
.0141" to .0113" incl. (29-30 ga.).....	38"	144"

### INLAND COLD ROLLED COILS Gages and Sizes Rolled

Thickness	Maximum Width
.0971" to .0822" incl. (13 ga.).....	62"
.0821" to .0225" incl. (14-24 ga.).....	72"
.0224" to .0142" incl. (25-28 ga.).....	52"
.0141" to .0113" incl. (29-30 ga.).....	38"

### INLAND COLD ROLLED SHEET CIRCLES

Thickness Range	Diameter Range
.0821" to .0225" incl.....	Over 12" to 72", incl.

### INLAND COLD ROLLED MILL RUN SHEETS

These sheets are manufactured with the same care as standard Inland Cold Rolled Sheets, the only difference being that they do not receive the same sheet-by-sheet inspection.

## FULLY ALUMINUM KILLED STEEL

► This is a non-aging steel of exceptional workability and uniform composition. Its most unusual characteristic is freedom from those spontaneous changes which cause the return of a sharp yield point. The danger of stretcher strain markings is thus eliminated and roller leveling before use is unnecessary. Because of the mechanical properties of Fully Aluminum Killed Steel and its freedom from the stretcher strain hazard, sheets and strip rolled from it are often recommended to meet severe fabrication requirements. Special practice requiring great care is followed in producing the steel.

# INLAND STEEL STRIP

Strip is manufactured by Inland to a wide range of properties for many purposes. The methods used in making Inland Hot Rolled and Cold Rolled Strip are similar to those followed in manufacturing Inland Hot Rolled and Cold Rolled Steel Sheets and there is the same control of quality at every stage of production. Metallurgical cooperation in specifying strip to meet individual requirements is often desirable and is freely provided by the Inland Metallurgical Department. When ordering strip, the gage should be specified in decimals or fractions of an inch.

## INLAND HOT ROLLED STRIP

### Rolled Edges

Thickness	Narrow Widths	Wider Widths
.187" to .249" incl.	5/8" to 4 1/2" incl.	6 1/2" to 12" incl.
.120" to .249" incl.	3/8" to 4 1/2" incl.	8 7/8" to 12" incl.
.109" to .249" incl.	3/8" to 4" incl.	8 7/8" to 12" incl.
.105" to .249" incl.	3/4" to 4" incl.	8 7/8" to 12" incl.
.083" to .249" incl.		8 7/8" to 12" incl.
.065" to .249" incl.		8 7/8" to 12" incl.

### Slit Edges

Thickness	Width	Maximum Straight Lengths
.249" to .162" incl.	4 3/8" to 12" incl.	240"
.161" to .105" incl.	3 1/8" to 12" incl.	216"
.104" to .090" incl.	3 1/8" to 12" incl.	192"
.089" to .041" incl.	2" to 12" incl.	192"
.164" to .074" incl.	7 3/4" to 12" incl.	Coils
.080" to .041" incl.	2" to 12" incl.	Coils

## INLAND COLD ROLLED STRIP

### SIZE RANGE (SLIT EDGE)

Width: 2" to 12" incl. Thickness: .093" and lighter. Length: Up to 148" in straight lengths, or longer lengths in coils.

### TEMPERS

Inland Cold Rolled Strip is produced in all five tempers—hard, half hard, quarter hard, soft and dead soft.

### FINISH AND EDGE

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

STEEL STRIP  
16

SHEETS Enam.  
18

SHEETS Galv.  
20

TIN PLATE  
24

BARs  
28

REINF. BARs  
45

STRUCT. SHAPES  
48

PILING  
57

PLATES  
60

FLOOR PLATES  
63

RAILS & TRACK ACC'S  
68

RAIL STEEL  
74

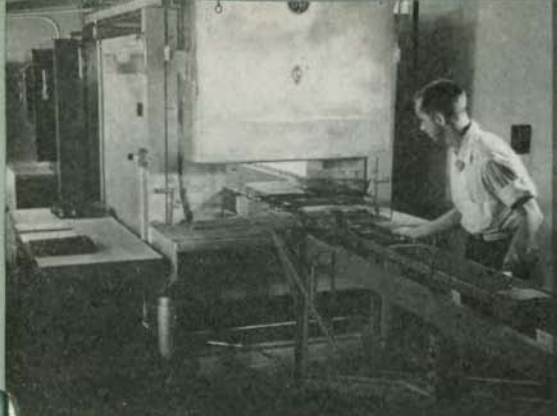
SPECIAL STEELS  
86

SPEC'S  
96

HEM. COMP.  
99

*Testing the enameling properties of steel in an electric furnace at the Inland Ceramics Laboratory.*

## ENAMELING SHEETS



► Research by the Inland Ceramics Laboratory has paid rich dividends to users of Inland Enameling Sheets. Developments resulting from this research have simplified fabricating and enameling problems and have contributed to a significant expansion in the manufacture and use of porcelain enameled products. Ti-Namel, the new Titanium alloy enameling steel, provides the most dramatic example of these Inland developments, but they are also evident in the quality of the Standard Enameling Iron Sheets produced by Inland.

As a user of Inland Enameling Sheets, you derive additional benefit from the specialized technical help we make available to you in meeting both your material requirements and production problems. The Inland Ceramics Laboratory, which has become widely recognized as a source of authoritative information on porcelain enameling, also keeps close supervision over the manufacture of Inland Enameling Sheets from writing the specification for the open hearth heat to the final finishing operations.

### TI-NAMEL

► The most important development of its kind in the history of the industry, Inland Ti-Namel is bringing about revolutionary changes in the manufacture of enameled ware. Greatly reduced production costs and superior products result from the fabricating and enameling practices made possible by this new alloy steel enameling base. It is opening up new opportunities for the individual manufacturer to create and sell enameled steel articles in a greater range and volume than ever before.

#### Attractive, Single-Coat Finishes

Ti-Namel eliminates the necessity for the standard blue cobalt ground coat in the manufacture of quality enameled ware. Cover coats are applied direct to the base metal; in fact, attractive, single-coat white finishes with satisfactory opacity are obtained in thicknesses so relatively thin (0.006" to 0.009") that the chipping hazard is minimized and the life of the coating greatly prolonged. The sheet does not reboil when the coating is fired. It makes black edging unnecessary. A particular advantage in architectural applications is its great sag resistance, which makes larger flat surfaces practical. This superior resistance to sag also results in savings by reducing rejections and by making possible the use of lighter gages in the fabrication of many shapes subject to sag.

#### A Non-Aging Steel With Great Workability

Ti-Namel can be cold worked by deep drawing, spinning, etc., as readily as the best carbon steel sheets and because of this great workability, many parts previously fabricated by forming and welding can now be quickly and economically shaped in one operation. A non-aging steel, it offers complete freedom from the hazard of stretcher strains.

## Gages and Sizes

Used principally in 18 gage and lighter, Ti-Namel has been produced in thicknesses as great as  $\frac{1}{4}$ " or more to meet special requirements. (Data as to gages and sizes currently available will be sent on request).

Ti-Namel was developed by Inland in association with the Titanium Alloy Manufacturing Company and is sold under a simple licensing arrangement that includes personal cooperation in its application. Write for Ti-Namel Bulletin.

## INLAND ENAMELING IRON SHEETS

► The excellent results given by Inland Enameling Iron Sheets in terms of both shop operations and attractive, durable finishes have led to their use on the widest scale in the manufacture of porcelain enameled products. Because of their popularity, output had to be more than doubled each year during the years immediately prior to the period of restricted production made necessary by the war. Uses include applications requiring exceptional drawing properties, a high degree of sag resistance, and coatings that stand up under the most severe conditions. Porcelain enameled washing machines, refrigerators, table tops, kitchen utensils, building materials and signs are among the products fabricated from Inland Enameling Iron Sheets.

### Superior Enameling Characteristics

Rolled from commercially pure iron ingots, these Inland enameling sheets have the superior enameling characteristics given by a sheet with great uniformity and a low metalloid content. They can be welded by the fastest and most economical methods and are made to meet all requirements for deep drawing, forming and spinning. Their flatness and relative freedom from warping at firing temperatures result in products that will pass exacting straight-edge and reflected-light tests. The final processing imparts a textured surface that offers a fingered grip to the enamel and provides for the tight adherence so necessary in modern applications of porcelain enamel.

### Made to Individual Requirements

One of the reasons for the popularity of Inland Enameling Iron Sheets is the laboratory control over all manufacturing processes in meeting individual requirements as to workability, temper, etc.—the user is assured a product that will perform as expected in shop fabrication and in service.

## GAGES AND SIZES ROLLED

### *Inland Enameling Iron Sheets*

U. S. Standard Gages	Maximum Width In.	Maximum Length In.
.0313" to .0284" (22 ga.) and thicker*	72	200
.0283" to .0255" incl. (23 ga.)	50	144
.0254" to .0255" incl. (24 ga.)	50	144
.0224" to .0171" incl. (25-26 ga.)	48	144
.0171" to .0142" incl. (27-28 ga.)	36	144
.0141" to .0113" incl. (29-30 ga.)	36	144

\*Inland Enameling Iron is rolled in thicknesses as great as  $\frac{1}{4}$ " or more in meeting special requirements

SHEETS  
Enam.  
18

SHEETS  
Galv.  
20

TIN  
PLATE  
24

BARS  
28

REINF.  
BARS  
45

STRUCT.  
SHAPES  
48

PILING  
57

PLATES  
60

FLOOR  
PLATES  
63

RAILS &  
TRACK  
ACC'S  
68

RAIL  
STEEL  
74

SPECIAL  
STEELS  
86

SPEC'S  
96

HEM.  
COMP.  
99

## INLAND GALVANIZED SHEETS

► Our galvanizing plant is one of America's newest and finest. Equipment for controlling numerous factors influencing quality helps to assure finished sheets that will give expected performance in shop and in service. Even the size of the spangle is automatically controlled. When making the base metal for galvanizing, special open hearth and rolling mill practice is followed to meet the varying requirements for stiffness or workability and to provide for a good galvanizing surface. The finished product must withstand the most rigid inspection.

The pre-eminent choice for  
first cost economy and long service ...  
made in grades to all requirements  
for stiffness or workability ... Inland  
Galvanized Sheets have established  
new standards of quality  
for sheets of their type.

*Sheet by sheet inspection of Inland Galvanized Sheets is the final step in insuring a quality product.*



### **GALVANIZED PAINT-TITE QUALITY**

#### **Cuts Painting Costs . . . Improves Paint Adherence**

Most types of our galvanized sheets may be ordered in Paint-Tite quality. These are sheets given a surface treatment that eliminates chemical reactions causing paint embrittlement and premature paint failure on galvanized surfaces. At the same time, this treatment provides an unsurpassed foothold for the finish; paint can be applied immediately without the customary weathering or chemical etching and washing. Inland galvanized sheets may be ordered in Paint-Tite quality in G.S. gages 10 and lighter. Unless otherwise specified, galvanized sheets with a commercial coating are usually furnished when Paint-Tite quality is ordered.

## DESCRIPTION AND USES

Name or Type	Description
<b>Galvanized, Commercial Coating</b>	An unusually popular sheet, with a pleasing, clean, bright and uniform spangle . . . preferred for numerous applications including those requiring moderate forming. Bends up to 90-degree angle. For GAGES AND SIZES ROLLED, see Table G-A.
<b>Extra Heavy-Coated</b>	Heavier coating than on commercial grade for exceptional service under conditions involving atmospheric corrosion. Not intended for forming other than corrugating. For GAGES AND SIZES ROLLED, see Table G-A.
<b>Tight-Coated</b>	A ductile base metal with a tight, relatively light coating—recommended for a wide range of forming operations, including those requiring more than a right angle bend. For GAGES AND SIZES ROLLED, see Table G-A.
<b>Extra Tight-Coated</b>	A soft ductile sheet with a light, tight coating—especially prepared for more severe forming operations than the Tight-coated grade. The galvanized surface has a relatively dull appearance. For GAGES AND SIZES ROLLED, see Table G-A.
<b>Form-Cote</b>	A beautifully spangled sheet developed to combine an appearance that has great consumer appeal with the capacity to withstand such severe forming, as double seaming. Particularly suitable for such exacting requirements as furnace pipe and elbows, air conditioning equipment, etc. For GAGES AND SIZES ROLLED, see Table G-B.
<b>Zinc-Alloy</b>	Manufactured by a special process which retards crystallization of zinc coating and converts it into an iron-zinc alloy. Withstands severest forming without flaking and gives a surface that provides excellent adherence for paints, lacquers, etc., without pretreatment. Unusually heat resistant—adapted for such uses as oven linings. Dull non-spangled appearance. For GAGES AND SIZES ROLLED, see Table G-C.
<b>Tension-Lap Perfect Drain Roofing and Siding</b>	Recognized as the most weatherproof roofing and siding obtainable . . . the Tension-Lap feature gives protection against wind-driven rains and leakage by capillary attraction. Easy to apply. Long life and protection against rust are assured by a base metal of high quality open hearth steel covered by a special process with extra heavy coatings of zinc. MADE IN GALVANIZED SHEET GAGES No. 29, 28 AND 26, BY 24" WIDE (after forming), AND IN 5 FOOT AND 12 FOOT LENGTHS.
<b>Corrugated Culvert Sheets</b>	These galvanized sheets, with 2.66" corrugations, are produced to different analyses as follows: Inland Copper-Alloy Steel Sheets—Inland Copper Iron Sheets—Inland 999 Pure Iron Copper Bearing Sheets—Inland Pure Iron Sheets.
<b>"Seal of Quality" Sheets</b>	We are licensed by the American Zinc Institute to produce this heavily coated galvanized sheet (2 oz. coating per sq. ft. of double exposed surface.) Principal uses are as roofing and siding. Heavy coating assures additional life under conditions involving atmospheric corrosion. Made either flat or corrugated in No. 28 G. S. GAGE AND HEAVIER.

Inland Galvanized Sheets may be furnished to the standards of the various specification writing bodies including A.S.T.M. Specification A-93-27; A.A.R. Specification M-119-34, and Federal Specification QQ-1-696.

(Continued on Next Page)

SHEETS  
Galv.  
20

TIN  
PLATE  
24

BARS  
28

REINF.  
BARS  
45

STRUC  
SHAPE  
48

PILING  
57

PLATES  
60

FLOOR  
PLATES  
63

RAILS &  
TRACK  
ACC'S  
68

RAIL  
STEEL  
74

SPECIAL  
STEELS  
86

SPEC  
96

CHEM.  
COMP.  
99

**TABLE G-A**

Inland Galvanized Sheets with Commercial Coating, Extra Heavy-Coating, Tight-Coating and Extra Tight-Coating—gages and sizes rolled.

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

**TABLE G-B**

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.....	44"	120"
No. 29 to 31, incl.....	36".....	120"

**TABLE G-C**

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"

## CORRUGATED SHEETS

► Up to 1200% increase in the rigidity of a steel sheet as measured by its resistance to deflection comes from corrugating. Because of this great stiffening effect, corrugating is often advisable where sheets are to be used for such applications as roofing, siding, culverts, etc. The Inland Steel Company corrugates sheets in Galvanized Sheet Gages 10 to 30, inclusive, with corrugations measuring  $\frac{5}{8}$ ",  $1\frac{1}{4}$ ", 2",  $2\frac{1}{2}$ " (standard for roofing and siding—actual measurement 2.66"), 3" or 5". Corrugated sheets are available with galvanized, painted, or uncoated surfaces.



## ANALYSES OF INLAND CULVERT STOCK

▶ Certificates of Analysis and Guarantee of the four grades of Inland corrugated Culvert Sheets are registered with the highway departments of the states served by Inland. These sheets, which are galvanized and have 2.66" corrugations, are produced to chemical limitations defined briefly as follows:

**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%; .20% minimum copper is added.

**Inland Pure Iron Sheets**—Aggregate of Carbon, Manganese, Phosphorus, Sulphur, Silicon and Copper does not exceed .10%.

## 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. In this test, the sheets 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 sheet provided for testing. The single or minimum spot test may be made on one of the three triple-spot test specimens at the discretion of the customer, but the designated specimen should not come from within two inches of the side of the sheet or four inches of the end.

TIN  
PLATE  
24

BARS  
28

REINF.  
BARS  
45

STRUCT.  
SHAPES  
48

PILING  
57

PLATES  
60

FLOOR  
PLATES  
63

RAILS &  
TRACK  
ACC'S  
68

RAIL  
STEEL  
74

SPECIAL  
STEELS  
86

SPEC'S  
96

CHEM.  
COMP.  
99

## TIN PLATE AND OTHER TIN MILL PRODUCTS

**Hot Dipped Tin Plate** · **Electrolytic Tin Plate**  
**Special Coated Manufacturing Ternes** · **Full Fin-**  
**ished Black Plate** · **Chemically Treated Black Plate**

▶ As a result of our metallurgical methods and manufacturing facilities, we have been notably successful in meeting the Tin Plate requirements of the food, beverage and other industries. We were among the first to concentrate on the production of Cold Reduced Tin Plate, with its great fabricating advantages. More recently Inland was among the pioneers in the development of electrolytic tinning units. All Inland Tin Mill Products are manufactured under the supervision of Tin Mill metallurgists, who work closely with users in determining the mechanical properties and coating characteristics best suited to their fabrication and service requirements.

### HOT DIPPED TIN PLATE

Classes: Cokes—Best Cokes—Kanners Special—1-A Charcoal

#### Base Weights and Sizes Produced

Base Weights	Maximum Widths	Maximum Lengths
70 lb., to 195 lb. incl. ....	34" .....	34" .....

Inland Hot Dipped Tin Plate is made from Cold Reduced Full Finished Black Plate which has been processed to provide an ideal tinning surface. Varied requirements as to workability or stiffness are met by adjustment of the chemical composition of the steel and by the finish processing. Special analysis steels are used when the plate is required for canning products which are unusually corrosive, high in acidity, or when great buckling resistance is required. In addition to use in the manufacture of containers for perishable foods and other products, Inland Hot Dipped Tin Plate has extensive application in making bottle caps, kitchenware, dairy equipment and other products.



Sorting Inland Tin Plate.

## INLAND ELECTROLYTIC TIN PLATE

Grades: No. 75 (.75 lb., per base box)—No. 50 (.50 lb., per base box)—  
No. 25 (.25 lb. per base box).

### Base Weights and Sizes Produced

Base Weights	Maximum Widths	Maximum Lengths
70 lb., to 112 lb. incl	32"	34"

The electrolytic tinning process can be used for applying smooth, even coatings in lighter weights than practicable in making Hot Dipped Tin Plate. The resulting product offers the economy that comes from its lighter coating in combination with such other desirable tin plate properties as cleanliness, a pleasing appearance and good paint and ink holding characteristics. Inland early recognized the possibilities of Electrolytic Tin Plate and had begun experimental work on it considerably before the war emergency made commercial production imperative as a tin conserving measure. The performance of the plate during the tin shortage has indicated it will continue permanently in wide use for general line cans. Also, it is expected to find extensive application in the manufacture of containers for products hitherto merchandised in nonmetallic packages.

## INLAND SPECIAL COATED MANUFACTURING TERNES

### Base Weights and Sizes Rolled

Base Weights	Maximum Widths	Maximum Lengths
70 lb., to 195 lb. incl	34"	34"

The tin-lead coating of this product provides for excellent solderability and also gives a good surface for the application of paints and other finishes. Its special field of application is in the manufacture of containers for oil, paint, varnish and other products

TIN  
PLATE  
24

BARS  
28

REINF.  
BARS  
45

STRUCT.  
SHAPES  
48

PILING  
57

PLATES  
60

FLOOR  
PLATES  
63

RAILS &  
TRACK  
ACC'S  
68

RAIL  
STEEL  
74

SPECIAL  
STEELS  
86

SPEC'S  
96

CHEM.  
COMP.  
99

### TIN MILL PRODUCTS (Continued)

which do not require the non-toxicity of Tin Plate for preservation. It combines the properties of its coating with the fine characteristics of its base metal, which is Inland Full Finished Black Plate.

## INLAND FULL FINISHED BLACK PLATE

### Gages and Sizes Rolled

Gages	Maximum Widths	Maximum Lengths
No. 29 to 35, incl.	34"	72"

Black Plate is the lightest gage cold reduced sheet steel normally produced. Inland Full Finished Black Plate is supplied with mechanical properties and finishes that meet many different fabricating and service requirements. With today's modern methods of manufacture, it has a clean, lustrous surface. Uses cover a wide range of products, including closures.

(For heavier gages of Cold Reduced Steel, see Inland Cold Rolled Sheets.)

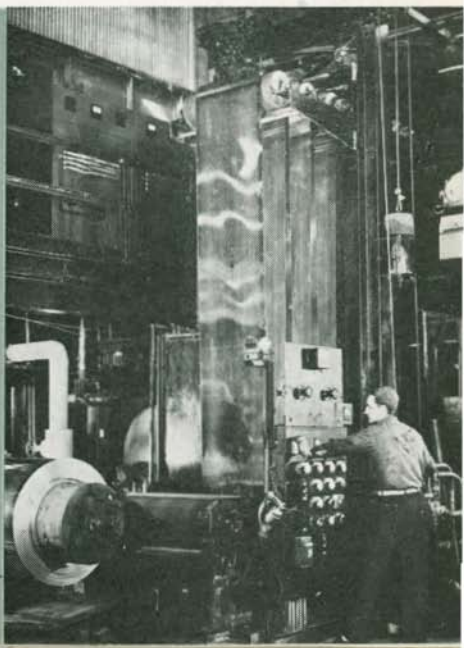
## CHEMICALLY TREATED BLACK PLATE

### Gages and Sizes Rolled

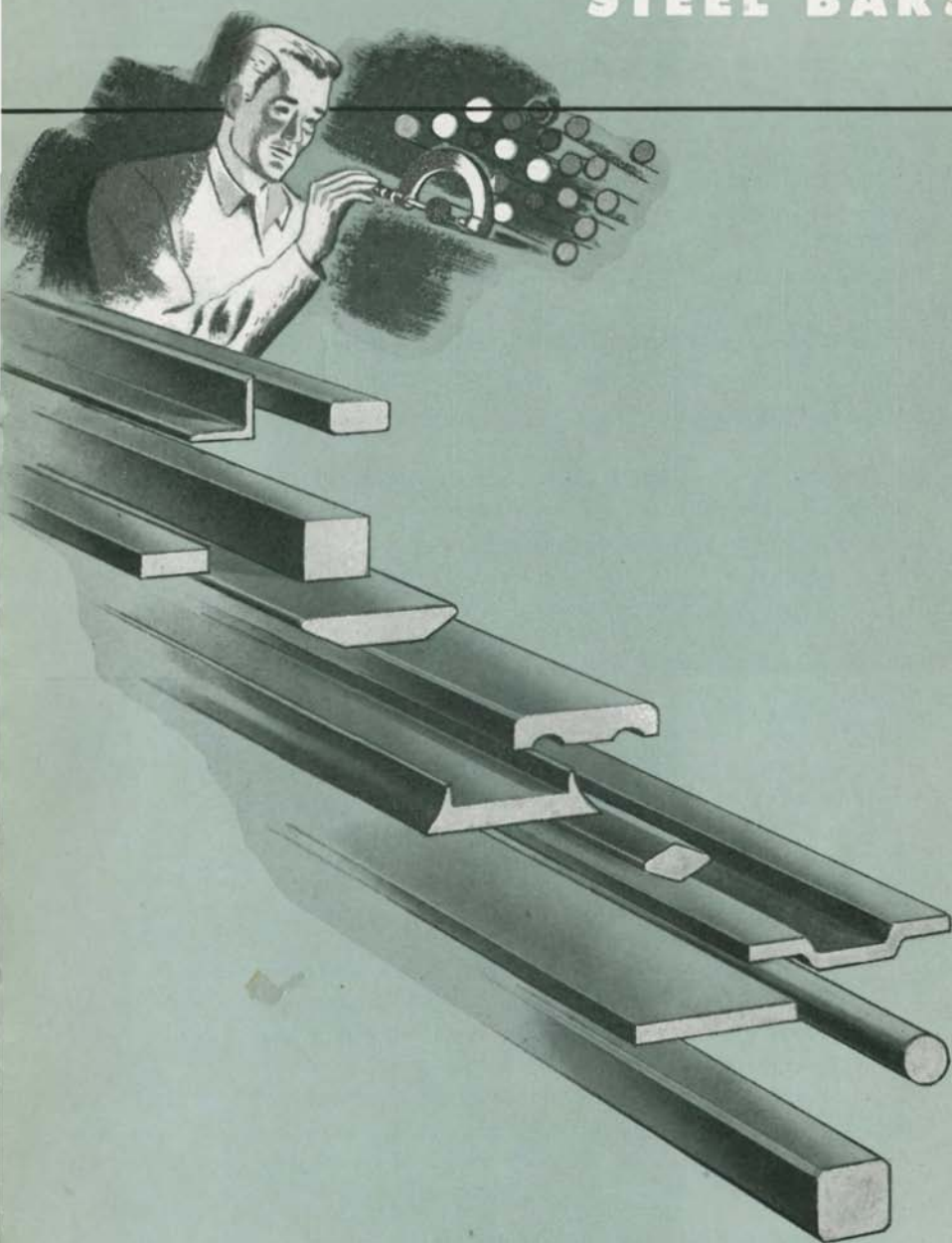
Gages	Maximum Widths	Maximum Lengths
No. 29 to 35, incl.	34"	72"

This type of Inland Black Plate is furnished with a bright, clean, deoxidized surface chemically treated to provide an exceptionally enduring bond for paints, lacquers, organic enamels, lithographing inks, etc. Although the material is susceptible to rust until the finish is applied, the surface treatment acts to inhibit under-film corrosion after painting and also provides an unsurpassed foothold for the immediate adherence of the finish. It is available in the same range of mechanical properties as standard Inland Black Plate.

*Electrolytic Tin Plating—The looping in the foreground is used to provide slack in coils of Black Plate entering the Electrolytic Tinning unit.*



# STEEL BARS



BARS  
28

REINF.  
BARS  
45

STRUCT.  
SHAPES  
48

PILING  
57

PLATES  
60

FLOOR  
PLATES  
63

RAILS &  
TRACK  
ACC'S  
68

RAIL  
STEEL  
74

SPECIAL  
STEELS  
86

SPEC'S  
96

CHEM.  
COMP.  
99

# HOT ROLLED CARBON BARS

## New Billet Steel\*

► Inland Steel Bars are in exceptional demand by shop men because of their high quality and dependable uniformity. They are manufactured on modern mills offering great flexibility and staffed by skilled steel-makers long experienced in Inland's manufacturing standards and adherence to specifications. Close cooperation by the Inland Metallurgical Department gives the user assurance of obtaining a steel which meets his requirements as to mechanical properties, heat treating response, service, etc.

### Rolled in Full Range of Sizes

Inland manufactures Hot Rolled Carbon Bars in a full range of sizes and to uniform dimensions and tolerances. Straight lengths are furnished up to 65 feet. Inland regularly rolls round bars with a maximum diameter of  $3\frac{1}{8}$ " in straight lengths. Round sizes over  $3\frac{1}{8}$ " to 5", inclusive, can be furnished when the volume required is sufficient to warrant production. Rounds ranging from  $\frac{1}{8}$ " to  $\frac{7}{8}$ ", inclusive, and nut flats from  $\frac{1}{8}$ " to  $1\frac{1}{8}$ ", inclusive, in width, may be ordered in coils.

Inland Steel products in this classification also include bar-size shapes such as angles, channels and zees (largest dimension less than 3"), flats not less than  $\frac{3}{4}$ " thick or over 6" wide, squares, round-cornered squares, ovals and diamonds. In addition, Inland rolls many special bar sections. For complete information as to the sizes, etc., see the tables on the following pages. Help in meeting any special bar requirements will be provided promptly following your inquiry.

### Spring Steel Bars—An Inland Specialty

Spring Steel Bars are a well-known Inland Steel specialty. A full range of sizes is regularly rolled. Various processing improvements, particularly those made possible by special high speed rolling and hot bed equipment, give a product that is superior both in the uniformity of the steel and in surface finish.

Inland produces Carbon Spring Steel in all the recognized grades. Most generally specified are the A. I. S. I. Steels C-1085 and C-1095. Bars will also be furnished in Alloy Spring Steel, and information as to the grades currently produced is available on request.

\* For Rail Steel Bars, see section on Rail Steel.

## ROUNDS—Sizes Rolled

(Sizes larger than 3 1/16" up to and including five inches can be rolled by special arrangement. Intermediate sizes are rolled in addition to those given in the table.)



Size Inches A	Wt. Lbs. per Ft.	Area Square Inches	Mill	Size Inches A	Wt. Lbs. per Ft.	Area Square Inches	Mill
23/64	.345	.1014	10"	1 3/4	8.178	2.4053	14"
3/8	.376	.1105	10"	1 13/16	8.773	2.5802	14"
7/16	.511	.1503	10"	1 7/8	9.388	2.7612	14"
				1 5/8	10.024	2.9483	14"
1/2	.668	.1963	10"	2	10.681	3.1416	14"
9/16	.845	.2485	10"	2 1/16	11.359	3.3410	14"
5/8	1.043	.3068	10"	2 1/8	12.058	3.5466	14"
11/16	1.262	.3712	10"	2 3/16	12.778	3.7583	14"
3/4	1.502	.4418	10"	2 1/4	13.519	3.9761	14"
13/16	1.763	.5185	10"	2 3/8	14.280	4.2000	14"
7/8	2.044	.6013	10"	2 3/8	15.062	4.4301	14"
15/16	2.347	.6903	10"	2 7/16	15.866	4.6664	14"
1	2.670	.7854	10"	2 1/2	16.690	4.9087	14"
1 1/16	3.015	.8866	14"	2 5/8	17.534	5.1572	14"
1 1/8	3.380	.9940	14"	2 5/8	18.400	5.4119	14"
1 3/16	3.766	1.1075	14"	2 11/16	19.287	5.6727	14"
1 1/4	4.172	1.2272	14"	2 3/4	20.195	5.9396	14"
1 3/8	4.600	1.3530	14"	2 13/16	21.123	6.2126	14"
1 3/8	5.049	1.4849	14"	2 7/8	22.072	6.4918	14"
1 7/16	5.518	1.6230	14"	2 15/16	23.042	6.7771	14"
1 1/2	6.008	1.7671	14"	3	24.033	7.0686	14"
1 5/16	6.519	1.9175	14"	3 1/16	25.045	7.3662	14"
1 5/8	7.051	2.0739	14"				
1 11/16	7.604	2.2365	14"				

## SQUARE BARS—Sizes Rolled



Size Inches A	Wt. Lbs. per Ft.	Area Square Inches	Mill	Size Inches A	Wt. Lbs. per Ft.	Area Square Inches	Mill
3/8	.478	.1406	10"	2 9/32	2.795	.8213	14"
7/16	.651	.1914	10"	1 5/16	2.988	.8789	14"
1/2	.850	.2500	10"	1	3.400	1.0000	14"
9/16	1.076	.3164	10"	1 1/16	3.838	1.1289	14"
5/8	1.328	.3906	10"	1 1/8	4.303	1.2656	14"
21/32	1.464	.4307	10"	1 3/16	4.795	1.4102	14"
11/16	1.607	.4727	10"	1 1/4	5.313	1.5625	14"
23/32	1.756	.5166	10"	1 5/16	5.857	1.7227	14"
3/4	1.913	.5625	10"	1 3/8	6.428	1.8906	14"
25/32	2.077	.6104	10"	1 7/16	7.026	2.0664	14"
13/16	2.245	.6602	14"	1 1/2	7.650	2.2500	14"
27/32	2.423	.7119	14"	2....	13.600	4.0000	14"
7/8	2.603	.7656	14"				

BARS  
28

REINF.  
BARS  
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STRUCT.  
SHAPES  
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PILING  
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RAILS &  
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ACC'S  
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STEEL  
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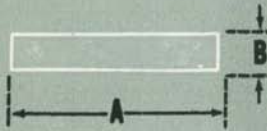
SPECIAL  
STEELS  
86

SPEC'S  
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CHEM.  
COMP.  
99

# FLAT BARS

Sizes Rolled



## 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.

THICK- NESS INCHES B	WIDTH, INCHES-A											
	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		
10" Mill	1/4	.5313	.6375	.7438	.8500	.9563	1.063	1.169	1.275	1.381	1.488	1.594
	3/8	.6641	.7969	.9297	1.063	1.195	1.328	1.461	1.594	1.727	1.859	1.992
	1/2	.7969	.9563	1.116	1.275	1.434	1.594	1.753	1.913	2.072	2.231	2.391
	3/4	.9297	1.116	1.302	1.488	1.673	1.859	2.045	2.231	2.417	2.603	2.789
	1	1.063	1.275	1.488	1.700	1.913	2.125	2.338	2.550	2.763	2.975	3.188
14" Mill	5/8	.....	1.4344	1.673	1.913	2.152	2.391	2.630	2.869	3.108	3.347	3.586
	3/4	.....	1.594	1.859	2.125	2.391	2.656	2.922	3.188	3.453	3.719	3.984
	1 1/8	.....	.....	2.045	2.338	2.630	2.922	3.214	3.506	3.798	4.091	4.383
	1 1/4	.....	.....	2.231	2.550	2.869	3.188	3.506	3.825	4.144	4.463	4.781
	1 3/8	.....	.....	.....	2.763	3.108	3.453	3.798	4.144	4.489	4.834	5.180
14" Mill	3/4	.....	.....	.....	2.975	3.347	3.719	4.091	4.463	4.834	5.206	5.578
	1	.....	.....	.....	.....	3.586	3.984	4.383	4.781	5.180	5.578	5.975
	1 1/8	.....	.....	.....	.....	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
	1 3/8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....



# 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.

THICK- NESS INCHES B	WIDTH, INCHES-A											
	2	2 1/8	2 1/4	2 3/8	2 1/2	2 5/8	3	3 1/4	3 1/2	3 3/4	3 1/2	
10" Mill	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
	5/8	3.825	4.064	4.303	4.542	4.781	5.020	5.259	5.498	5.738	6.216	6.694
	3/4	4.250	4.516	4.781	5.047	5.313	5.578	5.844	6.109	6.375	6.906	7.438
	7/8	4.675	4.967	5.259	5.552	5.844	6.136	6.428	6.720	7.013	7.597	8.181
	1 1/8	5.100	5.419	5.738	6.056	6.375	6.694	7.013	7.331	7.650	8.288	8.925
	1 1/4	5.525	5.870	6.216	6.561	6.906	7.252	7.597	7.942	8.288	8.978	9.669
14" Mill	7/8	5.950	6.322	6.694	7.066	7.438	7.809	8.181	8.553	8.925	9.669	10.413
	1 1/8	6.375	6.773	7.172	7.570	7.969	8.367	8.766	9.164	9.563	10.359	11.156
	1 1/4	6.800	7.225	7.650	8.075	8.500	8.925	9.350	9.775	10.200	11.050	11.900
	1 3/8	7.225	7.683	8.141	8.599	9.057	9.515	9.973	10.431	10.889	11.813	12.737
	1 1/2	7.650	8.141	8.632	9.123	9.614	10.105	10.596	11.087	11.578	12.575	13.572
	1 5/8	8.075	8.599	9.123	9.647	10.171	10.695	11.219	11.743	12.267	13.313	14.359
	1 3/4	8.500	9.031	9.563	10.094	10.625	11.156	11.688	12.219	12.750	13.813	14.875
	1 7/8	8.925	9.478	10.031	10.584	11.137	11.690	12.243	12.796	13.349	14.438	15.527
	2	9.350	9.913	10.476	11.039	11.602	12.165	12.728	13.291	13.854	14.963	16.072
	2 1/8	9.775	10.348	10.921	11.494	12.067	12.640	13.213	13.786	14.359	15.488	16.617
24" Mill	2 1/4	18.169	19.125	20.081	21.038	21.994	22.950	24.863	26.775	28.688	31.769	34.213
	2 3/8	19.125	20.191	21.258	22.325	23.392	24.459	26.526	28.593	30.660	34.213	37.769
	2 1/2	20.081	21.258	22.435	23.612	24.789	25.966	28.143	30.320	32.497	36.553	40.609
	2 5/8	21.038	22.325	23.612	24.899	26.186	27.473	30.760	33.047	35.334	40.609	44.875
	2 3/4	21.994	23.381	24.768	26.155	27.542	28.929	32.316	34.703	37.090	42.356	46.622
	2 7/8	22.950	24.437	25.924	27.411	28.898	30.385	34.272	38.159	42.046	47.312	51.578
	3	23.906	25.493	27.080	28.667	30.254	31.841	36.128	40.415	44.702	50.968	55.234
	3 1/4	24.863	26.550	28.237	29.924	31.611	33.298	38.085	42.372	46.659	53.925	58.191
	3 1/2	25.819	27.606	29.393	31.180	32.967	34.754	39.642	43.929	48.195	55.481	59.747
	3 3/4	26.775	28.662	30.549	32.436	34.283	36.040	41.199	45.466	49.733	57.299	61.565

- REINF. BARS 45
- STRUCT. SHAPES 48
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- FLOOR PLATES 63
- RAILS & TRACK ACC'S 68
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# FLAT BARS, Continued

## 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 B	WIDTH, INCHES-A									
	3 3/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6
1/4	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
3/8	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
1/2	6.375	6.800	7.225	7.650	8.075	8.500	8.925	9.350	9.775	10.200
5/8	7.172	7.650	8.128	8.604	9.084	9.563	10.041	10.519	10.997	11.475
3/4	7.969	8.500	9.031	9.563	10.094	10.625	11.156	11.688	12.219	12.750
1 1/16	8.766	9.350	9.934	10.519	11.103	11.688	12.272	12.856	13.441	14.025
3/4	9.563	10.200	10.838	11.475	12.113	12.750	13.388	14.025	14.663	15.300
1 1/8	10.359	11.050	11.741	12.431	13.122	13.813	14.503	15.194	15.884	16.575
7/8	11.156	11.900	12.644	13.388	14.131	14.875	15.619	16.363	17.106	17.850
1 1/16	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
1 1/4	15.938	17.000	18.063	19.125	20.188	21.250	22.313	23.375	24.438	25.500
1 1/2	19.125	20.400	21.675	22.950	24.225	25.500	26.775	28.050	29.325	30.600
1 5/8	20.719	22.100	23.481	24.863	26.244	27.625	29.006	30.388	31.769	33.150
1 3/4	22.313	23.800	25.288	26.775	28.263	29.750	31.238	32.725	34.213	35.700
1 7/8	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
2 1/8	27.094	28.900	30.706	32.513	34.319	36.125	37.931	39.738	41.544	43.350
2 1/4	28.688	30.600	32.513	34.425	36.338	38.250	40.163	42.075	43.988	45.900
2 3/8	30.281	32.300	34.319	36.338	38.356	40.375	42.394	44.413	46.431	48.450
2 1/2	31.875	34.000	36.125	38.250	40.375	42.500	44.625	46.750	48.875	51.000
2 5/8	33.469	35.700	37.931	40.163	42.394	44.625	46.856	49.088	51.319	53.550
2 3/4	35.063	37.400	39.738	42.075	44.413	46.750	49.088	51.425	53.763	56.100
2 7/8	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
3 1/4	41.438	44.200	46.963	49.725	52.488	55.250	58.013	60.775	63.538	66.300
3 1/2	44.625	47.600	50.575	53.550	56.525	59.500	62.475	65.450	68.425	71.400

# FLAT BARS Round Edge, Sizes rolled

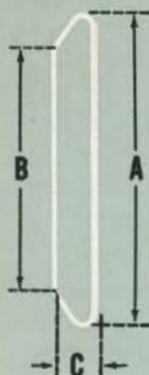
## FLAT BARS, ROUND EDGE Overall Measure

Flat bars with round edges should be specified to the overall width. Unless round edges are specified, flat bars are furnished with square edges.

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

WIDTH OVERALL INCHES A	THICKNESS, INCHES-B																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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3/8	.499	.614	.725	.832	1.147	1.259	1.360	1.498	1.659	1.858	2.058	2.260	2.462	2.621	2.722	2.990	3.136	3.282	3.418	3.577	3.752	3.896	4.050	4.215	4.390	4.575	4.770	4.975	5.190	5.415	5.650	5.895	6.150	6.415	6.690	6.975	7.270	7.575	7.890	8.215	8.550	8.895	9.250	9.615	9.990	10.375	10.770	11.175	11.590	12.015	12.450	12.895	13.350	13.815	14.290	14.775	15.270	15.775	16.290	16.815	17.350	17.895	18.450	19.015	19.590	20.175	20.770	21.375	21.990	22.615	23.250	23.895	24.550	25.215	25.890	26.575	27.270	27.975	28.690	29.415	30.150	30.895	31.650	32.415	33.190	33.975	34.770	35.575	36.390	37.215	38.050	38.895	39.750	40.615	41.490	42.375	43.270	44.175	45.090	46.015	46.950	47.895	48.850	49.815	50.790	51.775	52.770	53.775	54.790	55.815	56.850	57.895	58.950	60.015	61.090	62.175	63.270	64.375	65.490	66.615	67.750	68.895	70.050	71.215	72.390	73.575	74.770	75.975	77.190	78.415	79.650	80.895	82.150	83.415	84.690	85.975	87.270	88.575	89.890	91.215	92.550	93.895	95.250	96.615	97.990	99.375	100.770	102.175	103.590	105.015	106.450	107.895	109.350	110.815	112.290	113.775	115.270	116.775	118.290	119.815	121.350	122.895	124.450	126.015	127.590	129.175	130.770	132.375	133.990	135.615	137.250	138.895	140.550	142.215	143.890	145.575	147.270	148.975	150.690	152.415	154.150	155.895	157.650	159.415	161.190	162.975	164.770	166.575	168.390	170.215	172.050	173.895	175.750	177.615	179.490	181.375	183.270	185.175	187.090	189.015	190.950	192.895	194.850	196.815	198.790	200.775	202.770	204.775	206.790	208.815	210.850	212.895	214.950	217.015	219.090	221.175	223.270	225.375	227.490	229.615	231.750	233.895	236.050	238.215	240.390	242.575	244.770	246.975	249.190	251.415	253.650	255.895	258.150	260.415	262.690	264.975	267.270	269.575	271.890	274.215	276.550	278.895	281.250	283.615	285.990	288.375	290.770	293.175	295.590	298.015	300.450	302.895	305.350	307.815	310.290	312.775	315.270	317.775	320.290	322.815	325.350	327.895	330.450	332.915	335.390	337.875	340.370	342.875	345.390	347.915	350.450	352.995	355.550	358.115	360.690	363.275	365.870	368.475	371.090	373.715	376.350	378.995	381.650	384.315	386.990	389.675	392.370	395.075	397.790	400.515	403.250	405.995	408.750	411.515	414.290	417.075	419.870	422.675	425.490	428.315	431.150	433.995	436.850	439.715	442.590	445.475	448.370	451.275	454.190	457.115	460.050	462.995	465.950	468.915	471.890	474.875	477.870	480.875	483.890	486.915	489.950	492.995	496.050	499.115	502.190	505.275	508.370	511.475	514.590	517.715	520.850	523.995	527.150	530.315	533.490	536.675	539.870	543.075	546.290	549.515	552.750	556.095	559.450	562.815	566.190	569.575	572.970	576.375	579.790	583.215	586.650	590.095	593.550	597.015	600.490	603.975	607.470	610.975	614.490	618.015	621.550	625.095	628.650	632.215	635.790	639.375	642.970	646.575	650.190	653.815	657.450	661.095	664.750	668.415	672.090	675.775	679.470	683.175	686.890	690.615	694.350	698.095	701.850	705.615	709.390	713.175	716.970	720.775	724.590	728.415	732.250	736.095	739.950	743.815	747.690	751.575	755.470	759.375	763.290	767.215	771.150	775.095	779.050	783.015	787.090	791.175	795.270	799.375	803.490	807.615	811.750	815.895	820.050	824.215	828.390	832.575	836.770	840.975	845.190	849.415	853.650	857.895	862.150	866.415	870.690	874.975	879.270	883.575	887.890	892.215	896.550	900.895	905.250	909.615	913.990	918.375	922.770	927.175	931.590	936.015	940.450	944.895	949.350	953.815	958.290	962.775	967.270	971.775	976.290	980.815	985.350	989.895	994.450	999.015	1003.590	1008.175	1012.770	1017.375	1021.990	1026.615	1031.250	1035.895	1040.550	1045.215	1049.890	1054.575	1059.270	1063.975	1068.690	1073.415	1078.150	1082.895	1087.650	1092.415	1097.190	1101.975	1106.770	1111.575	1116.390	1121.215	1126.050	1130.895	1135.750	1140.615	1145.490	1150.375	1155.270	1160.175	1165.090	1169.915	1174.750	1179.595	1184.450	1189.315	1194.190	1199.075	1203.970	1208.875	1213.790	1218.715	1223.650	1228.595	1233.550	1238.515	1243.490	1248.475	1253.470	1258.475	1263.490	1268.515	1273.550	1278.595	1283.650	1288.715	1293.790	1298.875	1303.970	1309.075	1314.190	1319.315	1324.450	1329.595	1334.750	1339.915	1345.090	1350.275	1355.470	1360.675	1365.890	1371.115	1376.350	1381.595	1386.850	1392.115	1397.390	1402.675	1407.970	1413.275	1418.590	1423.915	1429.250	1434.595	1439.950	1445.315	1450.690	1456.075	1461.470	1466.875	1472.290	1477.715	1483.150	1488.595	1494.050	1499.515	1504.990	1510.475	1515.970	1521.475	1526.990	1532.515	1538.050	1543.595	1549.150	1554.715	1560.290	1565.875	1571.470	1577.075	1582.690	1588.315	1593.950	1599.595	1605.250	1610.915	1616.590	1622.275	1627.970	1633.675	1639.390	1645.115	1650.850	1656.595	1662.350	1668.115	1673.890	1679.675	1685.470	1691.275	1697.090	1702.915	1708.750	1714.595	1720.450	1726.315	1732.190	1738.075	1743.970	1749.875	1755.790	1761.715	1767.650	1773.595	1779.550	1785.515	1791.490	1797.475	1803.470	1809.475	1815.490	1821.515	1827.550	1833.595	1839.650	1845.715	1851.790	1857.875	1863.970	1870.075	1876.190	1882.315	1888.450	1894.595	1900.750	1906.915	1913.090	1919.275	1925.470	1931.675	1937.890	1944.115	1950.350	1956.595	1962.850	1969.115	1975.390	1981.675	1987.970	1994.275	2000.590	2006.915	2013.250	2019.595	2025.950	2032.315	2038.690	2045.075	2051.470	2057.875	2064.290	2070.715	2077.150	2083.595	2089.950	2096.315	2102.690	2109.075	2115.470	2121.875	2128.290	2134.715	2141.150	2147.595	2154.050	2160.515	2166.990	2173.475	2179.970	2186.475	2192.990	2199.515	2206.050	2212.595	2219.150	2225.715	2232.290	2238.875	2245.470	2252.075	2258.690	2265.315	2271.950	2278.595	2285.250	2291.915	2298.590	2305.275	2311.970	2318.675	2325.390	2332.115	2338.850	2345.595	2352.350	2359.115	2365.890	2372.675	2379.470	2386.275	2393.090	2400.015	2406.950	2413.895	2420.850	2427.815	2434.790	2441.775	2448.770	2455.775	2462.790	2469.815	2476.850	2483.895	2490.950	2498.015	2505.090	2512.175	2519.270	2526.375	2533.490	2540.615	2547.750	2554.895	2562.050	2569.215	2576.390	2583.575	2590.770	2597.975	2605.190	2612.415	2619.650	2626.895	2634.150	2641.415	2648.690	2655.975	2663.270	2670.575	2677.890	2685.215	2692.550	2700.015	2707.490	2714.975	2722.470	2729.975	2737.490	2745.015	2752.550	2760.095	2767.650	2775.215	2782.790	2790.375	2797.970	2805.575	2813.190	2820.815	2828.450	2836.095	2843.750	2851.415	2859.090	2866.775	2874.470	2882.175	2889.890	2897.615	2905.350	2913.095	2920.850	2928.615	2936.390	2944.175	2951.970	2959.775	2967.590	2975.415	2983.250	2991.095	2998.950	3006.815	3014.690	3022.575	3030.470	3038.375	3046.290	3054.215	3062.150	3070.095	3078.050	3086.015	3093.990	3101.975	3109.970	3117.975	3125.990	3133.915	3141.850	3149.795	3157.750	3165.715	3173.690	3181.675	3189.670	3197.675	3205.690	3213.715	3221.750	3229.795	3237.850	3245.915	3253.990	3262.075	3270.170	3278.275	3286.390	3294.515	3302.650	3310.795	3318.950	3327.115	3335.290	3343.475	3351.670	3359.875	3368.090	3376.315	3384.550	3392.795	3401.050	3409.315	3417.590	3425.875	3434.170	3442.475	3450.790	3459.115	3467.450	3475.795	3484.150	3492.515	3500.890	3509.275	3517.670	3526.075	3534.490	3542.915	3551.350	3559.795	3568.250	3576.715	3585.190	3593.675	3602.170	3610.675	3619.190	3627.715	3636.250	3644.795	3653.350	3661.915	3670.490	3679.075	3687.670	3696.275	3704.890	3713.515	3722.150	3730.795	3739.450	3748.115	3756.790	3765.475	3774.170	3782.875	3791.590	3800.315	3809.050	3817.795	3826.550	3835.315	3844.090	3852.875	3861.670	3870.475	3879.290	3888.115	3896.950	3905.795	3914.650	3923.515	3932.390	3941.275	3950.170	3959.075	3967.990	3976.915	3985.850	3994.795	4003.750	

## CONCAVE BEVEL EDGE FLATS



Size, Inches			Section	Con- cavity Inches	Area Sq. In.	Wt. Lbs.	
A	B	C				per Ft.	Mill
1 $\frac{3}{8}$	1 $\frac{1}{16}$	.180	M-149	Max..009 Min. .004 Max..012	.27	.918	10"
2 $\frac{1}{4}$	1 $\frac{3}{16}$	.238	M-150	Min. .006 Max..012	.49	1.666	10"
2 $\frac{1}{4}$	1 $\frac{3}{16}$	.259	M-151	Min. .006 Max..012	.53	1.802	10"
2 $\frac{1}{4}$	1 $\frac{1}{16}$	.180	M-180	Min. .006 Max..010	.375	1.275	10"
1 $\frac{3}{4}$ ...	1 $\frac{7}{16}$	.180...	M-197...	Min. .005	.29	.986...	10"

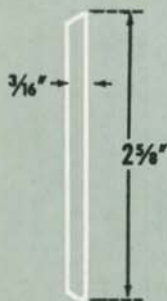
## DOUBLE BEVELED EDGE FLATS



Size, Inches		Section	Area Sq. Inches	Wt. lbs. per ft.	Mill
A	B				
2 $\frac{1}{2}$	$\frac{3}{16}$	M-332	1.21	4.13	10"
2 $\frac{1}{2}$ ...	$\frac{3}{16}$ ...	M-333...	1.37...	4.66...	10"

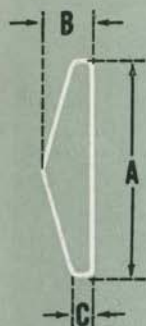
## BEVEL EDGE FLAT

### Section M-20



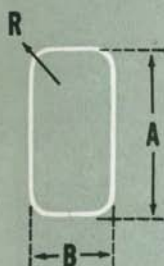
Size, Inches	Weight Lbs. per Ft.	Mill
2 $\frac{3}{8}$ x $\frac{3}{16}$ .....	1.63.....	10"

## DOUBLE BEVELED FLAT



Size, Inches			Section	Area Sq. In.	Wt. Lbs. per Ft.	Mill
A	B	C				
1 3/4	7/16	3/16	M-193	.547	1.860	10"

## ROUND CORNERED FLATS



Size, Inches			Section	Area Sq. In.	Wt. Lbs. per Ft.	Mill
A	B	Radius "R"				
1	1/2	1/8	M-224	.4866	1.654	10"
1 13/16	1	3/32	M-257	1.8049	6.137	10"
2 9/32	1 13/32	1/16	M-258	.3648	1.240	10"
1	5/8	1/8	M-320	.6116	2.08	10"
1 1/8	1 1/16	1/8	M-343	.7600	2.584	10"

## ROUND EDGE OVERALL GROOVED SPRING FLATS



"W" Width	Section	"G" Gauge	Area Sq. In.	Weight Lbs. per Ft.	Mill
2"	M-307	#1 (.300")	.580	1.972	10"
2"	M-308	#3 (.260")	.500	1.700	10"
2"	M-198	#4 (.238")	.455	1.547	10"
2"	M-199	#5 (.220")	.419	1.424	10"
2"	M-200	#7 (.180")	.339	1.152	10"
2 1/4"	M-306	#1 (.300")	.651	2.213	10"
2 1/4"	M-201	#3 (.260")	.561	1.907	10"
2 1/4"	M-202	#4 (.238")	.514	1.747	10"
2 1/4"	M-203	#5 (.220")	.474	1.611	10"
2 1/4"	M-204	#7 (.180")	.384	1.305	10"
2 1/4"	M-327	#6 (.203")	.436	1.482	10"
2"	M-328	#6 (.203")	.385	1.309	10"

REINF.  
BARS  
**45**

STRUCT.  
SHAPES  
**48**

PILING  
**57**

PLATES  
**60**

FLOOR  
PLATES  
**63**

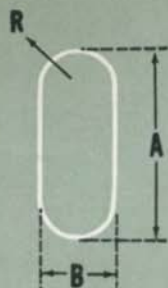
RAILS &  
TRACK  
ACC'S  
**68**

RAIL  
STEEL  
**74**

SPECIAL  
STEELS  
**86**

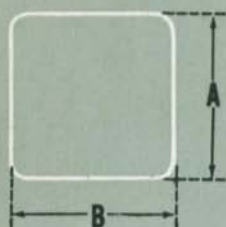
SPEC'S  
**96**

CHEM.  
COMP.  
**99**



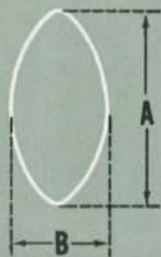
## FULL ROUND EDGE FLAT

Size, Inches		Section	Radius "R"	Area Sq. In.	Wt. Lbs. per Ft.	Mill
A	B					
2	1 <sup>3</sup> / <sub>16</sub>	M-316	1 <sup>3</sup> / <sub>32</sub>	1.483	5.04	14"



## ROUND CORNERED SQUARES

Size, Inches		Area Sq. In.	Wt. Lbs. per Ft.	Mill
A	B			
1 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	2.089	7.103	14"
1 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	2.182	7.419	14"
1 <sup>5</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>16</sub>	2.373	8.068	14"
1 <sup>5</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>16</sub>	2.573	8.748	14"
1 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	2.780	9.452	14"
1 <sup>3</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>4</sub>	2.979	10.129	14"
1 <sup>3</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>16</sub>	3.201	10.883	14"
1 <sup>7</sup> / <sub>8</sub>	1 <sup>7</sup> / <sub>8</sub>	3.395	11.543	14"
2	2	3.879	13.189	14"
2 <sup>1</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>8</sub>	4.395	14.943	14"
2 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub>	6.061	20.607	28"
3	3	8.728	29.675	28"



## OVALS

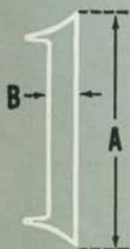
Size, Inches		Section	Area Sq. In.	Wt. Lbs. per Ft.	Mill
A	B				
5/8	5/8	M-156	.136	.464	10"
3/4	3/4	M-155	.162	.550	10"
7/8	7/8	M-144	.281	.955	10"

## GUY CLAMP SECTIONS



Size, Inches		Section	Wt. Lbs. per Ft.	Mill
A	B			
1 $\frac{1}{16}$	$\frac{3}{8}$	M-21	1.86	10"
1 $\frac{1}{16}$	.359	M-21	1.77	10"
1 $\frac{1}{32}$	.359	M-54	1.78	10"
1 $\frac{1}{32}$	$\frac{3}{8}$	M-54	1.87	10"

## LANDSIDE CHANNELS

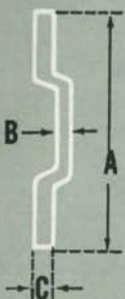


Size, Inches		Section	Wt. Lbs. per Ft.	Mill
A	B			
4 $\frac{11}{16}$	$\frac{1}{2}$	M-116	7.9	24"
4 $\frac{7}{8}$	1 $\frac{1}{32}$	M-115	9.486	24"

## FLATS (Nut Stock)

Nut flats are produced in sizes as shown in the tables on Flats on pages 30, 31 and 32. Only 10-Inch Mill sizes can be coiled

## SQUARE BACK GROOVED TIRE SECTIONS



Size, Inches			Section	Wt. Lbs. per Ft.	Mill
A	B	C			
4	$\frac{9}{32}$	$\frac{3}{8}$	M-153	5.005	14"
4	1 $\frac{13}{32}$	$\frac{1}{2}$	M-154	6.705	14"

REINF. BARS  
45

STRUCT. SHAPES  
48

PILING  
57

PLATES  
60

FLOOR PLATES  
63

RAILS & TRACK ACC'S  
68

RAIL STEEL  
74

SPECIAL STEELS  
86

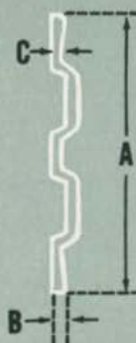
SPEC'S  
96

CHEM. COMP.  
99



## GROOVED TIRE SECTIONS

Size, Inches		Section	Wt. Lbs. per Ft.	Mill
A	B			
3	1/4	M-133	2.17	14"
3	3/8	M-134	3.45	14"
3	1/2	M-135	4.72	14"
3	5/16	M-159	2.81	14"
3	3/32	M-174	2.49	14"
4	3/8	M-131	4.56	14"
4	1/2	M-132	6.26	14"
4	3/8	M-136	7.96	14"
6	3/8	M-128	6.9	24"
6	1/2	M-129	9.45	24"
6	3/8	M-130	12.00	24"



## DOUBLE GROOVED TIRE SECTIONS

(Furnished by Special Arrangement Only)

Size, Inches			Section	Wt. Lbs. per Ft.	Mill
A	B	C			
8	5/16	7/32	M-163	7.521	24"
8	7/16	11/32	M-164	10.921	24"
8	3/16	13/32	M-165	14.321	24"
8	3/8	5/32	M-228	9.221	24"
8	1/2	13/32	M-229	12.621	24"
8	5/8	17/32	M-230	16.021	24"

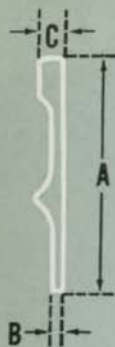


## DOUBLE GROOVED TIRE SECTIONS

(Furnished by Special Arrangement only)

Size, Inches		Section	Wt. Lbs. per Ft.	Mill
A	B			
10	3/8	M-124	9.35	24"
10	1/2	M-125	13.60	24"
10	3/8	M-126	17.85	24"
10	1/2	M-127	22.10	24"





## CAN SECTIONS

Size, Inches			Section	Area Sq. In.	Wt. Lbs. per Ft.	Mill
A	B	C				
2¼	⅛	¼	M-289	.371	1.261	10"
2¾	⅛	¼	M-279	.41	1.394	10"
2½	¾	¾	M-280	.253	.860	10"



Using an optic pyrometer to determine the temperature of molten steel as it is teemed into ingot molds.

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RAILS &  
TRACK  
ACC'S  
68

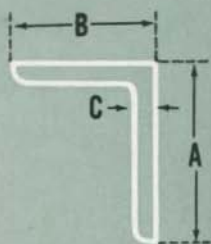
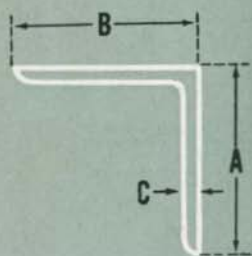
RAIL  
STEEL  
74

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## ANGLES—BAR SIZE

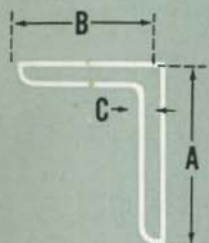
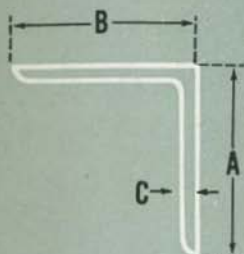
(Largest dimension less than three inches - - see pages 53 and 54 for Structural Angles)



Size, Inches			Wt. Lbs. per Ft.	Mill
A	B	C		
3/4	3/4	3/16	0.51	10"
3/4	3/4	1/8	0.59	10"
3/4	3/4	3/16	0.84	10"
7/8	7/8	3/16	0.61	10"
7/8	7/8	1/8	0.70	10"
7/8	7/8	3/16	1.00	10"
1	5/8	3/16	0.58	10"
1	5/8	1/8	0.64	10"
1	5/8	3/16	0.92	10"
1	1	3/16	0.71	10"
1	1	1/8	0.80	10"
1	1	3/16	1.16	10"
1	1	1/4	1.49	10"
1 3/8	7/8	3/16	0.78	10"
1 3/8	7/8	1/8	0.91	10"
1 3/8	7/8	3/16	1.32	10"
1 1/8	1 1/8	1/8	0.91	10"
1 1/8	1 1/8	3/16	1.32	10"
1 1/8	1 1/8	1/4	1.90	10"
1 1/4	1 1/4	1/8	1.01	10"
1 1/4	1 1/4	3/16	1.48	10"
1 1/4	1 1/4	1/4	1.92	10"
1 1/4	1 1/4	5/16	2.33	10"
1 1/2	1 1/2	1/8	1.23	10"
1 1/2	1 1/2	3/16	1.80	14"
1 1/2	1 1/2	1/4	2.34	14"
1 1/2	1 1/2	5/16	2.86	14"
1 1/2	1 1/2	3/8	3.35	14"
1 3/4	1 3/4	1/8	1.44	10"
1 3/4	1 3/4	3/16	2.12	14"
1 3/4	1 3/4	1/4	2.77	14"
1 3/4	1 3/4	5/16	3.39	14"
1 3/4	1 3/4	3/8	3.99	14"
2	1 1/2	1/8	1.44	14"
2	1 1/2	3/16	2.12	14"

## ANGLES—BAR SIZE—Continued

(Largest dimension less than three inches)



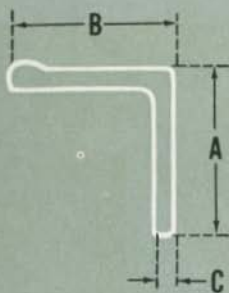
Size, Inches			Wt. Lbs. per Ft.	Mill
A	B	C		
2	1½	¼	2.77	14"
2	1½	⅜	3.39	14"
2	1½	½	3.99	14"
2	2	⅛	1.65	10"
2	2	⅜	2.44	14"
2	2	½	3.19	14"
2	2	⅜	3.92	14"
2	2	½	4.70	14"
2	2	¾	5.30	14"
2¼	2¼	⅛	1.86	14"
2¼	2¼	⅜	2.75	14"
2¼	2¼	½	3.62	14"
2¼	2¼	¾	4.50	14"
2¼	2¼	⅜	5.30	14"
2¼	2¼	½	6.10	14"
2¼	2¼	¾	6.80	14"
2½	2	⅜	2.75	14"
2½	2	½	3.62	14"
2½	2	¾	4.50	14"
2½	2	⅜	5.30	14"
2½	2	½	6.10	14"
2½	2	¾	6.80	14"
2½	2½	⅛	2.08	14"
2½	2½	⅜	3.07	14"
2½	2½	½	4.10	14"
2½	2½	¾	5.00	14"
2½	2½	⅜	5.90	14"
2½	2½	½	6.80	14"
2½	2½	¾	7.70	14"

### ROUND EDGE OVERALL CONCAVE FLATS

Rolled on the 10-Inch Mill in 4" width and narrower and ½" thickness and lighter. Wider and heavier sizes rolled on the 14-Inch Mill.

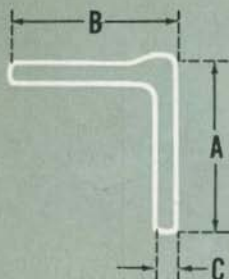
## SPECIAL ANGLES

### *Special Angle, With Bulb on Leg*



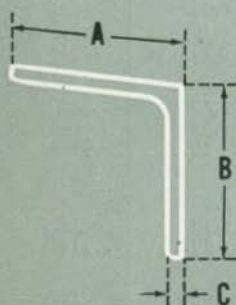
Size, Inches			Section	Area Sq. In.	Wt. Lbs. per Ft.	Mill
A	B	C				
1	1	$\frac{1}{8}$	A-319	.242	.823	10"

### *Special Angle, With Bulb at Corner*



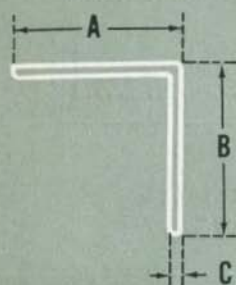
Size, Inches			Section	Area Sq. In.	Wt. Lbs. per Ft.	Mill
A	B	C				
1	1	$\frac{1}{8}$	A-318	.244	.830	10"

### *98° Angle*



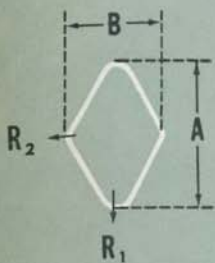
Size, Inches			Section	Area Sq. In.	Wt. Lbs. per Ft.	Mill
A	B	C				
2	2	$\frac{3}{16}$	A-298	.72	2.44	14"

### *Square Root Angle*



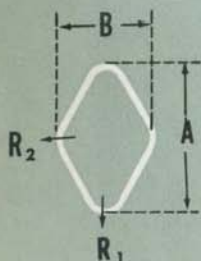
Size, Inches			Section	Wt. Lbs. per Ft.	Mill
A	B	C			
$1\frac{3}{4}$	$1\frac{3}{4}$	$\frac{1}{8}$	A-302	1.428	10"
$1\frac{3}{4}$	$1\frac{3}{4}$	$\frac{3}{16}$	A-308	1.770	10"

## DIAMOND SHAPED BARS



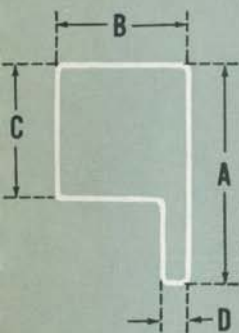
Size, Inches				Section	Area Sq. In.	Wt. Lbs. per Ft.	Mill
A	B	R1	R2				
.847	.549	$\frac{3}{32}$	$\frac{1}{32}$	M-195	.287	.976	10"
.875	.565	$\frac{3}{32}$	$\frac{1}{32}$	M-195	.287	.976	10"

## DIAMOND BIT STOCK



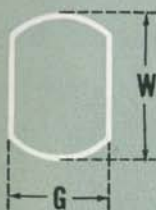
Size, Inches				Section	Area Sq. In.	Wt. Lbs. per Ft.	Mill
A	B	R1	R2				
.690	.455	$\frac{3}{64}$	$\frac{5}{32}$	M-275	.192	.653	10"
.665	.439	$\frac{3}{64}$	$\frac{5}{32}$	M-275	.192	.653	10"

## IDLER GUIDE SECTION



Size, Inches				Section	Area Sq. In.	Wt. Lbs. per Ft.	Mill
A	B	C	D				
2	1 1/4	1 1/4	1/4	M-213	1.747	5.94	14"

## GROMMET ROUND EDGE OVERALL FLATS



Size, Inches		Section	Area Sq. In.	Wt. Lbs. per Ft.	Mill
Width "W"	Gauge "G"				
.750	.495	M-273	.3422	1.163	10"
.812	.567	M-240	.4197	1.427	10"
.875	.620	M-276	.4928	1.675	10"
.973	.682	M-223	.577	1.962	10"
1.000	.745	M-274	.6687	2.273	10"
1.125	.745	M-281	.772	2.625	10"

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STEEL  
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SPECIAL  
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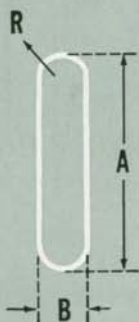
SPEC'S  
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CHEM.  
COMP.  
**99**



## Parabolic Spring Steel Flats

Size, Inches	Section	A	B	C	Area Sq. In.	Wt. Lbs. per Ft.	Mill
1 3/4 x .231	M-286	.231	.0375	.0104	.344	1.170	10"
1 3/4 x .251	M-267	.251	.040	.094	.374	1.270	10"
1 3/4 x .277	M-287	.277	.0425	.198	.409	1.390	10"
1 3/4 x .298	M-268	.298	.042	.288	.439	1.492	10"
1 3/4 x .206	M-319	.206	.035	.086	.312	1.061	10"



## Special Key Round Edge Flats

Size, Inches			Section	Area Sq. In.	Wt. Lbs. per Ft.	Mill
Width "A" In.	Thickness "B" In.	Radius "R" In.				
5	1 1/8	3/16	M-236	5.353	18.200	24"
5	1 1/4	3/8	M-237	5.915	20.111	24"
5 3/4	1 1/2	3/4	M-238	8.142	27.683	24"
6	1 1/2	3/4	M-239	8.517	28.958	24"

# HI-BOND\* REINFORCING BARS

Designed Especially for Higher Bonding Strength  
and Greater Mechanical Grip

▶ A more effective means of utilizing the strength of reinforcing steel in concrete is provided by the HI-BOND bar. Giving greatly increased load transfer between the two materials, the unique HI-BOND design marks the first real improvement in the bond value of reinforcing bars in a generation. It makes possible sounder, finer reinforced concrete structures with economy of steel and labor. So outstanding has been its performance both in actual use and laboratory tests that the Inland Steel Company has discontinued entirely the manufacture of previously established types of reinforcing bars.

The HI-BOND bar was developed by the Inland Steel Company in response to a need that has grown more pronounced as the strengths of concrete have increased. Ribs on the bar provide a bearing area more than double that of the usual commercial types of reinforcing bars and are dimensioned and spaced so as to give maximum interaction between steel and concrete.

\*Reg. U. S. Pat. Off.

## HI-BOND BARS Sizes Rolled

▶ Inland HI-BOND bars (all of round cross section) are manufactured to the nine cross sectional areas ranging from 0.11 to 1.56 sq. in., approved by the National Bureau of Standards, Division of Simplified Practice, Recommendation R 26-42:

Nominal Size (In Inches)	Area (In Sq. In.)	Weight (Lbs. Per Lin. Ft.)
3/8 Round	0.11	0.376
1/2 Round	.20	0.668
5/8 Round	.31	1.043
3/4 Round	.44	1.502
7/8 Round	.60	2.044
1 Round	.79	2.670
1 Square	1.00	3.400
1 1/8 Square	1.27	4.303
1 1/4 Square	1.56	5.313

Weights shown are used for billing purposes.

(Continued on Next Page)

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## SEVEN IMPORTANT ENGINEERING REASONS FOR SPECIFYING HI-BOND BARS

HIGHER BONDING STRENGTH	HI-BOND bars provide a substantial increase in bond value.
GREATER MECHANICAL GRIP	HI-BOND bars provide a more effective mechanical grip with the concrete irrespective of the position in which they are cast or the direction in which they are pulled.
HIGHER STRESS TRANSFER	HI-BOND bars provide a more efficient transfer of stress at splices and reduce the need for hook anchorage.
BETTER CRACK CONTROL	HI-BOND bars materially reduce the width of cracks, thereby reducing the possibility of corrosion of the steel at cracks and preserving the appearance and safety of reinforced concrete members.
GREATER RESISTANCE TO SLIP	HI-BOND bars through superior resistance to slip reduce deflections of beams and deformations of columns.
HIGHER DESIGN STRESSES POSSIBLE	HI-BOND bars will contribute to the effective use of high yield strength reinforcing steel and the further development of pre-stressed construction.
LOWER CONSTRUCTION COSTS	HI-BOND bars in reinforced concrete will result in more efficient structures and in addition lower construction costs through conservation of materials and labor.

### AVAILABLE IN BOTH NEW BILLET STEEL AND RAIL STEEL QUALITY

► HI-BOND bars are produced in both new Billet and Rail Steel quality to grades conforming with current reinforcing bar specifications of the American Society for Testing Materials and Federal Standards. Additional services such as cutting material to specified lengths and shop bending may be obtained when required.

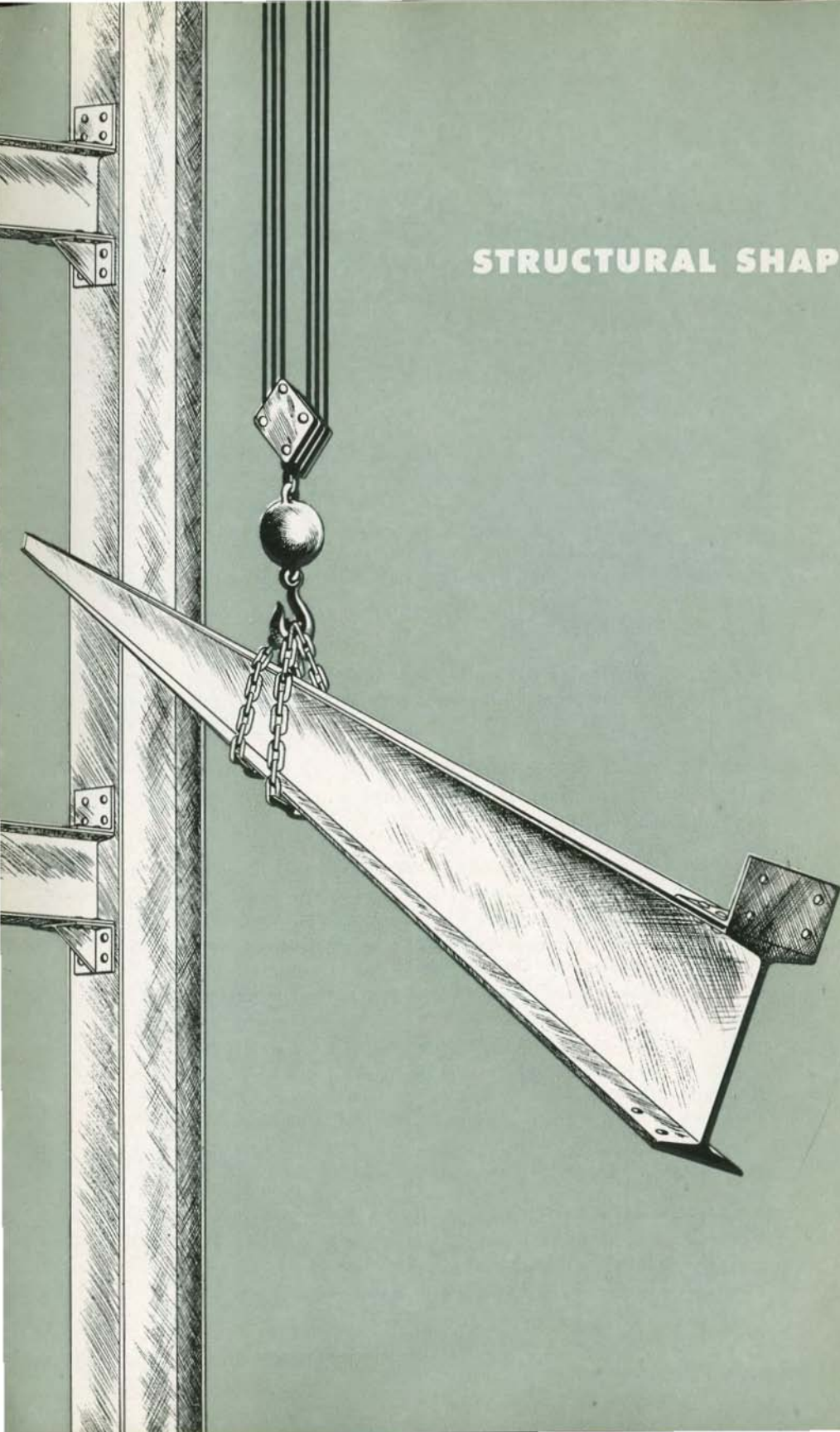
A. S. T. M. Specification For	Tensile Strength Lbs. per Sq. In.	Yield Point Lbs. per Sq. In.
Intermediate Grade Reinforcing Bars . . . . .	70,000-90,000 . . . . .	40,000 minimum
Rail Steel Quality . . . . .	80,000 minimum . . . . .	50,000 minimum

### SUPERIORITY OF HI-BOND BAR ESTABLISHED BY INDEPENDENT TESTS

Independent investigators have confirmed the superior bond value of the HI-BOND reinforcing bars in numerous tests. Tests conducted under the direction of Professor Frank E. Richart at the Talbott Laboratories, University of Illinois, showed that the HI-BOND bar offered a superior resistance to slip in all positions. Checking the influence of reinforcing bars in minimizing the widths of cracks in concrete, Watstein and Seese at the National Bureau of Standards found that the HI-BOND bar performed much better than any of the other standard types of reinforcing bars tested. Another series of tests conducted at the Bureau of Standards by Kluge and Tuma confirmed the fact that HI-BOND Bars produce a more efficient transfer of stress at splices.



# STRUCTURAL SHAPES



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# INLAND STRUCTURAL SHAPES

**PRODUCTS OF UNIFORM HIGH QUALITY BACKED BY  
CLOSE COOPERATION ON ENGINEERING PROBLEMS**

► The Inland Steel Company has set pacemaking standards for service on structural shapes. It is a service gauged to the requirements of today's construction and heavy equipment industries, with manufacturing controls that insure dependability of product, adherence to delivery schedules and close engineering cooperation with users. The modern Inland structural mills are operated by staffs schooled in the best production practices and there is laboratory supervision of all manufacturing processes.

## **Produced in a Wide Range of Sizes**

I-Beams, Angles, Channels and other Standard Structural Sections are produced by Inland in a wide range of sizes. The tables shown give the weights and dimensions of these and various special sections in the sizes rolled. Weights shown are used for billing purposes.

## **Rolled to All Standard Specifications and in Inland Hi-Steel**

Inland Structural Sections are produced to all the standard specifications. Generally, carbon steel structurals are furnished to the American Society for Testing Metals Specification A 7-42 for Bridges and Buildings, A.S.T.M. Specification A 113-42 for Locomotives and Cars, and The Association of American Railroads Specification M 116-42.

To meet requirements for high strength in combination with excellent workability and great resistance to corrosion, all structural sections rolled by Inland may be obtained in Inland Hi-Steel (See page 86 for special section on this product).

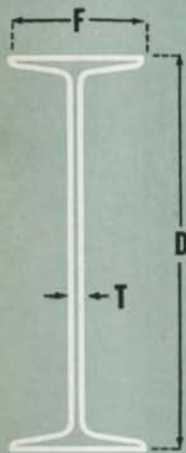
Brief descriptions of all of the most generally used standard specifications with information on the tensile properties of the steel covered will be found in the section on Standard Specifications beginning on page 96. Structural shapes may also be ordered to complete chemical requirements with no reference to physical requirements.

## **Structurals in Inland Copper-Alloy**

The added corrosion resistance of Inland Copper-Alloy steel is particularly to be desired in structurals which are to be put in service under conditions which may involve damage from corrosion. Carbon steel structurals made by Inland may be obtained in this corrosion-resistant grade. There is only a slight additional cost.

# I-BEAMS

## Sizes Rolled

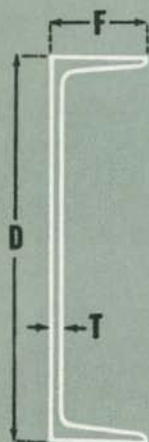


Depth of Section (D) Inches	Wt. Lbs. Per Ft.	Flange Width (F)		Web Thickness (T)	
		Decimals Inches	Fractions Inches	Decimals Inches	Fractions Inches
3	5.7	2.330	2 $\frac{3}{8}$	0.170	$\frac{3}{16}$
3	7.5	2.509	2 $\frac{1}{2}$	0.349	$\frac{3}{8}$
4	7.7	2.660	2 $\frac{3}{8}$	0.190	$\frac{3}{16}$
4	9.5	2.796	2 $\frac{3}{4}$	0.326	$\frac{3}{8}$
5	10.00	3.000	3	0.210	$\frac{1}{4}$
5	14.75	3.284	3 $\frac{1}{4}$	0.494	$\frac{1}{2}$
6	12.50	3.330	3 $\frac{3}{8}$	0.230	1 $\frac{3}{64}$
6	17.25	3.565	3 $\frac{3}{8}$	0.465	1 $\frac{1}{32}$
7	15.30	3.660	3 $\frac{3}{8}$	0.250	$\frac{1}{4}$
7	20.00	3.860	3 $\frac{3}{8}$	0.450	2 $\frac{3}{64}$
8	18.40	4.000	4	0.270	1 $\frac{3}{64}$
8	23.00	4.171	4 $\frac{1}{8}$	0.441	$\frac{7}{16}$
10	25.40	4.660	4 $\frac{5}{8}$	0.310	$\frac{5}{16}$
10	35.00	4.944	5	0.594	1 $\frac{1}{32}$
12	31.8	5.000	5	0.35	1 $\frac{1}{32}$
12	35.0	5.093	5 $\frac{1}{8}$	0.436	$\frac{7}{16}$
12	40.8	5.250	5 $\frac{1}{4}$	0.460	2 $\frac{3}{64}$
12	50.0	5.477	5 $\frac{1}{2}$	0.687	1 $\frac{1}{16}$
15	42.9	5.500	5 $\frac{1}{2}$	0.410	1 $\frac{3}{32}$
15	50.0	5.640	5 $\frac{3}{8}$	0.550	2 $\frac{3}{64}$
18	54.7	6.000	6	0.460	2 $\frac{3}{64}$
18	70.0	6.251	6 $\frac{1}{4}$	0.711	2 $\frac{1}{32}$
20	65.4	6.250	6 $\frac{1}{4}$	0.500	$\frac{1}{2}$
20	75.0	6.391	6 $\frac{3}{8}$	0.641	4 $\frac{1}{64}$
20	85.0	7.053	7	0.653	2 $\frac{1}{32}$
20	95.0	7.200	7 $\frac{1}{4}$	0.800	5 $\frac{1}{64}$
24	79.9	7.000	7	0.500	$\frac{1}{2}$
24	90.0	7.124	7 $\frac{1}{8}$	0.624	$\frac{5}{8}$
24	100.0	7.247	7 $\frac{1}{4}$	0.747	$\frac{3}{4}$
24	105.9	7.875	7 $\frac{3}{8}$	0.625	$\frac{5}{8}$
24	120.0	8.048	8	0.798	5 $\frac{1}{64}$

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## CHANNELS

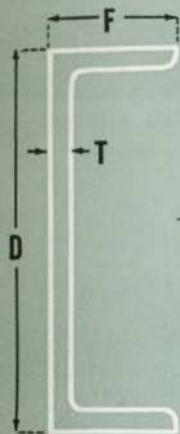
### Sizes Rolled



Depth of Channel (D) Inches	Wt. Lbs. Per Ft.	Flange Width (F)		Web Thickness (T)	
		Decimals Inches	Fractions Inches	Decimals Inches	Fractions Inches
3	4.1	1.410	1 $\frac{3}{8}$	0.170	1 $\frac{3}{64}$
3	5.0	1.498	1 $\frac{1}{2}$	0.258	1 $\frac{1}{4}$
3...	6.0...	1.596...	1 $\frac{3}{8}$ ...	0.356...	2 $\frac{3}{64}$
4	5.40	1.580	1 $\frac{3}{8}$	0.180	3 $\frac{1}{16}$
4...	7.25...	1.720...	1 $\frac{3}{8}$ ...	0.320...	3 $\frac{1}{16}$
5	6.7	1.75	1 $\frac{3}{4}$	0.19	3 $\frac{1}{16}$
5...	9.0...	1.885...	1 $\frac{3}{8}$ ...	0.325...	2 $\frac{1}{64}$
6	8.2	1.92	1 $\frac{7}{8}$	0.20	1 $\frac{3}{64}$
6	10.5	2.034	2	0.314	3 $\frac{1}{16}$
6...	13.0...	2.157...	2 $\frac{1}{8}$ ...	0.437...	3 $\frac{1}{16}$
7	9.80	2.09	2 $\frac{1}{8}$	0.21	1 $\frac{3}{64}$
7	12.25	2.194	2 $\frac{1}{4}$	0.314	3 $\frac{1}{16}$
7...	14.75...	2.299...	2 $\frac{1}{4}$ ...	0.419...	2 $\frac{3}{64}$
8	11.50	2.26	2 $\frac{1}{4}$	0.22	7 $\frac{1}{32}$
8	13.75	2.343	2 $\frac{3}{8}$	0.303	1 $\frac{9}{64}$
8...	18.75...	2.527...	2 $\frac{1}{2}$ ...	0.487...	1 $\frac{3}{64}$
9	13.40	2.430	2 $\frac{3}{8}$	0.23	1 $\frac{5}{64}$
9	15.00	2.485	2 $\frac{1}{2}$	0.285	9 $\frac{1}{32}$
9...	20.00...	2.648...	2 $\frac{3}{8}$ ...	0.448...	2 $\frac{9}{64}$
10	15.3	2.60	2 $\frac{3}{8}$	0.24	1 $\frac{5}{64}$
10	20.0	2.739	2 $\frac{3}{4}$	0.379	3 $\frac{1}{16}$
10	25.0	2.886	2 $\frac{7}{8}$	0.526	1 $\frac{7}{32}$
10...	30.0...	3.033...	3...	0.673...	4 $\frac{3}{64}$
12	20.7	2.94	3	0.28	9 $\frac{1}{32}$
12	25.0	3.047	3	0.387	2 $\frac{5}{64}$
12...	30.0...	3.17...	3 $\frac{1}{8}$ ...	0.51...	3 $\frac{3}{64}$
15	33.9	3.400	3 $\frac{3}{8}$	0.400	1 $\frac{13}{32}$
15	40.0	3.520	3 $\frac{1}{2}$	0.520	2 $\frac{3}{64}$
15...	50.0...	3.716...	3 $\frac{3}{4}$ ...	0.716...	2 $\frac{13}{32}$

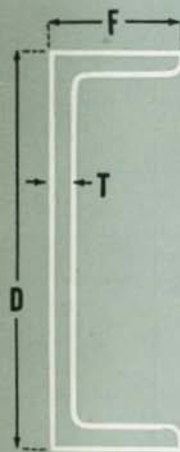
## SHIP CHANNELS

### Sizes Rolled



Depth of Channel (D) Inches	Wt. Lbs. Per Ft.	Flange Width (F)		Web Thickness (T)	
		Decimals Inches	Fractions Inches	Decimals Inches	Fractions Inches
6...	15.3...	3.50...	3½...	0.35...	⅜
7	19.1	3.450	3½	0.350	⅜
7...	22.7...	3.600...	3⅝...	0.500...	½
10	21.9	3.450	3½	0.325	⅝
10...	25.3...	3.550...	3½...	0.425...	⅞

## CAR BUILDING CHANNELS



Depth of Channel (D) Inches	Wt. Lbs. Per Ft.	Flange Width (F)		Web Thickness (T)	
		Decimals Inches	Fractions Inches	Decimals Inches	Fractions Inches
12...	50.0...	4.135...	4⅞...	0.835...	2⅞
13	31.8	4.000	4	0.375	⅜
13	35.0	4.072	4⅞	0.447	2¼
13	40.0	4.185	4⅞	0.560	⅝
13...	50.0...	4.412...	4¾...	0.787...	2½

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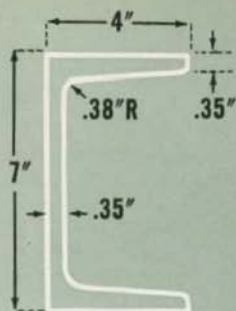
RAILS &  
TRACK  
ACC'S  
68

RAIL  
STEEL  
74

SPECIAL  
STEELS  
86

SPEC'S  
96

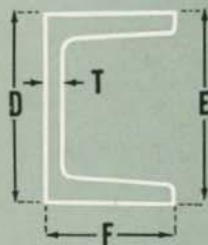
CHEM.  
COMP.  
99



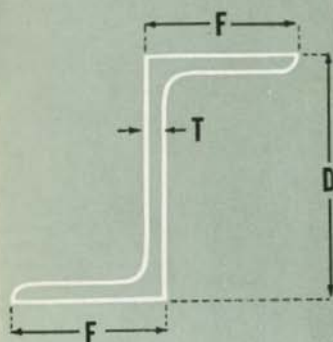
## SIDE SILL CHANNEL

Depth of Channel (D) Inches	Wt. Lbs. Per Ft.	Flange Width (F)		Web Thickness (T)	
		Decimals Inches	Fractions Inches	Decimals Inches	Fractions Inches
7.....	18.8.....	4.....	4.....	0.35.....	$\frac{3}{8}$

## CAR BUILDING BRAKE BEAM CHANNELS



Depth of Channel (D) Inches	Wt. Lbs. Per Ft.	Flange Width (F)		Web Thickness (T)		Overall Depth (E) Inches
		Decimals Inches	Fractions Inches	Decimals Inches	Fractions Inches	
3	6.5	1.875	$1\frac{7}{8}$	0.25	$\frac{1}{4}$	$3\frac{1}{8}$
3	7.10	1.938	2	0.313	$\frac{5}{16}$	$3\frac{1}{8}$
3	9.00	2.125	$2\frac{1}{8}$	0.50	$\frac{1}{2}$	$3\frac{1}{8}$
3.....	10.3.....	2.25.....	$2\frac{1}{4}$ .....	0.625.....	$\frac{3}{8}$ .....	$3\frac{1}{8}$



## ZEE'S

Depth of Web (D) Inches	Wt. Lbs. per Ft.	Width of Flange (F) Inches	Thickness (T) Inches
3	6.7	$2\frac{1}{16}$	$\frac{1}{4}$
3.....	9.8.....	$2\frac{1}{16}$ .....	$\frac{3}{8}$
4	8.2	$3\frac{1}{16}$	$\frac{1}{4}$
$4\frac{1}{16}$	10.3	$3\frac{3}{8}$	$\frac{3}{16}$
$4\frac{1}{8}$	12.5	$3\frac{3}{16}$	$\frac{3}{8}$
$4\frac{1}{16}$ .....	15.9.....	$3\frac{1}{8}$ .....	$\frac{1}{2}$
5	11.6	$3\frac{1}{4}$	$\frac{3}{16}$
$5\frac{1}{16}$	14.0	$3\frac{3}{16}$	$\frac{3}{8}$
$5\frac{1}{8}$ .....	16.4.....	$3\frac{3}{8}$ .....	$\frac{7}{16}$
6	15.7	$3\frac{1}{2}$	$\frac{3}{8}$
$6\frac{1}{8}$ .....	21.1.....	$3\frac{3}{8}$ .....	$\frac{1}{2}$

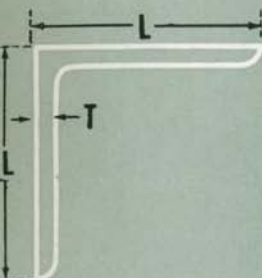
## ANGLES—Equal Sizes Rolled

Dimensions, Inches			Wt. Lbs. Per Foot
L	L	T	
3	3	3/16	3.71
3	3	1/4	4.9
3	3	5/16	6.1
3	3	3/8	7.2
3	3	7/16	8.3
3	3	1/2	9.4
3 1/2	3 1/2	1/4	5.8
3 1/2	3 1/2	5/16	7.2
3 1/2	3 1/2	3/8	8.5
3 1/2	3 1/2	7/16	9.8
3 1/2	3 1/2	1/2	11.1
4	4	1/4	6.6
4	4	5/16	8.2
4	4	3/8	9.8
4	4	7/16	11.3
4	4	1/2	12.8
4	4	5/8	15.7
4	4	3/4	18.5
5	5	5/16	10.30
5	5	3/8	12.3
5	5	7/16	14.3
5	5	1/2	16.2
5	5	5/8	20.0
5	5	3/4	23.6
5	5	7/8	27.2
6	6	3/8	14.9
6	6	7/16	17.2
6	6	1/2	19.6
6	6	5/16	21.9
6	6	3/8	24.2
6	6	3/4	28.7
6	6	7/8	33.1
6	6	1	37.4
8	8	1/2	26.4
8	8	5/16	29.6
8	8	3/8	32.7
8	8	3/4	38.9
8	8	7/8	45.0
8	8	1	51.0
8	8	1 1/8	56.9

## ANGLES—Unequal

Dimensions, Inches			Wt. Lbs. Per Foot
L	L'	T	
3	2	3/16	3.07
3	2	1/4	4.1
3	2	5/16	5.0
3	2	3/8	5.9
3	2	7/16	6.8
3	2	1/2	7.7
3	2 1/2	1/4	4.5
3	2 1/2	5/16	5.6
3	2 1/2	3/8	6.6

(Continued on Next Page)



PILING  
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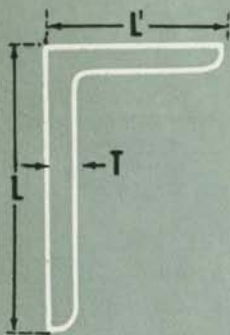
RAILS &  
TRACK  
ACC'S  
68

RAIL  
STEEL  
74

SPECIAL  
STEELS  
86

SPEC'S  
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CHEM.  
COMP.  
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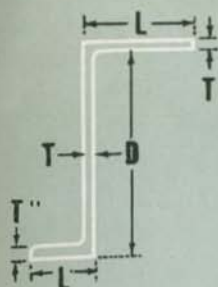


### ANGLES—Unequal (Continued)

Dimensions, Inches			Wt.
L	L'	T	Lbs. Per Foot
3	2½	⅞	7.6
3	2½	½	8.5
3½	2½	¼	4.9
3½	2½	⅞	6.1
3½	2½	⅞	7.2
3½	2½	⅞	8.3
3½	2½	½	9.4
3½	3	¼	5.4
3½	3	⅞	6.6
3½	3	⅞	7.9
3½	3	⅞	9.1
3½	3	½	10.2
4	3	¼	5.8
4	3	⅞	7.2
4	3	⅞	8.5
4	3	⅞	9.8
4	3	½	11.1
4	3	⅞	13.6
4	3½	¼	6.2
4	3½	⅞	7.7
4	3½	⅞	9.1
4	3½	⅞	10.6
4	3½	½	11.9
4	3½	⅞	14.7
5	3½	⅞	8.7
5	3½	⅞	10.4
5	3½	⅞	12.0
5	3½	½	13.6
5	3½	⅞	16.8
5	3½	¾	19.8
6	3½	⅞	9.8
6	3½	⅞	11.7
6	3½	½	15.3
6	4	⅞	10.3
6	4	⅞	12.3
6	4	⅞	14.3
6	4	½	16.2
6	4	⅞	18.1
6	4	⅞	20.0
6	4	¾	23.6
6	4	⅞	27.2
7	4	⅞	13.6
7	4	⅞	15.8
7	4	½	17.9
7	4	⅞	20.0
7	4	⅞	22.1
7	4	¾	26.2
7	4	⅞	30.2
8	6	⅞	20.2
8	6	½	23.0
8	6	⅞	25.7
8	6	⅞	28.5
8	6	¾	33.8
8	6	⅞	39.1
8	6	1	44.2

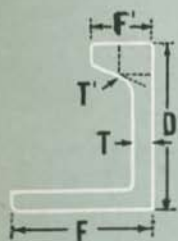


## CAR BUILDING ZEE CENTER SILL



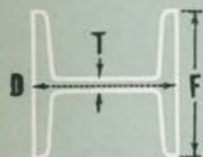
Dimensions, Inches						Area Sq. In.	Wt. Lbs. per Ft.
D	L	L'	T	T	T'		
12 <sup>2</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>32</sub>	<sup>3</sup> / <sub>8</sub>	<sup>3</sup> / <sub>8</sub>	<sup>23</sup> / <sub>32</sub>	9.912	33.70
12 <sup>7</sup> / <sub>16</sub>	6 <sup>2</sup> / <sub>32</sub>	4	<sup>13</sup> / <sub>32</sub>	<sup>13</sup> / <sub>32</sub>	<sup>3</sup> / <sub>4</sub>	10.642	36.21
12 <sup>1</sup> / <sub>16</sub>	6 <sup>2</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	<sup>1</sup> / <sub>22</sub>	<sup>1</sup> / <sub>22</sub>	<sup>13</sup> / <sub>16</sub>	12.115	41.2

## BULB ANGLES



Dimensions, Inches					Wt. Lbs. per Ft.
D	F	F'	T	T'	
4	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	<sup>3</sup> / <sub>8</sub>	<sup>5</sup> / <sub>16</sub>	11.9
4	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	<sup>1</sup> / <sub>2</sub>	<sup>2</sup> / <sub>32</sub>	14.3
5	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	<sup>3</sup> / <sub>8</sub>	<sup>5</sup> / <sub>16</sub>	13.0
5	4 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub>	<sup>7</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>32</sub>	19.1

## H-BEAMS



Depth of Channel (D) Inches	Wt. Lbs. Per Ft.	Flange Width (F)		Web Thickness (T)	
		Decimals Inches	Fractions Inches	Decimals Inches	Fractions Inches
6	20.0	5.938	6	0.250	<sup>1</sup> / <sub>4</sub>
6	25.0	5.938	6	0.313	<sup>5</sup> / <sub>16</sub>
8	34.3	8.000	8	0.375	<sup>3</sup> / <sub>8</sub>

PILING  
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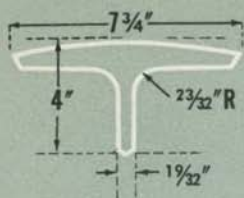
RAIL  
STEEL  
74

SPECIAL  
STEELS  
86

SPEC'S  
96

CHEM.  
COMP.  
99

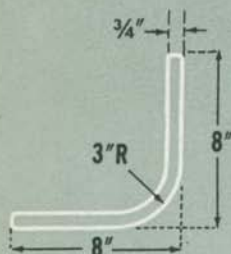
## ARMORING FOR LOCK WALLS



### Wall Armor Tee

Nominal Dimensions, Inches .....  $7\frac{3}{4} \times 4 \times 1\frac{1}{32}$

Weight, Lbs. per Foot ..... 28.2



### Wall Armor Angle

Size, Inches	Thickness, Inches	Wt., Lbs. per Ft.
8 x 8	$\frac{3}{4}$	35.7



# INLAND STEEL SHEET PILING

## A TOUGH, FREE-DRIVING INTERLOCKING PILING WITH NUMEROUS RECORDS OF EXCEPTIONAL SERVICE

► Inland Steel Sheet Piling has a record of giving exceptional service on hundreds of construction jobs throughout the United States and our possessions. Made with interlocks to form a continuous wall, its uses include cofferdams, shore protection, dock walls, wharves, sea walls and cut-off walls under dams. Because of the temporary nature of some of these uses, both new and used piling is leased as well as sold.

Sheet Piling manufactured by Inland includes arched web and straight web sections with special adaptability for numerous different requirements. It is rolled from special analysis steel with a guaranteed minimum tensile strength of 70,000 lbs., per square inch and with the capacity to withstand the pounding and tearing stresses of hammering and pulling—it has been driven and redriven as many as 15 times. The Inland interlock is designed to drive freely, and has a swing that permits almost any wall layout to be followed, yet it forms a tight wall under pressure.

### Invaluable Engineering Experience

Inland specialists on steel sheet piling have had broad experience in cooperating with contractors on sheet piling jobs from the earliest stages to the finished job. With nearly every piling job presenting individual problems, this accumulation of experience and skill is invaluable to our sheet piling customers.

On request, a coffer calculator of the slide-rule type developed by Inland engineers to save time in designing box-type cofferdams will be sent without charge.

### Sheet Piling Accessories

In conjunction with supplying sheet piling, Inland regularly fabricates corners, tees, Y's, crosses, taper piles and other connections needed to meet the requirements of the wall layout. We are also prepared to furnish accessories such as wales and tie rods.

### Furnished in Inland Copper-Alloy

For added corrosion resistance, all sections of Inland Sheet Piling may be obtained in Inland Copper-Alloy grade. The strength and other properties of the steel are unchanged except for the increased resistance to corrosion coming from the copper content. There is only a slight additional cost.

*(Continued on next page)*

**WRITE FOR INLAND STEEL SHEET PILING CATALOGUE**

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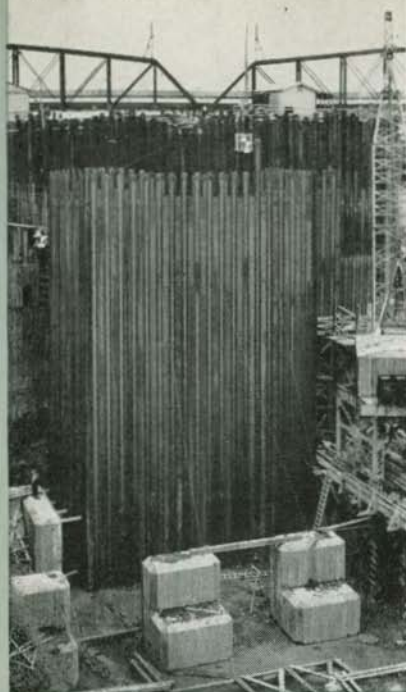
RAILS &  
TRACK  
ACC'S  
68

RAIL  
STEEL  
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SPECIAL  
STEELS  
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## INLAND ARCH WEB PILING SECTIONS\*

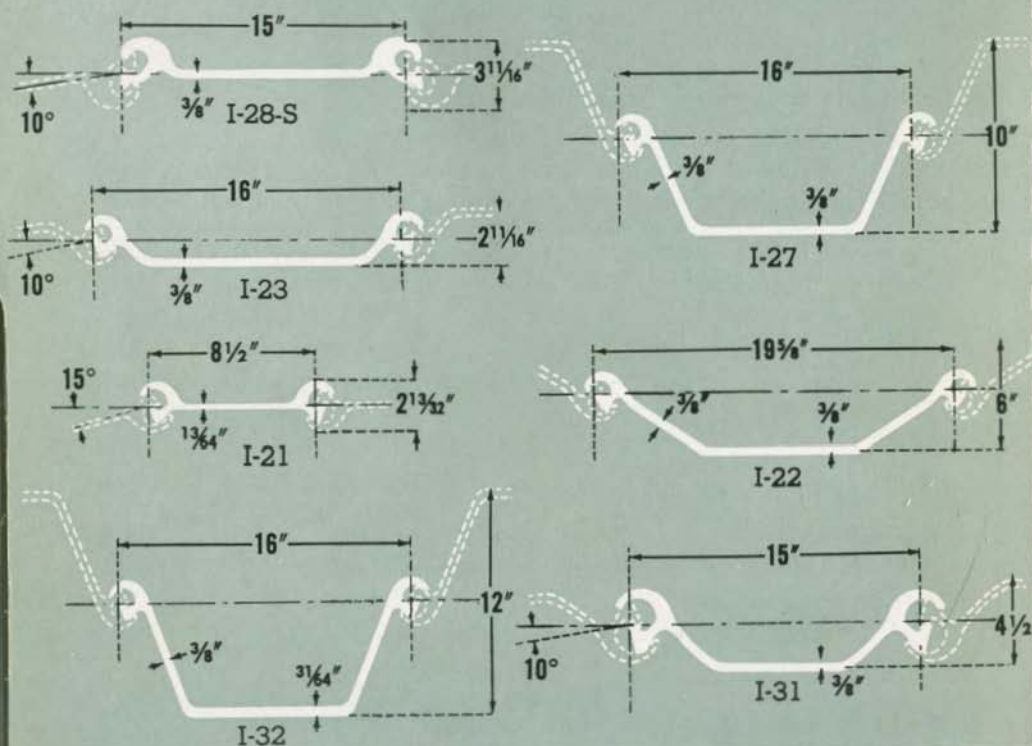
Sections	Wt. Per Ft.	Wt. Per Sq. Ft. Wall	Sec. Modulus	S. M. Per Lin. Ft. Wall
1-32	42.7	32.0	20.4	15.3
1-27	36.0	27.0	14.3	10.7
1-22	36.0	22.0	8.8	5.4
1-31	38.8	31.0	8.1	6.5

\*Sold at estimated weight

## INLAND STRAIGHT WEB PILING SECTIONS\*

Sections	Wt. Per Ft.	Wt. per Sq. Ft. Wall
1-28-S	35.0	28.0
1-23	30.7	23.0
1-21	14.9	21.0

\*Sold at estimated weight



# STEEL PLATES



PLATES  
**60**

FLOOR  
PLATES  
**63**

RAILS &  
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**99**

# INLAND STEEL PLATES

► Steel Plates are manufactured by Inland Steel Company to meet varying requirements as to structural strength, formability, weldability and other properties in many different combinations. To help you obtain a product with properties best suited to your purposes, our service to plate customers includes assistance in writing or selecting the specification for the steel by staff specialists on the manufacture and fabrication of Steel Plates. Close metallurgical supervision of all manufacturing processes and the finest production facilities assure a product that will meet your requirements. For gages and sizes rolled, see accompanying tables.

## Plate Specifications

For descriptions of steel specifications commonly used in meeting Steel Plate requirements, see Standard Specifications beginning on page 96. Among the most frequently used is the American Society for Testing Metals Specification A 7-42, Steel for Bridges and Buildings (Tensile strength, 60,000 to 72,000 lbs. per square inch). Other grades produced include Boiler Plates, Firebox Plates, Carbon-Silicon Steel Plates in different tensile ranges, and Hi-Steel Plates.

## Hi-Steel Plates

For many purposes, the use of Hi-Steel Plates is advisable. Hi-Steel is a low-alloy steel with higher tensile properties permitting important savings in weight, an advantage it offers in combination with exceptional corrosion resistance, workability and weldability. Hi-Steel Plates have a yield strength approximately two-thirds greater than that of ordinary structural steel. Even greater yield strength and tensile strength are obtained by a simple heat treatment. An additional advantage is a resistance to abrasion that has resulted in many times the service life of carbon steel in some applications. (See special section on Hi-Steel).

## Copper-Alloy Plates

Steel Plates made to most standard specifications may be ordered in Copper-Alloy grade at only slightly added cost. In general, Inland Copper-Alloy Plates will give approximately double the life of ordinary Steel Plates in uses involving exposure to atmospheric corrosion. The physical properties of the steel are the same.

## PLATE MILL CIRCLES—Sizes Rolled

### Sheared to Size

Thickness	Diameters
3/16" .....	Over 48" to 84", incl.
1/4" to 1/2" .....	12" to 96", incl.

### Flame Cut to Size

Thickness	Diameters
3/16" .....	Over 48" to 84", incl.
1/4" to 3", incl. ....	12" to 96", incl.

SHEARED PLATES—Sizes Rolled

Thickness, Inches	Lbs. per Sq. Ft.	Widths, Inches															
		30	36	42	48	54	60	66	72	76	80	84	88	92	94	96	
		Maximum Lengths, Inches															
3/16	7.65	.....	.....	.....	720	600	600	600	600	420	360	300	.....	.....	.....	.....	
1/4	10.20	720	720	720	720	720	720	720	720	540	500	480	400	360	360	300	
5/16	12.75	720	720	720	720	720	720	720	720	540	500	480	400	360	360	360	
3/8	15.30	720	720	720	720	720	720	720	612	540	500	500	450	360	360	360	
7/16	17.85	720	720	720	720	720	720	720	576	540	500	500	450	360	360	360	
1/2	20.40	720	720	648	600	600	600	600	540	540	540	540	450	360	360	360	
5/8	22.95	720	720	600	600	600	600	600	540	540	540	480	400	360	360	360	
3/4	25.50	684	600	600	600	600	600	600	540	540	480	480	360	360	360	360	
7/8	30.60	564	540	540	540	540	540	540	492	468	444	420	360	300	300	300	
1	35.70	540	540	540	540	500	480	420	360	360	360	360	324	240	240	240	
1 1/8	40.80	540	540	540	492	432	408	360	336	324	300	300	240	240	240	240	
1 1/4	45.90	540	540	400	360	360	300	300	240	240	240	240	240	200	200	240	

Thickness, Inches	Lbs. per Sq. Ft.	Widths, Inches																
		32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	94
		Maximum Lengths, Inches																
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

Information on narrower widths and lengths over 720" furnished on request. For intermediate widths not shown use length of next greater width.

- PLATES 60
- FLOOR PLATES 63
- RAILS & TRACK ACC'S 68
- RAIL STEEL 74
- SPECIAL STEELS 86
- SPEC'S 96
- CHEM. COMP. 99

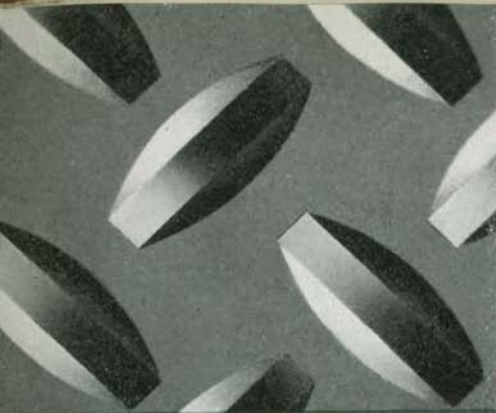
## UNIVERSAL MILL PLATES

Widths, Inches	6¼		6½ to 26, incl.	
Thickness, Inches	Maximum Lengths, Feet			
¼	65		65	
⅜	65		65	
½	65		65	
⅝	65		65	
¾	65		65	
7/8	65		65	
1	65		65	
1¼	65		65	
1½	65		65	
1¾	65		65	
2	58		65	

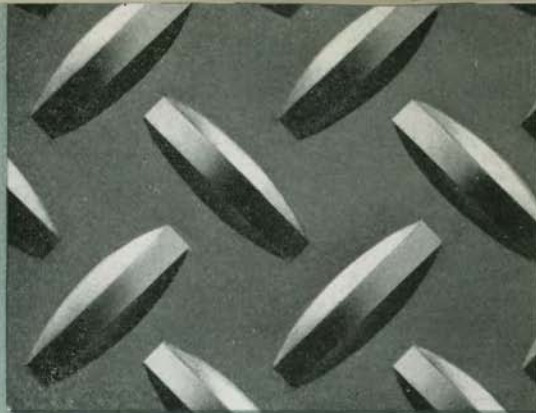
Widths, Inches	6¼	6½	6¾	7	7½
Thickness, Inches	Maximum Lengths, Feet				
1	52	65	65	65	65
1¼	48	52	52	52	54
1½	40	44	44	52	54
1¾	35	36	36	45	45
2	30	32	32	38	40

Widths, Inches	8	9	10	11	12 to 26, incl.
Thickness, Inches	Maximum Lengths, Feet				
1	65	65	65	65	65
1¼	60	60	50	46	48
1½	60	60	50	46	48
1¾	52	52	43	41	41
2	45	45	39	35	36





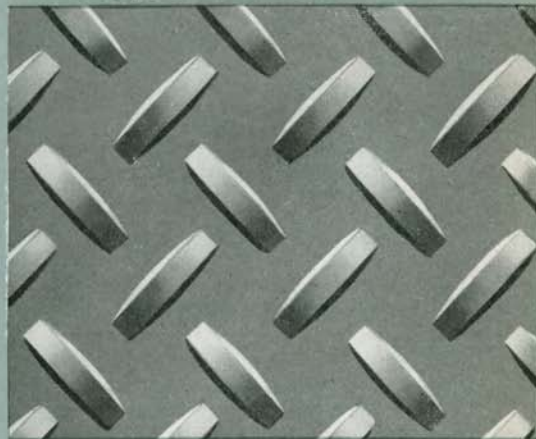
Large pattern (actual size)



Medium pattern (actual size)

## INLAND 4-WAY FLOOR PLATE

*The Most Widely Used Steel  
Safety Flooring*



Small pattern (actual size)

► An economical flooring that gives long life under the most severe usage, Inland 4-Way Floor Plate is rolled from open hearth steel with curved projections scientifically designed and arranged for:

**4-Way Safety and Traction**—Identical resistance to slip in all four directions results in the unusual safety features of this floor plate . . . reduces accidents such as slipping and falling . . . provides for safer and faster movement of men and materials.

**4-Way Stiffness**—Equal rigidity lengthwise and crosswise adds to dependability of the plate in all applications.

**4-Way Matching**—When plates are laid together end to end or side to end they match to give a uniform continuous pattern.

**4-Way Draining and Cleaning**—Drainage in all four directions contributes to easy cleaning and to the prevention of water accumulation and ice formation.

The Inland 4-Way Floor Plate design marked the most important advance ever made in steel safety tread. Satisfaction it has given in many different types of installations

FLOOR  
PLATES  
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RAILS &  
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ACC'S  
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RAIL  
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## **Inland 4-Way Floor Plate (Con't.)**

has made it the most widely used flooring of its type. In addition to the advantages of its 4-Way design, it provides a floor that cannot decay, burn, warp, crack, splinter or absorb liquids or odors. Its strength permits its use as part of the supporting structure in adding to the strength of floors, stairs, platforms, etc. It keeps floor maintenance costs at a minimum and far outlasts other types of floors.

### **Large, Medium and Small Patterns**

To meet the varied requirements of different applications, 4-Way Floor Plate is manufactured in a wide range of thicknesses and with projections in three sizes. In the large pattern, the projections are  $1\frac{1}{4}$ " long; in the medium pattern, 1" long, and in the small pattern,  $\frac{5}{8}$ " long. Plate thicknesses, widths, lengths, etc., are shown on page 66. The plate is available in the Inland Copper-Alloy Steel grade on special arrangement. Special arrangement may also be made to have the plate in the medium and small patterns furnished with both sides galvanized.

### **A Material of Many Uses**

The advantages offered by Inland 4-Way Floor Plate have resulted in its use for many different purposes, including floors in various types of structures—stairways—working space around machinery—vestibules and steps on passenger cars—ship decks and in engine rooms—sidewalk hatchways—truck floors—manhole covers—loading platforms—bridge treads, etc. Wooden and concrete floors, whether new or old and worn, are made safer with Inland 4-Way Floor Plate.

The large pattern is used for most heavy duty purposes. Usually the medium pattern is indicated when there is need to reduce dead weight. The small pattern was created to meet the need for a light safety plate that would give maximum weight reduction.

### **A Selling Advantage in Numerous Products**

The durability, strength, non-slip surface and other features of the plate have great consumer appeal; an important competitive advantage can, in fact, be gained for many types of industrial and agricultural machinery through the use of 4-Way Floor Plate for work platforms, running boards, etc. All gages are readily fabricated by forming, cutting and welding.

**Typical 4-Way Floor Plate installation in large automobile manufacturing plant.**





4-Way Floor Plate gives a safe, strong and long-lasting truck floor.



Safer stairs are fabricated from Inland 4-Way Floor Plate.

## Help In Applying Steel Safety Plate

Engineering cooperation by Inland Steel specialists in the application of Inland 4-Way Floor Plate is available to users. Samples are gladly furnished. Catalogue illustrating different applications and containing data on loads, fabrication, etc., will be sent on request.



Long wear and increased safety come from the use of 4-Way Floor Plate for sidewalk hatchways.

## Inland 4-Way Traffic Plate

The strength and rigidity of the floors of new and old bridges can be increased and their useful life economically prolonged by the use of Inland 4-Way Traffic Plate. The 4-Way safety feature assures safe traction for tires, wheels, and feet. Properly installed, with full advantage taken of its 4-Way stiffness, the plate can greatly reduce the noise from vibration. Even worn wooden bridge floors can be made to give years of additional service by the use of this steel safety plate.

The standard length of Inland 4-Way Traffic Plate is 15', but odd lengths can be furnished. It is ordinarily used in 20 or 24" widths for one-way traffic runways, and in 30 to 42" widths for center runways used by two-way traffic. The plates have 7/16" holes punched at 15" intervals along the sides and at 6" intervals across the ends. Galvanized lag screws, 3/8" by 3", are ordinarily furnished, but carriage bolts can be specified.

## INLAND 4-WAY FLOOR PLATE

*Thickness, Weights, Width and Maximum Lengths*

### LARGE PATTERN

Thickness	Lbs. Per Square Ft.	Maximum Lengths in Inches				
		24"	36"	Width 48"	60"	72"
3/16"	8.70	360	360	360	360	360
1/4"	11.25	360	360	360	360	360
5/16"	13.80	360	360	360	360	360
3/8"	16.35	360	360	360	360	360
7/16"	18.90	360	360	360	360	360
1/2"	21.45	360	360	360	360	360
5/8"	24.00	360	360	360	360	360
3/4"	26.55	360	360	360	360	360
7/8"	31.65	360	360	360	360	300

### MEDIUM PATTERN

16 gage	3.00	240	240	240	...	...
14 gage	3.75	240	240	240	...	...
13 gage	4.50	240	240	240	...	...
12 gage	5.25	240	240	240	240	...
11 gage	6.15	360	360	360	360	360

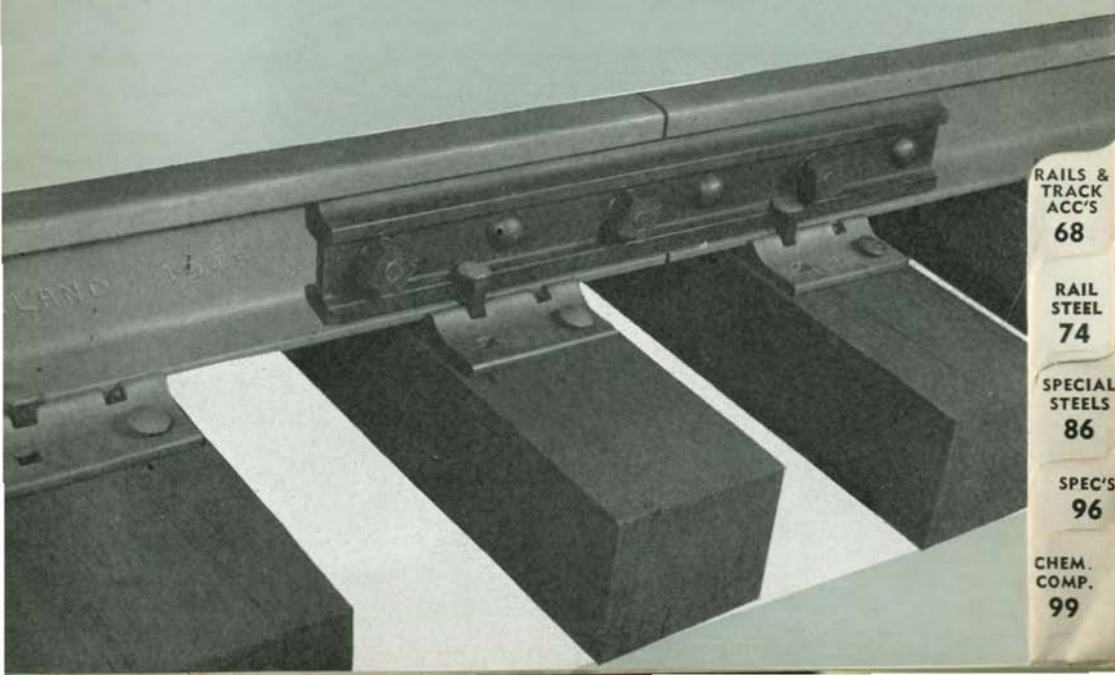
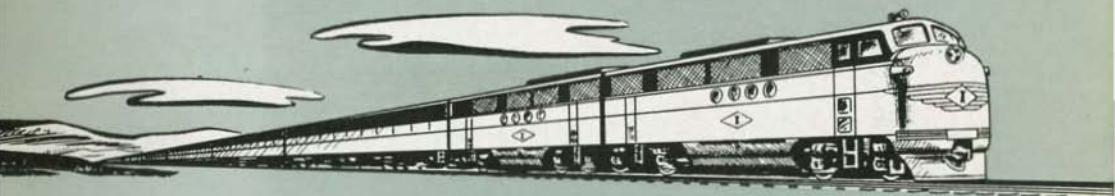
**SMALL PATTERN**—Rolled in widths up to 48" and in lengths up to 240" in 18 gage only. Weight per sq. foot, 2.4 lbs.

### SAFE UNIFORM LOAD—Lbs. Per Sq. Ft.

Gage	SPAN										
	6"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	6'-0"
18	323	81	36								
16		98	44	24	16	11					
14		165	73	41	26	18					
13		250	111	62	40	28	20				
12		356	158	89	57	39	29	22			
11		506	224	126	81	56	41	31			
3/16"			416	235	150	105	76	59			
1/4"			740	416	266	185	136	104	83	55	
5/16"			1050	650	416	290	212	162	129	104	72
3/8"			1670	937	600	416	306	236	185	150	105
7/16"			2260	1275	820	570	416	318	255	205	141
1/2"			2960	1660	1065	738	545	416	330	266	185
5/8"			3750	2110	1350	937	687	528	416	337	234
3/4"			4620	2600	1660	1157	850	650	513	416	290
7/8"			6670	3750	2400	1660	1225	937	740	600	416
Deflection Coefficient	.005	.021	.047	.083	.130	.186	.253	.331	.419	.517	.745

Thickness of plate is through body, does not include projections. Loads include weight of plates. Allowable working stress equals 20,000. Deflections above the underlining will exceed 1/100th of the span. Deflection in inches with maximum safe uniform load equals deflection coefficient divided by Thickness of plate in inches. Deflection in inches with any uniform load within the elastic limit equals deflection coefficient times actual load per sq. ft., all divided by maximum safe load per sq. ft.

# STEEL RAILS AND TRACK ACCESSORIES



RAILS &  
TRACK  
ACC'S

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RAIL  
STEEL

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SPECIAL  
STEELS

86

SPEC'S

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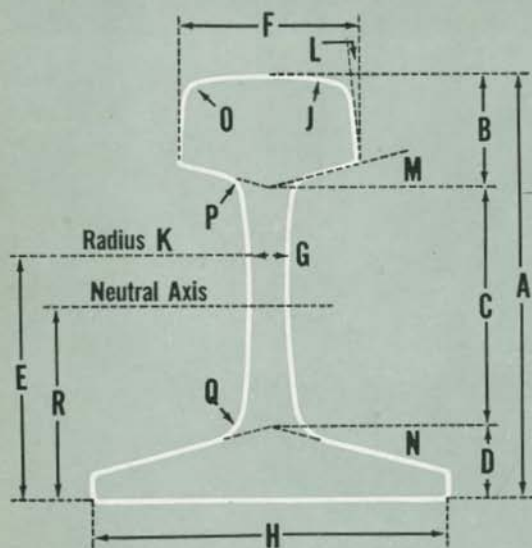
## INLAND STEEL RAILS AND TRACK ACCESSORIES

► Rails, Joint Bars and Tie Plates are manufactured by the Inland Steel Company in a variety of sections, designs and sizes to meet the requirements of the railroads.

Through improvement of equipment and processes, the quality of the product has been improved.

These products are manufactured in accordance with A.R.E.A., or A.S.T.M. Specifications.

### TEE RAILS



The symbols used on this drawing cover the various dimensions and characteristics of Inland Rails as shown in the table on sections rolled.

Inland Steel Company is equipped to supply rails in standard and special sections from 131 to 80 pounds per yard, inclusive. Dimensions and characteristics of Inland Rails are shown in the table on sections rolled on the opposite page.

Inland Rails are manufactured to AREA Specifications and are control cooled, a treatment resulting in the elimination of shatter cracks, the main cause of internal transverse fissures.

# RAILROAD RAILS — Sections Rolled

See drawing of cross-section of rail for dimensions, etc., referred to by symbols.

## DIMENSIONS

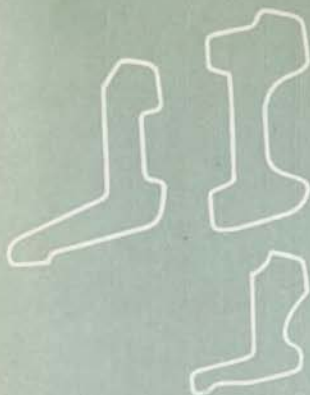
SECTION	HEIGHT—Inches												WIDTH Inches			RADIИ Inches			SLOPES			CORNERS AND FILLETS			ELEMENTS			CHARACTERISTICS			
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	I	Sh	Sb	HEAD	WEB	BASE	TOTAL							
13128 AREA	7 1/8	1 3/4	4 3/8	1 3/8	4 1/4	3	2 1/2	6	14	10	1-40	1-4	1-4	(1)†	1/2	3/4	3.2	88.5	22.6	27.6	4.49	3.46	4.87	12.82							
13031 PS..... Former	6 3/8	2	3 13/16	1 7/8	3 1/4	3	1 1/8	5 1/2	12	16	Vert.	18°	14°	1/2	3/4	3 3/8	72.8	20.6	23.5	39.4	22.0	38.6	100.0								
13025 AREA...	6 3/8	1 13/16	3 11/16	1 7/8	3 3/8	2 1/8	2 1/8	6	14	14	1-16	4-1	4-1	1/2	3/4	3 1/2	77.4	20.8	25.6	4.63	3.02	5.06	12.71								
12722 NYC	7	1 11/16	4 3/8	1 3/4	3 3/8	3	2 3/8	6 1/4	14	18	16:1	4:1	4:1	1/2	3/4	3.1	83.7	21.5	27.0	4.38	3.14	4.96	12.48								
11228 AREA...	6 3/8	1 11/16	3 11/16	1 1/8	3 3/8	2 3/8	2 1/8	5 1/2	14	10	1-40	4-1	4-1	(1)††	1/2	3/4	3.0	65.5	18.1	21.8	35.9	25.1	39.0	100.0							
10524 Dudley	6	1 3/8	3 13/16	1 3/4	3 1/8	3	3 3/8	5 1/2	14	14	1/8:1	4:1	4:1	1/2	3/4	2.88	49.86	15.96	17.30	4.20	2.46	3.60	10.26								
10030 ARA-B...	5 1/4	1 1/4	2 5/8	1 3/8	2 5/8	2 1/2	2 1/2	5 1/2	12	12	*	13°	13°	3/8	3/4	2.63	41.30	13.72	15.70	3.95	1.89	4.00	9.85								
10025 AREA	6	1 3/8	3 3/8	1 1/8	2 3/8	2 1/8	2 1/8	5 3/8	14	14	16:1	4:1	4:1	3/4	3/4	2.75	49.0	15.1	17.8	3.80	2.25	3.90	9.95								
10020 ARA-A...	6	1 1/8	3 3/8	1 1/8	2 1/8	2 3/8	2 3/8	5 1/2	14	14	1/8:1	4-1	4-1	3/8	3/4	2.75	48.94	15.04	17.80	3.63	2.30	3.91	9.84								
9040 ASCE	5 3/8	1 1/8	2 5/8	1 1/8	2 5/8	2 3/8	2 3/8	5 3/8	12	12	Vert.	13°	13°	3/8	3/4	2.55	34.39	12.17	13.49	3.71	1.85	3.26	8.82								
9020 ARA-A	5 3/8	1 1/8	2 5/8	1 1/8	2 5/8	2 3/8	2 3/8	5 3/8	14	14	16:1	4:1	4:1	3/4	3/4	2.54	38.70	12.56	15.24	3.19	2.12	3.51	8.82								
8540 ASCE...	5 3/8	1 1/8	2 5/8	1 1/8	2 5/8	2 3/8	2 3/8	5 3/8	12	12	Vert.	13°	13°	3/8	3/4	2.47	30.07	11.06	12.18	3.62	2.40	3.98	10.00								
8040 ASCE...	5	1 1/2	2 3/8	1 3/8	2 3/8	2 1/2	2 1/2	5 3/8	12	12	Vert.	13°	13°	3/8	3/4	2.38	26.38	10.07	11.08	4.2	2.1	3.70	10.00								

# CRANE RAILS — Sections Rolled

## DIMENSIONS

SECTION	HEIGHT—Inches												WIDTH Inches			SLOPES			CORNERS AND FILLETS			ELEMENTS			CHARACTERISTICS			
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	I	Sh	Sb	HEAD	WEB	BASE	TOTAL				
14455	6	2 3/4	3 3/4	1 1/8	2 7/16	3	1	5 3/4	20	12	Vert.	13°	13°	3/4	3/4	2.76	61.24	18.90	22.18	5.78	2.82	5.54	14.14					
10955	5 3/8	1 3/8	2 5/8	1 1/8	2 5/8	2 3/8	2 3/8	5 1/2	12	14	16:1	13°	13°	3/8	3/4	2.45	38.75	13.08	15.81	4.10	2.00	3.90	10.00					

† Horizontal distance between 1" radii 1 1/2". †† Horizontal distance between 1" radii 1 1/2". \* 3/4" in height of side of head.



Cross sections of typical Joint Bars produced by the Inland Steel Company.

## JOINT BARS

Joint bars of various designs for use with rails of 131 to 60 pounds per yard are produced by Inland by rolling and forging. They are made of high carbon steel in accordance with A.R.E.A. or A.S.T.M. Specifications for quenched carbon steel joint bars. Inland Joint Bars are supplied in normal section or, for use with worn rail, are oversized or crowned, or oversized and crowned as specified.

### QUANTITIES OF RAIL (IN GROSS TONS) AND ACCESSORIES Per One Mile of Single Track (39 Ft. Rails)

SECTION	RAILS		Joint Bars (Pairs)*	TRACK BOLTS			TIE PLATES		Size (Inches)	TRACK SPIKES**				
	Weight	Gross Tons		Number	Size (Inches)	Kegs (200 Lbs.)	24 Ties per 39 Ft. Rail	22 Ties per 39 Ft. Rail		24 Ties Per 39 Ft. Rail		22 Ties Per 39 Ft. Rail		
										Pieces	Kegs	Pieces	Kegs	
(Assuming 6 Track Bolts per Joint)														
13128	RE	130.8	205.54	278	1668	1x6 1/4	16.7	6498	5956	3/4x6 1/2	12996	56.5	11912	51.8
12722	NYC	127.3	200.04	"	"	1 1/4x5 1/4	13.8	"	"	3/4x6	"	54.2	"	49.6
11228	RE	112.3	176.47	"	"	1x6	16.2	"	"	3/4x6	"	54.2	"	49.6
10524	NYC	104.7	164.53	"	"	1 1/4x5 1/4	13.8	"	"	3/4x6	"	54.2	"	49.6
(Assuming 4 Track Bolts per Joint)														
10025	RE	101.5	159.50	278	1112	1x5 1/2	11.2	6498	5956	3/4x6	12996	54.2	11912	49.6
10020	RA-A	100.4	157.77	"	"	1x5 1/2	11.2	"	"	3/4x6	"	54.2	"	49.6
9020	RA-A	90.0	141.43	"	"	1x5 1/2	11.0	"	"	3/4x5 1/2	"	41.2	"	37.8
8540	ASCE	85.0	133.57	"	"	3/4x4 3/4	7.8	"	"	3/4x5 1/2	"	41.2	"	37.8
8040	ASCE	80.2	126.03	"	"	3/4x4 1/2	7.6	"	"	3/4x5 1/2	"	41.2	"	37.8

### MILEAGE AND QUANTITIES OF RAIL ACCESSORIES Per 1000 Gross Tons of Rail (39 Ft. Rails)

SECTION	RAILS		Joint Bars (Pairs)*	TRACK BOLTS			TIE PLATES		Size (Inches)	TRACK SPIKES**				
	Weight	Length Track Miles		Number	Size (Inches)	Kegs (200 Lbs.)	24 Ties per 39 Ft. Rail	22 Ties per 39 Ft. Rail		24 Ties Per 39 Ft. Rail		22 Ties Per 39 Ft. Rail		
										Pieces	Kegs	Pieces	Kegs	
(Assuming 6 Track Bolts per Joint)														
13128	RE	130.8	4.86	1351	8106	1x6 1/4	81.0	31580	28946	3/4x6 1/2	63160	274	57892	252
12722	NYC	127.3	5.00	1390	8340	1 1/4x5 1/4	68.9	32490	29780	3/4x6	64980	271	59560	248
11228	RE	112.3	5.67	1576	9456	1x6	91.8	36844	33771	3/4x6	73688	307	67542	281
10524	NYC	104.7	6.08	1690	10140	1 1/4x5 1/4	83.8	39508	36212	3/4x6	79016	329	72424	302
(Assuming 4 Track Bolts per Joint)														
10025	RE	101.5	6.27	1743	6972	1x5 1/2	70.4	40742	37344	3/4x6	81484	339	74688	311
10020	RA-A	100.4	6.34	1763	7052	1x5 1/2	71.2	41197	37761	3/4x6	82394	343	75522	314
9020	RA-A	90.0	7.07	1965	7860	1x5 1/2	77.8	45941	42109	3/4x5 1/2	91882	291	84218	267
8540	ASCE	85.0	7.49	2082	8328	3/4x4 3/4	58.2	48670	44610	3/4x5 1/2	97340	309	89220	283
8040	ASCE	80.2	7.93	2205	8820	3/4x4 1/2	60.0	51529	47231	3/4x5 1/2	103058	327	94462	300

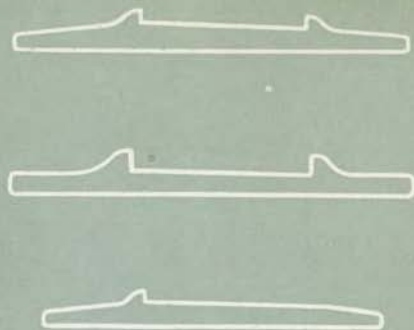
\*Assuming 89% 39 Ft. Long and 11% 32 Ft. Long. \*\*Assuming 4 Track Spikes per Tie.



## TIE PLATES

A number of tie plate sections ranging from 14 3/4 to 8 1/2 inches in length are produced by Inland. These can be furnished with varying degree of cant—for use with rails of different base width, double or single shoulder—rail seat flat or with rolled crown or pressed camber—ends inclined or flat—and with several bottom designs.

Tie plates are manufactured from either soft or medium steel, or hot worked, high carbon steel, in accordance with AREA or ASTM Specifications.



Cross-sectional drawings of characteristic Tie Plate designs.

### QUANTITIES OF RAIL (IN NET TONS) AND ACCESSORIES Per One Mile of Single Track (39 Ft. Rails)

RAILS				Joint Bars (Pairs)	TRACK BOLTS			TIE PLATES		Size (Inches)	TRACK SPIKES**				
SECTION	Weight	Net Tons	Number		Size (Inches)	Kegs (200 Lbs.)	24	22	24 Ties Per 39 Ft. Rail		22 Ties Per 39 Ft. Rail	Pieces	Kegs	Pieces	Kegs
							per 39 Ft. Rail	per 39 Ft. Rail							
(Assuming 6 Track Bolts per Joint)															
13128	RE	130.8	230.21	278	1668	1x6 1/4	16.7	6498	5956	3/8x6 1/2	12996	56.5	11912	51.8	
12722	NYC	127.3	224.05	"	"	1 3/4x5 1/4	13.8	"	"	3/8x6	"	54.2	"	49.6	
11228	RE	112.3	197.65	"	"	1x6	16.2	"	"	3/8x6	"	54.2	"	49.6	
10524	NYC	104.7	184.27	"	"	1 3/8x5 1/4	13.8	"	"	3/8x6	"	54.2	"	49.6	
(Assuming 4 Track Bolts per Joint)															
10025	RE	101.5	178.64	278	1112	1x5 1/2	11.2	6498	5956	3/8x6	12996	54.2	11912	49.6	
10020	RA-A	100.4	176.70	"	"	1x5 1/2	11.2	"	"	3/8x6	"	54.2	"	49.6	
9020	RA-A	90.0	158.40	"	"	1x5 1/4	11.0	"	"	3/8x5 1/2	"	41.2	"	37.8	
8540	ASCE	85.0	149.60	"	"	7/8x4 3/4	7.8	"	"	3/8x5 1/2	"	41.2	"	37.8	
8040	ASCE	80.2	141.15	"	"	7/8x4 1/2	7.6	"	"	3/8x5 1/2	"	41.2	"	37.8	

### MILEAGE AND QUANTITIES OF RAIL ACCESSORIES Per 1000 Net Tons of Rail (39 Ft. Rails)

RAILS				Joint Bars (Pairs)	TRACK BOLTS			TIE PLATES		Size (Inches)	TRACK SPIKES**				
SECTION	Weight	Length Track Miles	Number		Size (Inches)	Kegs (200 Lbs.)	24	22	24 Ties Per 39 Ft. Rail		22 Ties Per 39 Ft. Rail	Pieces	Kegs	Pieces	Kegs
							per 39 Ft. Rail	per 39 Ft. Rail							
(Assuming 6 Track Bolts per Joint)															
13128	RE	130.8	4.34	1207	7242	1x6 1/4	72.4	28201	25849	3/8x6 1/2	56402	245	51698	224	
12722	NYC	127.3	4.46	1240	7440	1 3/4x5 1/4	61.5	28981	26564	3/8x6	57962	241	53128	221	
11228	RE	112.3	5.06	1407	8442	1x6	81.9	32880	30137	3/8x6	65760	274	60274	251	
10524	NYC	104.7	5.43	1510	9060	1 3/8x5 1/4	74.9	35284	32341	3/8x6	70568	294	64682	269	
(Assuming 4 Track Bolts per Joint)															
10025	RE	101.5	5.59	1555	6220	1x5 1/2	62.8	36324	33294	3/8x6	72648	302	66588	277	
10020	RA-A	100.4	5.66	1574	6296	1x5 1/2	63.6	36779	33711	3/8x6	73558	306	67422	281	
9020	RA-A	90.0	6.32	1757	7028	1x5 1/4	69.6	41067	37642	3/8x5 1/2	82134	261	75284	239	
8540	ASCE	85.0	6.68	1858	7432	7/8x4 3/4	51.9	43407	39786	3/8x5 1/2	86814	275	79572	253	
8040	ASCE	80.2	7.08	1969	7876	7/8x4 1/2	53.6	46006	42168	3/8x5 1/2	92012	292	84336	268	

\*Assuming 89% 39 Ft. Long and 11% 32 Ft. Long. \*\*Assuming 4 Track Spikes per Tie.

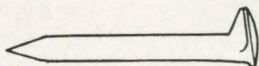
RAIL  
STEEL  
74

SPECIAL  
STEELS  
86

SPEC'S  
96

CHEM.  
COMP.  
99

## CUT TRACK SPIKES



**AREA 1937 Reinforced  
Throat Design**

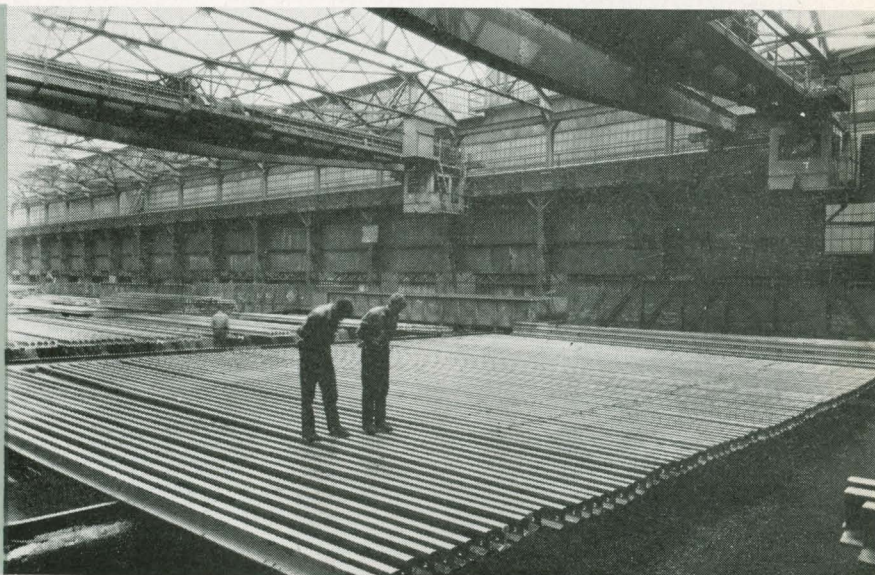
Inland manufactures track spikes of the AREA 1937 long head, reinforced throat design. They are made of soft or high carbon steel in accordance with AREA or ASTM Specifications.

The number of track spikes per 200 lb. keg in the various sizes, lengths and AREA designs is:

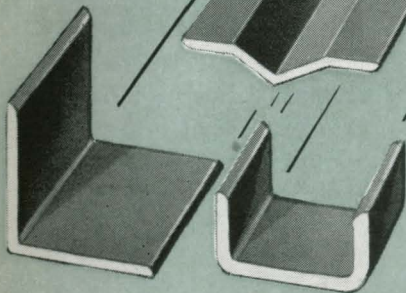
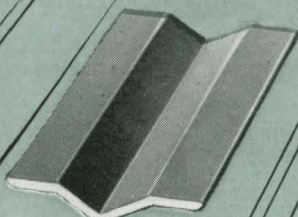
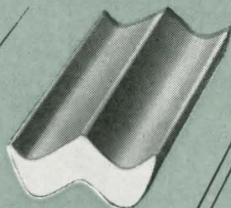
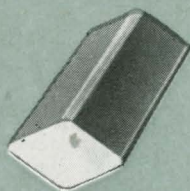
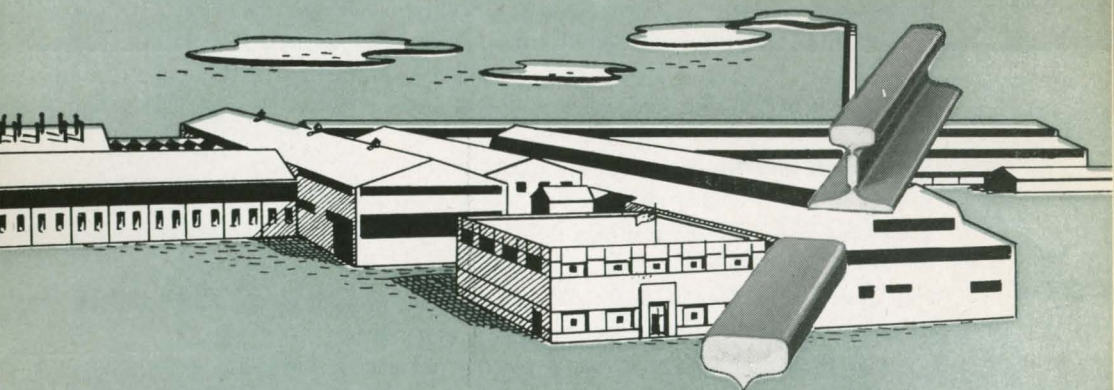
### CUT TRACK SPIKES Per 200 Lb. Keg

Length:	6½"	6"	5½"
Design:	1937	1937	1937
Size			
⅝"	230	240	253
⅞"	...	293	315

**Visual Rail Inspection—One of a long series of checks made in controlling the quality of Inland Steel Rails.**



# INLAND RAIL STEEL



**An economical material  
with consistently  
fine characteristics for  
making quality products  
at important savings  
in costs**

**RAIL  
STEEL  
74**

**SPECIAL  
STEELS  
86**

**SPEC'S  
96**

**CHEM.  
COMP.  
99**

## INLAND RAIL STEEL

► More and more industries are finding that Inland Rail Steel can be used, with important savings in material costs, for making numerous products which must give quality performance in service. It is a high carbon steel characterized by strength, stiffness and resiliency. Its tensile strength averages 50 per cent more than that of mild steel. Savings result from its economical cost and also from the fact that its physical properties often make possible the use of smaller sections or lighter gages when it is substituted for mild steel.

### Definition and Manufacture

A steel of definite quality recognized by specification writing bodies, Rail Steel is the established trade and technical term for products rolled from standard section railroad tee rails. The Inland Steel Company, through more than 50 years of specializing in Rail Steel at its Chicago Heights plant, has developed and perfected manufacturing improvements that produce a steel of consistently fine characteristics.

In manufacturing Inland Rail Steel, a selected raw material originally made to rigid Railroad Specifications is given a new grain structure and all strains and stresses resulting from use or other causes are completely removed. Quality is insured by slow and uniform heating which is automatically measured by optomatic pyrometers, and by high pressure water descaling, and the retarded cooling of the finished product. The resultant product is found to be fully equal in many applications to the finest new billet steel.



### Inland Rail Steel Products

**Bars and Bar-Sized Shapes**—Products of the Inland Rail Steel Mill include the following bars and bar-sized shapes: rounds, squares, flats, equal and unequal leg angles, tees, channels and many special sections. Information as to range of sizes and weight per foot of the standard shapes and various special sections rolled will be found in tables on the following pages. The ability of the Inland Rail Steel Mill to produce sections in any particular contour depends largely on the demand for the section, and inquiries as to sections not listed are invited.

**Steel Posts**—The stiffness, resiliency and strength of Inland Rail Steel make it a material especially well suited for steel fence posts. The Inland Rail Steel Mill pioneered in the development of steel posts and for years has been a most important producer of easily driven, long lasting steel posts for different types of fencing, sign supports, road markers, etc. For description of designs, sizes and other information, see Pages 83 and 84.

**TYPICAL PRODUCTS  
MADE IN PART OR  
COMPLETELY FROM  
INLAND RAIL STEEL**

**Miscellaneous**

Steel shelving  
Animal pens  
Scaffolding  
Lockers  
Jack handles  
Bumper bar supports  
Purlines  
Beds  
Cots  
Couch side rails  
Gliders  
Portable buildings  
Ground rods  
Overhead track  
Car ladder rungs  
Industrial trucks  
Reinforcing bars  
Portable elevators  
Fence posts  
Water tanks

**Farm Implements  
and Equipment**

Hay loaders  
Corn pickers  
Corn huskers  
Corn shellers  
Hay mowers  
Hay rakes  
Wagon dumpers  
Manure spreaders  
Spike tooth harrows  
Combines  
Spring tooth harrows  
Feed grinders  
Cultivators  
Baling presses  
Seed drills  
Hay forks  
Litter track  
Stanchions  
Stall partition frames  
Windmill towers  
Feed hoppers  
Barn door track

**Inland Rail Steel Products (Con't.)**

**HI-BOND\* Reinforcing Bars In Rail Steel Quality**—The famous HI-BOND Reinforcing Bar, because of its superior characteristics, is the only type of concrete reinforcing bar now made by Inland. It is produced in Rail Steel quality as well as in New Billet Steel. Rail Steel was one of the earliest established materials for reinforced concrete construction, and it has been used in a good share of the largest and finest examples of that type of construction—among them, Chicago's huge Merchandise and Furniture Mart buildings. In addition to high tensile properties, Rail Steel has a relatively high elastic limit which is a particular advantage in reinforcing bars. The elastic limit of HI-BOND bars rolled from Rail Steel runs from a minimum of 50,000 lbs., psi., to 70,000 lbs., and more.

Please refer to Pages 45 and 46 for information about sizes, weights, etc., and for a description of the HI-BOND Bar, which is making possible superior reinforced concrete construction with economy of steel and labor due to its great bonding strength and other engineering advantages.

**Minimum Tensile Properties**

The following minimum tensile properties are standard for Rail Steel, and may be accepted for purposes of design in either construction or industrial uses:

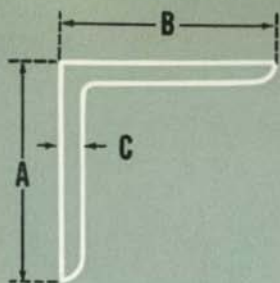
Elastic Limit.....50,000 lbs., Minimum per square inch  
Tensile Strength .....80,000 lbs., Minimum per square inch  
Modulus of Elasticity....30,000,000

**Fabrication Characteristics**

The wide range of products made from Inland Rail Steel is evidence of the success experienced in fabricating it, but this grade of steel does not lend itself quite as readily to fabrication as mild steel. A booklet on recommended practices for punching and shearing is available to users. In these operations, as well as in moderate forming, no difficulty is encountered if simple precautions are followed. For more severe fabrication, Inland manufactures a grade known as Treated Rail Steel. The ductility of this steel is greatly increased and its hardness is reduced by a special process developed by Inland.

Specialists in the fabrication of Rail Steel are on call to aid users in working it with maximum speed and economy. Samples will be gladly furnished for shop trials.

\* Reg. U. S. Pat. Off.



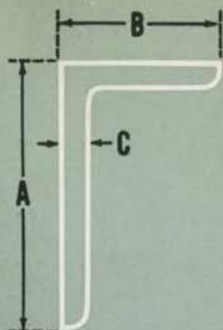
## ANGLES—Equal Leg\*

Bar-Sizes rolled from Rail Steel—See Index for New Billet Steel Bar-Size Angles and Structural Angles.

A	B	C	Wt. Lb. Per Ft.
3/4	3/4	3/4	.52
3/4	3/4	No. 11 B.W.G.	.56
3/4	3/4	1/8	.59
3/4	3/4	3/4	.65
3/4	3/4	3/32	.72
3/4	3/4	3/16	.84
7/8	7/8	3/4	.61
7/8	7/8	No. 11 B.W.G.	.67
7/8	7/8	1/8	.70
7/8	7/8	3/4	.77
7/8	7/8	3/32	.85
7/8	7/8	3/16	1.00
1	1	3/4	.70
1	1	No. 11 B.W.G.	.77
1	1	1/8	.80
1	1	3/4	.89
1	1	3/32	.98
1	1	3/16	1.16
1	1	1/4	1.49
1 1/4	1 1/4	3/4	.89
1 1/4	1 1/4	No. 11 B.W.G.	.97
1 1/4	1 1/4	1/8	1.01
1 1/4	1 1/4	3/4	1.13
1 1/4	1 1/4	3/32	1.25
1 1/4	1 1/4	3/16	1.48
1 1/4	1 1/4	1/4	1.92
1 1/4	1 1/4	3/16	2.33
1 1/2	1 1/2	3/4	1.08
1 1/2	1 1/2	No. 11 B.W.G.	1.18
1 1/2	1 1/2	1/8	1.23
1 1/2	1 1/2	3/4	1.37
1 1/2	1 1/2	3/32	1.52
1 1/2	1 1/2	3/16	1.80
1 1/2	1 1/2	1/4	2.34
1 1/2	1 1/2	3/16	2.86
1 1/2	1 1/2	3/8	3.35

A	B	C	Wt. Lb. Per Ft.
1 3/4	1 3/4	No. 11 B.W.G.	1.23
1 3/4	1 3/4	1/8	1.28
1 3/4	1 3/4	3/4	1.43
1 3/4	1 3/4	3/32	1.58
1 3/4	1 3/4	3/16	1.88
1 3/4	1 3/4	1/4	2.44
1 3/4	1 3/4	3/8	2.99
1 3/4	1 3/4	No. 11 B.W.G.	1.38
1 3/4	1 3/4	1/8	1.44
1 3/4	1 3/4	3/4	1.61
1 3/4	1 3/4	3/32	1.78
1 3/4	1 3/4	3/16	2.12
1 3/4	1 3/4	1/4	2.77
1 3/4	1 3/4	3/16	3.39
1 3/4	1 3/4	3/8	3.99
2	2	1/8	1.65
2	2	3/4	1.85
2	2	3/32	2.04
2	2	3/16	2.44
2	2	1/4	3.19
2	2	3/16	3.92
2	2	3/8	4.70
2 1/4	2 1/4	1/8	1.86
2 1/4	2 1/4	3/4	2.09
2 1/4	2 1/4	3/32	2.31
2 1/4	2 1/4	3/16	2.75
2 1/4	2 1/4	1/4	3.62
2 1/4	2 1/4	3/16	*4.50
2 1/4	2 1/4	3/8	*5.30
2 1/2	2 1/2	1/8	2.08
2 1/2	2 1/2	3/4	2.32
2 1/2	2 1/2	3/32	2.57
2 1/2	2 1/2	3/16	3.07
2 1/2	2 1/2	1/4	4.10
2 1/2	2 1/2	3/16	*5.00

\*Legs of angles will show variations in length that are in all cases over the dimensions given. Inside radius 1/8" on angles 1" x 1" and smaller; all other sizes have a 3/16" radius.



## ANGLES—Unequal Leg\*

A	B	C	Wt. Lb. Per Ft.
1	3/8	3/4	.56
1	3/8	No. 11 B.W.G.	.62
1	3/8	1/8	.64
1	3/8	3/4	.71
1	3/8	5/32	.78
1	3/8	3/16	.92
1 3/8	3/8	3/4	.80
1 3/8	3/8	No. 11 B.W.G.	.87
1 3/8	3/8	1/8	.91
1 3/8	3/8	3/4	1.01
1 3/8	3/8	5/32	1.11
1 3/8	3/8	3/16	1.32
1 3/8	1 1/8	3/4	.89
1 3/8	1 1/8	No. 11 B.W.G.	.97
1 3/8	1 1/8	1/8	1.01
1 3/8	1 1/8	3/4	1.13
1 3/8	1 1/8	5/32	1.25
1 3/8	1 1/8	3/16	1.48
1 3/8	1 1/8	1/4	1.92
1 3/8	1 1/8	5/16	2.33
1 1/2	1	3/4	.89
1 1/2	1	No. 11 B.W.G.	.97
1 1/2	1	1/8	1.01
1 1/2	1	3/4	1.13
1 1/2	1	5/32	1.25
1 1/2	1	3/16	1.48
1 1/2	1	1/4	1.92
1 1/2	1	5/16	2.33
1 1/2	1 1/4	3/4	.97
1 1/2	1 1/4	No. 11 B.W.G.	1.07
1 1/2	1 1/4	1/8	1.12
1 1/2	1 1/4	3/4	1.25
1 1/2	1 1/4	5/32	1.38
1 1/2	1 1/4	3/16	1.64
1 1/2	1 1/4	1/4	2.13
1 1/2	1 1/4	5/16	2.59

\*Legs of angles will show variations in length that are in all cases over the dimensions given. Inside radius 1/8" on angles 1" x 1" and smaller; all other sizes have a 3/16" radius.

A	B	C	Wt. Lb. Per Ft.
1 3/4	1 1/2	3/4	1.17
1 3/4	1 1/2	No. 11 B.W.G.	1.28
1 3/4	1 1/2	1/8	1.33
1 3/4	1 1/2	3/4	1.49
1 3/4	1 1/2	5/32	1.65
1 3/4	1 1/2	3/16	1.96
1 3/4	1 1/2	1/4	2.55
1 3/4	1 1/2	5/16	3.12
1 3/4	1 1/2	3/8	3.66
2	1	No. 11 B.W.G.	1.18
2	1	1/8	1.23
2	1	3/4	1.37
2	1	5/32	1.52
2	1	3/16	1.80
2	1	1/4	2.34
2	1	5/16	2.86
2	1	3/8	3.35
2	1 3/8	No. 11 B.W.G.	1.33
2	1 3/8	1/8	1.38
2	1 3/8	3/4	1.55
2	1 3/8	5/32	1.71
2	1 3/8	3/16	2.04
2	1 3/8	1/4	2.66
2	1 3/8	5/16	3.26
2	1 3/8	3/8	3.83
2	1 1/2	No. 11 B.W.G.	1.38
2	1 1/2	1/8	1.44
2	1 1/2	3/4	1.61
2	1 1/2	5/32	1.78
2	1 1/2	3/16	2.12
2	1 1/2	1/4	2.77
2	1 1/2	5/16	3.39
2	1 1/2	3/8	3.99
2 1/2	2	1/8	1.86
2 1/2	2	3/4	2.09
2 1/2	2	5/32	2.31
2 1/2	2	3/16	2.75
2 1/2	2	1/4	3.62
2 1/2	2	5/16	*4.50
2 1/2	2	3/8	*5.30

SPECIAL  
STEELS  
86

SPEC'S  
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CHEM.  
COMP.  
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## ROUNDS

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



## SQUARES

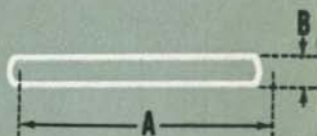
Size, Inches A	Wt. Lbs. per Ft.	Size, Inches A	Wt. Lbs. per Ft.
1/2	.850	3/4	2.603
5/8	1.076	1	3.400
3/4	1.328	1 1/8	4.303
7/8	1.913	1 1/4	5.313



## BANDS

Weights Are Shown In Lbs. Per Lineal Ft. For Sizes Rolled

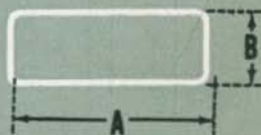
Width Inches A	Thickness B			
	12 B.W.G.	1/8"	5/32"	3/16"
3/4	....	....	....	.478
7/8	....	.372	.465	.558
1	.372	.425	.531	.638
1 1/8	....	.478	.598	.717
1 1/4	....	.531	.664	.797
1 3/8	....	.584	.730	.877
1 1/2	....	.638	.797	.956
1 5/8	....	.691	.863	1.036
1 3/4	....	.744	.930	1.116
2	....	.850	1.063	1.275
2 1/4	....	.956	1.195	1.434



## FLATS

Weights Are Shown In Lbs. Per Lineal Ft. For Sizes Rolled

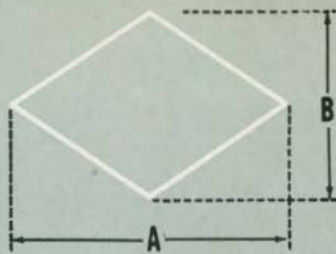
Width Inches (A)	Thickness, Inches (B)								
	1/4	3/16	1/8	7/16	1/2	5/16	3/8	1 1/16	3/4
3/4	.637	....	....	....	....	....	....	....	....
7/8	.744	.93	1.12	1.30	1.49	....	....	....	....
1	.850	1.06	1.28	1.49	1.70	1.91	2.13	2.34	2.55
1 1/8	.956	1.20	1.43	1.68	1.92	2.15	2.39	2.63	2.87
1 1/4	1.063	1.33	1.59	1.86	2.13	2.39	2.66	2.92	3.19
1 3/8	1.169	1.46	1.76	2.05	2.34	2.63	2.92	3.22	3.51
1 1/2	1.275	1.59	1.91	2.23	2.55	2.87	3.19	3.51	3.83
1 5/8	1.381	1.73	2.08	2.42	2.77	3.11	3.46	3.80	4.15
1 3/4	1.488	1.86	2.23	2.60	2.98	3.35	3.72	4.09	4.46
2	1.700	2.13	2.55	2.98	3.40	3.83	4.25	4.68	....
2 1/4	1.913	2.39	2.87	3.35	3.83	4.30	4.78	....	....





## DIAMOND

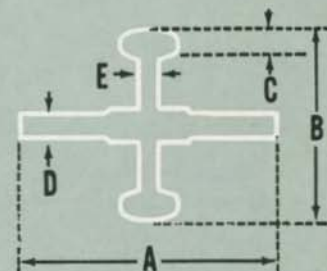
Size, Inches		Wt. Lbs. per Ft.
A	B	
$\frac{7}{8}$ .....	$\frac{3}{8}$ .....	1.020



## DOUBLE BEAD\*

Size, Inches						Wt. Lbs. per Ft.
A	B	C	D	E	F	
2 .....	$1\frac{7}{16}$ .....	$1\frac{1}{4}$ .....	$\frac{3}{16}$ .....	$\frac{5}{32}$ .....	$\frac{7}{16}$ .....	2.250

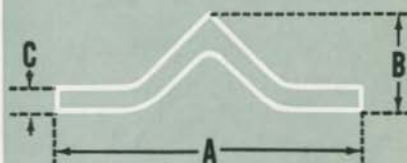
\*Rolled by Special Arrangement only.



## BUTTERFLY ANGLES\*

Size, Inches			Wt. Lbs. per Ft.
A	B	C	
$1\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{8}$	.800
$1\frac{1}{4}$	$\frac{1}{32}$	$\frac{3}{32}$	.980
$1\frac{3}{8}$ .....	$\frac{9}{16}$ .....	$\frac{3}{16}$ .....	1.160

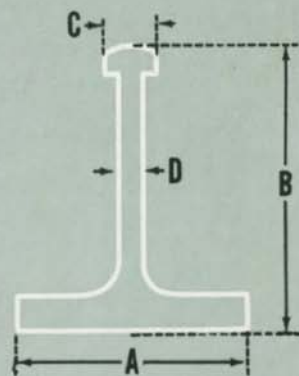
\*Rolled by Special Arrangement only.



## MONO TRACK\*

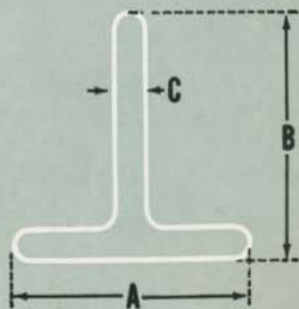
Size, Inches					Wt. Lbs. per Ft.
A	B	C	D	E	
2 .....	$2\frac{7}{16}$ .....	$\frac{7}{16}$ .....	$\frac{3}{16}$ .....	1.16	3.67

\*Rolled by Special Arrangement only.



## TEES

Size, Inches			Wt. Lbs. per Ft.
A	B	C	
$1\frac{3}{4}$	$1\frac{1}{2}$	$\frac{3}{16}$	2.000
$1\frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{8}$	1.30
$1\frac{3}{8}$ .....	$1\frac{3}{8}$ .....	$\frac{3}{4}$ .....	1.250



## CHANNEL No. 31\*

Size, Inches			Wt. Lbs. per Ft.
A	B	C	
1 3/4	1 9/32	3/32	2.000
1 3/4	5/8	1/4	2.250
1 3/4	1 1/16	3/16	2.650

\*Rolled by Special Arrangement only.

## FLARED CHANNELS\*

Size, Inches				Wt. Lbs. per Ft.
A	B	C	D	
2	1	3/4	3/4	1.12
2	1 1/4	1/8	15/128	1.25
2	1 1/2	3/4	1/8	1.33
2	1 3/4	3/2	17/128	1.50

\*Rolled by Special Arrangement only.

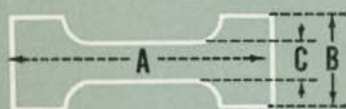
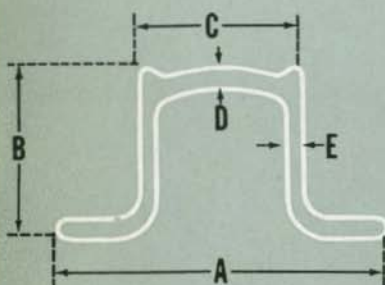
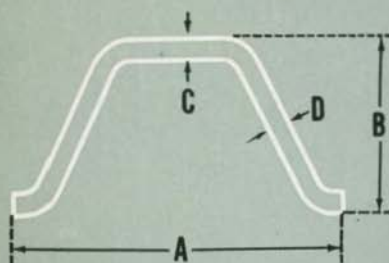
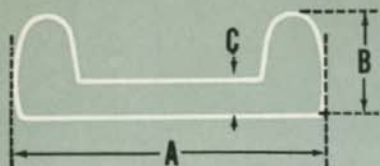
## SPECIAL FLANGED CHANNELS\*

Size, Inches			Wt. Lbs. per Ft.
A	B	C	
3 1/16	1.509	1 1/2	2.75
3 1/16	1.500	1 1/2	2.60
3 1/16	1.474	1 1/2	2.25
3 1/16	1.459	1 1/2	2.00

\*Rolled by Special Arrangement only.

## CHANNELED FLATS No. 17

Size, Inches			Wt. Lbs. per Ft.
A	B	C	
1 1/4	3/16	3/16	1.250
1 1/4	1/2	1/4	1.500
1 1/4	3/16	3/16	1.760
1 1/4	3/8	3/8	2.030
1 1/2	3/16	3/16	1.500
1 1/2	1/2	1/4	1.850
1 1/2	3/16	3/16	2.150
1 1/2	3/8	3/8	2.460



## U-HARROW BARS No. 51

Sizes, Inches				Wt. Lbs. per Ft.
A	B	C	D	
1 3/16	7/8	3/16	3/16	1.500
1 3/8	7/8	1/4	3/16	1.750
1 3/8	1 1/16	1/4	1/4	2.000

## U-STANCHION BAR No. 113

Size, Inches			Wt. Lbs. per Ft.
A	B	C	
1 1/4	1 1/4	3/16	1.860
1 1/4	1 7/32	3/32	1.50

## SPECIAL HARROW I BARS No. 24\*

Size, Inches			Wt. Lbs. per Ft.
A	B	C	
2 1/8	5/8	1/8	1.500
2 1/8	1 1/16	3/16	1.900
2 1/8	3/4	1/4	2.300

\*Rolled by Special Arrangement only.

## LOCK ANGLE\*

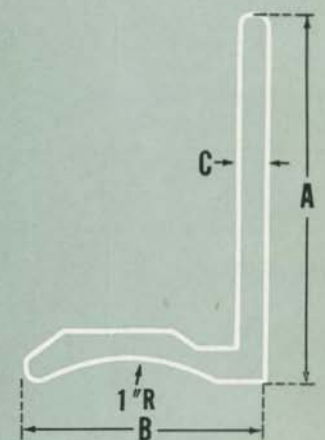
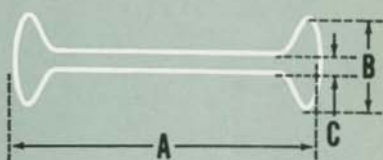
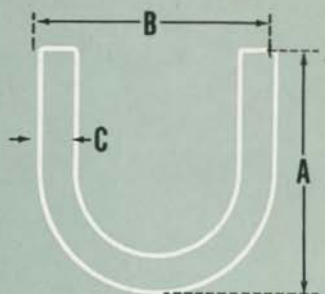
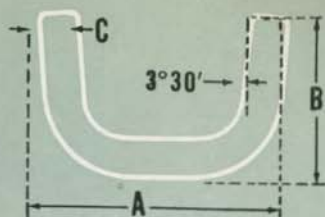
Concave Base

Size, Inches			Wt. Lbs. per Ft.
A	B	C	
1 13/16	1 3/16	3/32	1.685

Flat Base

Size, Inches			Wt. Lbs. per Ft.
A	B	C	
1 13/16	1 3/16	3/32	1.685

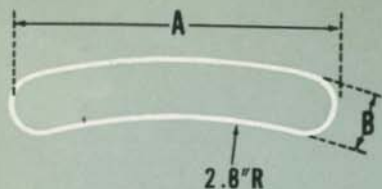
\* Rolled by Special Arrangement only.



SPECIAL  
STEELS  
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SPEC'S  
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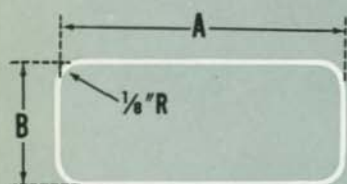
CHEM.  
COMP.  
99



## CONVEX FLAT\*

Size, Inches		Wt. Lbs. per Ft.
A	B	
1 3/4	3/16	1.750

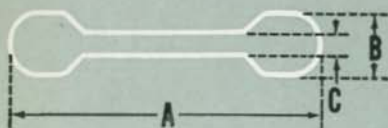
\*Rolled by Special Arrangement only.



## ROUND CORNERED FLAT\*

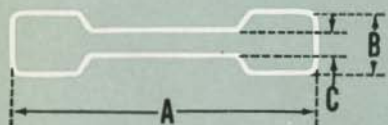
Size, Inches		Wt. Lbs. per Ft.
A	B	
1	1/2	1.654

\*Rolled by Special Arrangement only.



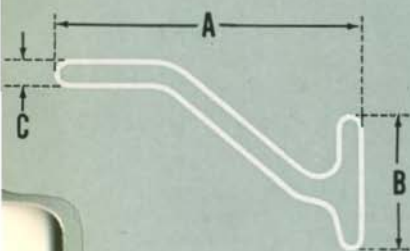
## LITTER CARRIER TRACKS\*

Size, Inches			Wt. Lbs. per Ft.
A	B	C	
2	3/8	1/8	1.500



Size, Inches			Wt. Lbs. per Ft.
A	B	C	
2	3/8	5/32	1.70

\*Rolled by Special Arrangement only.



## DOUBLE FLANGE HAY CARRIER TRACK\*

Size, Inches			Wt. Lbs. per Ft.
A	B	C	
1 2 1/2	1 1/16	1/8	1.119

\*Rolled by Special Arrangement only.

## RED TOP STEEL FENCE POSTS

"top them all" for economy and durability

► Inland Red Top Steel Fence Posts reduce the installation and maintenance costs of fences to a minimum and are guaranteed to outlast the fence they support. Used throughout the United States for farm fences, railroad right-of-way fences, snow fences and similar fencing purposes, they have met and continue to meet the most severe tests for long-lasting service. They can be driven with great speed and economy . . . government figures show the cost to be only 1/6th that of setting a wooden post. Even hard, dry soil and frost can be readily penetrated.

Rolled by Inland from selected Rail Steel, they have the good characteristics of quality high carbon steel—stiffness, resiliency and great strength. They make the fence flexible. Sudden shocks are withstood. Quick pressure at any point is distributed, and when the pressure is removed the fence springs back to its original position. Unlike wooden posts, they will not rot or burn. Electrical charges in the fence line are grounded.

### Durable Finishes

The appearance and durability of Red Top Fence Posts benefit from a baked on finish, which consists of a prime coat and either a top coat of aluminum paint, or, at the customer's option, red or green enamel.

### Fence Accessories

Posts are equipped with ground plates securely attached. Galvanized "Everhold" wire fasteners are furnished with each post at no extra charge. Sturdy "One-Man Post Drivers," which facilitate installation, are provided at a nominal cost. End, Corner and Intermediate Bracing Posts of heavy angle construction are supplied complete with braces, bolts and nuts.

### Weights and Lengths

Red Top Fence Posts are made in the popular studded tee section to a standard weight of 1.33 lbs. per foot. Available in bundles of five, they are easy to handle, pile and count. In storage, they take up only a fraction of the space required by wood posts.

#### RED TOP STUDDED TEE POSTS

Lengths and Weights (Finished Posts with Anchor Plate)

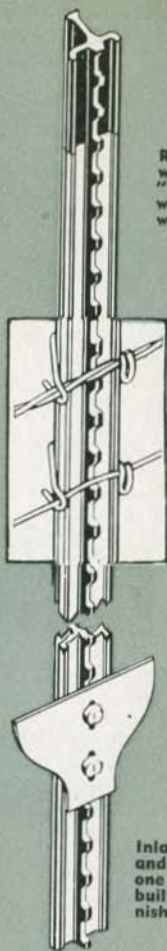
Length . . . . .	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"
Wt. per post, lbs. . . . .	7.99	8.65	9.32	9.98	10.65	11.31

#### ANGLE END, GATE, INTERMEDIATE AND CORNER POSTS

Lengths and Weights

Length . . . . .	7'8"	9'0"
Wt. per Unit—End or Gate Post (Including Brace) . . . . .	56 lbs.	66 lbs.
Wt. per Unit—Corner or Intermediate Post (Including two braces) . . . . .	80 lbs.	94 lbs.

Red Top Fence Post with inset showing "Everhold" fasteners which are supplied with the post.



Inland steel posts are quickly and economically driven by one man with this sturdily built driver, which is furnished by Inland at a nominal price.



SPECIAL STEELS  
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# HERCULES SIGN AND MARKER POSTS

. . . the stiffest, strongest made

► The high tensile properties of Rail Steel are combined in Inland Hercules Steel Posts with a new scientific design that develops the greatest structural strength possible; in fact, these posts are, for their weight, the strongest, stiffest highway sign and marker posts made. The Hercules design, with exclusive reinforcing ribs, utilizes the properties of Rail Steel in full, placing the metal where it gives maximum strength. With other advantages of the posts such as fine appearance, the speed with which they are installed and their immunity to fire and rot, the extra strength of the scientific Hercules design results in a post ideally fulfilling all the requirements of highway sign and marker service.

Hercules posts can be quickly and easily driven by one man without any digging, filing or tamping. Their stiffness and resilience causes posts to spring back to normal position after shocks and pressures that would break posts made from other materials. Primer and finish coats of rust resistant paint are baked on the posts separately; the posts retain their attractive appearance over prolonged periods with no need for re-painting or repairing.

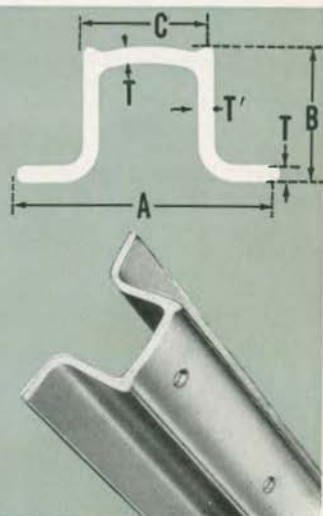
## SPECIFICATIONS—HERCULES STEEL POSTS

Hercules steel posts are available in two weights to satisfy all major highway marker and sign requirements—2.00 lbs. and 2.60 lbs. per lineal foot. They are furnished in various lengths from 6 to 12 feet, inclusive. The ends are pointed for easy driving. The posts will be furnished with or without a large size anchor of new design that adds greatly to the stability of the post in the ground. Holes for bolting on highway marker signs are punched as desired in any reasonable numbers. Normally, the posts are furnished with a finish coat of metallic aluminum paint, but other colors or finishes will be furnished when conditions permit. The posts can be galvanized if this coating is preferred.

## HERCULES FENCE POSTS Weights per Post in Pounds\*

The design of the Hercules Steel Post develops maximum structural strength

Length of Post in Ft.	2.60 Pounds Per Lineal Ft.		2.00 Pounds Per Lineal Ft.	
	No Anchor Plate	With Anchor Plate	No Anchor Plate	With Anchor Plate
6	15.60	16.35	12.00	12.75
6½	16.90	17.65	13.00	13.75
7	18.20	18.95	14.00	14.75
7½	19.50	20.25	15.00	15.75
8	20.80	21.55	16.00	16.75
8½	22.10	22.85	17.00	17.75
9	23.40	24.15	18.00	18.75
9½	24.70	25.45	19.00	19.75
10	26.00	26.75	20.00	20.75
10½	27.30	28.05	21.00	21.75
11	28.60	29.35	22.00	22.75
11½	29.90	30.65	23.00	23.75
12	31.20	31.95	24.00	24.75



\*Weights of post may vary slightly due to variations in rolling.

## AVERAGE DIMENSIONS

Wt. Lb. Per Foot	Area of Section in Sq. Inches	Dimensions in Inches				
		A	B	C	T	T'
2.00	.59	3½	1.459	1½	.115	.105
2.60	.76	3½	1.500	1½	.156	.115

Write for literature on Inland Red Top and Hercules Steel Posts. Prices will be sent on request.

# INLAND SPECIAL PURPOSE STEELS

(Hi Steel - Copper-Alloy - Ledloy)

**SEMI-FINISHED PRODUCTS**

**PIG IRON**

**LIMESTONE**

**COKE BY-PRODUCTS**

**CHEMICAL COMPOSITIONS**

**STANDARD SPECIFICATIONS**



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## INLAND HI-STEEL\*

**A Low Alloy, High Yield Strength Steel  
With Extraordinary Workability**

*Trial heats of steel made in this miniature laboratory furnace provide Inland metallurgists with data that aids in the development of new and better steels.*



► Inland Hi-Steel has provided the answer to the need for a high yield strength structural steel that can be welded as well or better and worked about as readily as ordinary structural grade carbon steel. With a yield strength nearly twice as high as ordinary structural steel, Hi-Steel permits weight to be greatly reduced without loss of structural strength. Its relatively low cost eliminates the principal disadvantage of older alloy steels and it has the added advantage of being much easier and faster to work.

Other properties adding to the usefulness of this versatile modern steel include a fatigue strength approximately one-third greater than that of structural grade carbon steel, high abrasion resistance, and resistance to corrosion four to six times greater than mild carbon steel. In some applications requiring high abrasion resistance, Hi-Steel has given more than 12 times the service of mild carbon steel.

### Uses of Hi-Steel

Inland Hi-Steel has found especially wide use in reducing the dead weight and increasing the pay load of such equipment as railroad freight and passenger cars, trucks, busses, mine cars, street cars, etc. Other uses include bridges, buildings, earth moving machinery, precipitators, concrete mixers, mufflers, boats, bins, buckets, chains, hoppers, jacks, etc.

### Inland Hi-Steel Products

Inland Hi-Steel is available in virtually all forms of rolled steel, including hot and cold rolled sheets and strip, structural sections, plates, bars and bar size shapes. Hi-Steel sheets and plates are used in considerable volume for forming into structural members to obtain maximum strength with the full benefit of weight reduction. Information as to sizes and gages rolled will be sent on request.

### Analysis and Manufacture

Methods of processing and control used by Inland in the manufacture of Hi-Steel assure a product of exceptional uniformity. Its approximate chemical analysis follows: Carbon, .12% max.; manganese, .50-.90%; phosphorus, .050-.120%; sulphur, .05% max.; silicon .15% max.; copper, .95-1.30%; nickel, .45-.75%; molybdenum, .08-.18%; aluminum, .12-.27%.

\*Reg. U. S. Pat. Off.



## PHYSICAL PROPERTIES\*—INLAND HI-STEEL

Yield Point . . . . .	52,500 psi. min. under $\frac{3}{16}$ " in thickness 50,000 psi. min. $\frac{3}{16}$ to 2", incl., in thickness
Tensile Strength . . . . .	70,000 psi min. up to 2" incl., in thickness
Cold Bend . . . . .	180° (flat bend under $\frac{3}{16}$ " in thickness; 1×Dia., $\frac{3}{16}$ " to $\frac{3}{4}$ ", incl.; 1½×Dia., over $\frac{3}{4}$ " to 1", incl.; 2×Dia. 1" to 1½" incl.)

## SIMPLE HEAT TREATMENT

### Gives Unusual Combination of Yield Strength and Ductility

A big advantage of Inland Hi-Steel in many applications is that its yield point can be greatly increased by precipitation hardening. This is a simple, low-temperature heat treatment.

Precipitation hardening at temperatures between 1000 and 1100° Fahrenheit for periods of from four to eight hours gives an especially desirable range of properties, as shown by the following examples of results obtained with  $\frac{1}{4}$ " plate:

	1000° F.		1100° F.	
	4 hours	8 hours	4 hours	8 hours
Yield Point . . . . .	84,000 psi.	80,000 psi.	75,000 psi.	72,000 psi.
Tensile Strength . . . . .	94,000 psi.	88,000 psi.	82,000 psi.	79,000 psi.
Elong. in 2" (per cent) . . . . .	30	30	32	34
Reduction in Area (per cent) . . . . .	60	63	67	67
Charpy Impact at 75° F. . . . .	50 ft. lbs.	53 ft. lbs.	56 ft. lbs.	63 ft. lbs.
Charpy Impact at - 50° F. . . . .	22 ft. lbs.	23 ft. lbs.	54 ft. lbs.	52 ft. lbs.

An interesting feature of these results is the fact that the exceptionally high yield point is obtained in combination with high ductility and impact resistance.

Any information users may require for the precipitation hardening treatment of Inland Hi-Steel will be gladly furnished. Inquiries for Inland Hi-Steel already treated by precipitation hardening are also welcome.

*\*Write for special booklet giving detailed information on the properties, uses and fabrication of Inland Hi-Steel.*

*Inland Hi-Steel can be fabricated by regular shop equipment as economically as ordinary structural steel. It offers exceptional weldability.*

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## INLAND COPPER-ALLOY\*

## Prolong Product Life At Only Slightly Added Cost

► In uses involving outdoor exposure or conditions promoting corrosion indoors, Inland Copper-Alloy Steel can generally be expected to give at least double the service life of ordinary carbon steels. Tests and the experience of users have shown that a service life as much as three times that of non-copper bearing steels is not unusual.

Because of the durability of products made from it, Inland Copper-Alloy Steel has been found by manufacturers to be invaluable as a means of winning customer good will and repeat orders. The steel has also won the enthusiastic endorsement of architects and engineers, and it is significant that many companies have standardized on Inland Copper-Alloy for use in all applications in and about their plants.

Typical of the products made from Inland Copper-Alloy Steel are: Farm implements, bridges, truck bodies, buildings, railroad cars, roofing and siding, runways, signs, tanks, all types of industrial and road-building equipment, screens, jetties, pans and ventilators.

### Economical to use

In all rolled forms, finish processed and ready to use, Inland Copper-Alloy Steel costs only about 5 per cent more than carbon steels which have a similar analysis, but lack its copper content. This slight additional cost is more than offset by the longer service life of the steel and makes it an economical choice for all requirements where atmospheric corrosion is a factor.

### Available in many forms and analyses

Nearly all forms and analyses of the lower carbon grades of steel made by Inland may be obtained in Inland Copper-Alloy quality, giving the user almost unlimited scope in taking advantage of its atmospheric corrosion resistant qualities. Products rolled by Inland in Copper-Alloy quality include:

Structural Shapes  
Bars  
Plates  
Sheet Piling  
4-Way Floor Plate

Hot Rolled Strip  
Cold Rolled Strip  
Hot Rolled Sheets  
Cold Rolled Sheets  
Galvanized Sheet Products  
(Including Roofing and Siding)

\* Reg. U. S. Pat. Off.

## Inland Copper-Alloy—Time-Tested, Proved

Through more than three decades since it was first manufactured by Inland, Inland Copper-Alloy Steel has been giving long and satisfactory service. Also, government bureaus, engineering association and private laboratories have conducted numerous tests of the corrosion resisting properties of steel alloyed with copper. These tests have established the marked superiority of copper-bearing steel in resisting corrosion in different types of atmospheres, ranging from that of an inland rural region to the damp, sulphurous atmosphere of industrial marine areas. The tests have been generally based on weight loss due to corrosion over a period of years and it is noteworthy that the ratio of superiority of Copper-Alloy Steel over ordinary carbon steel increased rapidly as the tests were continued (see chart).

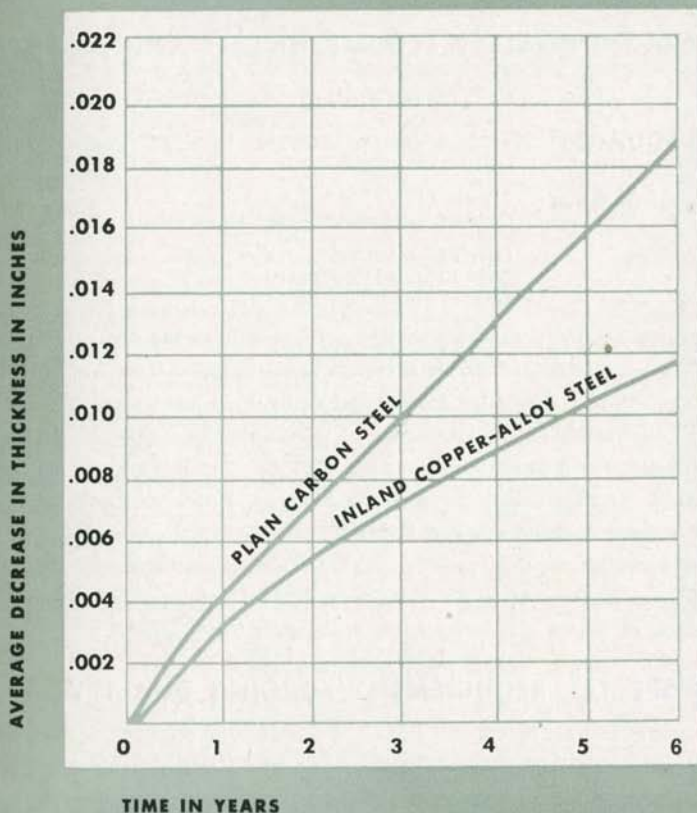


Chart shows results obtained in tests of the resistance of Inland Copper-Alloy Steel and plain carbon steel to atmospheric corrosion. Note how, with the passage of time, the ratio of superiority of Copper-Alloy Steel increased.

## INLAND LEDLOY\*

► Ledloy is produced by a process developed by Inland Steel metallurgists for adding lead to steel in a manner that causes uniform dispersion of the lead throughout the steel. The free-cutting characteristics of the steel are greatly improved while there are no measurable effects on its other properties. Strength, ductility and resistance to impact are unchanged. Results of heat treatments or carburizing are identical except for effects coming from a slightly smaller grain size. It welds and forges the same as an ordinary steel of similar analysis.

\*Reg. U. S. Pat. Office.

## SEMI-FINISHED PRODUCTS

### FORGING QUALITY BLOOMS, BILLETS AND SLABS

#### Sizes Rolled

**SQUARES:** 4", 5", 5½", 6" to 13", 13¾", 15¾", 18", inclusive.

**SLABS:** 6½" to 22" x 2" to 13"  
(Minimum cross-sectional 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"

Inland forging quality blooms, billets and slabs are furnished for making forgings which can be readily finished by machining. The material is free from piping and undue segregation, and is selected for surface quality, or, if necessary, is prepared by chipping or other means for the elimination of injurious surface defects.

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

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 areas 16 square inches; minimum thickness, 2".

### SPECIAL REQUIREMENT FORGING QUALITY

Forging quality blooms, billets and slabs are classified as Special Requirement Forging Quality when any one of the following additional restrictive requirements is specified: (1) guaranteed segregation limits affected by methods of sampling, (2) specified discard, (3) homogeneity tests, (4) guaranteed hardenability, (5) non-metallic inclusion requirements.

Size limitations for this classification are the same as those for forging quality.

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

## PIG IRON

*Securing a sample of Pig Iron  
for chemical analysis as it  
flows from an  
Inland blast furnace.*



► Pig iron, the product resulting from the reduction of iron ore in the blast furnace, is principally produced by us for our own use in the manufacture of steel. However, we are often in a position to meet industrial requirements for Pig Iron and inquiries are at all times invited. It is sold in carload lots by the gross ton (2,240 lbs.)

Pig Iron is classified and graded in accordance with its intended use. Classifications and grades regularly produced by Inland are as follows:

### Basic Pig Iron

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 analysis for basic iron is as follows:

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

### Foundry Pig Iron

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. Standard Chemical limits 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

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 of Malleable Pig Iron 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.

## INLAND LIMESTONE

*Quarrying reaches a high stage of mechanization at the Inland limestone quarries. Shown are dump cars being loaded for hauling the stone to crushing stations.*



▶ A hard, fine-grained calcium carbonate stone of unusual purity is available in Inland Limestone. To natural advantages that come from the high quality of the stone are added those resulting from modern methods of production—cleanliness, relative freedom from dust, and uniform sizing in all grades. The sizes range from 12 inches in diameter to stone sand.

Inland Limestone is produced in a highly mechanized quarrying operation at Port Inland on the north shore of Lake Michigan. It can be shipped via economical water transportation to most of the important industrial centers of America, as well as by rail.

### AN IDEAL MATERIAL FOR MANY PURPOSES

The chemical and physical properties of Inland Limestone meet the highest requirements of the metallurgical, chemical and construction industries. These properties make it an ideal limestone for many purposes, among them:

- Fluxing Agent (In blast furnaces, open hearths and foundry cupolas)
- Cement Manufacture
- Concrete Aggregates
- Soil Liming
- Paper Making
- Bituminous or Asphalt Construction

Many other uses including road surfacing, track ballast and as a raw material in manufacturing carbide, alkalis and various forms of chemical lime.

### CHEMISTRY

Remarkable freedom from undesirable elements likely to cause discoloration or other difficulties in industrial processes and an average content of more than 96 per cent calcium carbonate are shown by chemical analyses of Inland Limestone. Following is a typical analysis:

CaCO <sub>3</sub>	MgCO <sub>3</sub>	SiO <sub>2</sub>	R <sub>2</sub> O <sub>3</sub>	Sulphur	Phosphorus
96.73	2.37	.55	.32	.02	.01

## STRUCTURAL ADVANTAGES

With a dense, hard structure that fractures along sharp, angular planes, Inland Limestone offers structural advantages that make it unexcelled for use in all types of concrete where high strength and durability is desired.

## INLAND AGRICULTURAL LIMESTONE

Finely pulverized Inland Agricultural Limestone is an economical material for soil liming, which helps to provide essential elements for maximum crop yields and otherwise to condition the soil. Federal Specifications covering the chemical requirements of agricultural limestone are exceeded by the Inland product.

## CONVENIENTLY LOCATED STOCKS

Docks stocked with coarse and fine limestone aggregates are located at:

Ashtabula, Ohio  
Cleveland, Ohio  
Detroit, Michigan  
Erie, Pennsylvania  
Fairport, Ohio  
Green Bay, Wisconsin

Ludington, Michigan  
Manistee, Michigan  
Manistique, Michigan  
Marquette, Michigan  
Milwaukee, Wisconsin  
Munising, Michigan

Muskegon, Michigan  
Port Huron, Michigan  
St. Joseph, Michigan  
South Haven, Michigan  
Sturgeon Bay, Wisconsin  
Washburn, Wisconsin

*For Descriptive Literature and Other Information, Write to*

## INLAND LIME & STONE COMPANY

Manistique, Michigan

or

38 South Dearborn Street—Chicago 3, Illinois



Loading uniformly sized limestone into lake freighter at Port Inland.



Traveling conveying stacker at The Inland Lime & Stone Company plant.

## COKE BY-PRODUCTS (CHEMICAL)

Essential intermediates  
in the manufacture of hundreds  
of different products



COAL TAR

CARBOLATE

CREOSOTE OIL

► The Inland Steel Company is a leading supplier of chemicals recovered from coal during coke manufacture. Used in the manufacture of hundreds of products ranging from moth balls and shoe polish to sulphur drugs and plastics, they are by-products of the coking of thousands of tons of coal every day at the big Inland Steel Coke Ovens at Indiana Harbor, Indiana. They are 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.

### 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.

### Carbolate

Containing Phenol ( $C_6H_5OH$ )—Cresols ( $CH_3C_6H_4OH$ ) and Xylenols [ $(CH_3)_2C_6H_3OH$ ]. Acids 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 insecticides.



BENZENE

NAPHTHALENE



AMMONIUM SULPHATE

TOLUENE

CRUDE SOLVENT NAPHTHA

XYLOL

SOLVENT NAPHTHA

### 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.

### Benzene ( $C_6H_6$ )

Used in the manufacture of 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.

### Toluene ( $CH_3C_6H_5$ )

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

### Xylene ( $C_6H_4$ ) ( $CH_3$ )<sub>2</sub>

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

### 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.

SPEC'S  
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CHEM.  
COMP.  
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# STANDARD SPECIFICATIONS

## A.S.T.M. SPECIFICATIONS

The American Society for Testing Materials has issued a large number of specifications which have been adopted as standard. These are the result of the work done by numerous committees on which consumers and the manufacturers were represented. The specifications may therefore be considered suitable for use in ordering the various grades of steel considered within their scope. Brief descriptions of those most commonly used are given below. Copies of the complete specifications will be sent on request.

### STEEL FOR BRIDGES AND BUILDINGS A.S.T.M. DESIGNATION A 7-42

This specification, which is used for plates, shapes and bars, provides for a tensile strength of 60/72,000 lbs. per square inch and a minimum yield point that is one-half of the tensile strength, but in no case less than 33,000 lbs. per square inch, excepting in the case of rolled base plates over 2" in thickness for bearing purposes, which are specified to a carbon range of .20/.35%. The steel must withstand a 180 degree bend around a pin, the diameter of which must bear a relation to the thickness of the test specimen as stated in the detailed A.S.T.M. specification, excepting that physical tests are not required for rolled base plates for bearing purposes over 2" in thickness. For added corrosion resistance, this steel may be furnished in Inland Copper-Alloy grade.

### 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 maximum carbon content is .40% and the silicon content must not be under .20% on ladle analysis.

### STRUCTURAL STEEL FOR LOCOMOTIVES AND CARS A.S.T.M. DESIGNATION A 113-42

This is a 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. per square inch, while that for structural steel for locomotives is 55,000 to 65,000 lbs. Plates for cold pressing are shown with a tensile range of 48,000 to 58,000 lbs. per square inch. For increased resistance to corrosion, this steel may be ordered in the Inland Copper-Alloy grade.

### 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 7-29), Structural Steel for Buildings (A 9-29), and Structural Steel for Locomotives and Cars (A 113-29).

This specification provides for a rivet steel with a tensile strength range of 52,000 to 62,000 lbs. per square inch. The steel may be ordered in Inland Copper-Alloy grade for increased resistance to corrosion.

### CARBON-SILICON STEEL PLATES OF ORDINARY TENSILE RANGES A.S.T.M. DESIGNATION A 201-44

This specification covers carbon-silicon steel plates in two ordinary tensile ranges designated as Grades A and B. Grade A calls for a tensile strength of 55/65,000 lbs.

per square inch, and Grade B, 60/70,000 lbs. per square inch. It is a specification for steel for locomotive boiler shells, stationary boilers and other pressure vessels, and is intended particularly for fusion welding. A definite silicon content is specified. Under this specification, the maximum thickness of flange quality plates is two inches. The maximum thickness of firebox quality plates is 12 inches when made to the Grade A specification, and 6 inches when made to the Grade B specification.

### **CARBON-SILICON STEEL PLATES OF HIGH TENSILE STRENGTH A.S.T.M. DESIGNATION A 212-44**

This specification covers carbon-silicon steel plates in two high tensile strength ranges as follows: Grade A, tensile strength 65/77,000 lbs. per square inch, and Grade B, tensile strength 70/82,000 lbs. per square inch. It is a specification for flange and firebox quality steel plates for use in locomotive boiler shells, stationary boilers and other pressure vessels. Under this specification, the maximum thickness of flange quality plates is two inches and of firebox quality plates, 4½ inches. A definite silicon content is specified and the steel is suitable for fusion welding.

### **NEW BILLET STEEL BARS FOR CONCRETE REINFORCEMENT A.S.T.M. DESIGNATION A 15-39**

This steel is the generally accepted standard for this class of material and covers three grades of deformed and cold twisted bars, namely, structural, intermediate and hard. Open Hearth, Electric Furnace and Bessemer Steel are permitted by the specifications, the phosphorus being the only element shown in the specification subject to limitation. The tensile requirement for the structural grade is 55,000 to 75,000 lbs. per square inch and for the intermediate grade, 70,000 to 90,000 lbs. per square inch. 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 the bars be rolled from standard section Tee Rails, and permits no substitution of other materials such as those known by the term "rerolled," "rail-steel equivalent," and "rail-steel quality." The minimum tensile is 80,000 lbs. per square inch and the minimum yield point 50,000 lbs. per square inch.

### **STANDARD SPECIFICATION FOR HOT ROLLED CARBON STEEL BARS A.S.T.M. DESIGNATION A 107-42**

This specification covers hot rolled carbon steel bars produced in accordance with good mill practice for general purposes including heat treatments. The sections covered are rounds, squares, and hexagons of all sizes, and flats. Inland manufactures 17 standard grades covering Open Hearth Steel under this specification, seven grades covering Open Hearth Sulphurized Steel, and one grade covering Open Hearth Sulphurized Nut Stock. These are:

Open Hearth Grades: A.I.S.I. Steels 1008, 1010, 1015, 1016, 1020, 1022, 1025, 1030, 1035, 1040, 1045, 1050, 1055, 1060, 1070, 1080, 1095.

Open Hearth Free Cutting Steels: A.I.S.I. Steels 1115, 1117, 1118, 1120, 1137, 1141, 1151.

See page 99 for the chemical composition of these grades.

Open Hearth Sulphurized Nut Stock: Carbon, 0.25 max.; Manganese, 0.40 to 0.90; Phosphorus, 0.06 max.; Sulphur, 0.075 to 0.15.

### **CARBON STEEL BARS FOR SPRINGS A.S.T.M. DESIGNATION A 14-44**

This specification covers three grades of carbon steel bars used for the manufacture of railway springs. The choice of the grade of bar to be used for the manufacture of any spring depends on the design of the spring and the stresses and service for which

## **Standard Specifications (Cont.)**

it is intended. Purposes for which these grades are frequently used are as follows:

Grade A, for elliptical and helical springs (.90/1.10% carbon).

Grade B, for helical springs (.95/1.15% carbon).

Grade C, for applications where definitely specified (.85/1.05% carbon).

### **CARBON-STEEL BARS FOR SPRINGS WITH SPECIAL SILICON REQUIREMENTS A.S.T.M. DESIGNATION A 68-44**

This specification covers hot-rolled carbon-steel bars with special silicon requirements to be used for the manufacture of railway and general purpose springs.

The carbon range is 90/1.05% and the silicon specified is .15% minimum.

## **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:

### **BLOOMS, BILLETS AND SLABS FOR FORGINGS**

#### **A.A.R. SPECIFICATION M-105-45**

Requirements of this specification are covered by ASTM Specification A-273-44T for Carbon Steel and ASTM Specification A-274-44T for Alloy Steel.

### **RIVET STEEL AND RIVETS**

#### **A.A.R. SPECIFICATION M-110-40**

This specification covers carbon steel bars for rivets and finished rivets for boilers, locomotive tanks and underframes, passenger and freight equipment cars. Specification provides for a steel with a tensile strength of 45,000 to 55,000 pounds per square inch. For increased resistance to corrosion, the steel may be specified in Inland Copper-Alloy.

### **STEEL BARS, CARBON, FOR RAILWAY SPRINGS**

#### **A.A.R. SPECIFICATION M-114-42**

This specification covers Carbon Steel Bars to be used for the manufacture of railway springs and provides for a carbon range of .90/1.05%, and a minimum silicon content of .15%.

### **STEEL, STRUCTURAL SHAPES, PLATES AND BARS**

#### **A.A.R. SPECIFICATION M-116-42**

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 three grades shown in the specification: namely, Grade A, tensile strength 60,000 to 72,000 lbs. per square inch; Grade B, tensile strength 50,000 to 62,000 lbs. per square inch, and Grade C, Cold Pressing Quality for plates only, tensile strength 48/58,000 lbs. per square inch. All three grades may be ordered in Inland Copper-Alloy steel for increased resistance to corrosion.

## **OTHER SPECIFICATIONS**

In addition to the commonly used specifications listed above, there are a number of other standard specifications for carbon steels produced by Inland. Our metallurgists are also prepared to advise customers in the case of requirements not covered by standard specifications.

## CHEMICAL COMPOSITIONS

The Inland Steel Company regularly produces steel to the specifications of the American Iron & Steel Institute (A.I.S.I. steels) listed below:

### BASIC OPEN-HEARTH CARBON STEELS FOR HOT ROLLED BARS *Subject to Permissible Variation for Check Analysis*

AISI Number	Chemical Composition Limits, per cent			
	Carbon	Manganese	Phosphorus Max.	Sulphur Max.
C 1008	0.10 max.	0.30/0.50	0.040	0.050
C 1010	0.08/0.13	0.30/0.60	0.040	0.050
C 1012	0.10/0.15	0.30/0.60	0.040	0.050
C 1015	0.13/0.18	0.30/0.60	0.040	0.060
C 1016.....	0.13/0.18.....	0.60/0.90.....	0.040.....	0.050
C 1017	0.15/0.20	0.30/0.60	0.040	0.050
C 1019	0.15/0.20	0.70/1.00	0.040	0.050
C 1020	0.18/0.23	0.30/0.60	0.040	0.050
C 1022	0.18/0.23	0.70/1.00	0.040	0.050
C 1023.....	0.20/0.25.....	0.30/0.60.....	0.040.....	0.050
C 1025	0.22/0.28	0.30/0.60	0.040	0.050
C 1030	0.28/0.34	0.60/0.90	0.040	0.050
C 1035	0.32/0.38	0.60/0.90	0.040	0.050
C 1040	0.37/0.44	0.60/0.90	0.040	0.050
C 1043.....	0.40/0.47.....	0.70/1.00.....	0.040.....	0.050
C 1045	0.43/0.50	0.60/0.90	0.040	0.050
C 1050	0.48/0.55	0.60/0.90	0.040	0.050
C 1055	0.50/0.60	0.60/0.90	0.040	0.050
C 1060	0.55/0.65	0.60/0.90	0.040	0.050
C 1065.....	0.60/0.70.....	0.60/0.90.....	0.040.....	0.050
C 1070	0.65/0.75	0.60/0.90	0.040	0.050
C 1078	0.72/0.85	0.30/0.60	0.040	0.050
C 1080	0.75/0.88	0.60/0.90	0.040	0.050
C 1085	0.80/0.93	0.70/1.00	0.040	0.050
C 1095.....	0.90/1.05.....	0.30/0.50.....	0.040.....	0.050

### SULPHURIZED CARBON STEELS FOR HOT ROLLED BARS

*Subject to Permissible Variations for Check Analysis—(See Note).*

AISI Number	Chemical Composition Limits, per cent			
	Carbon	Manganese	Phosphorus Max.	Sulphur
C 1109	0.08/0.13	0.60/0.90	0.045	0.08/0.13
C 1112	0.10/0.16	1.00/1.30	0.045	0.08/0.13
C 1115	0.13/0.18	0.70/1.00	0.045	0.08/0.13
C 1116	0.14/0.20	1.10/1.40	0.045	0.16/0.23
C 1117.....	0.14/0.20.....	1.00/1.30.....	0.045.....	0.08/0.13
C 1118	0.14/0.20	1.30/1.60	0.045	0.08/0.13
C 1120	0.18/0.23	0.70/1.00	0.045	0.08/0.13
C 1137	0.32/0.39	1.35/1.65	0.045	0.08/0.13
C 1141	0.37/0.45	1.35/1.65	0.045	0.08/0.13
C 1144.....	0.40/0.48.....	1.35/1.65.....	0.045.....	0.24/0.33
C 1145	0.42/0.49	0.70/1.00	0.045	0.04/0.07
C 1151.....	0.48/0.55.....	0.70/1.00.....	0.045.....	0.08/0.13

NOTE: Sulphurized steel is not subject to check analysis for sulphur.



## OTHER INLAND LITERATURE

► We are glad to supply additional information about any products we manufacture. Described below are some of the publications we have prepared to aid our customers in selecting or working with our products. Please feel free to write for those you may find useful.

**Price and Extra Booklets**—Issued on all major products produced by the Inland Steel Company, these booklets present comprehensive data on prices, extras, deductions, etc.

**Inland Hi-Steel** (high strength, low alloy steel)—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 Sheet Piling Catalogue**—Booklet describing Inland Sheet Piling sections and accessories, with information on use.

**Inland 4-Way Floor Plate Catalogue**—Illustrated book on floor safety and economy, with tables on sizes, weights, loads, etc.

**Hi-Bond Reinforcing Bars**—Bulletins providing complete information on Hi-Bond bars and describing independent engineering tests that have demonstrated its superior bonding strength in comparison with other commonly used reinforcing bars.

**Ti-Namel Steel**—Descriptive bulletins on this new enameling alloy steel, including information on fabrication, firing temperatures, application of the coating, etc.



**Inland Enameling Iron**—Inland literature on this product includes folders describing manufacture, properties, fabricating, enameling, firing, etc.

**Inland Steel Data Book**—This is a general steel data book compiled to meet quickly the constantly recurring need for different types of information about steel. It contains weight and conversion tables, data on allowable loads, descriptions of the properties and applications of different steels, authoritative information on fabrication processes such as deep drawing, forming and welding, etc.\*

**Brochure on 44" Mill**—A dramatic picture story of one of the gigantic Inland Continuous Sheet Mills showing, step by step, the production of sheet on this big mill.

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

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

**Calculators**—Inland has designed several time-saving calculators of the slide-rule type, as follows:

**Inland Weight Calculator**—Saves time and helps eliminate errors in computing the weights of structurals, bars, plates, floor plate, sheets, strip, circles, angles, rails, etc.

**Inland Girder Calculator**—Enables engineers to select at a glance a wide range of plate and angle girders, with required strength for a given loading and span—after which design can be completed by using calculator to determine length of cover plates, rivet pitch and stiffener spacing.

**Inland Cofferdam Calculator**—Gives engineers and contractors a means of selecting in the shortest possible time, the economical piling section for box type cofferdams, and to determine size and spacing of wales.

\*In preparation 1946

## TRADE CUSTOMS

► Fabrication of steel into finished products involves various hazards, some of which may arise due to the inherent characteristics of the material and others to methods of handling, fabrication, etc. Inland's policies and facilities for close cooperation with its customers are of special value to them in the avoidance of these difficulties. Practices described below have been developed to meet some of the problems most commonly encountered regardless of all precautions. They are the product of long experience and painstaking analysis of the positions and interests of both parties.

### Definition of Order in Process

An order is deemed "in process of manufacture" from and including ingots for Special Quality Material, and from and including slabs and billets for Standard Commercial Material.

### Car Loading

Loading rules published by the Mechanical Division of the Association of American Railroads are complied with by Inland Steel Company, consequently, if the steel should arrive in damaged condition, the damage should be called to the attention of the delivering railroad and a request made for railroad inspection and a "Damaged in Transit" report secured. 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 ten tons of a size in the case of such products as Sheet Steel, Bars, and Plates, 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 Governs Invoice Settlement

Because of the possibility of error in counting pieces where actual weight and not theoretical weight is the basis for billing, the determining factor in settlement of invoices is weight of the material.

### Weight Variations

Custom recognizes variations between weighings of one-half of 1%, which may be due to differences between scales and location, or to personal equation.

### Prompt Notification

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 the disposition to be made of it.

### Assessing Liability

When steel is ordered without the purpose being shown on the order, the buyer is responsible for its adaptability to the particular use, providing of course the material is up to the standard for the grade ordered. If ordered for a definite requirement and then used for a different purpose, the buyer must also assume responsibility when the material meets the original requirement; however, should we authorize such a change in the use of the material, we are responsible.

We agree to replace any product which does not meet the specifications of the order as accepted and which is found to be defective while in possession of the buyer. We



will not be responsible for any consequential damages or for labor costs arising out of the use of such product. Our responsibility in no case exceeds the purchase price of the material.

No allowance is made to the buyer for labor of reloading and bracing when material is rejected by him and is returned to the mill. It is considered proper cooperation between the buyer and seller for the former to be responsible for this expense.

## CONDITIONS OF SALE

► All orders and contracts are subject to acceptance at our General Office at Chicago, Illinois.

All materials are furnished subject to the standard manufacturing variations and practices and within the limits of the sizes we produce.

We do not accept responsibility for delay in performance of an agreement resulting in whole or in part from fire or flood; strikes, lockouts, or other differences with employees; war, riot, or embargo delays; losses or damage in transportation; mill conditions, shortages of cars, fuel, labor or material; or any cause beyond our control.

Shipments and deliveries shall at all times be subject to the approval of our Credit Division and we may at any time decline to make shipment or delivery except upon receipt of payment, or upon terms and conditions, or security satisfactory to the Credit Division.

Unless our Credit Division shall otherwise provide, terms of payment are net cash: Thirty (30) days from the date of invoice payable in New York or Chicago exchange or the equivalent thereof. A discount of one-half of 1% will be allowed if such payment is made within ten (10) days from the date of invoice, no discount being allowed on transportation charges.

Material will be billed at those prices, extras, and deductions in effect at the time of shipment.

All of our prices, except those applicable to rails and joint bars, are F.O.B. "Place of Delivery," which is the railroad freight station nearest the place where the material is to be used or stored.

If freight rates other than switching charges are increased or decreased prior to shipment, prices on unshipped portion shall be increased or decreased accordingly.

We will not be responsible for spotting, switching, or other transportation charges incurred at destination.

Any taxes other than existing state sales taxes which Inland may be required to pay or collect under any present or future law upon or with respect to the sale, purchase, delivery, storage, processing, use, consumption, or transportation of any of the materials sold by Inland, shall be for the account of the buyer.

Waiver by us of any breach of an agreement shall not be construed as a waiver of any other breach, and failure to exercise any right arising from any default of the buyer under an agreement shall not be deemed to be a waiver of such right which may be exercised at any subsequent time.

## Other Trade Customs and Conditions of Sale

Other trade customs and conditions of sale not listed herein but set forth in our announcement of base prices and classifications of extras and deductions relating to particular products shall govern.

## Decimal Equivalents

1/64 .015625	1 1/32 .34375	4 3/64 .671875
1/32 .03125	2 3/64 .359375	1 1/16 .6875
3/64 .046875	3/8 .375	4 5/64 .703125
1/16 .0625	2 5/64 .390625	2 3/32 .71875
5/64 .078125	1 1/2 .40625	4 7/64 .734375
3/32 .09375	2 3/64 .421875	3/4 .75
7/64 .109375	7/16 .4375	4 9/64 .765625
1/8 .125	2 5/64 .453125	2 5/32 .78125
9/64 .140625	1 5/32 .46875	3 1/64 .796875
5/32 .15625	2 1/64 .484375	1 3/16 .8125
1 1/64 .171875	1/2 .5	5 3/64 .828125
3/16 .1875	2 3/64 .515625	2 7/32 .84375
1 3/64 .203125	1 7/32 .53125	5 5/64 .859375
7/32 .21875	2 5/64 .546875	7/8 .875
1 5/64 .234375	9/16 .5625	5 7/64 .890625
1/4 .25	3 7/64 .578125	2 9/32 .90625
1 7/64 .265625	1 9/32 .59375	5 9/64 .921875
9/32 .28125	3 9/64 .609375	1 3/16 .9375
1 9/64 .296875	3/8 .625	6 1/64 .953125
5/8 .3125	4 1/64 .640625	2 1/32 .96875
2 1/64 .328125	2 1/2 .65625	6 3/64 .984375

## Standard Classification of Flat Rolled Carbon Steel

### Hot Rolled

Width, Inches	.2500 or thicker	.2499 to .1875	.1874 to .0568	.0567 to .0344	.0343 to .0255	.0254 to .0142	.0141 or thinner
Up to 3 1/2, inc.....	Bar	Strip	Strip	Strip	Strip	Sheet	Sheet
Over 3 1/2 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) Is special edge or finish, or temper as in A.S.T.M. Spec. A-109.

(2) If no special edge, finish, or temper.

# INLAND STEEL COMPANY

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## GENERAL OFFICES

38 S. Dearborn St., Chicago 3, Ill.  
Phone CENTral 7920

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## PLANTS

Indiana Harbor, Ind.  
Chicago Heights, Ill.

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## DISTRICT SALES OFFICES

### DETROIT 2, MICH.

1132 Fisher Building . . . . . Phone: TRinity 24425

### INDIANAPOLIS 4, IND.

831 Architects & Builders Building . . . . . Phone: LIncoln 0275

### KANSAS CITY 6, MO.

906-907 Midland Building . . . . . Phones: VICTor 5506  
VICTor 5507

### MILWAUKEE 2, WIS.

1042 Bankers Building . . . . . Phone: DALy 4921

### NEW YORK 17, N. Y.

817 New York Central Bldg. . . . . Phone: MURray Hill 6-7250

### ST. LOUIS 2, MO.

804 Commerce Building. . . . . Phones: MAIn 3185  
MAIn 3186

### ST. PAUL 1, MINN.

W-1762 First National Bank Bldg. . . . . Phones: CEEdar 1191  
Midway 6965



2500°F

2400

2300

2200

2100

2000

1900

1800

1700

1600

1500

1400

1300

1200

1100

# INLAND STEEL



INLAND STEEL COMPANY